Ministry of the Environment, Conservation and Parks

Consolidated Linear Infrastructure Environmental Compliance Approvals (CLIECA)

Source to Stream Conference

March 2025

Ontario

CLI ECA Overview

- Consolidated Linear Infrastructure Environmental Compliance Approvals (CLI-ECA) are replacing existing pipe-by-pipe approvals for some municipal sewage works by consolidating approvals for linear infrastructure into a system-wide permission with modern terms and conditions.
- Each owner (municipality) will receive:
  - One CLI-ECA for their Municipal Sewage Collection System
  - Once CLI-ECA for their Municipal Stormwater Management System
- Industrial, commercial, and wastewater treatment facilities will still require a separate sewage ECA.

The CLI Approach is….

Improving Consistency and Environmental Protection

- Standard conditions across Ontario for system design, construction and operation
- Updated ECA terms and conditions and Design Criteria will enhance environmental protection

Streamlining the Approvals Process

- For both municipalities, and developers constructing works on behalf of municipalities
- Pre-authorization conditions for routine activities prevent need for an ECA application where alterations meet the Design Criteria and conditions in the CLI-ECA

Creating a Holistic Picture of Sewage Works

- Will enable enhanced policy and decision making
- Process to update the ECA description as projects are completed
- Renewed ~5 years to ensure the conditions and the description of sewage works remains up to date

Pre-authorization

Allow simple, routine changes to be made with no additional approval from the Ministry, such as:

- Modifying, replacing or extending sanitary sewers and storm sewers, including extensions into new residential developments;
- Adding new sewage pumping stations or modifying existing sewage pumping stations;
- Adding new stormwater management facilities or modifying existing facilities (e.g., wet pond, infiltration basins, engineer wetlands, etc.)
- Adding new or modifying existing equipment with emissions to air (e.g., emergency power generators or venting for odour control).

All pre-authorized alterations are subject to strict conditions that ensure environmental protection. Changes that do not meet the conditions will require a separate application from the Ministry and must be approved before they proceed.

Consolidated Linear Infrastructure Environmental Compliance Approvals (CLIECA)

Monitoring Plan

Stormwater Monitoring Guidance – Monitoring Plan

The Purpose and Objectives of the Monitoring Plan

Purpose

Evaluation of key receiver water quality and quantity to identifying potential areas of concerns. Intended is to build upon existing studies / plans / programs and is flexible.

Objectives

- Monitor water quality and quantity parameters in Key Receivers to observe trends and identify potential areas of concern (e.g., neighbourhoods, SWM systems).
- Collect information which may be used by municipal decision makers to evaluate the effectiveness of SWM O&M activities and/or support or streamline future O&M activities.

Stormwater Monitoring Guidance – Monitoring Plan

Monitoring Attributes

Water Quantity Monitoring:
- Water Level (Required)
- Flow and Velocity (Recommended)
- Precipitation (Required)

Water Quality Monitoring (Required):
- Total suspended solids (TSS)
- Total phosphorous (TP)
- Total nitrogen (TN)
- Chloride (CL)
- pH (taken at time of collection)
- Water temperature (taken at time of collection).

Other:
- Air Temperature (Required)
- Identify Major Construction and ESC plans (Required)

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Stormwater Monitoring Guidance – Monitoring Plan

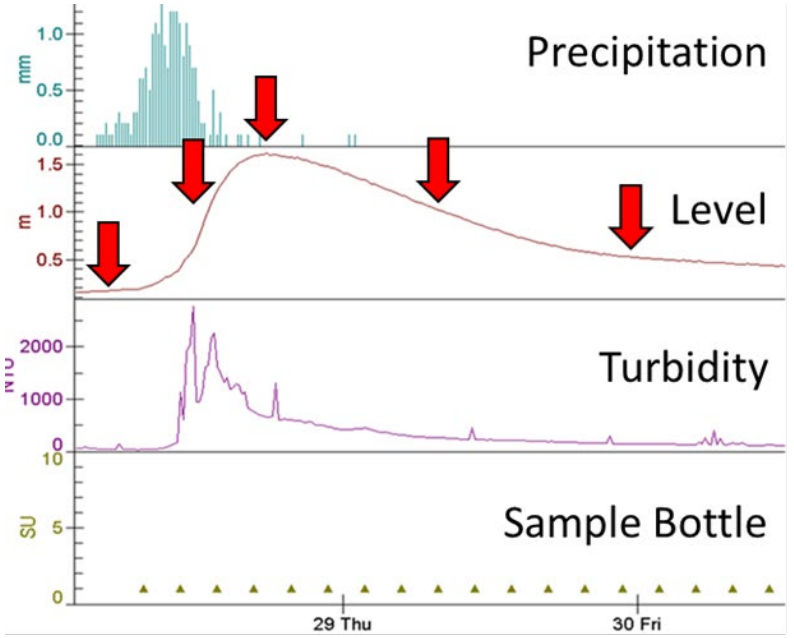
Flow and Season Considerations

3 Flow Regimes

- Wet weather: rainfall >= 10mm (forecasted or measured)
- Dry weather: No precipitation in 3+ days.
- Snowmelt: Driven by warmer air temp and/or rain on snow when snow is on the ground (>=2 cm blanket coverage)

4 Seasons

- Each one affects contaminant transport and access.



EXAMPLE – using autosampler and automated sensors

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Stormwater Monitoring Guidance – Monitoring Plan

Station Type and Siting

Sentinel (Long-Term) Monitoring Stations:

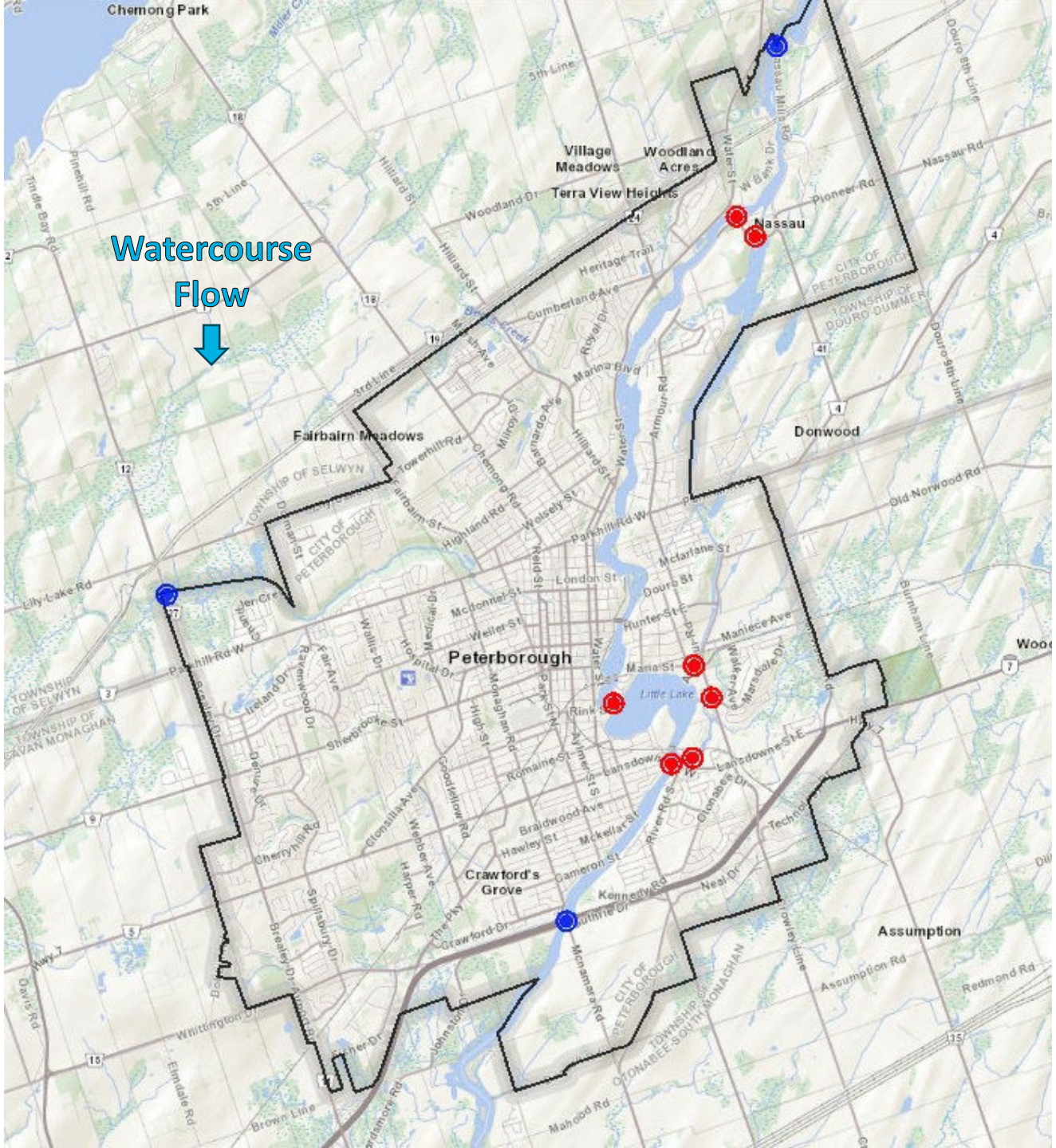
- Monitoring key receiver(s) over time to develop trends of health and identify areas of concern.
- In stream orders 4 or greater (ref: Strahler). If less than 4th order, then use highest order for sentinel station(s).
- Locate on *Key Receivers* and major confluences:
    - Within a municipality's jurisdiction.
    - Starts/enters and ends/leaves its jurisdiction.
    - Used to divide into larger sub-catchments.
    - No major watercourse(s) in jurisdiction, continue O&M activities and redirect efforts to SWM system monitoring.
- The QP may include a sampling location near a sensitive/vulnerable area determined in Section 4.6 of this document.

Short-Term Monitoring Stations:

Pending trend results, the QP may decide to install additional short-term monitoring stations to locate a potential source or increase coverage.

- **Performance or Targeted Monitoring Stations:** To evaluate the potential impact of a particular Major SWM outfall, SWM technology or series of inline SWM technologies (treatment train).
- **Standalone Monitoring Stations:** To provide information in a short period of time that may or may not be directly related to any station in the network (e.g. an additional precipitation gauge or a level sensor in a pipe to determine timing and stage).

- Sentinel stations at border
- Sentinel stations at major branches and/or confluence



EXAMPLE – Peterborough (Single Tier)

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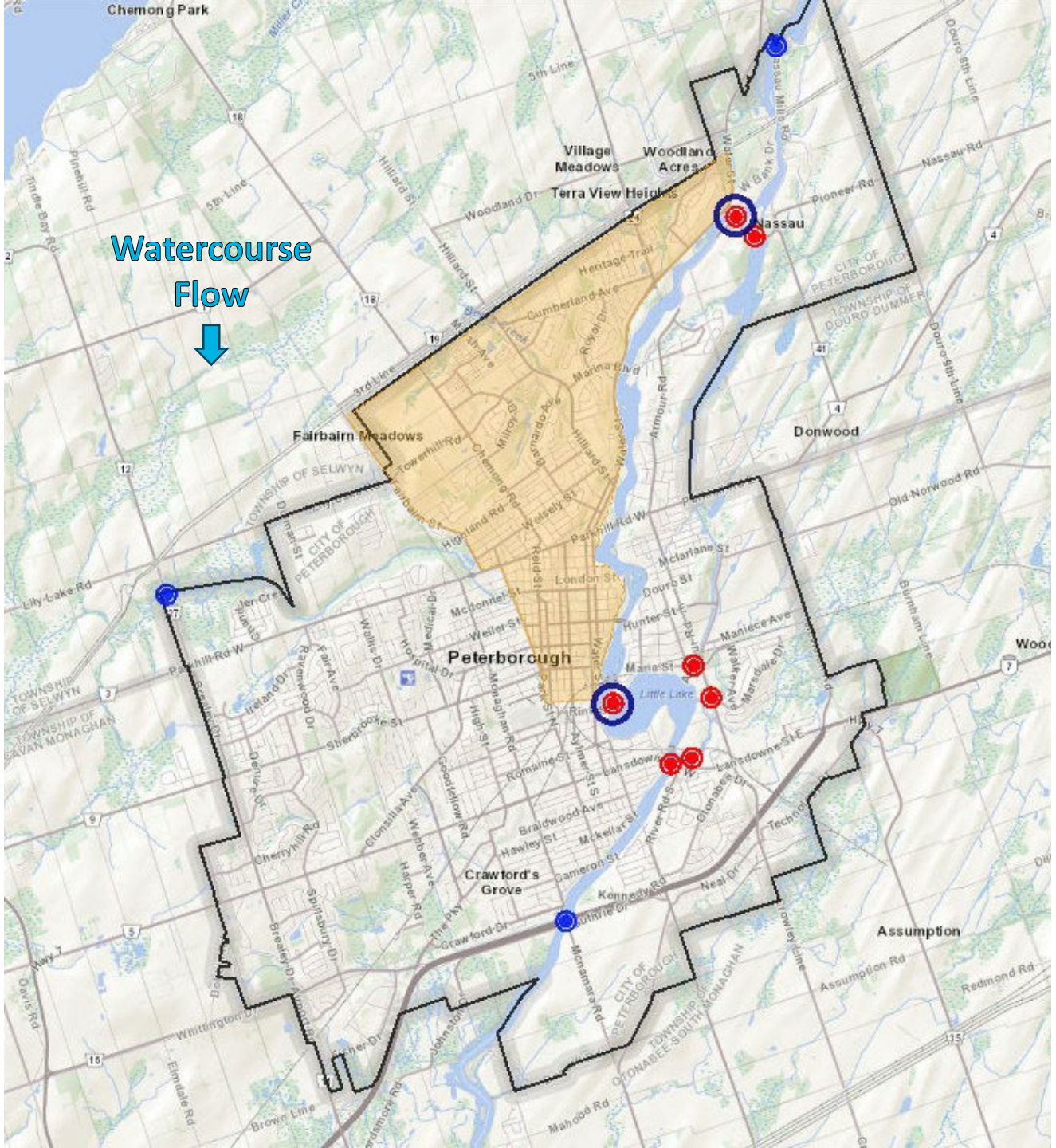
EXAMPLE – Peterborough (Single Tier)

- Sentinel stations at border
- Sentinel stations at major branches and/or confluence
- Significant discrepancy observed between up and down stream
- Area of concern (AOC)

Response #1
Direct O&M efforts to AOC. Use physical techniques such as inspections, level monitoring, sediment surveys, etc. to determine next steps to improve or if additional monitoring is needed.

Response #2 (pending #1)
If the first response does not work, the QP may add short-term stations for level, flow, and/or water quality at major outfalls to narrow down source of increased runoff and/or water quality parameter(s).



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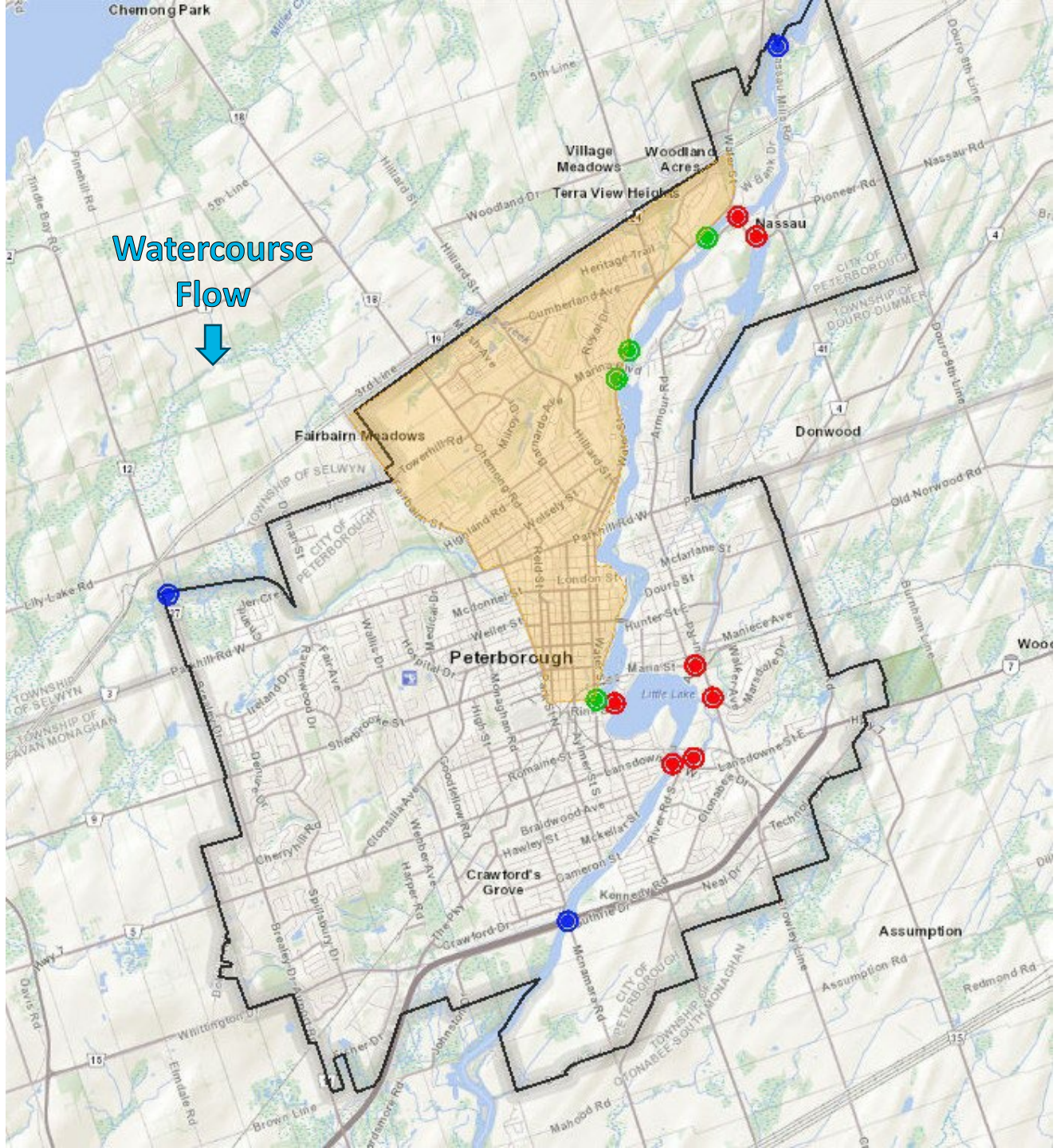
- Sentinel stations at border
- Sentinel stations at major branches and/or confluence
- Short term stations at major outfalls to support SWM investigations
- Area of concern (AOC)

Response #2 (if applicable)
If the first response does not work, the QP may add short-term stations for level, flow, and/or water quality at major outfalls to narrow down source of increased runoff and/or water quality parameter(s). If an outfall is identified as the source of observed issues, then the QP may add additional stations to observe neighbourhood SWM system performance. At this point a 3rd response is possible (e.g. system performance monitoring)



EXAMPLE – Peterborough (Single Tier)

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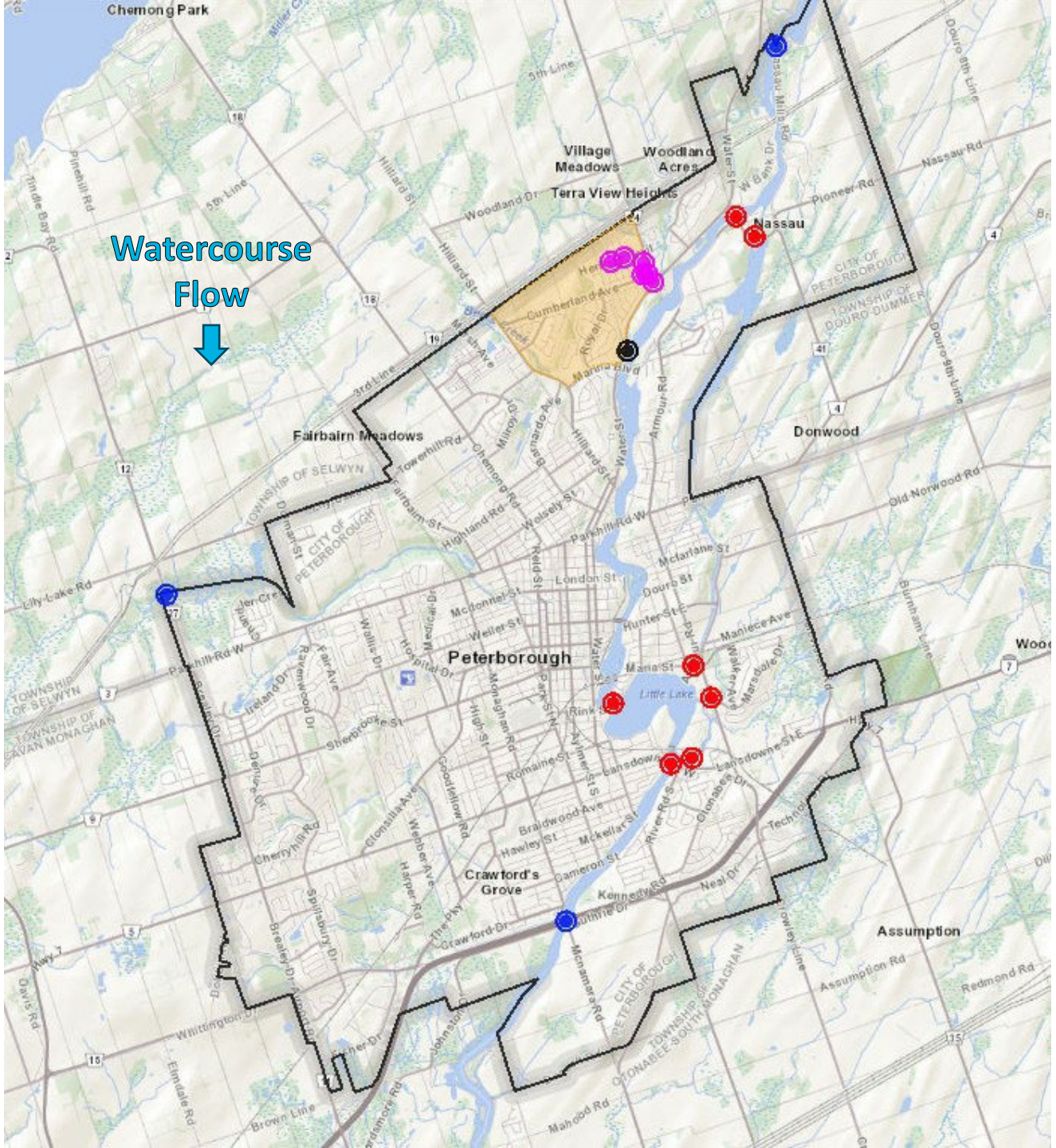
EXAMPLE – Peterborough (Single Tier)

- Sentinel stations at border
- Sentinel stations at major branches and/or confluence
- Short term station continues at outfall to support SWM investigations
- Standalone stations in SWM system to support SWM investigations
- Area of concern (AOC)

Response #3 (pending #2)
At this point, the municipality may want to revisit base O&M initiatives as proposed in Response #1. If deemed ineffective, then the QP may add standalone stations for level, flow, and/or water quality within the SWM system to narrow down source of increased runoff and/or water quality parameter(s).



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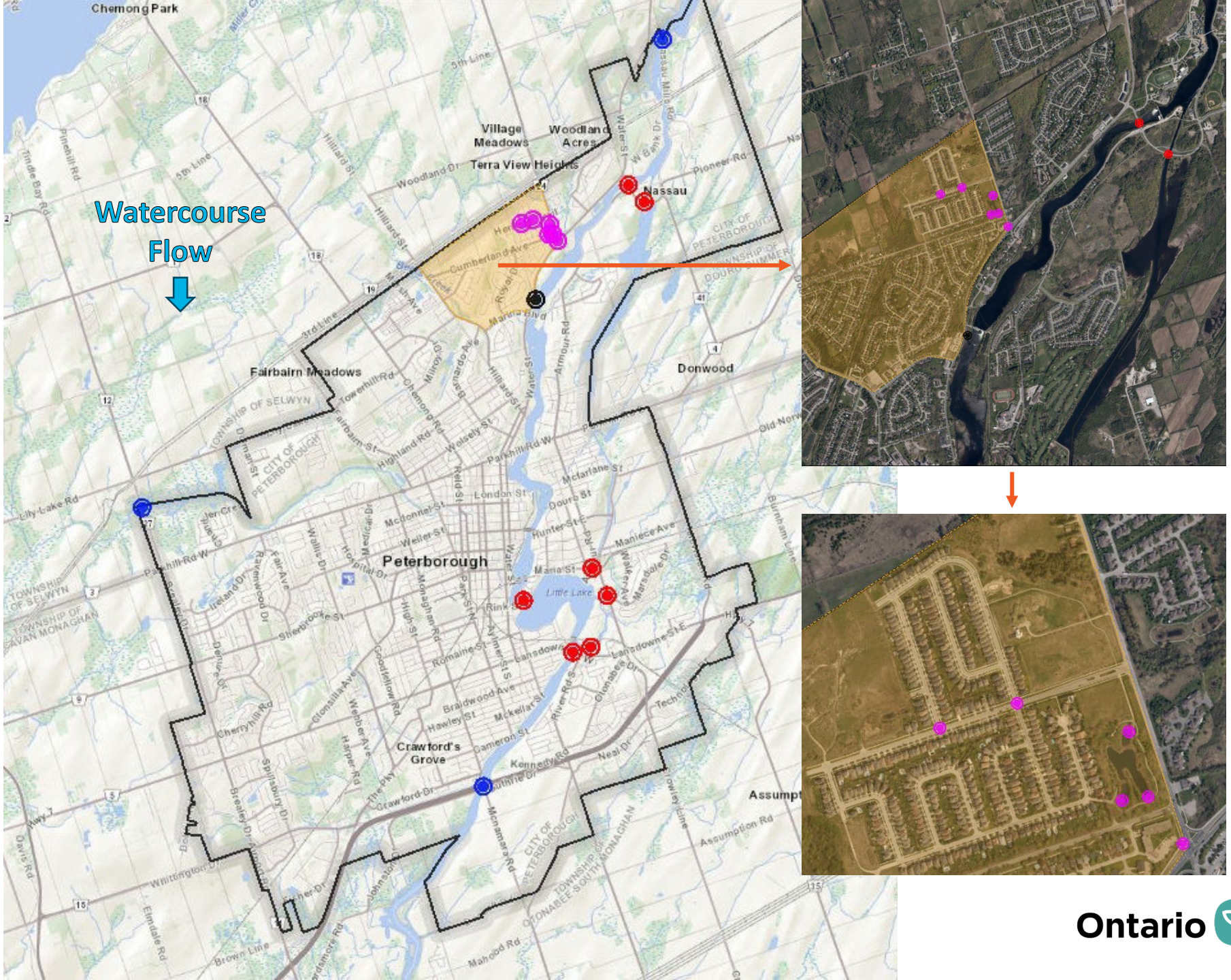
- Sentinel stations at border
- Sentinel stations at major branches and/or confluence
- Short term station continues at outfall to support SWM investigations
- Standalone stations in SWM system to support SWM investigations
- Area of concern (AOC)

Response #3 (if applicable)
If necessary, then the QP may add standalone stations for level, flow, and/or water quality within the SWM system to narrow down source of increased runoff and/or water quality parameter(s).

EXAMPLE – Peterborough (Single Tier)



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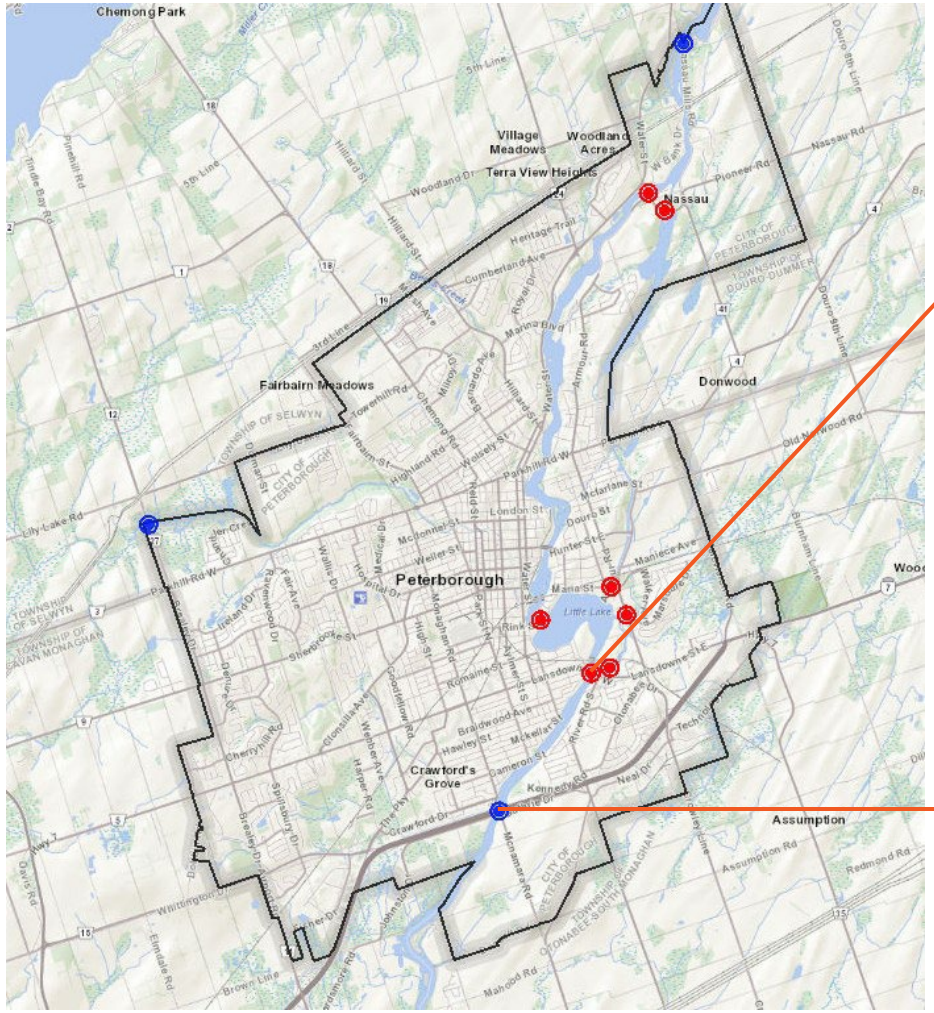
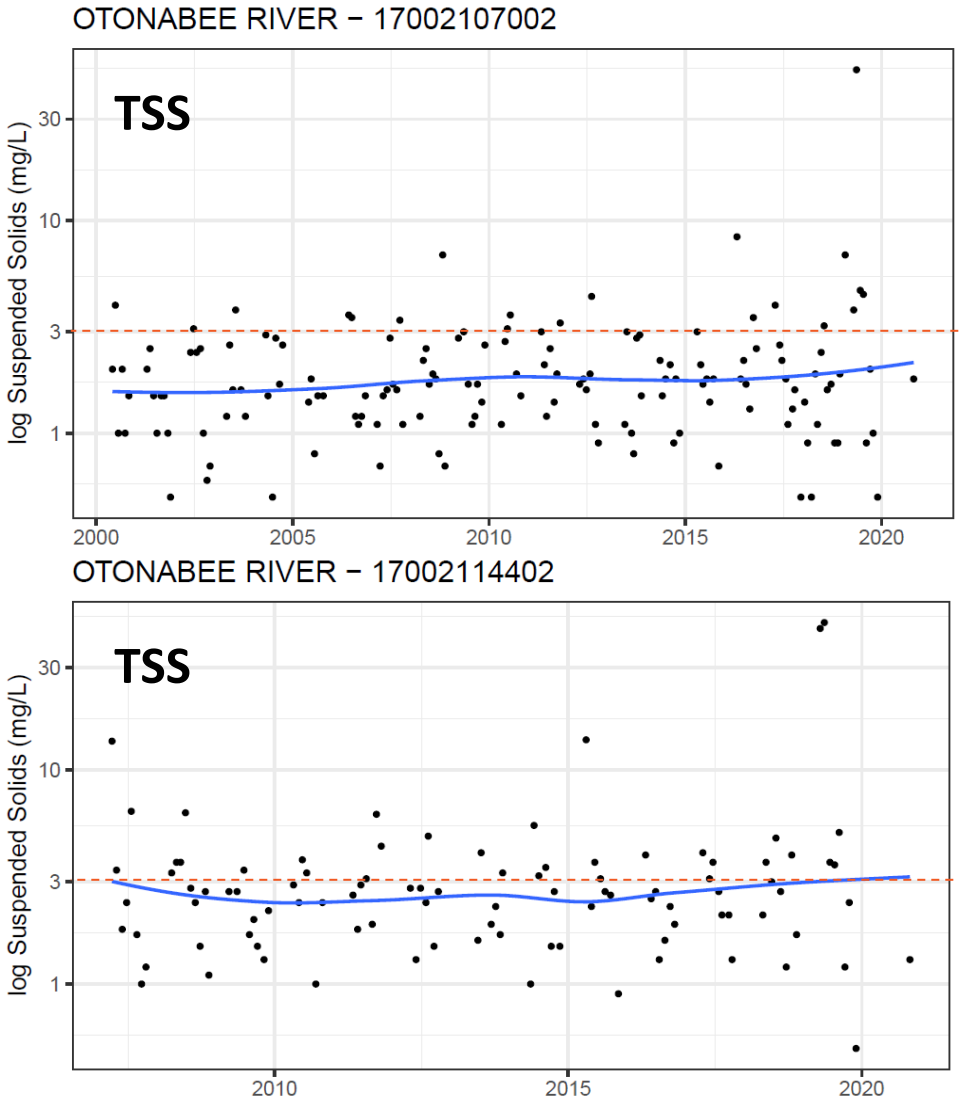
Stormwater Monitoring Guidance – Interpreting the Data





EXAMPLE – Using PWQMN uncorrected data

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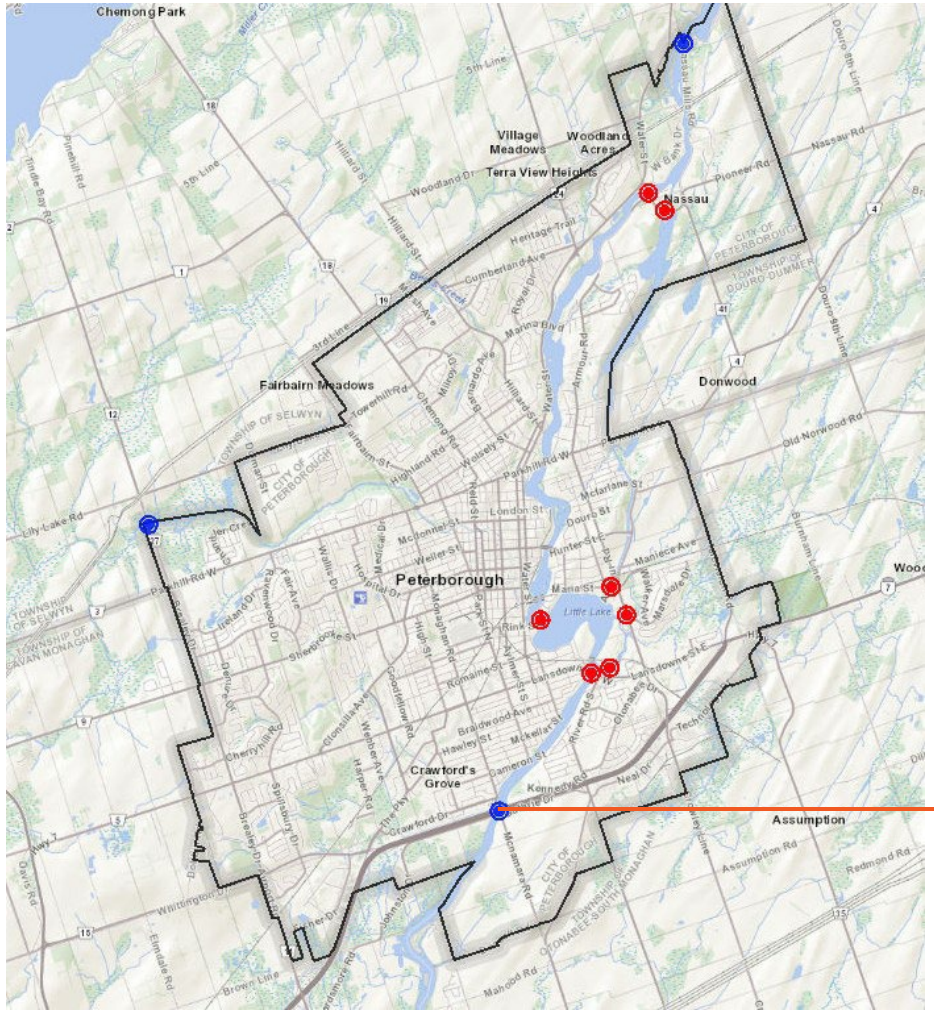
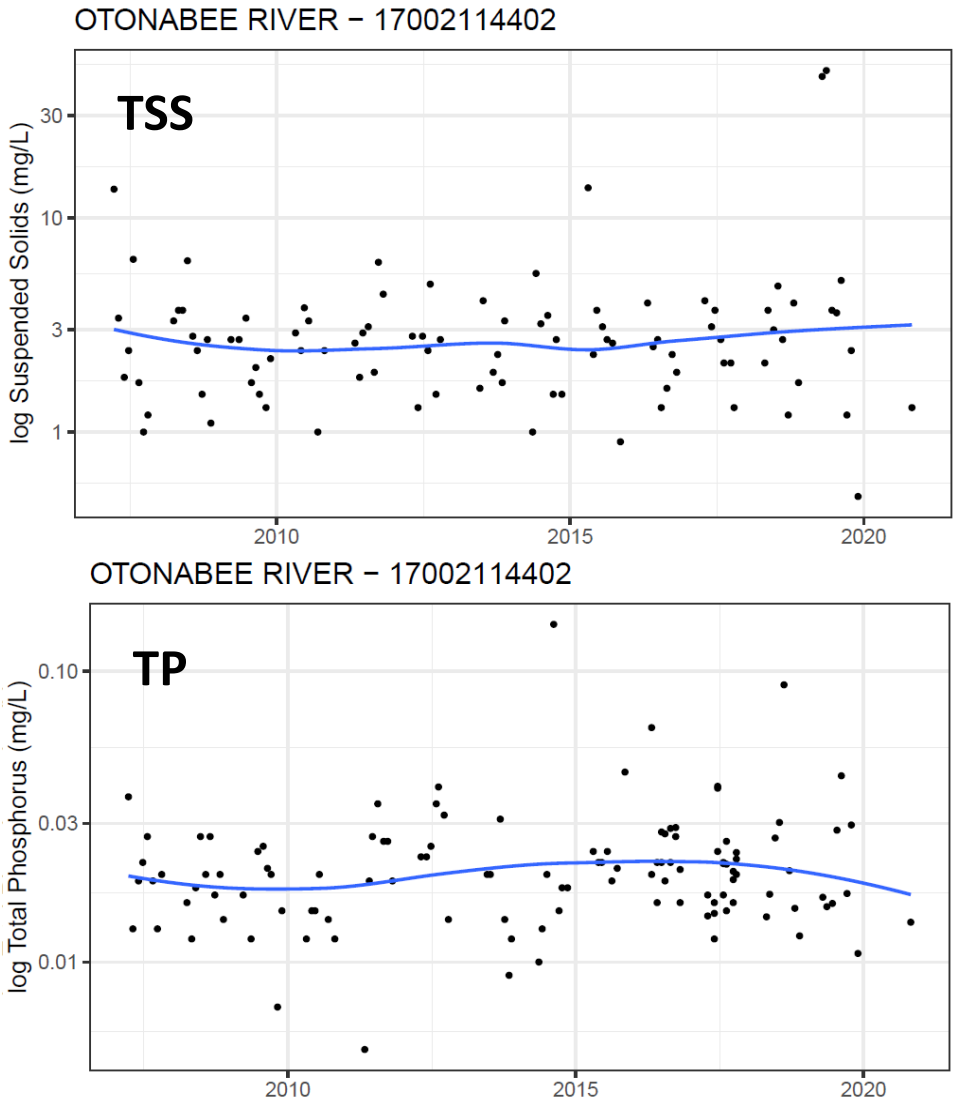
Stormwater Monitoring Guidance – Interpreting the Data





EXAMPLE – Using PWQMN uncorrected data

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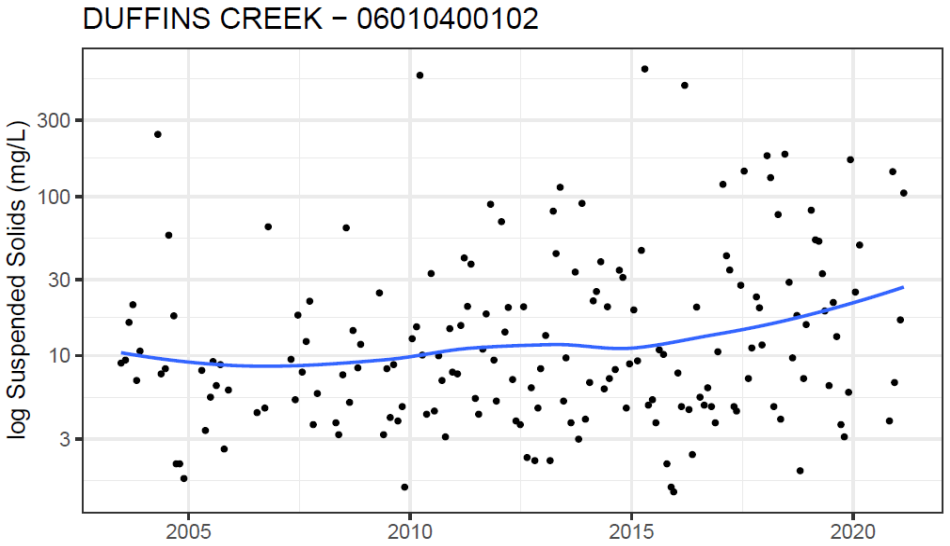
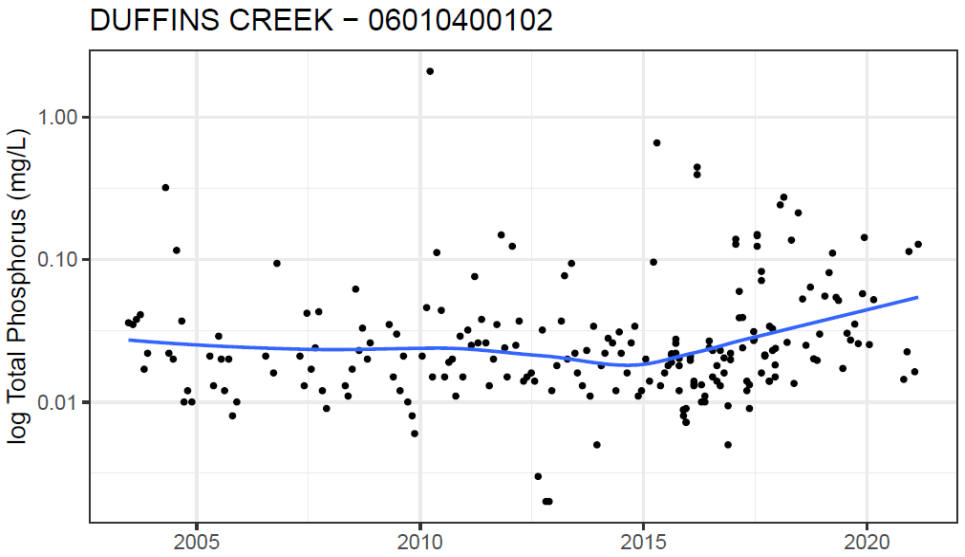
Stormwater Monitoring Guidance – Interpreting the Data





EXAMPLE – Duffins Creek, Durham, Ontario. Using PWQMN uncorrected data

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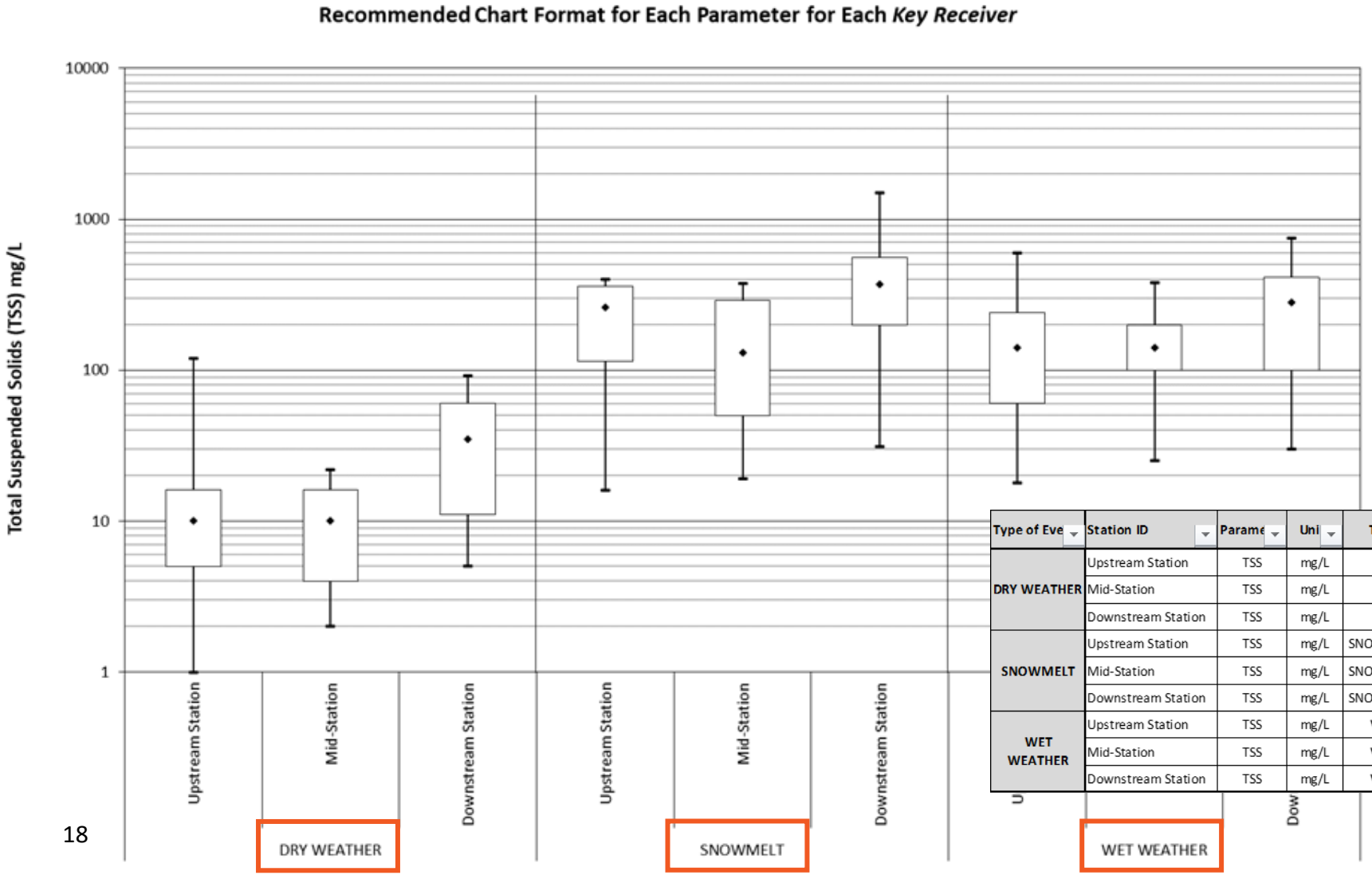
Stormwater Monitoring Guidance – Interpreting the Data



EXAMPLE – Whisker Plots and Data Organization

Type of Eve	Station ID	Parame	Uni	Type	Count (n	Detecte d (	Mi	Ma	Mea	Geomea n	25th	Median 50th	75th	Std. Dev
DRY WEATHER	Upstream Station	TSS	mg/L	DRY	10	9	1	120	21	9	5	10	16	34
	Mid-Station	TSS	mg/L	DRY	10	10	2	22	13	10	4	10	16	9
	Downstream Station	TSS	mg/L	DRY	10	10	5	92	37	25	11	35	60	30
SNOWMELT	Upstream Station	TSS	mg/L	SNOWMELT	7	7	16	400	225	130	115	260	360	150
	Mid-Station	TSS	mg/L	SNOWMELT	6	6	19	375	175	100	50	130	290	150
	Downstream Station	TSS	mg/L	SNOWMELT	6	6	31	1500	500	290	200	370	560	500
WET WEATHER	Upstream Station	TSS	mg/L	WET	27	27	18	600	175	120	60	140	240	170
	Mid-Station	TSS	mg/L	WET	29	29	25	380	150	130	100	140	200	85
	Downstream Station	TSS	mg/L	WET	28	28	30	750	270	190	100	280	410	180

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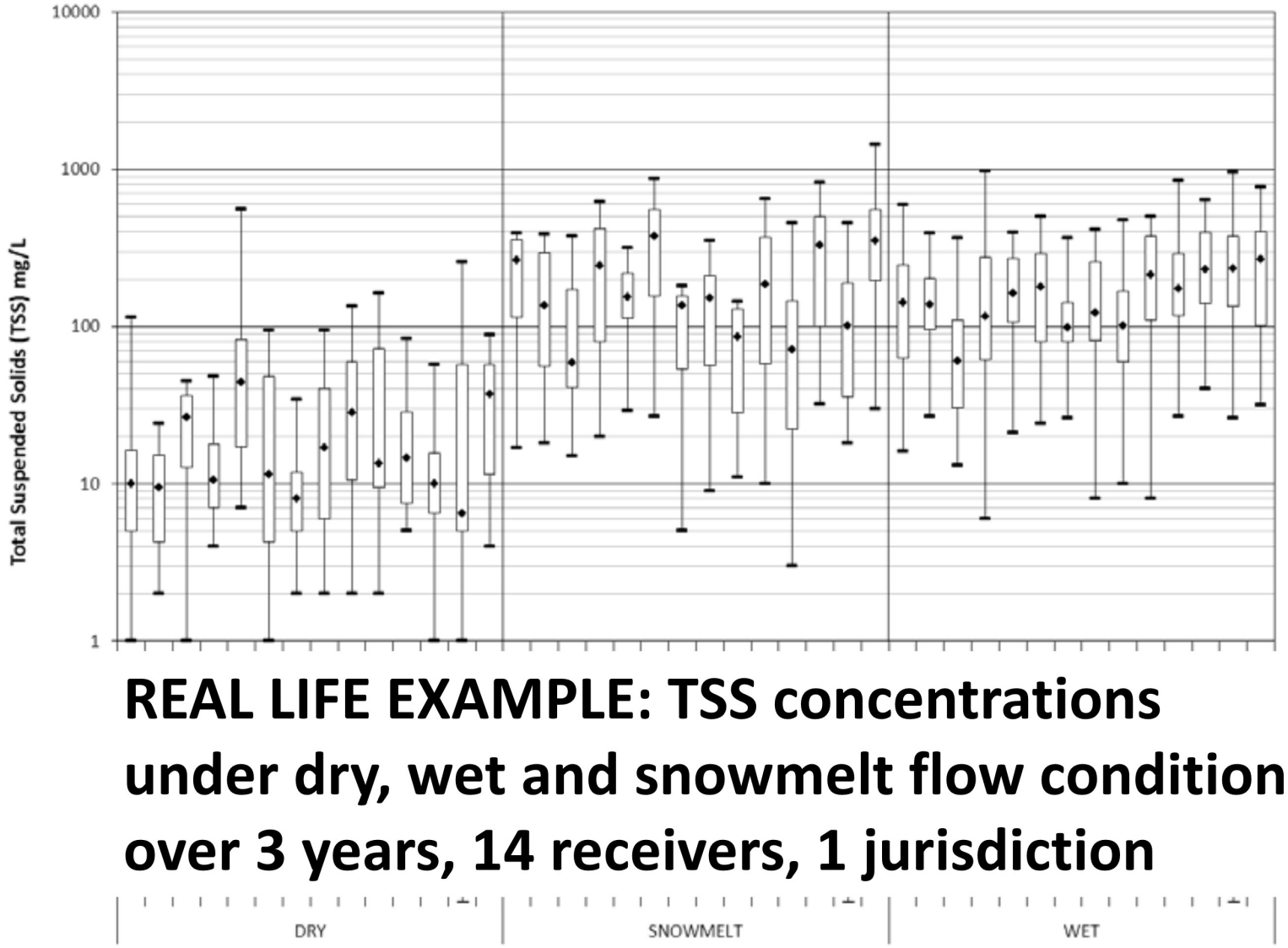
Stormwater Monitoring Guidance – Interpreting the Data



EXAMPLE – Whisker Plots and Data Organization

REAL LIFE EXAMPLE: TSS concentrations under dry, wet and snowmelt flow conditions over 3 years, 14 receivers, 1 jurisdiction

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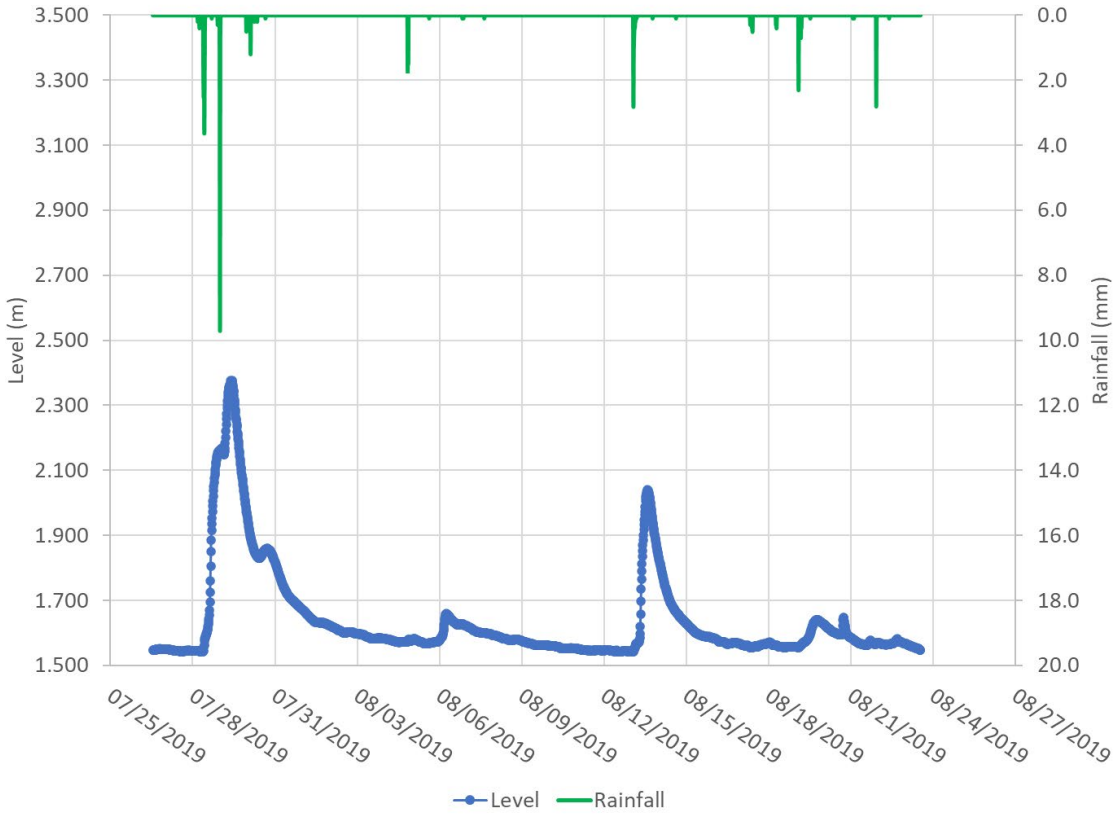
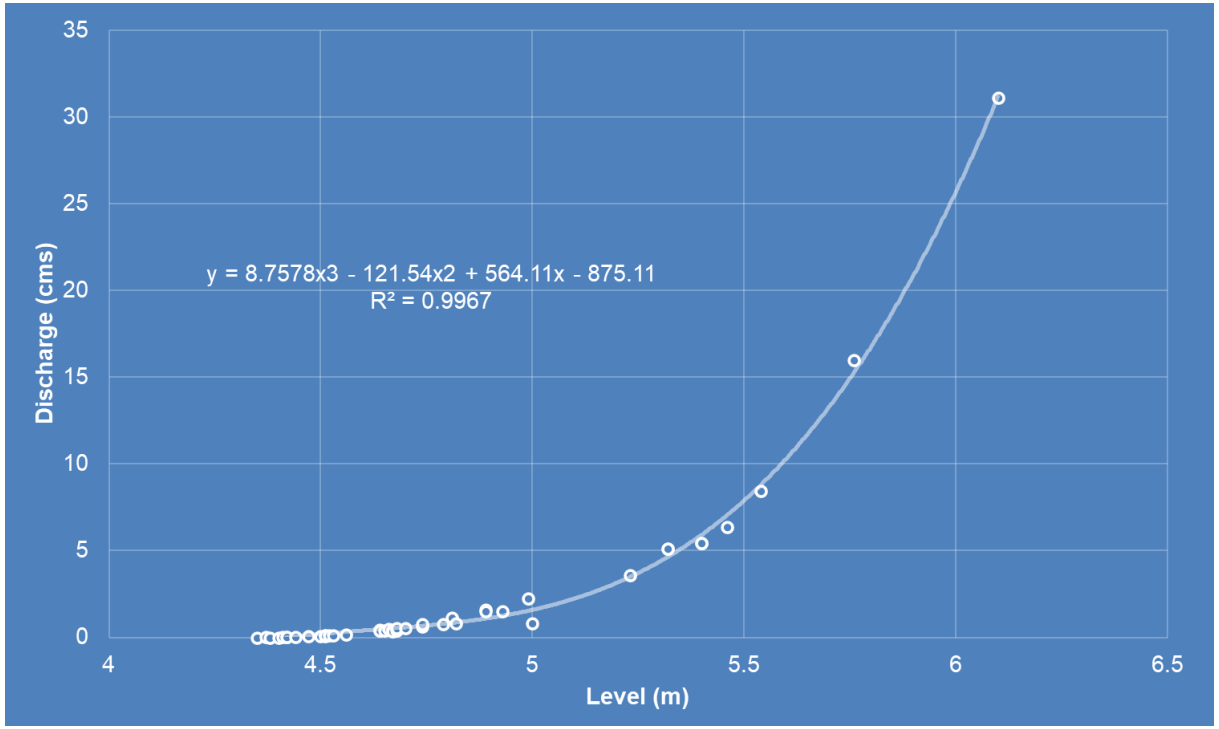
Stormwater Monitoring Guidance – Interpreting the Data

EXAMPLE - Hydrograph



EXAMPLE – Stage/Discharge Curve (rating curve)



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Stormwater Monitoring Guidance – Reporting

1 Year – Basic Summary

****A TEMPLATE IS DESCRIBED IN GUIDE**

- Include a map of jurisdiction with MP attributes.
- Number of samples collected that year and all to date under dry, wet, and snowmelt flow conditions.
- Describe any issues or concerns with the data, for example:
  - Site is under construction or major construction upstream of site.
  - Observed flooding, persistent SWM technology overflow, etc. on Key receiver.
  - Observable change since beginning of monitoring and adverse effects on the natural environment.
  - Describe the monitoring stations and their operating activities and issues.
- Overall MP review (e.g. site changes and rational).

5 Year – Trend Observations and Summaries

****A TEMPLATE IS DESCRIBED IN GUIDE**

A summary and interpretation of environmental trends based on all monitoring information and data for the previous five (5) years.

- Include a map of jurisdiction with MP attributes.

Water Quality Summary Attributes May Include:

- Dry, wet, snowmelt sampling event summary to include attributes such as:
  - Dry days since last rainfall (for dry)
  - Rainfall total and intensity per hour (for wet)
  - Air temp max and rainfall total (for snowmelt)

Stormwater Monitoring Guidance – Reporting

5 Year – Trend Observations and Summaries

****A TEMPLATE IS DESCRIBED IN GUIDE**

Water Quantity Summary Attributes May Include:

- Event summary tables and graphs:
  - Hydrographs (e.g. level and/or flow, rainfall)
  - Observed level / flow at time of sample
  - Max level / flow if known
- 5 yr summary table:
  - Event precipitation totals/intensity
  - 5yr min, max, average observed level /flow
  - Known SWM technology overflow
  - Known receiver flooding
  - Major construction activities / ESC plan(s)

Station Name	Station ID	Receiver	5yr Min Observed Level (m)	5yr Max Observed Level (m)	5yr Avg Observed Level (m)	5yr Min Observed Flow (m3/s)	5yr Max Observed Flow (m3/s)	5yr Avg Observed Flow (m3/s)	Known SWM technology overflow to receiver when sampling in last 5yr (y/n)	If known date of overflow (mm/dd/yyyy)	Known receiver flooding when sampling in last 5yr (y/n)	If known date of flood (mm/dd/yyyy)
Niagara	1	Lyons Creek - Boat Station	1.0	2.1	1.6	2.8	4.0	3.5	y	(11/05/2023)	n	---

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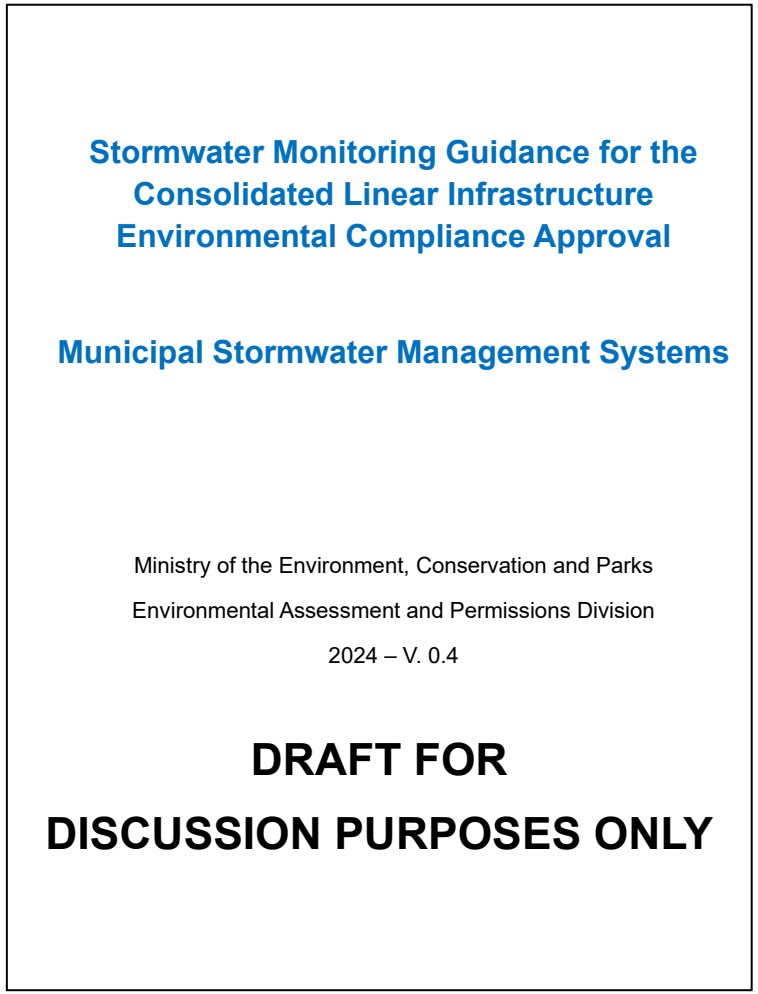
Stormwater Monitoring Guidance

Next Steps

- CLIECA draft guideline currently under internal review.
- CLIECA draft guide will be posted on the Environmental Registry for comment soon.
- Current draft subject to change pending comments.



Stormwater Monitoring Guidance for the Consolidated Linear Infrastructure Environmental Compliance Approval

Municipal Stormwater Management Systems

Ministry of the Environment, Conservation and Parks

Environmental Assessment and Permissions Division

2024 – V. 0.4

DRAFT FOR

DISCUSSION PURPOSES ONLY

Ontario

Aziz Ahmed P.Eng.
Manager, Municipal Water and Wastewater Permissions
The Ontario Ministry of Environment, Conservation, and Parks
Tel: 416-314-4625
E-mail: aziz.ahmed@ontario.ca

Derek Smith BA., MSc.
Field Coordinator, Surface Water
Stream Water Unit, Environmental Monitoring and Reporting Branch
The Ontario Ministry of Environment, Conservation, and Parks
Cell: 416 786 0866
E-mail: derek.smith2@ontario.ca