

**Appendix B**  
**Consultation and Correspondence**



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**Town of Lakeshore Stormwater Master Plan - Phase 1  
AGENCY CONTACT LIST**

| Agency   | Title | First Name | Last Name      | Department                                 | Title  | Address                           | City        | Pr | Postal  | Phone                                    | Email                                 |
|--|-------|------------|----------------|--|--|-----------------------------------|-------------|----|---------|--|---------------------------------------|
| <b>Provincial Contacts</b>                                       |       |            |                |  |  |                                   |             |    |         |  |                                       |
| Ministry of Natural Resources and Forestry                       |       | Karina     | Cerniavskaja   | Aylmer District                            | District Planner   | 615 John Street North             | Aylmer      | ON | N5H 2S8 |  | karina.cerniavskaja@ontario.ca        |
| Ministry of the Environment, Conservation and Parks              |       | Craig      | Newton         | Southwestern Region                        | Regional Environmental Assessment Coordina                                       | 733 Exeter Road                   | London      | ON | N6E 1L3 |  | craig.newton@ontario.ca               |
| Ministry of the Environment, Conservation and Parks              |       | Travis     | McMunn         | Windsor Area Office (Central Region)       | Supervisor   | 1 Stone Road W, 4th floor         | Guelph      | ON | N1G 4Y2 |  | travis.mcmunn@ontario.ca              |
| Ministry of the Environment, Conservation and Parks              |       |            |                |  |  |                                   |             |    |         |  | eanotification_swregion@ontario.ca    |
| Ministry of Tourism, Culture and Sport                           |       | Rosi       | Zirger         | Culture Services Unit                      | Heritage Planner   | 401 Bay Street, Suite 1700        | Toronto     | ON | M7A 0A7 |  | rosi.zirger@ontario.ca                |
| Ministry of Transportation                                       |       | Michael    | Nadeau         | London Office                              | Manager of Operations (Acting)   | 659 Exeter Road, 2nd floor        | London      | ON | N6E 1L3 |  | michael.nadeau@ontario.ca             |
| Ministry of Transportation                                       |       | Malvika    | Rudra          | London office                              | Manager of Corridor Control  | 659 Exeter Road, 3rd floor        | London      | ON | N6E 1L3 |  | malvika.rudra@ontario.ca              |
| Ministry of Agriculture, Food, and Rural Affairs                 |       | Drew       | Crinklaw       | Land Use Policy & Stewardship              | Rural Planner, Southwest Ontario   | 667 Exeter Road                   | London      | ON | N6E 1L3 |  | drew.crinklaw@ontario.ca              |
| Ministry of Agriculture, Food, and Rural Affairs                 |       | John       | Turvey         | Land Use Policy & Stewardship              | Policy Advisor   | 1 Stone Road W, 3rd floor         | Guelph      | ON | N1G 4Y2 |  | john.turvey@ontario.ca                |
| Ministry of Municipal Affairs and Housing                        |       | Ian        | Kerr           | Municipal Services Office                  | Regional Director  | 659 Exeter Road, 2nd floor        | London      | ON | N6E 1L3 |  | ian.kerr@ontario.ca                   |
| Ministry of Indigenous Relations and Reconciliation              |       | Leslie     | Brewer-Palhazi | Reconciliation, Ministry Partnerships Unit | Advisor  | 160 Bloor Street E, Suite 400     | Toronto     | ON | M7A 2E6 |  | leslie.brewer-palhazi@ontario.ca      |
| <b>Federal Department Contacts</b>                               |       |            |                |  |  |                                   |             |    |         |  |                                       |
| Indigenous Affairs and Northern Affairs Canada                   |       | Sean       | Darcy          | Claims Assessment and Treaty Mechanisms    | Manager  | 10 Wellington Street              | Gatineau    | QC | K1A 0H4 |  | sean.darcy@canada.ca                  |
| Department of Fisheries and Oceans Canada                        |       | Lisa       | Wren           |  | Senior Fisheries Protection Biologist  | 867 Lakeshore Drive               | Burlington  | ON | L7S 1A1 |  |                                       |
| <b>Municipal Departments</b>                                     |       |            |                |  |  |                                   |             |    |         |  |                                       |
| Town of Lakeshore  |       |            |                |  |  | 415 Notre Dam Street              | Belle River | ON | N0R 1A0 |  | info@lakeshore.ca                     |
| City of Windsor  |       | Wes        | Hicks          | Infrastructure and Geomatics               | Senior Manager of Infrastructure & Transportation Planning, Deputy City Engineer | 350 City Hall Square West         | Windsor     | ON | N9A 6S1 |  | whicks@citywindsor.ca                 |
| City of Windsor  |       | Mike       | Clement        | Parks and Recreation                       | Manager of Parks Development   | 2450 McDougall Street             | Windsor     | ON | N8X 3N6 |  | mclement@citywindsor.ca               |
| Town of Tecumseh   |       | Chad       | Jeffery        |  | Manager of Planning Services   | 917 Lesperance Road               | Tecumseh    | ON | N8N 1W9 |  |                                       |
| Town of Tecumseh   |       | Mike       | Voegeli        |  | Manager of Building Services   | 917 Lesperance Road               | Tecumseh    | ON | N8N 1W9 |  |                                       |
| County of Essex  |       | Jane       | Mustac         |  | Director of Infrastructure Services & Engineer                                   | 360 Fairview Avenue West          | Essex       | ON | N8M 1Y6 |  | imustac@countyofessex.ca              |
| Essex Region Conservation Authority                              |       | Mike       | Nelson         |  | Watershed Planner  | 360 Fairview Avenue West          | Essex       | ON | N8M 1Y6 |  | rmelson@erca.org                      |
| <b>Indigenous Communities</b>                                    |       |            |                |  |  |                                   |             |    |         |  |                                       |
| Walpole Island First Nation / Bkejwanong Territory               |       | Dean       | Jacobs         |  | Heritage Centre Director   | R.R. #3                           | Wallaceburg | ON | N8A 4K9 |  | dean.jacobs@wifn.org                  |
| Walpole Island First Nation / Bkejwanong Territory               | Chief | Daniel     | Miskokomon     |  | Chief  | 117 Tahgahoning Road R.R. #3      | Wallaceburg | ON | N8A 4K9 |  | drskoke@wifn.org                      |
| Chippewas of the Thames  | Chief | Myeengun   | Henry          |  | Chief  | 320 Chippewa Road RR1             | Muncey      | ON | N0L 1Y0 | 519-289-5241                             | myeegun@cottfn.com                    |
| Chippewas of the Thames  |       | Rochelle   | Smith          | Lands and Resources                        | Consultation Coordinator   | 320 Chippewa Road RR1             | Muncey      | ON | N0L 1Y1 | T: 519.289.2662 ext 213                  | rsmith@cottfn.com                     |
| Oneida Nation of the Thames                                      | Chief | Jessica    | Hill           |  | Chief  | 2212 Elm Avenue RR #2             | Southwold   | ON | N0L 2G0 | T: 519-318-4585                          | jessica.hill@oneida.on.ca             |
| Oneida Nation of the Thames                                      |       | Catherine  | Cornelius      |  | Political Chief Assistant  | 2213 Elm Avenue RR #2             | Southwold   | ON | N0L 2G0 | T: 519-652-6161                          | Catherine.cornelius@oneida.on.ca      |
| Munsee-Delaware Nation   | Chief | Roger      | Thomas         |  | Chief, Primary Executive   | 289 Jubilee Road                  | Muncey      | ON | N0L 1Y0 | T: 519-289-5396 Ext. 226                 | chief.thomas@munsee-delaware.org      |
| Munsee-Delaware Nation   |       | Glenn      | Forrest        |  | Band Manager   | 289 Jubilee Road                  | Muncey      | ON | N0L 1Y0 | T: 519-289-5396 Ext. 222                 | glenn@munsee.ca                       |
| Delaware Nation  | Chief | Denise     | Stonefish      |  | Chief  | 14760 School House Line RR #3     | Thamesville | ON | N0P 2K0 | T: 519.692.3936 F: 519.692.5522          | denise.stonefish@delawarenation.on.ca |
| Bkejwanong Territory (Walpole Island)                            | Chief | Dan        | Miskokomon     |  | Chief  | 117 Tahgahoning Road RR #3        | Wallaceburg | ON | N8A 4K9 | T: (519) 627-1481                        | drskoke@wifn.org                      |
| Bkejwanong Territory (Walpole Island)                            |       | Janet      | Macbeth        |  | Project Review Coordinator   | 117 Tahgahoning Road RR #3        | Wallaceburg | ON | N8A 4K9 | T: 519.627.1475 Ext.108                  | janet.macbeth@wifn.org                |
| Bkejwanong Territory (Walpole Island)                            | Dr.   | Dean       | Jacobs         |  | Consultation Manager   | 117 Tahgahoning Road RR #3        | Wallaceburg | ON | N8A 4K9 | T: 519.627.1475 Ext. 104                 | dean.jacobs@wifn.org                  |
| Caldwell First Nation  | Chief | Mary       | Duckworth      |  | Chief  | 14 Orange Street (P.O. Box 388)   | Leamington  | ON | N8H 3W3 | T: 519.322-1765                          | chief@caldwellfirstnation.ca          |
| Caldwell First Nation  |       | Allen      | Deleary        |  | Director of Operations   | P.O.Box 388                       | Leamington  | ON | N8H 3W3 | T: 519.322-1766                          | allen.deleary@caldwellfirstnation.ca  |
| Chippewas of Kettle and Stony Point First Nation                 | Chief | Jason      | Henry          |  | Chief  | 6247 Indian Lane RR #2            | Forest      | ON | N0N 1J0 | T: 519-786-2125                          | jason.henry@kettlepoint.org           |
| Chippewas of Kettle and Stony Point First Nation                 |       | Valerie    | George         |  | Consultation Coordinator   | 6247 Indian LaneRR#2              | Forest      | ON | N0N 1J0 | T: 519.786.2125 F: 519.786.2109          | valerie.george@kettlepoint.org        |
| Aamjiwnaang First Nation   | Chief | Chris      | Plain          |  | Chief  | 978 Tashmoo Avenue                | Sarnia      | ON | N7T 7H5 | T: 519.336.8410 F: 519.336.0382          | chief@aamjiwnaang.ca                  |
| Aamjiwnaang First Nation   |       | Sharilyn   | Johnston       |  | Environment Coordinator  | 978 Tashmoo Avenue                | Sarnia      | ON | N7T 7H5 | T: 519.336.8410 ext. 245 F: 519.336.0382 | sjohnston@aamjiwnaang.ca              |
| <b>School Board Contacts</b>                                     |       |            |                |  |  |                                   |             |    |         |  |                                       |
| Greater Essex County District School Board                       |       | Shelley    | Armstrong      |  | Superintendent of Business and Treasurer   | 451 Park Street West P.O. Box 210 | Windsor     | ON | N9A 6K1 |  |                                       |
| Windsor-Essex Catholic District School Board                     |       | Penny      | King           | Operations Services                        | Executive Superintendent of Business   | 1325 California Avenue            | Windsor     | ON | N9B 2Z5 |  | penny_king@wecdsb.on.ca               |
| Conseil Scolaire de District des Ecoles Catholiques du Sud-Ouest |       | Joseph     | Picard         | CSDECSO Siege Social                       | Directeur Général du Csc Providence  | 7515 Forest Glade Drive           | Windsor     | ON | N8T 3P5 |  |                                       |

Class Environmental Assessment - Schedule B  
Lakeshore Stormwater Master Plan - Phase 1  
Properties Potentially Impacted

| Surname | First Name | Organization | Department | Job Title | Address | City/Prov | Postal Code | Tel. | Fax | E-Mail | Notes |
|---------|------------|--------------|------------|-----------|---------|-----------|-------------|------|-----|--------|-------|
|---------|------------|--------------|------------|-----------|---------|-----------|-------------|------|-----|--------|-------|

Langlois Ryan

[REDACTED]

Lakeshore Stormwater Master Plan - Phase 1  
 PIC No. 1 Attendees and Persons Who Submitted Comment Sheets

| Surname   | First Name       | Organization | Department | Job Title | Address | City/Prov | Postal Code | Tel. | Email |
|---|------------------|--------------|------------|-----------|---------|-----------|-------------|------|-------|
| <b>PIC Attendees</b>                                      |                  |              |            |           |         |           |             |      |       |
| Aimelie   | David            |              |            |           |         |           |             |      |       |
| Shepherd  | Pam              |              |            |           |         |           |             |      |       |
| Bellard   | Vita             |              |            |           |         |           |             |      |       |
| Bain  | Tom              |              |            |           |         |           |             |      |       |
| Reid  | Kyle             |              |            |           |         |           |             |      |       |
| McAvley   | Simonne          |              |            |           |         |           |             |      |       |
| Langton   | Sylvia           |              |            |           |         |           |             |      |       |
| Janisse   | Len              |              |            |           |         |           |             |      |       |
| Hanna   | Dave             |              |            |           |         |           |             |      |       |
| McKinlay  | Linda            |              |            |           |         |           |             |      |       |
| Kerr  | John             |              |            |           |         |           |             |      |       |
| Laramie   | Brian            |              |            |           |         |           |             |      |       |
| Ramsden   | Harry            |              |            |           |         |           |             |      |       |
| Spencer   | Ian              |              |            |           |         |           |             |      |       |
| Poisson   | Ken              |              |            |           |         |           |             |      |       |
| Brown   | John             |              |            |           |         |           |             |      |       |
| McLaughlin  | Bennett          |              |            |           |         |           |             |      |       |
| Garran  | Ed & Sherry      |              |            |           |         |           |             |      |       |
| Pracey  | Ron              |              |            |           |         |           |             |      |       |
| Ossington   | Irene            |              |            |           |         |           |             |      |       |
| Aversa  | Angelo           |              |            |           |         |           |             |      |       |
| Purvis  | J.               |              |            |           |         |           |             |      |       |
| Walstedt  | Kirk             |              |            |           |         |           |             |      |       |
| Smith   | Wayne            |              |            |           |         |           |             |      |       |
| Goodyear  | Nicole           |              |            |           |         |           |             |      |       |
| Dufova  | Adrian           |              |            |           |         |           |             |      |       |
| Ackland   | Pat & Ted        |              |            |           |         |           |             |      |       |
| Gibson  |                  |              |            |           |         |           |             |      |       |
| Murray  | Sandra           |              |            |           |         |           |             |      |       |
| Volante   | Fabio            |              |            |           |         |           |             |      |       |
| Thomas  | Wayne            |              |            |           |         |           |             |      |       |
| Noakes  | Bill             |              |            |           |         |           |             |      |       |
| Barrette  | Ron              |              |            |           |         |           |             |      |       |
| Blanchard   | Richard          |              |            |           |         |           |             |      |       |
| Paterson  | Dianne & William |              |            |           |         |           |             |      |       |
| Emery   | Gerard           |              |            |           |         |           |             |      |       |
| Truman  | Darin            |              |            |           |         |           |             |      |       |
|   |                  |              |            |           |         |           |             |      |       |
|   |                  |              |            |           |         |           |             |      |       |
|   |                  |              |            |           |         |           |             |      |       |
|   |                  |              |            |           |         |           |             |      |       |
| <b>Submitted Comment Forms (in addition to those indi</b> |                  |              |            |           |         |           |             |      |       |



Stantec

## Lakeshore Stormwater Master Plan Study

July 16, 2018

FTF Progress Meeting

## Main Objective of Study

- Perform a comprehensive review and analysis of stormwater infrastructure and identify infrastructure improvements to mitigate flooding

## Work In Progress...

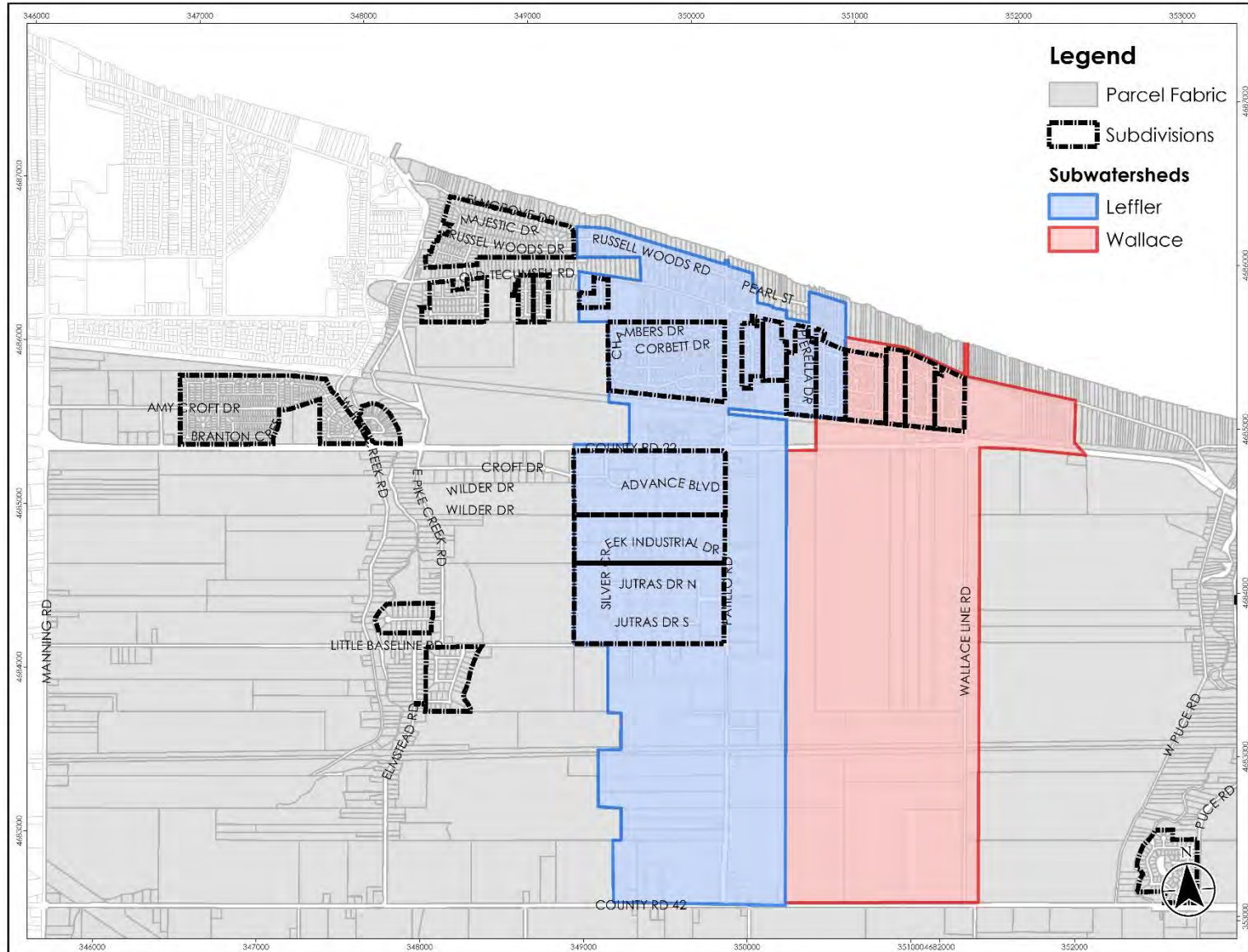
- Flow monitoring
- Detailed review and analysis of;
  - stormwater system capacity
  - surface flooding
  - overland routing
- Inspection of SWM ponds



# Study Area



# Tonight's focus: Areas most affected by flooding





# Agenda

1. Minor System Design
2. Major System Design
3. Recent Extreme Storms
4. Backwater Conditions
5. Other Considerations
6. Basement Flooding
7. Recommendations

# 1. Minor System Design

# Storm Sewers

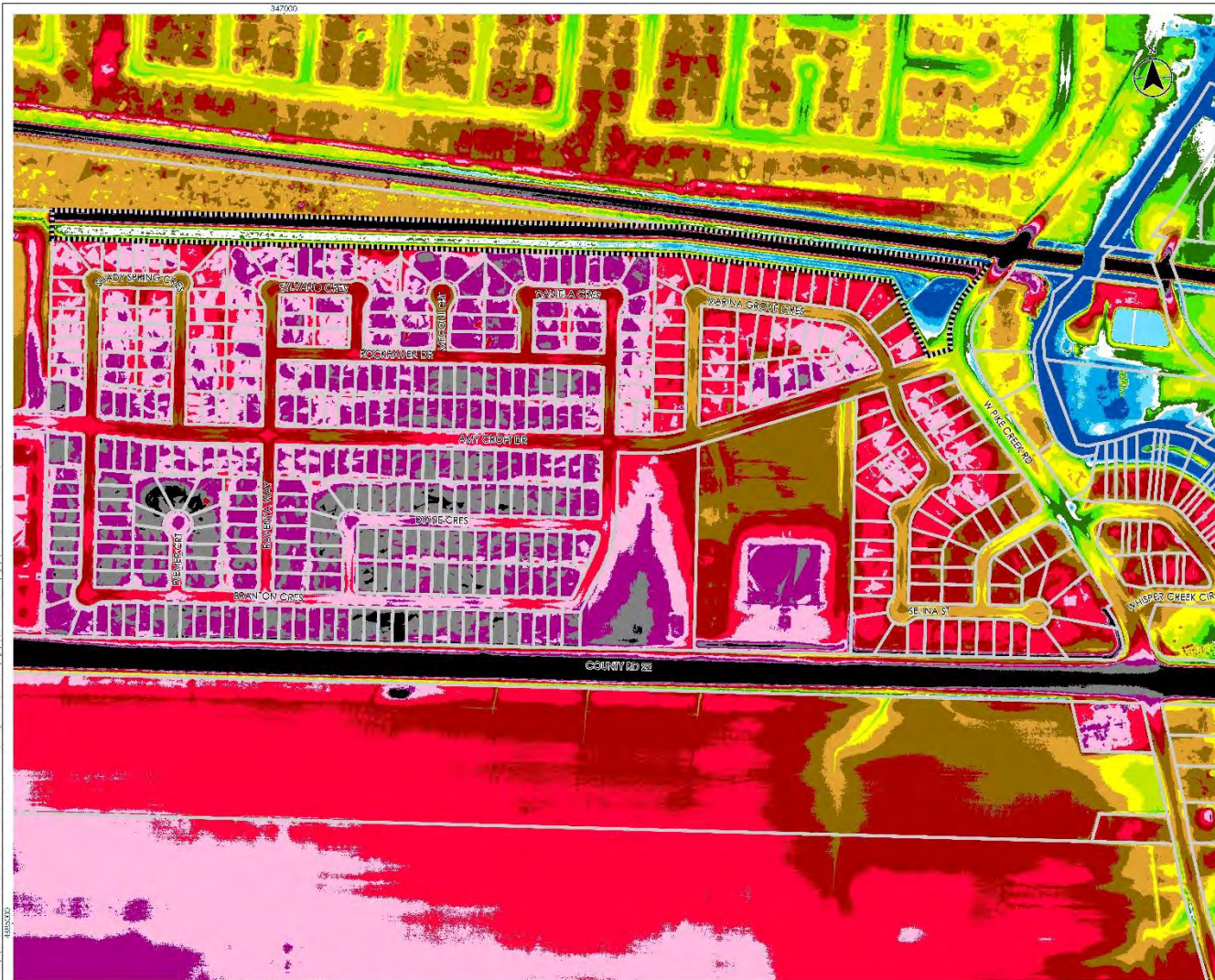
- Quick and efficient drainage to limit inconvenience of stormwater ponding from frequent storm event
- Typically 1:2 year or 1:5 year design.

## 2. Major System Design

# Roadways

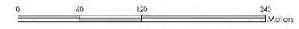
- Overland flow pathways that assists minor system in conveying infrequent major storm event
- Typically 1:100 year design
- Overland flow always exists, regardless of whether or not it is planned for.

# St. Clair Shores Development



**Legend**

- Parcel Fabric
  - Storm Ponds
- Elevation (m)**
- ≥ 178.8
  - 178.6 - 178.8
  - 178.4 - 178.6
  - 178.2 - 178.4
  - 178.0 - 178.2
  - 177.8 - 178.0
  - 177.6 - 177.8
  - 177.4 - 177.6
  - 177.2 - 177.4
  - 177.0 - 177.2
  - 176.8 - 177.0
  - 176.6 - 176.8
  - 176.4 - 176.6
  - 176.2 - 176.4
  - 176.0 - 176.2
  - ≤ 176.0



**Notes**

1. Contour interval: 0.3m (1:100,000)
2. Elevation: Mean Sea Level (MSL)



Project Location: 1000 Lakeshore Dr, St. Clair Shores, MI 48089  
 Prepared by: J. Smith  
 Date: 2018-07-18

Client/Project: Lakeshore SWM Master Plan

Figure No.: A-1

Title: Area 1 - Topography

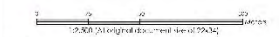
Project: Lakeshore SWM Master Plan, 1000 Lakeshore Dr, St. Clair Shores, MI 48089  
 Date: 2018-07-18  
 Scale: 1:10,000  
 Author: J. Smith  
 Check: J. Smith  
 Date: 2018-07-18  
 Project No.: 18-0001  
 Drawing No.: A-1



# Russell Woods / Orchard Park Dev.



- Legend**
- Parcel Fabric
  - Storm Ponds
  - Elevation (m)**
  - ≥ 178.8
  - 178.6 - 178.8
  - 178.4 - 178.6
  - 178.2 - 178.4
  - 178.0 - 178.2
  - 177.8 - 178.0
  - 177.6 - 177.8
  - 177.4 - 177.6
  - 177.2 - 177.4
  - 177.0 - 177.2
  - 176.8 - 177.0
  - 176.6 - 176.8
  - 176.4 - 176.6
  - 176.2 - 176.4
  - 176.0 - 176.2
  - ≤ 176.0



**Notes**  
 1. Shaded relief derived from 1:12,500 contour map.  
 2. Storm ponds shown in blue. Storm ponds are shown in blue. Storm ponds are shown in blue. Storm ponds are shown in blue.



Project location  
 Date: 10/15/2014  
 Drawn by: JF  
 Checked by: JF

Client: Project  
 Lakeshore SWM Master Plan

Scale: 1:500  
 Title: A-2  
 No. Area 2 - Topography

# Country Walk / Russell Park Dev.

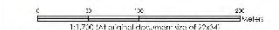


**Legend**

- Parcel Fabric
- Storm Ponds

**Elevation (m)**

- ≥ 178.8
- 178.6 - 178.8
- 178.4 - 178.6
- 178.2 - 178.4
- 178.0 - 178.2
- 177.8 - 178.0
- 177.6 - 177.8
- 177.4 - 177.6
- 177.2 - 177.4
- 177.0 - 177.2
- 176.8 - 177.0
- 176.6 - 176.8
- 176.4 - 176.6
- 176.2 - 176.4
- 176.0 - 176.2
- ≤ 176.0



**Notes**  
 1. Elevation data is based on a 1:25000 scale DTM.  
 2. Parcel boundaries are shown in grey. Parcel boundaries are shown in grey.  
 3. Storm ponds are shown in blue. Storm ponds are shown in blue.



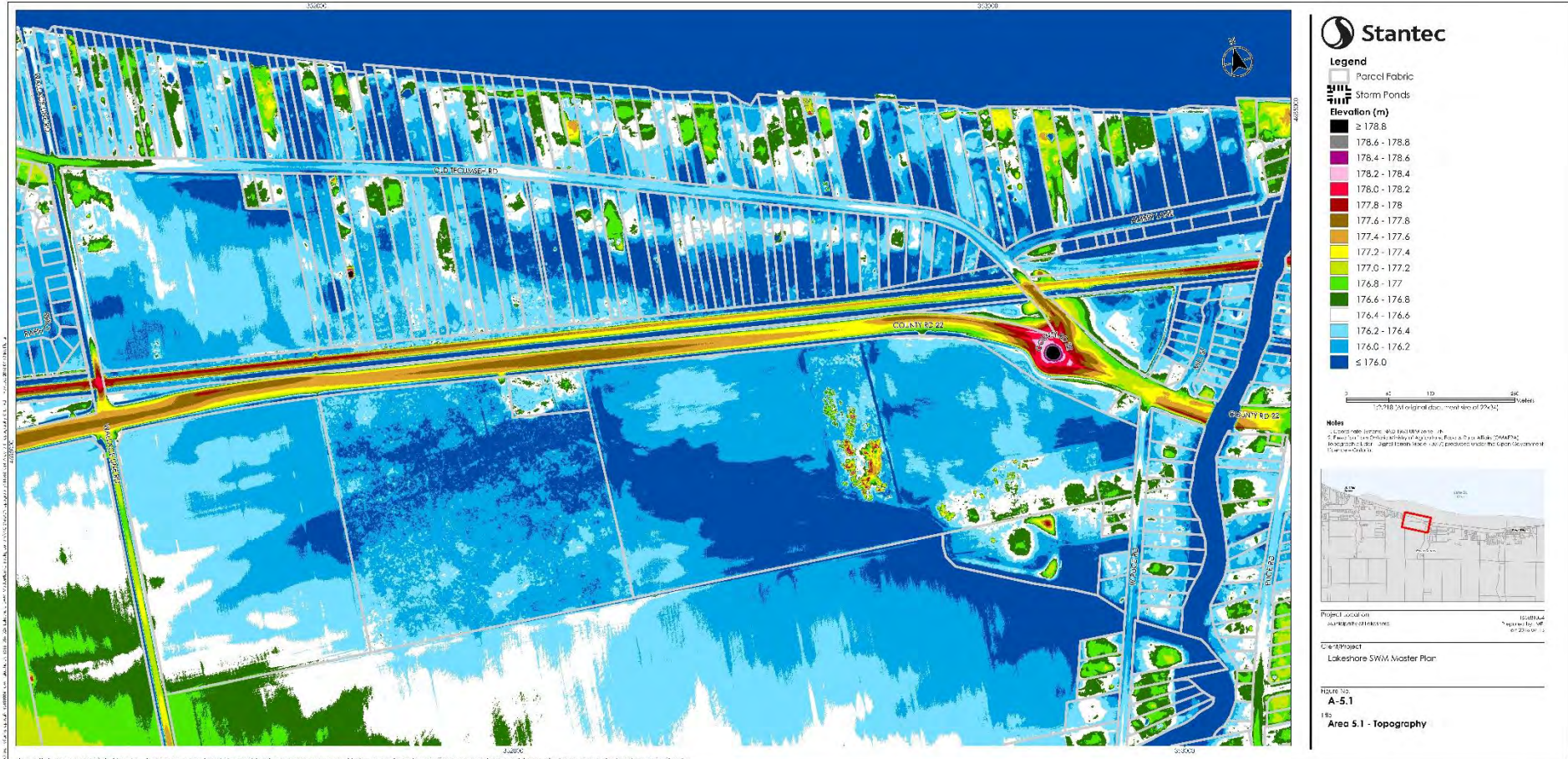
Project location:  
 Lakeshore SWM Master Plan

City: Lakeshore  
 Project: Lakeshore SWM Master Plan

Sheet No.:  
 A-3

110  
 Area 3 - Topography

# Old Tecumseh Rd.



### 3. Recent Extreme Storms

# Uncalibrated Radar Rainfall – For Discussion Purposes Only

## IMPORTANT NOTE:

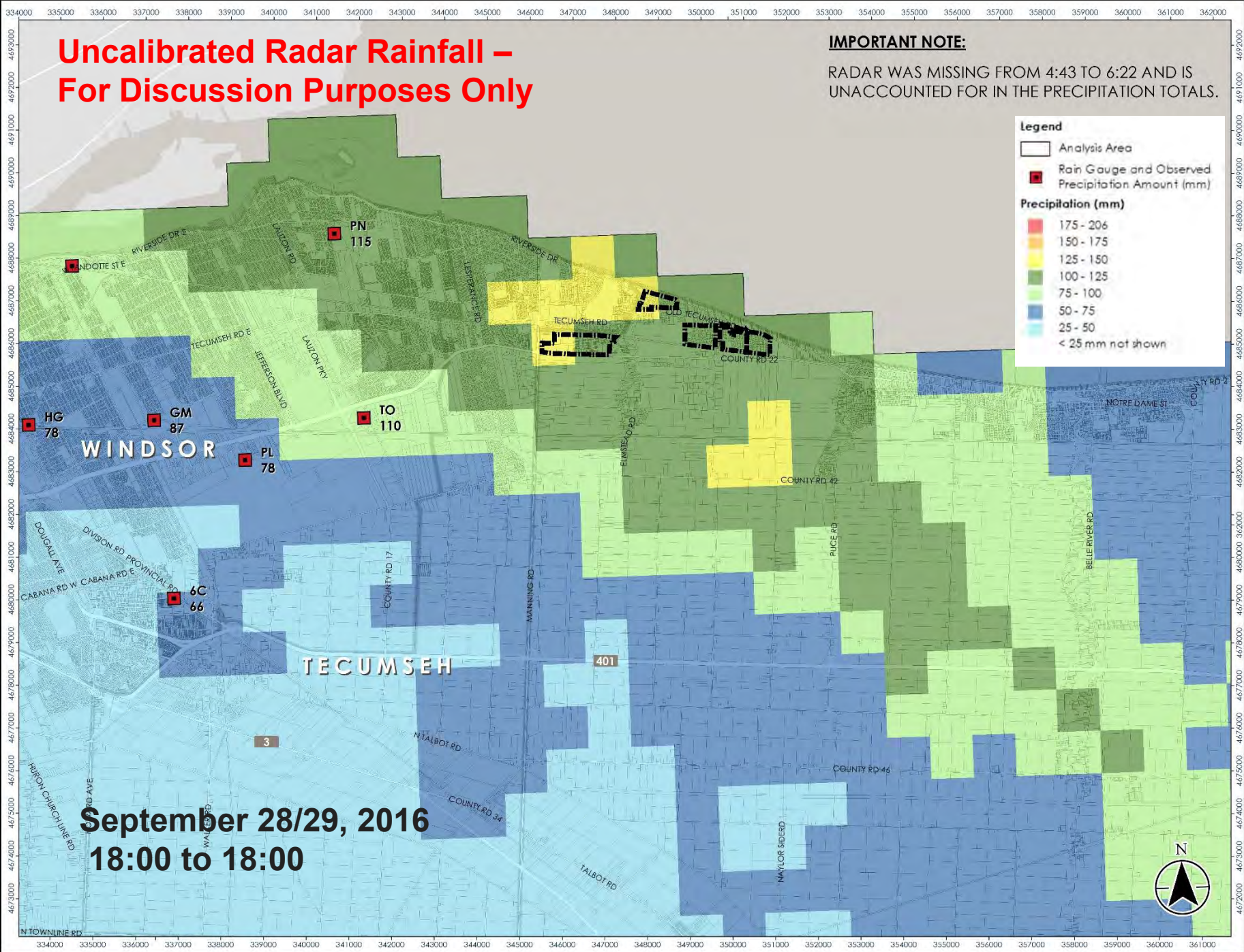
RADAR WAS MISSING FROM 4:43 TO 6:22 AND IS UNACCOUNTED FOR IN THE PRECIPITATION TOTALS.

**Legend**

- Analysis Area
- Rain Gauge and Observed Precipitation Amount (mm)

**Precipitation (mm)**

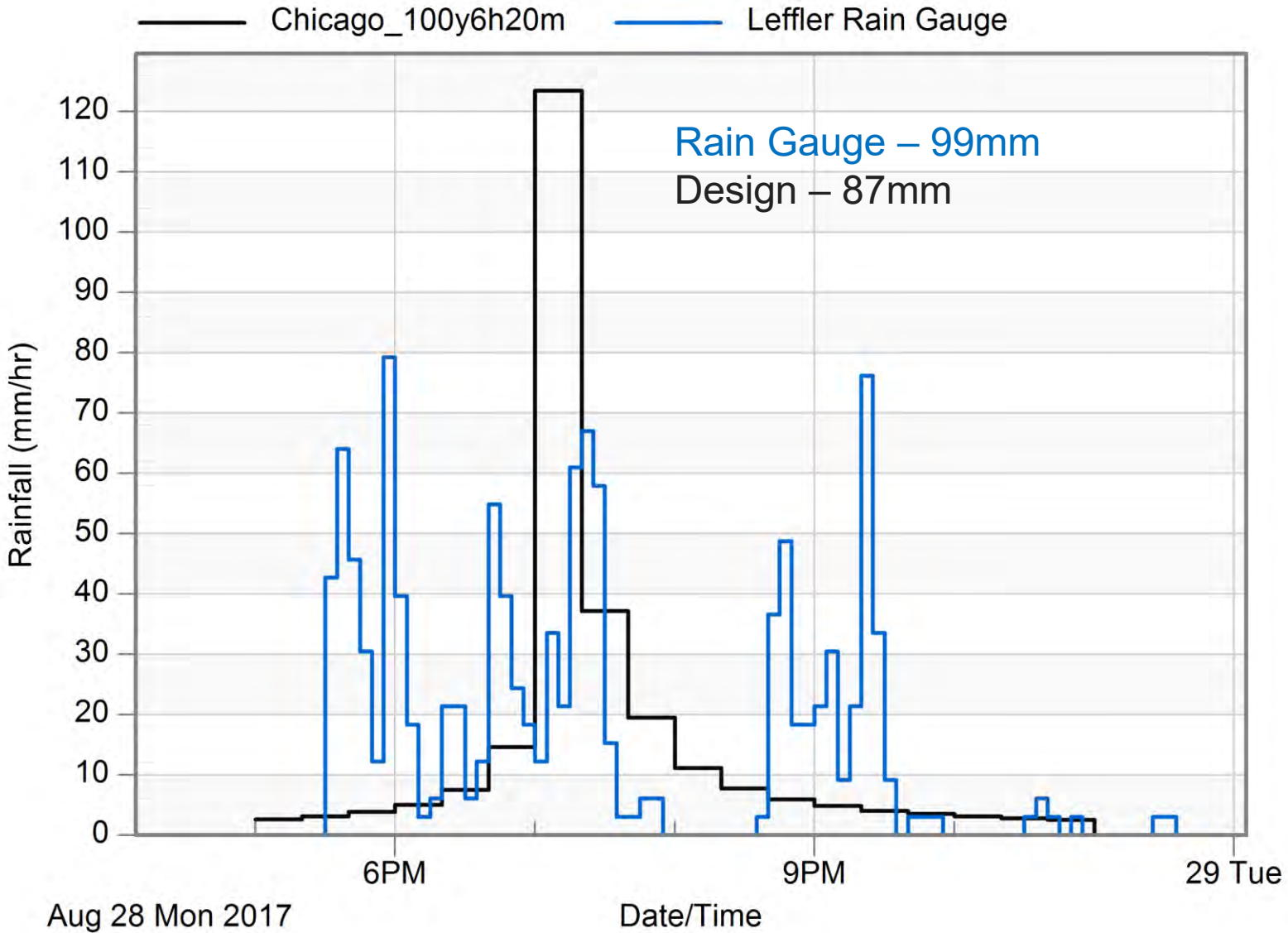
- 175 - 206
- 150 - 175
- 125 - 150
- 100 - 125
- 75 - 100
- 50 - 75
- 25 - 50
- < 25 mm not shown





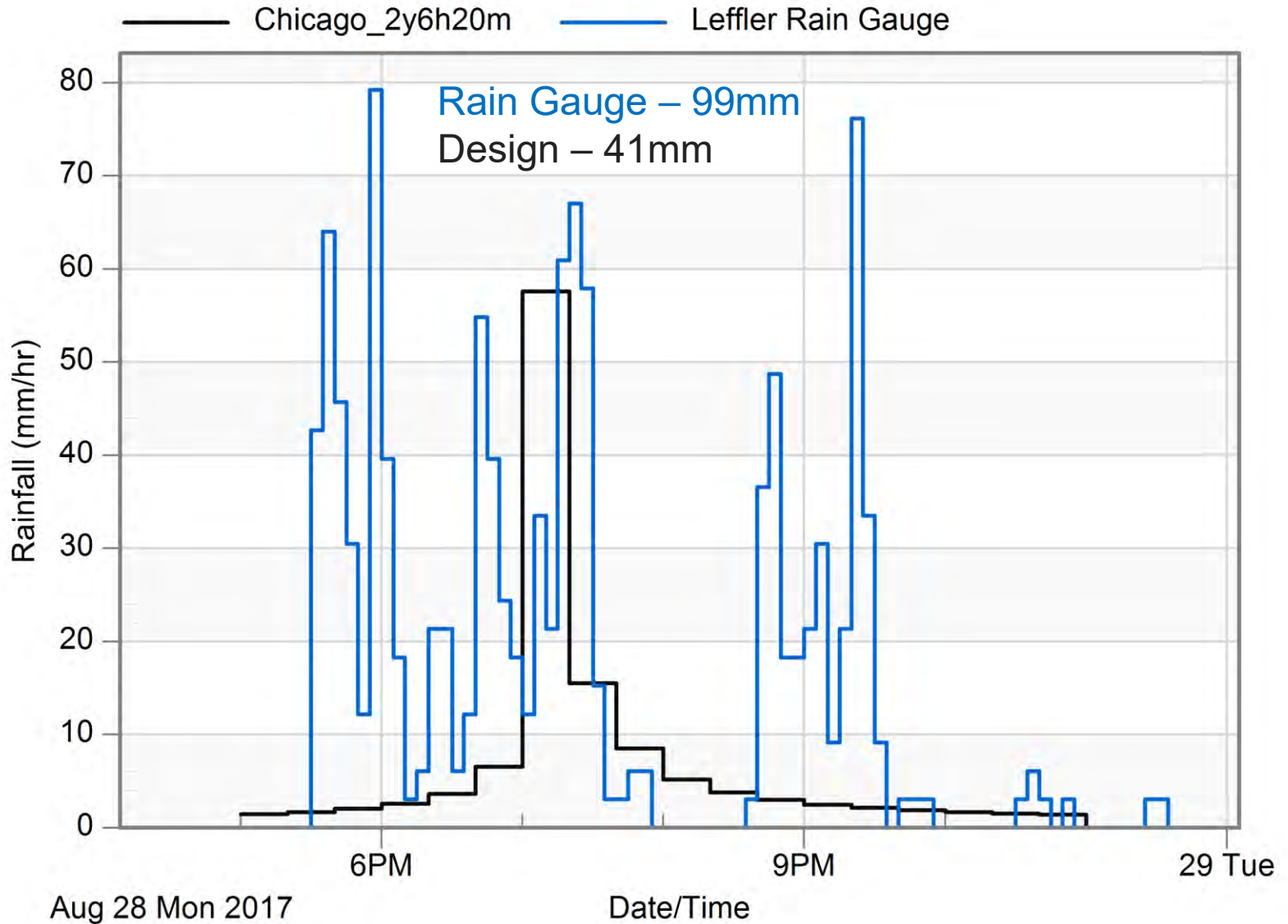
# How do recent storms compare to 1:100 year design?

Recent Extreme Storms



# How do recent storms compare to 1:2 year design?

Recent Extreme Storms

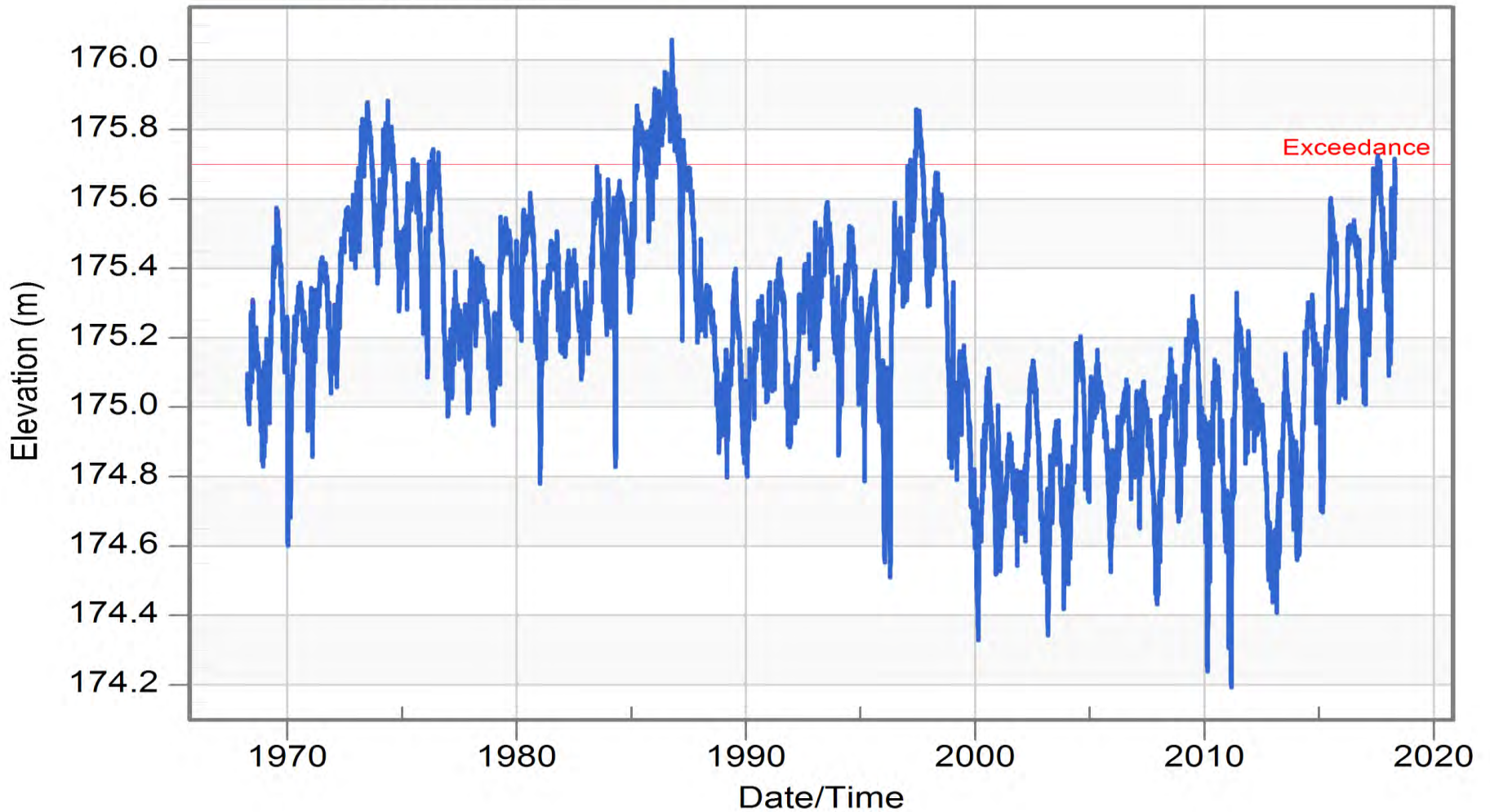




## 4. Backwater Conditions

# Lake St. Clair Historical Water Levels

— Daily Levels



# SWM Pond Levels

**COUNTRY WALK & DEAN  
SUBDIVISION SWM POND – Sept 29th**


**WL = +/-176.2 m**

A photograph of a stormwater management pond. In the foreground, there is a chain-link fence and tall, green and yellowish grasses. The pond is in the middle ground, surrounded by a green lawn. In the background, there are several trees, some with yellowing leaves, and a house is visible through the trees. The sky is overcast and grey.

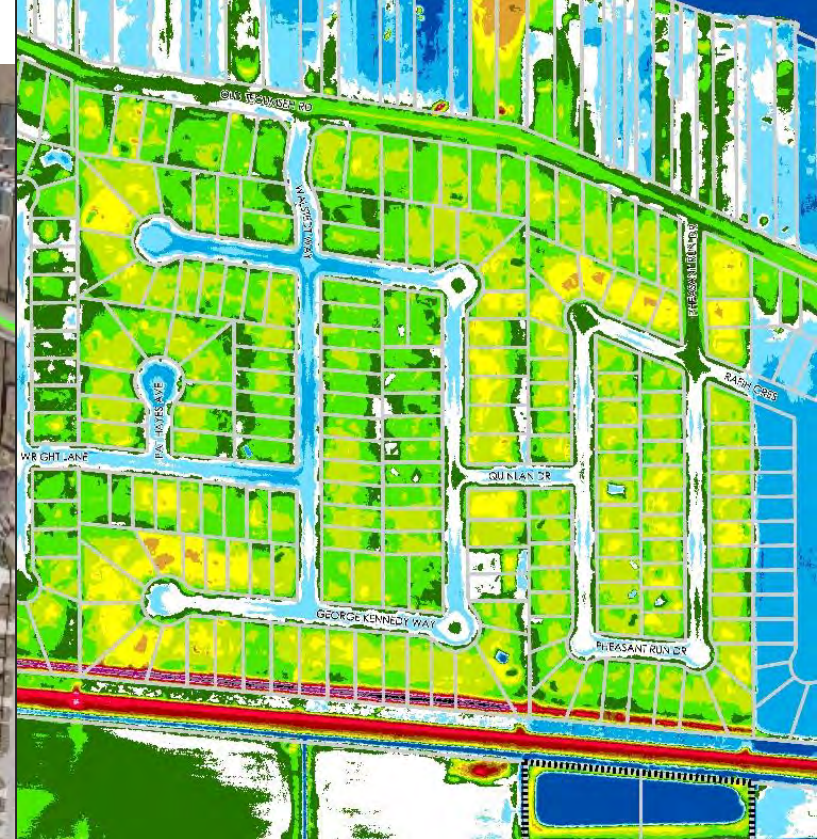
# SWM Pond Levels

WALSTEDT WAY @ GEORGE  
KENNEDY WAY – Sept 29<sup>th</sup>

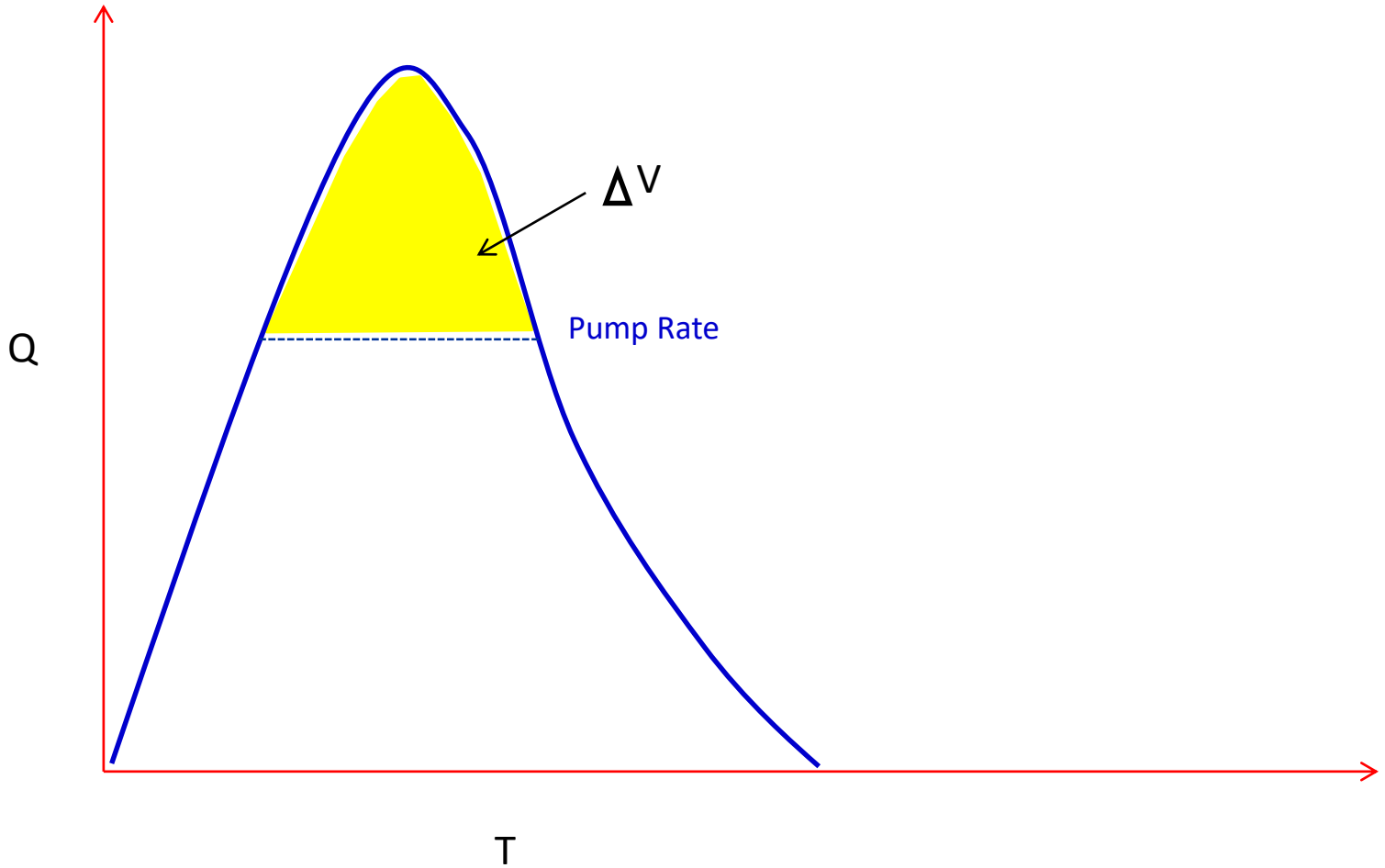
WL = +/-176.2 m



Backwater  
Conditions

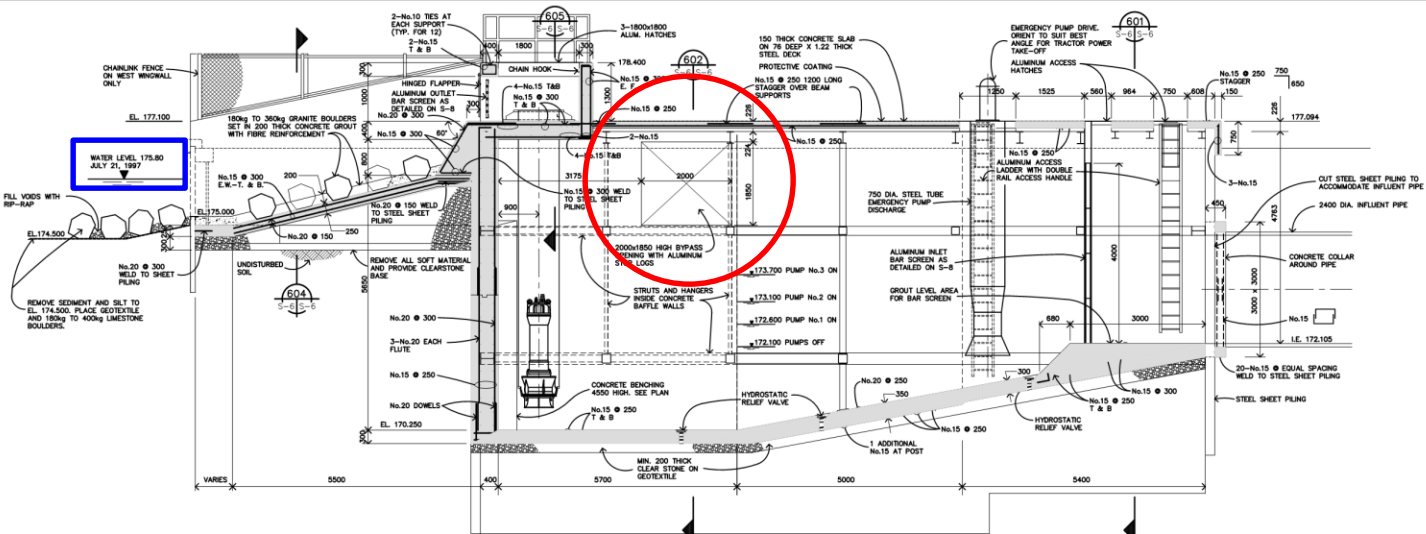


# Pumped Systems



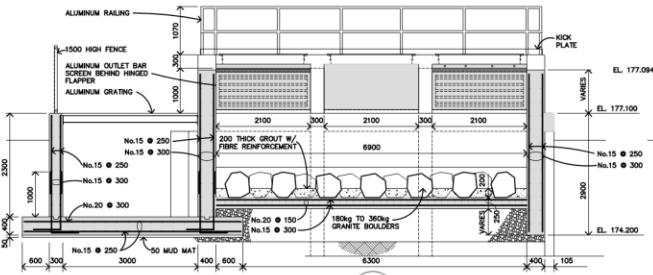
# Pumped Systems

Backwater  
Conditions

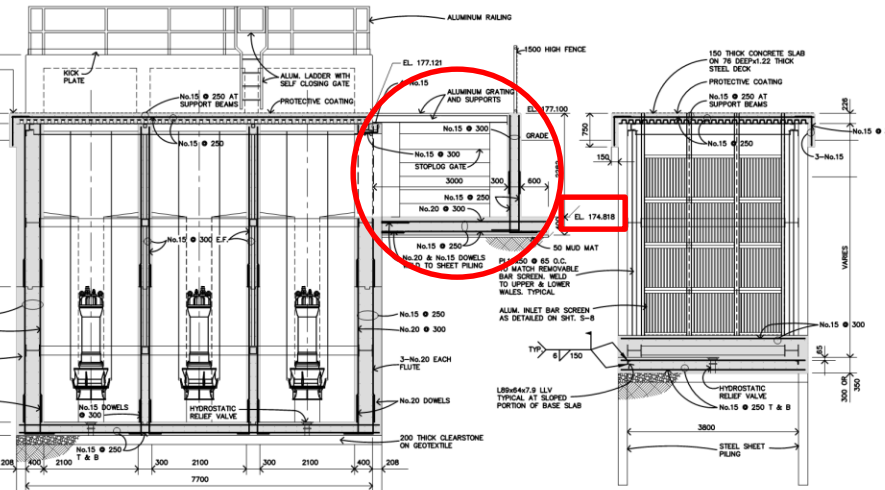


603  
S-5,6 S-6  
SCALE 1 : 50

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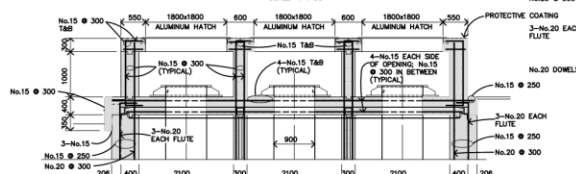


604  
S-5,6 S-6  
SCALE 1 : 50



602  
S-5,6 S-6  
SCALE 1 : 50

601  
S-5,6 S-6  
SCALE 1 : 50



605  
S-5,6 S-6  
SCALE 1 : 50

# Pumped Systems



**Legend**

Parcel Fabric

Storm Ponds

**Elevation (m)**

- ≥ 178.8
- 178.6 - 178.8
- 178.4 - 178.6
- 178.2 - 178.4
- 178.0 - 178.2
- 177.8 - 178.0
- 177.6 - 177.8
- 177.4 - 177.6
- 177.2 - 177.4
- 177.0 - 177.2
- 176.8 - 177.0
- 176.6 - 176.8
- 176.4 - 176.6
- 176.2 - 176.4
- 176.0 - 176.2
- ≤ 176.0

Scale: 1:10,000 (at original document size of 21cm)

**Notes**

- 1. Elevation data is based on a 1/2" contour interval.
- 2. Parcel boundaries are shown in white.
- 3. Storm ponds are shown in blue.



Project location: Lakeshore SWM Master Plan

City: Lakeshore SWM Master Plan

Sheet No. A-3

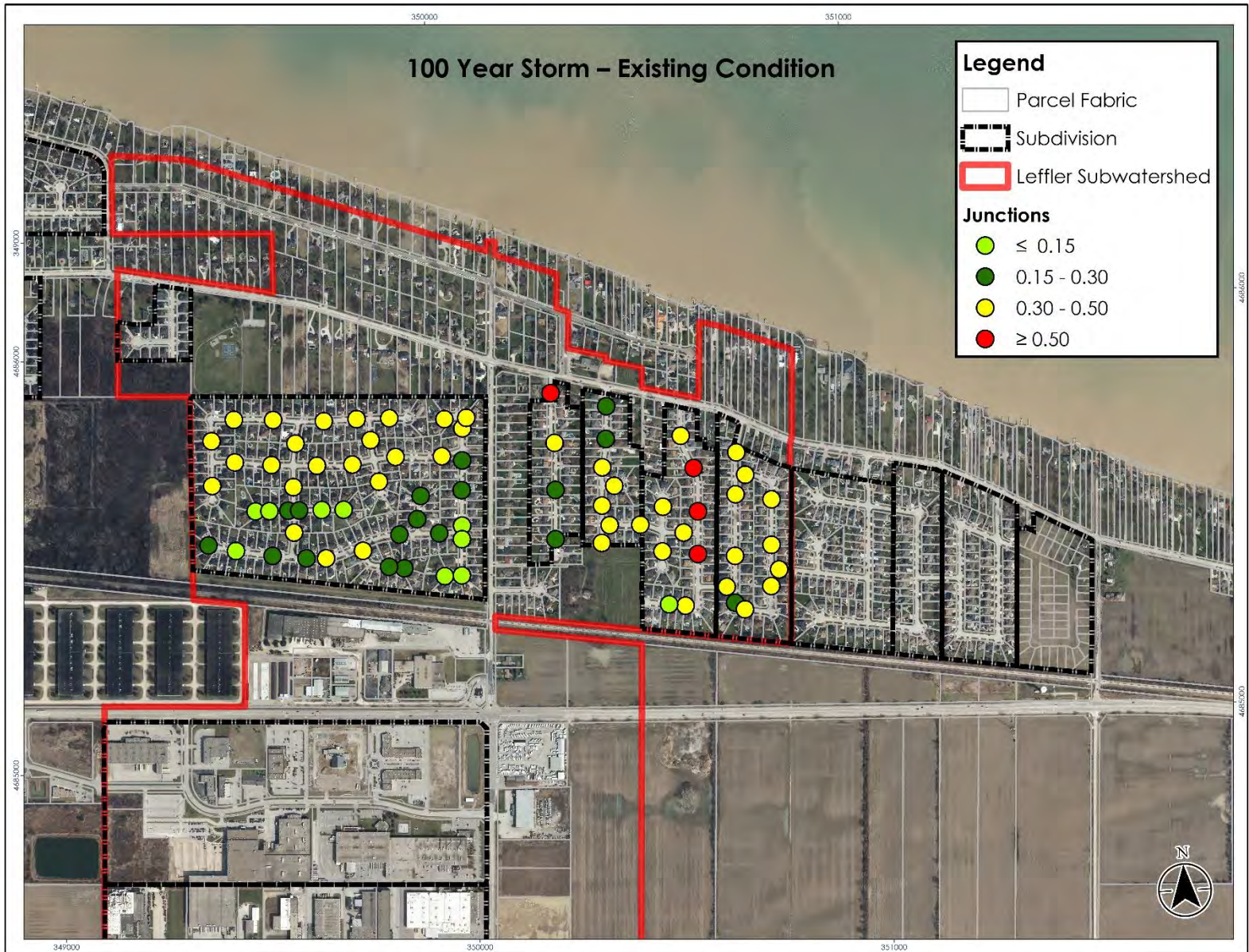
110

Area 3 - Topography



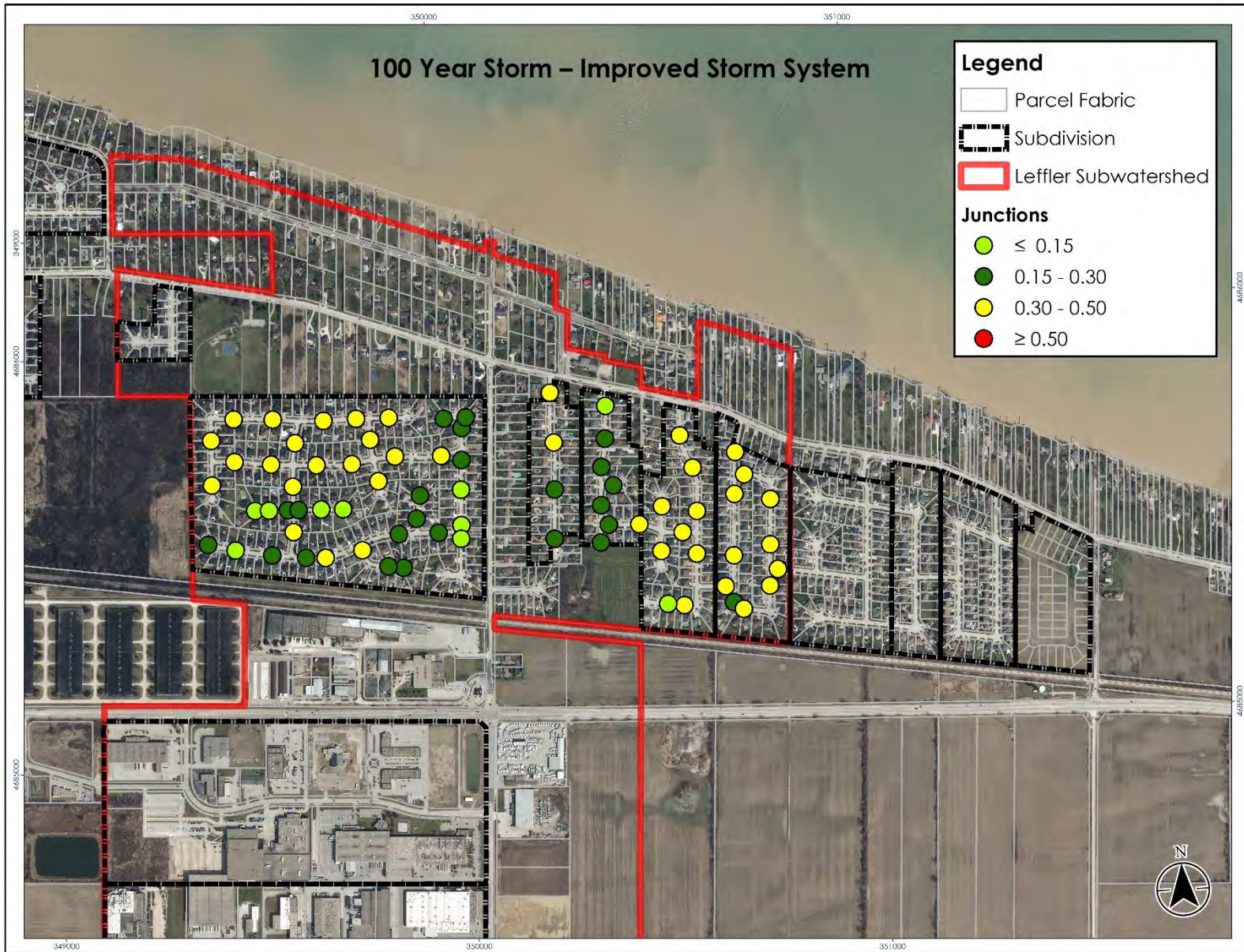
# 100 Year Surface Ponding Depth – Existing Conditions

Backwater  
Conditions

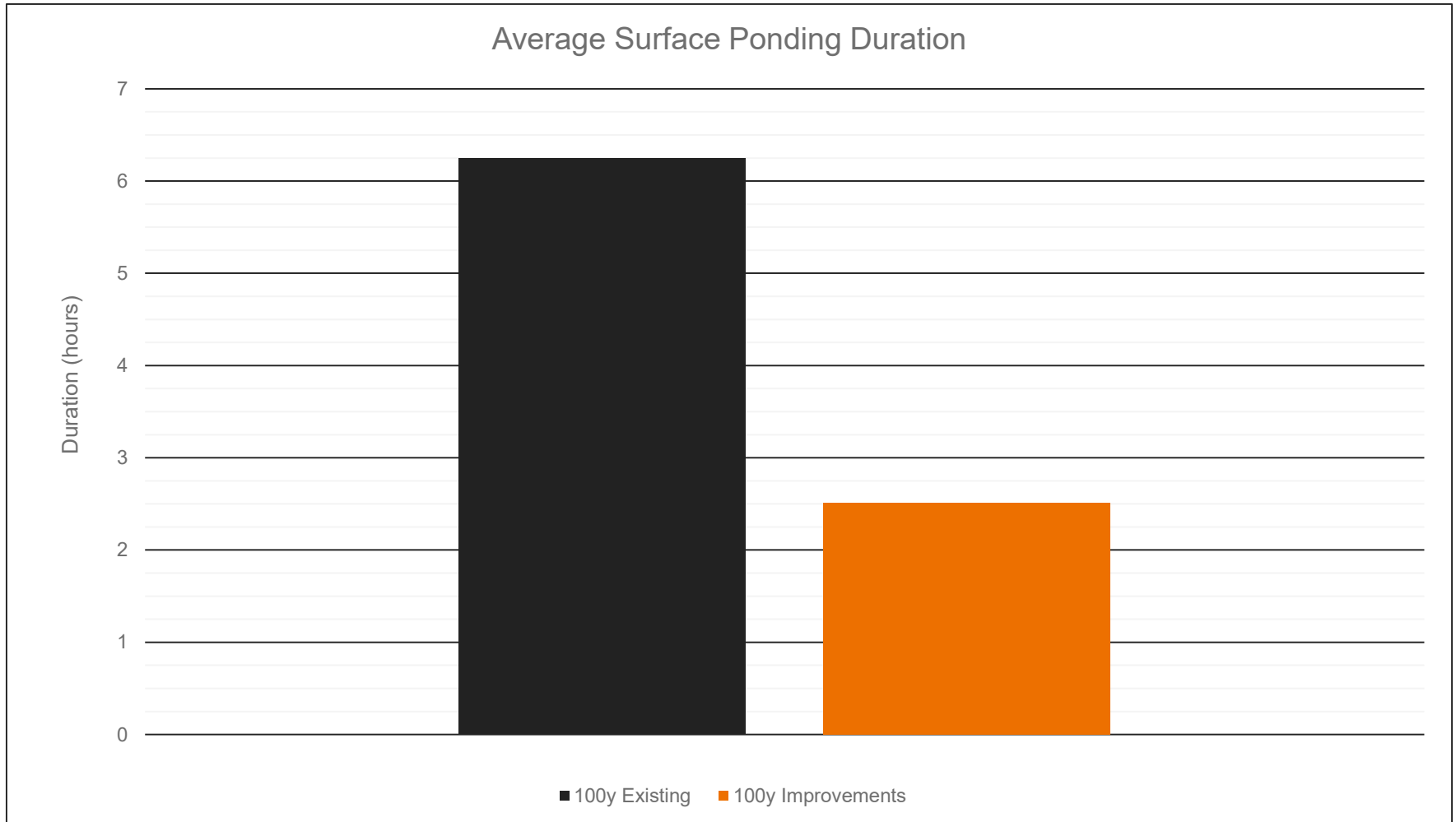


# 100 Year Surface Ponding Depth – Proposed Improvements (Preliminary)

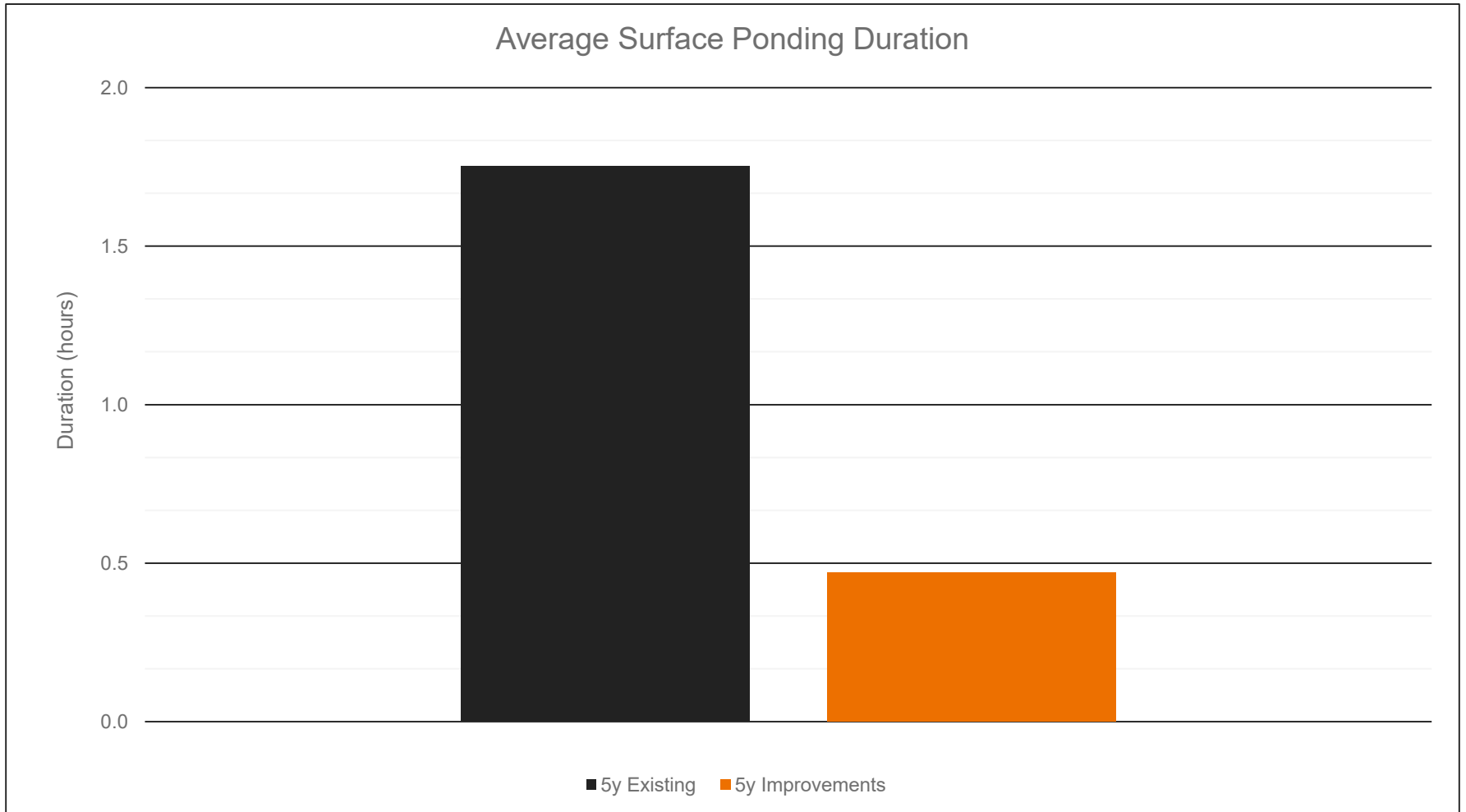
Backwater  
Conditions



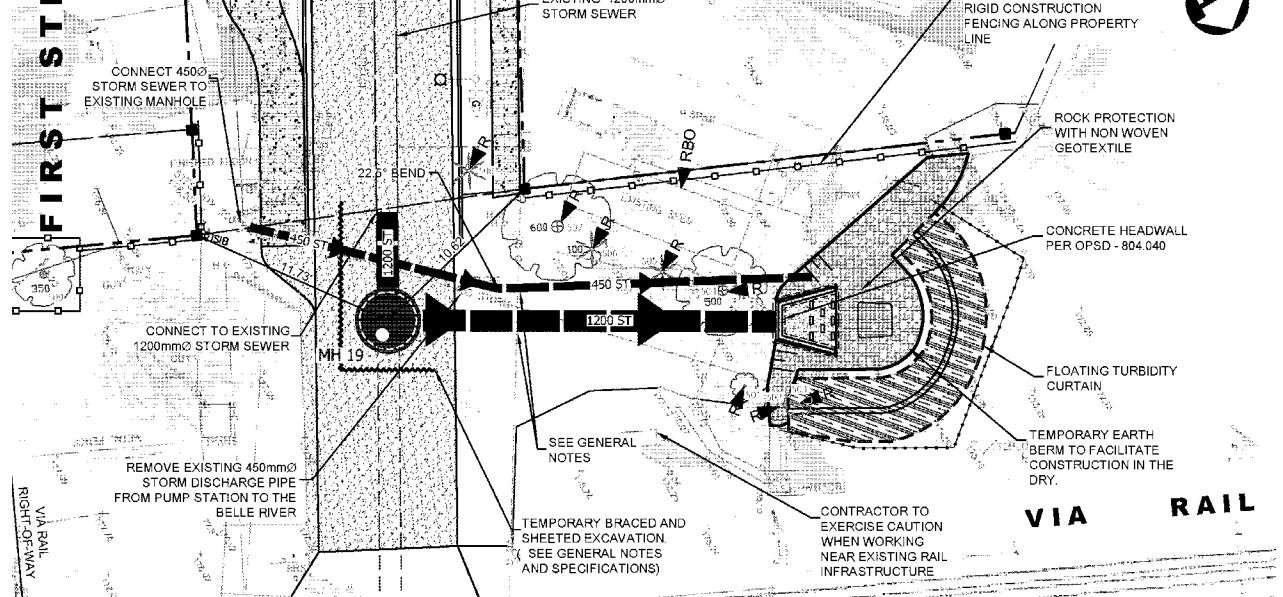
# Average Surface Ponding Duration 100 Year Design Storm



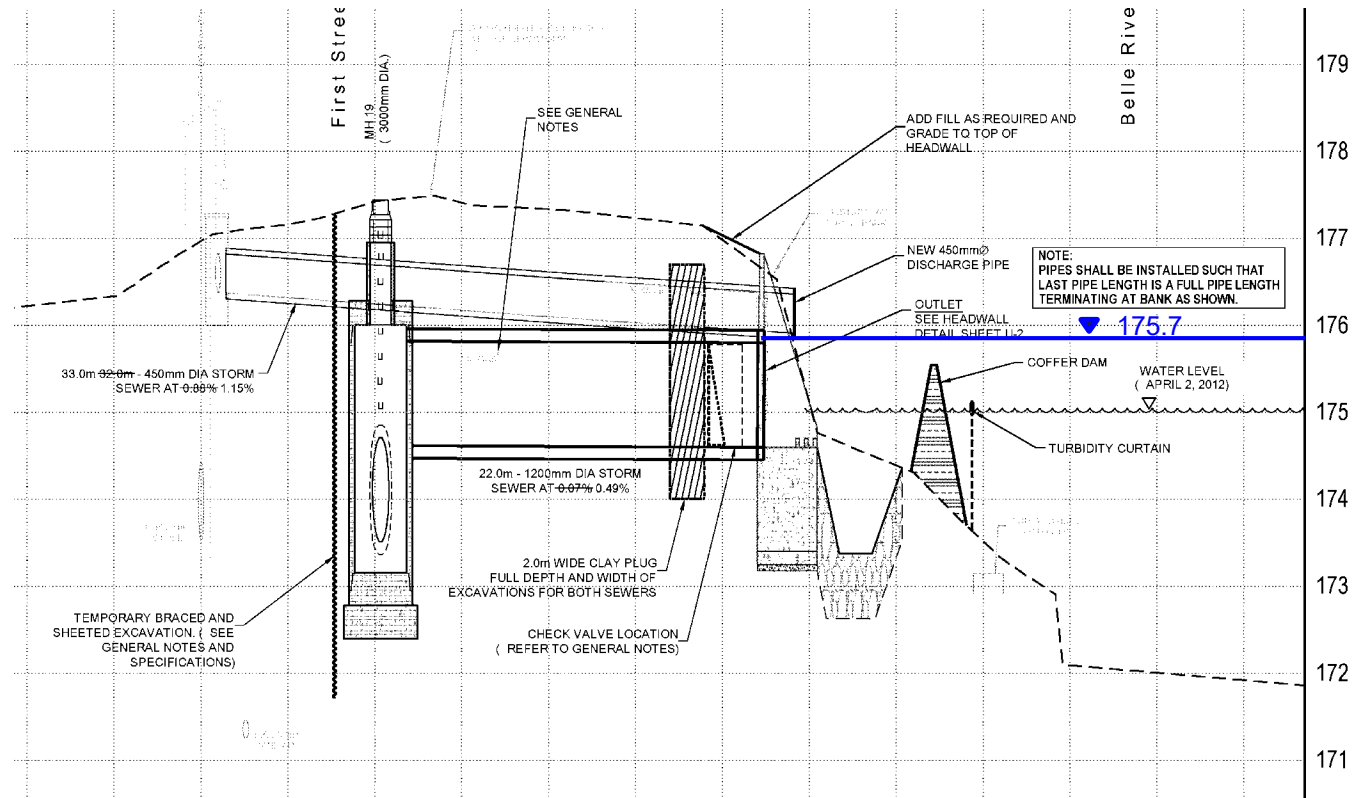
# Average Surface Ponding Duration 5 Year Design Storm



# Backwater Conditions



# Trench Backflow



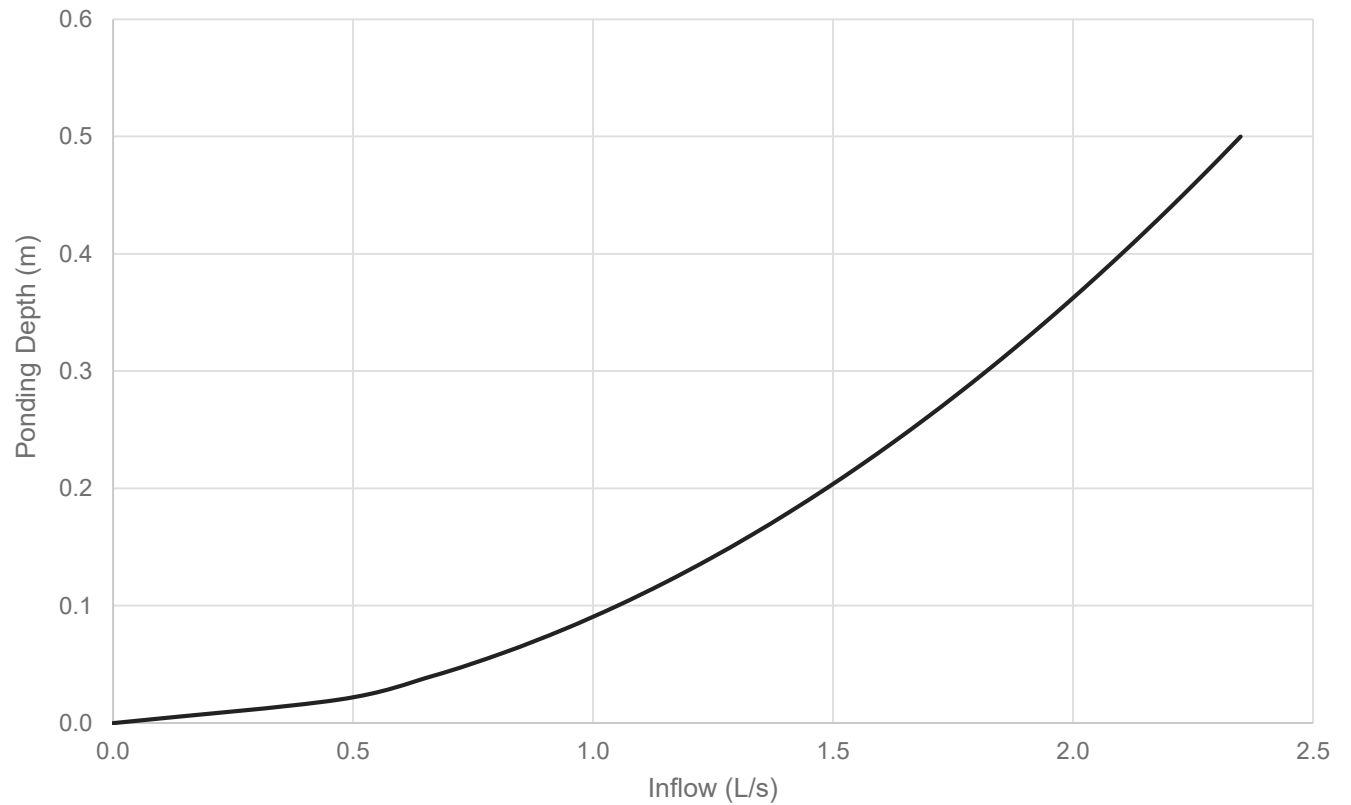
## 5. Other Considerations

# Sanitary MH Cover Inflow



25mm lift holes

Sanitary MH Inflow



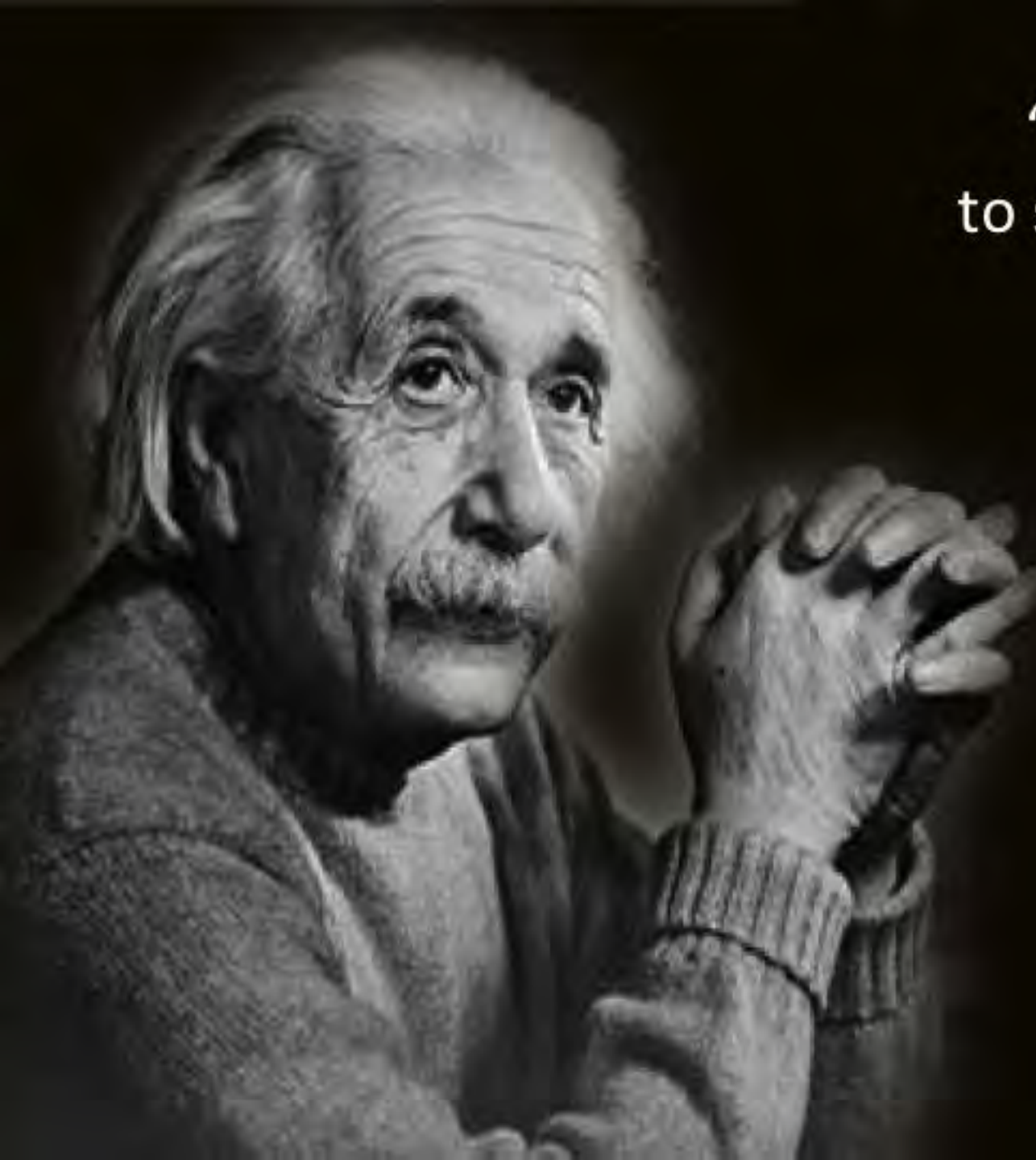
# Pond Inspection and Maintenance



From Marina Grove Cres



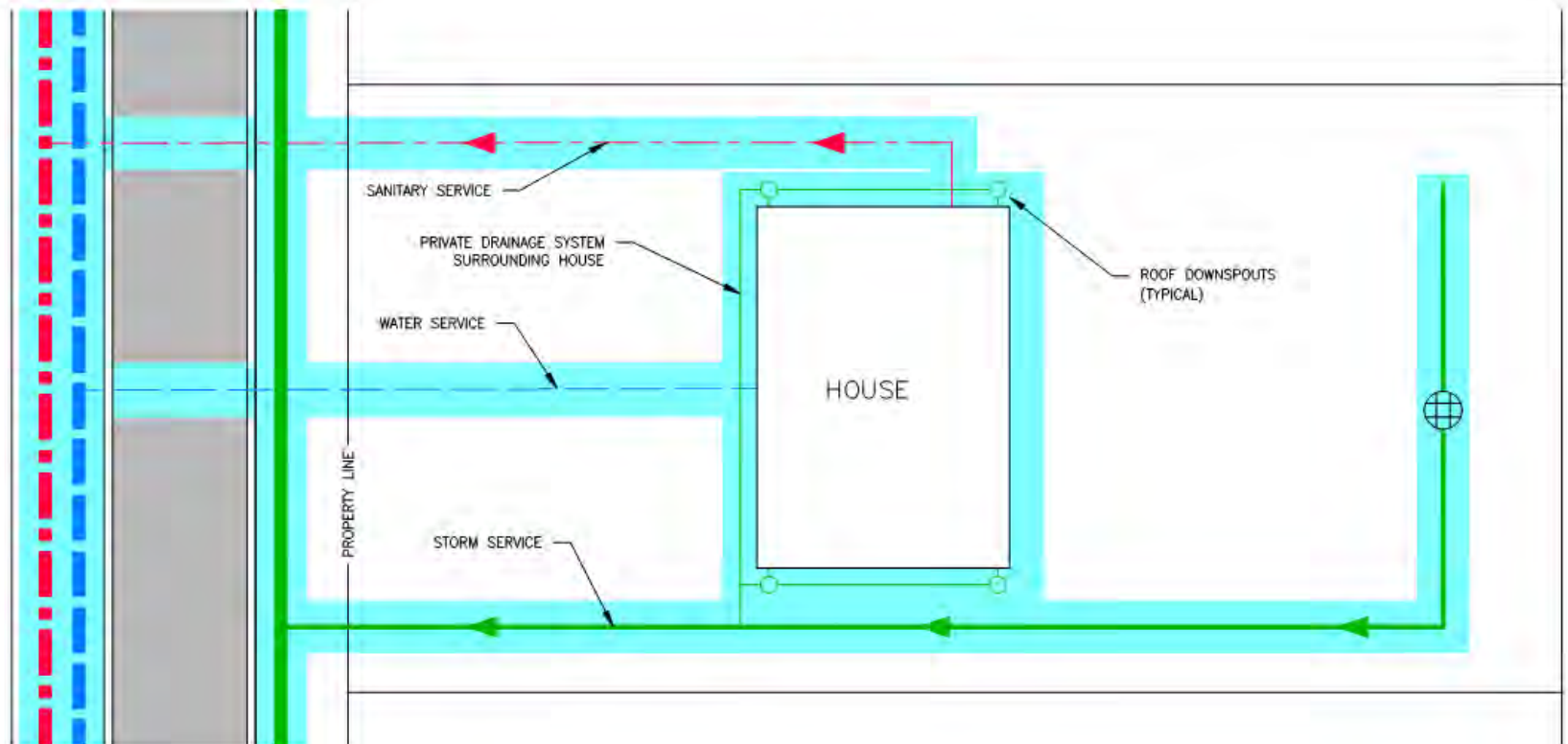
## 6. Basement Flooding



“If I had an hour  
to solve a problem  
I'd spend  
55 minutes  
thinking about  
the problem  
and 5 minutes  
thinking about  
solutions.”

– Albert Einstein

# Sources of Basement Flooding

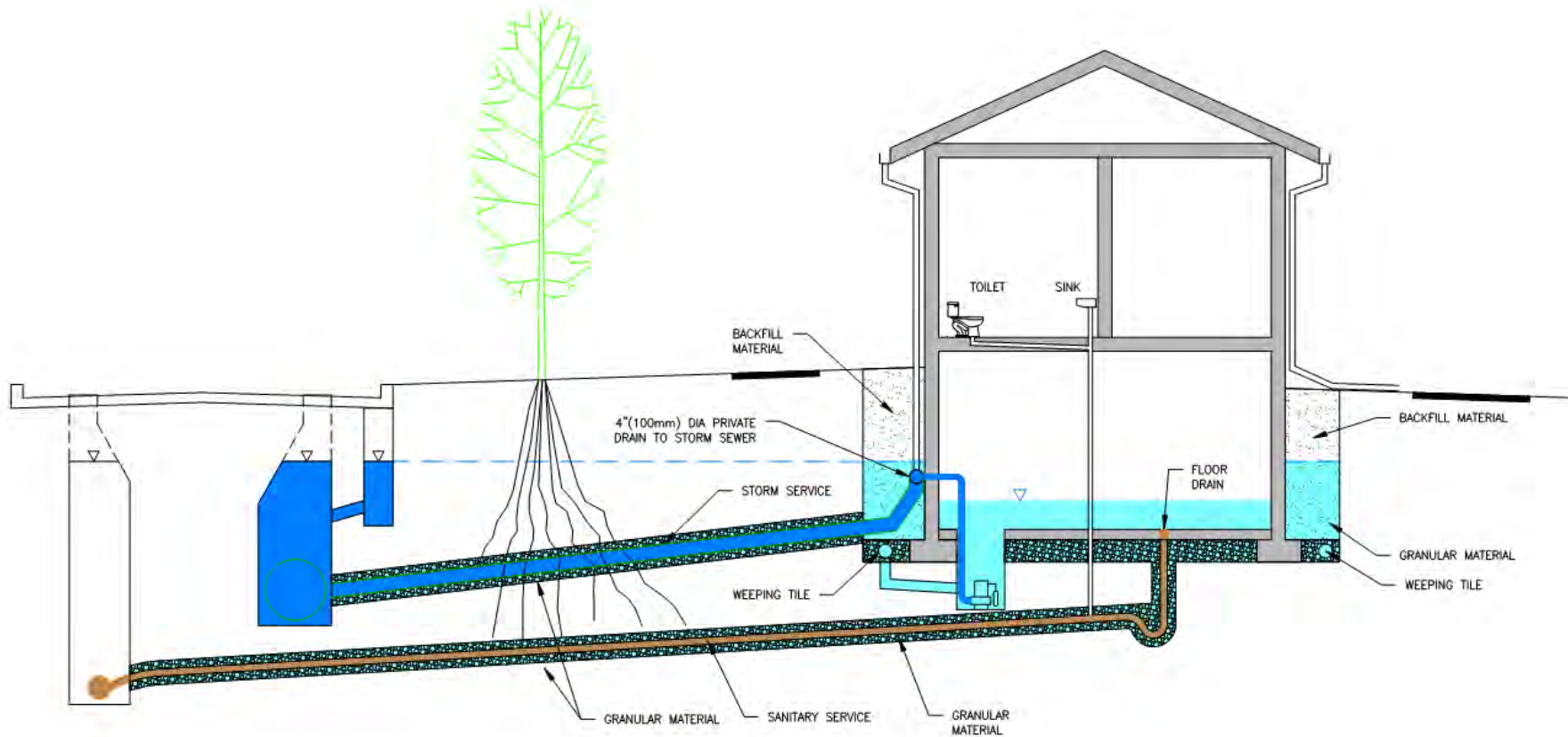


**LEGEND**



GRANULAR TRENCH

# Sources of Basement Flooding



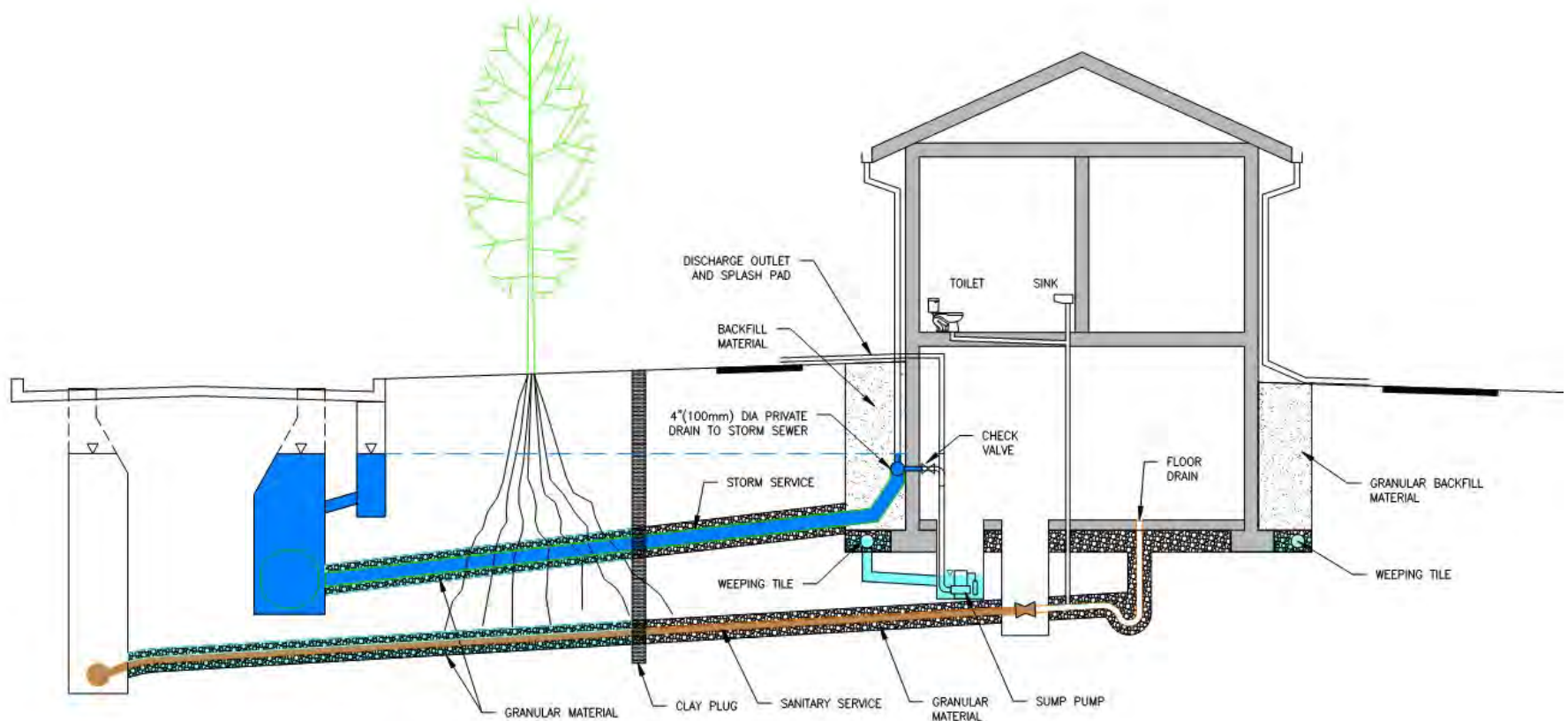
**NOTE:**

PRIVATE DRAINAGE SYSTEMS CAN BE COMPLEX AND COULD DIFFER FROM THAT SHOWN. IT IS CRITICAL THAT THE HOME OWNER CARRY OUT A SITE ASSIGNMENT WITH A LICENSED PLUMBER, DRAIN CONTRACTOR, OR DRAINAGE ENGINEER TO UNDERSTAND HOW THE EXISTING DRAINAGE SYSTEM OPERATES BEFORE DETERMINING THE APPROPRIATE SYSTEM IMPROVEMENTS.

**LEGEND**

-  STORM WATER
-  SANITARY WATER

# Sources of Basement Flooding



**NOTE:**

PRIVATE DRAINAGE SYSTEMS CAN BE COMPLEX AND COULD DIFFER FROM THAT SHOWN. IT IS CRITICAL THAT THE HOME OWNER CARRY OUT A SITE ASSIGNMENT WITH A LICENSED PLUMBER, DRAIN CONTRACTOR, OR DRAINAGE ENGINEER TO UNDERSTAND HOW THE EXISTING DRAINAGE SYSTEM OPERATES BEFORE DETERMINING THE APPROPRIATE SYSTEM IMPROVEMENTS.

**LEGEND**

-  STORM WATER
-  SANITARY WATER

## 7. Recommendations

# Flood Mitigation

**The most effective way to reduce the risk of flooding involves a two-part solution that aims to:**

## **Solution A:**

Maintain/Improve private drainage systems to ensure adequate drainage of surface, roof and groundwater around the home, supplemented with;

## **Solution B:**

Improvements to the Town's stormwater system to reduce the duration and frequency of sewer surcharging during intense rainfall events – thereby alleviating stress on the private drainage systems.

# Short-Term Recommendations

1. Expand inflow & infiltration reduction program to include RainGuards on all sanitary manholes.
2. Retrofit submerged outfalls to have backflow prevention and impervious plug. Where feasible, consider pumping to dewater sewer systems and trenches.
3. Perform required maintenance on SWM Facilities
4. Expand upon storm sewer condition assessment and maintenance program
5. Expand camera inspection program to include inspection of all flooded properties.
6. Expand upon education & subsidy programs to maintain/improve private drainage systems



# Maintain/Improve Private Drainage Systems

- **Private Drainage System Maintenance**

Periodic maintenance and repairs to private drainage systems is important to ensure that surface water and groundwater surrounding the home is directed away from the home and towards the roadway/storm sewer system.

- **Sump Pump Systems**

The sump pump is the most critical element in dewatering the groundwater surrounding the home and should not be neglected. Adequate power outage protection (i.e. power generator) or a backup pump with alternative power supply is strongly recommended. Equally important, the sump pump discharge must be effectively directed away from the home. A secondary discharge or by-pass to the surface is strongly recommended. When a pump discharges into a cracked or clogged private storm drain, water is not effectively directed away from the home.

- **Downspout Disconnection**

When feasible, disconnection of the roof downspouts from the underground sewer system can significantly reduce the direct inflow of water to the private drainage system. However, care must be taken to direct roof water to the street and/or rear yard drainage inlet, and not on neighbouring property.

- **Backflow Prevention**

Backflow valves are critical to mitigate the potential for storm/sanitary water to enter the home via backflow from the sewer main. In addition to backflow prevention within the home's plumbing, it is also recommended that clay plugs be installed to mitigate backflow via granular bedding surrounding home services (i.e. sanitary, storm and watermain service connections).



Stantec

## Lakeshore Stormwater Master Plan Study

October 4, 2018  
FTF Progress Meeting



# Agenda

1. Recap
2. Potential Town Infrastructure Improvements
3. Pond Capacity Review
4. Trench Backflow
5. Overland Routing
6. SWM Facility Maintenance
7. Recommendations
8. Next Steps

Recap

# Flood Mitigation

**The most effective way to reduce the risk of flooding involves a two-part solution that aims to:**

**Solution A:**

Maintain/Improve private drainage systems to ensure adequate drainage of surface, roof and groundwater around the home, supplemented with;

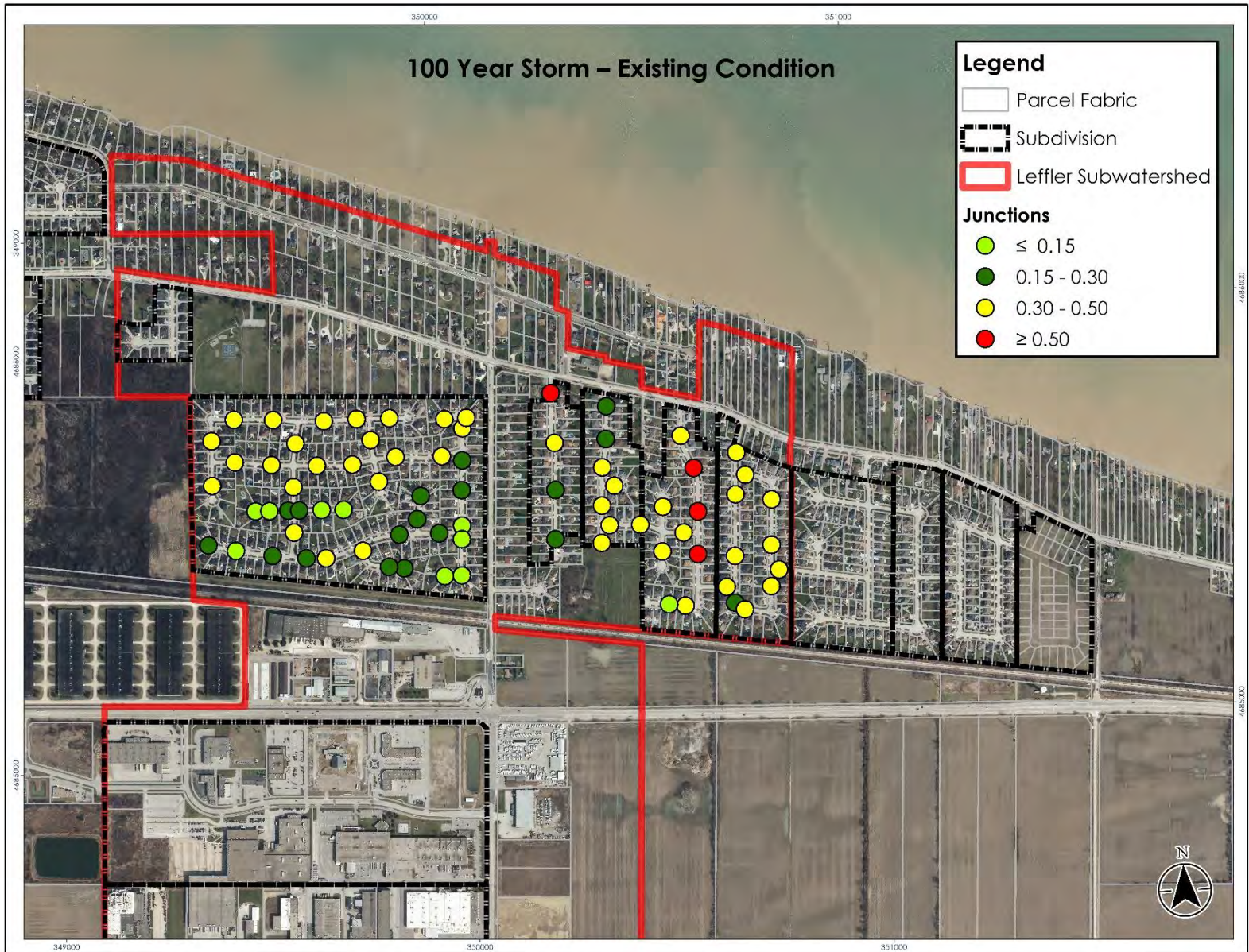
**Solution B:**

Improvements to the Town's stormwater system to reduce the duration and frequency of sewer surcharging during intense rainfall events.

# Potential Town Infrastructure Improvements

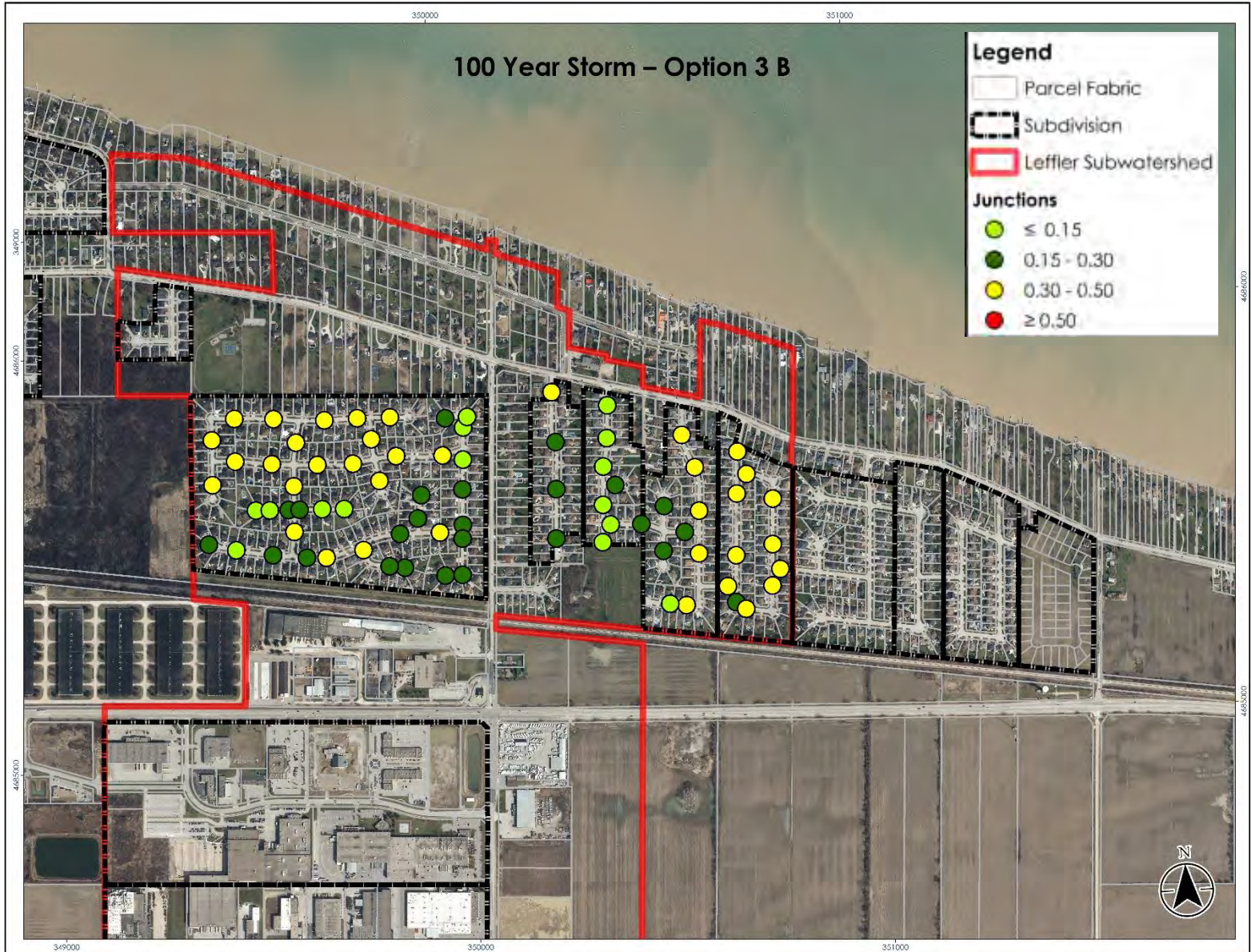
# Leffler Drainage System

Potential Improvements



# Leffler Drainage System

Potential Improvements

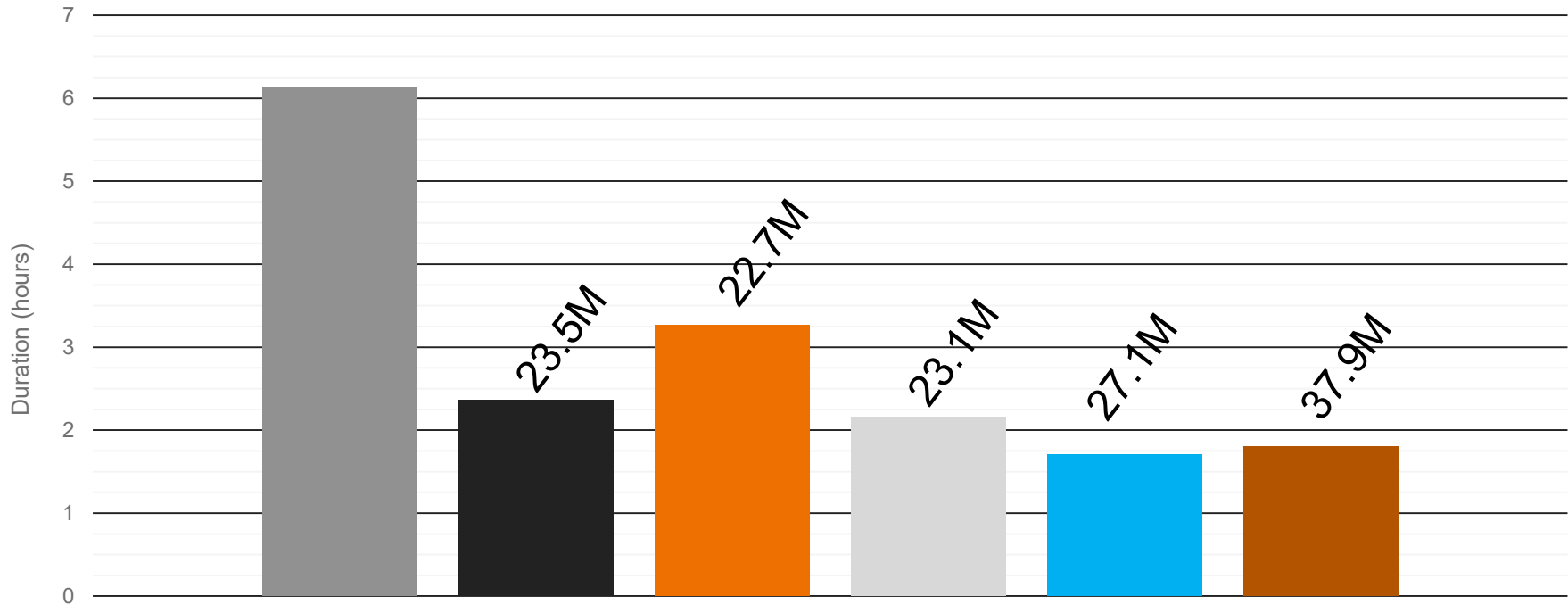




# Leffler Drainage System – 100 Year

Potential Improvements

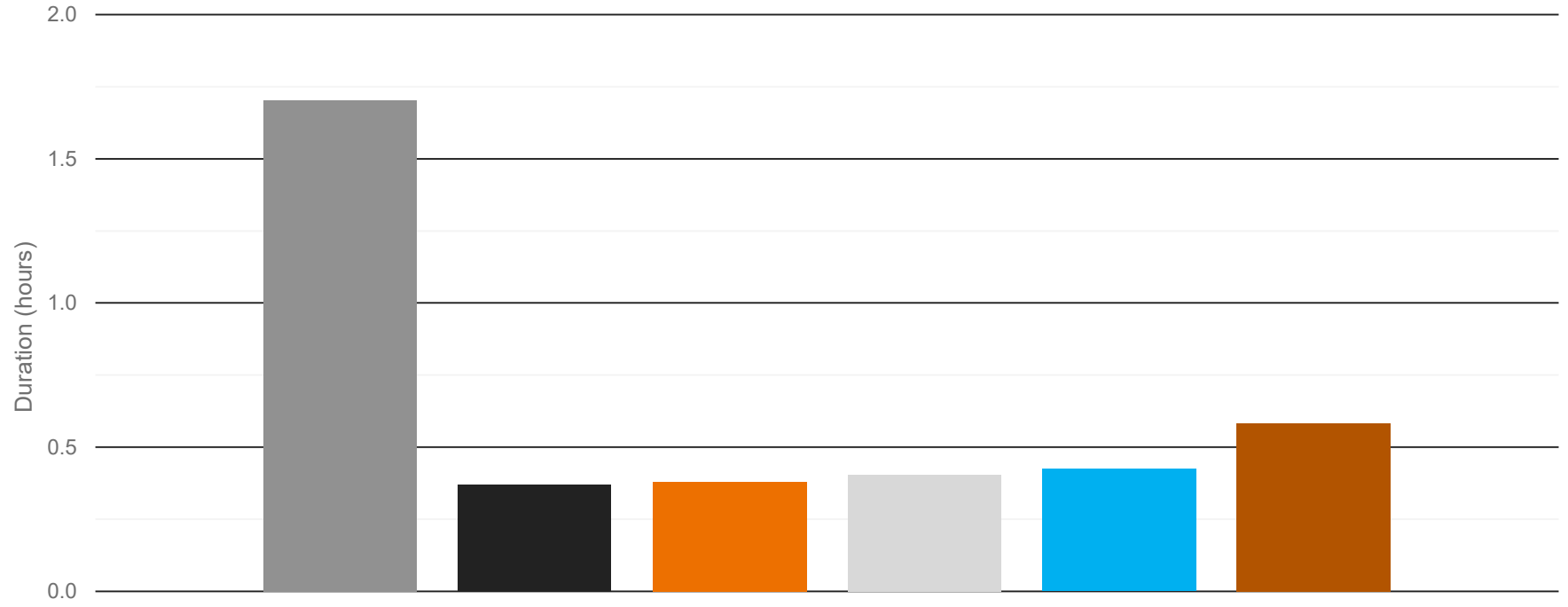
Average Surface Ponding Duration 100yr Storm - Residential



- Existing Condition
- Opt 1 - Regional Pond
- Opt 2 - Pump Station Upgrades
- Opt 3a - Wetland & PTO Pump
- Opt 3b - Wetland & PS Upgrades
- Opt 4 - 5yr Res. PS & Leffler PS Upgrades

# Leffler Drainage System – 5 Year

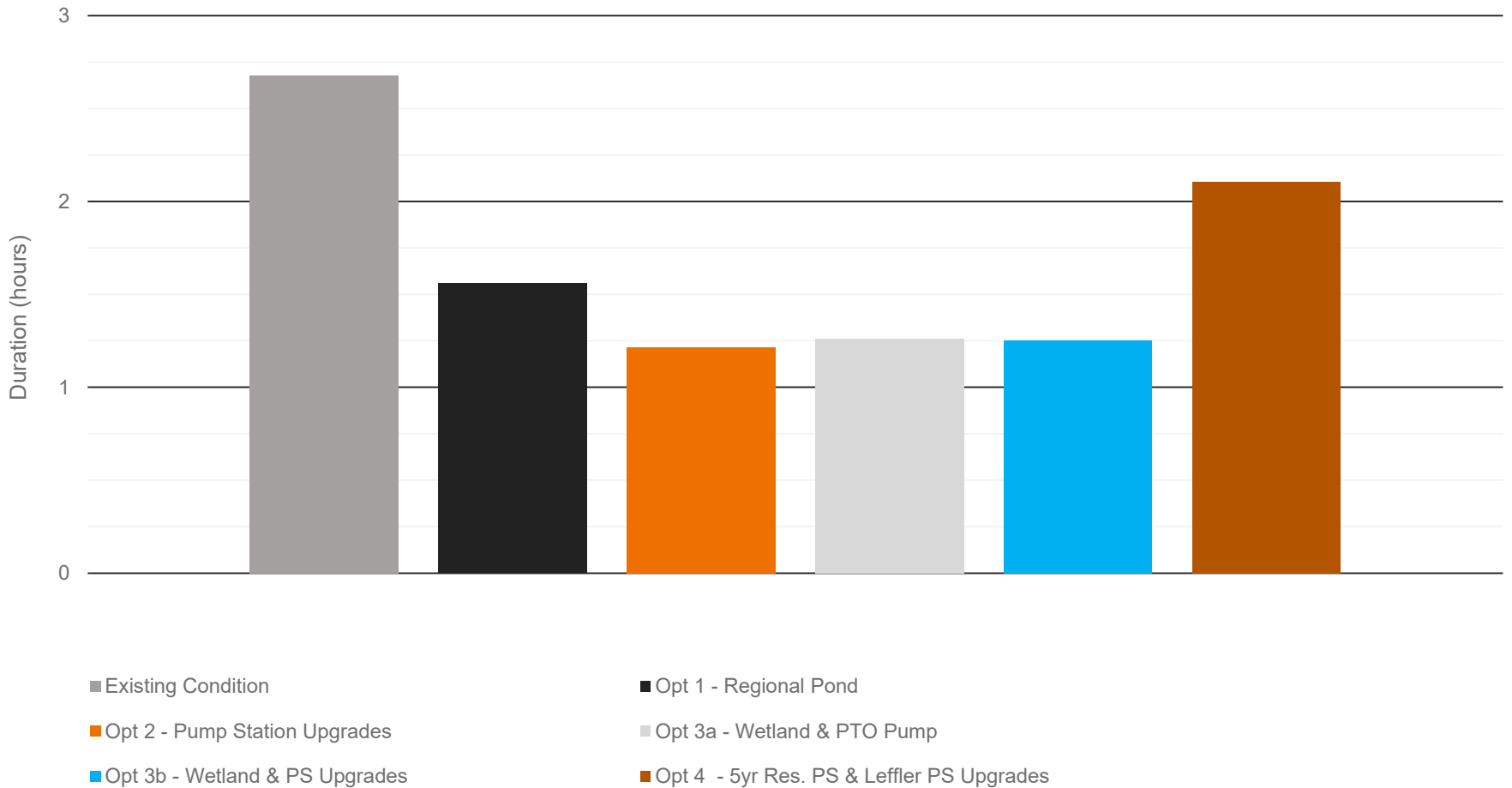
Average Surface Ponding Duration 5yr Storm - Residential



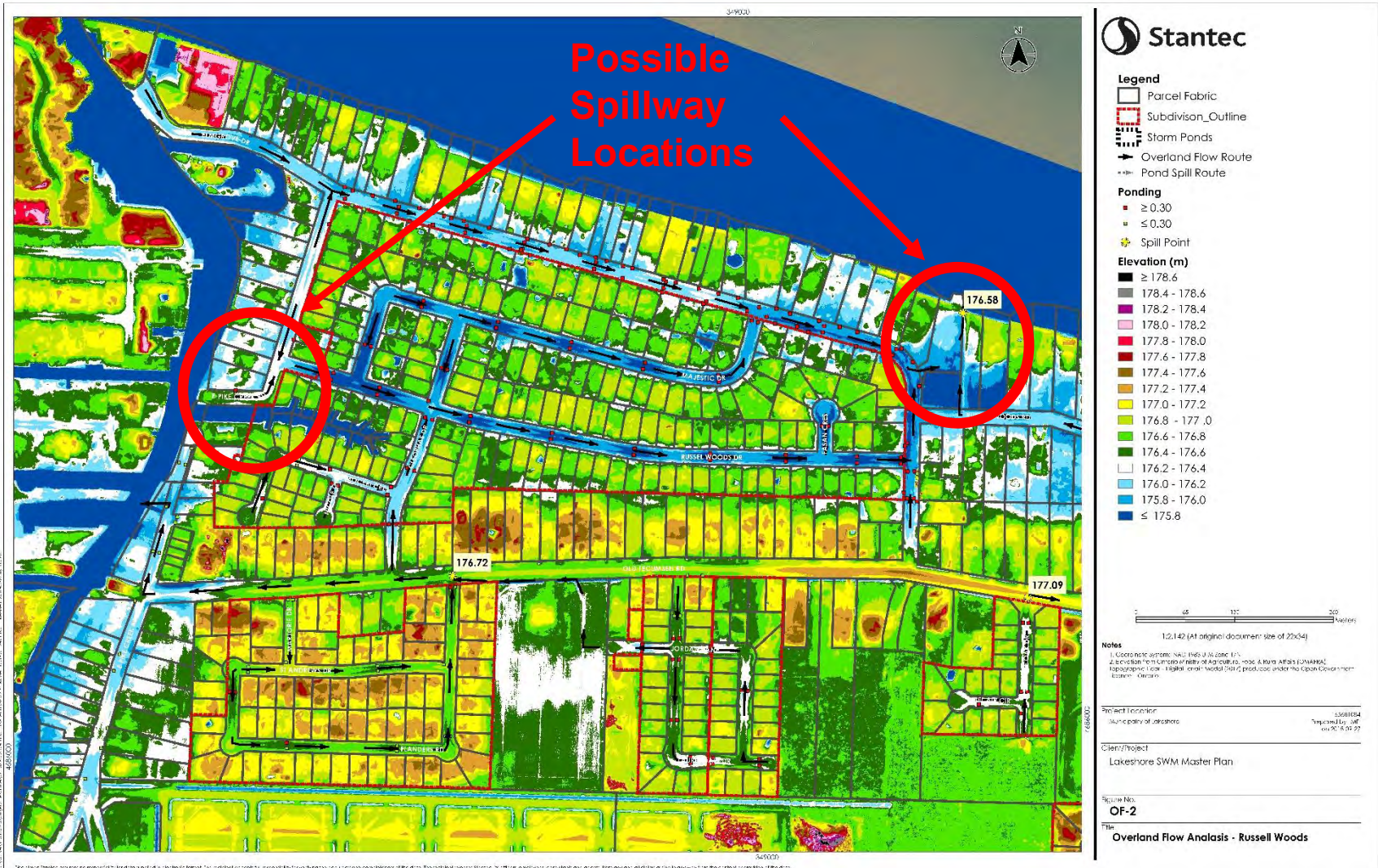
- Existing Condition
- Opt 1 - Regional Pond
- Opt 2 - Pump Station Upgrades
- Opt 3a - Wetland & PTO Pump
- Opt 3b - Wetland & PS Upgrades
- Opt 4 - 5yr Res. PS & Leffler PS Upgrades

# Leffler Drainage System – 100 Year

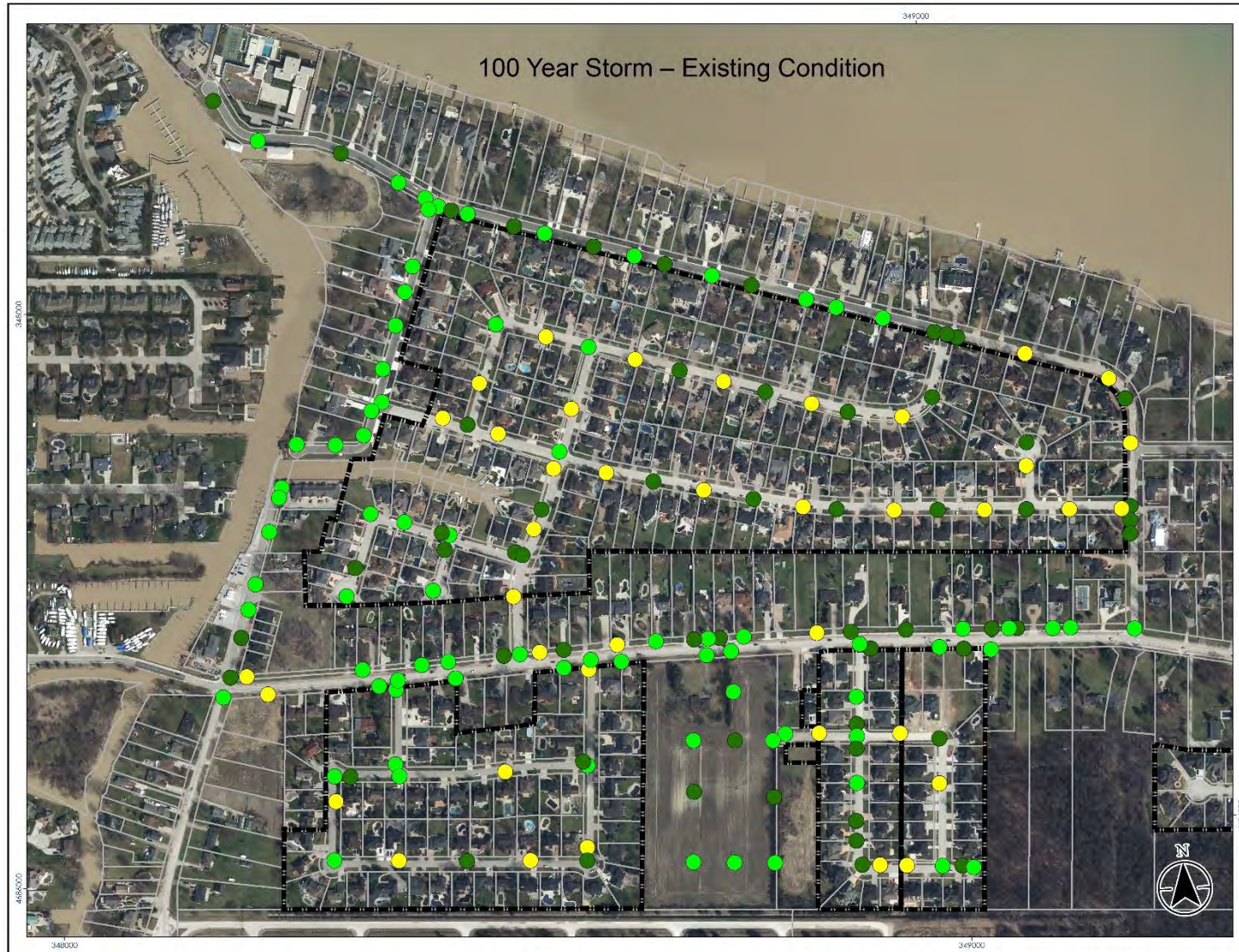
Average Surface Ponding Duration - Industrial



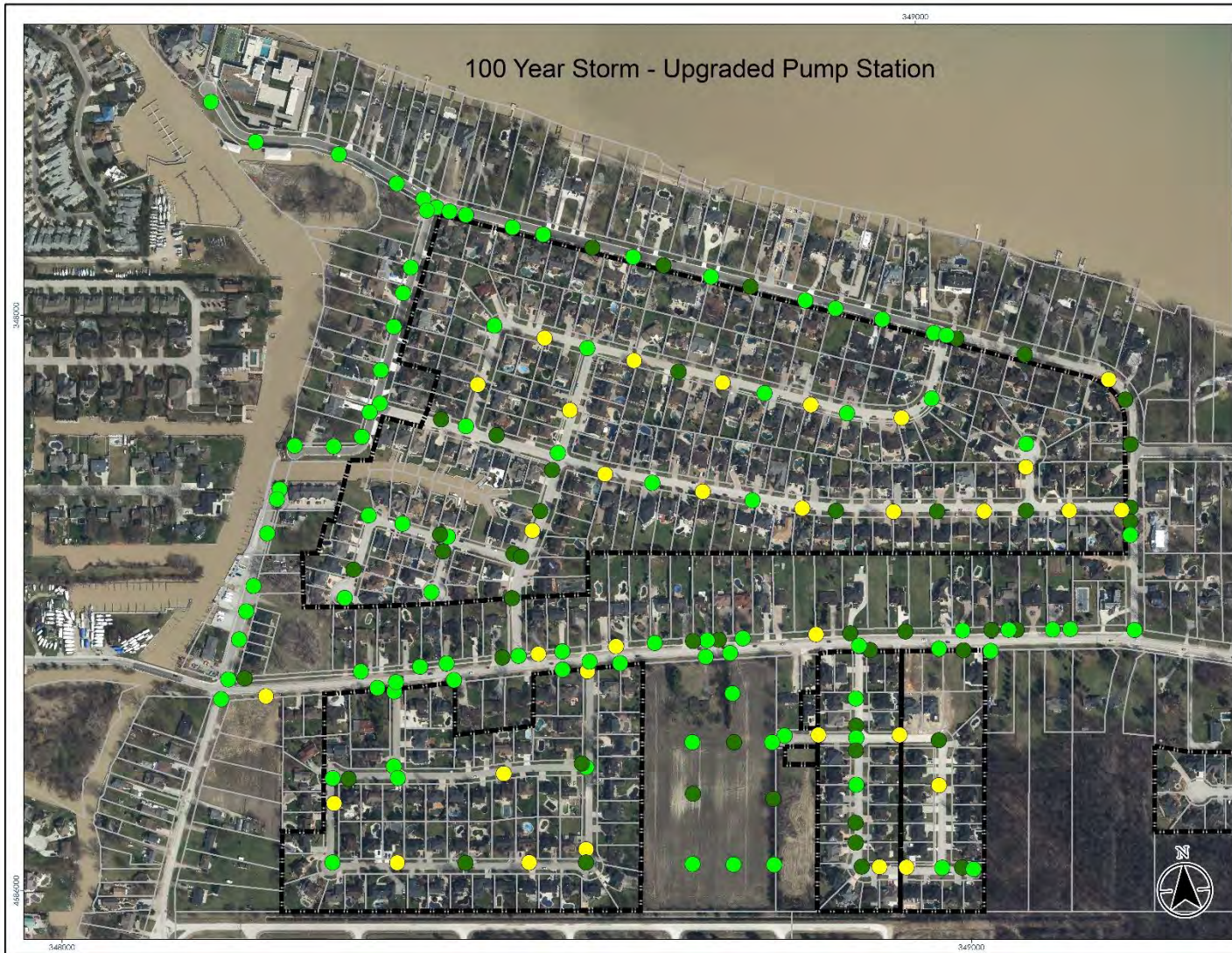
# Russell Woods – Overland Route



# Russell Woods – 100 year



# Russell Woods – 100 year



100 Year Storm - Upgraded Pump Station

### Legend

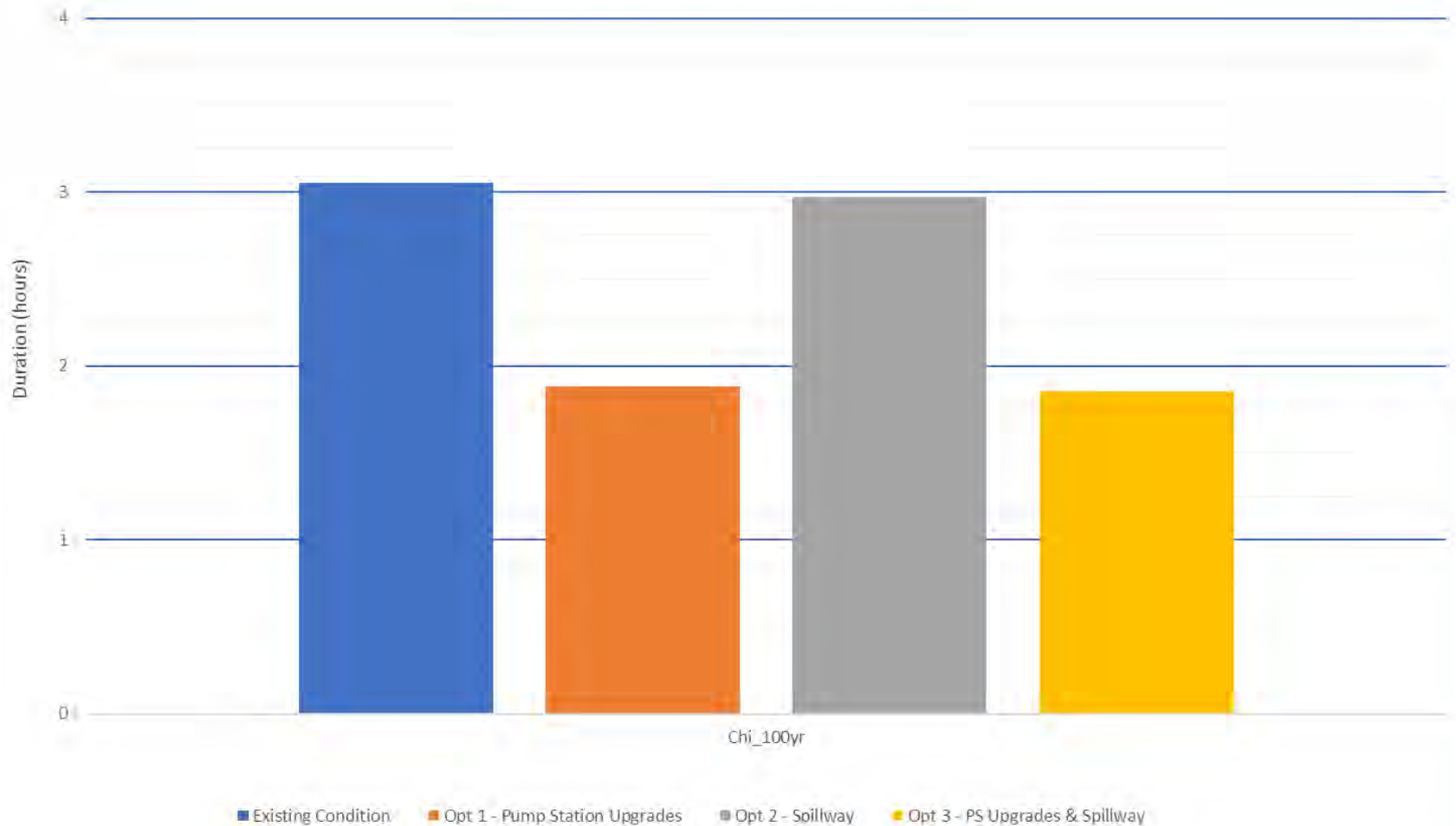
- Parcel Fabric
- Subdivision

### Junctions

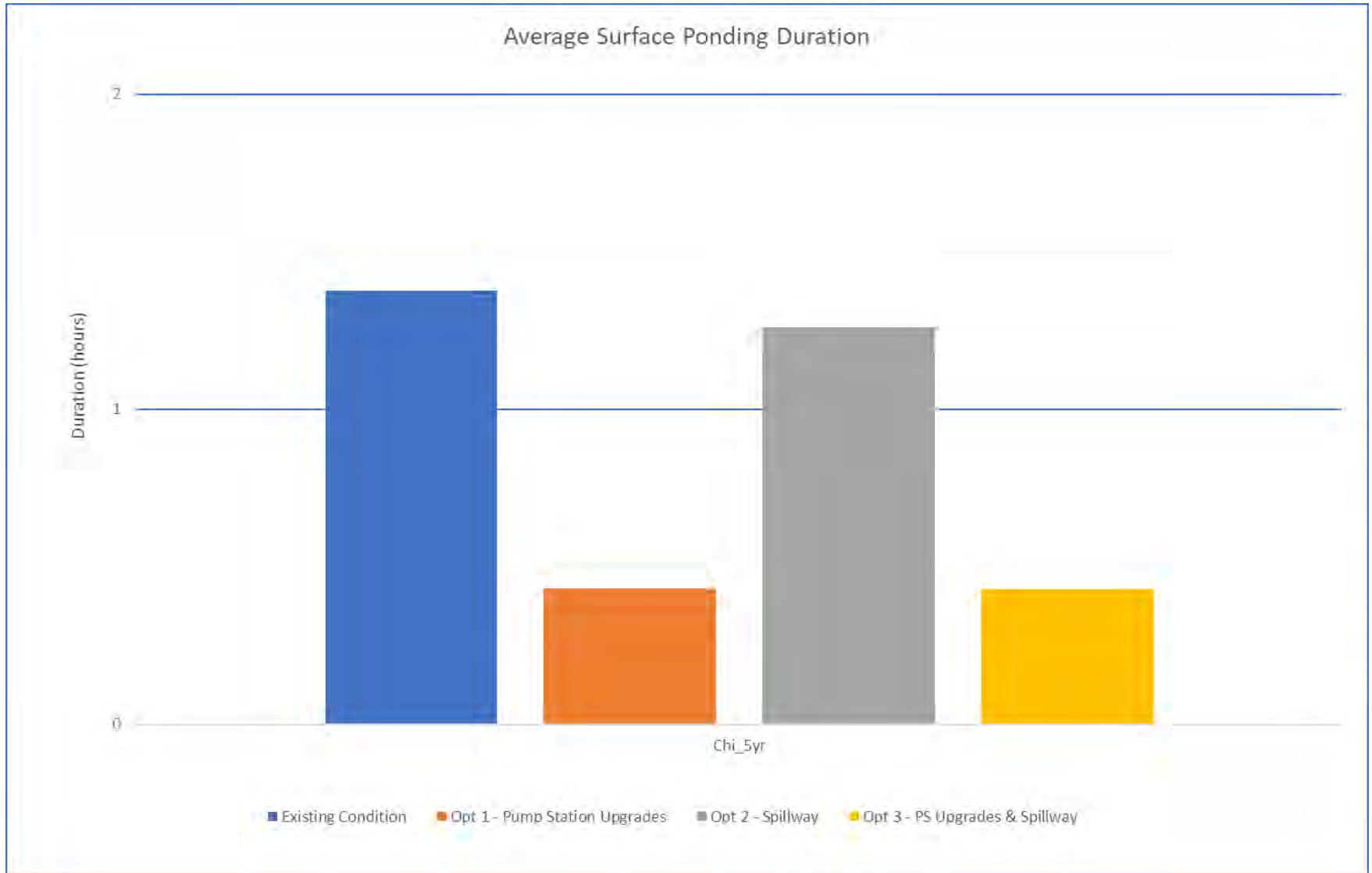
- $\le 0.15$
- $0.15 - 0.30$
- $0.30 - 0.50$
- $\ge 0.50$

# Russell Woods – 100 year

Average Surface Ponding Duration

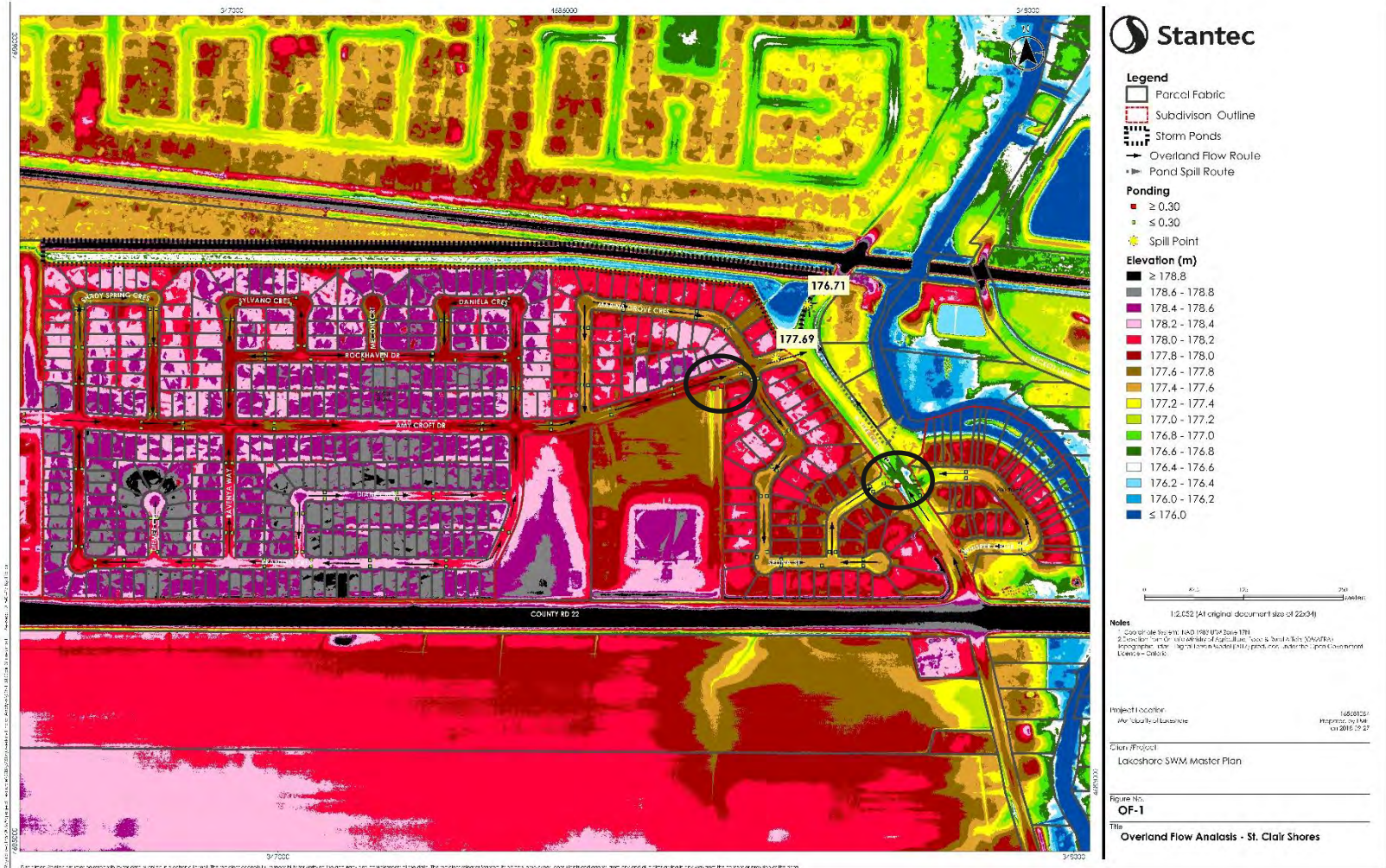


# Russell Woods – 5 Year

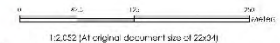




# St. Clair Shores and Walk the Pike



- Legend**
- Parcel Fabric
  - Subdivision Outline
  - Storm Ponds
  - Overland Flow Route
  - Pond Spill Route
- Ponding**
- ≥ 0.30
  - ≤ 0.30
- Spill Point**
- Spill Point
- Elevation (m)**
- ≥ 178.8
  - 178.6 - 178.8
  - 178.4 - 178.6
  - 178.2 - 178.4
  - 178.0 - 178.2
  - 177.8 - 178.0
  - 177.6 - 177.8
  - 177.4 - 177.6
  - 177.2 - 177.4
  - 177.0 - 177.2
  - 176.8 - 177.0
  - 176.6 - 176.8
  - 176.4 - 176.6
  - 176.2 - 176.4
  - 176.0 - 176.2
  - ≤ 176.0



**Notes**

1. General Reference: IAS 1983 (R) Zone 17N
2. Description of: Value of Elevation, Location, and Area
3. Geographic: City of St. Clair Shores, Michigan
4. Date: 08/15/2017

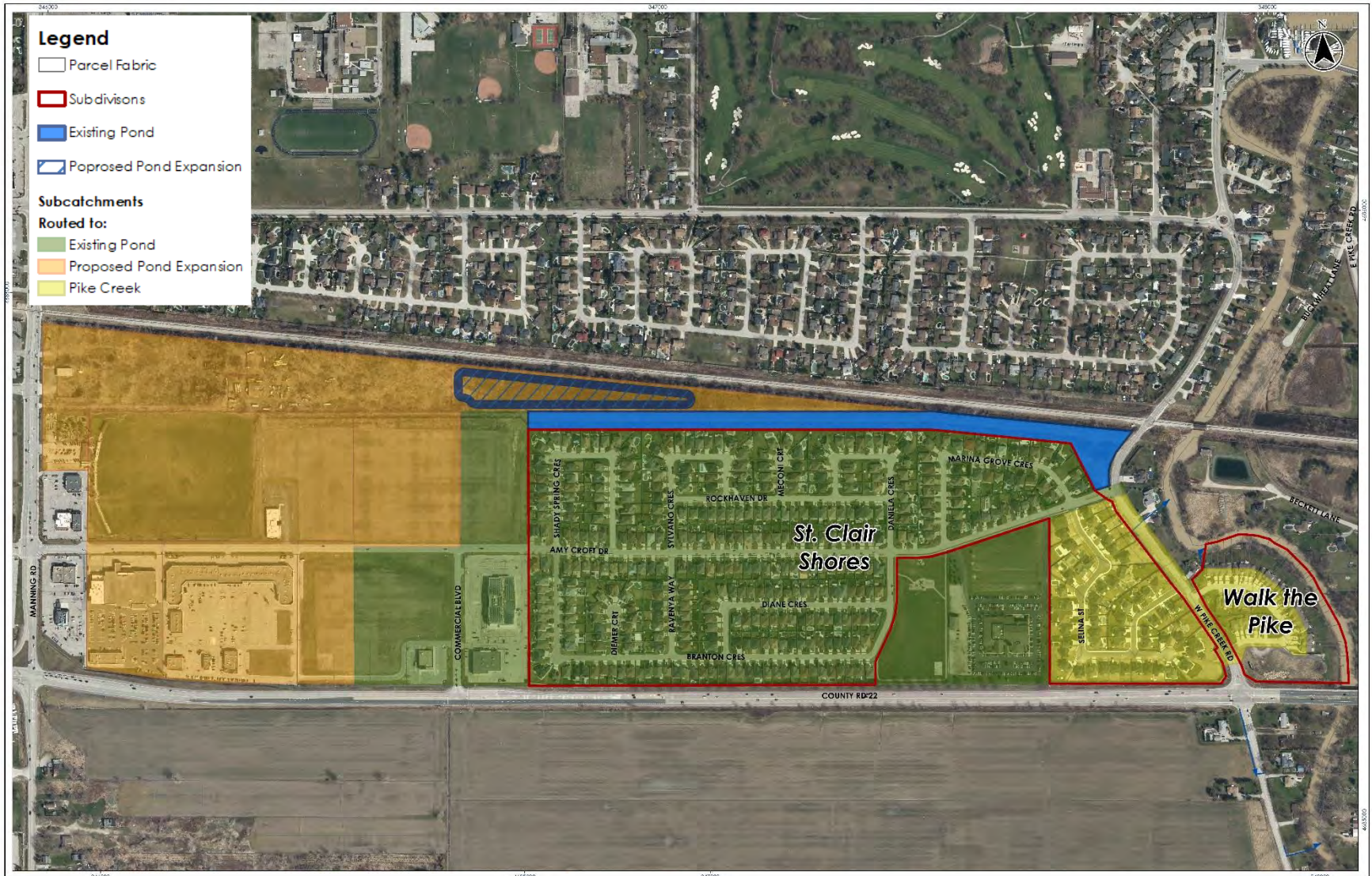
Project Location: City of St. Clair Shores, Michigan

Client/Project: Lakeshore SWM Master Plan

Figure No.: OF-1

Title: Overland Flow Analysis - St. Clair Shores

# St. Clair Shores and Walk the Pike



# Country Walk



### Legend

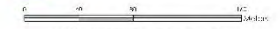
- Parcel Fabric
- Subdivision Outline
- Storm Ponds
- Overland Flow Route
- Pond Spill Route

### Ponding

- ≥ 0.30
- ≤ 0.30
- Spill Point

### Elevation (m)

- ≥ 178.8
- 178.6 - 178.8
- 178.4 - 178.6
- 178.2 - 178.4
- 178.0 - 178.2
- 177.8 - 178.0
- 177.6 - 177.8
- 177.4 - 177.6
- 177.2 - 177.4
- 177.0 - 177.2
- 176.8 - 177.0
- 176.6 - 176.8
- 176.4 - 176.6
- 176.2 - 176.4
- 176.0 - 176.2
- ≤ 176.0



Notes  
 1. Coordinate System: NAD 1983 UTM Zone 17N  
 2. Horizontal and vertical accuracy of polygons: ±0.05m & ±0.05m (vertical)  
 3. Accuracy: ICAH 2nd ed. requirements.

Project Location: Lakeshore, Ontario  
 Municipality: Lakeshore  
 Project No.: 16088-001  
 Date: 2016-05-27

Client/Project: Lakeshore SWM Master Plan

Figure No.: OF-4  
 Title: Overland Flow Analysis - Country Walk

Project No.: 16088-001; Date: 2016-05-27; File Path: C:\Users\jdoyle\OneDrive\Documents\16088-001\GIS\MapDocs\CountryWalk\CountryWalk\_OF-4.mxd; User: jdoyle

# Country Walk

Potential  
Improvements

100 Year Storm – Existing Condition





## Legend


 Parcel Fabric


 Subdivision

## Junctions

  $\leq 0.15$

 0.15 - 0.30

 0.30 - 0.50

  $\geq 0.50$

# Country Walk

Potential Improvements

## 100 Year Storm – Deepened Pond



### Legend

Parcel Fabric

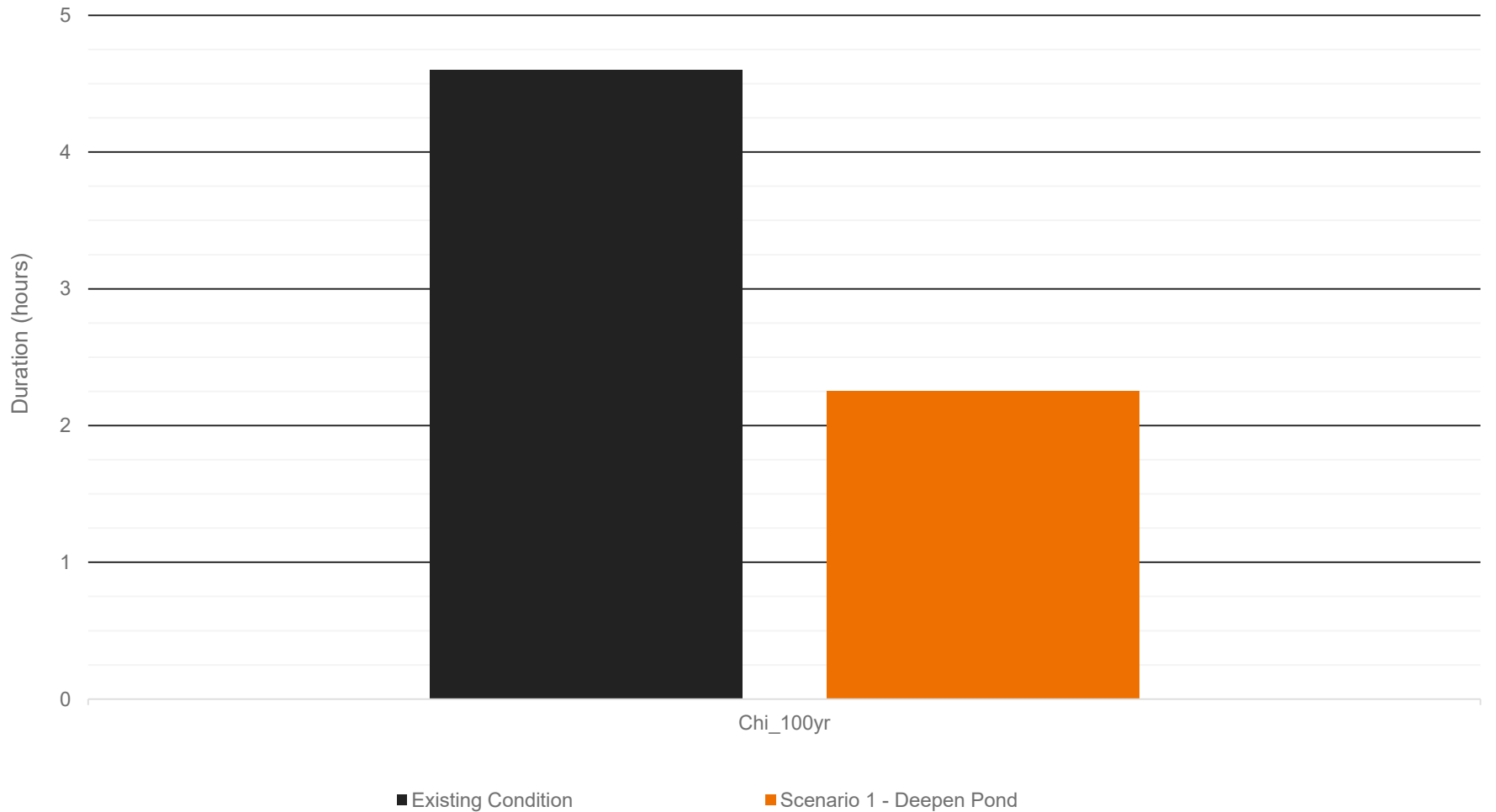
Subdivision

### Junctions

- $\leq 0.15$
- 0.15 - 0.30
- 0.30 - 0.50
- $\geq 0.50$

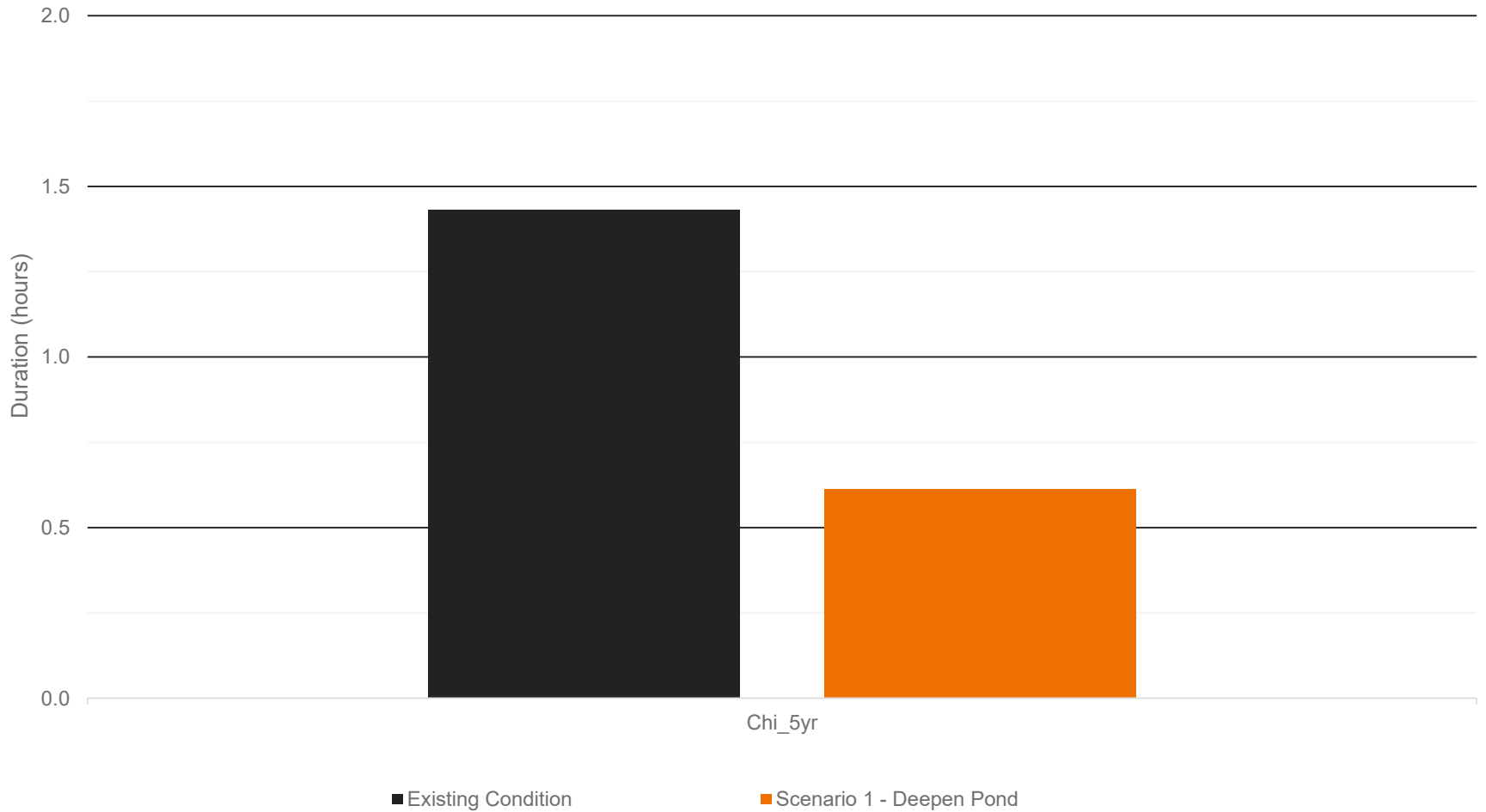
# Country Walk – 100 Year

Average Surface Ponding Duration - Country Walk



# Country Walk – 5 Year

Average Surface Ponding Duration - 5yr Storm



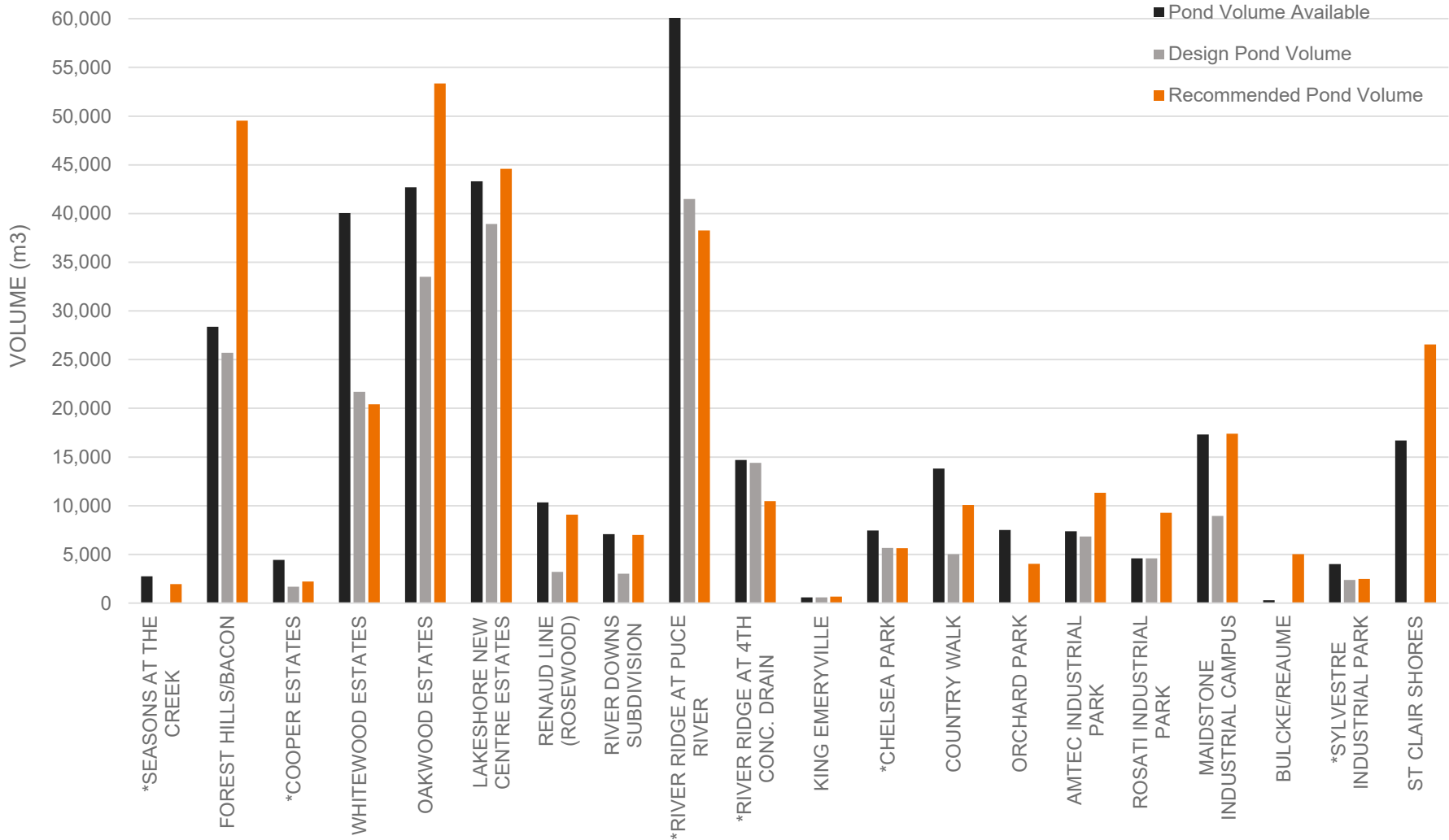
# Pond Capacity Review



# Pond Improvements

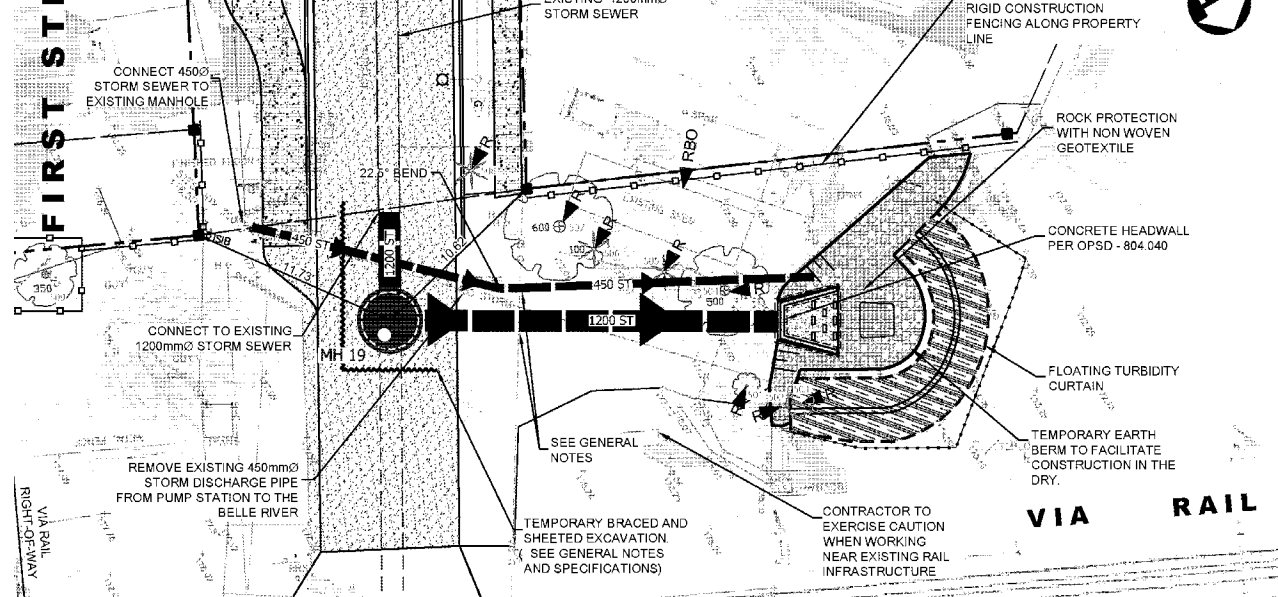
Pond Capacity

## SWM POND VOLUMES

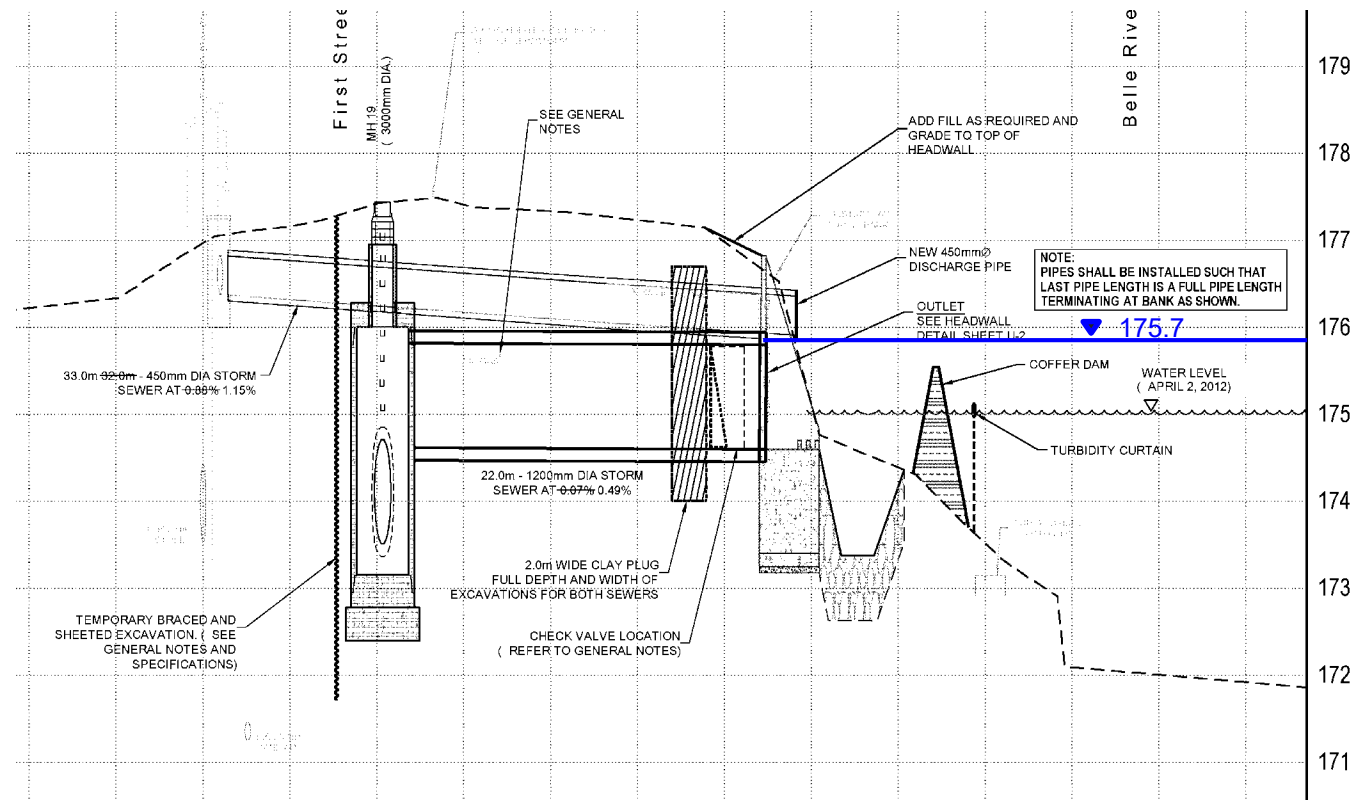


Trench Backflow

Trench Backflow



Trench Backflow

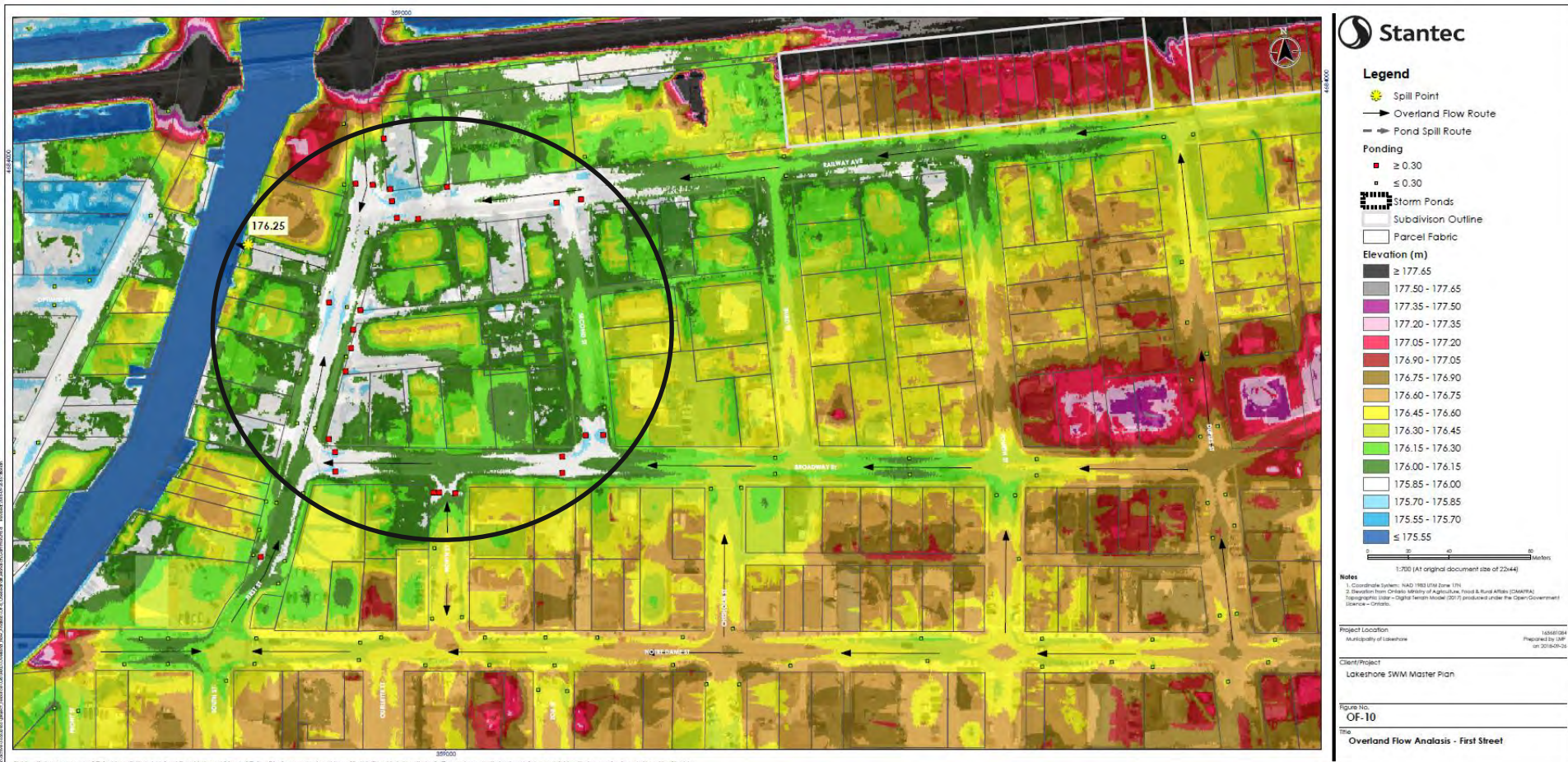


# Outfall Assessment

|              | <b>Pike Creek</b> | <b>Puce River</b> | <b>Belle River</b> | <b>Duck Creek</b> |
|--------------|-------------------|-------------------|--------------------|-------------------|
| <b>Okay</b>  | 5                 | 4                 | 3                  | 1                 |
| <b>Check</b> | 0                 | 5                 | 6                  | 3                 |
| <b>Need</b>  | 3                 | 2                 | 5                  | 4                 |
| <b>Total</b> | <b>8</b>          | <b>11</b>         | <b>3</b>           | <b>8</b>          |

# Overland Routing

# Belle River – First Street



Overland  
Routing



SWM Facility Maintenance



# SWM Facility Maintenance



# SWM Facility Maintenance

- Cooper Estates Subdivision
- Whitewood Estates Subdivision
- Renaud Line Development (Rosewood Subdivision)
- River Ridge Development - Puce Pond
- King Emeryville Development
- Chelsea Park Subdivision
- Country Walk Development
- Maidstone Industrial Campus (Advance Blvd.)
- Rosati Industrial Park (Silver Creek Industrial Dr.)
- Bulcke / Reaume Development
- Oakwood Estates Development

Recommendations

# Short-Term Recommendations

1. Expand inflow & infiltration reduction program to include RainGuards on all sanitary manholes. Less than \$160,000 for all manholes remaining in study area.
2. Retrofit submerged outfalls to have backflow prevention and impervious plug. Where feasible, consider pumping to dewater sewer systems and trenches.
3. Perform required maintenance on SWM Facilities
4. Expand upon storm sewer condition assessment and maintenance program. ZoomCam @ \$170,000 and/or Flushing/Video @ \$560,000.
5. Expand camera inspection program to include FREE inspection up to a maximum budgeted amount of X properties per year.
6. Expand upon education & subsidy programs to maintain/improve private drainage systems. (Educational video?...)
7. New SWM standards for future development.
8. Country Walk Pond deepening.

# Flood Mitigation

**The most effective way to reduce the risk of flooding involves a two-part solution that aims to:**

**Solution A:**

Maintain/Improve private drainage systems to ensure adequate drainage of surface, roof and groundwater around the home, supplemented with;

**Solution B:**

Improvements to the Town's stormwater system to reduce the duration and frequency of sewer surcharging during intense rainfall events.

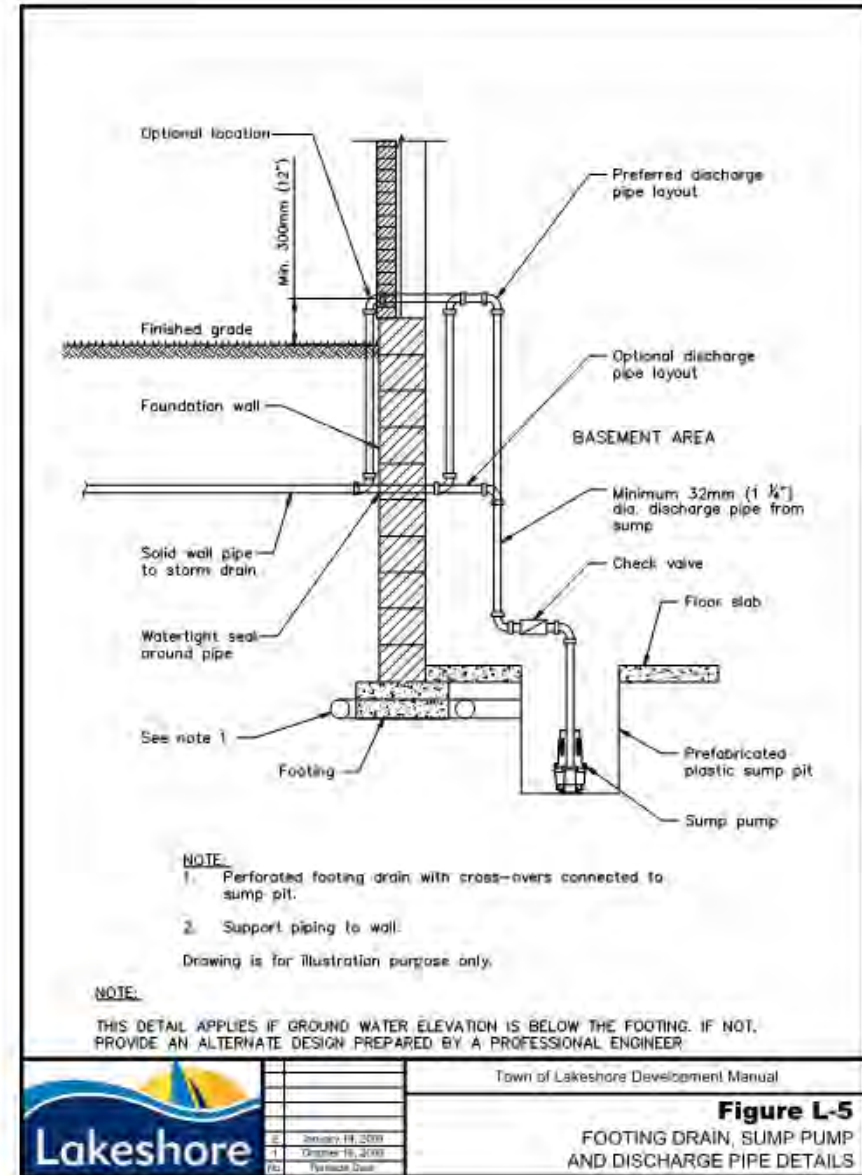
## Solution B Expectations



# Sump Pump System is Critical

## Common failures:

- Primary pump can't keep up
- Power outage
- Primary pump burns out
- Pump switches get hung up – pump doesn't turn on
- Pump clogs with sediment, mud, debris

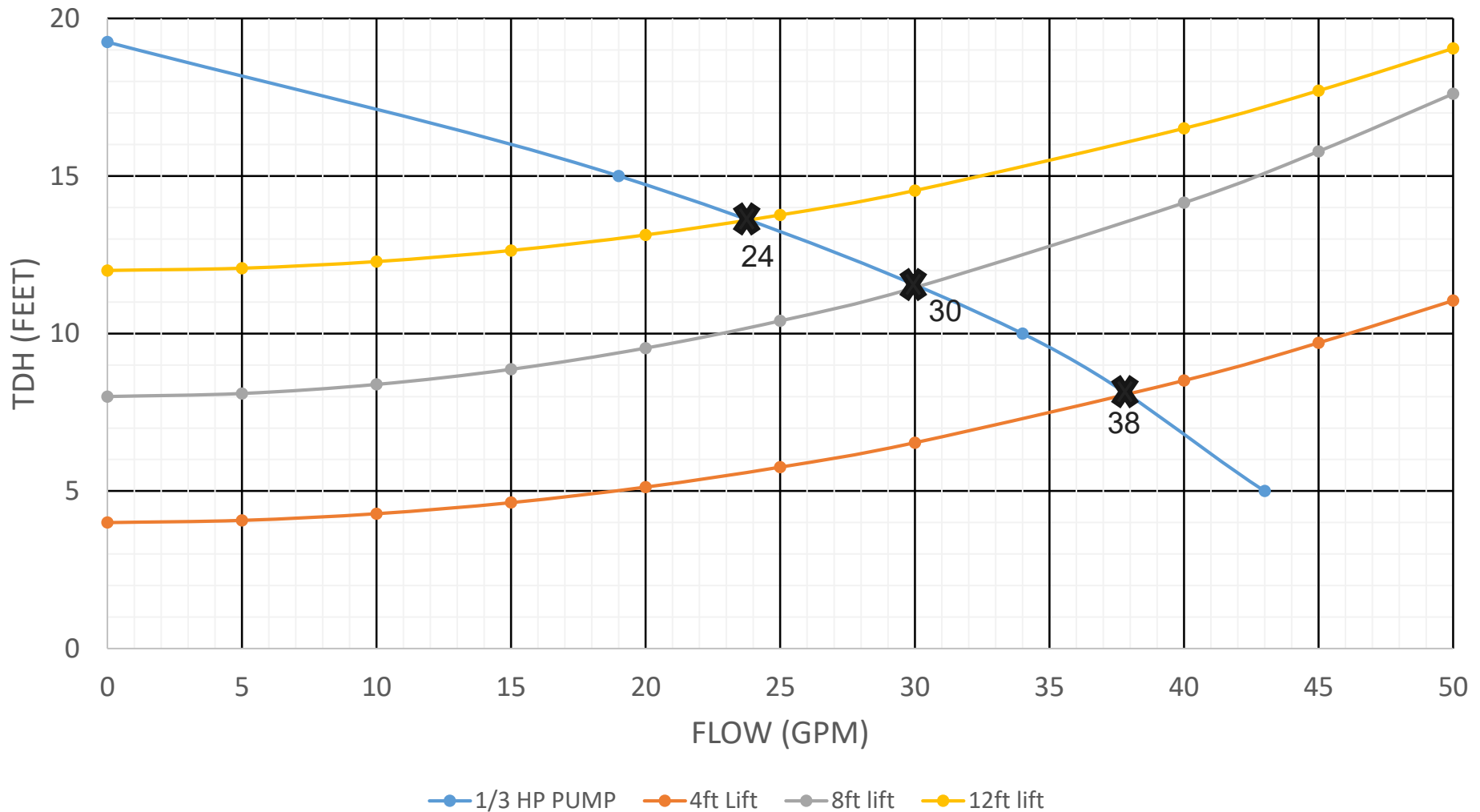


# Example 1/3HP Sump Pump

(for illustration only – actual pump performance may vary)

Initial Solutions

## PUMP PERFORMANCE CURVES



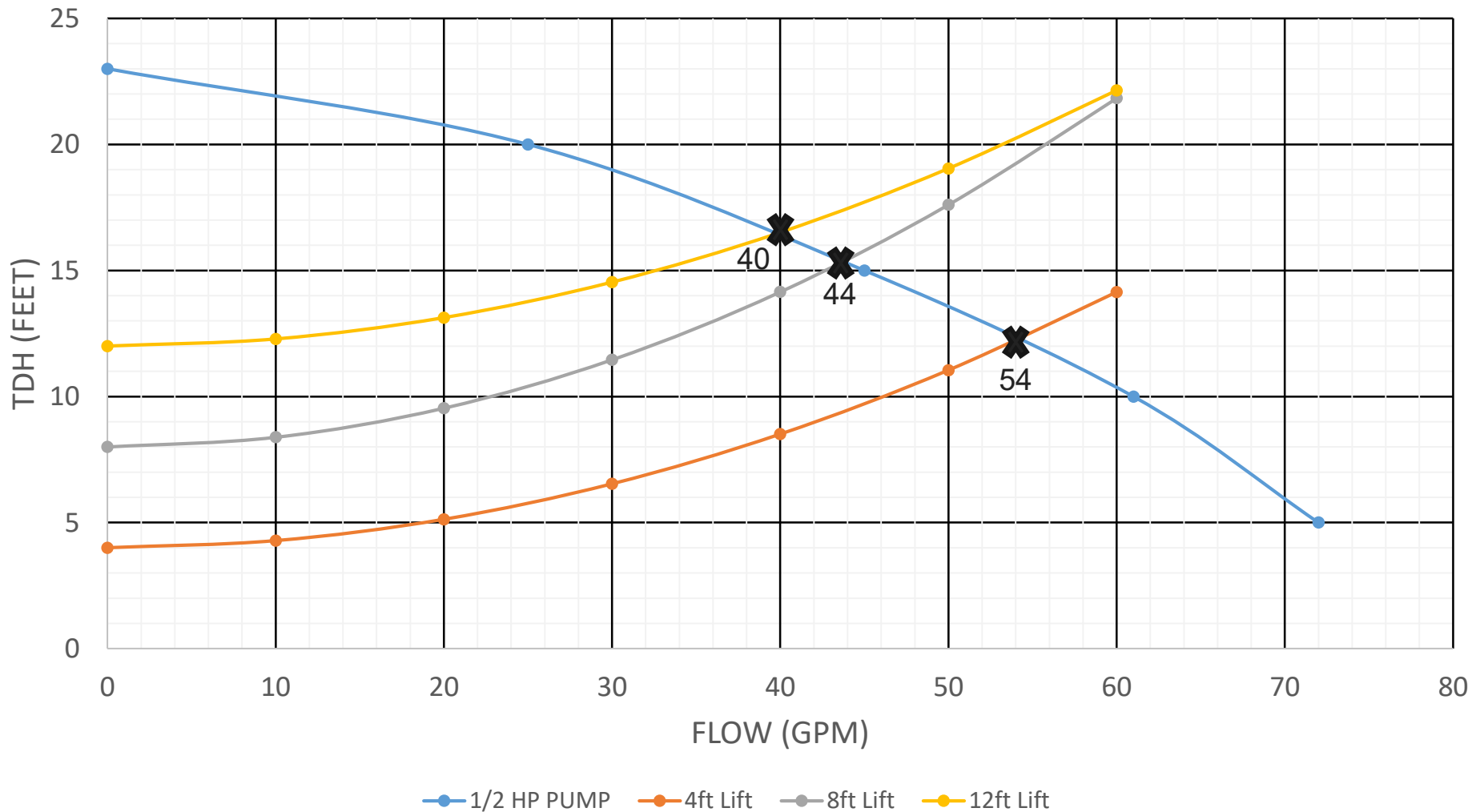


# Example 1/2HP Sump Pump

(for illustration only – actual pump performance may vary)

Initial Solutions

## PUMP PERFORMANCE CURVES



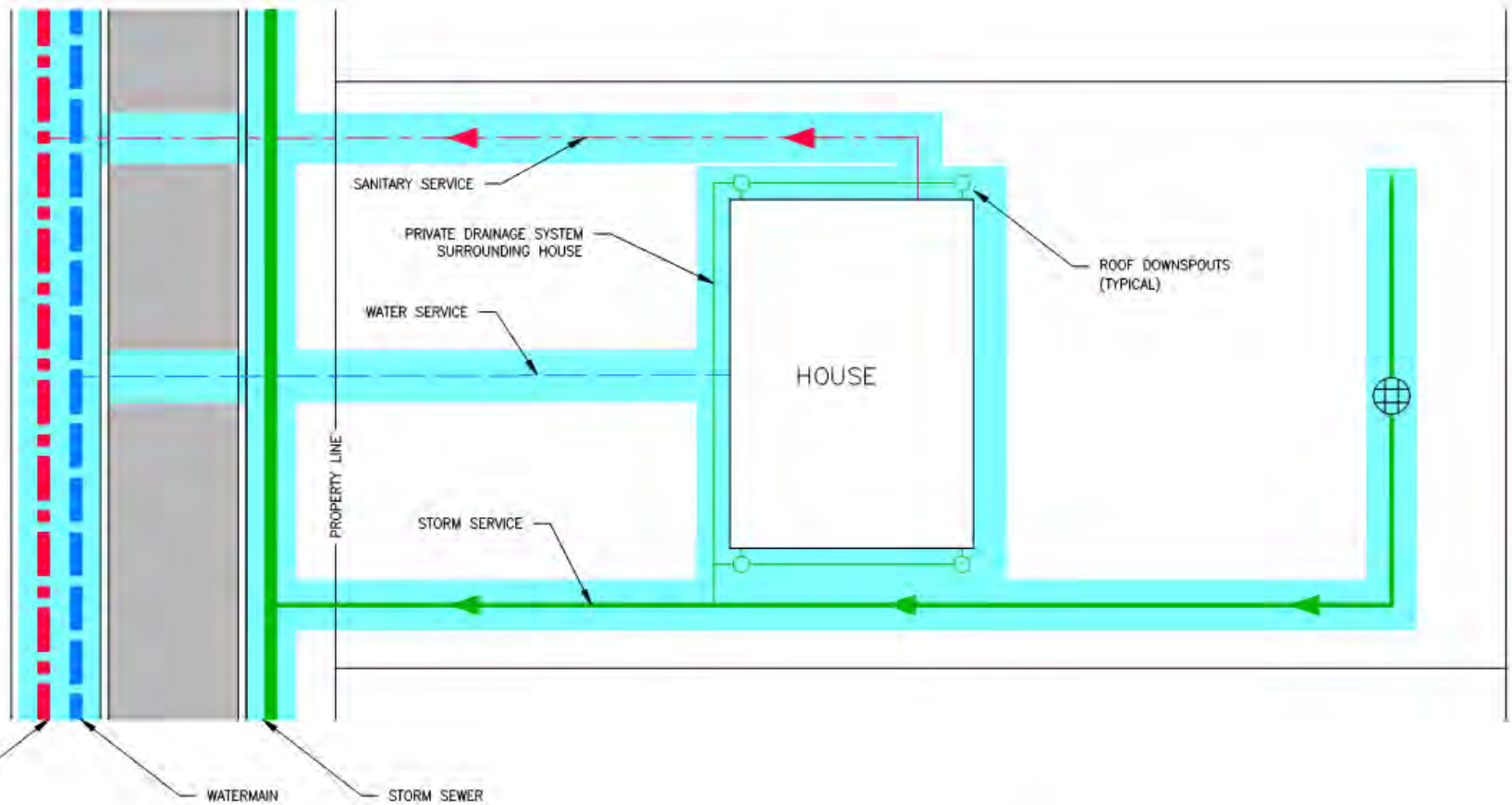
Next Steps

## Next Steps

- Continue review and analysis of infrastructure (pumps, outfalls, ponds)
- Meeting with Peralta to discuss improvements associated with Drainage Act
- Presentation to Council & PIC No.1

Basement Flooding

# Sources of Basement Flooding

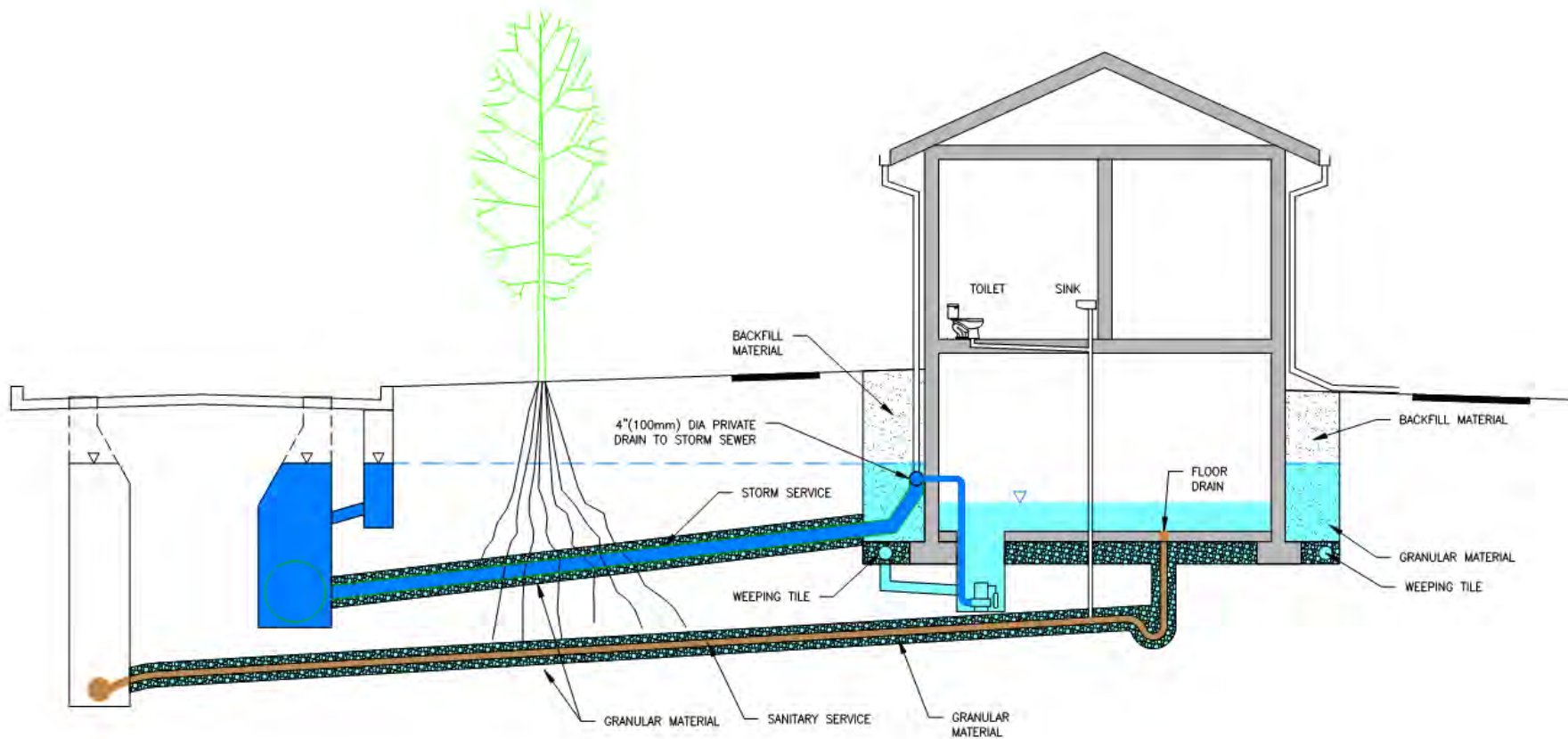


## LEGEND



GRANULAR TRENCH

# Sources of Basement Flooding



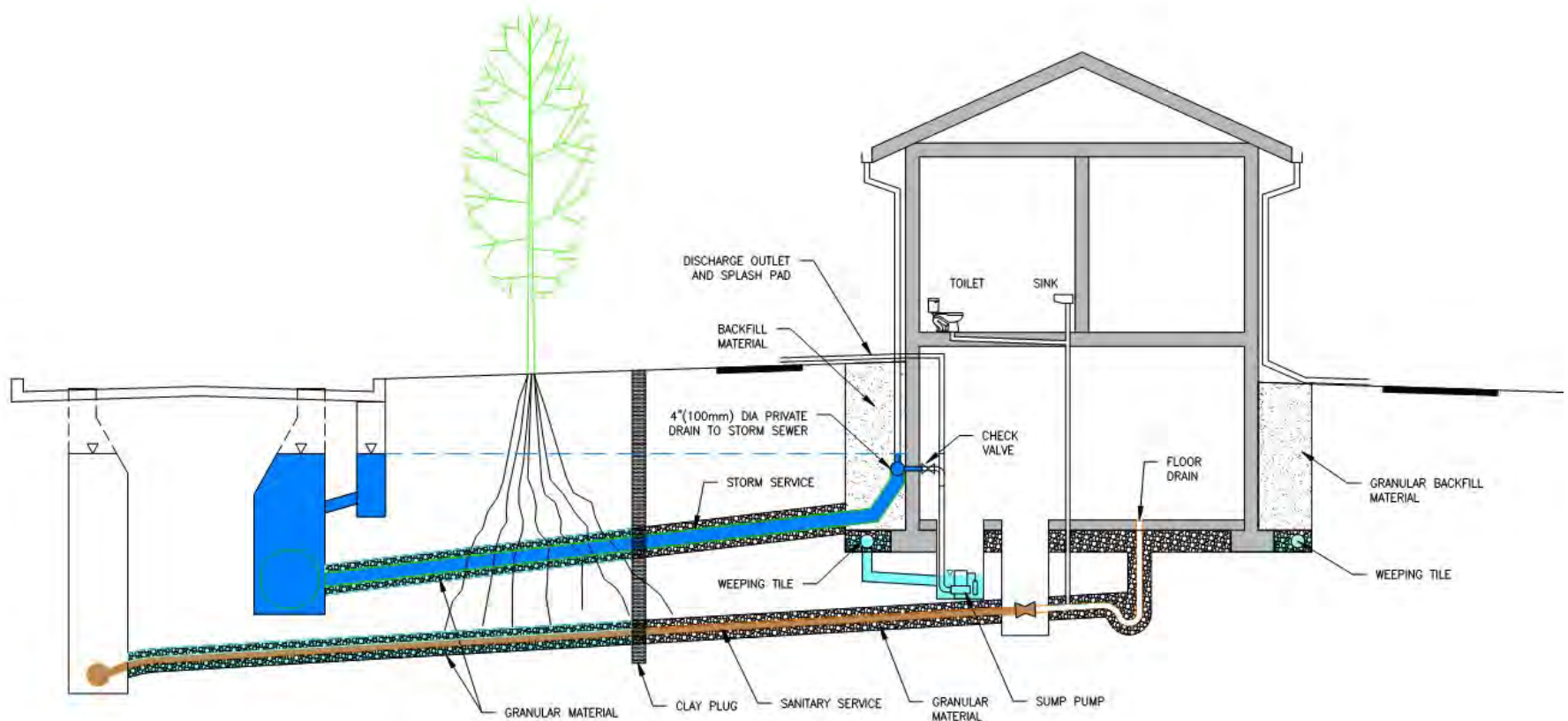
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**LEGEND**

-  STORM WATER
-  SANITARY WATER


# Sources of Basement Flooding



**NOTE:**

PRIVATE DRAINAGE SYSTEMS CAN BE COMPLEX AND COULD DIFFER FROM THAT SHOWN. IT IS CRITICAL THAT THE HOME OWNER CARRY OUT A SITE ASSIGNMENT WITH A LICENSED PLUMBER, DRAIN CONTRACTOR, OR DRAINAGE ENGINEER TO UNDERSTAND HOW THE EXISTING DRAINAGE SYSTEM OPERATES BEFORE DETERMINING THE APPROPRIATE SYSTEM IMPROVEMENTS.

**LEGEND**

-  STORM WATER
-  SANITARY WATER

**From:** [Newton, Craig \(MECP\)](#)  
**To:** [praji@lakeshore.ca](mailto:praji@lakeshore.ca)  
**Cc:** [Emery, Nick](#); [Hohner, Paula](#)  
**Subject:** FW: Lakeshore SWM Master Plan Study Phase 1 Update  
**Date:** Wednesday, October 9, 2019 2:51:40 PM  
**Attachments:** [20190930093558948.pdf](#)

---

Dear Mr. Raji:

This e-mail acknowledges this ministry's receipt, with thanks, your consultant's attached letter of September 9th, 2019.

In response to the attached Project Information Update that MECP recently received, based upon the information submitted to date, the MECP have identified the following key project details with respect to the proposed undertaking:

### **Aboriginal Consultation**

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before the Town of Lakeshore may proceed with this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of consultation to project proponents while retaining oversight of the process.

The Town of Lakeshore's proposed project may have the potential to affect Aboriginal or treaty rights protected under section 35 of Canada's *Constitution Act 1982*. Where the Crown's duty to consult is triggered in relation to the Town of Lakeshore's proposed project, the MECP is delegating the procedural aspects of rights-based consultation to the Town of Lakeshore through this email. The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information you have provided to date and the Crown's preliminary assessment the Town of Lakeshore is required to consult with the following communities who have been identified as potentially affected by your proposed project:

- Kettle and Stony Point First Nation
- Aamjiwnaang First Nation
- Bkejwanong (Walpole Island First Nation)
- Chippewas of the Thames First Nation
- Caldwell First Nation
- Oneida Nation of the Thames

Please be advised that the above guidance may change as new information becomes available on project impacts and/or communities' areas of interest. If new information



becomes available related to project impacts, the MECP would be willing to review the above recommendation to determine if it would change.

Steps that you may need to take in relation to Aboriginal consultation for your proposed project are outlined in the “Code of Practice for Consultation in Ontario’s Environmental Assessment Process” which can be found at the following link:

<https://www.ontario.ca/document/consultation-ontarios-environmental-assessment-process>

Additional information related to Ontario’s *Environmental Assessment Act* is available online at:

[www.ontario.ca/environmentalassessments](http://www.ontario.ca/environmentalassessments)

You must contact the Director of Environmental Assessment and Permissions Branch (Director) under the following circumstances subsequent to initial discussions with the communities identified by MOECC:

- Aboriginal or treaty rights impacts are identified to you by the communities;
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right;
- Consultation has reached an impasse;
- A Part II Order request or elevation request is expected.

The Director can be notified either by email, mail or fax using the information provided below:

|                 |  |
|-----------------|--|
| <b>Email:</b>   | <a href="mailto:enviopermissions@ontario.ca">enviopermissions@ontario.ca</a><br>Subject: Potential Duty to Consult             |
| <b>Fax:</b>     | 416-314-8452   |
| <b>Address:</b> | Environmental Assessment and<br>Permissions Branch<br>135 St. Clair Avenue West, 1 <sup>st</sup> Floor<br>Toronto, ON, M4V 1P5 |

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role the Town of Lakeshore will be asked to play should additional steps and activities be required.

### **Source Water Protection**

As per the recent amendments to the Municipal Engineers Association (MEA) Class Environmental Assessment parent document approved October 2015, proponents undertaking a Municipal Class EA project must identify early in the process whether a project is occurring within a source water protection vulnerable area. This must be

clearly documented in an ESR. If the project is occurring in a vulnerable area, then there may be policies in the local Source Protection Plan (SPP) that need to be addressed (requirements under the Clean Water Act). The proponent should contact and consult with the appropriate Conservation Authority/Source Protection Authority (CA/SPA) to discuss potential considerations and policies in the SPP that apply to the project.

Please include a section in the report on Source Water Protection. Specifically, it should discuss whether or not the project is located in a vulnerable area or changes or creates new vulnerable areas and provide applicable details about the area. If located in a vulnerable area, proponents should document whether any project activities are a prescribed drinking water threat and thus pose a risk to drinking water (this should be consulted on with the appropriate CA/SPA). Where an activity poses a risk to drinking water, the proponent must document and discuss in the Project File Report/ESR how the project adheres to or has regard to applicable policies in the local SPP. If creating or changing a vulnerable area, proponents should document whether any existing uses or activities may potentially be affected by the implementation of source protection policies. This section should then be used to inform and should be reflected in other sections of the report, such as the identification of net positive/ negative effects of alternatives, mitigation measures, evaluation of alternatives etc. As a note, even if the project activities in a vulnerable area are deemed not to be a drinking water risk, there may be other policies that apply and so consultation with the local CA/SPA is important.

## **Climate Change**

The Town of Lakeshore is strongly encouraged to include climate change in this EA. Climate change should be considered in the context of mitigation and the context of adaptation. The Ministry has recently released a guidance document to support proponents in including climate change in environmental assessments. The guide can be found online: <https://www.ontario.ca/page/considering-climate-change-environmental-assessment-process>. It should be noted that Climatic Features is identified in Appendix 2 of the Municipal Class EA page 2-7 (2015).

## **Part II Order Request Form**

Please note that as of July 1, 2018, a [Part II Order Request Form](#) must be used to request a Part II Order as per O. Reg. 152/18. Accordingly, please include those details when conveying information regarding the Part II Order process such as on the Notice of Completion. The following sample text would cover this requirement in the Notice of Completion for this project:

When the ESR is finalized, please send the Notice of Completion and final documentation to my attention. Should you or any members of your project team have any questions regarding the material above, please contact me directly.

Yours truly,

Craig Newton  
Regional Environmental Planner / Regional EA Coordinator  
Ministry of the Environment, Conservation and Parks  
Southwestern Region  
733 Exeter Road  
London, Ontario  
N6E 1L3

Telephone: (519) 873-5014  
E-mail: [craig.newton@ontario.ca](mailto:craig.newton@ontario.ca)



# CHIPPEWAS OF THE THAMES FIRST NATION

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September 24, 2019

VIA EMAIL

Peyman Raji  
Project Manager  
Town of Lakeshore  
Floodwater Defense Action Strategy and Plan  
419 Notre Dame St.  
Belle River, ON N0R 1A0

**RE: Lakeshore Stormwater Master Plan Study Phase 1**

Dear Mr. Yeoman,

We have received notification concerning the above-mentioned project, dated September 9, 2019. The proposed project is located within the Mckee Treaty Area (1790) to which Chippewas of the Thames First Nation (COTTfN) is a signatory. It is also located within Big Bear Creek Additions to Reserve (ATR) land selection area, as well as COTTfN's Traditional Territory.

We presently have minimal concerns with the information provided. Please provide updates via email to [consultation@cottfn.com](mailto:consultation@cottfn.com) as this project progresses and completed studies as they become available. As well, if there is an Archaeology Assessment conducted, we require notification and the opportunity to actively participate by sending First Nation field liaisons on behalf of this First Nation.

We look forward to continuing this open line of communication. To implement meaningful consultation, COTTfN has developed its own protocol — a document and a process that will guide positive working relationships. We would be happy to review COTTfN's Consultation Protocol with you. The protocol can be found on our website at [www.cottfn.com/consultation](http://www.cottfn.com/consultation).



# CHIPPEWAS OF THE THAMES FIRST NATION

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Please do not hesitate to contact me if you need further clarification of this letter.

Sincerely,

Fallon Burch  
Consultation Coordinator  
Chippewas of the Thames First Nation  
(519) 289-5555 Ext. 251  
[consultation@cottfn.com](mailto:consultation@cottfn.com)

enclosure

c: Mr. Nick Emery, Water Resources Engineer, Stantec Consulting Ltd.

April 06, 2018



**Re: Proposed Subdivision: (S-A-02-2015); County of Essex File No: 37-T-15001**  
**& Zoning By-Law Amendment (ZBA-15-2015 Under the Planning Act**

The captionally noted proposal for a subdivision and change in land use for this 4.92 hectare parcel of land situated within the Town of Lakeshore and more specifically within the boundary of the Russell Woods Pumping Station is currently under review.

An open house was held on Tuesday March 27, 2018 in accordance with the Planning Act.

I am an [REDACTED] [REDACTED] [REDACTED] to the proposed development area and live in a single family residential building located at [REDACTED] [REDACTED] [REDACTED] r. This 'loop' includes Laurendale Dr. and Jordan Lane. My concern here is with multiple catastrophic flooding incidents which have caused damage to my home and those of my neighbours. A very real and stressful situation has been created with residents of this area in relation to property flooding. In my case I have removed all downspouts, installed a new sump pump and attempted to divert water away from my home. Our area is serviced by a storm water pump located at the intersection of Old Tecumseh Rd. and Laurendale Dr. It has become apparent that the system, whether it be the main storm water drain on Old Tecumseh Rd. or the failure of the pump to activate or evacuate the storm water overwhelming the system. Town Council meetings held in 2017 have given vague information on the ability of the system to handle storm water and related to us that a 'martini glass' situation occurs during rain events, where large volumes of water have to be held back and slowly feed into the main arteries when sufficient volumes of water can be extracted. We have also been told that our streets are designed to act as retention ponds in the event of severe rain events and will hold water as designed until adequate volumes can be pumped into the main system.

In a word, this system "Failed". Street flooding for periods of 10-12 hours causes water to flow back into buildings, sump pumps cannot extract water from structures that have storm water looking for a place to go.

Since the Stantec Engineering Report dated 2013 was conducted on the Russell Woods Pumping Station that states quite clearly that the system is at capacity and cannot handle additional storm water or runoff, a number of building permits have been issued. Our new neighbours have built new high end homes with the best in construction materials and

knowledge and experience the same catastrophic results that have occurred to homes established in the area for close to 20 years. The Stantec Consulting Report also indicates that upgrades that would increase capacity would be cost prohibitive.

We are now faced with 60 new residential sites on this property, proposals for many more (East Pike Creek Road Subdivision also in the Russell Woods Pumping Station Boundary) and many more building sites for future development.

At the open house representatives were present from Dillon Consulting and were prepared to answer questions.

My first question was in regard to additional volumes of storm water, sewage and runoff. How will the present system handle the additional volume of water and insure that our existing problem won't become worse.

- **Answer:** This new subdivision will have no effect on our property or for future storm water drainage. We were told that huge underground, storm water retention systems would be installed under the roads and all of the water coming off of and through the storm drainage system would be "held back and stored" until dryer conditions exist and then it would be pumped into the main storm drainage system. A massive pump will be installed at the junction of this new massive underground retention system that would only pump out when it would have no effect on the current ability of the existing storm drainage system. We were further advised that this massive structure would be 6' in diameter and capable of holding any future severe rain events.

This answer seems farfetched at best and as anything that is buried underground in this area, it will be filled with ground water all the time, I cannot envision an underground retention vessel, impervious to ground water and large enough to retain flood waters as experienced in recent past months. This proposal would have to have a computerized system to decide when and at what rate it can start to introduce water into the main storm water drainage system and how reliable can that be?

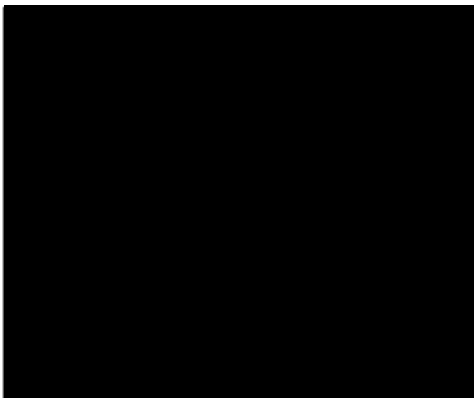
My next area of concern was with grade. Every time new construction takes place the next project is built higher than the last. The engineer from Dillon concurred with this. I made the point that even 1 foot in elevation is not visible to the eye, but water will take full advantage of this and the runoff, especially like the recent incident with heavy rain on frozen ground. He agreed that water would runoff onto surrounding properties, but would be absorbed by additional drainage tile located in our backyard. These small drainage tiles are in my experience extremely inadequate for reliable removal of even small amounts of water and become geysers during severe rain events, spewing water into the air in some cases. I'm sure that when the

ground is frozen they are completely ineffective in handling any water capacity. Our properties and roadways will no doubt receive any and all surface runoff from this development. Our neighbours to the west on Flanders Road already appear (to the naked eye) to be substantially lower in grade than the existing soy bean field adjacent to the rear of their properties.

In conclusion it is apparent that there is insurmountable evidence that this type of development is detrimental to all land owners within the Russell Woods Pumping Station Boundary. Notices of the public meeting only allowed for one week for people to prepare and examine the large volume of information accrued in relation to this proposal. Many residents that are affected were not home (south for the winter) and many more are unaware of the fact that they are connected to this same system. The 'optics' are not good in relation to public notification. It is difficult to get people to speak up when they see a completed draft plan of subdivision delivered to their homes leaving the typical feeling of this being a 'done deal'.

This therefore is my personal appeal to everyone involved in this process to do the right thing and carefully examine the facts. A simple rubber stamp approach cannot be dealt to this complex situation that will affect current landowners and the potential future property owners on this site. I really do want to be standing in my hip waders, pumping my basement out (again) during any future catastrophic rain events watching my furnace and hot water tank go under water again and have someone say, "I guess you were right, my bad". Once a project of this scale is commenced, there is no turning back.

Respectfully submitted:



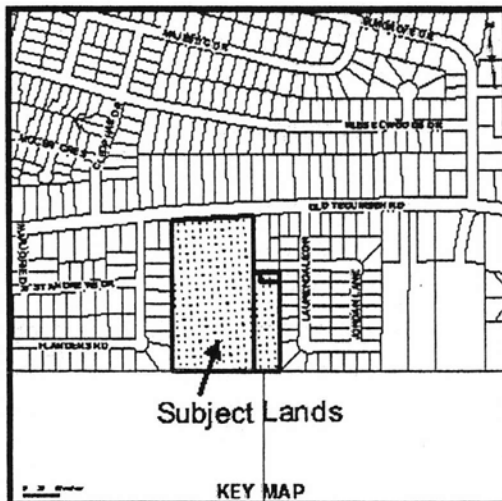




## NOTICE OF OPEN HOUSE

### Draft Plan of Subdivision (S-A-02-2015); County of Essex File No: 37-T-15001 & Zoning By-law Amendment (ZBA-15-2015) UNDER THE PLANNING ACT

The Town of Lakeshore has received applications for consideration of a Draft Plan of Subdivision and a Zoning By-law Amendment on a 4.92 hectare (12.16 acre) parcel of land on the south side of Old Tecumseh Road (County Road 2), in the Town of Lakeshore and as detailed in the Key Map below. The draft plan of subdivision is for 60 residential dwelling lots, consisting of a mixture of single detached residential dwellings, semi-detached dwellings and townhouse dwellings to be developed on full municipal services. The municipality will be processing the applications in accordance with the Planning Act and has scheduled an **Open House** to obtain feedback from area landowners and receive comments from municipal departments and public agencies. Town Council cannot make a decision on the draft plan of subdivision application until a Public Meeting has been held in accordance with the Planning Act. Please note the approval authority for the draft plan of subdivision is the County of Essex, c/o William King, MCIP, RPP, Manager of Planning, 360 Fairview Avenue West, Essex, Ontario, N8M 1Y6. **Notice of a Public Meeting to receive comments on the applications will be provided in the future in accordance with the Planning Act and the Town's Official Plan.**



Following is a brief description of the location of the subject lands:

#### Location:

The subject property as identified in the key map is located south of Old Tecumseh Road (County Road 2), and west of Laurendale Drive. It's comprised of a total area of 4.92 hectares (12.16 acres) and is located within the Town of Lakeshore (former Township of Maidstone). The total land area is designated and zoned for residential uses.

#### An OPEN HOUSE will be held on:

**Date:** Tuesday, March 27, 2018  
**Time:** 5:00 pm to 7:00 pm  
**Location:** Atlas Tube Centre, (Renaud Room)  
447 Renaud Line Road, Lakeshore

#### Proposal:

The applicants, 1903286 Ontario Inc. / Jack Mocerri & Sons Contracting Limited (Walkerview Subdivision) have submitted a Draft Plan of Subdivision application for 60 residential units consisting of 14 single detached dwelling lots, 14 blocks of semi-detached dwellings (28 dwelling lots) and 6 blocks (3 unit) townhouses (18 dwelling lots) (see draft plan on reverse side) on a 4.92 hectare (12.16 acre) parcel of land, that is designated "Residential" and zoned "R1, Residential – Low Density".

The applicant has also submitted a concurrent Zoning By-law Amendment application to rezone the subject lands from the "R1, Residential – Low Density" zone to a "R1, Residential in holding" for the single detached dwelling lots and to a site specific "R2, Residential – Medium Density in holding" zone to permit the semi-detached dwellings and townhouses as proposed. The "holding" symbol shall not be removed until such time as a subdivision agreement is executed by the owner and the municipality, and the development receives final approval by the County of Essex.

To view the municipality's Official Plan, please access the website at [www.lakeshore.ca](http://www.lakeshore.ca). Click "Build Lakeshore/ Planning Overview" and select "Official Plan" to view the Residential designation policies as found in Section 6.

To view the municipality's Zoning By-law, please access the website at [www.lakeshore.ca](http://www.lakeshore.ca). Click "Build Lakeshore / Planning Overview" and select "Zoning By-law".

ANY PERSON may attend the **Open House** to discuss their comments and concerns with the applicant and municipal planning staff on **March 27, 2018**.

Your comments on this matter are important. If you have comments on this application, they may be forwarded by phone, email or mail to the attention of:

Maureen Emery Lesperance, CPT  
 Planning Coordinator  
 Town of Lakeshore  
 Telephone: (519) 728-1975 ext. 286  
 Fax: (519) 728-4577  
 Email: mlesperance@lakeshore.ca

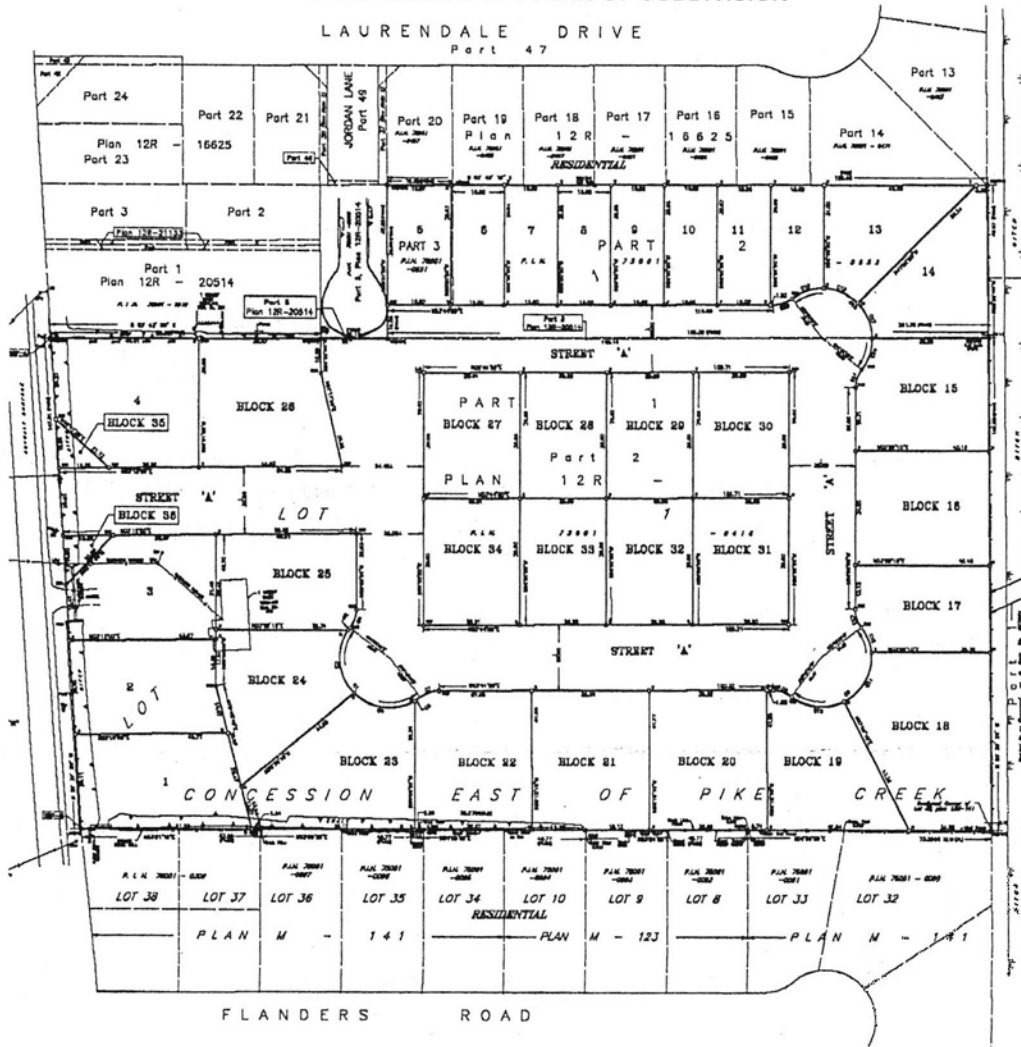
Comments and opinions submitted on this application, including your name and address, may become part of the public record and may be viewed by the general public and may be published in a Planning report. Representatives of the applicant and Town staff will be in attendance at the open house to answer questions with respect to the proposed draft plan of subdivision. Written and verbal submissions from the public at this open house will become part of the file to be forwarded to the County of Essex, the approval authority for plans of subdivisions.

**ADDITIONAL INFORMATION** relating to this matter is available for review at the Municipal Office (Town of Lakeshore), Development Service Department, Planning Division, during regular office hours (8:30 a.m. to 4:30 p.m.).

**DATED AT THE TOWN OF LAKESHORE THIS 9th DAY OF MARCH, 2018.**

Kim Darroch, B.A., M.PL., MCIP, RPP,  
 Manager of Development Services – Town Planner  
 Town of Lakeshore  
 419 Notre Dame Street,  
 Belle River ON, N0R 1A0  
 PHONE: 519-728-2700 x 245;  
 FAX: 519-728-4577  
 EMAIL: kdarroch@lakeshore.ca

**PROPOSED DRAFT PLAN OF SUBDIVISION**



March 22, 2018

**Attention:**

Maureen Emery Lesperance, CPT  
Planning Coordinator  
Town of Lakeshore  
[mlesperance@lakeshore.ca](mailto:mlesperance@lakeshore.ca)

**Re: Draft Plan of Subdivision (S-A-02-2015); County of Essex File No:  
37-T-15001 Zoning By-Law Amendment (ZBA-15-2015) Under the  
Planning Act**

Please find enclosed an overview of the current status of the subject lands captionally noted above. This report is being submitted for consideration by adjacent land owners. This area has been the site of numerous Catastrophic flooding events before and after this report was conducted by Stantec Consulting Ltd and commissioned by the Town of Lakeshore dated: November 22, 2013.

**Russell Woods Pumping Station Improvement – Town of Lakeshore Drainage  
Report Project No: 65600568-193 – (see attached)**

This report was conducted by Stantec Consulting Ltd, 140 Ouellette Place, Suite 100 Windsor, ON N8X 1L9. Report was completed by: Sam Paglia B.A.Sc. Civil Engineering / Reviewed and approved by: Don Joudrey, P. Eng. – Project Manager Stantec Consulting Ltd. Both Engineers signed off on this report: 22-Nov-13 under seal of Licensed Professional Engineers in the Province of Ontario. This report was addressed to the Attention of Mayor Tom Bain and Members of Council, Town of Lakeshore.

- The scope of this report was to investigate the cause of flooding events within the Russell Woods Drainage Area Plan – Investigate the addition of a back-up power generation system.
- The subject property described in this subdivision proposal falls within the Russell Woods Drainage boundaries as laid out in this report.

- As a result of this report, a back-up power generation system was added as well as safety related infrastructure and cosmetic improvements – flow rate and capacity were not addressed.
- It is indicated within the report that any projects undertaken to increase the flowrate of flood waters would be cost prohibitive
- This report was based on historical data based on the Windsor Atmospheric Environment Services (AES) for storm water flows **prior to 2013**.
- This report clearly describes this area as having: poorly drained soil conditions, past flooding events, and some previous attempts to provide sufficient drainage
- **This report clearly states on two separate occasions that the current system does not have the capacity to handle any changes in land use within the watershed that would increase the amount of runoff generated by the current conditions.**

### Catastrophic Weather Events and Climate Change

- The Stantec report is based on recorded historical weather data prior to 2013
- Since the report was submitted most of North America has been dealing with severe flooding incidents and the projection is that these incidents will become more severe going forward
- Lakeshore Residents located within the Russell Woods Pumping Station Area have been particularly hard hit with flooding both inside homes and flooding of property
- Recent events include a warning to residents not to use any water or allow waste water to enter the system as the system was overwhelmed with snow melt
- ERCA has issued flood warning to this area without precipitation, due to excessive ground water and a north wind off of Lake St. Clair tributaries within the Town of Lakeshore and lakeshore properties are at risk of flooding
- Many homeowners have exhausted both their insurance coverage for flood damage and attempts to remove their homes from danger of water entering basements (backwater valves, disconnection of downspouts etc.)
- Town of Lakeshore engineering spokespeople have referred to this area and the removal of heavy precipitation events as a “martini glass” which is wider at the top and has to slowly work its way down through a restricted system of pipes, roadways are supposed to work as “retention ponds” and hold water until the pumps can catch up.

Unfortunately once the system is “full” and the streets are flooded (August 2017 for up to 12 hours) Sump pumps became useless and water poured back into homes.

- With increased water saturation, hydrostatic pressure has become a problem for some home owners

### Media Releases Pertaining to Flooding – Mayor of Lakeshore - Comments

- “Lakeshore’s Rapid Growth Rate – has put pressure in its drainage systems”
- Mayor Bain responded: “When you get more homes, that’s covering more green space and hardtop, so you’ve got a lot more runoff, You’ve got to handle that water because it’s – boom – there instantly. When it comes real fast and real hard, the system can’t handle it.”
- Lakeshore spending \$350,000.00 to develop a storm water master plan in hopes of preventing the impact of devastating floods like that experienced during the two “storms of the century “since September 2016
- Heavy rain events, weather anomalies are worsening
- (see attached related articles – news releases)

### Environmental Concerns

As outlined in the Stantec report 6560568-193 page 8, there are some environmental concerns with development on this property.

#### **Eastern Fox Snake:**

Brown blotches on a creamy yellow background. Their belly has black blotches on white. Due to their coppery head colour, they are sometimes mistaken for a species not found in Ontario, the venomous copperhead. When threatened, wild specimens will release a strong musk and often vibrate their tails, thus they are often mistaken for rattlesnakes. Mainly rodent feeders, fox snakes also eat small birds and eggs.

**Focus area: Protection**

**Objective:** Identify and protect the habitat of Eastern Foxsnakes within their current distribution.

**Actions**

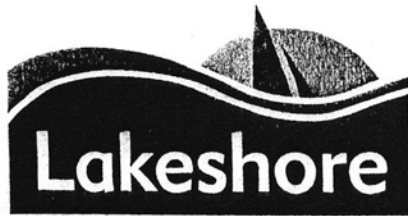
4. **(High)** Develop and promote best management practices to encourage management of rural landscapes that is compatible with the needs of snake populations.
5. As opportunities arise, support the securement of lands that contain Eastern Foxsnake sub-populations through existing land securement and stewardship programs.

Not listed in the Stantec report:

Endangered:

Little Brown Bat: (*myotis lucifugus*)

A summer colony of this endangered species (schedule 2, item 112) is known to exist on this property.



## TOWN OF LAKESHORE

419 Notre Dame St.  
Belle River, ON NOR 1A0

November 22, 2013

### NOTICE OF DRAINAGE WORKS

THE DRAINAGE ACT R.S.O. 1990, SECTION 41 (1)

MUNICIPALITY OF THE TOWN OF LAKESHORE

Dear Sir or Madam:

You are hereby notified that the Engineer appointed for the purpose did on **November 22, 2013** file at my office his preliminary report respecting the:

### RUSSELL WOODS PUMP STATION IMPROVEMENTS

The Drainage Board of the said Municipality will meet on:

**MONDAY, DECEMBER 16, 2013  
6:00 P.M.**

**AT**

**THE TOWN OF LAKESHORE  
MUNICIPAL COUNCIL CHAMBERS  
419 NOTRE DAME STREET  
BELLE RIVER**

When the said report will be considered.\*

An electronic copy of this report including Appendix A, Appendix B, and the specifications for the work and excluding the Assessment Schedule can be found at the following websites: Town of Lakeshore Website – Drainage and Storm Water Page:  
[http://www.lakeshore.ca/lakeshore\\_1.php?page=12](http://www.lakeshore.ca/lakeshore_1.php?page=12)

Yours truly,

BLAISE CHEVALIER  
ASSISTANT DRAINAGE SUPERINTENDENT

/sr

# Russell Woods Pumping Station Improvements Town of Lakeshore Drainage Report

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Prepared by:

Stantec Consulting Ltd.

140 Ouellette Place, Suite 100

Windsor, Ontario N8X 1L9

Tel: (519) 966-2250

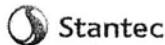
Fax: (519) 966-5523

November 22, 2013

Project No.: 65600568-193







## RUSSELL WOODS PUMPING STATION IMPROVEMENTS

6560568-193

22/11/2013

**Town of Lakeshore**  
**419 Notre Dame St.**  
**BELLE RIVER, Ontario**  
**N0R 1A0**

**Attention: Mayor Tom Bain and Members of Council**

**Subject: Russell Woods Pumping Station Improvements DRAINAGE REPORT**  
**Township of Maidstone**  
**Town of Lakeshore**

### 1.0 INTRODUCTION

Stantec Consulting Ltd. has been appointed to prepare a Drainage Report for the Russell Woods Pumping Station to address concerns of power loss and capacity with respect to the pumping station and hereby submit this Drainage Report for the improvements to the Russell Woods Pumping Station.

This report was prepared in accordance with Section 78 under the requirements of the Ontario Drainage Act R.S.O. 1990, as amended, further to correspondence received from the Assistant Drainage Superintendent of the Town of Lakeshore on August 29, 2011, and in accordance with the Council Resolution dated July 14, 2009. This report serves to supersede any previous reports as the most recent engineers' report in response to the request for drainage repair and improvements regarding the Russell Woods Pumping Station.

A request for storm water improvements was received by the Town of Lakeshore on August 23, 2011 by Gerald Stecyk, owner of Roll No. 210000472020000. Gerald requested that improvements be made to the existing Russell Woods Pumping Station, specifically the installation of a backup power generator that would enable the pumping station to continue operating during power outages. It has also been reported that during outages and on other occasions, isolated road flooding has occurred. Through Stantec's review of the previous engineers' reports, discussions with the Town of Lakeshore and land owners, it was decided that a full examination of the pumping station would be required to ascertain its operational capabilities under its current condition.

#### 1.1 WEBSITES

An electronic copy of this report including Appendix A, Appendix B, and the specifications for the work and excluding the Assessment Schedule can be found at the following websites:

Town of Lakeshore Website – Drainage and Storm Water Page:

[http://www.lakeshore.ca/lakeshore\\_1.php?page=12](http://www.lakeshore.ca/lakeshore_1.php?page=12)

Stantec Consulting File Transfer Protocol (FTP) site:



## RUSSELL WOODS PUMPING STATION IMPROVEMENTS

6560568-193

22/11/2013

### Automatic Login

**FTP site link:** <ftp://s1205093723:2444120@ftptmp.stantec.com>

By clicking on the link above (or pasting the link into Windows Explorer) you will be automatically logged into the FTP site.

### Manual Login

**FTP link:** <ftp://ftptmp.stantec.com>

**Login name:** s1205093723

**Password:** 2444120

**Disk Quota:** 2GB

## 2.0 DESCRIPTION OF DRAIN AND WATERSHED

A review of previous engineers' reports supplemented by field inspections and discussions with residents were used to determine the watershed served by the Russell Woods Pumping Station. An examination was also made of the various land uses and parcels of land in the drainage area where the extent of the residential and urbanized development was noted. Although it was found that a previous engineer's report (Peralta, 1995) was generally accurate in its drainage area and associated assessment schedule, it was noted that areas within the watershed have since been sub-divided and undergone changes in their land usage. Specifically, the Laurendale and Mocerri subdivisions, which were not completed at the time of the Peralta report. Stantec's review of the watershed has included these areas and their land uses have been considered in the calculations of the estimated runoff for the purpose of analyzing the pumping requirements at the Russell Woods Pumping Station, as well as in the assessment of lands.

From the October 5, 2011 on-site meeting, Stantec investigated the claim by Ms. Nancy Richter (400 Old Tecumseh Rd), which indicated that storm water run-off from the Vintage Oak Subdivision is entering into the Russell Woods Pumping Station. Stantec documents from a review of the subject area and topographic drawings from Clark Surveyors in 2003 showed that the storm water from the lots within Vintage Oak that are fronting Old Tecumseh Road use the ditch to the north and water is conveyed at a .12% slope to the East toward the Leffler Drain. The rear yards of the lots backing onto the Russell Woods Drainage Area are sloping toward the boundary of the watershed, but are equipped with rear yard drains which divert stormwater to the Vintage Oak Drainage System, which also uses the Leffler Drain as its outlet. Therefore, the Vintage Oak subdivision will not be assessed for the works within the Russell Woods Drainage Area. Details of the current drainage boundary can be found in the attached drawing **DR-101 – Drainage Area Plan** showing the extents of the area served by the Russell Woods Pumping Station.

## 3.0 DRAIN HISTORY

The drainage system that is served by the Russell Woods Pumping Station consists of a combination of open and enclosed gravity flow drains. The majority of the system is maintained as part of the Town's public works infrastructure, while some portions, including the pumping station itself, have been established under the auspices of the Drainage Act. Stantec's historical review of work completed under

previous engineers' reports has determined that the Russell Woods Pumping Station was established as part of the municipal drain under a report entitled "*Russell Woods Pumping Station and Elmgrove Drive Drainage and Pumping System*" authored by N.J. Peralta, P.Eng. dated August 25<sup>th</sup>, 1995. Maidstone Township By-law No. 4321-D-95 was passed to provide for this drainage work. The pumping station was originally constructed in March of 1988 as part of the Russell Woods Estates Residential Development. Prior to the 1995 Peralta report and subsequent By-law, the pumping station was not considered to be part of the municipal drain under the Drainage Act.

The above mentioned engineer's report makes recommendation for the abandonment of a portion of the Elmgrove Drive Drainage and Pumping System pursuant to Section 84 of the Drainage Act. The Elmgrove Drive Drainage and Pumping System was established over the years as a Municipal Drain under reports by C.G.R. Armstrong dated May 17<sup>th</sup>, 1962 and December 13<sup>th</sup> 1973. In addition to portions of the Elmgrove Drive drain, it was recommended that the Elmgrove Drive Pumping Station be decommissioned and abandoned. It was also recommended that the remaining portions of the original Elmgrove Drive Drainage System remain as a Municipal Drain and be known as the "Elmgrove Drive Drain". The report further recommended that the Russell Woods Pumping Station be established as a Pumping Station under the Drainage Act. Maintenance Schedules of Assessment for the newly established Elmgrove Drive Drain, as well as for the Russell Woods Pumping Station, were included in the report.

In addition to our historical examination of the Russell Woods and Elmgrove Drive Drainage and Pumping Systems, Stantec has reviewed the reconsidered *East Pike Creek Road Drainage System* report prepared by E.O. Lafontaine, P.Eng. dated September 22<sup>nd</sup>, 1987. This report was later appealed to the Drainage Tribunal in 1988. Under this report, a new covered drain, including catch basins, manholes and appurtenances, was constructed along the east side of East Pike Creek Road between Old Tecumseh Road and the Russell Woods Pumping Station. This new drain was connected to the pumping station, and as a result, the drainage area previously served by the pumping station was expanded. The additional area included the lands located along Old Tecumseh Road between East Pike Creek Road and Elmgrove Drive. Prior to this work, these lands drained directly into Pike Creek via the Tecumseh Road Drainage System.

At the time of the 1987 Lafontaine report, the Russell Woods Pumping Station was being constructed by South Canada Property Developing Company Ltd. and was to operate with two, 25 HP pumps. Provisions were also made at this time for capacity upgrades to the pumping station by leaving space vacant for a third pump. The Lafontaine report provided for the installation of the third pump, complete with controls and ancillary equipment. It was also recommended that the cost of maintaining and operating the new pump be assessed to all those properties receiving its service and not solely to those within the drainage area along Old Tecumseh Road. This included all lands in the Russell Woods Estates Subdivision and any other lands drained by the pumping station.

Also reviewed during Stantec's examination was the Tecumseh Road Drainage System, specifically the report prepared by E.O. Lafontaine, P.Eng. entitled "*Tecumseh Road Drainage System*" (1987). In his report, Mr. Lafontaine recommends that improvements be made to the existing Tecumseh Road Drain on both the north and south sides of the roadway and that the entire works be known thereafter as the Tecumseh Road Drainage System. The improvements included covering portions of the existing drains on both sides of the road, lowering and re-grading some of the open portions of the drains, and the

installation of manholes, catchbasins and appurtenances to serve the drainage system. This report was considered in our analysis of the watershed limits of the Russell Woods Pumping Station.

Preliminary discussions with the Town Drainage Superintendent highlighted potential issues with the condition of the Russell Woods Pumping Station as the cause of isolated flooding within the pumping station's watershed. These flooding problems were reported by land owners whose on-site meeting comments and feedback have suggested that the pump station ceases to operate during power outages and should therefore be upgraded to include back-up power generation. Through analysis of the drainage area served by the pumping station, as well as an examination of the capacity of the three existing pumps intended to serve this area, it has been concluded that not only would the residents benefit from back-up power generation as a safeguard during power outages, but that the existing pumps are operating sufficiently for the current drainage area, but do not have the capacity to handle any changes in land use within the watershed that would increase the amount of runoff generated by the current conditions.

The content of this Report is the result of extensive hydrologic modeling, discussions from the required official meetings as per the Ontario Drainage Act, onsite investigations, review and discussion of comments from landowners within the watershed, and correspondence with the E.R.C.A. and the Town of Lakeshore.

Over the years, a notable amount of work has been completed involving the Russell Woods drainage area and the pumping station. This has included improvements to Tecumseh Road and Elmgrove Drive residential developments and upgrades, the installation of a pumping station facility, and improvements to the drain itself. As part of Stantec's examination, a historical review of the drain was completed, which included a number of Engineers' reports. Additionally, pertinent reports and detailed design drawings that were not completed under the Drainage Act were reviewed.

A summary of the reports reviewed is provided below:

- C.G. Russell Armstrong, July 3 1970. Tecumseh Road Drain in Lot 1, East of Pike Creek. Plan and profile view of the Tecumseh Road Drain from East Pike Creek Road to Patillo Road.
- LaFontaine, Cowie, Buratto & Associates Limited (LCBA), June 30 1987, revised September 22 1987. East Pike Creek Road Drainage System. Plan/profile design drawings of improvements to the storm sewer system along Elmgrove Drive from Tecumseh Road to Russell Road.
- LaFontaine, Cowie, Buratto & Associates Limited (LCBA), 1987. Tecumseh Road Drainage Area. Report on the Russell Woods Drainage Area, which consisted of 42.08 hectares of which approximately 16 hectares of residential development south of Tecumseh Road were undeveloped. Construction drawings for the Tecumseh Road Drainage System works were also prepared by LCBA in 1990.
- Thames Valley Engineering Inc. Consulting Engineers March 27, 1987. Russell Woods Pump Station Report including detailed plans, which provided a complete design and as-built drawings



for the existing pumping station, along with the installation of 92m of 1200mm dia. storm sewer connection to the pumping station.

- N.J. Peralta Engineering Ltd., August 25 1995. Russell Woods Pumping Station and Elmgrove Drive Drainage and Pumping System. A report to support the abandonment of a section of the Elmgrove Drive Drainage System drain as well as the pumping station.

In addition to the Engineer's reports authored under the provisions of the Drainage Act or a predecessor thereof, the following documents were also reviewed as part of Stantec's examination:

- A.A. Boscarol and Associates, 1979/1980. Flanders Subdivision Phase 1 & 2. Report providing a design for the residential development of 5.95 and 4.08 hectare parcels of land respectively, including storm sewer outlet details.
- Thames Valley Engineering Inc. Consulting Engineers, 1986. Russell Woods Development Phase 1 Drawings providing storm sewer details for the Russell Woods 36 lot residential development of a 4.59 hectare parcel of land on the south side of Elmgrove Drive and the east side of East Pike Creek Road.
- Thames Valley Engineering Inc. Consulting Engineers, 1987. Russell Woods Development Phase 2 drawings providing storm sewer details for the Russell Woods 49 lot residential development of a 6.04 hectare parcel of land between East Pike Creek and Cleophas Drive.
- Thames Valley Engineering Inc. Consulting Engineers, 1987. Russell Woods Development Phase 3 Drawings providing storm sewer details for the Russell Woods 29 lot residential development of a 4.13 hectare parcel of land along Majestic drive south of Elmgrove Drive and north of Russell Woods Drive.
- Thames Valley Engineering Inc. Consulting Engineers, 1988. Russell Woods Development Phase 4 drawings providing storm sewer details for the Russell Woods 51 lot residential development of a 6.70 hectare parcel of land along Russell Woods Drive and Fasan Crescent.
- Hanna, Ghobrial and Spencer Ltd., 1997. Moceri Crescent Development. Drawings providing site servicing details and plan/profile views of the development of a 2.38 hectare parcel of land on Nicole Court & Moceri Crescent.
- Hanna, Ghobrial and Spencer Ltd., May 17 1999. Laurendale Subdivision. These plans provided site services and plan/profile views of a 4.43 hectare residential development of the Laurendale Subdivision south of Tecumseh Road.
- Dillon Consulting, 2004. Jordan Lane Phase 2. Drawings providing details on the development of a 2.13 hectare residential area on Jordan Lane, south of Tecumseh Road.



## RUSSELL WOODS PUMPING STATION IMPROVEMENTS

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### 4.0 ON-SITE & SUPPLEMENTARY MEETINGS

An onsite meeting was held on Wednesday, October 5, 2011 at 9:00 a.m. at St. Andrew's Church at 235 Amy Croft Drive in the Town of Tecumseh. Notices were sent out by the clerk to all residents currently assessed into the Russell Woods Pumping Station. Meeting Minutes are included in **Appendix A**.

Several meetings between the Town and Stantec were held onsite to discuss issues and determine the possible solutions. Notes from the meetings with respect to the Russell Woods Pumping Station can also be found in **Appendix A**.

### 5.0 EXISTING CONDITIONS

The Russell Woods Pumping Station is located at the west limit of East Pike Creek Road at the south west corner of Roll No. 210000508000000. The pumping station provides drainage for a number of residential subdivisions within the northwestern section of East Pike Creek River (within the former Township of Maidstone). This includes the Russell Woods Subdivision, Flanders Subdivision, Gates of Laurendale, and Jordan Woods. The pumping station also drains the residential areas situated along Elm Grove Drive, Old Tecumseh Road and East Pike Creek Road. Stormwater is conveyed to the pumping station through the entire watershed by a system of municipal drains and storm water sewers.

### 6.0 DESIGN CRITERIA AND CONSIDERATIONS

There are two (2) main types of soils in the watershed, Wauseon Sandy Loam, and Bottom Land. The Wauseon Sandy Loam mainly covers the watershed, and the Bottom Land surrounds the area of the canal. The land is nearly level with moderately severe limitations for crop use because of the ability of the soil to saturate in the soil profile. The drainage is poor for the hydrological soil group C, and course sandy loam is the texture for the A horizon of the soils profile.

A preliminary model was generated using PCSWMM, a hydrodynamic modeling and analysis software package used by engineers in the design and management of water resources. Stormwater flows were calculated using the Windsor Atmospheric Environment Services (AES) regional type storms and compared with shorter duration, higher intensity storms. The physiographical features of the watershed were applied in the generation of runoff hydrographs for the study area. Total expected flow was determined through both physical calculations and modeling and it was determined that the existing pumping station has sufficient capacity for the current drainage area, but does not have excess capacity to handle any changes in land use within the watershed that would increase the amount of runoff generated by the current conditions.

Through correspondence with the Town, Static has been informed that the Town has completed recent maintenance to the pumping station and has installed a 500 mm (20") adaptor and reducer on the 450 mm (18") shaft on pump No.1. The Town has reported that the pumping station has been able to handle

the heavy rain fall events in July 2013 without capacity or operational issues and has suggested that the main issue at the pumping station remains power failure related.

## 7.0 ENVIRONMENTAL CONCERNS

An official inquiry was made in July, 2012 requesting review and approval to satisfy the regulation under the Essex Region Conservation Authority (E.R.C.A.) for drainage works that fall within the Province of Ontario. It is a requirement that feedback and approval is obtained from all pertinent Provincial Authorities on any municipal project that falls within their jurisdiction. Upon the adoption of this report, all of the Provincial Authorities will obtain copies of the report and all pertinent information supplied by them through consultation will be addressed in the final report.

The Ministry of Ontario Species at Risk Act (SARA) provides federal legislation to prevent wildlife species from becoming extinct and provides long and short term objectives in a recovery strategy and action plan for protection and recovery. On behalf of the Ministry of Natural Resources (MNR), the Town of Lakeshore Drainage Superintendent has reviewed the details of the proposed drainage works with respect to the Endangered Species Act. This review has been conducted by the Town pursuant to an agreement with the Ministry of Natural Resources (MNR) under Section 23 of Ontario Regulation 242/08 of the Endangered Species Act which allows a municipality to review drainage projects under certain sections of the Drainage Act to determine potential impacts on endangered species identified as existing within the municipality, specifically within the area requiring drainage.

In a response letter from the Town of Lakeshore Drainage Superintendent dated December 3, 2012, entitled "Endangered Species Act review - Russell Woods Pumping Station", the provisions of the Endangered Species Act that may apply to this project have been identified. **Table 7.1** displays the endangered species which may be encountered at the project site, and their current threat level.

**Table 7.1 – Species at Risk**

| POSSIBLE ENCOUNTERS OF ENDANGERED SPECIES |                     |              |                       |                       |              |
|---|---------------------|--------------|-----------------------|-----------------------|--------------|
|   | Species             | Threat Level |                       | Species               | Threat Level |
| <b>Fish Species</b>                       | Eastern Sand Darter | Endangered   | <b>Turtle Species</b> | Spotted Turtle        | Endangered   |
|   | Northern Madtom     | Endangered   |                       | Eastern Musk          | Threatened   |
|   | Spotted Gar         | Threatened   |                       | Spiny Softshell       | Threatened   |
|   | Channel Darter      | Threatened   |                       | Blanding's Turtle     | Threatened   |
| <b>Mussel Species</b>                     | Not present         | N/A          | <b>Snake Species</b>  | Eastern Foxsnake      | Endangered   |
|   |                     |              |                       | Butler's Garter Snake | Threatened   |

In recognition of the impacts that these species may experience as a result of the subject works, the Town has made available comprehensive mitigation measures as well as species identification guides for reference. These documents will be included as part of the contract documents and must be followed by the Contractor throughout construction.

The Contractor must be familiar with the mitigation plans and Ontario Identifier Guidelines for turtles and snakes and be responsible for providing the necessary equipment and materials required in the mitigation plans. The Contractor should contact the Town of Lakeshore Drainage Superintendent immediately if any endangered species are encountered during construction.

Work on the Russell Woods Pumping Station will take place during specified times of the year so as to not disrupt the habitat and the natural course of any sensitive species present. In order to mitigate any disturbance of the existing drain inhabitants, no in-water work can proceed between March 15 and June 30 which is the Restricted Activity Period (RAP) set out by the Department of Fisheries and Oceans.

## **8.0 FINDINGS AND PROPOSED DESIGN**

Further to our survey, investigation, review of previous drainage reports, calculations of cost estimates and consultation/correspondence with the Drainage Superintendent, the manager of Public Works, and the Director of Engineering and Infrastructure for the Town of Lakeshore. The following section provides the recommendation for consideration.

Upon adoption of this Report and direction by the Lakeshore Drainage Board, all costs have been assessed for benefit, special benefit and outlet liability by the engineer to all affected lands pursuant to Section 21 - 28 of the Drainage Act and are included in the attached Assessment Schedule.

Any work performed on the Russell Woods Pumping Station should be completed according to provincial standards and in a manner satisfactory to the engineer, provincial conservation authorities and the Town of Lakeshore.

### **8.1 RECOMMENDED SOLUTION – INSTALL BACKUP GENERATOR**

The addition of a backup generator to the existing pumping station with no improvements to the pumps, but improvements to the electrical system currently in place. The new generator will be encased in an exterior housing adjacent to the existing pumping station as there is not enough room inside the existing station to accommodate a generator. Cable Concrete erosion protection will also be installed at the banks of the pumping station in this option by request from the Town Drainage Superintendent, and an iron fence will enclose the property by same request. The following is a summary of the proposed work:

1. No work is proposed to the existing pumps.
2. Install upgrades to the current electrical system to accept the installation of a Kohler 600V Diesel backup generator with capacity to power the three (3) existing 6500 USGPM (410 L/s) axial flow pumps;



3. Install iron fencing around the perimeter of the existing pumping station; and
4. Install Cable Concrete erosion protection on the west banks of the existing pumping station.

## 9.0 COST ESTIMATES

Stantec estimated the probable cost of the works herein to be \$208,303.00 and is made up as follows:

### 9.1 PART "A" – PROBABLE COST OF CONSTRUCTION

**Table 9.1 – Part "A" – Probable Cost of Construction**

| Item No.                                       | Item   | Cost (\$)           |
|--|--|---------------------|
| 1)   | Excavate, form and prepare a 2600 mm x 1040 mm concrete pad to support a 125kW 600V Diesel Generator.  | \$16,000.00         |
| 2)   | Supply and install a Kohler Model 125REOZJG, 600V Diesel Generator, including one sound /weatherproof housing and generator set skid mounting with complete enclosure and sound inhibitor. | \$60,000.00         |
| 3)   | Supply and install 50 m <sup>2</sup> of the Cable Concrete Erosion Control System on the Creek banks.  | \$25,000.00         |
| 4)   | Supply and install 70 m of decorative iron fence around perimeter of the Pumping Station   | \$22,500.00         |
| 5)   | Upgrades to the electrical equipment in the Pumping Station  | \$18,000.00         |
| 6)   | Traffic control  | <u>\$500.00</u>     |
| <b>TOTAL FOR PART "A" - CONSTRUCTION COSTS</b> |  | <b>\$142,000.00</b> |

All quantities and costs included in this report are estimates only and were prepared by the undersigned in so far as practical to do so under Section 10 of the Ontario Drainage Act.

### 9.2 PART "B" – INCIDENTAL COSTS

Incidentals consist of engineering fees as well as other miscellaneous costs. They include, but are not limited to the following:

**Table 9.2 – Part "B" – Incidental Costs**

| Item No.                                     | Item   | Cost (\$)          |
|--|--|--------------------|
| 1)   | On-Site Meeting, Preliminary Watershed Review, Survey and Drafting   | \$18,560.00        |
| 2)   | Report, Estimate, Design, Specifications, meetings with town and property owners, review of documents and reports, convening and attending meetings, Administration and Expenses | \$20,450.00        |
| 3)   | Final design and drawings, preparation of report and capital cost assessment   | \$15,450.00        |
| 4)   | Office Expenses  | \$2,500.00         |
| 5)   | Estimated cost of Letting Contract including Preparation of Tender Documents and Tender Review   | \$4,000.00         |
| 6)   | Estimated cost of Full-Time Supervision, Pre-Construction Meeting and Inspections during Construction  | \$4,000.00         |
| 7)   | Net H.S.T. on Items Above (1.76%)  | \$1,143.30         |
| 8)   | Estimated Cost of E.R.C.A. Permit (if required)  | \$200.00           |
| <b>TOTAL FOR PART "B" - INCIDENTAL COSTS</b> |  | <b>\$66,303.00</b> |

### 9.3 PART "C" - ALLOWANCES AND COMPENSATION

In accordance with Section 29 of the Drainage Act, Stantec did not provide a monetary value for allowances and compensation to be paid to affected lands necessary for the improvements to the Russell Woods Pumping Station as there are NO lands required for the construction of the drainage works or for a future maintenance easement needed to service the pumping station.

### 9.4 TOTAL PROBABLE COST

**Table 9.3 – Total Probable Costs**

| Item No.                   | Item                                    | Cost (\$)           |
|----------------------------|---|---------------------|
| 1)                         | PART "A"- Probable Cost of Construction | \$142,000.00        |
| 2)                         | PART "B" - Incidental Costs             | \$66,303.00         |
| <b>TOTAL PROBABLE COST</b> |   | <b>\$208,303.00</b> |

## 10.0 ASSESSMENT

There will be no in-water works performed under this report and the amounts in the Schedule of Assessment were derived by using the quantity of storm water artificially expected to flow from each parcel, and no consideration or factor was given to any parcel of land with respect to lineal distance from work.

In accordance with the Ontario Drainage Act, assessments are provided herein as Special Benefit, Benefit, and Outlet Liability against the lands, roads, town, County and utilities that lie upstream of the proposed pumping station improvements. The Town of Lakeshore is given a Special Benefit and Benefit assessment for the request to enclose the site as well as to stabilize the adjacent shoreline of the Pike Creek.

## 11.0 FUTURE MAINTENANCE

It is recommended that the Municipality make an application for grant to the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) in accordance with Section 88 of the Drainage Act for those lands assessed as *privately owned agricultural lands*. These lands may be eligible for a grant in the amount of 1/3 of their total assessment under OMAFRA's Administrative Policies for the Agricultural Drainage Infrastructure Program.

It is further recommended that all drainage works installed under this report be kept up and maintained by the Town of Lakeshore in accordance with provisions of the Drainage Act (Section 74) at the expense of the lands and roads in proportion to the assessment outlined herein until otherwise determined. Future maintenance costs shall be levied pro-rata based on the assessment schedule with the exception that all amounts assessed for Special Benefit shall not be used for maintenance assessments.

## 12.0 SUMMARY

Preliminary investigations, cost estimates, and a detailed hydrologic watershed model for the current condition of the watershed resulted in the consideration of three (3) alternatives by Stantec in the preparation of this report. Aside from the initial request for a backup generator, Stantec considered options to upgrade the capacity of the existing pump station including pump replacement and completely replacing the pump station as well. Two (2) of the options resulted in relatively high cost estimates and were not considered a necessary operational requirement and were not considered further at this time. Supporting correspondence with the Town of Lakeshore engineering staff, and lead repair personnel indicates that the town has made recent upgrades to the pump station (July, 2013) which include a 500 mm (20") diameter pump assembly with an adapter to the existing 450 mm (18") diameter pump discharge shaft which allows for a pump upgrade in the future. The Town has reported that the pumping station has been able to handle the heavy rain fall events in July 2013 and the town has reported no incidents with the pumping station regarding capacity or operation. Stantec has verified through modeling and calculations that the pumps can handle the theoretical 2 year flows for the (AES) 1 hour intensity design storm. → 2015?

Further to the survey, investigation, review of previous drainage reports, calculation of cost estimates and consultation/correspondence with the Drainage Superintendent and the Director of Engineering and Infrastructure for the Town of Lakeshore, the following is recommended:

1. That the recommended solution of a backup generator is installed with upgrades to the electrical system for the current issues experienced within the watershed of the Russell Woods Pumping Station.



## RUSSELL WOODS PUMPING STATION IMPROVEMENTS

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2. That cable stay concrete erosion protection be installed along the banks of the pumping station.
3. That the perimeter of the pumping station be enclosed with an iron fence to prohibit trespassing on the lands from boat access or road access.

Additional costs for the works recommended within this report for the Russell Woods Pumping Station that have yet to be determined in consultation with all interested parties include, but are not necessarily limited to the following items:

- Formal instruction from the Drainage Board of Lakeshore to adopt this Report.
- Address environmental concerns including those of the E.R.C.A. and incorporate appropriate measures.
- Future maintenance of the proposed drainage solutions.

All of which is respectfully submitted

### STANTEC CONSULTING LTD.

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**Legend**

**---** DRAINAGE BOUNDARY  
 123 MUNICIPAL ADDRESS

**Notes**

| Revision | By | Appd. | YY.MM.DD |
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| File Name:         | K.F.F. | D.A.J. | D.A.J. | 2013.09.11 |
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**Permit-Seal**

Client/Project  
 TOWN OF LAKESHORE

RUSSELL WOODS PUMP STATION

Town of Lakeshore ON Canada

Title  
 DRAINAGE AREA PLAN

Project No. 65600568-193 Scale

Drawing No. DR-101 Sheet Revision





LAKE ST. CLAIR

APPROXIMATE LIMIT OF DRAINAGE AREA

SELL WOODS PUMPING STATION

PIKE CREEK

EAST PIKE CREEK ROAD

ELM GROVE DRIVE

MAJESTIC DRIVE

CLEOPHAS DRIVE

RUSSELL WOODS DRIVE

MICORI CRES.

NICOLE CRES.

OLD TECUMSEH ROAD

EAST PIKE CREEK ROAD

ST. ANDREWS DRIVE

FLANDERS ROAD

FLANDERS ROAD

LAURENDALE DRIVE

JORDAN LANE

BEL AIR CIRCLE

VINTAGE OAK

RUSSELL WOODS DRIVE



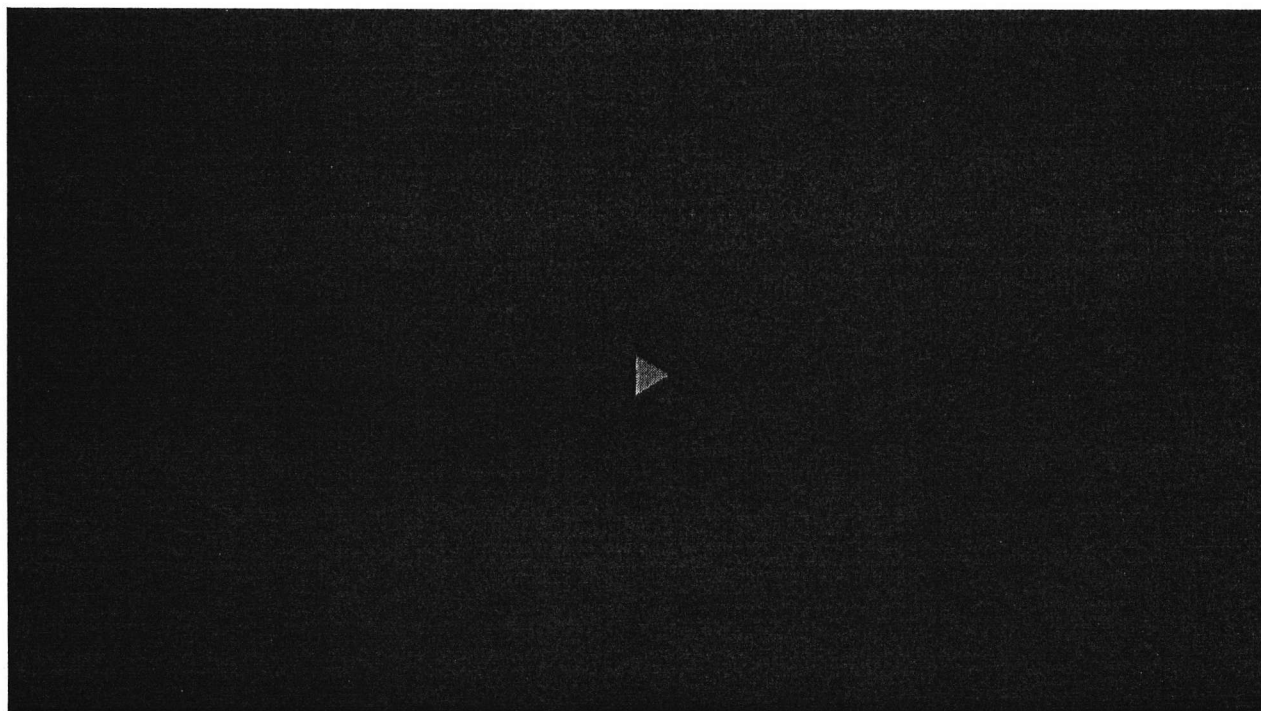
# Lakeshore lifts request that residents limit water use after heavy rainfall and snowmelt

Lakeshore's sewer system is running at full capacity after recent heavy rain and snowmelt, prompting officials to ask that residents stop showering and flushing their toilets.



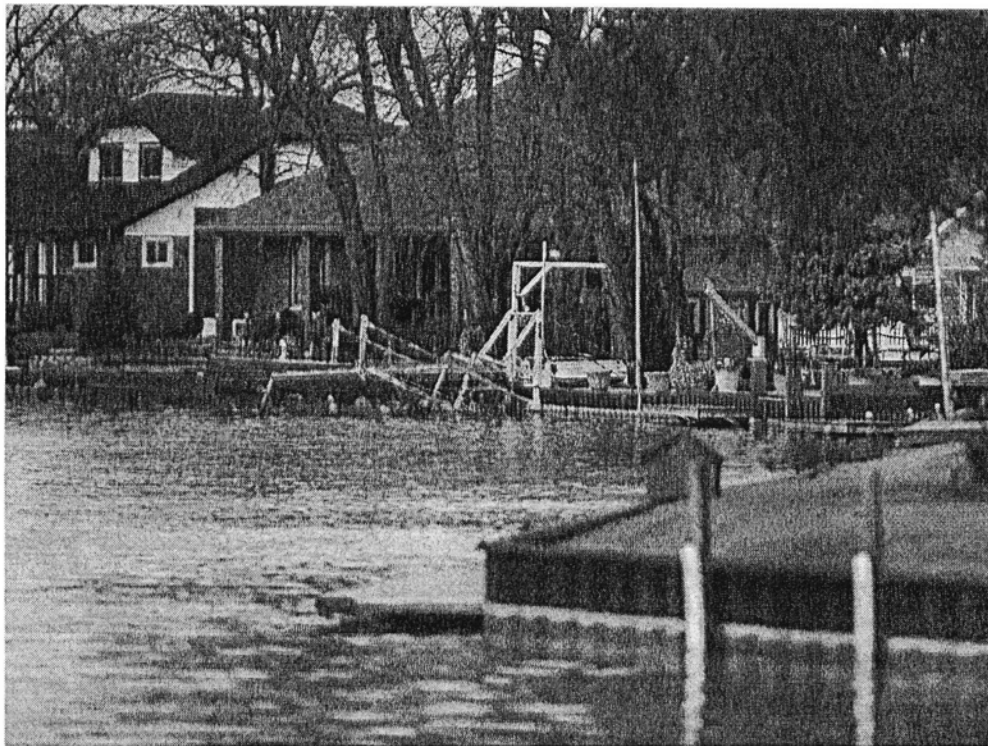
*DAVE WADDELL, WINDSOR STAR*

Published on: February 21, 2018 | Last Updated: February 21, 2018 9:56 PM EST



lines are already at capacity," said Nelson Cavacas, Lakeshore's director of engineering and infrastructure.

“Their check-valve will be energized and they can flood themselves internally doing their laundry because their lines are full.”



Houses along the Belle River in Belle River, Wednesday, February 21, 2018. The Town of Lakeshore asked residents to reduce their water use on Wednesday.  
*DAX MELMER / WINDSOR STAR*

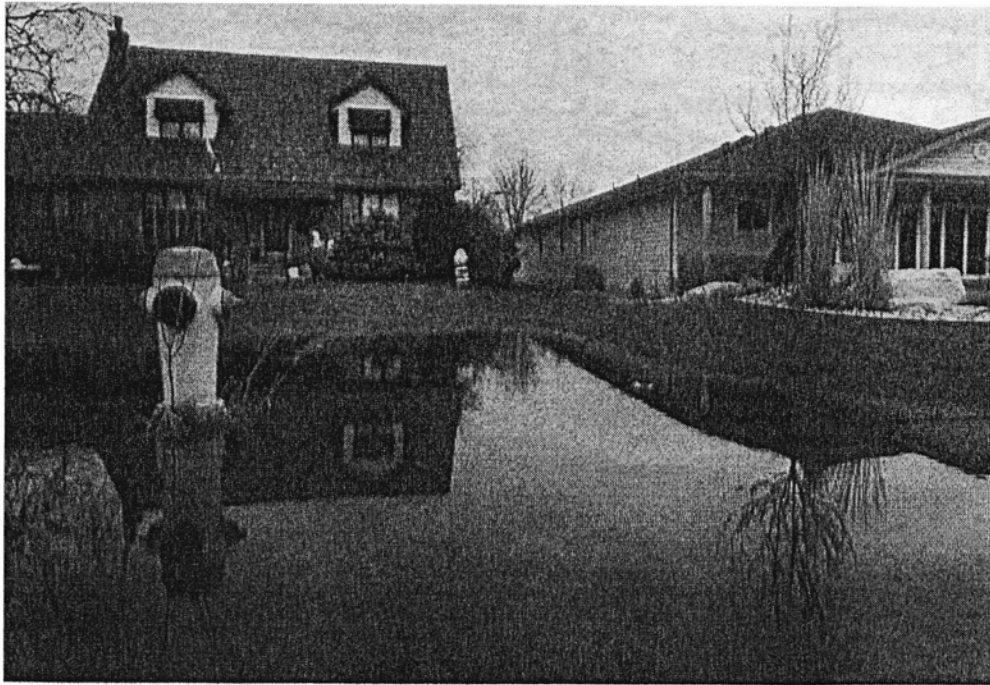
Cavacas added reports of water getting into basements has varied within the same neighbourhood depending how low lying the area is and style of home.

“If you’re up a bit and you have a home without a real deep basement (raised ranch), you might not be at risk of any problems,” Cavacas said. “Low lying areas are the problem.”

With a break in the incessant rain of the past three days, Cavacas’s hope that the system would have a chance to catch up by late Wednesday evening came to fruition. The town had hoped to speed up that process and avoid unnecessary flooding in homes by issuing the afternoon request to avoid doing laundry, running dishwashers, taking showers and flushing toilets.







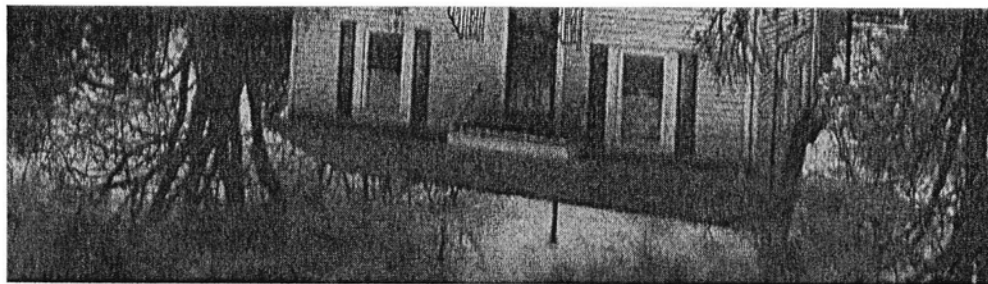
Homes with flooded front yards along Highway 42 in Belle River are pictured Wednesday, February 21, 2018. The Town of Lakeshore asked residents to reduce their water use on Wednesday. *DAX MELMER / WINDSOR STAR*

“We’re fortunate the system isn’t as inundated as during the big run last August,” Cavacas said. “The sewer system west of Puce River is operating normally.”

Cavacas said it took the system an entire day to catch up after the rain stopped falling last August.

The main problem for the town was the pipes delivering the water to the sanitary treatment plant can’t handle the volume as opposed to the plant’s capacity to process the water.





Homes with flooded front yards along Highway 42 in Belle River are pictured Wednesday, February 21, 2018. The Town of Lakeshore asked residents to reduce their water use on Wednesday. *DAX MELMER / WINDSOR STAR*

“The sewer and storm water systems are separate, but storm water is seeping into the sanitary system at various places,” Cavacas said.

“There’s no place for it to go because the ground is semi-frozen, so it’s finding ways in. We’ve had isolated issues with sections of road where debris wasn’t allowing the water to drain as well.

“The town has invested money this year to more aggressively try and seal up the system better to combat this problem.”

Cavacas said Lakeshore has also rolled out programs to install back-up valves and disconnect downspouts.

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## TRENDING STORIES



0

# Lakeshore launches \$350K stormwater study aimed at preventing future flooding

Lakeshore is spending \$350,000 to develop a storm water master plan in the hope of preventing the devastating flooding experienced during two “storms of the century” in just over a year.



*JULIE KOTSIS, WINDSOR STAR*

Published on: March 13, 2018 | Last Updated: March 13, 2018 10:24 AM EDT



Dawn Van Vlack, pictured in her Lakeshore basement on March 9, 2018, shows where a backwater valve was installed after her home experienced flooding last August. *DAX MELMER / WINDSOR STAR*

Lakeshore is spending \$350,000 to develop a stormwater master plan in hopes of preventing the impact of devastating floods (<http://windsorstar.com/news/local-news/heavy-rain-results-in-flooding-for-some-parts-of-windsor-essex>) like that experienced during two “storms of the century” since September 2016.

“We’re looking for solutions and how to avoid what’s happened in the past,” said Mayor Tom Bain.

“There are so many little things that you can do ... such as putting in these backwater valves, making sure that your eaves and everything are running out and away from your property.”

Bain said the town’s review will focus on ensuring drainage ditches and pumps are all up to specifications and that holding ponds are adequate.

“It’s these types of things that we’ll have the experts come up with in the plan and then we’ll try to institute a lot of their recommendations,” Bain said, adding the money is well-spent when compared to the huge losses experienced by some homeowners.

Bain said \$350,000 sounds like a lot but not when you look at the amount of damages some homeowner experienced — \$50,000 to \$60,000 in some cases.

“It doesn’t take long to add up to that,” he said. “It’s worth the expense if it prevents future flooding.”

One of the homeowners affected by the storms was Dawn Van Vlack, who, along with husband David Orchard, experienced flooding in their Pierella Drive home.

During the 2016 flooding, water began to “gurgle up” through the basement drain but Van Vlack, who has lived in the home for 16 years, said they were able to clear it out with a shop vac before it caused any damage.

They weren't so lucky during the August 2017 flooding.

“It seemed to happen all of in like 20 minutes to half an hour,” Van Vlack said.

The family was upstairs watching a movie when the heavy rains came. They checked the basement sump pump several times throughout the movie.

“The third time we went down there was water everywhere,” she said. “It was just pouring up through the drain.”

The water level peaked at about a foot in their basement.

Van Vlack said they were fortunate insurance covered the damage but they still lost a lot of personal items and felt a lot of anxiety over their safety.

“Once that happens you're fearful,” she said. “My husband and I lived in the dining room for two months while our bedroom was restored.”

Since the flooding, the couple has installed a backflow valve.

Nelson Cavacas, Lakeshore's director of engineering and infrastructure services, said the plan will provide short-, mid- and long-term recommendations for infrastructure enhancements that may include increasing sewer pipes, stormwater pond storage and pump station capacities.

The municipality has about 141 kilometres of urban storm sewers, 19 stormwater management facilities and 26 urban storm pump stations.

Drainage in urban areas is also served by municipal drains and two stormwater pumping stations near Lake St. Clair.

The proposed study area for the first phase is from County Road 42 north to Lake St. Clair and from Duck Creek west to the town limits.

A second study, which will require more funding, will look at the balance of urban and settlement areas to the east and south.

Cavacas said the analysis will review how the town's infrastructure works during minor and major rainfalls. Overland flood routes will be assessed as will grading on road right of ways.

Lakeshore's rapid growth rate (<http://windsorstar.com/news/local-news/new-subdivision-approved-for-booming-lakeshore-housing-market>) has put pressure on its drainage systems.

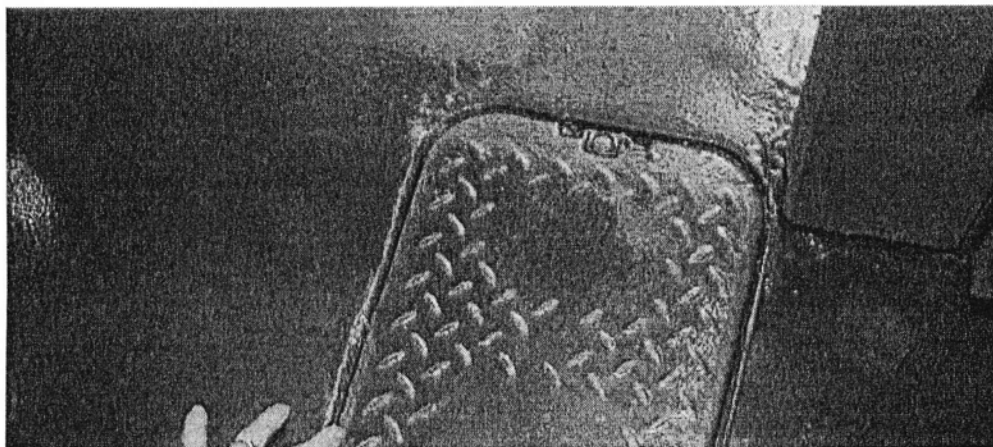
"When you get more homes, that's covering more green space and hardtop, so you've got a lot more runoff," Bain said.

"You've got to handle that water because it's — boom — there instantly. When it comes real fast and real hard, the systems can't handle it.

"So we're looking at ways of — through this report — bolstering our system and making it stronger."

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[twitter.com/JulieKotsis](http://twitter.com/JulieKotsis) (<http://twitter.com/JulieKotsis>)



# ERCA issues flood bulletin for Essex County

The Essex Region Conservation Authority has issued a Flood Outlook, warning residents that heavy rains are expected early next week.



CRAIG PEARSON

Published on: February 16, 2018 | Last Updated: February 16, 2018 5:49 PM EST



File photo of a flooded farm field in Essex County. WINDSOR STAR

# Flood watch issued



LIVEWIRE

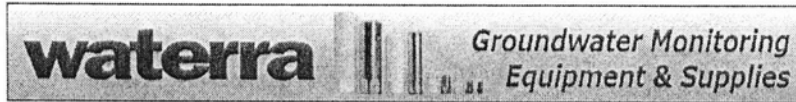
Published on: November 5, 2017 | Last Updated: November 5, 2017 3:47 PM EST



Pedestrians make their way through torrential rain in downtown Windsor on Aug. 29, 2017. *JASON KRYK / WINDSOR STAR*

The Essex Region Conservation Authority has issued a flood watch for Windsor and Essex County until Monday morning.





## Risks of legal liability for stormwater management

Apr 24, 2015

### Standard of care constantly evolving

Toronto received more than 4,700 basement flood complaints during and after the July storm, totaling over \$850 million in insurance claims across the GTA.



*Toronto received more than 4,700 basement flood complaints during and after the July storm, totaling over \$850 million in insurance claims across the GTA.*

A negligent act, or omission, is one that breaches the required standard of care. The standard of care applicable to the design of infrastructure is likely to be the standard of care at the time of the design. That said, it is possible and perhaps more likely, that actions other than the "design" of infrastructure will be subject to a claim of negligence.

In one case where the deficiencies of the stormwater system were well documented, the defendant-municipality chose to avoid major infrastructure upgrades. It did, however, implement a bylaw requiring that downspouts be disconnected from the municipal sewer system. The municipality then failed

to enforce the bylaw and was found liable for flooding, due to a failure of the municipal system. In that case, the failure to enforce the bylaw was found to be the inaction that determined negligence.

Since inspections, maintenance, repairs and other process decisions may be ongoing, they can be judged against a more recent standard of care. This may include considerations of changing information and climate change. Relying on outdated standards or processes can be negligent, if new information suggests that they should be reconsidered. This is the case even if the standards and processes were not negligent before the new information came to light.

This does not mean that decision makers need to change all possible standards and processes and upgrade their entire infrastructure in light of climate change information. After considering the risks, it is acceptable to determine that a particular action or investment is not worth the cost. Such a determination is the essence of a policy decision. To minimize risk, however, governmental authorities should at least "turn their minds" to stormwater related standards, processes and infrastructure. This is particularly important if information suggests that there may be increased risk to persons or property.

An important tool for showing that the standard of care has been met is demonstrating that a defendant has met the standard practiced by similar parties. Simply following the actions of others will not necessarily prevent a finding of negligence. Coordination between parties with stormwater management responsibility, could assist in mitigating risk by setting a clear industry standard. In other words, it may be in the best interests of municipalities and other governmental bodies to work together and develop industry standards. These could be pointed to as evidence of the appropriate standard of care in future flooding cases.

## Working towards legal risk management and minimization

Establishing processes for collecting and sharing new information can minimize the liability risk for governmental authorities. Information suggesting that there may be a risk to people or property should not be

ignored or avoided. Authorities should ensure active, valid policy decisions are being made and documented with respect to stormwater management decisions and systems. Even where the authority decides that proposed upgrades or changes are too costly given identified risks and current resources, that decision should be documented. This demonstrates that the government authority had turned its mind to the matter. They should also consider policies and decisions that enhance flood control, including lot-level controls and homeowner education.

Lastly, they should work with consultants and other service providers to ensure they are considering the best information available, and develop best practices and industry standards with other stormwater management stakeholders.

## A shared responsibility with shared risks

From a legal risk perspective, stormwater management is a shared responsibility. Municipalities, conservation authorities and provincial government can all impact the effective management of stormwater through their decisions, policies and procedures.

Since all levels of government can be sued for negligence in relation to their operational decisions, each has a strong incentive to consider its existing procedures and systems. Governments cannot escape liability for negligent actions of their employees, or contractors. Therefore, processes and practices for sharing relevant information should be in place. Service contracts can also include appropriate considerations related to climate change risk.

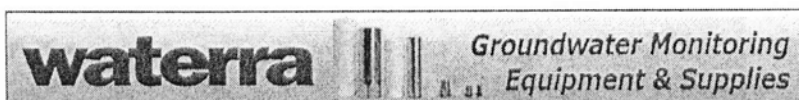
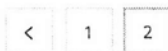
Additionally, consultants, engineers and other design professionals are all subject to legal liability for failure to take relevant information into account, or adapt to current, foreseeable conditions. Professionals who provide stormwater management services can potentially be sued by those who suffered harm and/or by governments that relied on their advice and actions. All parties involved in stormwater management have an interest in ensuring that sound, defensible decisions are being made and appropriate actions are being taken.

Private stakeholders also have roles to play in the management of stormwater and can be subject to legal liability, if they act negligently. Courts have determined that residents can be expected to participate in stormwater management, for example, by reporting known problems to authorities. In addition, it is possible that individual residents would potentially share in liability if they negligently contributed to the problem. This could include altering site grading so run-off flows toward, rather than away from basement foundations. However, governmental authorities cannot escape liability for making negligent operational decisions, just because property owners were also negligent.

Flooding-related class actions have the potential to bring multiple claims before a single court, conceivably resulting in large settlements, or cost awards. This highlights the need for governmental authorities to actively and collaboratively manage legal risks and work towards shared solutions where stormwater management is concerned. Taking appropriate action to identify and make suitable decisions based on risk is particularly important in light of predicted changes in our climate.

*This article is provided for discussion and information purposes only and should not be considered legal advice.*

*Laura Zizzo, Travis Allan and Alexandra Kocherga are with Zizzo Allan Professional Corporation. This article appeared in ES&E's July/August 2014 issue.*





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360 Fairview Avenue West  
Suite 311, Essex, ON N8M 1Y6

October 15, 2019

Nick Emery  
Stantec Consulting Limited

Dear Mr. Emery:

**RE: Lakeshore Stormwater Master Plan Study - Phase 1 Municipal Class EA Notice of Public Information Centre No. 2**

This letter is in response to our receipt and review of the following Notice of Public Information Centre for the Lakeshore Stormwater Master Plan Study - Phase 1. It is our understanding that this process is following the Municipal Class EA in accordance with the planning and design process for "Schedule B" projects as outlined in the Municipal Class Environmental Assessment (June 2000, as amended in 2007, 2011 and 2015) under the Ontario Environmental Assessment Act.

ERCA is interested in receiving the draft Master Plan findings for Phase 1 of the study. If it would be possible to forward a copy of the presentation slides and draft materials/report as they are made available it would be appreciated. At that time ERCA can provide feedback on the draft findings.

Sincerely,

Michael Nelson, BSc, MSc (Planning)  
Watershed Planner  
/mn

C: Peyman Raji, Town of Lakeshore:

Lakeshore Stormwater Master Plan – Phase 1  
Municipal Class Environmental Assessment

| Contact Information  | Date/Method of Communication   | Comment/Concern   | Response/Commitment to Carry Forward  |
|--|--|---|---|
| <p>Chippewas of the Thames<br/>Chief Jacqueline French<br/>320 Chippewa Road, RR1<br/>Muncey, ON N0L 1Y0<br/>519-289-5241<br/><a href="mailto:jfrench@cottfn.com">jfrench@cottfn.com</a></p> <p>Consultation Coordinator<br/>Fallon Burch<br/><a href="mailto:consultation@cottfn.com">consultation@cottfn.com</a><br/><a href="mailto:fburch@cottfn.com">fburch@cottfn.com</a></p> <p>Chief Turnover July 27, 2019<br/>Old Chief Myeengun Henry<br/>Email: <a href="mailto:myeegun@cottfn.com">myeegun@cottfn.com</a></p> | Project Information Update<br>Letter sent September 9, 2019  | Response Letter Received September 24, 2019, Acknowledgement of the NOC. Project located within treaty territory, but minimal concerns. | Continue to update as the study progresses. Future communications to be sent via <a href="mailto:consultation@cottfn.com">consultation@cottfn.com</a> |
|  | Follow Up<br>Email was sent to chief and Consultation Manager November 1, 2019<br><br>Follow Up message included PIC#1 Notice and PIC#2 Notice                       | N/A   | No response required at this time.  |
|  | Notice of PIC #2<br>Sent October 9, 2019   | N/A   | No response required at this time.  |
|  | Notice of Completion<br>(Pending)  |   |   |
|  |  |   |   |
| <p>Oneida Nation of the Thames<br/>Chief Jessica Hill<br/>2212 Elm Avenue RR #2<br/>Southwold, ON N0L 2G0<br/>519-318-4585<br/><a href="mailto:Jessica.hill@oneida.on.ca">Jessica.hill@oneida.on.ca</a></p> <p>Political Chief Assistant<br/>Catherine Cornelius<br/><a href="mailto:Catherine.cornelius@oneida.on.ca">Catherine.cornelius@oneida.on.ca</a></p>  | Project Information Update<br>Letter sent September 9, 2019  | N/A   | No response required at this time.  |
|  | Follow Up<br>Email was sent to Chief and Consultation Manager November 1, 2019 and November 11, 2019<br><br>Follow Up message included PIC#1 Notice and PIC#2 Notice | N/A   | No response required at this time.  |
|  | Further follow-up November 11, 2019 – message left   |   |   |
|  | Notice of PIC #2<br>Letter sent October 9, 2019  | N/A   | No response required at this time.  |
|  | Notice of Completion<br>(Pending)  |   |   |
| <p>Munsee-Delaware Nation<br/>Chief Roger Thomas<br/>289 Jubilee Road<br/>Muncey, ON N0L 1Y0<br/>519-289-5396 ext 226<br/><a href="mailto:chief@munsee.ca">chief@munsee.ca</a>*</p> <p>Band Manager<br/>Glenn Forrest</p>  | Project Information Update<br>Letter sent September 9, 2019  | N/A   | No response required at this time.  |
|  | Follow Up<br>Email was sent to chief and Band Manager November 1, 2019 and November 11, 2019<br><br>Follow Up message included PIC#1 Notice and PIC#2 Notice         | N/A   | No response required at this time.  |
|  | Further follow-up with chief November 11, 2019 – message left  |   |   |

Lakeshore Stormwater Master Plan – Phase 1  
Municipal Class Environmental Assessment

| Contact Information  | Date/Method of Communication   | Comment/Concern   | Response/Commitment to Carry Forward |
|--|--|---|--------------------------------------|
| glenn@munsee.ca<br><br>*Note change in email address   | Notice of PIC #2<br>Letter sent October 9, 2019  | N/A   | No response required at this time.   |
|  | Notice of Completion<br>(Pending)  |   |                                      |
|  |  |   |                                      |
| Delaware Nation<br>Chief Denise Stonefish<br>14760 School House Line RR #3<br>Thamesville, ON N0P 2K0<br>519-692-3936<br>Denise.stonefish@delawarenation.org   | Project Information Update<br>Letter sent September 9, 2019  | N/A   | No response required at this time.   |
|  | Follow Up<br>Email was sent to chief November 1, 2019<br><br>Follow Up message included PIC#1 Notice and PIC#2 Notice<br><br>Further follow-up with chief November 11, 2019 – successful   | Denise Stonefish did not receive any of the consultation materials, she is no longer at the listed address and is at a nursing home. Further contact should be made to someone else at the Delaware Nation. No comment on project was made. | No response required at this time.   |
|  | Notice of PIC #2<br>Letter sent October 9, 2019  | N/A   | No response required at this time.   |
|  | Notice of Completion<br>(Pending)  |   |                                      |
|  |  |   |                                      |
|  |  |   |                                      |
| Bkejwanong Territory (Walpole Island)<br>Chief Dan Miskokomon<br>117 Tahgahoning Road RR #3<br>Wallaceburg, ON N8A 4K9<br>519-627-1481<br><a href="mailto:drskoke@wifn.org">drskoke@wifn.org</a><br><br>Consultation Manager<br>Dean Jacobs<br><a href="mailto:dean.jacobs@wifn.org">dean.jacobs@wifn.org</a><br><br>Project Review Coordinator<br>Janet MacBeth<br><a href="mailto:Janet.macbeth@wifn.org">Janet.macbeth@wifn.org</a> | Project Information Update<br>Letter sent September 9, 2019  | N/A   | No response required at this time.   |
|  | Follow Up<br>Email was sent to chief and Consultation Manager November 1, 2019 and November 11, 2019<br><br>Follow Up message included PIC#1 Notice and PIC#2 Notice<br><br>Further follow-up was sent to Project Review Coordinator November 5, 2019 and November 11, 2019<br><br>Further follow-up with chief November 11, 2019 – message left | N/A   | No response required at this time.   |
|  | Notice of PIC #2<br>Letter sent October 9, 2019  | N/A   | No response required at this time.   |
|  | Notice of Completion<br>(Pending)  |   |                                      |
|  |  |   |                                      |
|  |  |   |                                      |

Lakeshore Stormwater Master Plan – Phase 1  
Municipal Class Environmental Assessment

| Contact Information  | Date/Method of Communication   | Comment/Concern   | Response/Commitment to Carry Forward |
|--|--|---|--------------------------------------|
| <p>Caldwell First Nation<br/>Chief Mary Duckworth<br/>14 Orange Street (P.O. Box 388)<br/>Leamington, ON N8H 3W3<br/>519-322-1765<br/>chief@caldwellfirstnation.ca</p> <p>Director of Operations<br/>Allen Deleary<br/>allen.deleary@caldwellfirstnation.ca</p>        | Project Information Update<br>Letter sent September 9, 2019  | N/A   | No response required at this time.   |
|  | Follow Up<br>Email was sent to chief and Director of operations November 1, 2019 and November 11, 2019<br><br>Follow Up message included PIC#1 Notice and PIC#2 Notice<br><br>Further follow-up with chief November 11, 2019 – cannot get through to chief | Chief does not take calls from people she does not know – automatically transferred to a voicemail – consultation unsuccessful. | No response required at this time.   |
|  | Notice of PIC #2<br>Letter sent October 9, 2019  | N/A   | No response required at this time.   |
|  | Notice of Completion<br>(Pending)  |   |                                      |
|  |  |   |                                      |
| <p>Chippewas of Kettle and Stony Point First Nation<br/>Chief Jason Henry<br/>6247 Indian Lane RR #2<br/>Forest, ON N0n 1J0<br/>519-786-2125<br/>jason.henry@kettlepoint.org</p> <p>Consultation Coordinator<br/>Valerie George<br/>valerie.george@kettlepoint.org</p> | Project Information Update<br>Letter sent September 9, 2019  | N/A   | No response required at this time.   |
|  | Follow Up<br>Email was sent to chief and Consultation Manager November 1, 2019 and November 11, 2019<br><br>Follow Up message included PIC#1 Notice and PIC#2 Notice<br><br>Further follow-up with chief November 11, 2019 – message left                  | N/A   | No response required at this time.   |
|  | Notice of PIC #2<br>Letter sent October 9, 2019  | N/A   | No response required at this time.   |
|  | Notice of Completion<br>(Pending)  |   |                                      |
|  |  |   |                                      |
| <p>Aamjiwnaang First Nation<br/>Chief Chris Plain<br/>978 Tashmoo Avenue<br/>Sarnia, ON N7T 7H5<br/>519-336-8410<br/>chief.plain@aamjiwnaang.ca*</p>   | Project Information Update<br>Letter sent September 9, 2019  | N/A   | No response required at this time.   |
|  | Follow Up<br>Email was sent to chief and Consultation Manager November 1, 2019 and November 11, 2019<br><br>Follow Up message included PIC#1 Notice and PIC#2 Notice   | N/A   | No response required at this time.   |



Lakeshore Stormwater Master Plan – Phase 1  
Municipal Class Environmental Assessment

| Contact Information   | Date/Method of Communication                                  | Comment/Concern | Response/Commitment to Carry Forward |
|---|---|-----------------|--------------------------------------|
| *note email address change<br><br>Environment Coordinator<br>Sharilyn Johnston<br>519-383-0404 ext. 245<br>sjohnston@aamjiwnaang.ca | Further follow-up with chief November 11, 2019 – message left |                 |                                      |
|   | Notice of PIC #2<br>Letter sent October 9, 2019               | N/A             | No response required at this time.   |
|   | Notice of Completion<br>(Pending)                             |                 |                                      |
|   |   |                 |                                      |