Welcome

Welcome to the Public Information Centre for:

Lisgar District Pumping Station
Class Environmental Assessment (EA)
and Town Hall Update Session

Information presented this evening will be available on the City of Mississauga's website:

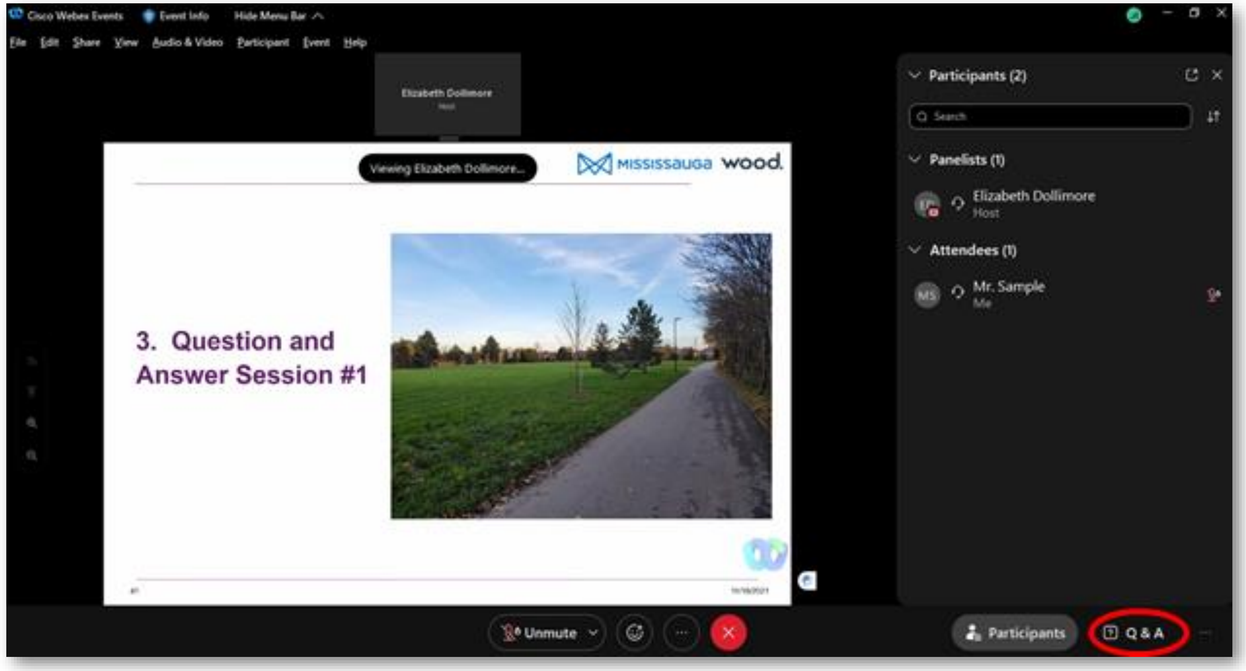
Meeting Agenda

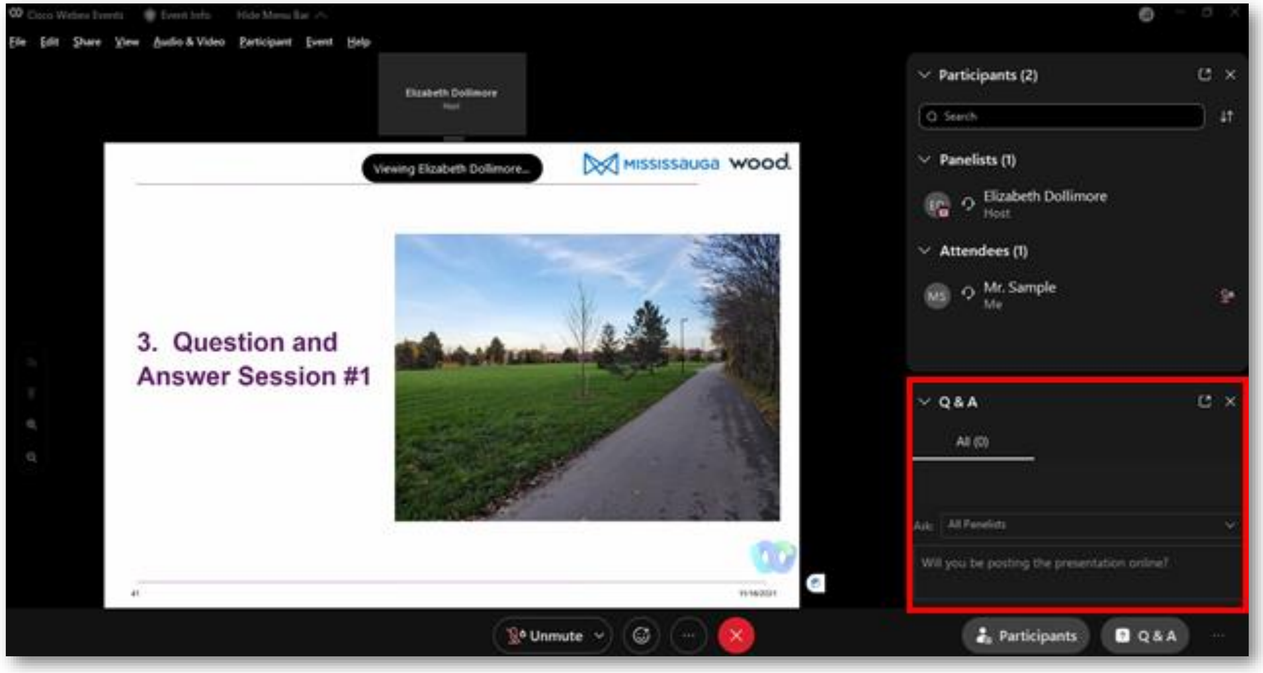
1. **Welcome and Introductions**
2. **Background and Update on Cactus Gate Pumping Station and Monitoring Program**
3. **Lisgar District Pumping Station Class EA**
4. **Question and Answer Session #1**
5. **High Water Protocol Overview**
6. **Additional Updates**
7. **Question and Answer Session #2**

1. Welcome and Introductions

Meeting Format

- Two Q&A sessions
- Attendees can ask questions in the Q&A function shown below
- Staff will read and answer questions aloud
- Wrap-up at 8:30pm
- Follow-up questions / comments can be emailed to
  elizabeth.dollimore@mississauga.ca





2. Background and Update on Cactus Gate Pumping Station and Monitoring Program

Recap and History of Problem

Timeline:

Beginning in 2008

- Several homes experienced basement water infiltration

October 2011

- Wood completed an engineering study to identify possible causes and develop Prioritized Action Plan

March 2015

- Prioritized Action Plan presented to public and approved by Council
- Select projects constructed and monitored to inform next prioritized actions

October 2017

- Community update meeting held
- Updated Prioritized Action Plan approved by Council
- Includes direction to consider permanent pumping stations

Recap and History of Problem

Timeline:

September 2018

- Class EA completed for Black Walnut Trail area pumping station system
- Preferred solution (highest priority) is a pumping station at the Cactus Gate Parkette

December 2019

- Construction began on the Cactus Gate pumping station

March 2021

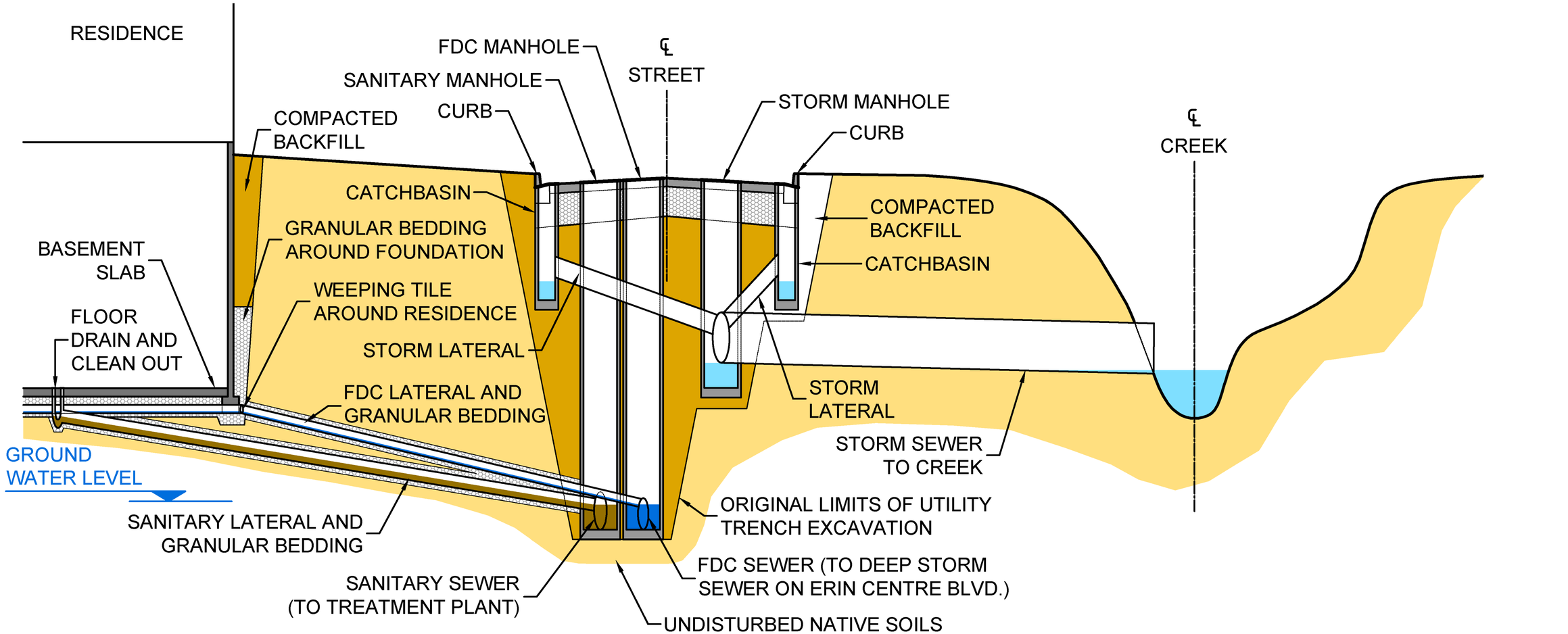
- Cactus Gate pumping station became operational

April 2021

- Current study (Class EA) begins
- Study is intended to review entirety of the Lisgar District
- Will determine number of required pumping stations and priority sequence for implementation

Overview of Foundation Drainage System

3-Pipe System - Foundation Drain Collector (FDC)



Past Study/ Investigations

Initial Broad Study to Identify Causes of Basement Water Infiltration including:

Monitoring Work:

- Groundwater
- FDC and Storm Sewer System
- Creek Tributary and Stormwater Management Pond

Testing:

- Water Quality
- Storm Sewer Leakage Testing
- Storm Sewer Outfall Collar Testing
- Smoke Testing

City-led Mitigation:

- Inspection
- Cleaning
- Sealing
- High Water Protocol
- Sump Pump Subsidy

Investigations led to the implementation of priority mitigation measures over a period of time

Primary Cause

Excess Stormwater into the Utility Trench

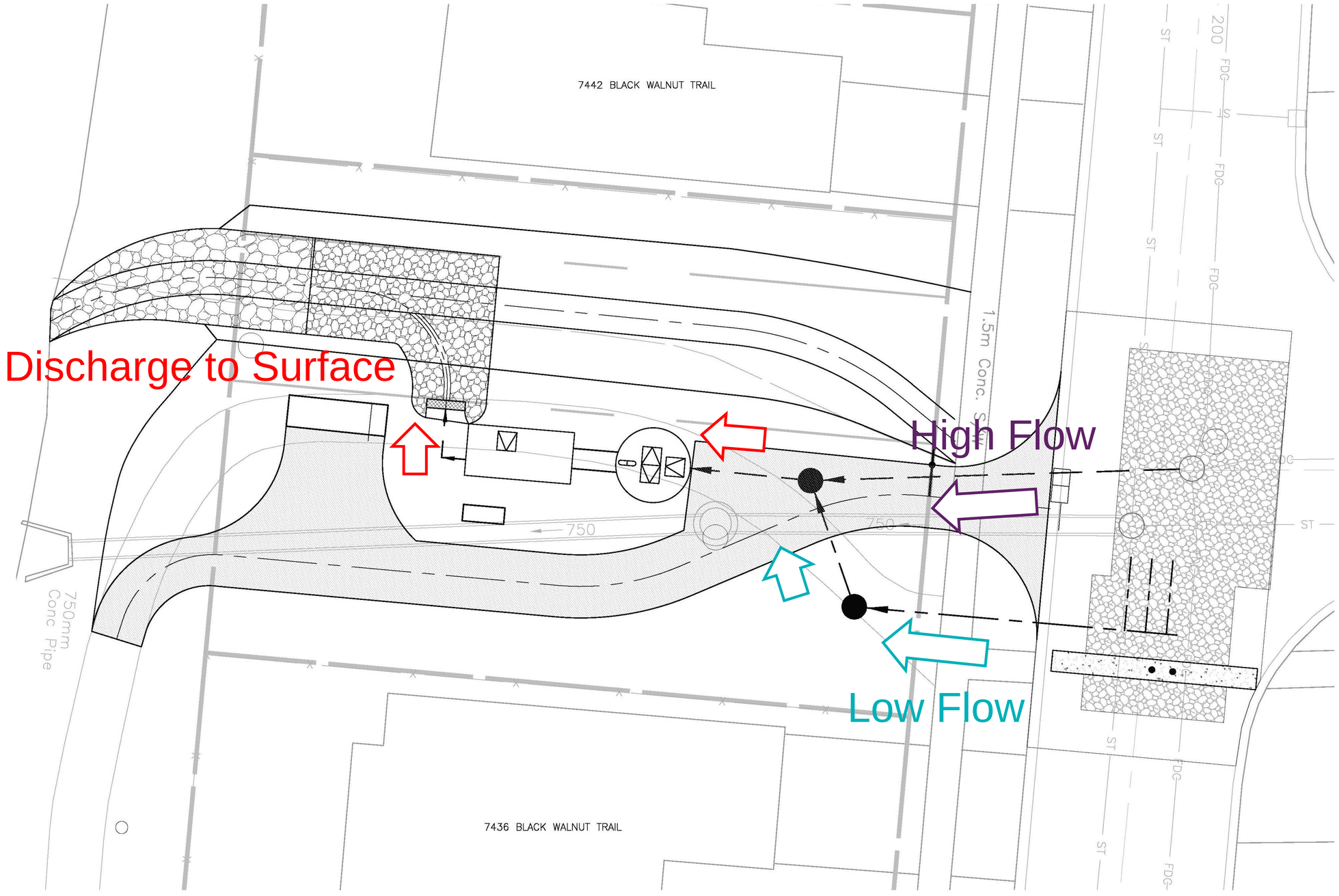
- Leakage from the storm sewer system combined with slow draining soils results in water build-up
- If the build-up of water is significant, it travels up the bedding material around the Foundation Drain Collector (FDC) system into the foundation weeping tiles of homes, which can overload the system
- Other conditions that can also contribute to basement water infiltration include:
  - Preceding rainfall followed by a large storm event
  - Local lot drainage
  - Private connections (downspouts, sanitary, etc.)

Cactus Gate Pumping Station

How does the pumping station work?

Cactus Gate Pumping Station

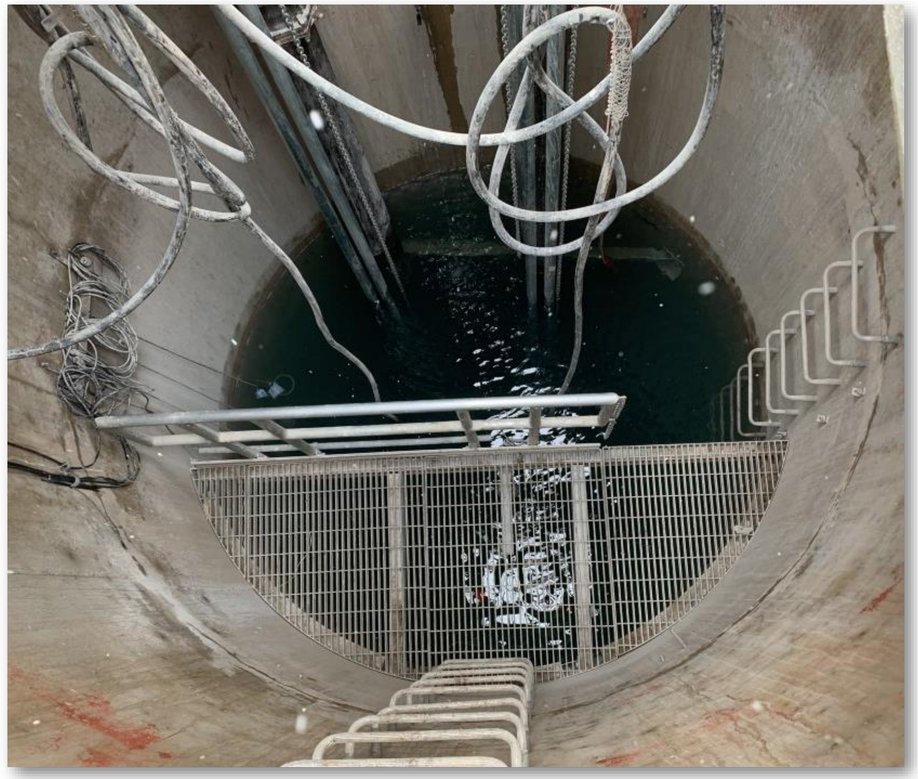
How does the pumping station work?



Cactus Gate Pumping Station

How does the pumping station work?

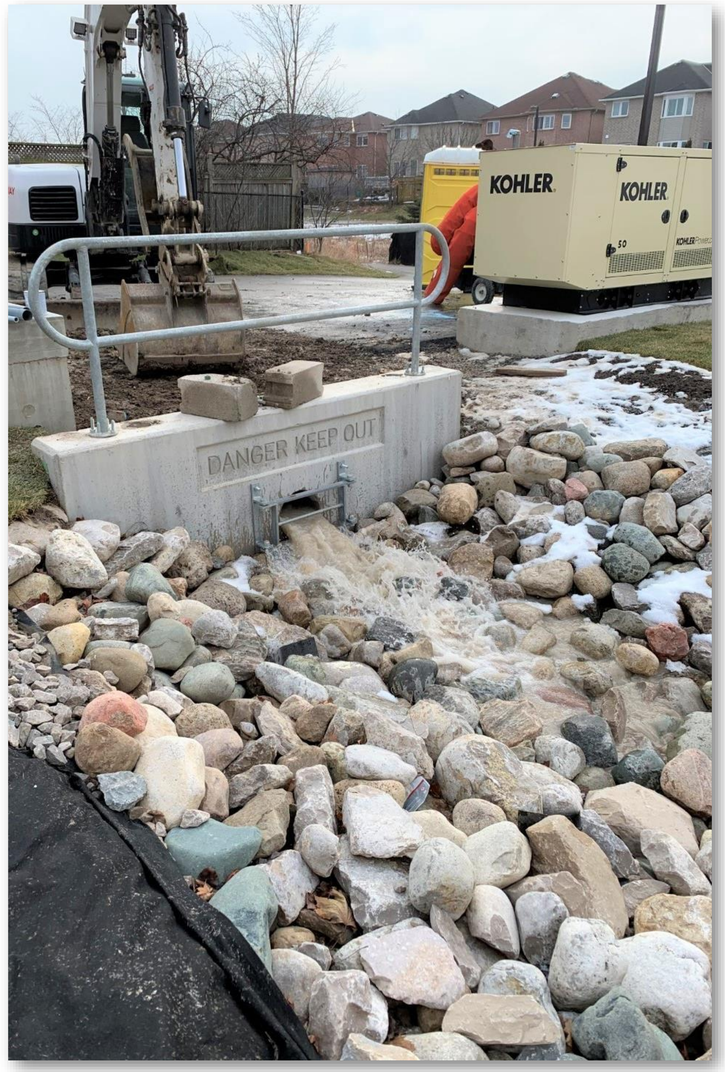
- 2 pumps – 1 duty and 1 standby (backup) pump
- Duty pump triggered automatically by set water level in wet well
- Standby pump will also turn on if first pump does not reduce water levels
- Pump shuts off automatically once wet well is drawn down
- Pumps are not triggered again until water is high enough (cycles)



Cactus Gate Pumping Station

Status of the Pumping Station

- Pumping station became active in March 2021 and has been continuously active since
- Station includes both a low flow and high flow system
- Each pump has a 70 L/s capacity, approximately 120 L/s with both operational
- An alarm system is in place which issues alerts in the event of any operations issues
- A backup generator will power the pumping station in the event of a power failure
- A contractor (OCWA) is responsible for Operations & Maintenance as of mid-2021



Cactus Gate Pumping Station

Monitoring of the Pumping Station

- Daily pumping volumes are measured (flow meter in valve chamber) and logged by the station (control panel)
- Additional temporary water level gauges have been installed around the pumping station to assess how the system responds to storm events
- Ongoing monitoring of previously installed gauges:
  - FDC Sewer System
  - Storm Sewer System
  - Watercourse (Creek) System
  - Groundwater and Utility Trench System

Cactus Gate Pumping Station

Dry Weather Period

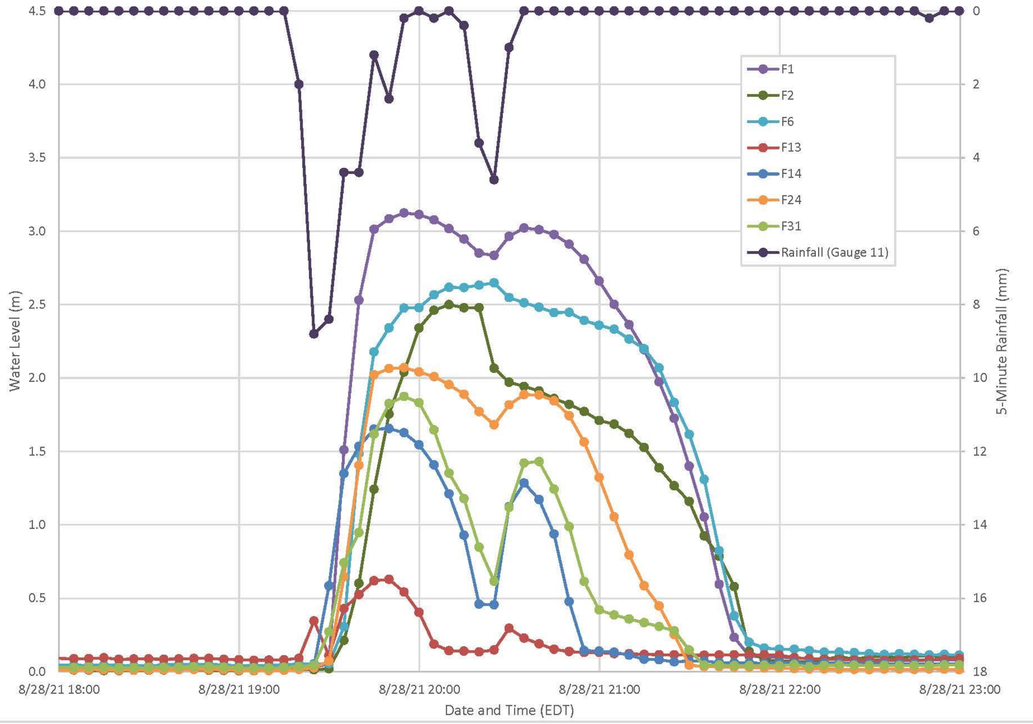
- Pumping station operates automatically every day dewatering the utility trench (low flow system)
- Between 100,000 and 250,000 L every day based on the flow gauge
- A general decrease in water levels within the utility trench has been observed in the vicinity of the pumping station

Cactus Gate Pumping Station

Wet Weather Period

- Several major rainfall events have occurred since March 2021
- August 28, 2021 storm event resulted in five incidents of reported basement water infiltration
- Storm was the most intense local rainfall on record (past 10 years +\-)
- Storm was more intense than the July 14, 2017 storm event and resulted in fewer reported incidents than that event (24)
- Based on the data the Cactus Gate Pumping station helped mitigate impacts of storm, in conjunction with High Water Protocol temporary pumping

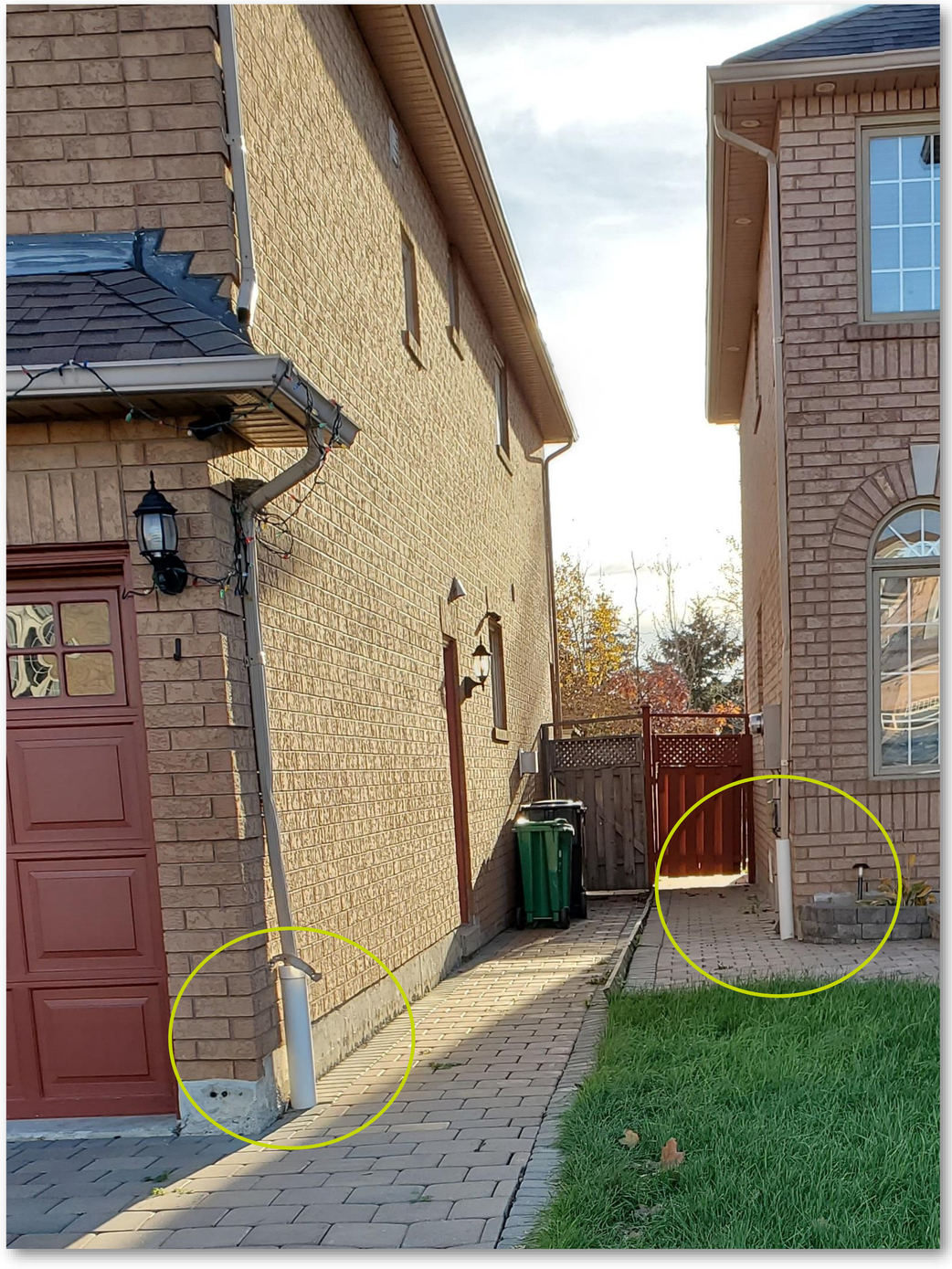
Figure A3a: Gauges on Black Walnut Trail - August 28, 2021 Storm Event



Overall Monitoring

Overall Monitoring

- Monitoring continues in the drainage systems noted
- The monitoring will help confirm the effectiveness of remedial measures as they are implemented
- The current results indicate that the Cactus Gate pumping station is effective and is operating as intended
- Additional investigations to identify private sources of inflow to the FDC system are underway



3. Lisgar District Pumping Station Class Environmental Assessment

Municipal Class EA Study Process

Study: This Municipal Class EA Study is being undertaken to confirm the number and location of required Foundation Drain Collector (FDC) Pumping Stations.

Schedule: The Design and Construction of the Pumping Stations is a Schedule B undertaking

Multiple Pumping Station Alternatives Developed

↓

Alternatives Evaluated to Select a Preferred Alternative for the Pumping Station(s)

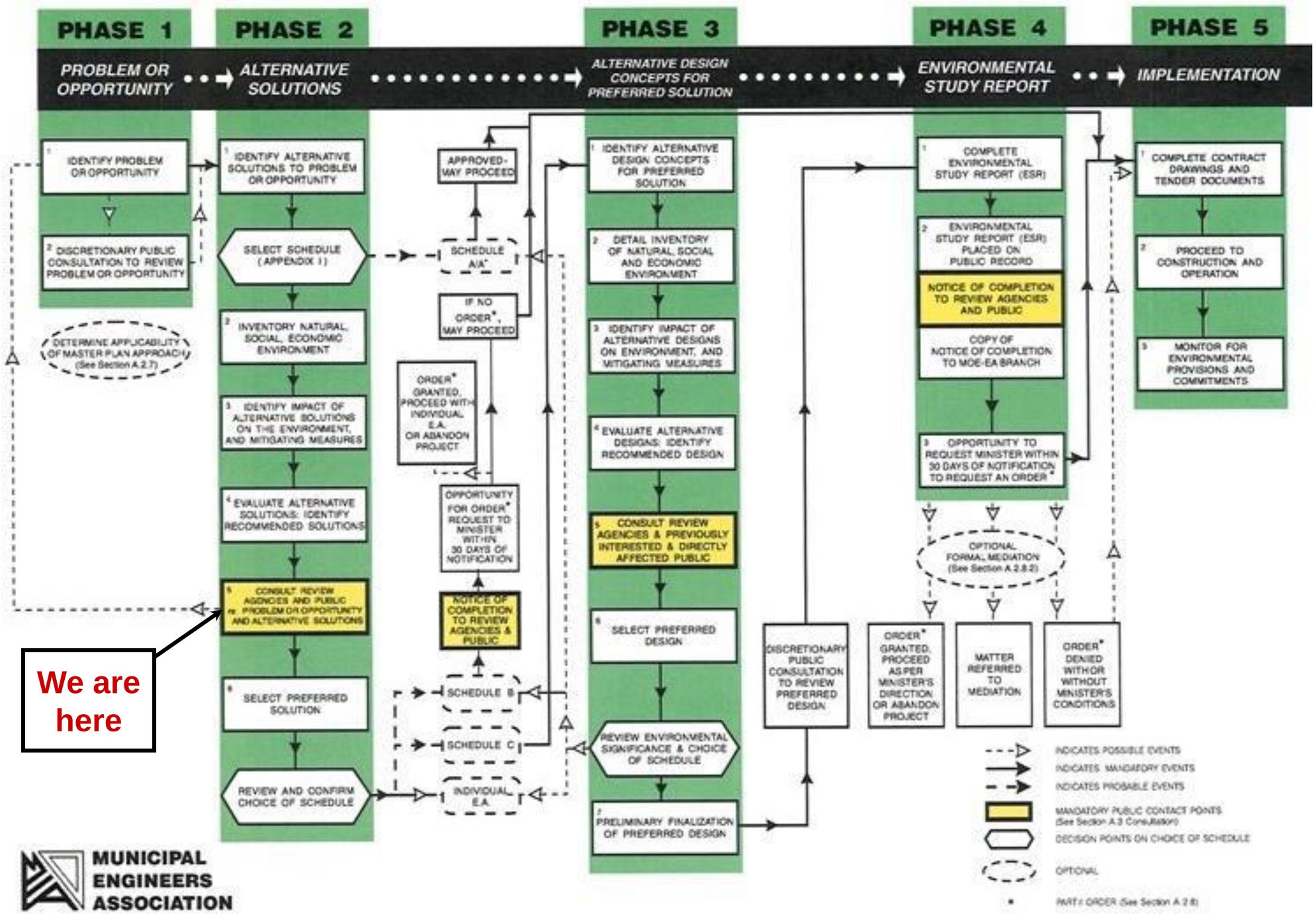
↓

Receive Public Input through Stakeholder and Public Consultation

↓

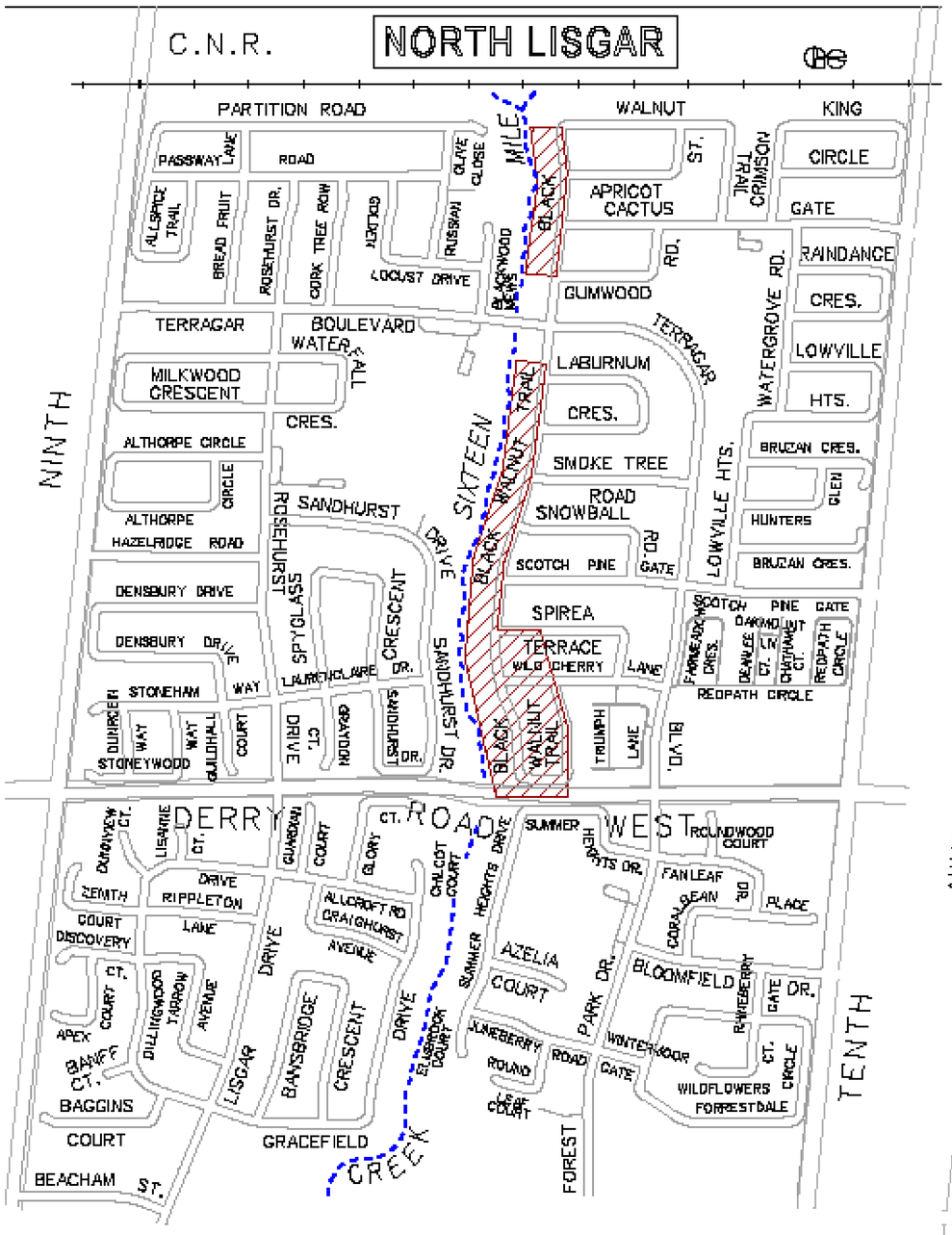
Develop Detailed Design for Preferred Alternative

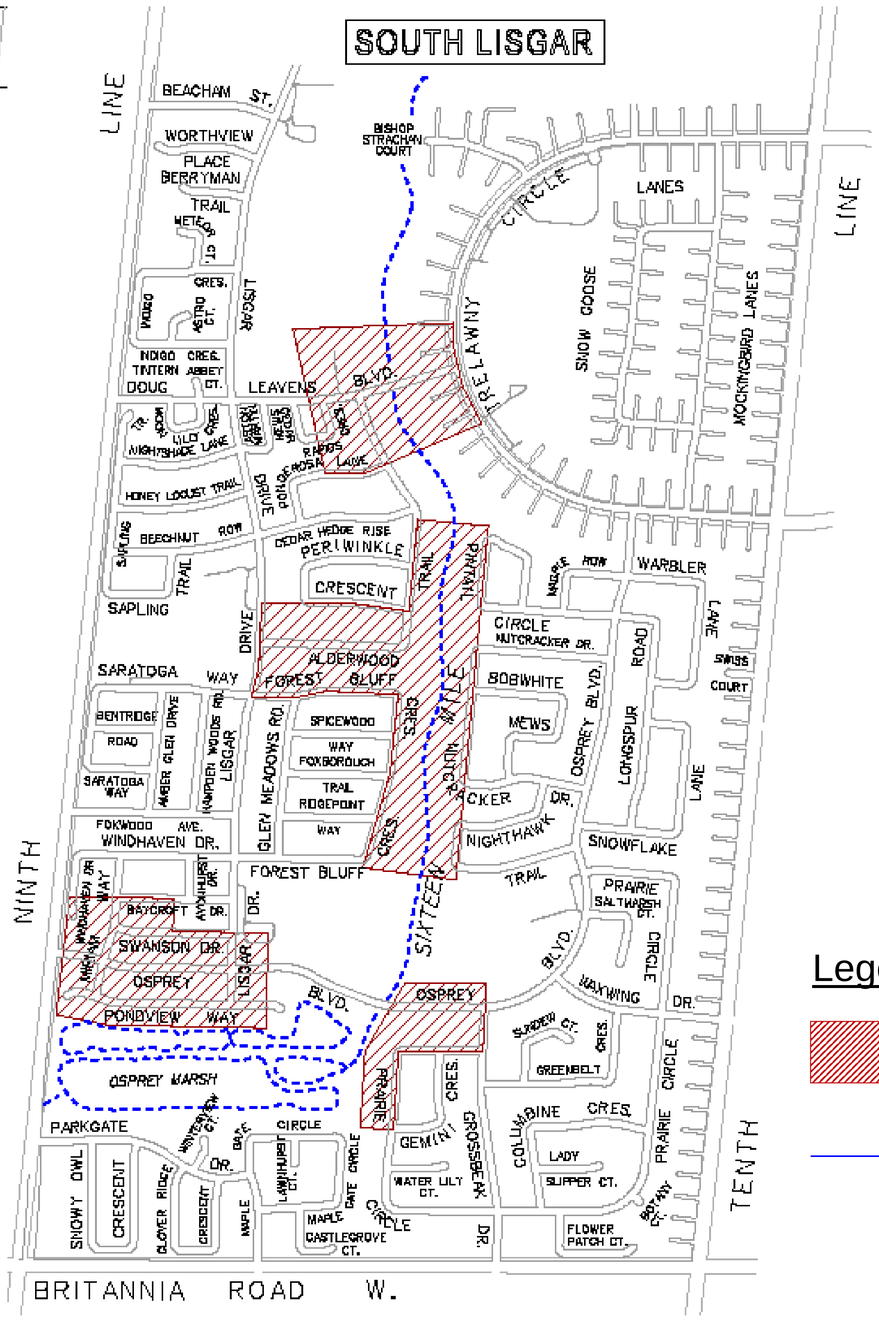
Municipal Class EA Study Process



Primary Study Area

Areas Generally Affected by Basement Water Infiltration





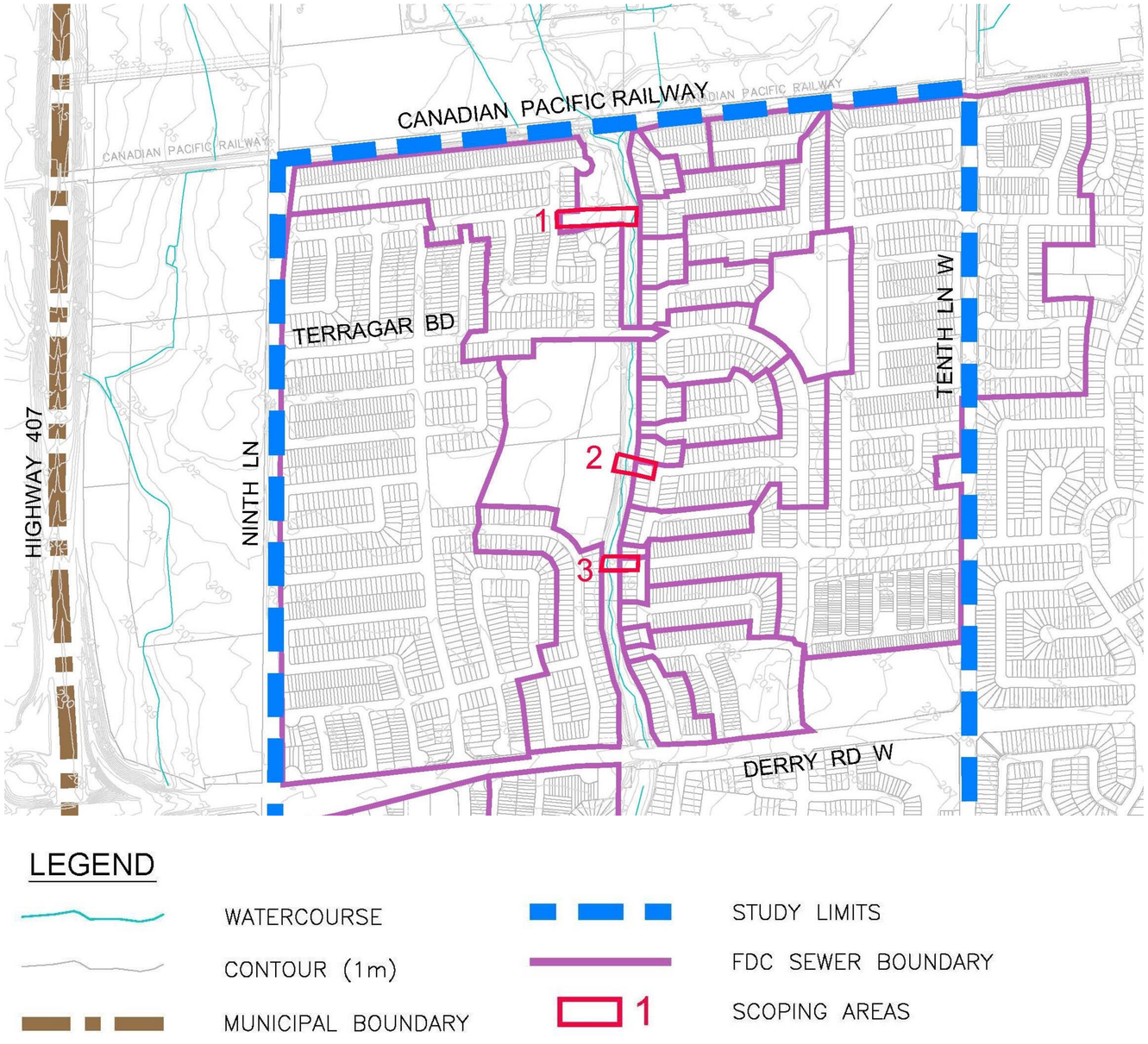
Legend

- Areas Generally Affected
- Sixteen Mile Creek

Pumping Station Assessment

Potential Pumping Station Locations (Long-list of Alternatives):

- A long-list of 14 different potential pumping station locations have been identified
  - *3 are located north of Derry Road*
  - *3 are located near Trelawny Circle*
  - *5 are located between Doug Leavens and Osprey Blvd*
  - *3 are located near Osprey Marsh*

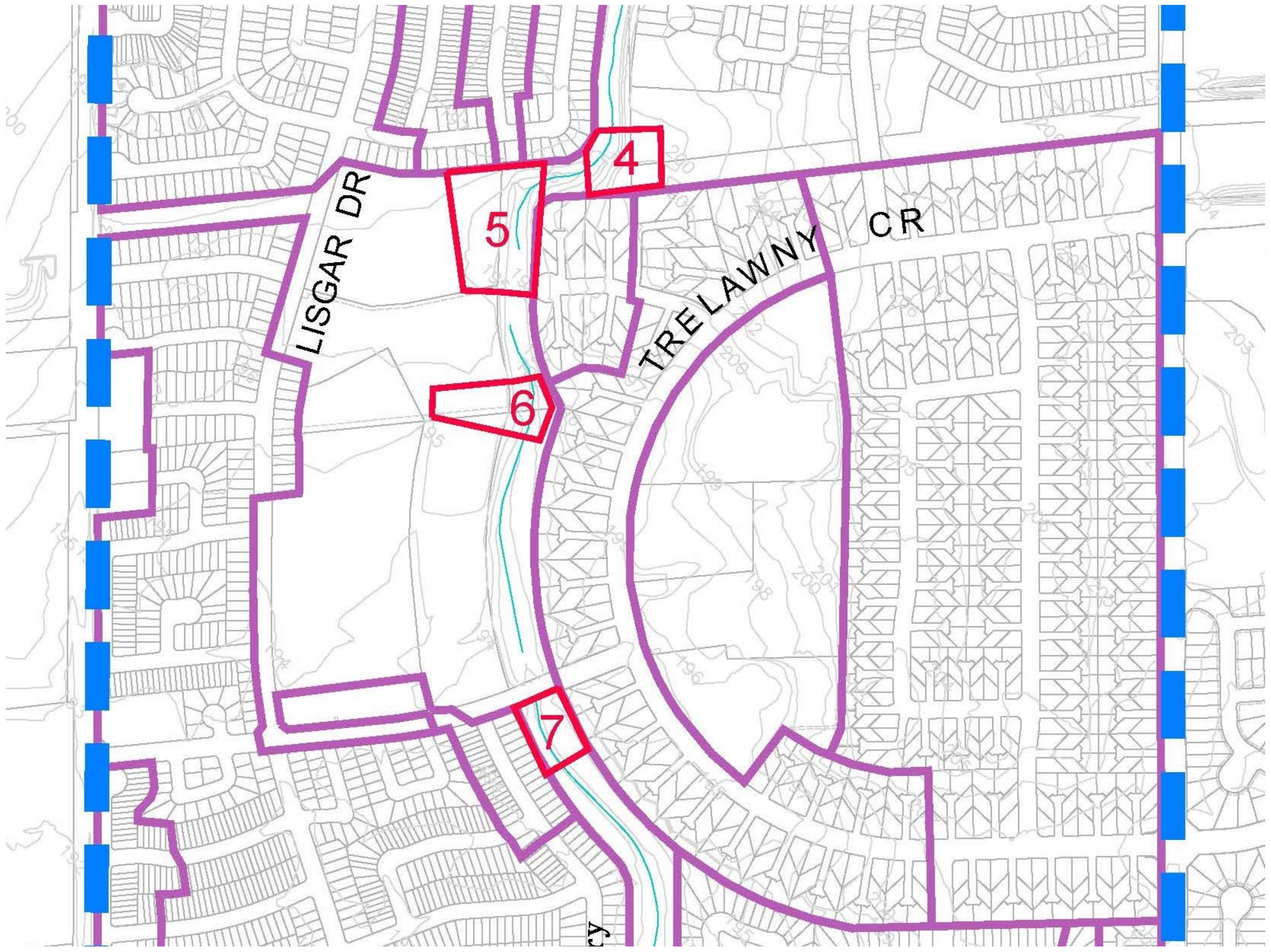


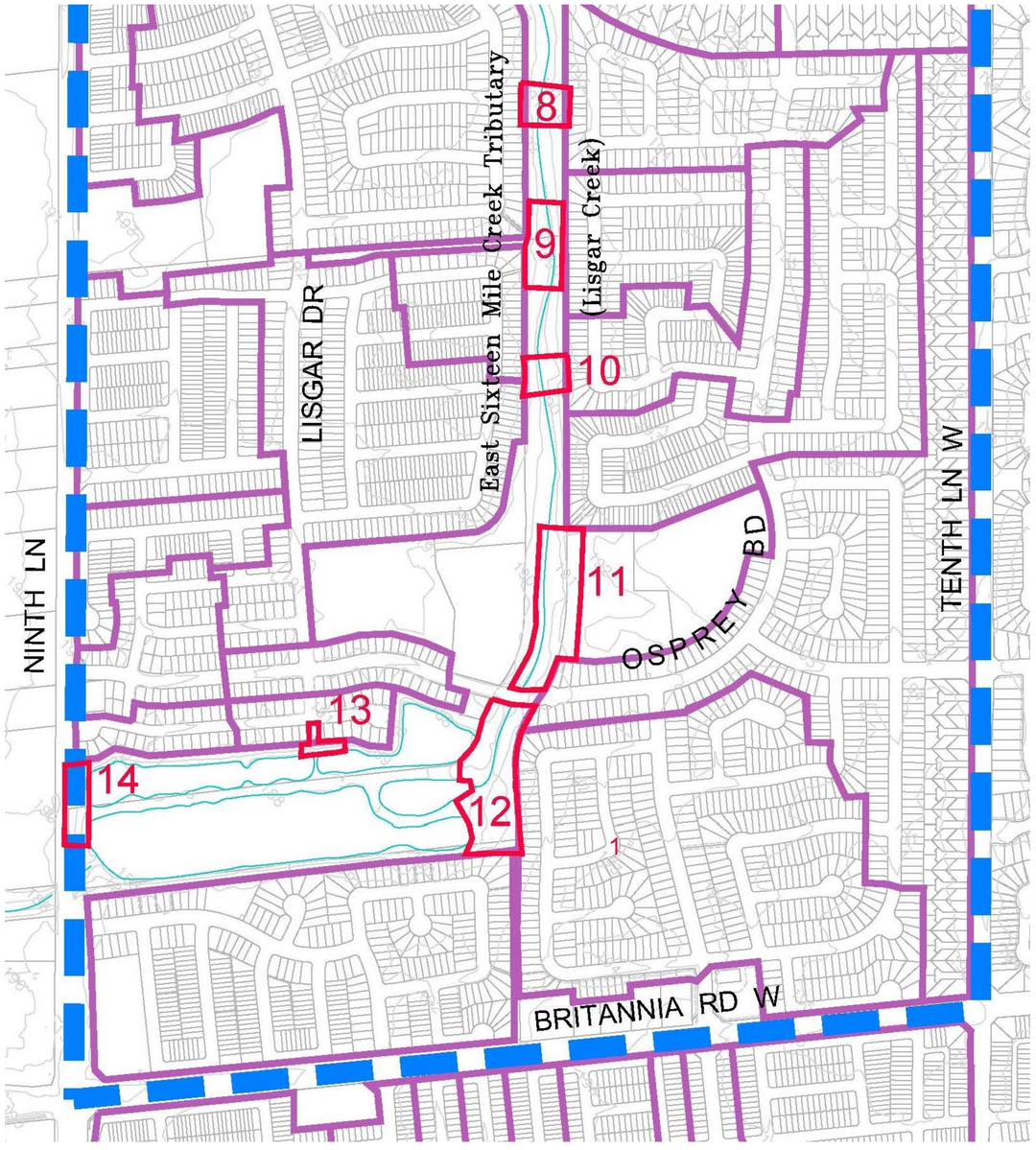
Criteria for Long List:

- Public Land Ownership
- Proximity to the FDC trunk sewer
- Proximity to the number of houses with reported incidents of basement water infiltration

Pumping Station Assessment

Potential Pumping Station Locations (Long-list of Alternatives):





Pumping Station Assessment

Evaluation Criteria

Drainage Area Served: The amount of nearby land that will be serviced by the Pumping Station, therefore a larger drainage area is a positive factor.

Property Suitability: Evaluated based on public land ownership and local property constraints, such as public space and accessibility, and utility, ecology, archaeology, and cultural heritage considerations.

Number of Houses in Proximity that Reported Basement Water Infiltration: Greatest number of houses that reported basement water infiltration, as well as frequency and severity of observed FDC system surcharging, is an indication of risk. Locating the pumping station slightly upstream of affected houses has the potential for greatest effectiveness.

Pumping Station Assessment

Evaluation of Alternatives

Long-list of Alternatives	Evaluation Criteria			Evaluation
Potential Pumping Station Locations	Drainage Area Served	Property Suitability	# of Reported Cases	Screened / Short-listed
1. Russian Olive Close at Buttonbush Park	🔴	🟢	🟡	Screened out
2. Black Walnut Trail at Smoke Tree Road Parkette	🟡	🟢	🟢	Short-listed
3. Black Walnut Trail at Scotch Pine Gate Parkette	🟡	🟢	🟢	Short-listed
4. Lisgar Creek at Forest Park	🟢	🟡	🔴	Screened out
5. Gracefield Drive at Lisgar Meadowbrook Trail	🟢	🔴	🔴	Screened out
6. Lisgar Creek at Lisgar Fields	🟢	🔴	🔴	Screened out
7. Lisgar Creek at Doug Leavens Boulevard	🟢	🟡	🟢	Short-listed

🟢 Positive 🟡 Neutral 🔴 Negative

Pumping Station Assessment

Evaluation of Alternatives

Long-list of Alternatives	Evaluation Criteria			Evaluation
Potential Pumping Station Locations	Drainage Area Served	Property Suitability	# of Reported Cases	Screened / Short-listed
8. Lisgar Creek at Pintail Circle	🟢	🟡	🟡	Short-listed
9. Lisgar Creek at Nutrcracker Drive (North)	🟢	🔴	🟡	Screened out
10. Lisgar Creek at Nutrcracker Drive (South)	🟢	🔴	🟡	Screened out
11. Lisgar Creek at Lisgar Green Park	🟢	🟡	🟢	Short-listed
12. Osprey Marsh at Prairie Circle	🟢	🟡	🟢	Short-listed
13. Osprey Marsh at Lisgar Drive	🟢	🔴	🟡	Screened out
14. Osprey Marsh at Ninth Line	🟢	🟡	🔴	Screened out

🟢 Positive 🟡 Neutral 🔴 Negative

Pumping Station Assessment

Based on the evaluation of alternatives, 6 locations have been short-listed in 3 different areas. All are:

- On public lands
- Near the FDC trunk sewer
- Near areas with greater instances of reported basement water infiltration or observed FDC surcharging
- Each have pros and cons

Black Walnut Trail Area

Location 2 – Black Walnut Trail at Smoke Tree Road Parkette

- Easily accessible, allows for low flow/high flow system
- Smallest drainage area served, impacts to pedestrian bridge

Location 3 – Black Walnut Trail at Scotch Pine Gate Parkette

- Easily accessible, allows for low flow/high flow system
- Slightly smaller parkette than Location 2, and does not address upstream impacts as well as location 2 (although has a greater drainage area)

Pumping Station Assessment

Doug Leavens Boulevard and Pintail Circle Area

Location 7 – Lisgar Creek at Doug Leavens Boulevard

- Location of observed FDC surcharge, upstream from impacted properties
- Access is more challenging due to proximity to arterial road

Location 8 – Lisgar Creek at Pintail Circle

- Location of observed FDC surcharge, near or upstream of impacted areas
- Construction, maintenance accesses will be challenging due to creek and roads

Osprey Boulevard Area

Location 11 – Lisgar Creek at Lisgar Green Park

- Potentially more easily accessible than upstream sites
- Temporary access limitations to trail and park during construction, potential impacts to natural features and temporary trail accessibility

Location 12 – Osprey Marsh at Prairie Circle

- Potentially more easily accessible than upstream sites
- Furthest location downstream, potential impacts to natural features and temporary trail accessibility

Pumping Station Assessment

Technical Assessment of Short-Listed Alternatives

The 6 short-listed alternatives have been further evaluated by:

- Assessment of previous FDC monitoring data
- Analytical modelling of the pumping station effectiveness of lowering water levels

This assessment has determined the pumping station(s):

- Number
- Location
- Relative benefit and overall priority for implementation (design and construction)

Further assessment will determine the pumping station:

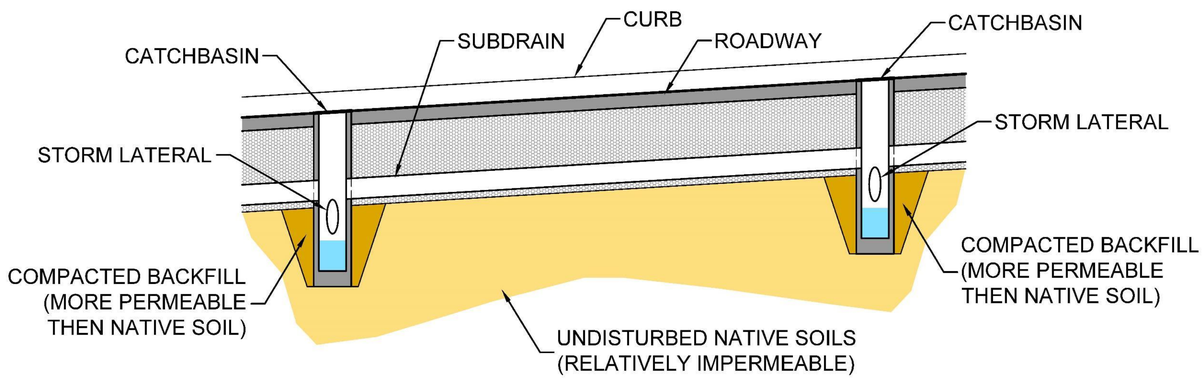
- Capacity (size of pumps)
- Type (low and high flow, or high flow only)

Pumping Station Types

Types of Systems:

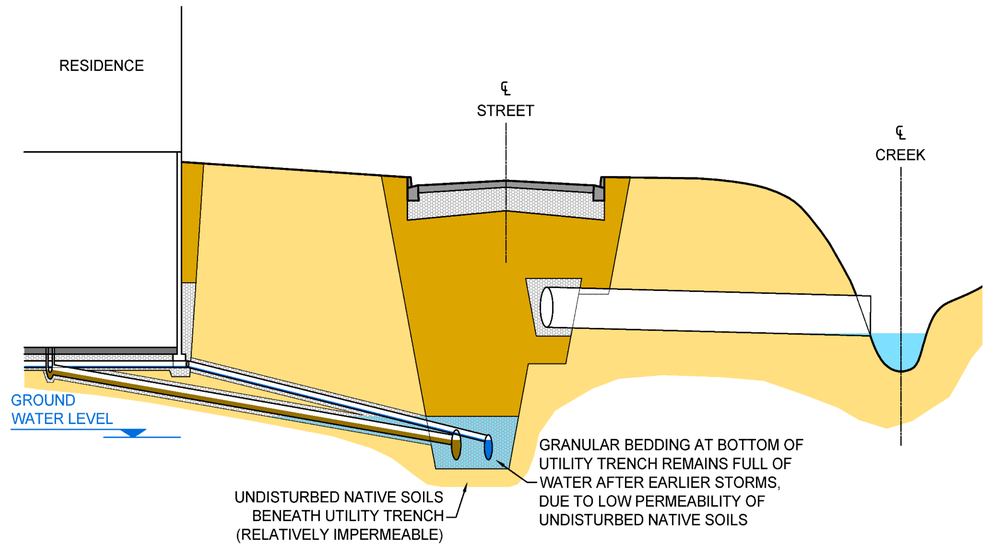
Utility Trench Dewatering Pumping Station (Low Flow):

- System operates to dewater the utility trench (granular stone bedding) by removing small amounts of water on a continuous basis, much like a sump pump.



FDC Pumping Station (High Flow):

- System operates to remove water from the FDC pipe network during periods of high flow. This pump would be larger but operate less frequently and only during certain rain storms



Pumping Station Assessment

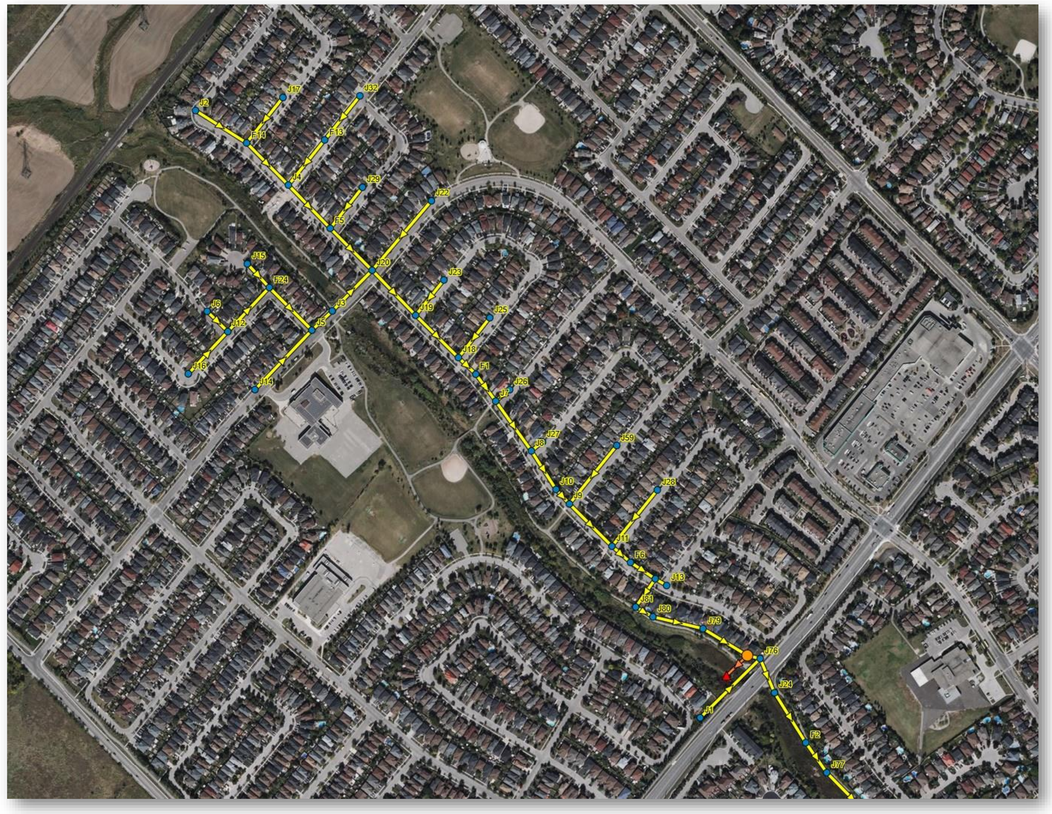
Technical Assessment

Model Purpose

- A hydraulic model of the FDC sewer system was developed and used to:
  - Assess expected flows during storm events
  - Evaluate the effectiveness of potential pumping station locations, including the size, capacity, and number of pumps

FDC Sewer System Monitoring Findings:

- The water levels in the north area (Black Walnut) tend to increase very quickly to thunderstorm type events
- The water levels in the south area (Doug Leavens to Osprey) tend to increase more to long-lasting saturated ground type events

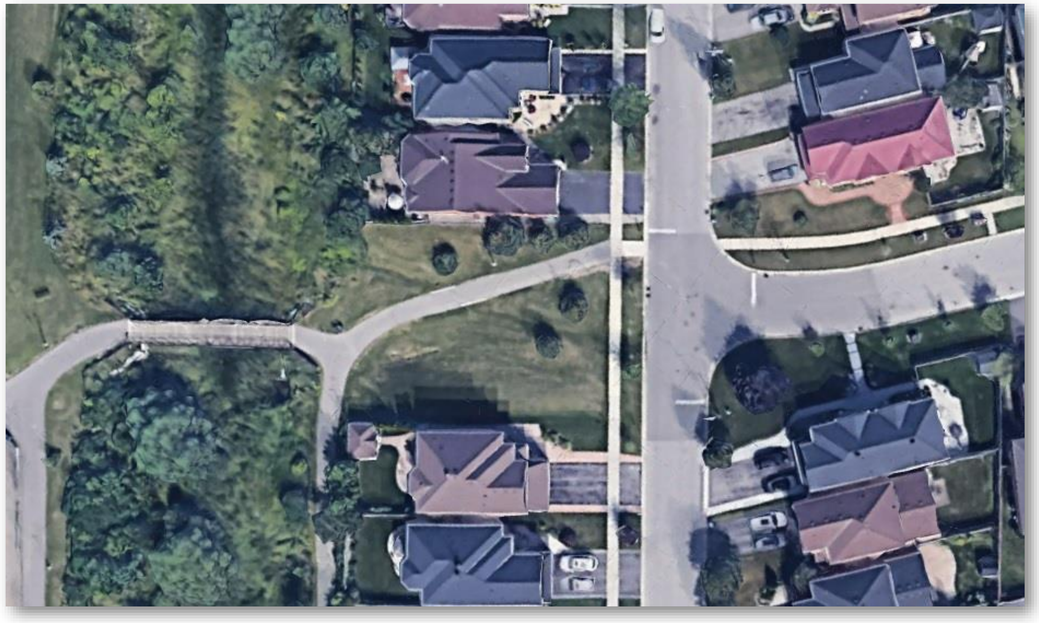


Preliminary Preferred Solution

Recommendations:

Parkette at Black Walnut Trail and Smoke Tree Road (Location 2) is Priority Location #1

- Monitoring indicates location continues to experience FDC surcharging
- Rapid nature of response requires a permanent installation that can respond quickly and automatically
- Carefully consider impacts to trail and pedestrian bridge

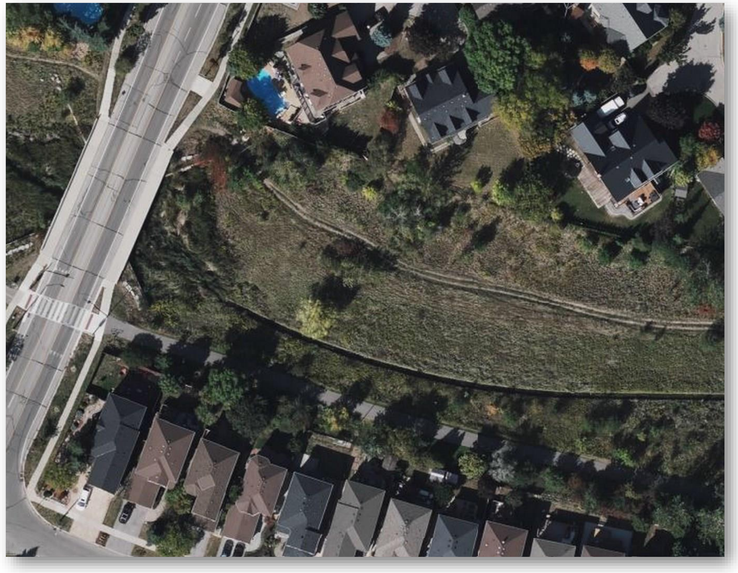


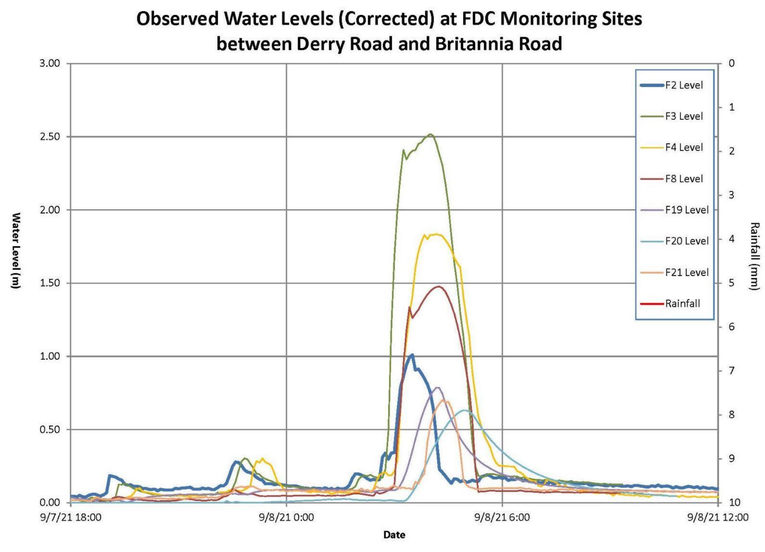
Preliminary Preferred Solution

Recommendations:

Doug Leavens Boulevard (Location 7) is Priority Location #2

- Monitoring indicates location continues to experience the greatest FDC surcharging in the southern area; required based on modelling
- Still located upstream of areas which have reported basement water infiltration
- More easily accessible for construction than Location 8 (Pintail Circle) given road proximity, and less disruption to trail system





Preliminary Preferred Solution

Recommendations:

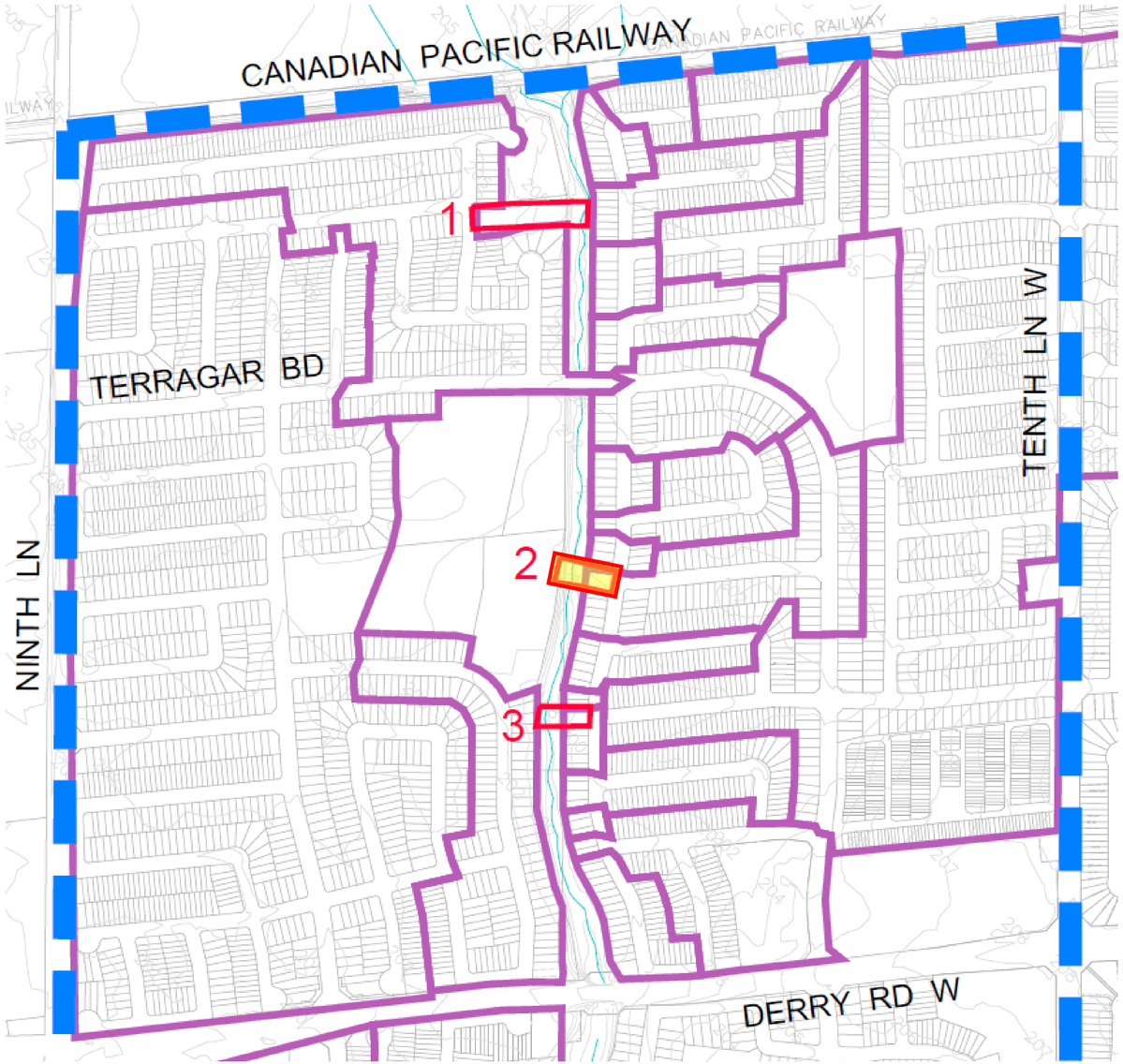
Lisgar Green Park (Location 11) is Priority Location #3

- Modelling indicates need for additional relief in the vicinity of Osprey Blvd; area of previously reported basement water infiltration
- Slightly further upstream than Location 12 (Osprey Marsh), also easier construction access; trail impacts still require consideration
- Ecological impacts to adjacent forest area to be minimized to extent possible; trunk sewer is in forested area and new outfall will likely be required

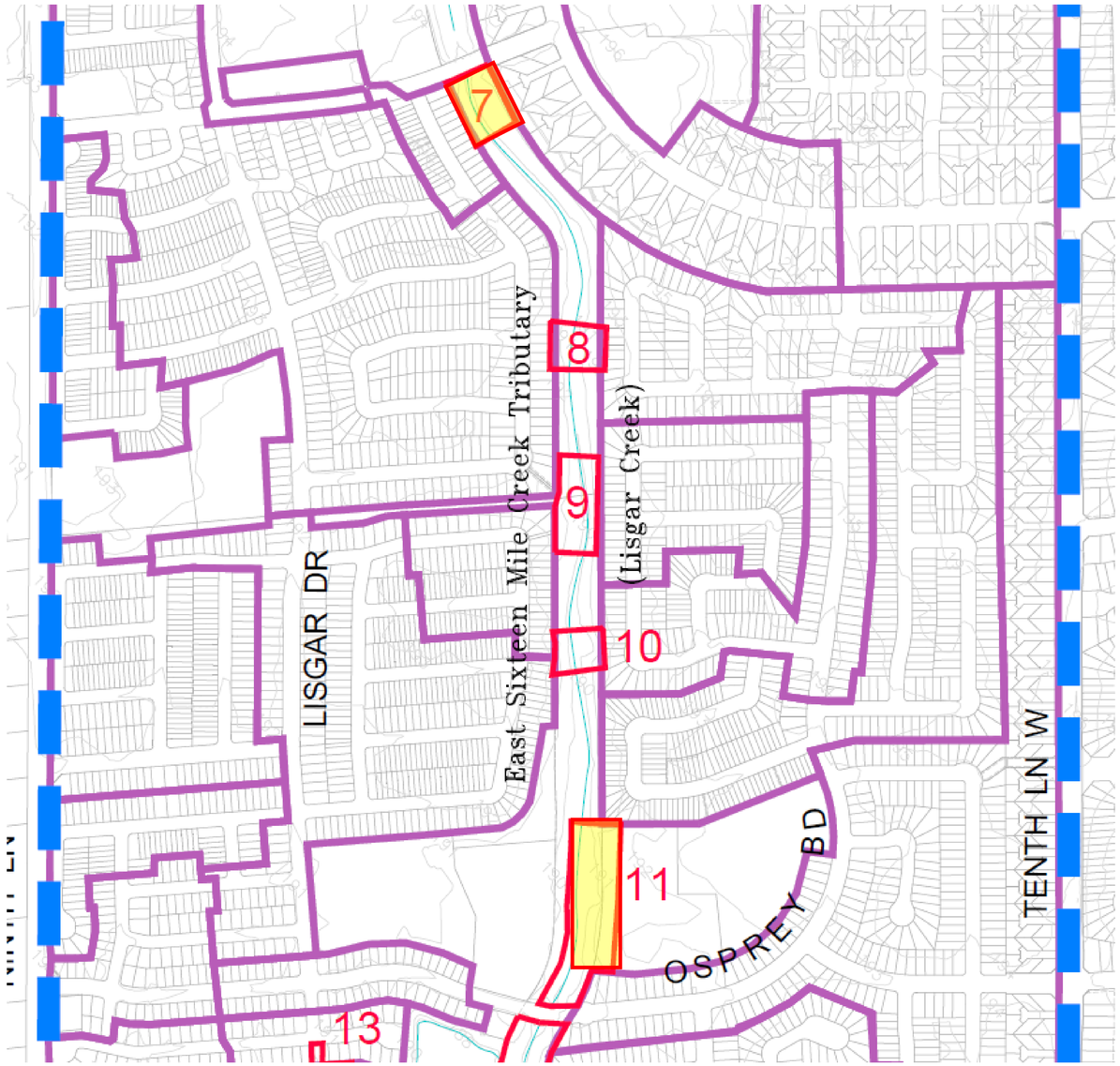
Preliminary Preferred Solution

Implement three (3) highest priority locations in sequence

North Area

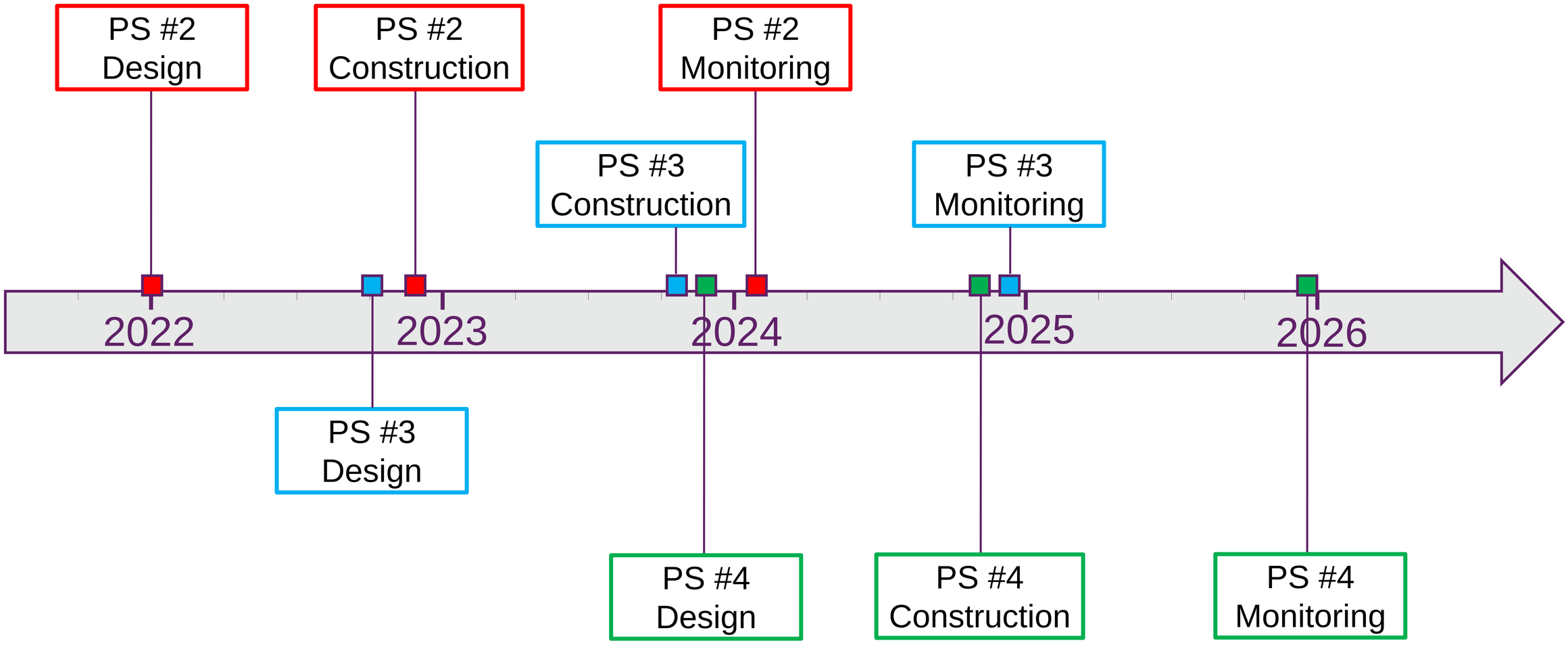


South Area



Preliminary Schedule

- The implementation of each pumping station consists of 3 phases:
  - Design, construction and monitoring
- The Cactus Gate Pumping Station (PS #1) is in the monitoring phase.
- The following timeline illustrates the preliminary schedule for the next pumping stations.



*Subject to Council approval of the necessary budget

Next Steps in Class EA

Next Steps:

Consultation (Q4 2021)

- Receive input from Public, stakeholders and Indigenous Communities

Project File (Q1 2022)

- A project file documenting the entire study process will be prepared for public review
- Seek approval from Council to publish the complete Project File for the public
- Project File will be available for public review for 30 days

Next Steps in Class EA

How Can You Get Involved?

- Email us to join our Project Mailing list for timely, relevant updates
- Review information shared at this Public Meeting
- Provide input by completing a Comment Form by December 1, 2021
- Visit the project website here:

mississauga.ca/lisgarpumpingstationstudy

- Speak with one of the Project Team members:

Elizabeth Dollimore, P.Eng. MBA.

City of Mississauga

Phone: (905) 615-3200, ext. 5303

Email: Elizabeth.Dollimore@mississauga.ca

Matt Senior, M.A.Sc., P.Eng.

Wood Environment & Infrastructure Solutions

Phone: (905) 335-2353 ext. 3080

Email: Matt.Senior@woodplc.com

4. Question and Answer Session #1

5. High Water Protocol Overview

What is the Lisgar High Water Protocol (LHWP)?

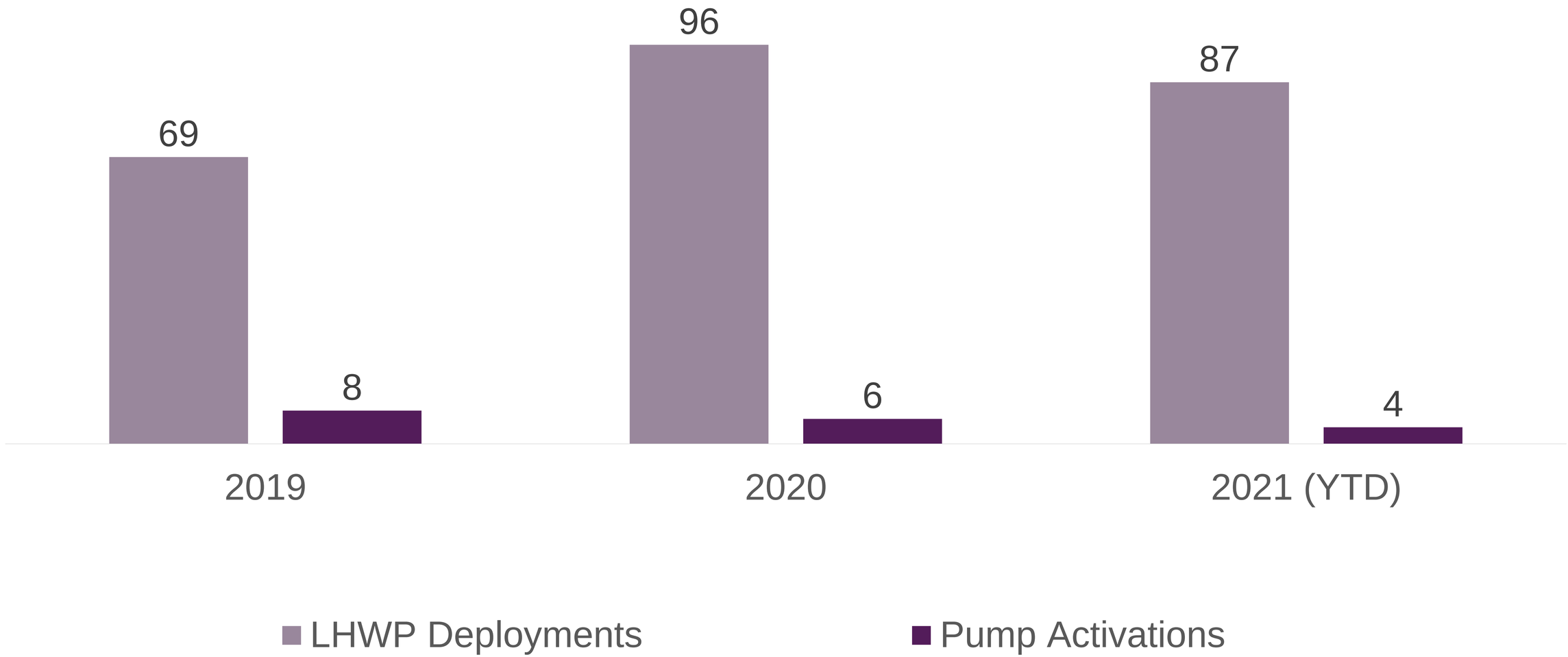
- The LHWP is one measure used to reduce the potential for water infiltration in the Lisgar area
- When specific weather-related criteria is met, the City will deploy temporary pumps at multiple locations within the Foundation Drain Collector System (FDC) as an emergency measure to provide relief from elevated water levels in the Lisgar FDC.

LHWP Criteria

The LHWP is initiated when any of the following criteria is met:

- Credit Valley Conservation Authority or Conservation Halton have issued a flood advisory or high water bulletin.
- Rain is forecasted with a probability of 40% or more and an intensity of one millimetre per hour or more.
- A risk of thunderstorms is forecasted.
- Rain is forecasted and the ground has snow cover.

LHWP Deployments & Activations by Year



Recent Improvements to the LHWP

The City is always reviewing the LHWP and looking for opportunities to improve it as new information becomes available.

These are recent improvements made to the LHWP:

- Larger 15 cm (6”) pumps have replaced the smaller 10 cm (4”) pumps. The larger pumps are quieter and can remove a higher volume of water.
- A consultant reviewed and evaluated pump locations for optimal performance and access. One pump was relocated as a result.
- Minor pathway work was completed so that residents can continue to safely access the trail network at each pump location when it is not raining.

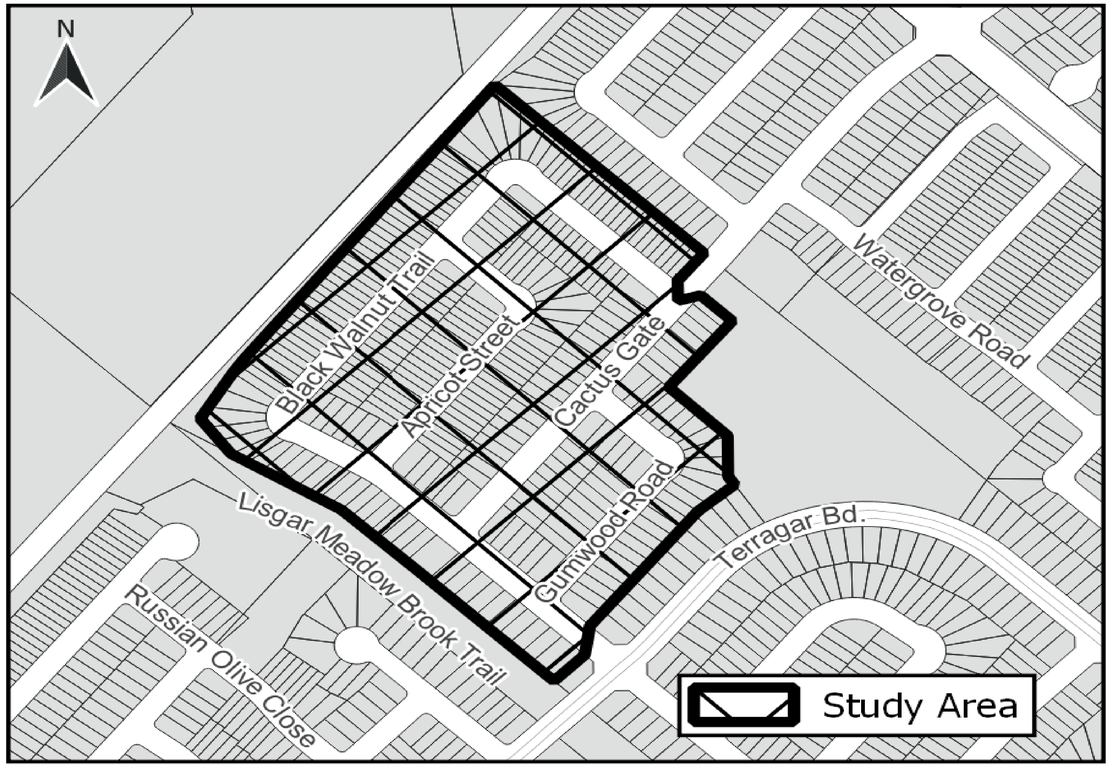
6. Additional Updates

FDC Smoke Testing

- Downspouts and plumbing vents should not be connected to the City's FDC system
- The City is undertaking additional investigations to identify unauthorized private sources of flow into the FDC
- This summer, the City completed smoke testing of a portion of the Foundation Drain Collector system

FDC Smoke Testing

- Testing was completed on the following streets:
  - A section of Black Walnut Trail, a section of Cactus Gate, Apricot Street and Gumwood Road
- 284 properties
- Staff observed smoke emitting from:
  - downspouts (may indicate direct connection to FDC)
  - sanitary vents (may indicate a cross connection to FDC)
- Staff are considering next steps



FDC Sump Pump Subsidy Program

- A sump pump can provide an additional safeguard against basement water infiltration.
- The City continues to suggest that residents who qualify for the City's FDC Sump Pump Subsidy Program take advantage of this program.
- The City will subsidize up to 100% of the cost of installing a sump pump, to a maximum of $6,000

- Program details are available at:
  http://www.mississauga.ca/portal/stormwater/fdc-sump-pump-subsidy/

7. Question and Answer Session #2

Thank you

Review this presentation and find the comment form at:
mississauga.ca/lisgarpumpingstationstudy

Follow-up questions / comments can be emailed to:
elizabeth.dollimore@mississauga.ca

Additional Slides

Preliminary Preferred Solution

Mitigation Considerations:

Subject	Impact / Issue	Mitigation / Action
Construction	•Traffic •Noise •Dust •Vibration	•Management plan required to meet City standards •Contract will ensure City requirements are met •Pre-construction surveys of adjacent residences are proposed •Active monitoring during construction
Operation	•Noise •Odour •Maintenance	•Pumps are below ground and very quiet •Stormwater flows (not sanitary) - no odour is anticipated •Proposed maintenance accesses will be included in design •City will retain a contractor for Operation and Maintenance

Preliminary Preferred Solution

Mitigation Considerations:

Subject	Impact / Issue	Mitigation / Action
Aesthetics	•Pumps •Parkette •Buildings	•Majority of features are below ground, including pumps •Landscape plan will be created for restoration •No permanent buildings are expected
Creek Discharge	•Outlet	•Located adjacent to creek; Conservation Halton permit is expected to be required if works within regulated area
Climate Change	•Resiliency	•Pumping station and utility dewatering trench will add capacity to overall system, providing resiliency to changing climate