



<https://sgis.wellington.ca/Maps/index.html?viewer=WellingtonCountyExternal>



Mount Forest Drainage Study

AREA EAST OF MAIN STREET SOUTH (HWY 6) AND
SOUTH OF SOUTH SAUGEEN RIVER

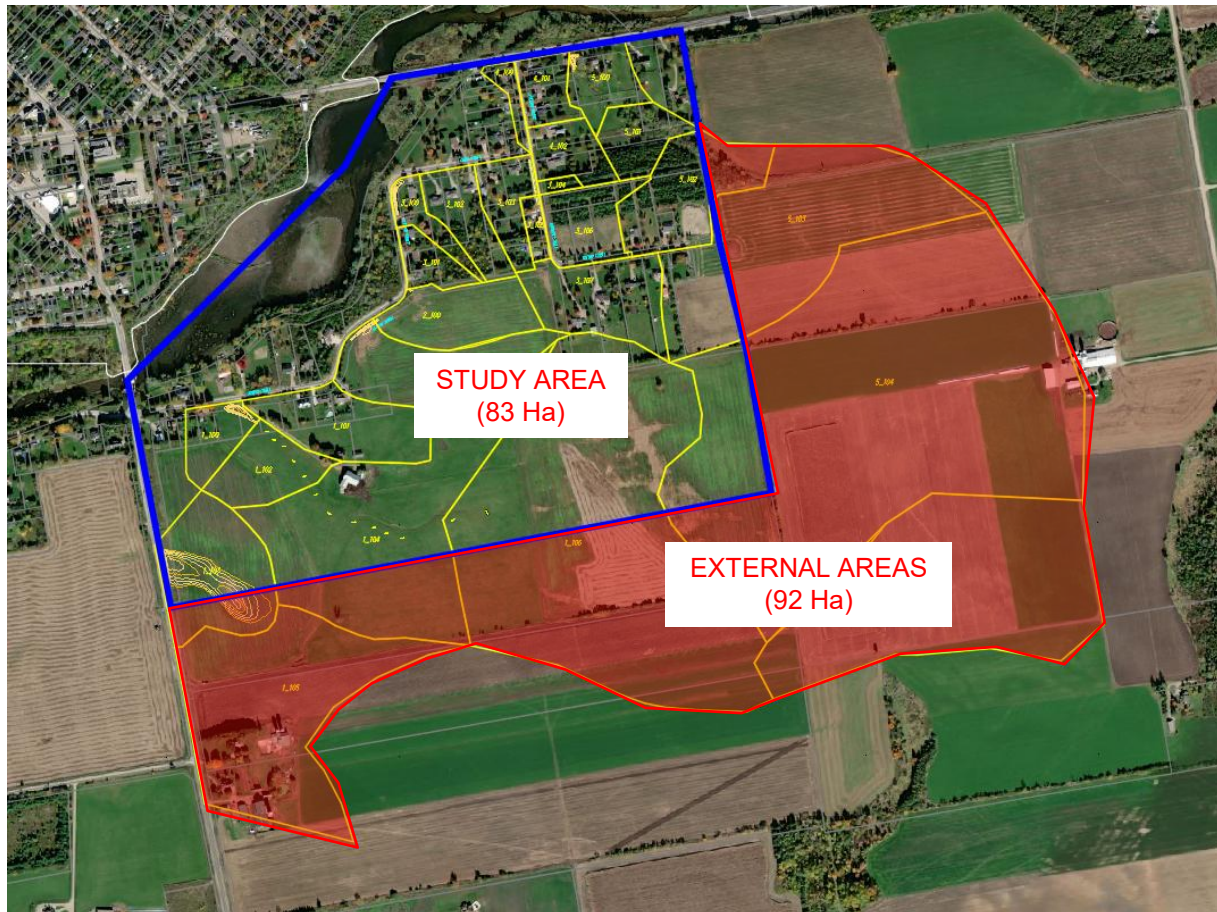
BMROSS PROJECT #25155

PUBLIC INFORMATION CENTRE

AUGUST 11, 2026



Study Area



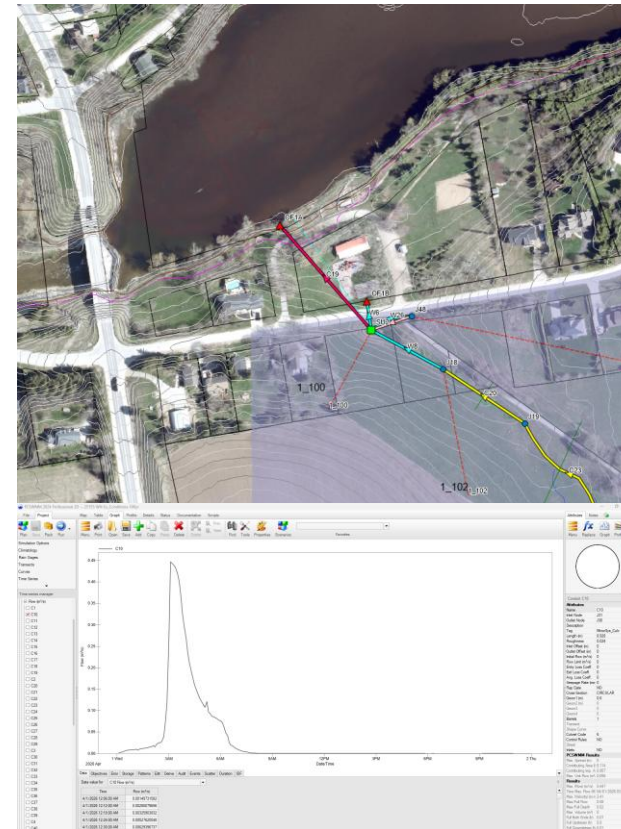
- ▶ Study Area consists of:
 - ▶ Areas within urban boundary of Mount Forest located south of South Saugeen River and east of Main Street South – **83 Ha**
 - ▶ Any external drainage areas which flow into the Study Area – **92 Ha**

Study Goals

- ▶ Use stormwater modelling software to assess Township drainage infrastructure within the Study Area and compare performance to Township standards
- ▶ Identify infrastructure that does not meet Township standards
- ▶ Identify drainage conditions that, while meeting Township standards, exhibit limited resilience or may be sensitive to operational and maintenance factors
- ▶ Develop and evaluate potential solutions to address identified deficiencies and improve overall drainage system performance

Stormwater Modelling - PCSWMM

- ▶ PCSWMM is a widely used engineering software program for analyzing stormwater drainage system
- ▶ The software simulates how rainfall becomes runoff, and then how this runoff moves through ditches, culverts, storm sewers, and other drainage infrastructure



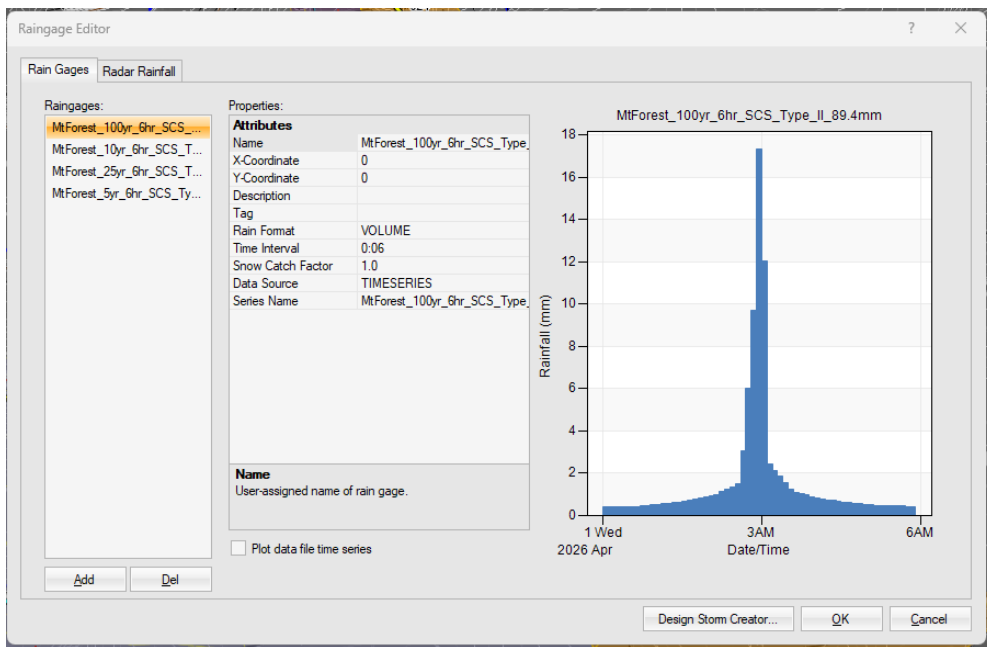
How Do We Evaluate a Drainage System?

- ▶ Municipal drainage systems must be able to manage a wide range of rainfall events:
 - ▶ Small, frequent storms occur every year and should be conveyed without flooding
 - ▶ Larger storms are less common but produce much greater runoff
 - ▶ Engineers evaluate how the drainage system performs under a series of **design storms** of increasing severity
 - ▶ To compare storms of differing severity, engineers describe them using their “return period”

What is a Return Period Storm?

- ▶ A return period is a statistical way of describing how rare a storm is:
 - ▶ **5 year storm** – occurs, on average, once every 5 years
 - ▶ **100 year storm** – occurs, on average, once every 100 years
- ▶ **Important:** a 100-year storm does **not** necessarily occur only once every 100 years.

PCSWMM Model – Design Storms



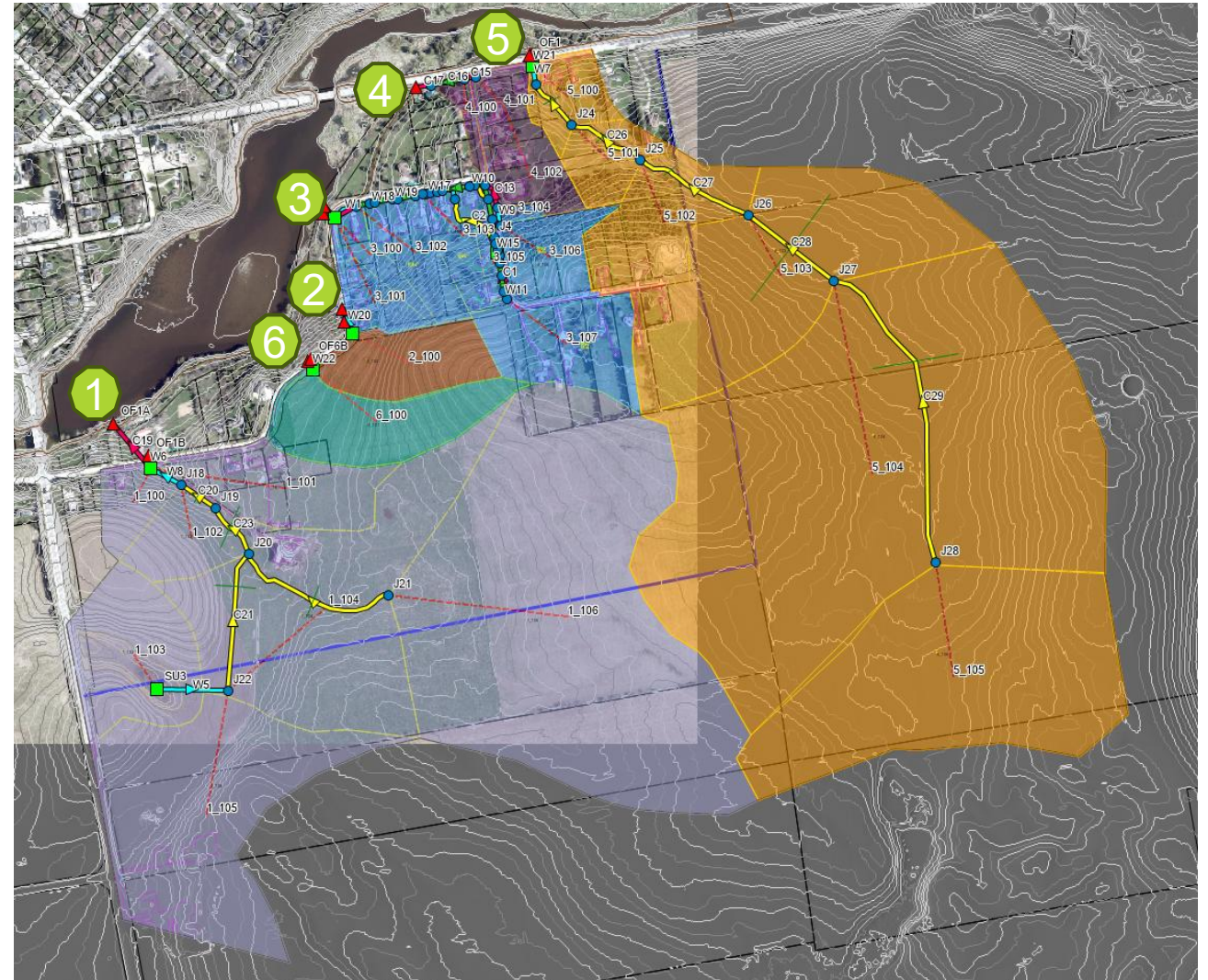
► Rainfall Events Modelled:

- 5 yr (54mm in 6 hrs)
- 10 yr (62mm in 6 hrs)
- 25 yr (73mm in 6 hrs)
- 100 yr (89mm in 6 hrs)

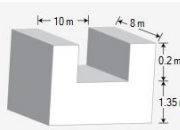
The overall drainage area was broken into 6 distinct catchments with 6 distinct outlets:

1. Murphy Street – at park (64 Ha)
750mm Culvert Outlet
2. Murphy/Glasgow bend (3 Ha)
450mm Culvert Outlet
3. Glasgow/Clyde bend (12 Ha)
900mm Culvert Outlet
4. Queen St – south side (3 Ha)
600mm Culvert Outlet
5. Queen St – north side (73 Ha)
1200mm Culvert Outlet
6. Murphy St – 80m w. of Glasgow (4 Ha)
450mm Culvert Outlet

Ex. Conditions Model Drainage Divisions



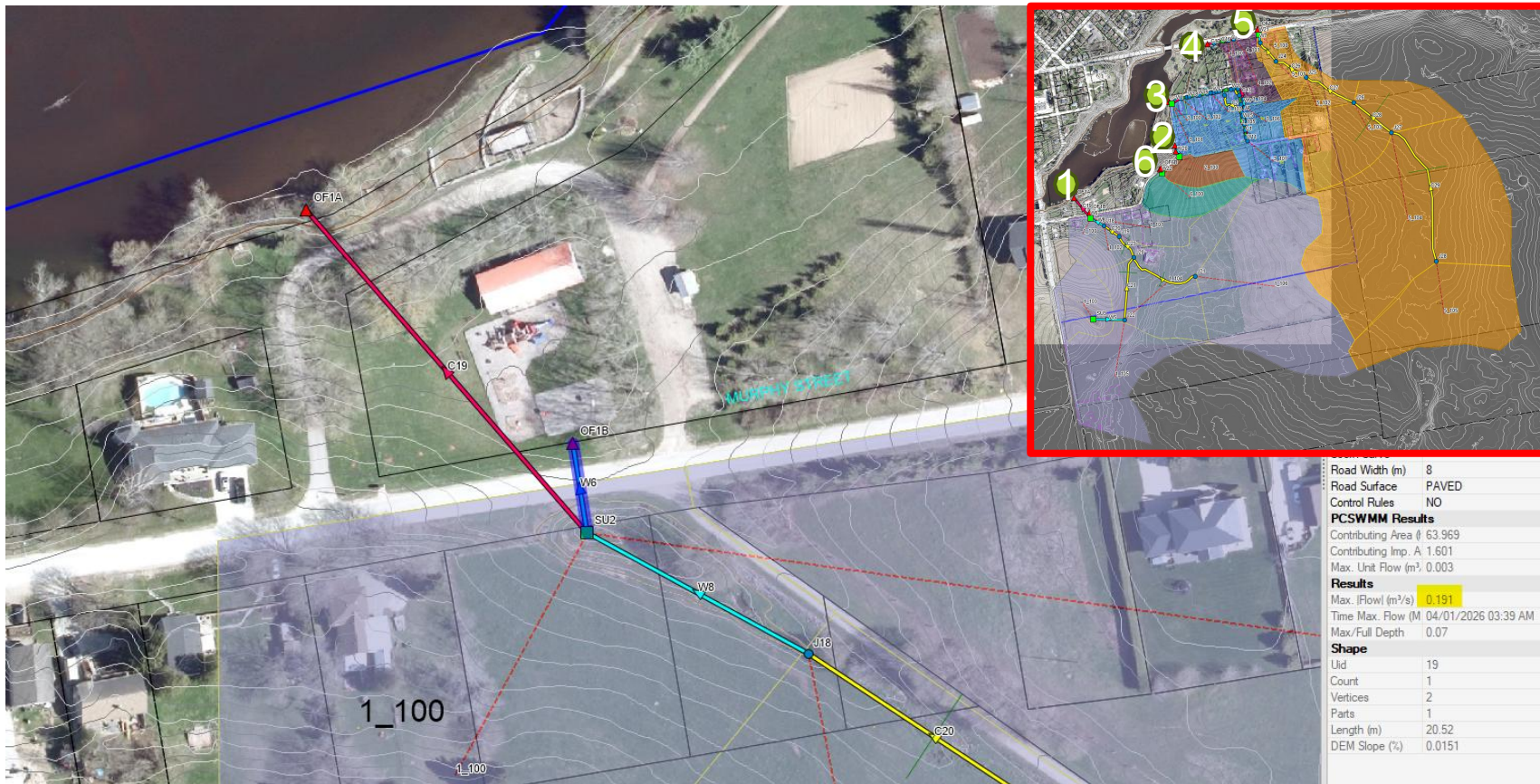
100



- | Attributes | |
|------------------|-----------------|
| Name | W2 |
| Inlet Node | SU1 |
| Outlet Node | OF38 |
| Description | Survey Adjusted |
| Tag | |
| Type | ROADWAY |
| Height (m) | 0.2 |
| Length (m) | 10 |
| Side Slope (m/n) | 0 |
| Charge Coeff. | 1.35 |
| Friction Coeff. | fr 3.33 |
| Rap Gate | NO |
| End Contractions | 0 |
| End Coeff. (m/s) | 0 |
| Can Surcharge | NO |
| Coef. Curve | |
| Road Width (m) | 8 |
| Road Surface | PAVED |
| Control Rules | NO |
-
- | PCSWMM Results | |
|--------------------------------------|--------|
| Contributing Area (ft ²) | 12.002 |
| Wet Weather Imp. A (1552) | |
| Max. Unit Flow (m ³ /s) | 0.002 |
-
- | Results | |
|--|-------|
| Max. Flow (m ³ /s) | 0.028 |
| Time Max. Flow (M 04/01/2026 03:09 AM) | |
| Max. Full Depth | 0.07 |
-
- | Shape | |
|---------------|---------|
| Utd | 12 |
| Count | 1 |
| Vertices | 2 |
| Parts | 1 |
| Length (m) | 26.73 |
| DEM Slope (%) | 0.63170 |

Existing Conditions Model Results

Catchment/Outlet #1 – Murphy St. @ Park - 64 Ha Drainage Area
~750mm Dia. Culvert Outlet



- ▶ Murphy Street culvert undersized (cannot convey 25 yr storm without overtopping) ✖
- ▶ This culvert is in poor condition near outlet ✖

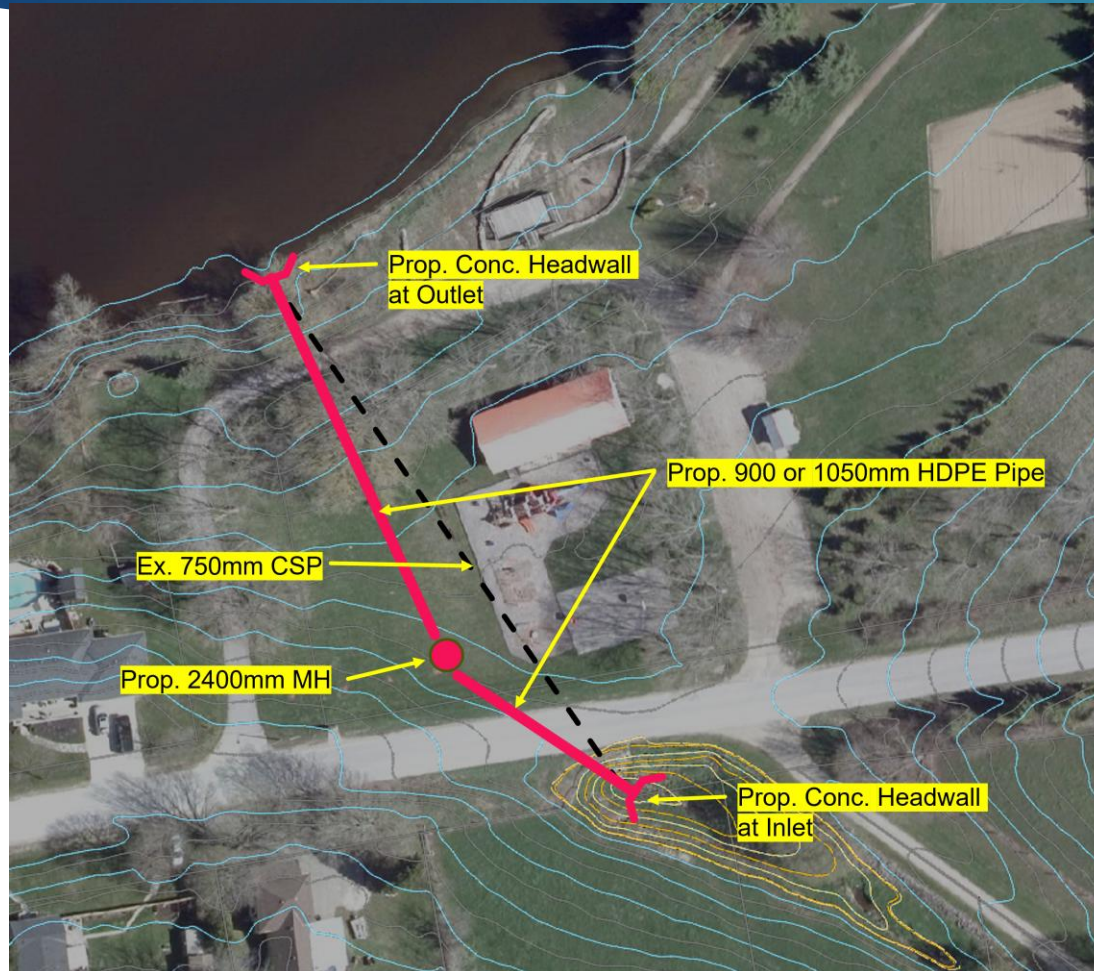
Existing Conditions Model Results

Catchment/Outlet #1 – Murphy St. @ Park - 64 Ha Drainage Area
~750mm Dia. Culvert Outlet



Potential Solutions / Next Steps

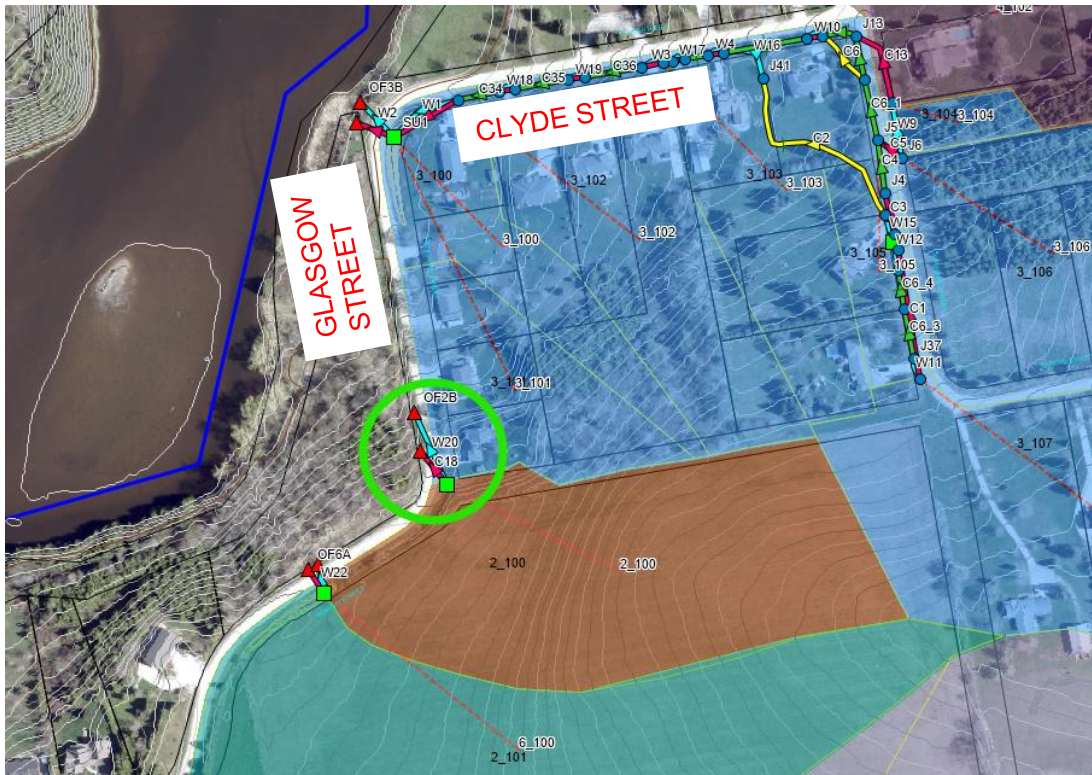
Catchment/Outlet #1 – Murphy St. @ Park - 64 Ha Drainage Area
~750mm Dia. Culvert Outlet



- ▶ Additional more detailed modelling work
- ▶ Culvert replacement – 900 or 1050mm dia.

Existing Conditions Model Results

Catchment/Outlet #2 – @ Murphy/Glasgow Bend - 3 Ha Drainage Area
450mm Dia. Culvert Outlet



- ▶ Culvert sufficiently sized ✓
- ▶ Erosion at outlet ✗
- ▶ No defined conveyance from culvert outlet to river, flows across trail ✗

100

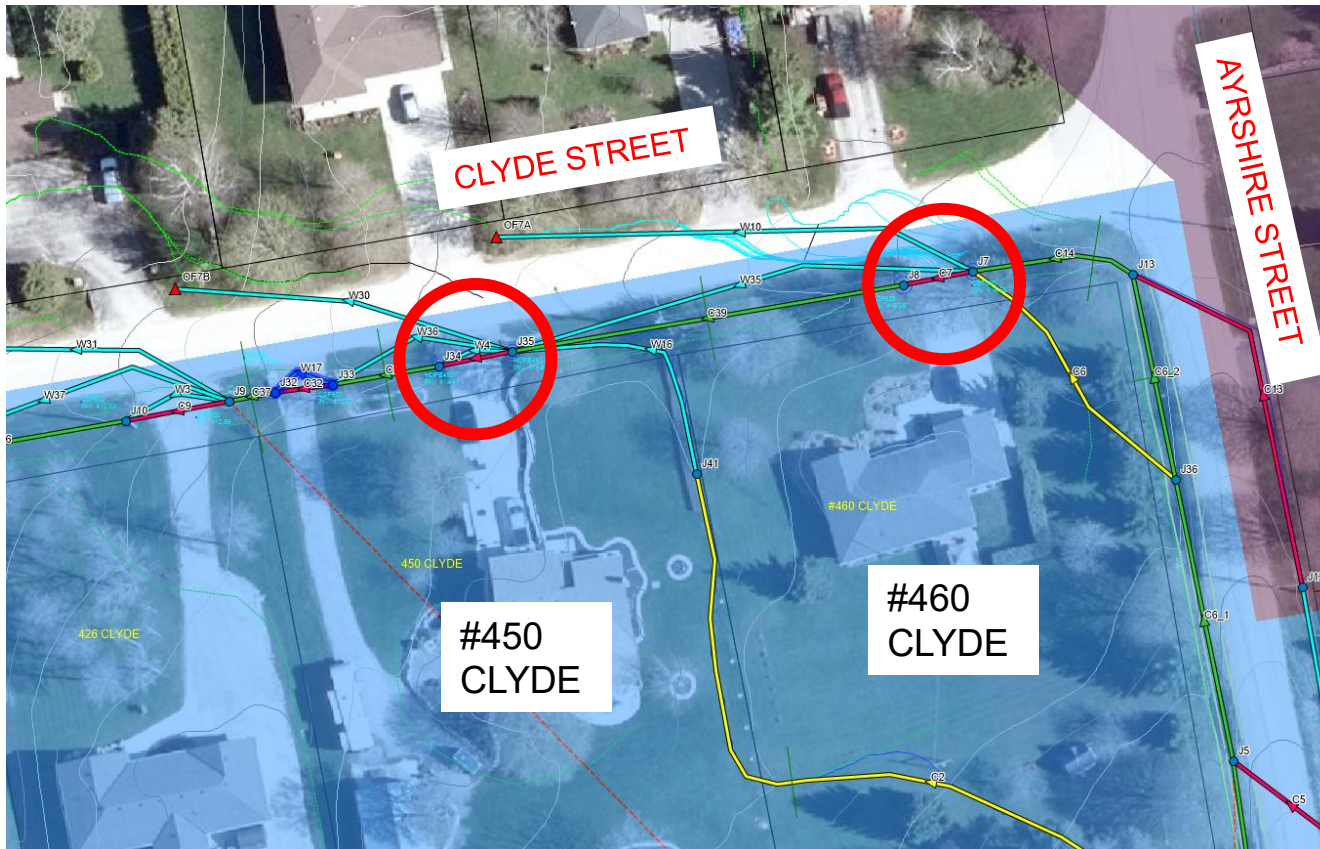
Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area ~900mm Dia. Culvert Outlet



- ▶ 900mm culvert at Clyde/Glasgow bend and most driveway culverts in Clyde St south ditch are sufficiently sized ✓
- ▶ Two (2) driveway culverts in Clyde St south ditch are undersized ✗
- ▶ Flows along Ayrshire St west ditch spill onto private property at south side of driveway to #425 Ayrshire during 100 yr storm ✗
- ▶ Ayrshire St west ditch adjacent to #460 Clyde St sufficiently sized but sensitive to conveyance reductions - undesirable
- ▶ Spills from Clyde St south ditch across to Clyde St north ditch under several storm scenarios – undesirable
- ▶ Clyde St north ditching poorly defined, allowing spills onto private property ✗

Existing Conditions Model Results

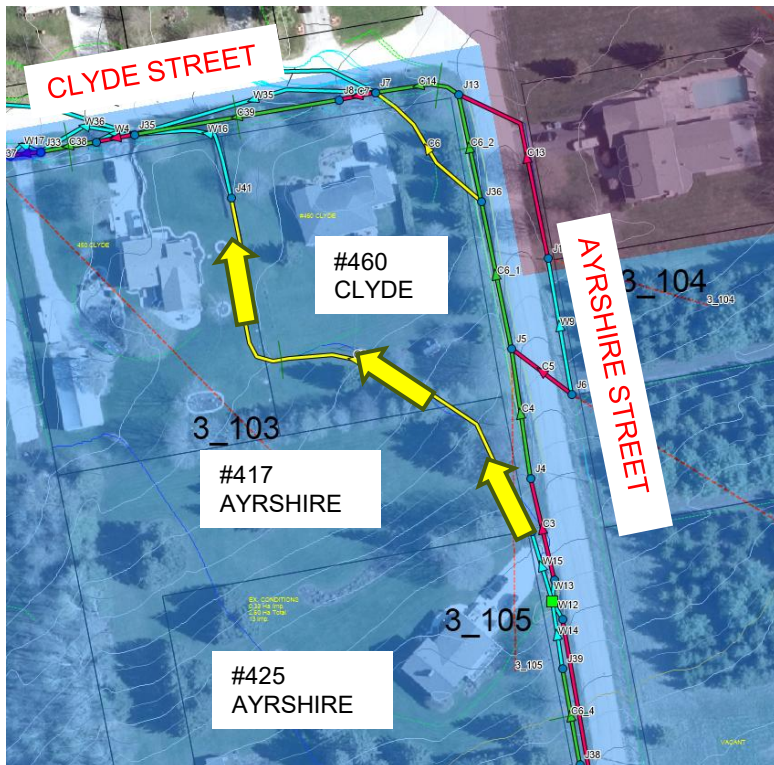
Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet



- ▶ Two (2) driveway culverts in Clyde St south ditch are undersized and overtop during 10-year storm ✖

Existing Conditions Model Results

Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet



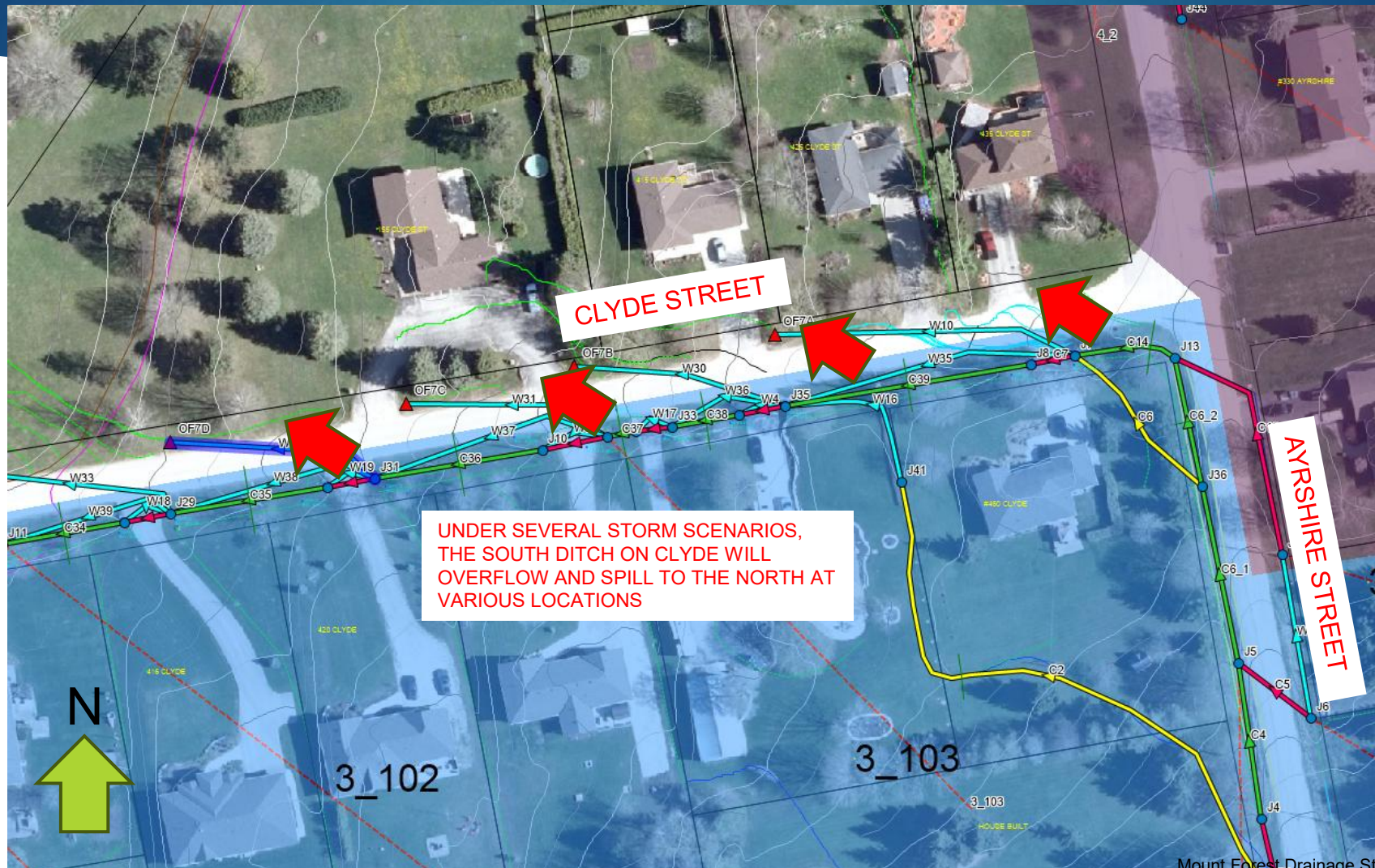
Existing Conditions Model Results

Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet



Existing Conditions Model Results

Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet



Existing Conditions Model Results

Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet



Potential Solutions / Next Steps

Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet

- ▶ Identified potential solutions / next steps for Township implementation
 1. Operations, Maintenance & Other
 2. Infrastructure Improvements

Potential Solutions / Next Steps

Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet

► Operations, Maintenance & Other

► Implement monitoring program and ensure regular maintenance of drainage infrastructure

- Example: when 50+ mm rainfall is forecasted, or before a significant snowmelt event, Township staff could complete sweep of drainage area and check for obvious deficiencies and blockages
- Complete regular ditch and culvert cleaning

Potential Solutions / Next Steps

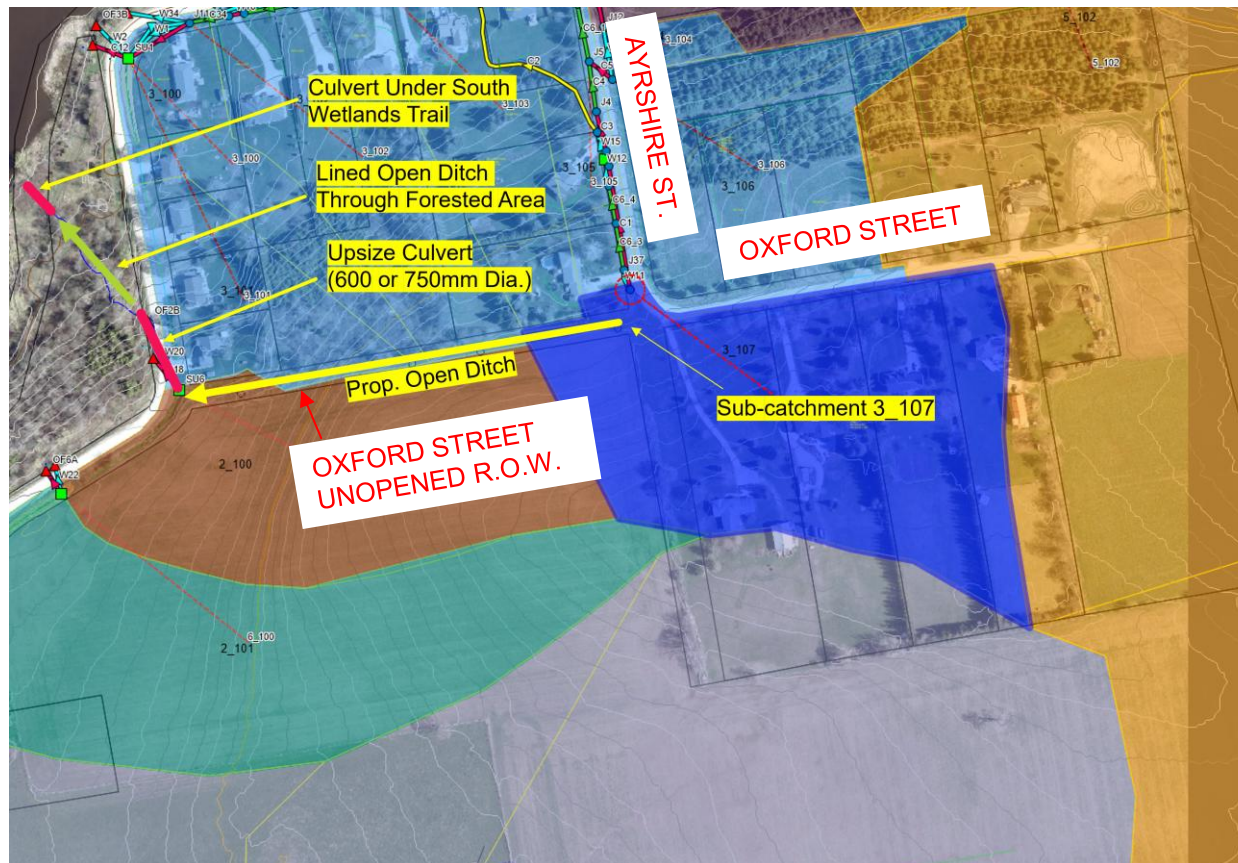
Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet



- Operations, Maintenance & Other
 - Private property upgrades and maintenance by homeowners can be helpful for extra protection above and beyond design conveyance capacity of Township infrastructure or in the case of runoff from adjacent lots
 - Swales, positive drainage

100

Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area ~900mm Dia. Culvert Outlet



- Infrastructure Improvement: Drainage Diversion

- ▶ Divert 3.6 Ha sub-catchment located south of Oxford St. to Outlet #2 via open ditch through unopened ROW.
- ▶ Requires upgrade of Outlet #2 at Murphy/Glasgow
- ▶ Significantly reduces flows experienced by Ayrshire/Clyde ditches and culverts

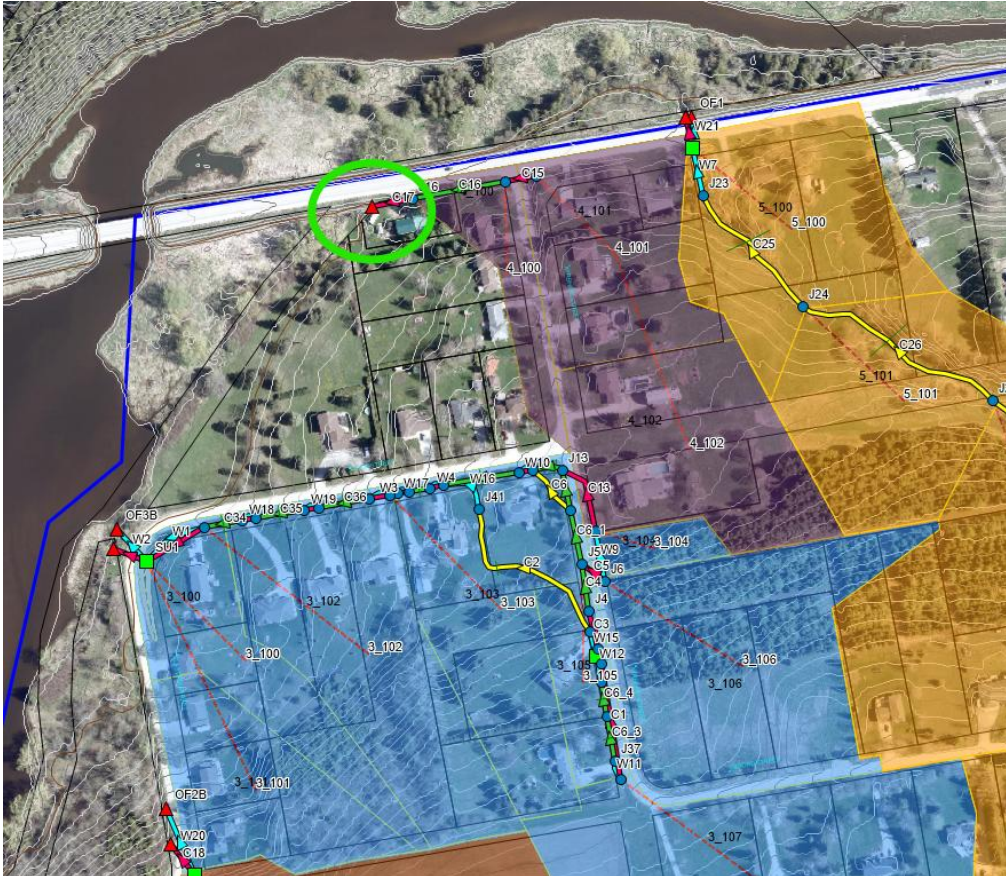
Potential Solutions / Next Steps

Catchment/Outlet #3 – @ Glasgow/Clyde Bend - 12 Ha Drainage Area
~900mm Dia. Culvert Outlet

- ▶ Infrastructure Improvement: Clyde Street Culvert/Ditching Upgrades
 - ▶ Replace undersized culverts in Clyde Street south ditch at #450 and #460 and improving ditching in north ditch
 - ▶ Potential Larger project instead of diversion: uniformly increase south ditch driveway culvert capacity – either increase size or twin

Existing Conditions Model Results

Catchment/Outlet #4 – @ Queen St. South Side - 3 Ha Drainage Area
~600mm Dia. Culvert Outlet



- ▶ Culvert sizes sufficient to meet Township standards ✓
- ▶ Ditching along Ayrshire Street (Clyde to Queen) poorly defined and some culverts buried ✗

Potential Solutions / Next Steps

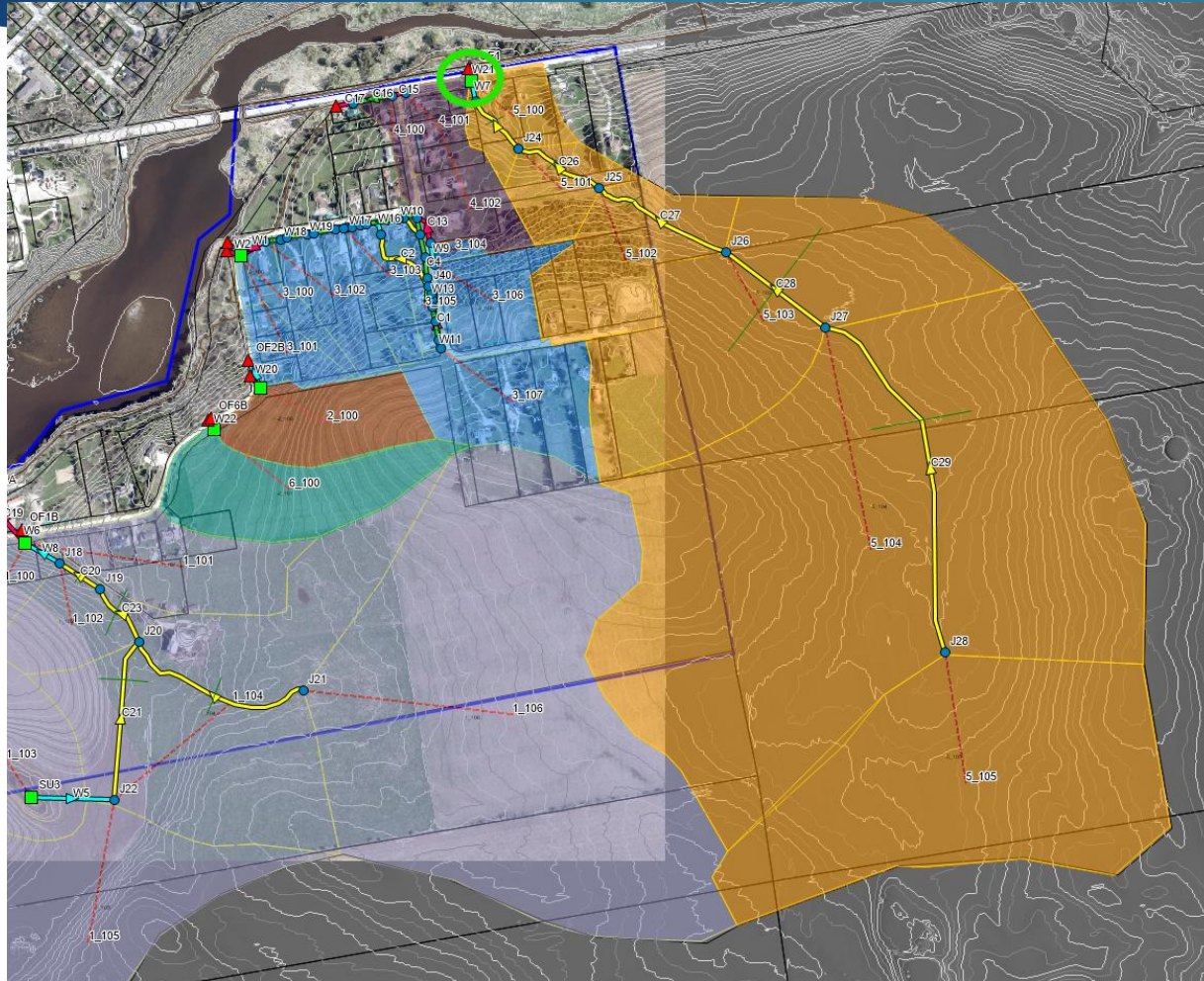
Catchment/Outlet #4 – @ Queen St. South Side - 3 Ha Drainage Area
~600mm Dia. Culvert Outlet



- ▶ Ditching improvements – minor excavation - along Ayrshire Street (Clyde to Queen) on both sides
- ▶ Recommendation to replace existing driveway culverts

Existing Conditions Model Results

Catchment/Outlet #5 – @ Queen St. North Side - 73 Ha Drainage Area
1200mm Dia. Culvert Outlet



- ▶ 1200mm culvert size sufficient to meet Township standards ✓
- ▶ Significant erosion at downstream end of culvert ✕ - Fix

Summary

- ▶ Stormwater modelling completed in study area to identify deficiencies
- ▶ Several capacity and maintenance deficiencies were discovered
- ▶ Routine monitoring and maintenance are critical to ensure optimal functionality of the system
- ▶ Some capital infrastructure improvements could be implemented, especially in Catchment 3 (Ayrshire/Clyde area) to resolve deficiencies and increase system resiliency

Questions/Comments?