# 2024 Annual Stormwater Performance Report

SUBMITTED TO THE MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS



Town of Caledon TOWN OF CALEDON | STORMWATER@CALEDON.CA This page intentionally left blank

#### **Executive Summary**

The Town's stormwater infrastructure system manages runoff to minimize the risk of flooding and erosion to protect people and properties, as well as helps to protect our natural environment by improving water quality before it drains to streams and rivers. The Town of Caledon's municipal stormwater system is operated in conformance with the Province's Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) program.

Ontario's CLI-ECA program for stormwater infrastructure provides a consistent set of conditions for all municipalities to alter, operate and maintain their municipal stormwater management systems. Participation in the program is mandatory. The Town began participation in the program in October of 2022.

In accordance with the CLI-ECA agreement, the Town is required to prepare an annual performance report for the period of January 1st to December 31st of the preceding year. The report is to be provided to the Ministry of Environment, Conservation and Parks and to be made available to the public. The enclosed report represents the Town's second Annual report and provides detail on the work undertaken as part of the CLI-ECA program between January 1 and December 31<sup>st</sup>, 2024. The following summarizes highlights of the report:

- Authorization of stormwater infrastructure for four (4) draft plan of subdivision applications and several streets across the Town. This includes the approval of storm sewers, enhanced grass swales and one (1) new stormwater management pond.
- Completed emergency repairs to the outlet structure of one (1) stormwater management pond.
- Undertook invasive species removal at two (2) stormwater management ponds.
- Developed a repair program for approximately 1200 m of storm sewer within Bolton.
- The Town completed the design for repair and restoration of two (2) stormwater management ponds.
- Condition assessment inspection were completed at all Town owned stormwater management facilities in 2024.
- Sediment surveys were completed at 38 storm ponds and 14 manufactured treatment devices. All Oil and Grit Separators require sediment removal, and several stormwater ponds require sediment removal and/or invasive species management to improve operation.
- Operations addressed 249 service requests related to stormwater infrastructure. All concerns were inspected by staff and actions taken by the Town related to service requests included the clean out of 15 catch basins, 15 culverts and 10 ditches.

## TABLE OF CONTENTS

Stormwater Management in Caledon	1
Environmental Compliance – Annual Stormwater Management Report	2
2024 Annual Stormwater Management Report Details	4
Section 1: Monitoring Program Information	5
Section 2: Monitoring Results Analysis	6
Section 3: Interpretation of Environmental Trends	7
Section 4: Operations	8
Section 5: Public Concerns	.11
Section 6: Summary of Alterations to the System	.14
Section 7: Spills and Abnormal Discharge Events	.15
Section 8: Actions Taken to Improve or Correct Performance	.25
Section 10: Making the Report Publicly Available	.27
Appendix A – Sediment Analysis and Condition Assessment Tables	.25



## LIST OF TABLES

Table 1: Overview of Reporting Requirements	2
Table 2: 2024 Annual Stormwater Management Report Details	4
Table 3: Summary of Planned Capital Maintenance	9
Table 4: Summary of Public Concerns	11
Table 5: Summary of Alterations to the Municipal Stormwater Management System	14
Table 6: Summary of Spills and Abnormal Discharge Events	16
Table 7: Actions Taken in Current Reporting Year to Improve and Correct Performance	25
Table A 1: Wet Pond Sediment Removal Analysis	25
Table A 2: Dry Pond Sediment Removal Analysis	25
Table A 3: Stormwater Management Pond Condition Assessment Summary	25
Table A 4: Low Impact Development Condition Assessment Summary	25
Table A 5: Manufactured Treatment Device Sediment Removal Analysis	25

## LIST OF FIGURES

Figure 1: Visual Depiction of the Town's Stormwater Operation and Maintenance Approach..... 8



## STORMWATER MANAGEMENT IN CALEDON

Along with roads and bridges, stormwater infrastructure a core municipal asset. The Town's stormwater infrastructure system helps to manage runoff, minimize the risk of flooding and erosion to protect people and properties, and protects our natural environment through mitigation of urban impacts on water quality. The Town is committed to providing safe and effective management of stormwater runoff while maintaining, and where possible improving, ecosystem health.

The Town is responsible for managing stormwater infrastructure within municipally owned lands, or where there is an easement, in three ways:

- 1. The planning, design and approval of municipal stormwater infrastructure. A responsibility led by Development Engineering.
- 2. Routine and preventative maintenance over the life of the stormwater infrastructure. A responsibility led by Operations.
- 3. Renewal and replacement of infrastructure at life cycle milestones. A responsibility led by Engineering Capital, Design and Construction.

Stormwater management is a shared responsibility. Within the Caledon, property owners, the Region of Peel, and Conservation Authorities also play an important role. Property owners are responsible for private stormwater infrastructure on their property, the Region of Peel approves, operates and maintains municipal stormwater management systems within Regional Roads, and Conservation Authorities are responsible for rivers and streams.

The Municipal Stormwater Management (SWM) System serving the Town of Caledon's 69,257 ha area outlets to the headwaters of the Credit River Watershed (30,384 ha), Humber River Watershed (31,309 ha), Etobicoke Creek Watershed (2,852 ha), Lake Simcoe Watershed (347 ha) and Nottawasaga Watershed (1,361 ha).



## ENVIRONMENTAL COMPLIANCE – ANNUAL STORMWATER MANAGEMENT REPORT

The Ministry of Environment, Conservation and Parks (MECP) has a Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) program that provides a consistent set of conditions for all Ontario Municipalities to adhere to in order to alter, operate and maintain municipal stormwater management systems. MECP issued a CLI-ECA to the Town of Caledon on October 14, 2022 (ECA number 324-S701).

In accordance with the Environmental Compliance Approval 324-S701, the Town is required to prepare an annual Stormwater Management Report for submission to MECP and made publicly available on the Town's website. Table 1 lists the information that is required in the Annual Report and the section where it can be found in the document.

Required Content	Location in Annual Report
Summary of all monitoring data along with an interpretation of the	Section 1, Monitoring
data and an overview of the condition and operational	Program Section 2,
performance of the Authorized System and any Adverse Effects	Monitoring Results
on the Natural Environment*	
Summary and interpretation of environmental trends based on all	Section 3, Environmental
monitoring information and data for the previous five (5) years*	Trends
Summary of any operating problems encountered and	Section 4, Operations
corrective actions taken*	
Summary of all inspections, maintenance, and repairs carried out	Section 4, Operations
on any major structure, equipment, apparatus, mechanism, or	
thing forming part of the Authorized System	
Summary of the calibration and maintenance carried out on all	Section 4, Operations
monitoring equipment*	
Summary of any complaints related to the Sewage Works	Section 5, Complaints
received during the reporting period and any steps taken to	
address	
the complaints	
Summary of all Alterations to the Authorized System within the	Section 6, Alterations
reporting period that are authorized by this Approval including a	
list of Alterations that pose a Significant Drinking Water Threats	
Summary of all spills or abnormal discharge events	Section 7, Spills and
	Abnormal Discharge Events
Summary of actions taken, including timelines, to improve or	Section 8, Summary of
correct performance of any aspect of the Authorized System	Actions Taken
Summary of the status of actions for the previous reporting year	Section 9, Summary of
	Actions from Previous Year

#### Table 1: Overview of Reporting Requirements



\*The monitoring aspect of the Town's CLI ECA program has not yet come into effect and therefore has not been included in the 2024 Annual Report. In accordance with the Town's CLI-ECA conditions (condition 4.0 of schedule E), the Town will develop and execute the monitoring requirements twenty-four (24) months from the date the Ministry publishes their monitoring guidance. Monitoring guidance from MECP had not been released.



### 2024 ANNUAL STORMWATER MANAGEMENT REPORT DETAILS

Details on the Town's 2024 Annual Report is provided in Table 2. This report has been prepared in accordance with the Town's CLI-ECA 324-S701 for the period beginning on the date of issue of the Town's CLI-ECA, January 1, 2024, and extending to December 31, 2024.

#### Table 2: 2024 Annual Stormwater Management Report Details

Environmental Compliance Approval Number	324-S701, Issue 2
Name of Municipal Stormwater Management System	Town of Caledon Municipal Stormwater Management System
Name of System Owner	Caledon, The Corporation of The Town of
Period Reported	January 1, 2024, to December 31, 2024

Questions about the report should be directed to the Town's general stormwater email account: <u>stormwater@caledon.ca</u>. Alternatively, please contact Shannon Malloy.

Shannon Malloy Project Manager, Stormwater <u>shannon.malloy@caledon.ca</u> 905-585-2272 ext. 4561



## **SECTION 1: MONITORING PROGRAM INFORMATION**

The monitoring aspect of the Town's CLI ECA program has not yet come into effect and therefore has not been included in the 2024 Annual Report. In accordance with the Town's CLI-ECA conditions (condition 4.0 of schedule E), the Town will develop and execute the monitoring requirements twenty-four (24) months from the date the Ministry publishes their monitoring guidance. Monitoring guidance from MECP had not been released.



## **SECTION 2: MONITORING RESULTS ANALYSIS**

The monitoring aspect of the Town's CLI ECA program has not yet come into effect and therefore has not been included in the 2024 Annual Report. In accordance with the Town's CLI-ECA conditions (condition 4.0 of schedule E), the Town will develop and execute the monitoring requirements twenty-four (24) months from the date the Ministry publishes their monitoring guidance. Monitoring guidance from MECP had not been released.



## **SECTION 3: INTERPRETATION OF ENVIRONMENTAL TRENDS**

The monitoring aspect of the Town's CLI ECA program has not yet come into effect and therefore has not been included in the 2024 Annual Report. In accordance with the Town's CLI-ECA conditions (condition 4.0 of schedule E), the Town will develop and execute the monitoring requirements twenty-four (24) months from the date the Ministry publishes their monitoring guidance. Monitoring guidance from MECP had not been released.



#### **SECTION 4: OPERATIONS**

As per the Town's CLI-ECA Issue 2, the Town is to prepare and implement an operation and maintenance manual by January 1, 2026. While the operations and maintenance (O&M) manual is underway, the Town is committed to ensuring the stormwater management system is maintained and operational. The following figure depicts the Town's intended approach to operate and maintain our stormwater infrastructure. The content provided in this section includes actions the Town has undertaken throughout the reporting period to ensure system function.



Figure 1: Visual Depiction of the Town's Stormwater Operation and Maintenance Approach

#### **Operational Problems Experienced and Corrective Actions**

Operational problems are typically identified through inspections responding to public concerns and condition assessment inspections. Operational problems identified by inspecting public concerns were generally minor. Minor operational problems encountered are described further in Section 5 and largely consisted of obstructed catchbasins, ditches and culverts. The type of obstructions included trash, debris, leaves, snow, overgrown vegetation, and sediment. Operational problems identified through condition assessment inspections also tended to be minor but some larger operational problems including all Oil and Grit Separators and several stormwater management ponds have sediment levels that require cleanout, as well as the presence of phragmites impairing the operation of pond facilities. Depending on the severity of the operational problem, risk, ability to repair and future capital plans, operational problems may be resolved immediately or planned with capital projects.

#### Inspections, Maintenance and Repairs



The following summarizes inspection, maintenance and repair actions undertaken throughout the reporting period.

- 1. <u>Inspections</u> Inspections that occurred in 2024 are summarized below. Information from inspections will be used to prioritize and plan maintenance activities.
  - a. Responding to Public Concerns Inspections were completed to follow up on 249 public concerns to determine if there are operational issues and if work was required to resolve the public concern.
  - b. Pond Storage Survey's Conducted at 38 stormwater management ponds in 2024. This includes bathymetric surveys of 34 wet ponds and topographic surveys of the pond storage area at four (4) dry pond facilities. A summary of inspection results is in Appendix A.
  - c. Condition Assessment Inspections Visual inspections were completed in 2024 for 58 storm ponds (wet ponds, dry ponds, and engineered wetlands), 14 manufactured treatment devices, and seven (7) LID practices. A summary of inspection results is in Appendix A.
  - d. Storm Sewer CCTV inspections approximate length of storm sewer CCTV'd was 70 km, representing about 25% of the municipal storm sewer system
- Maintenance and Repairs by Operations Routine infrastructure maintenance and/or repairs are rectified by the Town's Operation's division. This generally included clearing obstructions from ditches, culverts and catchbasins. If substantial infrastructure repairs are needed the repair is deferred to Capital and Design Engineering. Below is a summary of routine maintenance activities were completed by Operations in 2024:
  - a. 528 catch basins cleaned out through catchbasin cleanout program
  - b. Service requests submitted by the public (refer to section 5 for more detail) resulted in 15 catch basin, 15 culverts cleaned, and 10 ditches being cleaned out.
- Maintenance and Repairs by Capital and Design Engineering Maintenance including renewal and rehabilitation, is more intensive work and is primarily completed by the Town's Capital Engineering division. A summary of maintenance planned and/or completed in 2024 for the Town's stormwater management system by the Capital Engineering division is included below.

Table 3: Summ	ary of Planned	Capital N	Maintenance
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Type of Asset	Asset Name in CLI-ECA	Summary of Work
Storm Sewer	N/A	Town developed a repair program for approximately 1200 m of storm sewer within Bolton. Design work completed in 2024. The project was tendered and awarded for construction in 2024 with the sewer repairs scheduled to be completed in the spring of 2025.
Wet Pond	Bolton_Wet Pond22_Pt Lot 4 Conc 7 Albion	Cleanout and retrofit design ongoing. Pending budgets, the cleanout and retrofit works are scheduled for construction in 2025.



Wet Pond	Bolton_Wet Pond41_Lot 3 Conc 6 Alb	Repairs and restoration design is completed in 2024. Pond works scheduled for construction in 2025.
Dry Pond	Bolton_Dry Pond44_Plan 43M- 649 blk 190	Emergency repair works were completed on the outlet structure associated with Pond 44 in 2024.
Wet Pond	Bolton_Wet Pond94_Municipal Right-of-way	Repairs and retrofit design completed in 2024. Pond works are scheduled for construction in 2025.

#### Calibration and Maintenance of Monitoring Equipment

The monitoring aspect of the Town's CLI ECA program has not yet come into effect therefore it has not been included in the 2024 Annual Report. Based on MECP phasing of CLI ECA requirements, the earliest possible reporting of this information will be in in the Towns 2027 Annual Report.



## **SECTION 5: PUBLIC CONCERNS**

#### Summary of Concerns Received and Actions Taken

The Town of Caledon uses PSD City Wide for entering and tracking public concerns with Town assets. The general process is that a service request is generated in PSD Citywide for all concerns received by the Town. The service request is directed to the appropriate Caledon staff to inspect and determine the action for the concern to be resolved. If needed a work order will be issued to address the concern.

In 2024 the Town's process for documenting stormwater concerns raised by the public underwent a corporate review to identify process improvement. The main outcome of this review was that service request types were created in City Wide for stormwater management facilities so that concerns can be formally tracked for these assets.

A summary of complaints that were received and work orders generated during the reporting period are in Table 4.

Service	Details about Complaints Received and Actions Taken	Assumed	Number	Number
Request		or	of Service	of Work
Type		Unassumed	Requests	Orders
Catch Basin Maintenance	Details about Complaints - <u>Blockage</u> - Leaves, Trash, Debris - <u>Drainage Concern</u> - Debris/sediment in ROW blocking flow path to CB - <u>Physical Condition</u> - Alignment, raised/lack of top coat, broken grate Actions Taken - <u>Review Service Request</u> and inspect - A workorder is created to correct concerns as needed - <u>Work Order</u> - Most work orders generated entail street sweeping, clearing the catch basin, repair of the physical condition as required	Assumed Unassumed	57 0	15 0

Table 4: Summary of Public Concerns



Service Request Type	Details about Complaints Received and Actions Taken	Assumed or Unassumed	Number of Service Requests	Number of Work Orders
Ditch / Culvert Maintenance	Details about Complaints -Blockage - Sediment build up, overgrown vegetation Erosion -Drainage Concern - Impediment in the contributing drainage area -Physical Condition - Collapsed Culvert Actions Taken -Review Service Request and inspect - A workorder is created to correct concerns as needed -Work Order -Most work orders generated entailed clearing culverts, alignment adjustments to address flooding, implement erosion control	Assumed Unassumed	111 0	29 0
Drainage Flooding	Details about Complaints Prolonged ponding/flooding after rain events, snow/ice buildup, obstruction to flow path, sunken manhole risers creating ponding. In unassumed areas the drainage complaints are commonly associated with filter cloth in catchbasins for sediment control is impeding drainage as well as poor drainage due to lack of top coat Actions Taken - <u>Review Service Request and inspect</u> - A workorder is created to correct concerns as	Assumed Unassumed	63 3	11 0
	needed - <u>Work Order</u> -Most work orders generated entailed clearing the blockage (most often sediment or ice), one of the more involved work orders was adding an infiltration trench to a Town easement to improve drainage.			
Stormwater	Details about Complaints			
Management -Reported issues associated with the SWM				
Facility	facilities was related to aesthetics specifically	Assumed	6	0
Maintenance*	garbage within and around SWM facilities.	//00000000		U U
	Actions Taken	Unassumed	1	0



Service Request Type	Details about Complaints Received and Actions Taken	Assumed or Unassumed	Number of Service Requests	Number of Work Orders
	<ul> <li>-No immediate action on public concerns required.</li> <li>-Maintenance requirements were noted and being planned for in future.</li> </ul>			
Spills**	Details about Complaints -Oil/gas from cars and faulty equipment -Soil and mud	N/A	12	2
	Actions Taken Staff followed up on service requests. Cleanup was coordinate/reported as necessary.			

\*Note that the service request type for stormwater management facilities was created in August 2024, therefore complaints were not formally tracked prior to this time, therefore the summary provided is for a partial year of data.

\*\*Note that the Regional Municipality of Peel is the Spills Responder for the Region's municipalities, which included the Town Caledon. The spills summarized in this table only include concerns submitted by residents of the Town. See full spills inventory by the Region of Peel in Section 7 of this report.



## SECTION 6: SUMMARY OF ALTERATIONS TO THE SYSTEM

#### Summary of all Alterations to the System

As part of the Consolidated Linear Infrastructure Environmental Compliance Approval the Town is responsible for ensuring that the conditions and minimum design requirements, as determined by the Province, are met for all new or altered stormwater infrastructure that is located within Town owned lands. Table 5 summarizes all of the alterations (new, replacement, extension) to the municipal stormwater management system that the Town approved through our CLI-ECA agreement. These number are summarized based on number of records of authorization (i.e. SW Forms) that were processed by the Town. These alterations represent four (4) subdivisions and several streets across the Town.

Alteration Type	Number of Alterations Authorized	Number of Alterations that Pose a Significant Drinking Water Threat
Pre-Authorized Storm Sewer, Ditch or Culvert	Development Engineering: Seven (7) SW1 forms authorized	0
	Capital Engineering: One (1) SW1 form authorized	
Pre-Authorized Stormwater Management Facility	Development Engineering: Two (2) SW2 forms authorized Capital Engineering: None	0
Pre-Authorized Third Pipe	Development Engineering: One (1) SW3 form authorized Capital Engineering: None	0
Schedule C Works	0	0

#### Table 5: Summary of Alterations to the Municipal Stormwater Management System

#### Significant Alterations Authorized

All SW1 Forms for Development Engineering were associated with Draft Plan of Subdivision Applications. One of the SW2 forms authorized during the reporting period included a wet pond providing 80% TSS removal to service the community, the other two SW forms were for enhanced grass swales. The SW3 form was to convey roof runoff to provide wetland recharge.



## SECTION 7: SPILLS AND ABNORMAL DISCHARGE EVENTS

#### Summary of Spills and Abnormal Discharge Events

The Region of Peel is responsible for responding to spills on behalf of the Town of Caledon. A summary of spills on private and public property, and action taken, was provided by the Region and included below. A summary of spills that occurred in Caledon is included in Table 6.



Table 6: Summary	/ of Spills	and Abnormal	Discharge Events
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Incident #	Date	Description of Spill / Event	Comments/Actions Taken	Impact to
				Watercourse
24-013	2024-01-11	100 litres of diesel to ditch/road	Vactor and remove diesel and soil	No
24-038	2024-01-24	Approx. 200 L. of Diesel Fuel from MVC	Ditch vactored and excavated for disposal	No
24-040	2024-01-24	Sheen on driveway/Unknown Source	No odours or Pooling/No sewers impacted	No
24-082	2024-02-27	Unknown powder approximately 40 L	Region Roads sent to clean	No
24-105	2024-03-08	Pail of wash water dumped into C.B.	Slight cloudy water inside. No oil discovered	No
24-114	2024-03-13	Coolant (approx. 10-15 litres)	Cleaned up with multisorb. C.B.'s pumped out	No
24-115	2024-03-13	Diesel fuel (approx. 100 litres)	Cleaned up with a vactor truck. No sewers	No
24-151	2024-04-10	Rat Traps on street	Traps deployed along water main project	No
24-174	2024-04-15	>5L oil	Leak on road, cleaned with sorbent	No
			Leak to shoulder, cleaned main leak, impacted dirt to	
24-175	2024-04-15	Diesel	be cleaned after acquiring encroachment permit	No
24-178	2024-04-16	Motor vehicle fluids	Multivehicle fire released MVF	No
24-195	2024-04-22	Empty barrels	Resident dumped garbage and barrels	No
24-237	2024-05-23	Diesel fuel streak on road	Already dried up. Only stains on the road	No
24-238	2024-05-23	Diesel fuel (approx. 10-20 litres)	Contained in containers. To be clean up.	No
24-260	2024-06-01	Hydraulic oil spill	Clean up attempted, needed more work done	No
24-268	2024-06-05	private watermain break	Private side, no silt impact	No
24-300	2024-06-19	Alleged septic tank pumpout to grass	Informed it was rainwater/groundwater only	No
24-332	2024-07-06	Two abandoned paint/oil cans on road	Picked up by Town of Caledon for disposal	No
24-353	2024-07-12	Hydraulic Oil	Impacted roadway	No
24-390	2024-07-22	Sewage odours in ambient air	Possible manure odours from a farm	No
24-395	2024-07-24	septic tank overflow	Address in not in Peel	No
24-427	2024-08-13	Sheen	No sheen observed	No
24-436	2024-08-15	Sheen and Mosquitoes in storm pond	No oil sheen was visible	No
24-443	2024-08-16	Wastewater spill	Onto lawn	No
24-444	2024-08-16	Concrete driveway washwater	Rain at the time I arrived road and cb are clear	No
24-511	2024-09-18	250 L Concrete	Dumped on side of road, Caledon roads	No
24-525	2024-09-22	White chalky substance	Grout left on roadway, cleaned by Town of Caledon	No



Incident #	Date	Description of Spill / Event	Comments/Actions Taken	Impact to
				Watercourse
24-568	2024-10-11	<10 L Hydraulic oil	No CB affected	No
24-573	2024-10-13	silty water unknown volume	Water pooled on ground	No
24-593	2024-10-23	Motor oil/coolant spill (approx. 80 litres)	All contained in the grass ditch. No storm sewers	No
24-628	2024-11-13	Unknown sheen on stagnant water surface	Natural decomposition of organic matter	No
24-635	2024-11-15	15 L motor oil	Cleaned by Town of Caledon	No
24-642	2024-11-20	25 L Diesel	Spill contained to property, Ontario Spill response	No
24-657	2024-11-27	Alleged sanitary sewage ponding on grass	Contained on private property	No
24-704	2024-12-18	Oil pooling	Minor impact observed, pads placed	No



## SECTION 8: ACTIONS TAKEN TO IMPROVE OR CORRECT PERFORMANCE

As part of the Town's ongoing commitment to improving stormwater performance for all of our sewersheds actions were taken to improve or correct performance. Table 7 summarizes initiatives the Town undertook during the reporting period in addition to the operation and maintenance activities summarized in Section 4 of this report.

Action	Issue	Actions Taken	Target Completion
Number			Date
1	Lack of pre- treatment in the Town's stormwater management system.	Pilot project was previously initiated where CB Shields and LittaTrap inlet filters were installed in a small selection of catchbasins. The intent of the project was determining effective pre- treatment options for Caledon. The primary target is sediment removal and the associated contaminants and to increase the level of TSS Removal in existing built out sewersheds. Findings from this work will be reviewed in 2025 to select the Town's preferred pre- treatment option.	2025 Reporting Period
2	Invasive Species	Invasive species management occurred at Bolton_WetPond10_Plan43M-1287Blk 83 and Bolton_WetPond11_PtWLot8-Conc6Albion on July 18 <sup>th</sup> 2024 and August 14 <sup>th</sup> 2024. Three patches (166m <sup>2</sup> at Wetpond10, 43m <sup>2</sup> at Wetpond11) of invasive phragmites (Phragmites australis) received chemical, low volume, spot treatments using RoundUp WeatherPro (PCP # 33653). Application methods were completed via hand-sprayers and was supervised by an Ontario Integrated Pest Management (IPM)- Public Works Agent in dry locations only. Two (~26m <sup>2</sup> ) remaining patches received mechanical treatment via spading (wet area) or mowing. Follow up monitoring and treatments will be required in 2025.	Follow up monitoring and treatments planned for 2025

Table 7: Actions Taken in	n Current Reporting	Year to Improve and	I Correct Performance



3	LID Training	The Town partnered with Credit Valley Conservation in 2024 to host three LID training sessions for a broad range of staff who were likely to impacted by CLIECA conditions. The three workshops covered the following subjects 1. Introduction to LID 2. Implementing LID in Roads, Open Space, Public Spaces and Residential Subdivisions 3. Caledon's LID toolbox	
		more familiar with LID and provide input on the type for LID that the Town would be willing to implement. The training has indirectly helped to improve stormwater performance by staff becoming more aware of operation requirements for existing LID. Implementing LID technologies preferred by operations will help to ensure long-term performance of the implemented infrastructure.	
4	Drainage Study	The Town completed the Hamlet of Cataract Drainage Study in 2024.	The detailed design for the drainage improvements is proposed to be completed in 2025.
5	No documentation of public concerns about stormwater management facilities	In 2024 the Town's process for documenting stormwater concerns raised by the public underwent a corporate review to identify process improvement. The main outcome of this review was that service request types were created in City Wide for stormwater management facilities so that concerns can be formally tracked for these assets.	2024

#### Update on Actions from Previous Reporting Year

Actions ongoing from previous year are the CB Pilot Project and invasive species removal at Ponds 10 and 11. An update on progress is included in the above table.



## SECTION 10: MAKING THE REPORT PUBLICLY AVAILABLE

The Annual Stormwater report will be posted to the Town of Caledon webpage. The Link to where the information will be posted is as follows: <u>https://www.caledon.ca/en/town-services/Stormwater.aspx</u>



## APPENDIX A – SEDIMENT ANALYSIS AND CONDITION ASSESSMENT TABLES

#### Table A 1: Wet Pond Sediment Removal Analysis

	Total Facility     Forebay			Cleanout required?						
SWMF ID	Design Permanent Pool Volume (m <sup>3</sup> )	Actual Permanent Pool Volume (m <sup>3</sup> ) (Surveyed)	Total Sediment Accumulation (m <sup>3</sup> ) (Surveyed)	Design Permanent Pool Volume Remaining (%)	Actual Permanent Pool Volume Remaining (%)	Actual Permanent Pool Volume (m <sup>3</sup> ) (Surveyed)	Sediment Volume (m <sup>3</sup> ) (Surveyed)	Actual Permanent Pool Volume Remaining (%)	Total Facility	Forebay
2	5,022	4,526 (Undersized)	616	88%	86%	1,251	280	78%	No	No
3	12,546	15,135 (Oversized)	1,070	91%	93%	2,620	186	93%	No	No
						1,717	162	91%		No
5	245	350 (Oversized)	130	47%	63%	63	31	51%	Yes	No
6	N/A	3,631	475	N/A	87%	1,382	162	88%	No	No
8	800	1,165 (Oversized)	95	88%	92%	No forebay	No forebay	No forebay	No	No forebay
9	17,000	15,263 (Undersized)	707	96%	95%	No forebay	No forebay	No forebay	No	No forebay
10	N/A	2,622	457	N/A	83%	Pond 11 is the forebay for Pond 10			No	-
11	Pond 10 is the main cell for Pond 11					1,146	166	86%	-	No
14	N/A	5,723	1,091	N/A	81%	1,554	353	77%	No	No
18	N/A	602	655	N/A	-9%	No forebay	No forebay	No forebay	Yes	No forebay
19	N/A	8,341	481	N/A	94%	1,490	141	91%	No	No
20	8,939	13,472 (Oversized)	2,395	73%	82%	2,651	758	71%	No	No
21	14,463	21,889 (Oversized)	1,826	87%	92%	2,348	407	83%	No	No
23	3,435	4,071 (Oversized)	592	83%	85%	1,067	191	82%	No	No
27	2,400	2,146 (Undersized)	364	85%	83%	307	142	54%	No	No
33	N/A	1,259	257	N/A	80%	107	20	81%	No	No
35	N/A	915	91	N/A	90%	-	-	N/A	No	N/A
37-1	Pond 37-1 is a Wet Forebay for Dry Pond 37-2					940	143	85%	-	No
40	3,680	9,957 (Oversized)*	1,429	61%	86%	3,991	523	87%	No	No
49	N/A	4,030	143	N/A	96%	No forebay	No forebay	No forebay	No	No forebay
50	N/A	8,086	1,213	N/A	85%	No forebay	No forebay	No forebay	No	No forebay
51	N/A	16,510	1,298	N/A	92%	No forebay	No forebay	No forebay	No	No Forebay
52	N/A	14,493	807	N/A	94%	No forebay	No forebay	No forebay	No	No forebay
59	N/A	13,043	2,409	N/A	82%	1,533	371	76%	No	No
61	16,358	25,813 (Oversized)**	2,182	87%	92%	9,296	749	92%	No	No
66	N/A	141	130	N/A	8%	16	130	-713%	Yes	Yes
67	4,029	2,800 (Undersized)	258	94%	91%	1,400	136	90%	No	No
70	20,066	21,189 (Oversized)	2,873	86%	86%	3,077	668	78%	No	No
74	13,396	14,436 (Oversized)	1,616	88%	89%	4,794	952	80%	No	No

80	4,486	6,681 (Oversized)	448	90%	93%	1,501	229	85%	No	No
81	2,364	2,192 (Undersized)	358	85%	84%	816	225	72%	No	No
82	N/A	2,331	221	N/A	91%	946	117	88%	No	No
89	N/A	1,065	229	N/A	78%	No forebay	No forebay	No forebay	No	No Forebay
95	N/A	341	186	N/A	45%	No forebay	No forebay	No forebay	Yes	No Forebay
103	N/A	63	52	N/A	17%	No forebay	No forebay	No forebay	Yes	No Forebay

Notes:

N/A – Data not available

\*SWMF 40 was surveyed following a significant rain event two days prior, which may be contributing to the largely oversized permanent pool.

\*\*SWMF 61 was surveyed following a significant rain event on the morning of the survey day, which may be contributing to the largely oversized permanent pool.

Table A 2: Dry Pond Sediment Removal Analysis

SWMF ID	Design Total Storage (m <sup>3</sup> )	Actual Active Storage (m <sup>3</sup> )	Total Sediment Accumulation (m <sup>3</sup> ) (Surveyed)	Design Storage Remaining (%)	Cleanout required?
12*	7,200	6,875	519	92%	No
15*	11,500	858	142	83%	Yes
37-2	1,275	1,180	0	100%	No
42	479	471	0	100%	No

Notes:

\*Water was found on site at SWMF 12 (marshland) and SWMF 15 (micropools)

\*\*Further investigations are recommended to further evaluate SWMF 15. A beaver dam was identified on site which may be substantially impacting the hydraulic performance of SWMF 15.

Table A 3: Stormwater Management Pond Condition Assessment Summary
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SWMF	Deficiency	Recommendations
1	<ul> <li>Undercutting and erosion along banks</li> <li>Gabion baskets at outlet channel are not present</li> <li>No SWM signage throughout facility</li> <li>DICB has minor debris on it and is outside of the facility fenceline</li> </ul>	<ul> <li>Restore banks and install slope protection</li> <li>Install gabion baskets at outlet channel in accordance with design</li> <li>Install SWM signage</li> <li>Clear debris on DICB</li> </ul>
2	<ul> <li>Leftover construction signage in facility</li> <li>Section of facility fencing is compromised by construction debris</li> <li>No SWM signage throughout facility</li> <li>Significant debris clogging inlet grate</li> <li>No formal access road, with steep slopes around facility</li> <li>Significant sediment accumulation in inlet channel</li> <li>Debris clogging outlet control structure grates</li> <li>Evidence of pumping from adjacent construction site into facility</li> <li>Phragmites throughout inlet channel</li> <li>Evidence of pollution in forebay near inlet</li> <li>Phragmites and dense vegetation limiting access to inlet headwall</li> </ul>	<ul> <li>Remove leftover construction signage in facility</li> <li>Repair damaged facility fence</li> <li>Install SWM signage</li> <li>Clear debris from inlet grate</li> <li>Establish a formal access road</li> <li>Remove sediment from inlet channel</li> <li>Clear debris from outlet control structure grates</li> <li>Investigate pumping from adjacent construction site</li> <li>Phragmites removal</li> <li>Sample water in forebay near inlet to determine type of pollution and accordingly</li> <li>Manage vegetation from around inlet headwall</li> </ul>
3	<ul> <li>Access road and spillway covered in tall grasses</li> <li>No SWM signage throughout facility</li> <li>Access gate structure is collapsing</li> <li>Garbage throughout facility</li> <li>Debris and sediment accumulation at outlet</li> <li>Dense phragmites at inlet channel</li> </ul>	<ul> <li>Manage vegetation at access road and spillway</li> <li>Install SWM signage</li> <li>Repair access gate structure</li> <li>Remove garbage from facility</li> <li>Clear debris and remove sediment at outlet</li> <li>Phragmites removal</li> </ul>
4	<ul> <li>Banks around west inlet headwall is heavily vegetated</li> <li>Excessive vegetation compromising fence on headwall</li> <li>Dense phragmites at inlet channel</li> <li>Fallen tree debris throughout facility</li> <li>Debris surrounding Hickenbottom structure</li> <li>Displaced riprap along separation berm between the forebay and the outlet</li> </ul>	<ul> <li>Manage vegetation around west inlet headwall</li> <li>Repair fence on west inlet headwall</li> <li>Phragmites removal</li> <li>Clear fallen tree debris</li> <li>Clear debris around Hickenbottom structure</li> <li>Reinstate riprap along separation berm</li> </ul>
5	<ul> <li>Sediment analysis shows the facility requires cleanout</li> <li>Vegetation growing through cracks in access road</li> <li>No SWM signage present</li> <li>Dense phragmites throughout facility and throughout inlet spillway</li> <li>Outlet structure is 1/3 submerged, heavily vegetated, and difficult to access</li> </ul>	<ul> <li>Facility-wide sediment removal operations</li> <li>Clear vegetation from access road and repair cracks</li> <li>Install SWM signage</li> <li>Phragmites removal</li> <li>Manage vegetation at and create access to outlet structure</li> </ul>



	6	<ul> <li>Evidence of animal burrows around base of outlet maintenance hole</li> <li>No SWM signage throughout facility</li> <li>Rodent grate on outlet culvert downstream of the Hickenbottom structure appears clogged</li> <li>Significantly degraded outlet; Geoweb has eroded and is not functioning as designed</li> <li>Emergency outfall is incised and eroding, and there is no slope protection present</li> <li>Evidence of erosion around inlet headwall, with displaced vegetation in inlet channel</li> <li>Water overtopping pond banks, and undercutting and erosion along banks</li> </ul>	<ul> <li>Wildlife management</li> <li>Install SWM signage</li> <li>Clear debris from outlet structure rodent grate</li> <li>Restore slopes and slope protection at outlet</li> <li>Restore emergency outfall</li> <li>Restore slopes and clear vegetation around inlet headwall</li> <li>Restore banks and install slope protection</li> </ul>
	8	<ul> <li>Sediment accumulation in inlet channel</li> <li>Inlet wingwall is broken</li> <li>Fallen fence on the inlet headwall</li> <li>Inlet headwall inaccessible due to dense vegetation</li> <li>Facility densely vegetated</li> <li>Presence of invasive phragmites</li> <li>Garbage throughout facility</li> <li>Pipe on emergency overflow spillway is open with no lock, and is beginning to rust</li> <li>No SWM signage throughout facility</li> </ul>	<ul> <li>Remove sediment from inlet channel</li> <li>Repair inlet wingwall</li> <li>Repair fence on inlet headwall</li> <li>Manage vegetation and create access to inlet headwall</li> <li>Vegetation management throughout facility</li> <li>Phragmites removal</li> <li>Remove garbage throughout facility</li> <li>Install a locked grate on emergency overflow spillway pipe</li> <li>Install SWM signage</li> </ul>
-	9	<ul> <li>Undercutting and erosion along banks</li> <li>Three additional inlets identified on site</li> </ul>	<ul> <li>Restore banks and install slope protection</li> <li>Complete a pond functionality review and drainage area assessme additional inlets</li> </ul>
	10	<ul> <li>No formal access road</li> <li>Vegetation clogging inlet channel</li> <li>Debris and garbage in inlet pipe</li> <li>Undercutting and erosion along banks</li> <li>Debris and vegetation encroaching on Hickenbottom structure</li> </ul>	<ul> <li>Establish a formal access road</li> <li>Manage vegetation in inlet channel</li> <li>Clear debris and garbage from inlet pipe</li> <li>Restore banks and install slope protection</li> <li>Clear debris from and manage vegetation at Hickenbottom structure</li> </ul>
•	11	<ul> <li>Inlet structure is difficult to access</li> <li>Outlet structure is 50% submerged, and clogged with debris. Outlet grate is not visible.</li> <li>No SWM signage throughout facility</li> <li>Facility is fenced with two access gates that could not be opened by inspectors</li> </ul>	<ul> <li>Create an access route to inlet structure</li> <li>Clear debris from outlet structure</li> <li>Install SWM signage</li> <li>Establish facility entrance gates that are accessible</li> </ul>
	12	<ul> <li>Sediment analysis shows the facility requires cleanout</li> <li>No formal access road</li> <li>Outlet structure maintenance hole is not bolted down</li> <li>Fencing around inlet headwall is overgrown</li> <li>Floating debris throughout facility</li> <li>Garbage throughout facility</li> <li>Vines and leafy debris growing in and around DICB grate</li> <li>Outfall channel has some downed trees that are beginning to cause a blockage</li> </ul>	<ul> <li>Facility-wide sediment removal operations</li> <li>Establish a formal access road</li> <li>Bolt down outlet structure maintenance hole</li> <li>Manage vegetation around inlet headwall</li> <li>Clear floating debris from facility</li> <li>Remove garbage throughout facility</li> <li>Manage vegetation at DICB</li> <li>Clear fallen tree debris from outfall channel</li> </ul>



13	<ul> <li>Access route is heavily overgrown</li> <li>Fence on inlet headwall overgrown with vegetation</li> <li>Bicycle and other large debris throughout facility</li> <li>Debris and sediment accumulation in outlet channel</li> <li>Elevated water level at outlet due to outlet grate clogged with debris</li> <li>Concrete outlet headwall surrounded by dense vegetation</li> <li>Eroded banks around outlet headwall</li> <li>Fallen trees in outlet channel</li> <li>Garbage in outlet channel</li> </ul>	<ul> <li>Clear vegetation from access route</li> <li>Manage vegetation around inlet headwall</li> <li>Remove bicycle and other large debris throughout facility</li> <li>Clear debris and sediment from outlet channel</li> <li>Clear debris from outlet grate</li> <li>Manage vegetation around outlet headwall</li> <li>Restore banks and install slope protection around outlet headwall</li> <li>Clear fallen trees from outlet channel</li> <li>Remove garbage from outlet channel</li> </ul>
14	<ul> <li>No formal access road</li> <li>Damaged construction fencing around forebay</li> <li>Both inlet pipes are 3/4 submerged (potentially due to recent rainfall event)</li> <li>Inlet overflow grate accumulating debris</li> <li>Outlet to maintenance hole is clogged with sticks, causing outlet to be partially not visible</li> <li>Top grate of outlet structure is unlocked and the grate leading to the weir is partially covered</li> </ul>	<ul> <li>Establish a formal access road</li> <li>Repair fencing around forebay</li> <li>Remove debris from inlet overflow grate</li> <li>Remove debris from outlet maintenance hole</li> <li>Lock top grate of outlet structure</li> <li>Remove debris from grate leading to outlet weir</li> </ul>
15	<ul> <li>Sediment analysis shows the facility requires cleanout</li> <li>No formal access road</li> <li>No SWM signage throughout facility</li> <li>Dense reeds throughout inlet channel</li> <li>Concrete headwall on other side of fence looks to very clogged, some erosion causing water to travel under fence and to pond</li> <li>90% reeds in pond forebay</li> <li>30% phragmites coverage in facility, concentrated closer to roadside</li> <li>Potential beaver dam causing ponding prior to outlet channel</li> </ul>	<ul> <li>Facility-wide sediment removal operations</li> <li>Establish a formal access road</li> <li>Install SWM signage</li> <li>Manage vegetation in inlet channel</li> <li>Clear sediment from concrete headwall on other side of facility fence</li> <li>Restore slopes along facility fenceline</li> <li>Manage vegetation in forebay</li> <li>Phragmites removal</li> <li>Clear potential beaver dam prior to outlet channel</li> </ul>
17	<ul> <li>No SWM signage throughout facility</li> <li>Plunge pool banks are steep and eroded</li> <li>Outlet pipe is partially clogged and vegetation is beginning to encroach</li> <li>Vegetation beginning to grow in rip rap at outlet channel</li> </ul>	<ul> <li>Install SWM signage</li> <li>Restore banks of plunge pool and install slope protection</li> <li>Clear debris from outlet pipe</li> <li>Manage vegetation around outlet pipe and in riprap at outlet channel</li> </ul>
18	<ul> <li>Sediment analysis shows the facility requires cleanout</li> <li>No SWM signage throughout facility</li> <li>Densely vegetated forebay</li> <li>Some garbage throughout facility</li> <li>Berm is overgrown</li> </ul>	<ul> <li>Facility-wide sediment removal operations</li> <li>Install SWM signage</li> <li>Manage vegetation in forebay</li> <li>Remove garbage throughout facility</li> <li>Manage vegetation on separation berm</li> </ul>
19	<ul> <li>No SWM signage throughout facility</li> <li>No formal access road apart from direct road access pull-off</li> <li>Inlet headwall heavily vegetated and difficult to access</li> <li>Outlet structure heavily vegetated</li> </ul>	<ul> <li>Install SWM signage</li> <li>Establish a formal access road</li> <li>Manage vegetation at and establish access to inlet headwall</li> <li>Manage vegetation at outlet structure</li> </ul>

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20	<ul> <li>No formal access road. Evidence of an old gravel access that is heavily vegetated</li> <li>Dense vegetation throughout facility</li> <li>Maintenance hole could not be located due to dense vegetation</li> <li>No SWM signage throughout facility</li> <li>Filter cloth in inlet channel needs replacement</li> <li>Some phragmites in main cell</li> <li>Fallen tree debris on facility banks</li> <li>Garbage throughout facility</li> </ul>	<ul> <li>Establish a formal access road</li> <li>Vegetation management throughout facility</li> <li>Locate maintenance hole</li> <li>Install SWM signage</li> <li>Restore filter cloth in inlet channel and establish slope protection</li> <li>Phragmites removal</li> <li>Clear fallen tree debris on facility banks</li> <li>Remove garbage throughout facility</li> </ul>
21	<ul> <li>Evidence of erosion behind inlet headwall</li> <li>Evidence of oily pollution in water on top of riprap inlet from trucking yard</li> <li>Garbage throughout facility from surrounding private properties</li> <li>Phragmites around outlet structure</li> </ul>	<ul> <li>Restore slopes behind inlet headwall and install slope protection</li> <li>Sample water from riprap inlet to determine type of pollution and relaccordingly</li> <li>Remove garbage throughout facility</li> <li>Phragmites removal</li> </ul>
23	<ul> <li>Some phragmites around inlets</li> <li>There is a detached and floating PVC pipe at inlet behind grate</li> <li>Some floating debris in pond</li> <li>Garbage throughout facility</li> <li>Debris on inlet grates</li> </ul>	<ul> <li>Phragmites removal</li> <li>Investigate and restore PVC pipe at inlet behind grate</li> <li>Remove floating debris in pond</li> <li>Remove garbage throughout facility</li> <li>Remove debris from inlet grates</li> </ul>
25	<ul> <li>No SWM signage throughout facility</li> <li>No direct access road</li> <li>Integrity of some gabion baskets is compromised</li> <li>Sediment accumulation in Inlet pipe</li> <li>Evidence of erosion around facility banks</li> <li>DICB grate covered in vegetation</li> <li>Encroachment (sheds) on public property</li> </ul>	<ul> <li>Install SWM signage</li> <li>Establish a formal access road</li> <li>Restore gabion baskets</li> <li>Clear sediment in inlet pipe</li> <li>Restore banks and install slope protection</li> <li>Manage vegetation at DICB grate</li> <li>Investigate private property encroachment</li> </ul>
26	<ul> <li>Access road is too steep for maintenance access</li> <li>Phragmites present in forebay</li> <li>Evidence of sediment accumulation in DICB</li> <li>Vegetation encroaching on DICB</li> </ul>	<ul> <li>Regrade slopes in facility to establish maintenance access</li> <li>Phragmites removal</li> <li>Clear sediment from DICB</li> <li>Manage vegetation around DICB</li> </ul>
27	<ul> <li>No SWM signage throughout facility</li> <li>Could not open control maintenance hole to investigate</li> </ul>	<ul> <li>Install SWM signage</li> <li>Locate and investigate control maintenance hole</li> </ul>
28	No SWM signage throughout facility	Install SWM signage
29	Suspected sump pump pipe observed from private property discharging water into pond, indicating high groundwater	<ul> <li>Investigate sump pump pipe from private property</li> <li>Investigate groundwater levels in the area</li> </ul>



	30	<ul> <li>No formal access road</li> <li>No SWM signage throughout facility</li> <li>Unable to open gate from Airport Rd due to encroaching vegetation and sediment accumulation</li> <li>Facility is densely vegetated with many fallen trees</li> <li>Garbage and anthropogenic debris around inlet</li> <li>Erosion not visible due to vegetation, but is evident due to steep slopes around inlet and other investigated portions of facility</li> <li>Fence on inlet headwall has been damaged by fallen tree debris</li> <li>Entire facility is densely vegetated and difficult to access</li> </ul>	<ul> <li>Establish a formal access road</li> <li>Install SWM signage</li> <li>Manage vegetation and clear sediment from access gate at Airport</li> <li>Manage vegetation throughout facility</li> <li>Clear fallen tree debris throughout facility</li> <li>Remove garbage and debris around inlet</li> <li>Restore slopes throughout facility and install slope protection</li> <li>Repair inlet headwall fence</li> <li>Restore access to and throughout facility</li> </ul>
	31	<ul> <li>No SWM signage throughout facility</li> <li>Sediment accumulation evident in inlet pipe and inlet channel</li> <li>No lock on inlet grate</li> <li>Outlet channel is overgrown with evidence of sediment accumulation</li> <li>Riprap at emergency overflow weir is displaced</li> <li>Emergency overflow weir is overgrown and has fallen tree debris</li> <li>Abundant fallen tree debris throughout facility</li> </ul>	<ul> <li>Install SWM signage</li> <li>Clear sediment from inlet pipe and inlet channel</li> <li>Lock inlet grate</li> <li>Manage vegetation and sediment in outlet channel</li> <li>Restore riprap at emergency overflow weir</li> <li>Manage vegetation at emergency overflow weir</li> <li>Clear fallen tree debris throughout facility</li> </ul>
ĺ	32	<ul> <li>Could not open maintenance hole on access road</li> <li>Garbage throughout facility</li> </ul>	<ul> <li>Restore ability to open maintenance hole on access road</li> <li>Remove garbage throughout facility</li> </ul>
	33	<ul> <li>Gabion basket structure is compromised at some points</li> <li>Evidence of erosion around inlet</li> <li>Hickenbottom structure is partially clogged, but has no direct access other than from the water</li> <li>Could not locate outfall due to vegetation</li> </ul>	<ul> <li>Restore gabion basket structure</li> <li>Restore slopes around inlet and install slope protection</li> <li>Clear debris from Hickenbottom structure</li> <li>Manage vegetation so outfall can be located and investigated</li> </ul>
	34	<ul> <li>No SWM signage throughout facility</li> <li>Pond does not have a formal inlet structure</li> <li>Steep slopes and evidence of erosion around inlet channel</li> <li>Concrete outlet structure is partially submerged</li> <li>Evidence of sediment accumulation in outlet pipe</li> <li>Facility access is impeded due to dense vegetation</li> <li>90% coverage of aquatic vegetation in main cell</li> <li>Riprap displaced in outlet channel</li> </ul>	<ul> <li>Install SWM signage</li> <li>Investigate opportunity to add a formal inlet structure</li> <li>Restore slopes and install slope protection at inlet channel</li> <li>Investigate reason for concrete outlet structure being partially subm</li> <li>Clear sediment from outlet pipe</li> <li>Manage vegetation throughout facility</li> <li>Manage aquatic vegetation in main cell</li> <li>Restore riprap in outlet channel</li> </ul>
	35	<ul> <li>No SWM signage throughout facility</li> <li>Unidentified pipe located on slopes of pond</li> <li>Minor algae presence in pond</li> <li>Geoweb by inlet is exposed and in poor condition</li> <li>Bypass could not be located, so could not confirm flows being diverted into pond</li> </ul>	<ul> <li>Install SWM signage</li> <li>Investigate origin of pipe located on pond slopes</li> <li>Clear algae from pond</li> <li>Restore geoweb by inlet</li> <li>Locate and investigate bypass</li> </ul>
	37	<ul> <li>Garbage throughout facility</li> <li>No lock on outlet grate</li> <li>Fallen tree debris downstream</li> <li>Facility is densely vegetated</li> <li>Vegetation encroaching at outlet</li> </ul>	<ul> <li>Remove garbage throughout facility</li> <li>Lock outlet grate</li> <li>Clear downstream fallen tree debris</li> <li>Manage vegetation throughout facility</li> <li>Manage vegetation at outlet</li> </ul>



40	<ul> <li>Could not located maintenance holes</li> <li>Phragmites present along banks of main cell</li> <li>Outlet pipe and channel were submerged</li> <li>Garbage throughout facility</li> <li>Vegetation encroaching on emergency flood control structure - could not observe</li> <li>Prevalent algae throughout facility</li> </ul>	<ul> <li>Locate and investigate maintenance holes</li> <li>Phragmites removal</li> <li>Investigate cause for outlet pipe and channel being submerged</li> <li>Remove garbage throughout facility</li> <li>Manage vegetation on emergency flood control structure, then inve</li> <li>Clear algae from pond</li> </ul>
42	<ul> <li>No SWM signage throughout facility</li> <li>Outlet CSP pipe on creek side has 5 - 10 cm of sed buildup with grass starting to encroach</li> <li>Inlet pipe to facility from roadside ditch is corroded and rotted out at the bottom, on ditch side</li> <li>Displaced riprap outlet channel</li> <li>Inlet pipe to facility from roadside ditch has sediment and gravel accumulation, on facility side</li> <li>Private property encroachment</li> </ul>	<ul> <li>Install SWM signage</li> <li>Clear sediment from CSP outlet pipe</li> <li>Manage vegetation around CSP outlet pipe</li> <li>Replace inlet pipe to facility from roadside ditch</li> <li>Restore riprap outlet channel</li> <li>Address private property encroachment and provide public education</li> </ul>
48	<ul> <li>No SWM signage throughout facility</li> <li>Facility is densely vegetated - both terrestrial and aquatic</li> <li>CSP outlet pipe apron is beginning to rust out</li> <li>Downstream has many fallen trees and thick vegetation</li> </ul>	<ul> <li>Install SWM signage</li> <li>Manage vegetation throughout facility</li> <li>Restore CSP outlet pipe apron</li> <li>Clear fallen trees and manage vegetation downstream</li> </ul>
49	<ul> <li>No SWM signage throughout facility - there is a private property sign nearby</li> <li>Phragmities on facility banks</li> <li>Garbage throughout facility</li> </ul>	<ul> <li>Install SWM signage</li> <li>Phragmites removal</li> <li>Remove garbage throughout facility</li> </ul>
50 / 51	<ul> <li>No SWM signage throughout facility</li> <li>Entire facility is covered in duckweed</li> <li>Blockage beginning to form in CSP pipe at Pond 51</li> <li>Vegetation encroaching on CSP pipe at Pond 51</li> </ul>	<ul> <li>Install SWM signage</li> <li>Clear duckweed from facility</li> <li>Clear blockage in CSP pipe at Pond 51</li> <li>Manage vegetation around CSP pipe at Pond 51</li> </ul>
52	<ul> <li>No SWM signage throughout facility</li> <li>No formal access road</li> <li>Evidence of erosion along inlet spillway</li> <li>Evidence of oily pollution in inlet spillway</li> <li>Phragmites around inlet culvert</li> </ul>	<ul> <li>Install SWM signage</li> <li>Establish a formal access road</li> <li>Restore banks of inlet spillway and install slope protection</li> <li>Sample water from inlet spillway to determine type of pollution and accordingly</li> <li>Phragmites removal</li> </ul>
53	<ul> <li>No SWM signage throughout facility</li> <li>Sediment beginning to accumulate in multiple of the PVC pipes under footpath</li> <li>Facility has abundant fallen tree debris</li> <li>Evidence of sediment accumulation at gabion basket weir</li> </ul>	<ul> <li>Install SWM signage</li> <li>Clear sediment from PVC pipes under footpath</li> <li>Clear fallen tree debris throughout facility</li> <li>Clear sediment at gabion basket weir</li> </ul>
59	<ul> <li>No access gate to facility</li> <li>Phragmites present at inlet and outlet</li> <li>Vegetation encroaching at outlet</li> <li>Outlet pipe is partially submerged</li> <li>Access road is overgrown</li> <li>Seal between inlet pipe and headwall is deteriorating</li> </ul>	<ul> <li>Install an access gate</li> <li>Phragmites removal</li> <li>Manage vegetation at outlet</li> <li>Clear vegetation from access road</li> <li>Investigate partially submerged outlet pipe</li> <li>Re-seal inlet pipe to concrete headwall</li> </ul>
60	No major concerns	• N/A



61	<ul> <li>Could not located maintenance hole behind outlet structure</li> </ul>	<ul> <li>Locate and investigate maintenance hole behind outlet structure</li> </ul>
	Inlet grate is damaged	Repair inlet grate
	Phragmites present around outlet	Phragmites removal
66	Sediment analysis shows the facility requires cleanout	Facility-wide sediment removal operations
	Some garbage on access road	<ul> <li>Remove garbage from access road</li> </ul>
	Sediment accumulation in inlet pipe	Clear sediment from inlet pipe
	Phragmites on the south bank of the pond	Phragmites removal
	Evidence of oily pollution	Sample water to determine type of pollution and rehabilitate accordingly
	Outlet weir has debris in it	Clear debris from outlet weir
	Facility is about 50% covered in algae and aquatic weeds	Clear algae and aquatic weeds from facility
	Outlet headwall seal between PVC pipe and concrete deteriorating	Re-seal outlet pipe to concrete headwall
	Survey indicated that a significant discrepancy between as-built and survey	Investigate pond functionality and the significant deviations between the survey
	information. The pond seems to be 1.2m higher than the elevations shown in the as-	and as-built drawings
	builts.	
67	Garbage around outlet	Remove garbage around outlet
	• Facility access road flooded about 6 inches (potentially due to recent heavy rainfall)	Investigate facility to determine flooding on access road
	• Evidence of erosion around outlet maintenance hole	Restore slopes around outlet maintenance hole and install slope protection
68	Could not locate and investigate inlet maintenance hole	Locate and investigate inlet maintenance hole
	Could not locate emergency overflow weir due to dense vegetation	Manage vegetation to locate and investigate emergency overflow weir
	• Facility gate found open with no lock	Lock facility access gate
	Outlet structure difficult to access due to dense vegetation	Manage vegetation to establish access to outlet structure
70	Inlet grate found open with no lock	Lock inlet grate
	Garbage throughout facility	<ul> <li>Remove garbage throughout facility</li> </ul>
	• Berm around the main cell has eroded away in the middle and water is bypassing	<ul> <li>Restore berm around the main cell and install slope protection</li> </ul>
	through	<ul> <li>Manage vegetation at both inlet headwalls</li> </ul>
	Vegetation encroaching at both inlet headwalls	
73	No SWM signage throughout facility	Install SWM signage
	<ul> <li>Displaced and missing riprap along slopes</li> </ul>	Restore riprap along slopes
	Berm is overgrown	Manage vegetation on berm
	Some garbage throughout facility	<ul> <li>Remove garbage throughout facility</li> </ul>
	Could not locate overflow weir	Locate and investigate overflow weir
74	Inlet grate found unlocked	Lock inlet grate
	Garbage throughout facility	Remove garbage throughout facility
	Dense vegetation and phragmites in outlet channel	Manage vegetation in outlet channel
	Phragmites in main cell	Phragmites removal
	Unknown turbidity curtain in main cell	Investigate source and usage of turbidity curtain
80	Phragmites and dense vegetation in inlet channel	Manage vegetation throughout facility
	Prevalent algae presence throughout facility	Phragmites removal
	<ul> <li>Phragmites and vegetation encroachment in forebay and banks</li> </ul>	Clear algae from facility
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81	Overgrown vegetation in inlet channel	Manage vegetation in inlet channel
	Phragmites present in forebay and main cell	Phragmites removal
	• Turbidity and garbage in inlet channel and main cell	Address turbidity in inlet channel in main cell
	<ul> <li>Vegetation beginning to encroach at outlet grate and outlet spillway</li> </ul>	<ul> <li>Remove garbage from inlet channel and main cell</li> </ul>
	<ul> <li>Turfstone access to forebay is disjointed at end</li> </ul>	<ul> <li>Manage vegetation around outlet grate and in outlet spillway</li> </ul>
	Phragmites at low flow channel through berm	<ul> <li>Restore turfstone access to forebay</li> </ul>
82	No SWM signage throughout facility	Install SWM signage
	Access road is overgrown	<ul> <li>Clear vegetation from access road</li> </ul>
	<ul> <li>Vegetation encroaching at inlet headwall</li> </ul>	<ul> <li>Manage vegetation at inlet headwall</li> </ul>
	<ul> <li>Inlet headwall beginning to lean away from embankment</li> </ul>	Reset inlet headwall
	<ul> <li>Inlet headwall is experiencing spalling</li> </ul>	<ul> <li>Repair spalled concrete on inlet headwall</li> </ul>
	<ul> <li>Outlet headwall beginning to lean away from bank</li> </ul>	Reset outlet headwall
	Vegetation encroaching on outlet grate	Manage vegetation at outlet grate
	Inlet channel riprap is displaced	Restore riprap at inlet channel
80	• Facility is overgrown	Manage vegetation throughout facility
03	No formal access road	Fetablish a formal access road
	• No SWM signage throughout facility	<ul> <li>Install SWM signage</li> </ul>
	• Follon trop dobring throughout facility	Clear fellen tree debrie throughout facility
95	Sediment analysis shows the facility requires cleanout	Facility-wide sediment removal operations,
	Facility access road is overgrown	Clear vegetation from facility access road
	No SWM signage throughout facility	Install SWM signage
	Evidence of sediment accumulation in inlet pipe and at inlet channel	Clear sediment from inlet pipe and inlet channel
	Vegetation encroaching at outlet pipe	Manage vegetation at outlet pipe
	No lock on inlet or outlet grates	Lock inlet and outlet grates
	Vegetation encroaching at inlet pipe and inlet channel	Manage vegetation at inlet pipe and inlet channel
	Facility is around 90% full of reeds	Mangement of reeds and excessive vegetation
96	Access road is overgrown after paved portion	Clear vegetation from access road
50	No SWM signage throughout facility	Install SWM signage
	Degraded gabion basket at top of outlet apron, materials displaced	Pestore gabion basket at top of outlet aprop
	Eglion trop dobrin throughout facility	Clear fellen tree debrie throughout facility
	• Faller liee debits infoughout facility	Crear failer free debris filloughout facility     Posters banks and clones around outlet and restors growth clone
	• Exposed Geoweb on eroded banks and around outlet	• Restore barks and slopes around outlet and restore geowed slope
103	Sediment analysis shows the facility requires cleanout	Facility-wide sediment removal operations
	No formal access road	Establish a formal access road
	Evidence of sediment accumulation in inlet channel	Clear sediment from inlet channel
	No SWM signage throughout facility	Install SWM signage
	Sediment accumulation in inlet nine	Clear sediment from inlet nine
		olear sediment norminiet pipe
109	No formal access road	Establish a formal access road
	<ul> <li>Inlet head wall is slightly buried and clogged with sediment</li> </ul>	Clear sediment from inlet headwall
	Vegetation encroaching on inlet headwall and inlet pipe	Manage vegetation around inlet headwall and inlet pipe
	No SWM signage throughout facility	• Install SWM signage
	• Perforated pipe emerging in inlet channel where eroded and filer cloth is visible	Restore slopes and slope protection around perforated pipe in inlet
	Sediment accumulation in inlet pipe	Clear sediment from inlet pipe



110	No SWM signage throughout facility	Install SWM signage
	Steep slopes around inlet structure	• Restore slopes and install slope protection around inlet structure
	<ul> <li>CSP outlet is rotted out and most outlet flows are being diverted along surrounding</li> </ul>	Replace CSP outlet pipe (300 mm)
	vegetation	



Table A 4: Low Impact Development Condition Assessment Summary

SWMF ID	Deficiency	Recommendations
16.1	<ul> <li>Invasive phragmites throughout the swale.</li> </ul>	<ul> <li>Phragmites management clean-up and removal</li> </ul>
	<ul> <li>Corroded CVC sewer at inlet headwall</li> </ul>	<ul> <li>Review of structural integrity of the CVC sewer at inlet headwall</li> </ul>
	• Visible sediment accumulation in the ditch and on the road, possibly washing out and	<ul> <li>Clean-out of sediment</li> </ul>
	pooling on the road after/during rainfall events	• Drainage area assessment and drainage connectivity assessment r
	Missing as-built information	This ditch appears to part of a larger drainage network
16.2	<ul> <li>Invasive phragmites throughout the swale</li> </ul>	<ul> <li>Phragmites management clean-up and removal</li> </ul>
	<ul> <li>Missing as-built information</li> </ul>	• Drainage area assessment and drainage connectivity assessment r
		This ditch appears to part of a larger drainage network.
16.3	Invasive phragmites throughout the swale	<ul> <li>Phragmites management clean-up and removal</li> </ul>
	<ul> <li>Slopes of the ditch are eroded and sitting water was noted throughout the facility</li> </ul>	<ul> <li>Regrade ditch to provide positive drainage</li> </ul>
	<ul> <li>Visible sediment accumulation</li> </ul>	<ul> <li>Clean-out of sediment</li> </ul>
	<ul> <li>Missing as-built information</li> </ul>	• Drainage area assessment and drainage connectivity assessment r
		This ditch appears to part of a larger drainage network
16.4	<ul> <li>Invasive phragmites throughout swale</li> </ul>	<ul> <li>Phragmites management clean-up and removal</li> </ul>
	Water is pooling at roadside	<ul> <li>Regrade ditch to provide positive drainage</li> </ul>
	Dead ash trees	<ul> <li>Clear out dead and invasive vegetation</li> </ul>
	Missing as-built information	<ul> <li>Drainage area assessment and drainage connectivity assessment r This ditch appears to part of a larger drainage petwork</li> </ul>
67 1	<ul> <li>Signs of washout, sand debris at the inlet</li> </ul>	Clean out debris and sediment at inlet and outlet
07.1	Construction sediment log left over in the facility	Removal of temporary construction features such as sediment logs
	<ul> <li>Signs of erosion at the inlet spillway.</li> </ul>	Frosion protection at inlet spillway
	<ul> <li>Signs of phragmites at the outlet</li> </ul>	Phragmites management clean-up and removal
	<ul> <li>Missing as huilt information. Eacility appears to be a series of inlets, ditches, and storm</li> </ul>	Prainage area assessment and drainage connectivity assessment r
	sewers which lead to a central ditch or LID. OGS units were noted upstream of the	This facility appears to part of a larger drainage network
	facility	
67.2	Minor vegetation management (weeds)	Cleanout of invasive species (minor)
	Debris and garbage built up around grates	Clean out of inlet and outlet grates
	Visible solidified concrete has been poured into bioswale	Remove concrete debris from bioswale
	Missing as-built information	Maintain the planting plan per the original design
		• Complete a functionality assessment and drainage area assessm
		facility to intended level of service.
108	<ul> <li>Outlet grate is overgrown with vegetation</li> </ul>	<ul> <li>Clean up and reinstate riprap</li> </ul>
	<ul> <li>Riprap is overgrown with vegetation</li> </ul>	<ul> <li>Clean up of vegetation</li> </ul>
	<ul> <li>No visible outlet control structure or orifice plate</li> </ul>	Confirm outlet controls
	<ul> <li>Missing as-built information</li> </ul>	<ul> <li>Complete a functionality assessment and drainage area assessment facility to intended level of service.</li> </ul>



#### Table A 5: Manufactured Treatment Device Sediment Removal Analysis

SWMF ID	OGS Model	Allowable Sediment (mm)	Sediment Depth (mm)	% of Allowable Sediment	Cleanout Needed?	Notes
54	STORMCEPTOR-1000	278	FULL	100%	Yes	No exact silt reading given
66 (1)	STORMCEPTOR-750	228	404	177%	Yes	
66 (2)	STORMCEPTOR-750	228	531	233%	Yes	
67	STORMCEPTOR-750	228	758	332%	Yes	
69	STORMCEPTOR-6000	430	2174	506%	Yes	
73	HYDROGUARD HG5	354	152	43%	No	
96	STORMCEPTOR-3000	480	1947	406%	Yes	
108 (1)	STORMCEPTOR-750	228	758	332%	Yes	
108 (2)	STORMCEPTOR-750	228	404	177%	Yes	
111	JELLYFISH 4-2-1	303	101	33%	No	Filters are clogged. Service via CSE required
115	STORMCEPTOR-750	228	FULL	100%	Yes	No exact silt reading given
129	STORMCEPTOR-4000	404	1213	300%	Yes	
201	STORMCEPTOR-2000	354	733	207%	Yes	
202	STORMCEPTOR-750	228	910	399%	Yes	