Snow Storage Sites Analysis and Conceptual Design Project

Project File Report

Region of Peel

60646784

November 2024

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AECOM: 2015-04-13

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Revision History

Revision Number	Date	Revised By	Revision Description
-	January 15, 2024	-	Draft Project File submitted to the Region.
1	April 3, 2024	SZ	Draft Project File circulated for Agency Review
2	November 1, 2024	SZ	Final Project File for 30-day Review

Executive Summary

Introduction and Background

The Region of Peel (the Region) has retained AECOM Canada Ltd. (AECOM) to complete a Municipal Class Environmental Assessment to evaluate snow storage opportunities at selected Region of Peel (and one Town of Caledon) owned properties. The Region requires strategically placed and well-designed snow disposal facilities to effectively store and manage subsequent snow melt. These facilities also mitigate against undesirable environmental and operational impacts, such as crossing watershed boundaries, as well as minimizing travel time.

The snow storage sites identified in this report will provide near and long-term snow storage solutions that are environmentally sound and acceptable for the Region and its area municipalities. Facility design and construction of preferred snow storage facilities is to be determined by the Region on an individual basis.

Pursuant to the Municipal Engineers Association Class Environmental Assessment document (October 2000, as amended in 2007, 2011 and 2015) snow storage facilities are “Schedule A” or pre-approved projects. However, the Region has elected to follow a similar process of that to a Schedule B Municipal Class Environmental Assessment planning framework for this study to allow for the evaluation of snow storage siting opportunities in consultation with key stakeholders, regulatory agencies, and the public.

Potential Snow Storage Sites

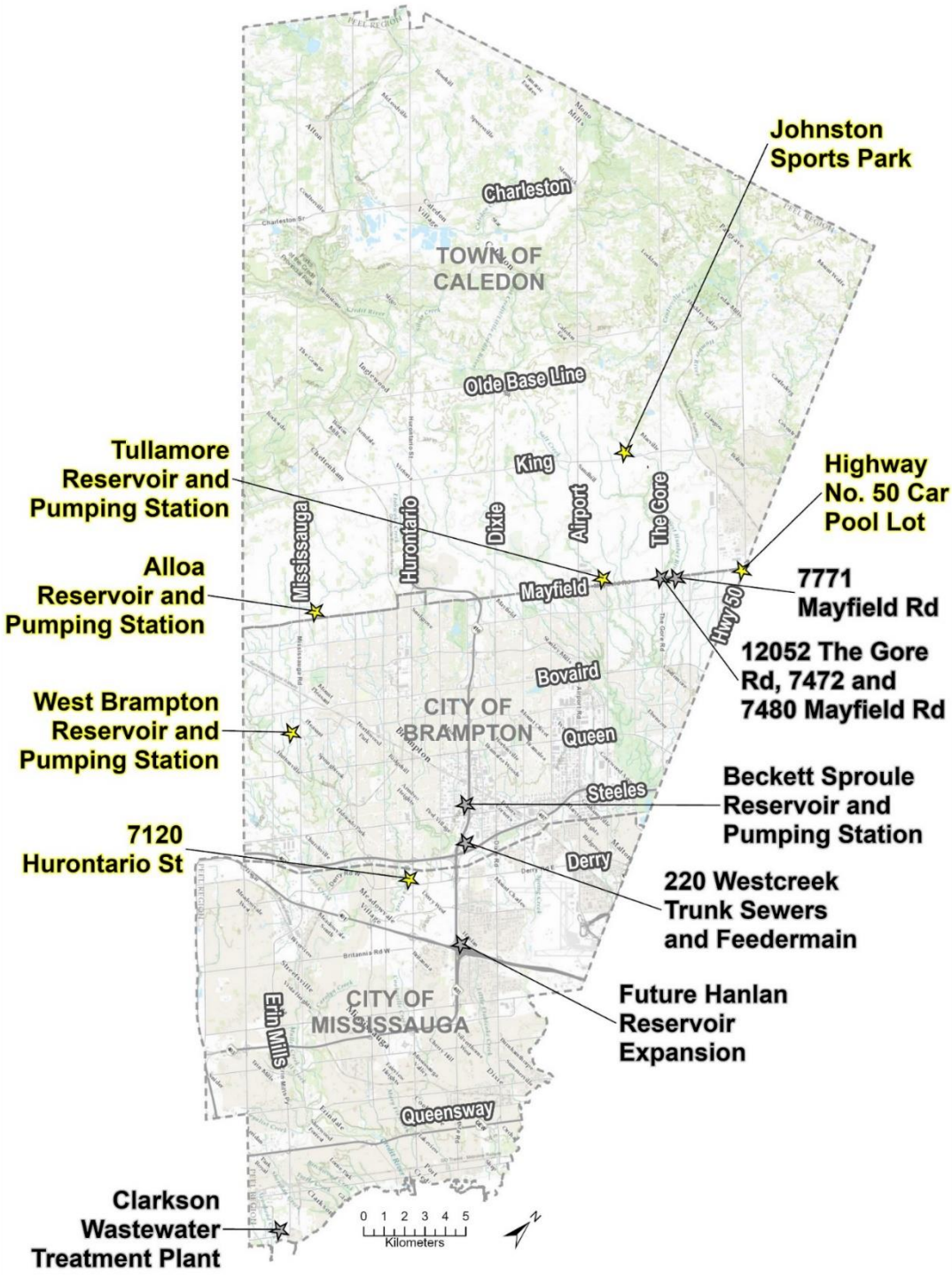
A total of 12 potential snow storage sites, as identified in **Table ES-1** were assessed and evaluated across the Region are shown in **Figure ES-1**.

Table ES-1: Snow Storage Sites

Site	Location	Municipality
1	Highway 50 Carpool Lot	Brampton
2	Beckett Sproule Reservoir and Pumping Station	Brampton
3	West Brampton Reservoir and Pumping Station	Brampton
4	Clarkson Wastewater Treatment Plant	Mississauga
5	Johnston Sports Park	Caledon
6	Tullamore Reservoir and Pumping Station	Caledon
7	Future Hanlan West Reservoir expansion site	Mississauga
8	220 Westcreek Boulevard Trunk Sewers and Feedermain site	Brampton
9	Alloa Reservoir and Pumping Station	Caledon
10	7120 Hurontario Street	Mississauga
11	7771 Mayfield Road	Brampton
12	12052 The Gore Road, 7472 and 7480 Mayfield Road	Caledon

The site locations highlighted in yellow in **Figure ES-1** have been recommended to be carried forward to the design and implementation phase and have been included in the supporting studies for this project to better understand their existing conditions and evaluate their impacts, if ultimately developed for snow storage.

Figure ES-1: Snow Storage Options



Phase 1: Problem or Opportunity Statement

Phase 1 of the Municipal Class Environmental Assessment planning process requires the Region to first document factors leading to the conclusion that the improvement is needed, and to develop a clear statement of the identified problems and opportunities to be investigated. The Problem and/or Opportunity for this study is presented below.

Problem

- Over the winter, snow accumulates on the side of roads as plows clear the snow off the roadways. As the banks get higher, too much snow can become a safety issue by obstructing driver views and hindering pedestrian passage. In recent years, infrastructure enhancements to improve walkability, cycling and other modes of travel have reduced the areas where snow can be placed within built environments.
- Road Operations monitors snow accumulations and periodically removes the accumulated snow piles within the road right of ways. The removed snow needs to be taken somewhere to melt in an environmentally responsible way as it may contain road contaminants such as salt, oil, grease, heavy metals and garbage.
- Identifying appropriate snow storage sites has become an increasing challenge due to population growth and environmental disposal concerns. This issue may worsen due to the impacts of climate change. Many of the traditional locations used for storing snow are becoming unavailable or inappropriate for use.

Opportunity

- Strategically placed and well-designed snow disposal facilities are required in order to effectively store and manage the melt of the snow while mitigating against undesirable environmental and operational impacts.
- Through the Municipal Class Environmental Assessment planning and consultation process, a long list of snow storage sites will be screened to identify a short list of recommended snow storage sites. The Region will determine the phased implementation of the recommended sites complete with detailed design, construction and monitoring.

Phase 2: Alternative Solutions

Phase 2 of the Municipal Class Environmental Assessment process focused on evaluating the 12 snow storage sites (**Figure ES-1**) throughout the Region and

selecting the validated sites to go forward to design and construction. Based on the evaluation, the following 6 sites, as highlighted in yellow in **Figure ES-1** and shown in **Figures ES-2 to ES-7**, were validated and recommended to proceed to design and implementation:

- **Site 1: Highway 50 Carpool Lot**, in Brampton, is adjacent to the parking lot owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 3**: **West Brampton Reservoir and Pumping Station**, in Brampton, is owned by the Region and has been recommended to proceed due to its proximity to the serviced areas and the available space.
- **Site 5: Johnston Sports Park**, in Caledon, is owned by the Town of Caledon and has been recommended to proceed due to its proximity to the serviced areas and the available space. This site will be joint use between the Region and Town and in line with the proposed Johnston Sports Park Master Plan.
- **Site 6: Tullamore Reservoir and Pumping Station**, in Caledon, is owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 9: Alloa Reservoir and Pumping Station**, in Caledon, is owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 10: 7120 Hurontario Street**, in Mississauga, is owned by the Region and has been recommended to proceed as this site has surplus parking area and is currently being used as a temporary snow storage area.

The proposed site conditions and conceptual designs associated with each of the above noted sites are described in **Section 7** of this report.

Figure ES-2: Highway 50 Carpool Lot (Brampton)

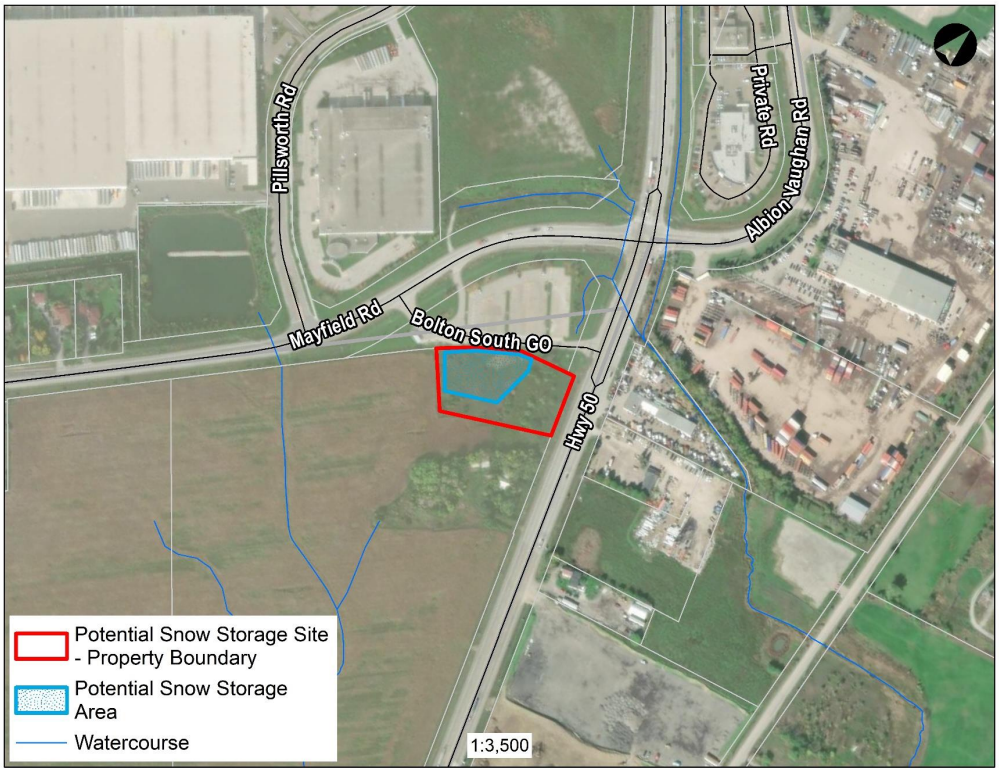


Figure ES-3: West Brampton Reservoir and Pumping (Brampton)

Figure ES-4: Johnston Sports Park (Caledon)

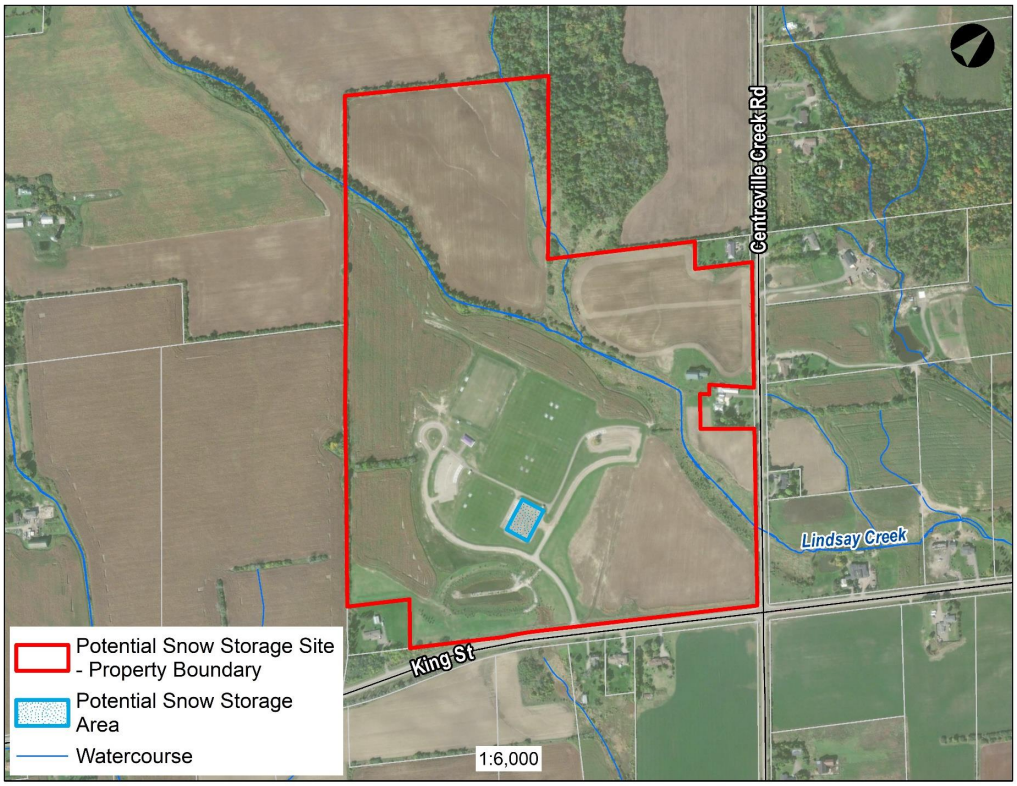


Figure ES-5: Tullamore Reservoir and Pumping Station (Caledon)

Figure ES-6: Alloa Reservoir and Pumping Station (Caledon)

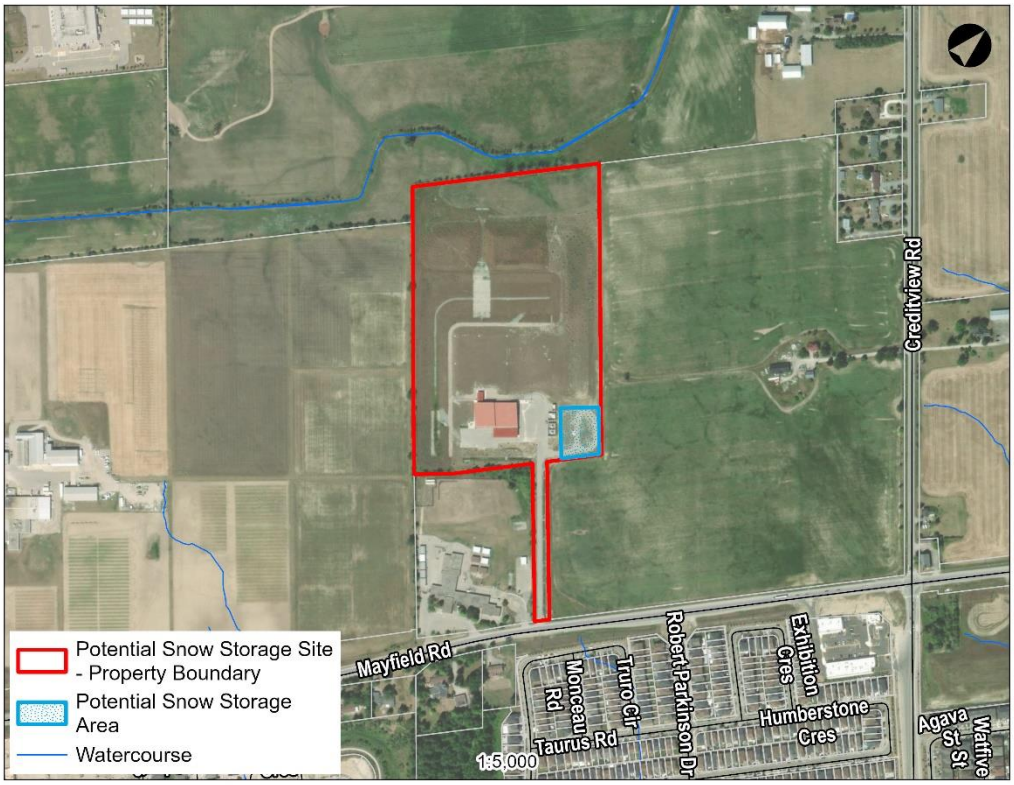
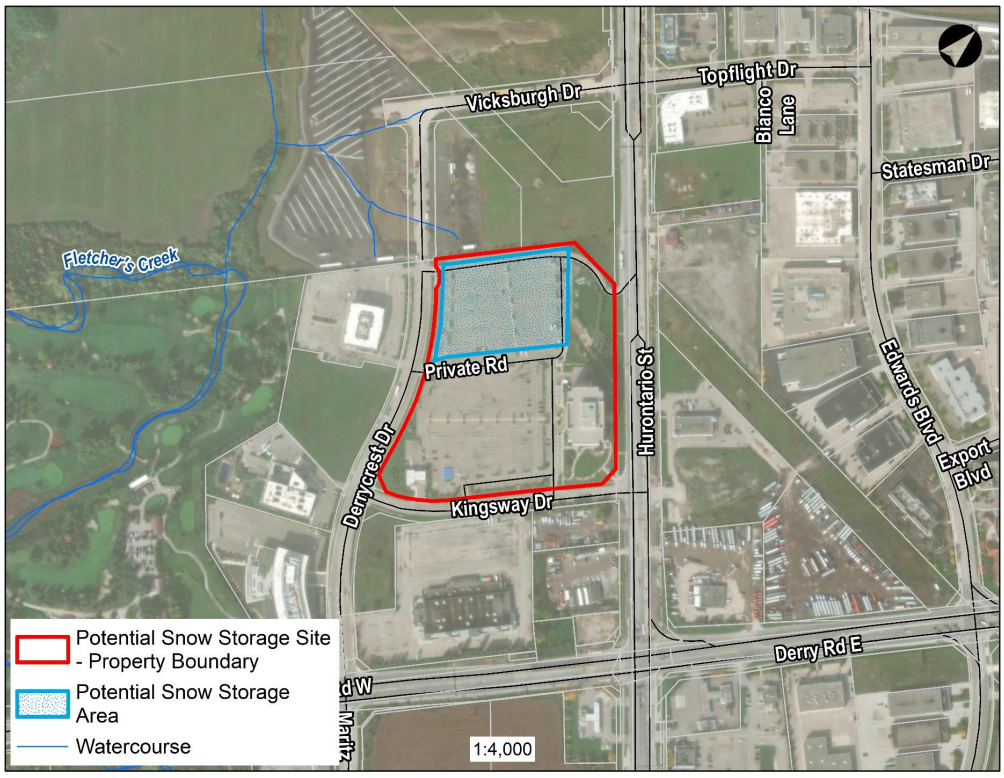


Figure ES-7: 7120 Hurontario Street (Mississauga)



Potential Impacts and Proposed Mitigation Measures

The validated sites carried forward for design and construction provide near and long-term snow storage solutions that are environmentally sound and politically acceptable for the Region in order to safely dispose of any snow removed from the Region's roadways and facilities, while mitigating against undesirable environmental and operational impacts.

Impacts related to the construction and operation of the new snow storage sites include, among others:

- Potential conflict with current traffic on-site and at access/egress locations.
- Potential Vegetation removals.
- Potential impacts to Species at Risk, as well as wildlife and wildlife habitat.
- Sediment entering neighbouring properties and natural areas during construction.
- Potential effects related to snow melt during operation, including salt
- Potential impacts to archaeological resources, built heritage resources and cultural heritage landscapes.
- Potential impacts to surrounding properties during construction (e.g., noise).
- Potential impacts to potable water storage and operation of the storage/pumping station facilities.

Section 8 of this report includes the potential mitigation measures to address these potential effects, such as implementing appropriate measures to separate traffic movements, compliance with respective environmental timing windows and developing an Erosion and Sediment Control Plan prior to construction.

Although de-icing salt is of concern at each site, salts within snow collected from roadways is best managed at the source through salt optimization programs. Furthermore, the Transportation Association of Canada cites research that found "…much of the salt that is applied to pavement is not retained in the snow that is removed to snow disposal facilities. This is because chlorides tend to leave stockpiled snow soon after it is plowed. Only a small percentage of the salt that is applied to a road may be reaching the snow disposal facility".

It is also proposed that each snow storage site include a customized monitoring approach and program. Methods of monitoring system performance may include implementing monitoring wells in stormwater management / Low Impact Development

features, surface water monitoring wells in any bioswales which may be constructed, along with the collection of water quality grab samples from relevant site outlets or features.

The Region will communicate upcoming activities related to the snow storage sites to the community prior to construction. General project information and updates may also be provided through the Region's website.

Proposed mitigation measures will be further developed during the preliminary and detailed design phases by means of further studies and permit applications, where applicable.

Communications and Consultation Overview

A key priority of community engagement has been to encourage the participation of stakeholders, review agencies, the public and Indigenous Communities. All comments received were considered and addressed to the extent possible by the Study Team. The following summarizes the key consultation related activities undertaken:

- Development of a contact list that was regularly updated to notify key review agencies, stakeholders, Indigenous communities and interested members of the public about the Project.
- Advertisement and distribution of the following notifications: Notice of Commencement and Public Information Centre, and Notice of Completion.
- Posting of key information to the Region's website (**www.peelregion.ca/pw/transportation/construction/environmental-assessment/snow-storage-sites**) and social media platforms.
- A Technical Agency Committee was formed and included a meeting to introduce and discuss the snow storage sites.
- Hosting an online Public Information Centre in December 2022 to provide stakeholders, review agencies, the public and Indigenous Communities an opportunity to learn about the project and provide feedback on the snow storage facilities under consideration.

Conclusions

This Project File covers the process required to ensure that the proposed snow storage sites comply with the *Environmental Assessment Act*. The screening of the sites for

snow storage facilities resulted in the following validated sites being recommended for detailed design:

- Site 1: Highway 50 Carpool Lot (Brampton)
- Site 3: West Brampton Reservoir and Pumping Station (Brampton)
- Site 5: Johnston Sports Park (Caledon)
- Site 6: Tullamore Reservoir and Pumping Station (Caledon),
- Site 9: Alloa Reservoir and Pumping Station (Caledon)
- Site 10: 7120 Hurontario Street (Mississauga)

The six candidate sites are suitable to serve as snow storage facilities, based on a review of currently available background information and ability to provide stormwater management servicing to each location.

Subject to detailed design investigations, Low Impact Development-based site servicing approaches are currently understood to be suitable for Sites 1, 3, 5, 6, 9, and 10, and may be required to satisfy site grading constraints.

The Municipal Class Environmental Assessment planning process has not identified any significant environmental concerns associated with each snow storage site that cannot be addressed by incorporating best management practices and established mitigation measures during construction. The minor to moderate and predictable impacts can be addressed by recommended mitigation measures as presented in **Section 8**.

Servicing designs for each location are to be confirmed following the completion of detailed field studies and analysis. Facility design and construction of preferred snow storage facilities will be determined by the Region on an individual basis.

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1. Introduction

1.1 Background

The Region of Peel (the Region) has retained AECOM Canada Ltd. (AECOM) to complete a Municipal Class Environmental Assessment to evaluate snow storage opportunities at selected Region of Peel (and one Town of Caledon) owned properties. The Region requires strategically placed and well-designed snow disposal facilities to effectively store and manage subsequent snow melt. These facilities also mitigate against undesirable environmental and operational impacts, such as crossing watershed boundaries, as well as minimizing travel time.

The snow storage sites identified in this report will provide near and long-term snow storage solutions that are environmentally sound and acceptable for the Region and its area municipalities. Facility design and construction of preferred snow storage facilities is to be determined by the Region on an individual basis.

Pursuant to the Municipal Engineers Association Class Environmental Assessment document (October 2000, as amended in 2007, 2011 and 2015) snow storage facilities are “Schedule A” or pre-approved projects. However, the Region has elected to follow a similar process of that to a Schedule B Municipal Class Environmental Assessment planning framework for this study to allow for the evaluation of snow storage siting opportunities in consultation with key stakeholders, regulatory agencies, Indigenous communities, and the public.

1.2 Snow Storage Sites

A total of 12 potential sites, as identified in **Table 1-1**, were assessed and evaluated across the Region (**Figure 1-1**). The site-specific locations with potential snow storage areas are mapped in **Figure 1-3** to **Figure 1-13.**

The validated site locations identified above and highlighted in yellow in **Figure 1-1** have been carried forward based on the Environmental Assessment level evaluation (**Section 6**) and conceptual design (**Section 7**) stage, and included in the supporting studies summarized in **Section 3** to better understand their existing conditions and evaluate their impacts.

Table 1-1: Snow Storage Sites

Site	Location	Municipality	Validated Site
1	Highway 50 Carpool Lot	Brampton	Yes
2	Beckett Sproule Reservoir and Pumping Station	Brampton	No
3	West Brampton Reservoir and Pumping Station	Brampton	Yes
4	Clarkson Wastewater Treatment Plant	Mississauga	No
5	Johnston Sports Park	Caledon	Yes
6	Tullamore Reservoir and Pumping Station	Caledon	Yes
7	Future Hanlan West Reservoir expansion site	Mississauga	No
8	220 Westcreek Boulevard Trunk Sewers and Feedermain site	Brampton	No
9	Alloa Reservoir and Pumping Station	Caledon	Yes
10	7120 Hurontario Street	Mississauga	Yes
11	7771 Mayfield Road	Brampton	No
12	12052 The Gore Road, 7472 and 7480 Mayfield Road	Caledon	No

Figure 1-1: Snow Storage Sites

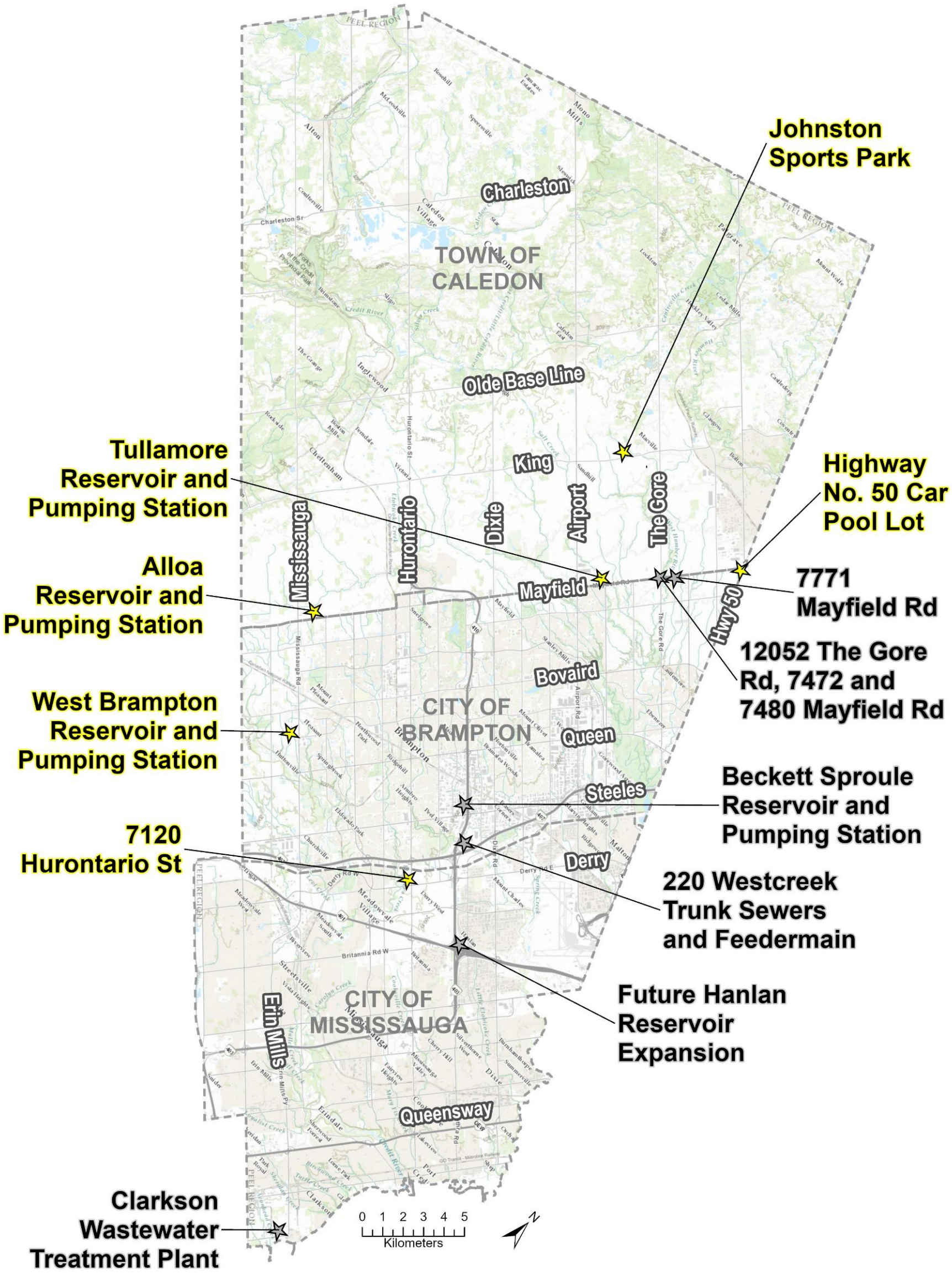

Figure 1-2: Highway 50 Carpool Lot (Brampton)

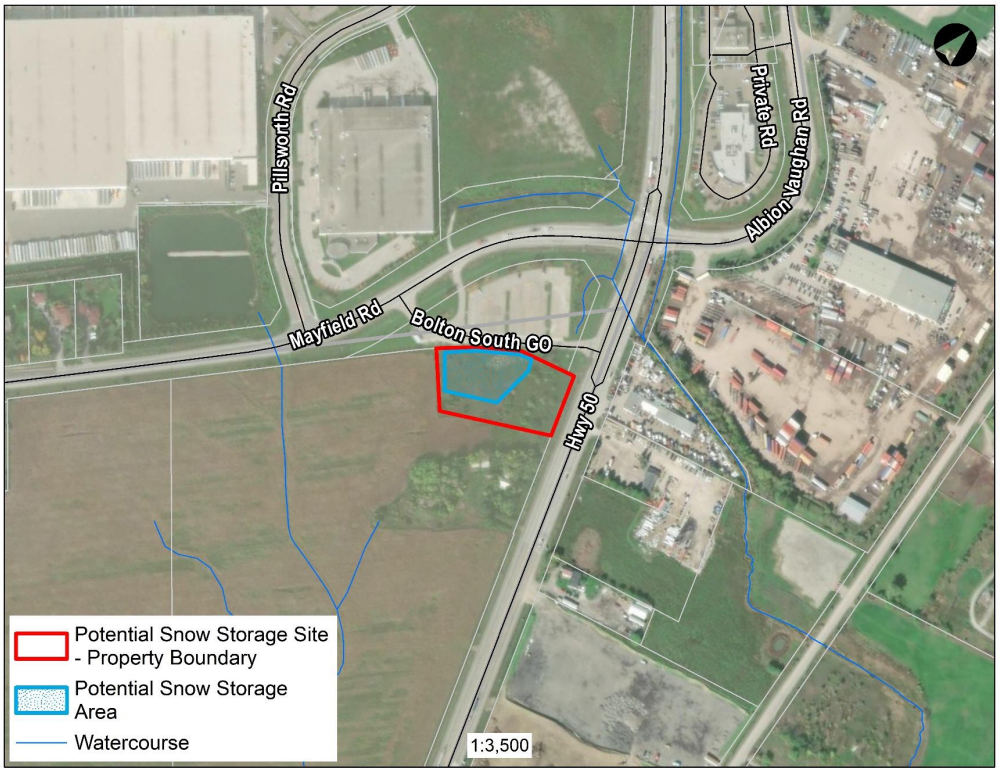

Figure 1-3: Beckett Sproule Reservoir and Pumping Station (Brampton)

Figure 1-4: West Brampton Reservoir and Pumping (Brampton)

Figure 1-5: Clarkson Wastewater Treatment Plant (Mississauga)

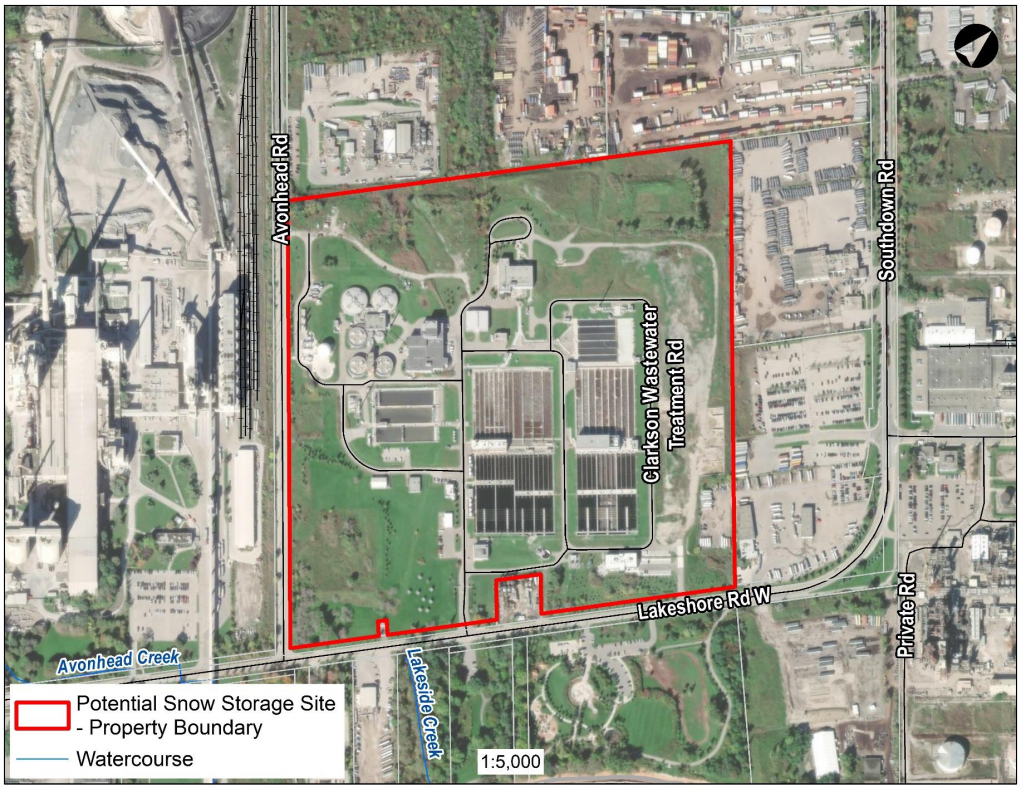

Figure 1-6: Johnston Sports Park (Caledon)

Figure 1-7: Tullamore Reservoir and Pumping Station (Caledon)

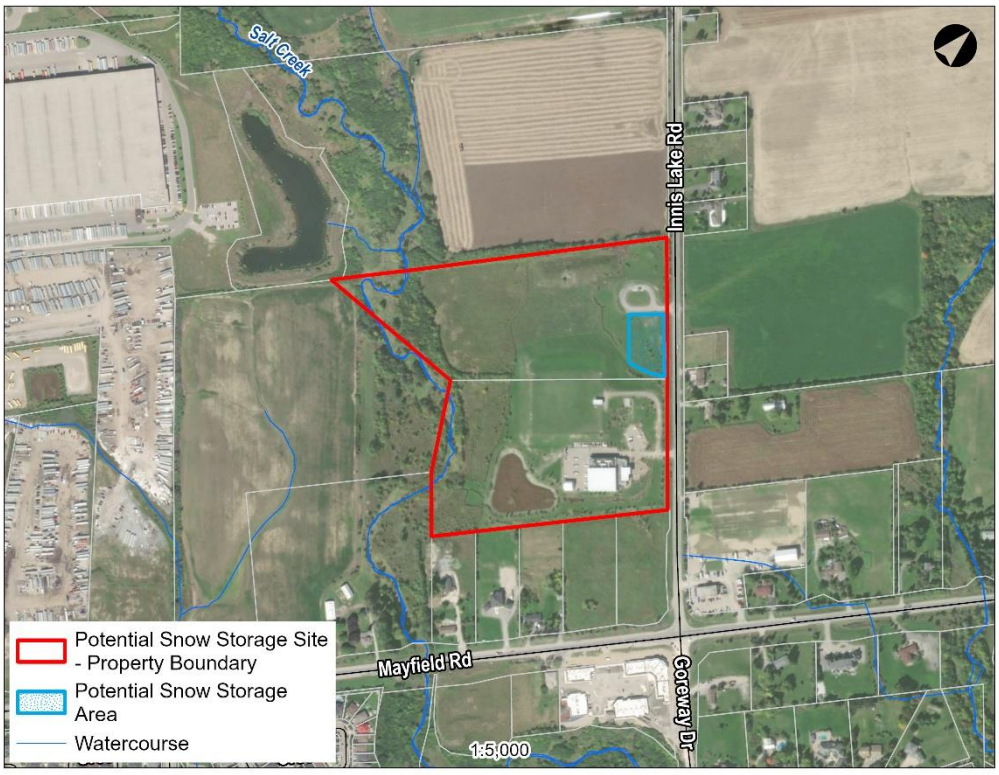

Figure 1-8: Future Hanlan Reservoir Expansion (Mississauga)

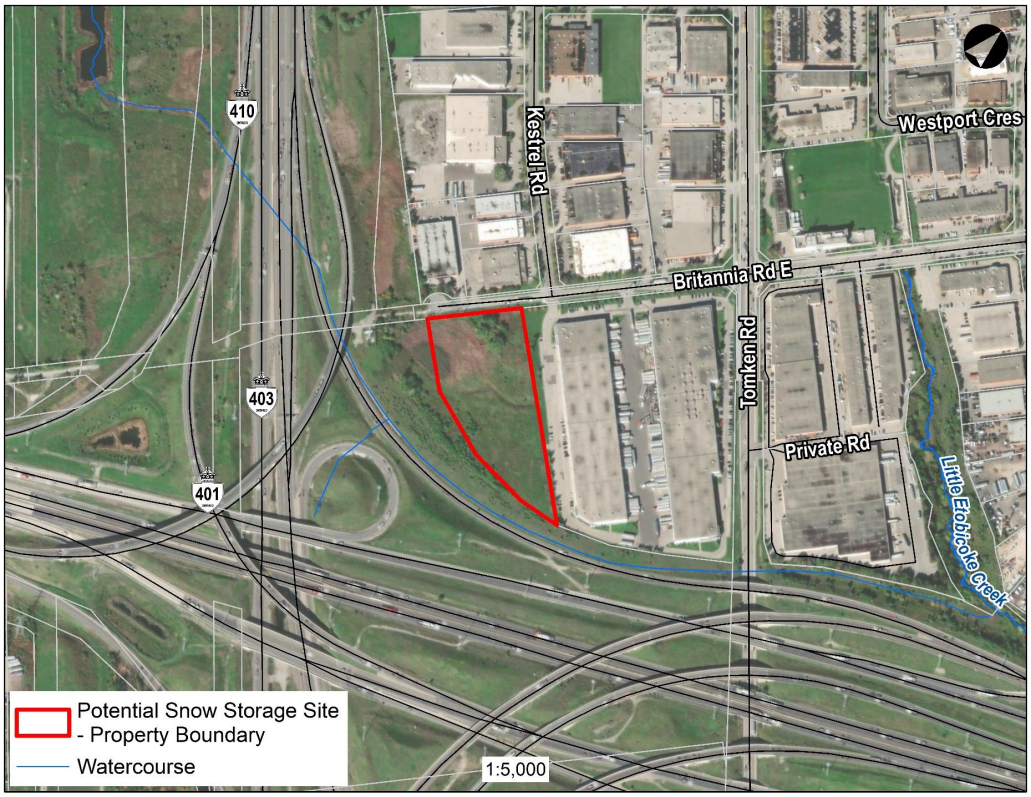

Figure 1-9: 220 Westcreek Trunk Sewers and Feedermain (Brampton)

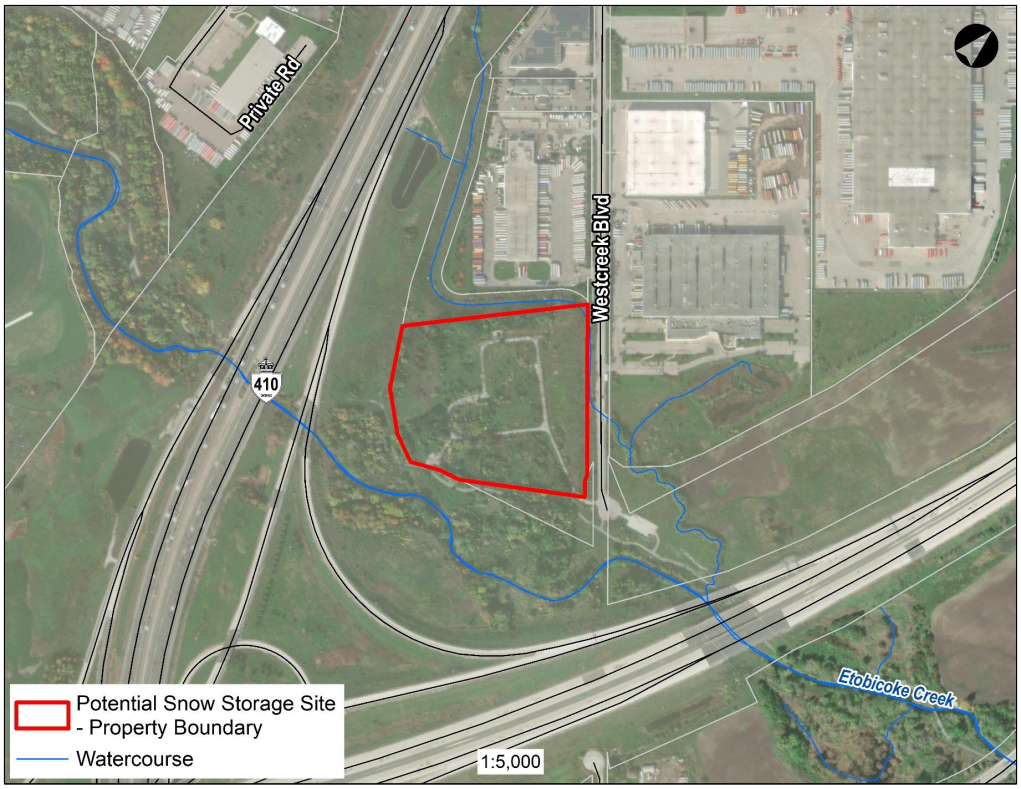

Figure 1-10: Alloa Reservoir and Pumping Station (Caledon)

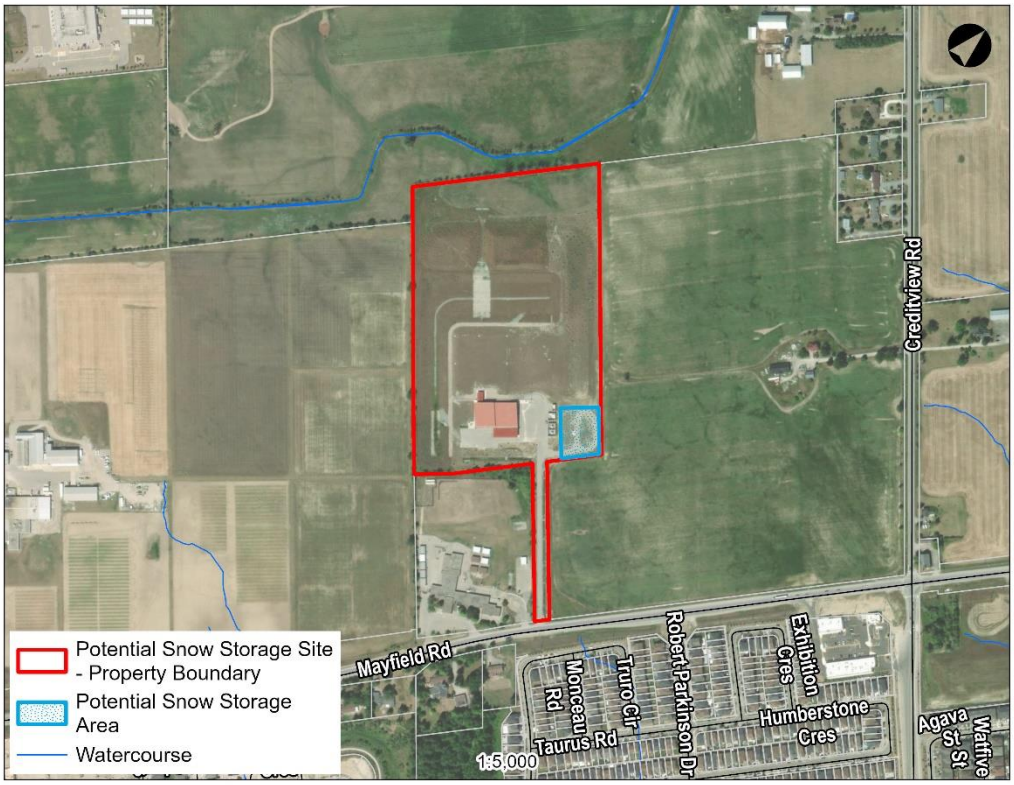

Figure 1-11: 7120 Hurontario Street (Mississauga)

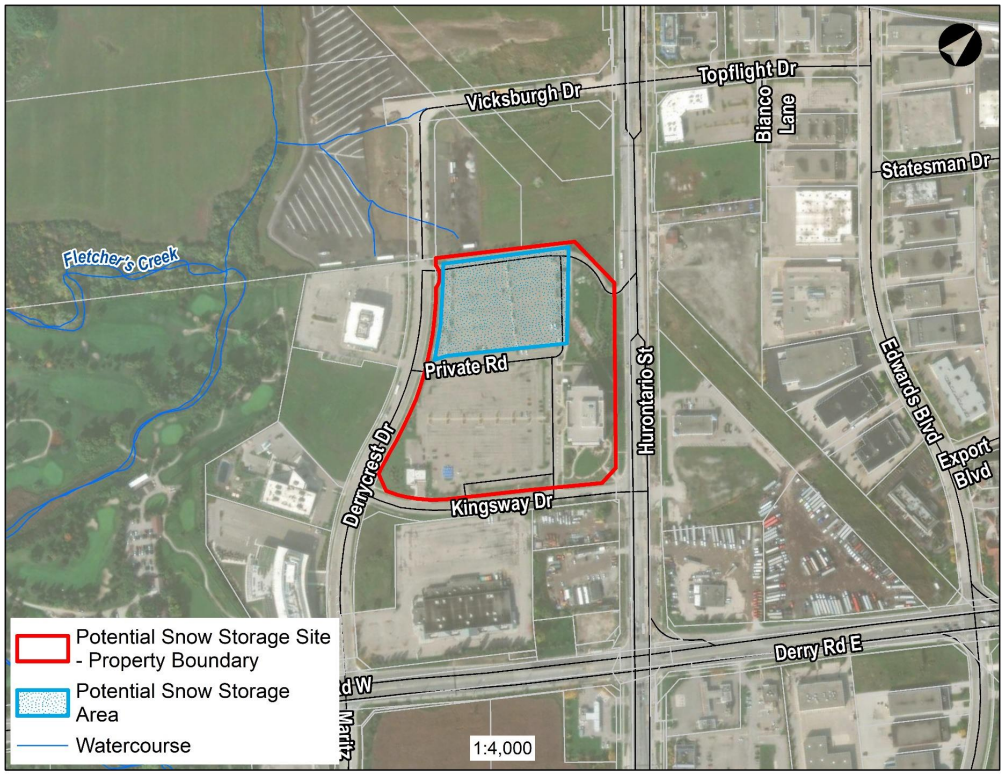

Figure 1-12: 7771 Mayfield Road (Brampton)

Figure 1-13: 12052 The Gore Road, 7472 and 7480 Mayfield Road (Caledon)

2. Municipal Class Environmental Assessment Planning Process

2.1 Overview

All municipalities in Ontario are subject to the provisions of the Ontario *Environmental Assessment Act* and its requirements to prepare an Environmental Assessment for applicable public works projects. The Ontario Municipal Engineers Association "Municipal Class Environmental Assessment" manual (October 2000, as amended in 2007, 2011,2015, and 2023) provides municipalities with a phased planning procedure, to plan and undertake all municipal sewage, water, stormwater management and transportation projects that occur frequently, are usually limited in scale and have a predictable range of environmental impacts and applicable mitigation measures. This project has been undertaken in accordance with the 2015 "Municipal Class Environmental Assessment" manual as this study was initiated prior to the release of the amended Municipal Class Environmental Assessment manual in March 2023.

In Ontario, infrastructure projects are subject to the Municipal Class Environmental Assessment process and must follow a series of mandatory steps as outlined in the Municipal Class Environmental Assessment manual. The Municipal Class Environmental Assessment manual consists of five phases and the application of the phases depends on the Municipal Class Environmental Assessment Schedule that applies to a project. The phases are summarized below:

- **Phase 1 – Problem or Opportunity:** Identify the problems or opportunities to be addressed and the needs and justification.
- **Phase 2 – Alternative Solutions:** Identify alternative solutions to the problems or opportunities by taking into consideration the existing environment, and establish the preferred solution considering public and agency review and input.
- **Phase 3 – Alternative Design Concepts for the Preferred Solution:** Examine alternative methods of implementing the preferred solution based upon the existing environment, public and agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.
- **Phase 4 – Environmental Study Report:** Document in an Environmental Study Report, a summary of the rationale, planning, design and consultation process for the project as established through Phases 1 to 3 above and make such documentation available for scrutiny by review agencies and the public.

- **Phase 5 – Implementation:** Complete contract drawings and documents, proceed to construction and operation, and monitor construction for adherence to environmental provisions and commitments. Also, where special conditions dictate, monitor the operation of the completed facilities.

The Municipal Class Environmental Assessment process ensures that all projects are carried out with effectiveness, efficiency and fairness. The process serves as a mechanism for understanding economic, social and environmental concerns while implementing improvements to municipal infrastructure.

2.2 Project Planning Schedules

The Municipal Class Environmental Assessment defines four types of projects and the processes required for each (referred to as Schedule A, A+, B, or C). The selection of the appropriate schedule is dependent on the anticipated level of environmental impact, and for some projects, the anticipated construction costs. Projects are categorized according to their environmental significance and their effects on the surrounding environment. The following describes the Municipal Class Environmental Assessment planning schedules in accordance with the 2015 Municipal Engineers Association "Municipal Class Environmental Assessment" manual:

- **Schedule A:** Projects are limited in scale, have minimal adverse environmental effects and include a number of municipal maintenance and operational activities. These projects are pre-approved and may proceed to implementation without following the full Municipal Class Environmental Assessment planning process.
- **Schedule A+:** The purpose of Schedule A+ is to ensure appropriate public notification for certain projects that are pre-approved under the Municipal Class Environmental Assessment. It is appropriate to inform the public of municipal infrastructure project(s) being constructed or implemented in their area.
- **Schedule B:** Projects have the potential for some adverse environmental effects. The proponent is required to undertake a screening process (Phases 1 and 2), involving mandatory contact with directly affected public and with relevant review agencies to ensure that they are aware of the project and that their concerns are addressed. If there are no outstanding concerns, then the proponent may proceed to implementation. At the end of Phase 2, a Project File documenting the planning process followed through Phases 1 and 2 shall be finalized and made available for public and agency review. However, if a concern is raised related to aboriginal and treaty rights which

cannot be resolved, a Section 16 Order may be requested and considered by the Minister of the Environment, Conservation and Parks.

- **Schedule C:** Projects have the potential for significant adverse environmental effects and must proceed under the full planning and documentation (Phases 1 to 4) procedures specified in the Municipal Class Environmental Assessment manual. Schedule C projects require that an Environmental Study Report be prepared and filed for review by the public and review agencies. If concerns related to aboriginal and treaty rights are raised that cannot be resolved then a Section 16 Order may be requested.

2.2.1 Snow Storage Siting Planning Schedule

As noted above this study is being undertaken in accordance with the 2015 Ontario Municipal Engineers Association Municipal Class Environmental Assessment manual as the study was initiated prior to the release of the amended Municipal Class Environmental Assessment manual in March 2023. Snow and de-icing operations that comply with Ministry of Environment's Guideline B-4 "Snow Disposal and De-icing Operations in Ontario" is defined as a Schedule A or pre-approved activity. The Region has elected to follow a similar process of that to a Schedule B Municipal Class Environmental Assessment planning framework for this study to allow for the evaluation of snow storage siting opportunities in consultation with key stakeholders, regulatory agencies, Indigenous Communities and the public.

2.3 Communications and Consultation Overview

A key priority of community engagement has been to encourage the participation of stakeholders, review agencies, the public and Indigenous Communities. The following summarizes the key consultation related activities undertaken:

- Development of a contact list that was regularly updated to notify key review agencies, stakeholders, Indigenous communities and interested members of the public about the Project.
- Advertisement and distribution of the following notifications: Notice of Commencement and Public Information Centre, and Notice of Completion
- Posting of key information to the Region's website (**www.peelregion.ca/pw/transportation/construction/environmental-assessment/snow-storage-sites**) and social media platforms
- A Technical Agency Committee was formed and included a meeting to introduce and discuss the snow storage sites.

- Hosting an online Public Information Centre in December 2022 to provide stakeholders, review agencies, the public and Indigenous Communities an opportunity to learn about the project and provide feedback on the snow storage facilities.

All comments received were considered and addressed to the extent possible by the Study Team. Refer to **Section 9** for the overview of consultation program.

3. Existing Conditions

The scope of this project included completion of various supporting studies to better understand and inform the existing conditions of the validated snow storage sites as described in the following sections.

- **High Level Traffic Impact Assessment (Appendix A)** – a preliminary high-level traffic impact assessment has been completed pertaining to the proposed snow storage sites. The traffic impact analysis and site access review were performed independently of the other sites at each location. This analysis identified high-level improvements to mitigate potential impacts at road intersections within the vicinity of the proposed snow storage sites. A total of six intersections have been identified to be within the vicinity of the snow storage locations. Traffic operations and geometric characteristics at these locations were reviewed at the respective intersection and roadway access/egress points. Further below summarizes the site-specific key findings from the Traffic Impact Assessment for the preferred snow storage locations.
- **Hydrogeological, Geotechnical and Contaminated Sites Assessment (Appendix B)** – a geotechnical investigation of the shortlisted snow storage sites was completed as part of the background assessment. The geotechnical field testing and sampling was carried out using American Society for Testing Materials standards which were modified based on site conditions. Standard Penetration Tests were carried out at selected intervals to assess soil compactness and consistency, which is used to assess soil strength and to obtain samples for index (laboratory) testing purposes. Standard Penetration Tests were carried out in general accordance with American Society for Testing Materials D1586.

  In accordance with the geotechnical investigation, AECOM completed a hydrogeological assessment of the shortlisted snow storage sites with the purpose of summarizing and characterizing the local physical and groundwater setting, and to estimate infiltration and movement of meltwater through the subsurface, as seen in Appendix 1 of the geotechnical study. Infiltration testing and groundwater monitoring was also completed at the sites and results are summarized in separate reports.

  Key details from the geotechnical and hydrogeological investigations, including general soil conditions, groundwater elevations and measured infiltration rates for each site are provided in **Appendix B** with key information summarized further below.

- **Natural Environment Report (Appendix C)** – this report provides a description of the existing natural heritage features, an assessment of the significance of features and their functions, a Species at Risk screening, a summary of constraints and opportunities, as well as recommended mitigation measures. The Natural Environment Report and further below summarizes the existing aquatic and terrestrial conditions for each of the snow storge opportunities as determined through a review of available online background information and agency correspondence as well as reconnaissance-level field investigations.
- **Fluvial Geomorphological Assessment** (**Appendix D)** – the objective of the fluvial geomorphic assessment was to characterize fluvial geomorphological processes associated with the snow storage sites carried forward to design and to define management recommendations that will maintain the current channel processes and limit adverse impacts to channel morphology.
- **Stage 1 Archaeology Assessment (Appendix E**) – a Stage 1 Archaeological Assessment (PIF number P123-0463-2021) has been completed by AECOM to evaluate the archaeological potential within the Study Areas of the snow storage sites.

  The Stage 1 Archaeological Assessment consisted of background research into the land use history of the area, a search of previous investigations and nearby archaeological sites as well as a desktop survey to establish whether any parts of the Study Area retained archaeological potential. The Study Area consists of the preferred snow storage sites.
- **Cultural Heritage Report (Appendix F)** – this report was completed to identify municipally, provincially, and federally recognized heritage properties, as well as to identify potential built heritage resources and cultural heritage landscapes within and/or adjacent to the snow storage site locations, in order to evaluate the potential impacts that the sites may have on cultural heritage resources.
- **Conceptual Snow Storage Facilities and Stormwater Management Servicing Approach (Appendix G)** – this memorandum presented the proposed stormwater management approach for the preferred snow storage sites that will provide appropriate quantity and quality control treatment for stormwater management, based on the background review and investigations completed to date at each location.

3.1 Site 1: Highway 50 Carpool Lot

3.1.1 Traffic Impact Assessment

The following summarizes the site-specific key findings from the high-level Traffic Impact Assessment **(Appendix A)** for Site 1:

- Potential conflict with the bus and private vehicles near the bus bay and the circulation road to the proposed snow storage site and the parking lot. On-site traffic management may need to be considered.
- There is more than one access/egress point where vehicles can access/egress the site using either Mayfield Road or southbound Highway 50.
- Potentially a high truck volume area at the traffic intersection of Mayfield Road & Highway 50.
- There is limited space for pedestrians waiting to cross the Mayfield Road and Highway 50 intersection.
- Additional green time for the Northbound Left and Eastbound Left movements at Highway 50 and Mayfield Road may be required.

For Site 1, there is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams.

3.1.2 Geotechnical, Hydrogeological and Contaminated Site Assessment

Three boreholes including BH1-1 to BH1-3 on the open space area were advanced as per the **Geotechnical, Hydrogeological and Contaminated Site Assessment** (**Appendix B**). During the investigation, no abnormal odour or staining was detected.

A 5 metre layer of silty clay till was encountered beneath the thin topsoil layer in all the site boreholes.

No groundwater was observed upon the completion of the drilling in all three boreholes; therefore, a monitoring well was not installed during the hydrogeological investigation stage. This does not guarantee that groundwater is not present, as groundwater levels should be expected to fluctuate seasonally and be dependent on precipitation events.

Based on the infiltration testing and analysis that was completed on site, it was determined that the field saturated vertical hydraulic conductivity of the surficial soils at

the two locations of testing ranged between 6.4 x 10^{-7} metres per second and 9.6 x 10^{-7} metres per second and the percolation rates ranged between 41 and 46 millimetres per hour.

The calculated infiltration rates for Site 1 indicate that the local shallow soils generally are sufficiently permeable to consider multiple Low Impact Development technologies.

3.1.3 Natural Environment

3.1.3.1 Background Information Review

Designated Natural Areas

As per **Table 3-1** below, the proposed Site 1 snow storage area is located outside of designated natural areas.

Table 3-1: Natural Features – Site 1 Study Area

Site	Wetlands	Woodlands	Significant Wildlife Habitat	Potential Snow Storage Area Located within Natural Designated Features (Yes/No)
Site 1: Highway 50 Carpool lot	■ None	■ None	■ None	■ No

Vegetation Areas

The Study Area of the Highway 50 Carpool lot (Site 1) falls within the Lake Simcoe-Rideau Ecoregion (6E), which is part of the Mixedwood Plains Ecozone.

Refer to the **Natural Environment Report** (**Appendix C**) for further details regarding Species of Conservation Concern and Species at Risk plant records in the vicinity of the snow storage site.

Aquatic Habitat

No fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries of Site 1 as the proposed Snow Storage Area is not located on or immediately adjacent to a watercourse (i.e., within the regulated floodplain limits).

Terrestrial Species at Risk and Species of Conservation Concern

A list of wildlife Species at Risk and/or Species of Conservation Concern with records identified through the background review in the vicinity of the Site 1 snow storage Study Area is presented in **Table 3-2.**

Table 3-2: Species at Risk and/or Species of Conservation Concern Potentially Present within Site 1 Study Area

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 4)	Source	Species at Risk / Species of Conservation Concern
Highway 50 Carpool Lot	Bird	Acadian Flycatcher	*Empidonax virescens*	S2S3B	END	END	END	eBird, OBBA	Species at Risk
Highway 50 Carpool Lot	Bird	Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	eBird, OBBA	Species at Risk
Highway 50 Carpool Lot	Bird	Barn Swallow	*Hirundo rustica*	S5B	THR	THR	THR	eBird, OBBA	Species at Risk
Highway 50 Carpool Lot	Bird	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
Highway 50 Carpool Lot	Bird	Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	THR	THR	eBird, OBBA	Species at Risk
Highway 50 Carpool Lot	Bird	Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
Highway 50 Carpool Lot	Amphibian	Western Chorus Frog – Great Lakes – St. Lawrence – Canadian Shield population	*Pseudacris maculata pop. 1*	S4	NAR	THR	THR	ORAA	Species of Conservation Concern
Highway 50 Carpool Lot	Bird	Common Nighthawk	*Chordeiles minor*	S4B	SC	SC	THR	OBBA	Species of Conservation Concern
Highway 50 Carpool Lot	Bird	Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern
Highway 50 Carpool Lot	Bird	Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species of Conservation Concern

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure—Common, widespread, and abundant in the nation or state/province.
SNR – Unranked—Province conservation status not yet assessed.
SU – Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note 2: ***Endangered Species Act* Status**: The *Endangered Species Act* 2007 protects species listed as Threatened and Endangered on the Species at Risk in Ontario List on provincial and private land. The Minister lists species on the Species at Risk in Ontario list based on recommendations from the Committee on the Status of Species at Risk in Ontario, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming Endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note 3: **Committee on the Status of Endangered Wildlife in Canada Status:** The Committee on the Status of Endangered Wildlife in Canada exists to provide Canadians and their governments with advice regarding the status of wildlife species that are nationally at risk of extinction or extirpation. Committee on the Status of Endangered Wildlife in Canada classifies Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012)
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Note 4: ***Species at Risk Act* Sched. 1 Status:** The *Species at Risk Act* protects and ensures the recovery of Species at Risk listed on Schedule 1 as Extirpated, Endangered and Threatened, and their critical habitats at a federal level. Schedule 1 of the *Species at Risk Act* provides the legal classification of Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012).
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

3.1.3.2 Field Investigations Results

Vegetation

Vegetation communities were limited due to the fragmented landscape resulting from human disturbance. Where accessible, AECOM staff delineated vegetation communities that are shown in Figure 2 of the **Natural Environment Report** (**Appendix C**). Vegetation community descriptions for Site 1 are presented in **Table 3-3**. The flora lists are provided in Appendix C of the **Natural Environment Report** (**Appendix C**).

Incidental Wildlife

Incidental wildlife observations were documented during the field investigations conducted by AECOM Ecologists. **Table 3-4** outlines incidental wildlife observed during field investigations.

Table 3-3: Ecological Land Classification Communities – Site 1 Study Area

Ecological Land Classification Code	Ecological Land Classification Name	Community Description	Floristic Assessment	Ecological Land Classification Community within Potential Snow Storage Areas Located
CUM1-1	Dry – Moist Old Field Meadow	■ This community consisted of a variety of graminoid and herbaceous species, including tall goldenrod (*Solidago altissima*), Kentucky blue-grass (*Poa pratensis*), calico aster (*Symphyotrichum lateriflorum*), New England aster (*Symphyotrichum novae-angliae*), heath aster (*Symphyotrichum ericoides*), wild carrot (*Daucus carota*). The canopy and shrub layer was sparse and consisted of Russian olive (*Elaeagnus angustifolia*) and European Buckthorn (*Rhamnus cathartica*), both invasive and non-native species.	■ Total Species: 21 ■ Native Species: 8 (38%) ■ Non-native Species: 13 (62%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities.	■ Yes – Proposed Snow Storage Area consists entirely of CUM1-1 community.
CUW1	Mineral Cultural Woodland	■ No property access granted and could not assess from roadside due to health and safety reasons.	■ Not applicable	■ No – Proposed Snow Storage Area consists of CUM1-1 only.

Table 3-4: Incidental Wildlife Observations – Site 1

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 4)
Highway 50 Carpool lot	Bird	Red-winged Blackbird	*Agelaius phoeniceus*	S4	Not applicable	Not applicable	Not applicable

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure—Common, widespread, and abundant in the nation or state/province.
SNR – Unranked—Province conservation status not yet assessed.
SU – Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note 2: ***Endangered Species Act* Status**: The *Endangered Species Act* 2007 protects species listed as Threatened and Endangered on the Species at Risk in Ontario List on provincial and private land. The Minister lists species on the Species at Risk in Ontario list based on recommendations from the Committee on the Status of Species at Risk in Ontario, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming Endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note 3: **Committee on the Status of Endangered Wildlife in Canada Status:** The Committee on the Status of Endangered Wildlife in Canada exists to provide Canadians and their governments with advice regarding the status of wildlife species that are nationally at risk of extinction or extirpation. Committee on the Status of Endangered Wildlife in Canada classifies Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012)
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Note 4: ***Species at Risk Act* Sched. 1 Status:** The *Species at Risk Act* protects and ensures the recovery of Species at Risk listed on Schedule 1 as Extirpated, Endangered and Threatened, and their critical habitats at a federal level. Schedule 1 of the *Species at Risk Act* provides the legal classification of Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012).
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Aquatic Habitat

An intermittent to permanent drainage channel was located east of the existing Highway 50 carpool lot originating from an outlet structure from the carpool lot stormwater system. The channel flowed northward for approximately 80 metre along a cattail filled channel and then eastward through a box culvert crossing Highway 50. The crossing provided an open connection to a tributary of Robinson Creek downstream (east) of Highway 50 that would allow fish passage into the channel and thus the channel at Site 1 should be considered fish habitat. Fish community data from open secondary source databases (Northern Development, Mines, Natural Resources and Forestry, 2021b) identified the Robinson Creek tributary as having a warm water thermal regime supporting a diverse community of small-bodied fish species (refer to Table 3-7 in the **Natural Environment Report, Appendix C**). Incidental observations of fish were not recorded at the time of assessment due to the high flow and high turbidity conditions following a rainfall event that limited visibility.

The channel morphology consisted of a long run transitioning to a pool upstream of the Highway 50 culvert inlet. Instream cover was high (approximately 90%) provided by the dense stand of emergent cattails within the channel. Substrate within the drainage channel consisted predominantly of detritus from the abundant aquatic vegetation, with lesser amounts of silt and cobble in the form of rip rap armouring the channel at the outfall from carpool lot stormwater system. The surrounding riparian habitat consisted of cultural meadow and sparse deciduous shrubs and trees along the adjacent roadways and carpool lot that did not provide canopy cover to the drainage channel. Additional flow inputs to the channel from the northwest across Mayfield Road and from the roadside drainage ditches parallel to Mayfield Road and Highway 50 were observed, but these features had poorly defined channels that likely only provide flow ephemerally following rainfall events and do not support fish habitat.

3.1.3.3 Significant Wildlife Habitat Assessment

The Significant Wildlife Habitat Assessment for Site 1 is presented in **Table 3-5.** A detailed Species of Conservation Concern Habitat Assessment is provided in Appendix D of the **Natural Environment Report** (**Appendix C**).

Table 3-5: Significant Wildlife Habitat Assessment Summary – Site 1

Site	Seasonal Concentration Areas	Rare Vegetation Communities or Specialized Habitats for Wildlife	Habitats for Species of Conservation Concern	Animal Movement Corridors
Highway 50 Carpool lot	■ None.	■ None.	■ Candidate Habitat for: – Monarch	■ None.

3.1.3.4 Species at Risk Habitat Assessment

The Species at Risk Habitat Assessment and screening exercise for each Snow Storage Area is presented in Appendix D of the **Natural Environment Report** (**Appendix C**).

There are no Species at Risk with medium probability of occurring within the Site 1 Study Area. The Potential Snow Storage Area is located within a cultural meadow (CUM1-1) surrounded by agricultural fields and urban developments and is unlikely to support Species at Risk species.

The remaining Species at Risk listed were identified to have low probability of occurrence within the Study Area.

3.1.4 Fluvial Geomorphological Assessment

There are no watercourses associated with the proposed Highway 50 Carpool Lot snow storage site, therefore, this snow storage site was not included in the Fluvial Geomorphological Assessment (**Appendix D**).

3.1.5 Socio-Economic Environment – Existing and Future Land Use

The following summarizes the existing site use and description of the proposed location for development within the site boundaries:

- Existing Site Use: Site 1 is a 24/7 commuter lot for carpooling and for GO Transit Bus Stop Park ‘N Ride. Cars can park for free, and there is an on-site passenger pick-up/drop-off location. The bus stop is located south of the site and is serviced by the Bolton GO bus route to and from the Malton GO Station.
- Description of the Proposed Location for Development Within the Site Boundaries: The area of Site 1 currently proposed for snow storage facility implementation is a grassed area with no existing services at the southern edge of the Highway 50 Carpool Lot.

There is potential for a future industrial/commercial development that abuts against the proposed snow storage facility; however future snow operations are not anticipated to have any major conflicts with existing and future site uses.

3.1.6 Stage 1 Archaeological Assessment

A review of available background information, as well as previous archaeological assessments showed that the study area of the Highway 50 Carpool lot requires Stage 2 test pit assessment.

Given the results of the Stage 1 assessment (**Appendix E**), AECOM makes the following recommendations related to this site:

- The Highway 50 Carpool Lot, the West Brampton Reservoir and Pumping Station, and the Johnston Sports Park have all been previously assessed. They have been cleared of further archaeological concerns.
- If the Highway 50 Carpool Lot study area cannot be avoided, then it will require Stage 2 test pit survey at 5 metre intervals. This should be completed in keeping with Section 2.1.2 of the Standards and Guidelines for Consultant Archaeologists (Ontario Government 2011).

3.1.7 Cultural Heritage – Preliminary Impact Assessment

No built heritage resources and/or cultural heritage landscapes have been identified within or adjacent to Site 1 as per the **Cultural Heritage Report** (**Appendix F**). Should the conceptual design for the proposed undertaking extend beyond the boundaries of the current site, then a Qualified Heritage Professional should be retained to confirm impacts of the proposed work on the cultural heritage resources and assess if further mitigation is required.

3.1.8 Stormwater Management

Site 1 (Highway 50 Carpool Lot) is located southwest of the Highway 50 and Mayfield Road intersection in Brampton, Ontario. Approximately 0.4 hectares of land has been identified as a potentially suitable location for the development of a snow storage facility within the property boundaries of Site 1. The subject lands are situated adjacent to the south side of the existing carpool lot and are primarily grass covered. The western half of this site is covered by tall grass, as well as small shrubbery and trees. The eastern half of the site is more densely vegetated due to greater tree coverage.

A nearby intermittent watercourse is present within Toronto and Region Conservation Authority Regulation Limits, approximately 150 metre southwest of the Highway 50 Carpool Lot property. The Toronto and Region Conservation Authority Regulation limit also extends to the northeast of the proposed site, along the boulevard of Highway 50. The site drainage direction runs from west to east across the site, changing in elevation by approximately 2 metre across a 100 metre length. A ditch-drainage system runs parallel to Highway 50, towards the Mayfield Road and Highway 50 intersection, where a culvert conveys runoff east under the roadway. The watercourse that is located at the downstream end of this culvert, resides within Toronto and Region Conservation Authority Regulation Limits.

3.2 Site 3: West Brampton Reservoir and Pumping Station

3.2.1 Traffic Impact Assessment

The following summarizes the site-specific key findings from the high-level Traffic Impact Assessment (**Appendix A**) for Site 3:

- Potential conflict with transit route in the southbound direction of Mississauga Road in the event of reduced lanes.
- If the median lane on Mississauga Road can be used for left-turning vehicles, spillbacks from the Southbound Left storage lane at Mississauga Road & Williams Parkway could extend into the median lane, blocking site left-turning vehicles.

For Site 3, there is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams.

3.2.2 Geotechnical, Hydrogeological and Contaminated Site Assessment

Six boreholes from BH3-1 to BH3-6 on the open space areas were advanced as per the **Geotechnical, Hydrogeological and Contaminated Site Assessment** (**Appendix B**). During the investigation, no abnormal odour or staining was detected.

A layer of clayey silt fill was encountered underneath the topsoil in the site boreholes.

Groundwater monitoring was completed between February 11 to July 7, 2022. Groundwater levels were recorded between 4.26 and 4.5 metres below ground surface. It is expected that the groundwater levels within Site 3 will be subjected to seasonal fluctuations including response to spring freshet and localized precipitation events.

Based on the infiltration testing and analysis that was completed on site, it was determined that the field saturated vertical hydraulic conductivity of the surficial soils at the three locations of testing ranged between 1.8×10^{-6} metres per second and 4.9×10^{-6} metres per second and the percolation rates ranged between 54 and 71 millimetres per hour. The calculated infiltration rates for Site 3 indicate that the local shallow soils generally are sufficiently permeable to consider multiple Low Impact Development technologies.

3.2.3 Natural Environment

3.2.3.1 Background Information Review

Designated Natural Areas

A summary of designated natural areas identified within the Site 3 Study Area is provided in **Table 3-6** below. Designated natural areas within and in the vicinity of the Study Area are illustrated on Figure 1 of the **Natural Environment Report** (**Appendix C**).

Table 3-6: Natural Features within the Site 3 Study Area

Site	Wetlands	Woodlands	Significant Wildlife Habitat	Potential Snow Storage Area Located within Natural Designated Features (Yes/No)
Site 3: West Brampton Reservoir and Pumping Station	■ Provincially Significant Huttonville Creek and Area Wetland Complex	■ Core Areas and Natural Areas and Corridors	■ None	■ No

Vegetation Areas

The Study Area is located within Ecoregion 7E (Lake Erie-Lake Ontario). Ecoregion 7E, which is part of the Mixedwood Plains Ecozone, extends from Windsor to Toronto and includes the Niagara Region.

A number of Species of Conservation Concern and Species at Risk plant records in the vicinity of the Site 3 snow storage site Study Area through a review of the background information sources. For further details refer to the **Natural Environment Report** (**Appendix C**).

Aquatic Habitat

Fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries of Site 3 (West Brampton Reservoir and Pumping Station).

However, the proposed Snow Storage Area is not located on or immediately adjacent to a watercourse (i.e., within the regulated floodplain limits). The West Brampton Reservoir and Pumping Station was the only site without fish community records and the watercourse that is mapped through this site is not regulated by Credit Valley Conservation based on their regulated floodplain limits.

Terrestrial Species at Risk and Species of Conservation Concern

A list of wildlife Species at Risk and/or Species of Conservation Concern with records identified through the background information review in the vicinity of the snow storage Study Area for Site 3 is presented in **Table 3-7**.

Table 3-7: Species at Risk and/or Species of Conservation Concern Potentially Present within the Site 3 Study Area

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	Species at Risk A Schedule 1 Status (Note 4)	Source	Species at Risk / Species of Conservation Concern
West Brampton Reservoir and Pumping Station	Bird	Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	eBird, OBBA	Species at Risk
West Brampton Reservoir and Pumping Station	Bird	Barn Swallow	*Hirundo rustica*	S5B	THR	THR	THR	eBird, OBBA	Species at Risk
West Brampton Reservoir and Pumping Station	Bird	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
West Brampton Reservoir and Pumping Station	Bird	Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	THR	THR	eBird, OBBA	Species at Risk
West Brampton Reservoir and Pumping Station	Bird	Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
West Brampton Reservoir and Pumping Station	Bird	Eastern Whip-poor-will	*Antrostomus vociferous*	S4B	THR	THR	THR	eBird, OBBA	Species at Risk
West Brampton Reservoir and Pumping Station	Bird	Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	END	END	THR	eBird, OBBA	Species at Risk
West Brampton Reservoir and Pumping Station	Bird	Common Nighthawk	*Chordeiles minor*	S4B	SC	SC	THR	OBBA	Species of Conservation Concern
West Brampton Reservoir and Pumping Station	Bird	Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern
West Brampton Reservoir and Pumping Station	Bird	Purple Martin	*Progne subis*	S3S4B	No Status	No Status	No Status	eBird, OBBA	Species of Conservation Concern
West Brampton Reservoir and Pumping Station	Bird	Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species of Conservation Concern

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure—Common, widespread, and abundant in the nation or state/province.
SNR – Unranked—Province conservation status not yet assessed.
SU – Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note 2: ***Endangered Species Act* Status**: The *Endangered Species Act* 2007 protects species listed as Threatened and Endangered on the Species at Risk in Ontario List on provincial and private land. The Minister lists species on the Species at Risk in Ontario list based on recommendations from the Committee on the Status of Species at Risk in Ontario, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
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SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note 3: **Committee on the Status of Endangered Wildlife in Canada Status:** The Committee on the Status of Endangered Wildlife in Canada exists to provide Canadians and their governments with advice regarding the status of wildlife species that are nationally at risk of extinction or extirpation. Committee on the Status of Endangered Wildlife in Canada classifies Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
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Note 4: ***Species at Risk Act*** **Sched. 1 Status:** The *Species at Risk Act* protects and ensures the recovery of Species at Risk listed on Schedule 1 as Extirpated, Endangered and Threatened, and their critical habitats at a federal level. Schedule 1 of the *Species at Risk Act* provides the legal classification of Species at Risk as follows:

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Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

3.2.3.2 Field Investigations Results

Vegetation

Vegetation communities were limited due to the fragmented landscape resulting from human disturbance. Where accessible, AECOM staff delineated vegetation communities that are shown in Figure 2 of the **Natural Environment Report** (**Appendix C**). Vegetation community descriptions for Site 3 are presented in **Table 3-8**. The flora lists are provided in Appendix C of the **Natural Environment Report** (**Appendix C**).

Table 3-8: Ecological Land Classification Communities – Site 3 Study Area

Ecological Land Classification Code	Ecological Land Classification Name	Community Description	Floristic Assessment	Ecological Land Classification Community within Potential Snow Storage Areas Located
FOD2-3	Dry-Fresh Oak-Hickory Deciduous Forest Type	■ The canopy was mostly dominated by shagbark hickory (*Carya ovata*) followed by sugar maple, American beech (*Fagus grandifolia),* green ash (*Fraxinus pensylvanica*) and red maple (*Acer rubrum*). European buckthorn and red oak (*Quercus rubra)* were abundant in the understorey.	■ Total Species: 8 ■ Native Species: 7 (87.5%) ■ Non-native Species: 1 (15.5%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities.	■ No – Proposed Snow Storage Area consists of CUM1-1 only.
MAS2-1	Cattail Mineral Shallow Marsh Type	■ This community was dominated by narrow-leaved cattail (*Typha angustifolia)* and consisted of willow species in the canopy including pussy willow (*Salix discolor*) and peach-leaved willow (*Salix amygdaloides*).	■ Total Species: 3 ■ Native Species: 3 (100%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of CUM1-1 only.
CUM1-1	Dry – Moist Old Field Meadow	■ The meadow communities were comprised of grasses, asters including heath aster, goldenrods in the herbaceous layer. Willow species including pussy willow was present in the shrub layer.	■ Total Species: 5 ■ Native Species: 2 (40%) ■ Non-native Species: 3 (60%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ Yes – Proposed Snow Storage Area consists entirely of CUM1-1 community.

Incidental Wildlife

Incidental wildlife observations were documented during the field investigations conducted by AECOM Ecologists.

Observations of one Species of Conservation Concern (monarch) were identified within the West Brampton Reservoir and Pumping Station snow storage site Study Area. **Table 3-9** outlines incidental wildlife observed during field investigations.

Table 3-9: Incidental Wildlife Observations – Site 3

Taxon	Common Name	Scientific Name	S-Rank[1]	*Endangered Species Act* Status[2]	Committee on the Status of Endangered Wildlife in Canada Status[3]	*Species at Risk Act* Schedule 1 Status[4]
Bird	Canada Goose	*Branta canadensis*	S5	Not applicable	Not applicable	Not applicable

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SNR – Unranked—Province conservation status not yet assessed.
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B – Breeding—Conservation status refers to the breeding population of the species in the province.
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Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Aquatic Habitat

A small, intermittent unnamed tributary to the Credit River was present crossing the access laneway to the West Brampton Reservoir and Pumping Station site through a concrete culvert. The unnamed tributary upstream (north) of the laneway was poorly defined on the adjacent farm property and most of the flow was contributed by outflow from the stormwater facility/constructed wetland on the site. The approximately 20 metre of open channel from the stormwater facility outlet to the laneway culvert was densely filled with cattails and several young willow trees. Downstream (south) of the laneway the cattails gave way to a dense stand of non-native common reed in the channel before it flowed through mature willow trees and off the site.

The channel morphology was ill-defined due to the dense instream vegetation – nearly 100% instream cover – and the substrate was comprised of detritus over silt/muck. The surrounding riparian habitat consisted of a narrow border of herbaceous meadow vegetation and woody willow species with the mowed lawn bordering the laneway beyond. The unnamed tributary ultimately flowed to the Churchville-Norval Wetland Complex PSW approximately 1 kilometre further downstream before reaching the confluence with the Credit River. Data from open secondary source databases (Northern Development, Mines, Natural Resources and Forestry, 2021a; 2021b) identified the unnamed tributary as having a warm water thermal regime and had past records of a provincially ranked Species at Risk (Redside Dace), but Fisheries and

Oceans Canada (2021) aquatic Species at Risk mapping did not identify the species – which is also federally listed – as currently present within the watercourse. No fish community records were available for the reach within the Site 3 Study Area. No fish were observed at the time of assessment. The unnamed tributary originates within the surrounding fields of the Study Area, collecting surficial runoff and directing it downstream. It is unlikely that this feature supports permanent fish habitat, but when water is present within the feature, fish could migrate upstream from the Credit River and seasonally be found in the feature.

The stormwater facility/constructed wetland on the West Brampton Reservoir and Pumping Station site received inflow from another drainage channel inletting from the northwest of the feature. The drainage channel originated from seepage on the western side of the reservoir which it partially encircled to north before flowing into the stormwater facility/constructed wetland. The adjacent land north of the drainage channel consisted of dry fallow meadow surrounded by high berms. The channel itself was poorly defined and filled with dense cattails and small outcrops of common reed and willow species along its length. The flow regime was ephemeral, with minimal flow despite the recent rainfall event, and unlikely to support direct fish habitat.

3.2.3.3 Significant Wildlife Habitat Assessment

The Significant Wildlife Habitat Assessment for the Site 3 Snow Storage Area is presented in **Table 3-10**. A detailed Species of Conservation Concern Habitat Assessment is provided in Appendix D of the **Natural Environment Report** (**Appendix C**).

Table 3-10: Significant Wildlife Habitat Assessment Summary – Site 3 Snow Storage Area

Site	Seasonal Concentration Areas	Rare Vegetation Communities or Specialized Habitats for Wildlife	Habitats for Species of Conservation Concern	Animal Movement Corridors
West Brampton Reservoir and Pumping Station	■ None. ■ Potential Snow Storage Area is located outside of Candidate Bat Maternity Colonies (FOD2-3) located along the southern border the site property.	■ None.	■ Candidate Habitat for Monarch.	■ Candidate Amphibian Movement Corridors. Amphibians may travel between breeding habitats located outside of the Potential Snow Storage Area.

3.2.3.4 Species at Risk Habitat Assessment

The Species at Risk Habitat Assessment and screening exercise for this Study Area is presented in Appendix D of the **Natural Environment Report** (**Appendix C**).

The West Brampton Reservoir and Pumping Station was the only site identified to contain potentially suitable Species at Risk habitat within the proposed Snow Storage Area. Potential Species at Risk habitat for bobolink and eastern meadowlark were found to occur within the proposed Snow Storage Area at the West Brampton Reservoir and Pumping Station site.

The Species at Risk with medium probability of occurring within the Site 3 Study Area include:

- Bobolink
- Eastern meadowlark

The potential Snow Storage Area is located within a cultural meadow (CUM1-1) which is adjacent to a large pasture field. It may support breeding habitat for grassland Species at Risk birds. The remaining Species at Risk listed were identified to have low probability of occurrence within the Study Area.

3.2.4 Fluvial Geomorphological Assessment

Fluvial geomorphological reach characterization was completed for this Study Area. A site visit was conducted at Bovaird Drive where the channel was only slightly defined and approximately 1 metre wide. However, the site was not further assessed due to watercourse being located on private property. Future detailed assessment is recommended when permission to enter is granted.

3.2.5 Socio-Economic Environment – Existing and Future Land Use

The following summarizes the existing site use and description of the proposed location for development within the site boundaries:

- Existing Site Use: Site 3 is a lake-based water transmission facility that is part of the central trunk system, which provides a direct supply to the local water distribution system. The water storage/pumping facility will need to be expanded in the future (additional pumping capacity and storage).
- Description of the Proposed Location for Development Within the Site Boundaries: Grassed landscaped area with gravel access road north of the existing reservoir, adjacent to fill berms.

Future snow operations are not anticipated to conflict with existing site uses. However, the West Brampton Reservoir and Pumping Station site is being reviewed as a possible location for a new fire station at the time of this publication that may require future co-ordination on the site.

3.2.6 Stage 1 Archaeological Assessment

A review of available background information, as well as previous archaeological assessments showed that the Study Area associated with the West Brampton Reservoir and Pumping Station site had already been completely assessed. The site has been cleared of further archaeological concerns as per the **Stage 1 Archaeological Assessment Report** (**Appendix E**).

3.2.7 Cultural Heritage – Preliminary Impact Assessment

No built heritage resources and cultural heritage landscapes have been identified within or adjacent to Site 3. Should the conceptual design for the proposed undertaking extend beyond the boundaries of the current site, then a Qualified Heritage Professional should be retained to confirm impacts of the proposed work on the cultural heritage resources and assess if further mitigation is required.

3.2.8 Stormwater Management

Site 3 (West Brampton Reservoir and Pumping Station) is located northwest of the Mississauga Road and Williams Parkway intersection in Brampton, Ontario. The site is accessed via a 350 metre laneway off the west side of Mississauga Road. Approximately 1.2 hectares of land has been identified as a potentially suitable location for the development of a snow storage facility, within the property boundaries of Site 3. The land identified for potential snow storage development is situated north of the existing reservoir and is surrounded on the north, east, and west by an existing berm / spoil pile. There is an existing reservoir water overflow pond located within the boundaries of the proposed snow storage facility. The site is primarily grass covered with a gravel access road running along the west side of the reservoir.

A fill embankment spans the northern and eastern limits of the site to a height of 3 to 5 metre above the surrounding grades. The site drainage direction travels primarily southeast, towards an existing stormwater management pond that is located within the property limits. The site elevation changes by approximately 5 metre (240 metre to 235 metre) from the northwest to southeast sides of the site when considering the elevation of the site berm, and by approximately 3 metre when disregarding the berm. A 6.5 hectares protected woodland area exists to the west of the site, which spans approximately 250 metre of the west property line. Credit Valley Conservation Regulation limits (Credit River watershed) are present on the lands west of this woodland.

3.3 Site 5: Johnston Sports Park Existing Conditions

3.3.1 Traffic Impact Assessment

The following summarizes the site-specific key findings from the high-level Traffic Impact Assessment (**Appendix A**) for Site 5 recommended for design.

- King Street & Centreville Creek Road may require a left turn lane in the north and east approach (Northbound Left and Eastbound Left) of the traffic intersection to accommodate the snow removal trucks.

For Site 5, there is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams.

3.3.2 Geotechnical, Hydrogeological and Contaminated Site Assessment

Five boreholes including BH5-1 to BH5-5 on the green land were advanced as per the **Geotechnical, Hydrogeological and Contaminated Site Assessment (Appendix B)**. During the investigation, no abnormal odour or staining was detected.

A layer of silty clay fill was encountered at the ground surface in all five boreholes. The thickness of this fill layer ranged from 0.7 metre to 2.1 metre.

Groundwater monitoring was completed between February 11 to June 30, 2022. Groundwater levels at this location were recorded between 0.11 and 0.32 metres below ground surface. It is expected that the groundwater levels within Site 5 will be subjected to seasonal fluctuations including response to spring freshet and localized precipitation events.

Based on the infiltration testing and analysis that was completed on site, it was determined that the field saturated vertical hydraulic conductivity of the surficial soils at the three locations of testing ranged between 1.3×10^{-7} metres per second and 6.5×10^{-7} metres per second and the percolation rates ranged between 27 and 41 millimetres per hour.

The calculated infiltration rates for Site 5 indicate that the local shallow soils generally are sufficiently permeable to consider multiple Low Impact Development technologies, however it is noted that elevated groundwater conditions have been observed on site which may limit storage that can be provided from potential Low Impact Development at this site. Groundwater conditions at the proposed Low Impact Development locations should be confirmed prior to detailed design since initial groundwater monitoring was completed at the southeastern edge of the Johnston Sporks Park property, approximately 150 metre east of proposed lands for development.

3.3.3 Natural Environment

3.3.3.1 Background Information Review

Designated Natural Areas

A summary of designated natural areas identified within the Site 5 Study Area is provided in **Table 3-11** below. Designated natural areas within and in the vicinity of the Study Area are illustrated on Figure 1 of the **Natural Environment Report** (**Appendix C**).

Table 3-11: Natural Features – Site 5 Study Area

Site	Wetlands	Woodlands	Significant Wildlife Habitat	Potential Snow Storage Area Located within Natural Designated Features (Yes/No)
Site 5: Johnston Sports Park	■ None	■ Core Areas and Natural Areas and Corridors	■ Wildlife Concentration Area -Mixed Wader Nesting Colony	■ No

Vegetation Areas

The Study Area for Site 5 is located within Ecoregion 7E (Lake Erie-Lake Ontario). Ecoregion 7E, which is part of the Mixedwood Plains Ecozone, extends from Windsor to Toronto and includes the Niagara Region.

A number of Species of Conservation Concern Species of Conservation Concern and Species at Risk plant records in the vicinity of the various snow storage site Study Areas were also identified through a review of the background information sources. For further details pertaining to Site 5 refer to the **Natural Environment Report** (**Appendix C**).

Aquatic Habitat

Fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries for Johnston Sports Park (Site 5).

However, the proposed Snow Storage Area is not located on or immediately adjacent to a watercourse (i.e., within the regulated floodplain limits).

Terrestrial Species at Risk and Species of Conservation Concern

A list of wildlife Species at Risk and/or Species of Conservation Concern with records identified through the background review in the vicinity of the snow storage Study Area for Site 5 is presented in **Table 3-12.**

Table 3-12: Species at Risk and/or Species of Conservation Concern Potentially Present within the Site 5 Study Area

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 4)	Source	Species at Risk / Species of Conservation Concern
Johnston Sports Park	Bird	Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	eBird, OBBA	Species at Risk
Johnston Sports Park	Bird	Barn Swallow	*Hirundo rustica*	S5B	THR	THR	THR	eBird, OBBA	Species at Risk
Johnston Sports Park	Bird	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
Johnston Sports Park	Bird	Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	THR	THR	eBird, OBBA	Species at Risk
Johnston Sports Park	Bird	Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
Johnston Sports Park	Bird	Prothonotary Warbler	*Protonotaria citrea*	S1B	END	END	END	eBird, OBBA	Species at Risk
Johnston Sports Park	Bird	Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	END	END	THR	eBird, OBBA	Species at Risk
Johnston Sports Park	Fish	Redside Dace	*Clinostomus elongatus*	S1	END	END	END	Natural Heritage Information Centre, Fisheries and Oceans Canada	Species at Risk
Johnston Sports Park	Amphibian	Western Chorus Frog – Great Lakes – St. Lawrence – Canadian Shield population	*Pseudacris maculata pop. 1*	S4	NAR	THR	THR	ORAA	Species of Conservation Concern
Johnston Sports Park	Bird	American Golden-plover	*Pluvialis dominica*	S2B,S4N	No Status	No Status	No Status	eBird	Species of Conservation Concern
Johnston Sports Park	Bird	Eastern Palm Warbler	*Setophaga palmarum hypochrysea*	S1B	No Status	No Status	No Status	eBird	Species of Conservation Concern
Johnston Sports Park	Bird	Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern
Johnston Sports Park	Bird	Golden-winged Warbler	*Vermivora chrysoptera*	S4B	SC	THR	THR	eBird, OBBA	Species of Conservation Concern
Johnston Sports Park	Bird	Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern
Johnston Sports Park	Bird	Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species of Conservation Concern

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

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Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

3.3.3.2 Field Investigations Results

Vegetation

Vegetation communities were limited due to the fragmented landscape resulting from human disturbance. Where accessible, AECOM staff delineated vegetation communities that are shown in Figure 2 of the **Natural Environment Report** (**Appendix C**). Vegetation community descriptions are presented in **Table 3-13**. The flora lists are provided in Appendix C of the **Natural Environment Report** (**Appendix C**).

Table 3-13: Ecological Land Classification Communities – Site 5 Study Area

Ecological Land Classification Code	Ecological Land Classification Name	Community Description	Floristic Assessment	Ecological Land Classification Community within Potential Snow Storage Areas Located
MAM3-2	Reed-canary Grass Graminoid Organic Meadow Marsh Type	■ The meadow marsh community was situated around the watercourse. Reed canary grass (*Phalaris arundinacea*) was dominant in the herbaceous layer. Narrow-leaved cattails, asters and grasses were also in the herbaceous layer. The shrub layer consisted of European buckthorn, willows and dogwoods (*Cornus sp.*).	■ Total Species: 12 ■ Native Species: 10 (83.33%) ■ Non-native Species: 2 (16.67%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn and sports field.
CUM1-1	Dry – Moist Old Field Meadow	■ The meadow community surrounded the stormwater management pond. The ground layer consisted of reed canary grass, heath aster, New England aster, common reed (*Phragmites australis*), an aggressive invasive wetland plant, and Canada thistle (*Cirsium arvense*). The canopy consisted of few trees that appeared to be planted. Planted trees included tamarack (*Larix laricina)*, eastern white cedar (*Cirsium arvense*) and white pine (*Pinus strobus*).	■ Total Species: 27 ■ Native Species: 17 (62.96%) ■ Non-native Species: 10 (37.04%) ■ One Species at Risk tree was identified within this community. The planted Kentucky Coffee-tree is listed as threatened under the *Endangered Species Act*. No provincially significant vegetation communities were present.	■ No – Proposed Snow Storage Area consists of manicured lawn and sports field.
MAS2-1	Cattail Mineral Shallow Marsh Type	■ The mineral marsh was densely vegetated with narrow-leaved cattail, reed canary grass and common reed.	■ Total Species: 3 ■ Native Species: 3 (100%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn and sports field.
MAM3-2/ CUW1	Reed-canary Grass Graminoid Organic Meadow Marsh Type	■ The meadow marsh consisted of Freeman's maple (*Acer freemani*), green ash (*Fraxinus pennsylvanica),* pussy willow, and speckled alder (*Alnus incana).* Detailed vegetation composition was not possible due to accessibility limitations.	■ Total Species: 4 ■ Native Species: 4 (100%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn and sports field.
OAO	Open Aquatic	■ Open water community of the stormwater management pond with narrow-leaved cattail sparsely emergent on edges.	■ Total Species: 1 ■ Native Species: 1 (100%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn and sports field.
FOD	Deciduous Forest	■ No property access granted and could not assess from roadside due to health and safety reasons.	■ Not applicable	■ No – Proposed Snow Storage Area consists of manicured lawn and sports field.
CUH	Cultural Hedgerow	■ Hedgerow's present contained mostly European buckthorn and green ash. Detailed vegetation composition was not possible due to accessibility limitations.	■ Total Species: 2 ■ Native Species: 1 (50%) ■ Non-native Species: 1 (50%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn and sports field.
CUW1	Mineral Cultural Woodland	■ No property access granted and could not assess from roadside due to health and safety reasons.	■ Not applicable	■ No – Proposed Snow Storage Area consists of manicured lawn and sports field.

Incidental Wildlife

Incidental wildlife observations were documented during the field investigations conducted by AECOM Ecologists.

Among the observations, a muskrat lodge was identified within the stormwater management pond at the Johnston Sports Park snow storage site. This species is considered a furbearing mammal and is afforded protection from the FWCA. **Table 3-14** outlines incidental wildlife observed during field investigations.

Table 3-14: Incidental Wildlife Observations – Site 5

Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 4)
Bird	Brown Creeper	*Certhia americana*	S5B	Not applicable	Not applicable	Not applicable
Bird	Northern Mockingbird	*Mimus polyglottos*	S4	Not applicable	Not applicable	Not applicable
Bird	Red-winged Blackbird	*Agelaius phoeniceus*	S4	Not applicable	Not applicable	Not applicable
Bird	Rock Dove	*Columba livia*	SNA	Not applicable	Not applicable	Not applicable
Insect	Monarch	*Danaus plexippus*	S2N, S4B	SC	END	SC
Mammal	Coyote	*Canis latrans*	S5	Not applicable	Not applicable	Not applicable
Mammal	Muskrat	*Ondatra zibethicus*	S5	Not applicable	Not applicable	Not applicable

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure—Common, widespread, and abundant in the nation or state/province.
SNR – Unranked—Province conservation status not yet assessed.
SU – Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note 2: ***Endangered Species Act* Status**: The *Endangered Species Act* 2007 protects species listed as Threatened and Endangered on the Species at Risk in Ontario List on provincial and private land. The Minister lists species on the Species at Risk in Ontario list based on recommendations from the Committee on the Status of Species at Risk in Ontario, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming Endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note 3: **Committee on the Status of Endangered Wildlife in Canada Status:** The Committee on the Status of Endangered Wildlife in Canada exists to provide Canadians and their governments with advice regarding the status of wildlife species that are nationally at risk of extinction or extirpation. Committee on the Status of Endangered Wildlife in Canada classifies Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012)
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Note 4: ***Species at Risk Act* Sched. 1 Status:** The *Species at Risk Act* protects and ensures the recovery of Species at Risk listed on Schedule 1 as Extirpated, Endangered and Threatened, and their critical habitats at a federal level. Schedule 1 of the *Species at Risk Act* provides the legal classification of Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
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Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012).
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Aquatic Habitat

The assessment of existing conditions in the natural environment is based upon background sources only for this site. Fish community data from open secondary source databases identified Lindsay Creek as having a warm water thermal regime and supporting a small assemblage of common fish species (Northern Development, Mines, Natural Resources and Forestry, 2021b) (refer to Table 3-8 in the **Natural Environment Report**). No aquatic Species at Risk were present in Lindsay Creek (Fisheries and Oceans Canada, 2021; Northern Development, Mines, Natural Resources and Forestry, 2021a); however, Redside Dace were identified as present in Lindsay Creek further downstream south of King Street (Highway 9) and thus, regulatory agencies may consider the reach of Lindsay Creek within the site as contributing habitat due to it providing flow and allochthonous inputs to the regulated habitat downstream.

3.3.3.3 Significant Wildlife Habitat Assessment

The Significant Wildlife Habitat Assessment for the Site 5 Snow Storage Area is presented in **Table 3-15.** A detailed Species of Conservation Concern Habitat Assessment is provided in Appendix D of the **Natural Environment Report** (**Appendix C**).

Table 3-15: Significant Wildlife Habitat Assessment Summary – Site 5

Site	Seasonal Concentration Areas	Rare Vegetation Communities or Specialized Habitats for Wildlife	Habitats for Species of Conservation Concern	Animal Movement Corridors
Johnston Sports Park	■ None. ■ Proposed Snow Storage Area consists of manicured lawn and sports field.	■ None.	■ None.	■ None

3.3.3.4 Species at Risk Habitat Assessment

The Species at Risk Habitat Assessment and screening exercise for the Site 5 Snow Storage Area is presented in Appendix D of the **Natural Environment Report** (**Appendix C**). Two Species at Risk were confirmed within the Study Area of Johnston Sports Park: Kentucky Coffee-tree (*Gymnocladus dioicus*) and Redside Dace (*Clinostomus elongatus)*. The planted Kentucky coffee-tree was found within the meadow community and is listed as threatened under the *Endangered Species Act* but does receive protection in the Region of Peel. Regardless, no impacts to this species are anticipated as the individual was planted more than 20 metre away from the

proposed Snow Storage Area, which is located within a manicured lawn and sports field.

The Species at Risk with medium probability of occurring within the Site 5 Study Area includes Redside Dace. Redside Dace habitat at Johnston Sports Park was not within the proposed Snow Storage Area boundaries, however potential impacts exist as Redside Dace habitat was identified approximately 2 kilometres downstream of the proposed Snow Storage Area boundaries within Lindsay Creek. While it has not been identified within the property, it is possible that Ministry of the Environment, Conservation and Parks could consider the reach located within the property as "contributing habitat" under the *Endangered Species Act*.

The remaining Species at Risk listed were identified to have low probability of occurrence within the Study Area.

3.3.4 Fluvial Geomorphological Assessment

Fluvial geomorphological reach characterization, in addition to Rapid Geomorphic Assessment, quantitative geomorphological data collection, erosion threshold assessment, and a meander belt width delineation was completed for this Study Area.

The Rapid Geomorphic Assessment completed found that the channel is in a "Transitional or Stressed" condition with aggradation and planimetric form adjustment as the main geomorphological processes taking place. In addition, the erosion threshold assessment calculated the critical discharge value required for bed material entrainment was on average 0.15 m^3/s. The meander belt width was determined using the empirical approach due to historical alterations of the channel and calculated at 33.5 metre.

Based on available topographic information, the section of the site in which snow facility development would likely be sited appears to discharge southwest to an adjacent stormwater management facility and may not directly contribute to Lindsay Creek.

Based on the results of the fluvial geomorphic assessment, the following recommendations are made:

- Overall, to prevent, eliminate or minimize the risks to life and property caused by erosion hazards, it is recommended to maintain the meander belt boundary.
- Increases in flow to the watercourses from the snow melt should consider the erosion threshold conditions for this snow storage site. The erosion threshold provides targets for the drainage network. Increases in flow have the potential to result in channel instability and lead to morphological adjustment. For the

Johnston Sports Park snow storage site, aggradation of fine sediment was found along the bed of the watercourse and that increases in flow will help to alleviate this.

- The meander belt refers to the lateral extent of floodplain occupation by a meandering watercourse both now and into the future. Protecting the meander belt area from encroachment serves the dual purposes of enabling a continuity of natural channel processes and of protecting property and structures from erosion. To prevent, eliminate or minimize the risks to life and property caused by erosion hazards, it is recommended to maintain the meander belt boundary.

3.3.5 Socio-Economic Environment - Existing and Future Land Use

The following summarizes the existing site use and description of the proposed location for development within the site boundaries:

- Existing Site Use: Site 5 is a community recreational outdoor field in the Town of Caledon, owned and operated by the Town. Accessible parking is located near the roadway entrance at King Street.
- Description of the Proposed Location for Development Within the Site Boundaries: South-central section of the existing sports complex. Currently planned to serve as facility parking lot “P4”. The location has been selected upon review of the Town’s Johnston Sports Park Master Plan.

Future snow operations are not anticipated to conflict with existing and future site uses.

3.3.6 Stage 1 Archaeological Assessment

A review of available background information, as well as previous archaeological assessments showed that the Study Area of Johnston Sports Park had already been completely assessed. The site has been cleared of further archaeological concerns as per the **Stage 1 Archaeological Assessment Report** (**Appendix E**).

3.3.7 Cultural Heritage – Preliminary Impact Assessment

The **Cultural Heritage Report** (**Appendix F**) identified above-ground built heritage resources and cultural heritage landscapes (referred to as BHRs/CHLs) adjacent to Johnston Sports Park. There are no direct impacts; however, the proposed snow storage facility at Johnston Sports Park may indirectly impact structures located on two

of the previously identified BHRs/CHLs (BHR/CHL 1; 6907 King Street, Caledon and BHR/CHL 2; 11416 Centreville Creek Road, Caledon) due to potential vibration impacts.

Based on the results of the data collection, field review, and preliminary impact assessment, the following recommendations have been developed related to this site:

- Suitable mitigation measures during construction is required, such as establishing no-go zones adjacent to all of the potential BHRs/CHLs and issuing instructions to construction crews in order to prevent impacts to existing structures.
- There are potential indirect impacts due to vibration (within the 50 metre vibration buffer) from construction related activities for the following two resources: BHR/CHL 1; 6907 King Street, Caledon (Johnston Sports Park), and BHR/CHL 2; 11416 Centreville Creek Road, Caledon (Johnston Sports Park). Evaluation of impacts related to vibration activities requires assessment based on identification of specific construction methods proposed, distance between the sensitive receptor (i.e., a cultural heritage resource) and the construction activity, and anticipated vibration levels (millimetres per second). Given the proximity to the BHRs/CHLs to the snow storage site located at Johnston Sports Park, it is anticipated that in some locations vibration limits may be exceeded and therefore, the following mitigation measures for vibration impacts should be implemented:
  - Prior to construction, determine which previously identified cultural heritage resources documented in this Cultural Heritage Report require vibration mitigation and monitoring
  - Document (review and establish) the structural condition of a building to determine if it is vulnerable to vibration impacts from the Project
  - Establish vibration limits based on structural conditions, founding soil conditions and type of construction vibration (refer to the Noise and Vibration report)
  - Implement vibration mitigating measures on the construction site and/or at the building (i.e., modify construction procedures, if required)

  Construction and post-construction monitoring may be required for historic buildings that were determined subject to vibration damage. The following monitoring activities are recommended for vibration impacts:

  - Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and

  - Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measures. Implement additional mitigation as required.

- Should the conceptual design for the proposed undertaking extend beyond the boundaries of the site, or if new site locations are added, then a Qualified Heritage Professional should be retained to confirm impacts of the proposed work on the cultural heritage resources and assess if further mitigation is required.

3.3.8 Stormwater Management

Site 5 (Johnston Sports Park) is located northwest of the King Street and Centreville Creek Road intersection in Caledon, Ontario. The site is accessed via a driveway off King Street. Approximately 0.4 hectares of land has been identified as a potentially suitable location for the development of a snow storage facility within the existing limits of Site 5, specifically parking lot 'P4'. The identified land for development is situated on the south-central section of the sports park, which is a primarily flat parking area. The Johnston Sports Park is owned by the Town of Caledon, which has expressed support for the joint use of any developed snow storage area. The section of land that has been identified for snow storage site development is currently planned to remain as a parking lot, as per the Town of Caledon/Johnston Sports Park Master Plan and should continue to act as such in the spring/summer months.

Toronto and Region Conservation Authority Regulation limits are located nearby the identified section of land, but do not overlap the site. The Toronto and Region Conservation Authority Regulation limits are located approximately 200 metre outside the northeast corner of the site, as well as 150 metre from the southeast corner, on the south side of King Street. A stormwater management facility is located approximately 50 metre south of the potential snow storage area and is understood to service the sports park.

3.4 Site 6: Tullamore Reservoir and Pumping Station

3.4.1 Traffic Impact Assessment

The following summarizes the site-specific key findings from the high-level **Traffic Impact Assessment** (**Appendix A**) for Site 6 recommended for design.

- Potential widening of Innis Lake Road to include a left-turn storage lane for left-turning vehicles into the site to prevent blocking northbound traffic.

- Two possible routing options via Innis Lake Road to the site snow storage area. This could increase snow dumping processes at the site if operating in parallel. The route to access the site snow storage area using the private road loop is separate from the site access/egress used by the existing site traffic.
- There is limited space for pedestrians waiting to cross the Mayfield Road and Goreway Drive intersection.

For Site 6, there is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams.

3.4.2 Geotechnical, Hydrogeological and Contaminated Site Assessment

Three boreholes from BH6-1 to BH6-3 on the green land were advanced as per the **Geotechnical, Hydrogeological and Contaminated Site Assessment** (**Appendix B**). During the investigation, no abnormal odour or staining was detected.

A layer of silty clay fill was discovered at the ground surface in two of the site boreholes. The thickness of this fill layer ranged from 1.2 metre to 2.3 metre, which may be in the range of depth for Low Impact Development requirements, should such a stormwater management servicing strategy be utilized to manage snow melt at this site.

Groundwater monitoring was completed between March 7 to June 28, 2022. Groundwater levels were recorded between 0.66 and 1.83 metres below ground surface. It is expected that the groundwater levels within the Site 6 will be subjected to seasonal fluctuations including response to spring freshet and localized precipitation events.

Based on the infiltration testing and analysis that was completed on site, it was determined that the field saturated vertical hydraulic conductivity of the surficial soils at the two locations of testing ranged between 6.4×10^{-7} metres per second and 8.9×10^{-7} metres per second and the percolation rates ranged between 41 and 45 millimetres per hour.

The calculated infiltration rates for Site 6 indicate that the local shallow soils generally are sufficiently permeable to consider multiple Low Impact Development technologies, although it is noted that elevated groundwater conditions have been observed on site which may limit storage that can be provided from potential Low Impact Development at this site. Local groundwater conditions should be considered throughout the site during detailed design.

3.4.3 Natural Environment

3.4.3.1 Background Information Review

Designated Natural Areas

A summary of designated natural areas identified within the Site 6 Study Area is provided in **Table 3-16** below. Designated natural areas within and in the vicinity of the Study Areas are illustrated on Figure 1 of the **Natural Environment Report** (**Appendix C**).

Table 3-16: Natural Features – Site 6 Study Area

Site	Wetlands	Woodlands	Significant Wildlife Habitat	Potential Snow Storage Area Located within Natural Designated Features (Yes/No)
Site 6: Tullamore Reservoir and Pumping Station	■ None	■ Natural Areas and Corridors	■ Wildlife Concentration Area -Mixed Wader Nesting Colony	■ No

Vegetation Areas

The Site 6 Study Area is located within Ecoregion 7E (Lake Erie-Lake Ontario). Ecoregion 7E, which is part of the Mixedwood Plains Ecozone, extends from Windsor to Toronto and includes the Niagara Region.

A number of Species of Conservation Concern Species of Conservation Concern and Species at Risk plant records in the vicinity of the snow storage site Study Areas through a review of the background information sources. For further details pertaining to Site 6 refer to the **Natural Environment Report** (**Appendix C**).

Aquatic Habitat

Fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries for Site 6 (Tullamore Reservoir and Pumping Station).

However, the proposed Snow Storage Area is not located on or immediately adjacent to a watercourse (i.e., within the regulated floodplain limits).

Terrestrial Species at Risk and Species of Conservation Concern

A list of wildlife Species at Risk and/or Species of Conservation Concern with records identified through the background review in the vicinity of the Site 6 snow storage Study Area is presented in **Table 3-17**.

Table 3-17: Species at Risk and/or Species of Conservation Concern Potentially Present within the Site 6 Study Area

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)1	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 4)	Source	Species at Risk / Species of Conservation Concern
Tullamore Reservoir and Pumping Station	Amphibian	Jefferson Salamander	*Ambystoma jeffersonianum*	S2	END	END	END	ORAA	Species at Risk
Tullamore Reservoir and Pumping Station	Bird	Acadian Flycatcher	*Empidonax virescens*	S2S3B	END	END	END	eBird, OBBA	Species at Risk
Tullamore Reservoir and Pumping Station	Bird	Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	eBird, OBBA	Species at Risk
Tullamore Reservoir and Pumping Station	Bird	Barn Swallow	*Hirundo rustica*	S5B	THR	THR	THR	eBird, OBBA	Species at Risk
Tullamore Reservoir and Pumping Station	Bird	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
Tullamore Reservoir and Pumping Station	Bird	Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	THR	THR	eBird, OBBA	Species at Risk
Tullamore Reservoir and Pumping Station	Bird	Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
Tullamore Reservoir and Pumping Station	Bird	Prothonotary Warbler	*Protonotaria citrea*	S1B	END	END	END	eBird, OBBA	Species at Risk
Tullamore Reservoir and Pumping Station	Bird	Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	END	END	THR	eBird, OBBA	Species at Risk
Tullamore Reservoir and Pumping Station	Fish	Redside Dace	*Clinostomus elongatus*	S1	END	END	END	Natural Heritage Information Centre, Fisheries and Oceans Canada	Species at Risk
Tullamore Reservoir and Pumping Station	Amphibian	Western Chorus Frog – Great Lakes – St. Lawrence – Canadian Shield population	*Pseudacris maculata pop. 1*	S4	NAR	THR	THR	ORAA	Species of Conservation Concern
Tullamore Reservoir and Pumping Station	Bird	Common Nighthawk	*Chordeiles minor*	S4B	SC	SC	THR	OBBA	Species of Conservation Concern
Tullamore Reservoir and Pumping Station	Bird	Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern
Tullamore Reservoir and Pumping Station	Bird	Golden-winged Warbler	*Vermivora chrysoptera*	S4B	SC	THR	THR	eBird, OBBA	Species of Conservation Concern
Tullamore Reservoir and Pumping Station	Bird	Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)1	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 4)	Source	Species at Risk / Species of Conservation Concern
Tullamore Reservoir and Pumping Station	Bird	Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species of Conservation Concern

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

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SNR – Unranked—Province conservation status not yet assessed.
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SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
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Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note 2: ***Endangered Species Act* Status**: The *Endangered Species Act* 2007 protects species listed as Threatened and Endangered on the Species at Risk in Ontario List on provincial and private land. The Minister lists species on the Species at Risk in Ontario list based on recommendations from the Committee on the Status of Species at Risk in Ontario, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

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SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note 3: **Committee on the Status of Endangered Wildlife in Canada Status:** The Committee on the Status of Endangered Wildlife in Canada exists to provide Canadians and their governments with advice regarding the status of wildlife species that are nationally at risk of extinction or extirpation. Committee on the Status of Endangered Wildlife in Canada classifies Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
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Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012)
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Note 4: ***Species at Risk Act* Sched. 1 Status:** The *Species at Risk Act* protects and ensures the recovery of Species at Risk listed on Schedule 1 as Extirpated, Endangered and Threatened, and their critical habitats at a federal level. Schedule 1 of the *Species at Risk Act* provides the legal classification of Species at Risk as follows:

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Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012).
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

3.4.3.2 Field Investigations Results

Vegetation

Vegetation communities were limited due to the fragmented landscape resulting from human disturbance. Where accessible, AECOM staff delineated vegetation communities that are shown in Figure 2 of the **Natural Environment Report** (**Appendix C**). Vegetation community descriptions are presented in **Table 3-18**. The flora lists are provided in Appendix C of the **Natural Environment Report** (**Appendix C**).

Table 3-18: Ecological Land Classification Communities – Site 6 Study Area

Ecological Land Classification Code	Ecological Land Classification Name	Community Description	Floristic Assessment	Ecological Land Classification Community within Potential Snow Storage Areas Located
CUM1-1	Dry – Moist Old Field Meadow	■ This open meadow was dominated with tall goldenrod, heath aster, New England aster, cow vetch (*Vicia cracca*), birds-foot trefoil (*Lotus corniculatus*), Kentucky blue-grass and black medick (*Medicago lupilina*).	■ Total Species: 28 ■ Native Species: 13 (46.43%) ■ Non-native Species: 15 (53.57%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawns.
CUT1/ CUM1-1	Cultural Thicket / Dry – Moist Old Field Meadow	■ The canopy and shrub layer was dominated with pussy willow, red-osier dogwood *(Cornus sericea*), gray dogwood (*Cornus racemosa)*, speckled alder, European buckthorn and trembling aspen (*Populus tremuloides).*	■ Total Species: 9 ■ Native Species: 7 (77.78%) ■ Non-native Species: 2 (22.22%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn.
MAS2-1	Cattail Mineral Shallow Marsh Type	■ This community was densely vegetated with narrow-leaved cattail and common reed.	■ Total Species: 2 ■ Native Species: 2 (100%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn.
FOD	Deciduous Forest	■ Community description was not possible due to accessibility limitations.	■ Not applicable	■ No – Proposed Snow Storage Area consists of manicured lawn.
CUT	Cultural Thicket	■ Community description was not possible due to accessibility limitations.	■ Not applicable	■ No – Proposed Snow Storage Area consists of manicured lawn.

Incidental Wildlife

Incidental wildlife observations were documented during the field investigations conducted by AECOM Ecologists. **Table 3-19** outlines incidental wildlife observed during field investigations.

Aquatic Habitat

The primary feature identified within the Tullamore Reservoir and Pumping Station property boundary is Salt Creek, a permanent watercourse with a warm water thermal regime that provides habitat for Redside Dace, a provincially and federally listed Species at Risk (Fisheries and Oceans Canada 2021; Northern Development, Mines, Natural Resources and Forestry 2021a). Fish community data for Salt Creek is provided in Table 3-9 of the **Natural Environment Report** (**Appendix C**). The main channel of Salt Creek was identified flowing southward along the western boundary of the site outside of a fence running the length of the property and thus was not accessed to assess aquatic habitat existing conditions. The stormwater management facility on the site outlet through rip rap and dense common reed and then through the fence westward toward Salt Creek. No defined channel connecting the outlet to Salt Creek was observed that would allow fish passage into the facility and onto the site from Salt Creek.

The proposed Snow Storage Area is located on the eastern portion of the site opposite Salt Creek and adjacent to Innis Lake Road. A poorly defined, vegetated swale crossed this portion of the site and connected to the roadside ditch at Innis Lake Road. This vegetated swale had intermittent outcrops of cattail along its length but exhibited mainly ephemeral overland flow through terrestrial grasses and as such did not provide fish habitat. The Region parking lot off Innis Lake Road also had a Low Impact Development system for receiving stormwater runoff from the parking lot and conveyed it via a cattail-lined vegetated swale along the southern boundary of the site westward to a drop grate inlet to the stormwater management facility. This Low Impact Development system was separate and disconnected from the vegetated swale and roadside drainage ditches parallel to Innis Lake Road and did not provide fish habitat. Since the Low Impact Development system provided flow to the stormwater management facility, the potential exists for salt-laden runoff from the adjacent proposed Snow Storage Area to enter the facility and ultimately flow to the regulated fish habitat in Salt Creek. Apart from Salt Creek, no other fish habitat was present on or adjacent to the site.

Table 3-19: Incidental Wildlife Observations – Site 6

Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 4)
Bird	American Crow	*Corvus brachyrhynchos*	S5B	Not applicable	Not applicable	Not applicable
Bird	Killdeer	*Charadrius vociferus*	S5B,S5N	Not applicable	Not applicable	Not applicable
Bird	Mourning Dove	*Zenaida macroura*	S5	Not applicable	Not applicable	Not applicable

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure—Common, widespread, and abundant in the nation or state/province.
SNR – Unranked—Province conservation status not yet assessed.
SU – Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note 2: ***Endangered Species Act* Status**: The *Endangered Species Act* 2007 protects species listed as Threatened and Endangered on the Species at Risk in Ontario List on provincial and private land. The Minister lists species on the Species at Risk in Ontario list based on recommendations from the Committee on the Status of Species at Risk in Ontario, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming Endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note 3: **Committee on the Status of Endangered Wildlife in Canada Status:** The Committee on the Status of Endangered Wildlife in Canada exists to provide Canadians and their governments with advice regarding the status of wildlife species that are nationally at risk of extinction or extirpation. Committee on the Status of Endangered Wildlife in Canada classifies Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012)
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Note 4: ***Species at Risk Act* Sched. 1 Status:** The *Species at Risk Act* protects and ensures the recovery of Species at Risk listed on Schedule 1 as Extirpated, Endangered and Threatened, and their critical habitats at a federal level. Schedule 1 of the *Species at Risk Act* provides the legal classification of Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012).
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

3.4.3.3 Significant Wildlife Habitat Assessment

The Significant Wildlife Habitat Assessment for the Site 6 Snow Storage Area is presented in **Table 3-20**. A detailed Species of Conservation Concern Habitat Assessment is provided in Appendix D of the **Natural Environment Report** (**Appendix C**).

Table 3-20: Significant Wildlife Habitat Assessment Summary – Site 6

Site	Seasonal Concentration Areas	Rare Vegetation Communities or Specialized Habitats for Wildlife	Habitats for Species of Conservation Concern	Animal Movement Corridors
Tullamore Reservoir and Pumping Station	■ None ■ Potential Snow Storage Area is located within a manicured lawn.	■ None.	■ None.	■ None.

3.4.3.4 Species at Risk Habitat Assessment

The Species at Risk Habitat Assessment and screening exercise for the Snow Storage Area is presented in Appendix D of the **Natural Environment Report** (**Appendix C**).

Redside Dace was identified in Salt Creek for the Tullamore Reservoir and Pumping Station site snow storage area. If this location is chosen, a meander belt analysis should be conducted to confirm the boundaries of Redside Dace habitat on the property as regulated under the *Endangered Species Act*.

The Potential Snow Storage Area is located within a manicured lawn that is at least 120 metre away from more sensitive features in the southern half of the site property.

The Species at Risk with medium probability of occurring within the Site 6 Study Area includes Redside Dace. Habitat for Redside Dace is located within the property boundaries. As mentioned above, a meander belt assessment will be required to confirm the full extent of the habitat as regulated under the *Endangered Species Act* (i.e., meander belt plus 30 metre) to confirm whether regulated habitat is located within or adjacent to the storage area. Salt management will be essential for this site to prevent salt ladened runoff from entering Salt Creek.

The remaining Species at Risk listed were identified to have low probability of occurrence within the Study Area.

3.4.4 Fluvial Geomorphological Assessment

Fluvial geomorphological reach characterization, in addition to Rapid Geomorphic Assessment, quantitative geomorphological data collection, erosion threshold assessment, and a meander belt width delineation was completed for this Study Area.

The Rapid Geomorphic Assessment completed found the channel to be in “Regime” with widening and planimetric form adjustment identified as the main geomorphological processes taking place. Minimal evidence of erosion was found within this reach. The erosion threshold identified that the critical discharge value required to entrain or begin to transport bed material is on average 0.13 m^3/s. The meander belt width was completed using the mapping approach and is 158 metre. Based on available topographic information, the site appears to discharge to the west side of Innis Lake Road, where it eventually discharges to a watercourse flowing east along Mayfield Road.

Based on the results of the fluvial geomorphic assessment, the following recommendations are made:

- Overall, to prevent, eliminate or minimize the risks to life and property caused by erosion hazards, it is recommended to maintain the meander belt boundary.
- Increases in flow to the watercourses from the snow melt should consider the erosion threshold conditions for this snow storage site. The erosion threshold provides targets for the drainage network. Increases in flow have the potential to result in channel instability and lead to morphological adjustment. For the Tullamore Reservoir snow storage site, shale bedrock identified along the bed of the watercourse will provide resistance to erosional processes, but no shale was noted along the banks. It is recommended that care is taken to maintain vegetation cover along and within the watercourses in order to maintain the existing channel stability.
- The meander belt refers to the lateral extent of floodplain occupation by a meandering watercourse both now and into the future. Protecting the meander belt area from encroachment serves the dual purposes of enabling a continuity of natural channel processes and of protecting property and structures from erosion. To prevent, eliminate or minimize the risks to life and property caused by erosion hazards, it is recommended to maintain the meander belt boundary.

3.4.5 Socio-Economic Environment - Existing and Future Land Use

The following summarizes the existing site use and description of the proposed location for development within the site boundaries:

- **Existing Site Use:** Site 6 is a drinking water transmission facility that is part of the east trunk system which provides a direct supply to the local water distribution network. The Caledon Water Station is a bulk water filling depot, located in the private roadway loop on the north side of the site. This water storage/pumping facility will need to be expanded in the future (additional pumping capacity and storage).
- **Description of the Proposed Location for Development Within the Site Boundaries:** Existing grassed / landscaped area adjacent to Innis Lake Road. Located just south of existing asphalt turning area.

Future snow operations are not anticipated to conflict with existing and future site uses.

3.4.6 Stage 1 Archaeological Assessment

A review of available background information, as well as previous archaeological assessments showed that the Study Area of the Tullamore Reservoir and Pumping Station had been partially assessed and requires further work.

Given the results of the Stage 1 assessment (**Appendix E**), AECOM the following recommendation applies to Site 6:

- If the area of the Tullamore Reservoir and Pumping Station which has not been assessed cannot be avoided, then it will require Stage 2 test pit survey at 5 metre intervals. This should be completed in keeping with Section 2.1.2 of the Standards and Guidelines for Consultant Archaeologists (Ontario Government 2011).

3.4.7 Cultural Heritage – Preliminary Impact Assessment

The **Cultural Heritage Report** (**Appendix F**) identified built heritage resources and cultural heritage landscapes (referred to as BHRs/CHLs) adjacent to the Tullamore Reservoir and Pumping Station site, including BHR/CHL 4 (12351 Innis Lake Road), and BHR/CHL 5 (6340 Mayfield Road). There will no direct or indirect impacts to these resources.

As per the recommendations, if a site within or adjacent to BHRs/CHLs is selected, suitable mitigation measures during construction may be required, such as establishing no-go zones adjacent to all of the potential BHRs/CHLs identified in the **Cultural Heritage Report** (**Appendix F**) and issuing instructions to construction crews in order to prevent impacts to existing structures.

Should the conceptual design for the proposed undertaking extend beyond the boundaries of the site, then a Qualified Heritage Professional should be retained to confirm impacts of the proposed work on the cultural heritage resources and assess if further mitigation is required.

3.4.8 Stormwater Management

Site 6 (Tullamore Reservoir and Pumping Station) is located along the west side of Innis Lake Road, approximately 200 metre northwest of the Mayfield Road / Goreway Drive intersection, in Brampton, Ontario. Approximately 0.4 hectares of land has been identified as a potentially suitable location for the development of a snow storage facility, within the boundaries of Site 6. The land identified for development is situated adjacent to the bulk water station at the north end of the site and is primarily flat and grass covered. Trees and shrubs have been planted along the south and east sides of the identified location. A small, wired fence separates the Tullamore Reservoir and Pumping Station property from Innis Lake Road, and the roadside ditch conveyance system accepts drainage from the existing site and the roadway. A conveyance ditch also runs parallel to the western section of the lands that has been identified for potential development within the Tullamore property, which feeds to the ditch along Innis Lake Road.

Nearby Salt Creek runs through a protected wooded area and is situated within the Regulatory jurisdiction of the Toronto and Region Conservation Authority. The Toronto and Region Conservation Authority Regulation Limits and identified woodland, are located approximately 200 metre west of the lands within the Tullamore site which have been identified for potential future development of a snow storage facility. Overland drainage from the western half of the Tullamore property drains toward Salt Creek, however the eastern half of the site appears to drain towards the roadside ditches along Innis Lake Road.

3.5 Site 9: Alloa Reservoir and Pumping Station

3.5.1 Traffic Impact Assessment

The following summarizes the site-specific key findings from the high-level **Traffic Impact Assessment** (**Appendix A**) for Site 9:

- Potential widening of Mayfield Road to include a left-turn storage lane for vehicles turning left into the site to prevent blocking eastbound traffic.

For Site 9, there is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams.

3.5.2 Geotechnical, Hydrogeological and Contaminated Site Assessment

Three boreholes including BH9-1 to BH9-3/MW on the green land were advanced as per the **Geotechnical, Hydrogeological and Contaminated Site Assessment** (**Appendix B**).

A layer of sandy silt fill atop a sandy fill layer was discovered at the ground surface in two of the site boreholes which may support the implementation of Low Impact Development (i.e., bioswales) that provide acceptable retention storage depth, should such an approach be implemented to provide stormwater management for any proposed snow storage facility.

Groundwater monitoring was completed between March 7 to June 30, 2022. Groundwater levels were recorded between 3.23 and 5.25 metres below ground surface. It is expected that the groundwater levels within Site 9 will be subjected to seasonal fluctuations including response to spring freshet and localized precipitation events.

Based on the infiltration testing and analysis that was completed on site, it was determined that the field saturated vertical hydraulic conductivity of the surficial soils at the two locations of testing ranged between 1.5×10^{-6} metres per second and 8.3×10^{-6} metres per second and the percolation rates ranged between 51 and 82 millimetres per hour.

The calculated infiltration rates for Site 9 indicate that the local shallow soils generally are sufficiently permeable to consider multiple Low Impact Development technologies.

3.5.3 Natural Environment

3.5.3.1 Background Information Review

Designated Natural Areas

A summary of designated natural areas identified within the Site 9 Study Area is provided in **Table 3-21** below. Designated natural areas within and in the vicinity of the Study Area are illustrated on Figure 1 of the **Natural Environment Report** (**Appendix C**).

Table 3-21: Natural Features – Site 9

Site	Wetlands	Woodlands	Significant Wildlife Habitat	Potential Snow Storage Area Located within Natural Designated Features (Yes/No)
Site 9: Alloa Reservoir and Pumping Station	■ None	■ Core Areas	■ None	■ No

Vegetation Areas

The Study Area for Site 9 is located within Ecoregion 7E (Lake Erie-Lake Ontario). Ecoregion 7E, which is part of the Mixedwood Plains Ecozone, extends from Windsor to Toronto and includes the Niagara Region.

A number of Species of Conservation Concern and Species at Risk plant records in the vicinity of the snow storage site Study Areas through a review of the background information sources. For further details pertaining to Site 9 refer to the **Natural Environment Report** (**Appendix C**).

Aquatic Habitat

Fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries for Site 9 (Alloa Reservoir and Pumping Station).

However, the Snow Storage Area is not located on or immediately adjacent to watercourse (i.e., within the regulated floodplain limits).

Terrestrial Species at Risk and Species of Conservation Concern

A list of wildlife Species at Risk and/or Species of Conservation Concern with records identified through the background review in the vicinity of the Site 9 snow storage Study Area is presented in **Table 3-22**.

Table 3-22: Species at Risk and/or Species of Conservation Concern Potentially Present within Site 9 Study Area

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 4)	Source	Species at Risk / Species of Conservation Concern
Alloa Reservoir and Pumping Station	Amphibian	Jefferson Salamander	*Ambystoma jeffersonianum*	S2	END	END	END	ORAA	Species at Risk
Alloa Reservoir and Pumping Station	Bird	Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	eBird, OBBA	Species at Risk
Alloa Reservoir and Pumping Station	Bird	Barn Swallow	*Hirundo rustica*	S5B	THR	THR	THR	eBird, OBBA	Species at Risk
Alloa Reservoir and Pumping Station	Bird	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
Alloa Reservoir and Pumping Station	Bird	Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	THR	THR	eBird, OBBA	Species at Risk
Alloa Reservoir and Pumping Station	Bird	Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
Alloa Reservoir and Pumping Station	Bird	Eastern Whip-poor-will	*Antrostomus vociferous*	S4B	THR	THR	THR	eBird, OBBA	Species at Risk
Alloa Reservoir and Pumping Station	Bird	Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	END	END	THR	eBird, OBBA	Species at Risk
Alloa Reservoir and Pumping Station	Amphibian	Western Chorus Frog – Great Lakes – St. Lawrence – Canadian Shield population	*Pseudacris maculata pop. 1*	S4	NAR	THR	THR	ORAA	Species of Conservation Concern
Alloa Reservoir and Pumping Station	Bird	Common Nighthawk	*Chordeiles minor*	S4B	SC	SC	THR	OBBA	Species of Conservation Concern
Alloa Reservoir and Pumping Station	Bird	Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern
Alloa Reservoir and Pumping Station	Bird	Purple Martin	*Progne subis*	S3S4B	No Status	No Status	No Status	eBird, OBBA	Species of Conservation Concern
Alloa Reservoir and Pumping Station	Bird	Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species of Conservation Concern
Alloa Reservoir and Pumping Station	Bryophyte	Alleghany Moss	*Thamnobryum alleghaniense*	S2	No Status	No Status	No Status	iNaturalist	Species of Conservation Concern
Alloa Reservoir and Pumping Station	Insect	Fraternal Potter Wasp	*Eumenes fraternus*	S3	No Status	No Status	No Status	iNaturalist	Species of Conservation Concern

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure—Common, widespread, and abundant in the nation or state/province.
SNR – Unranked—Province conservation status not yet assessed.
SU – Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note 2: ***Endangered Species Act*** **Status**: The *Endangered Species Act* 2007 protects species listed as Threatened and Endangered on the Species at Risk in Ontario List on provincial and private land. The Minister lists species on the Species at Risk in Ontario list based on recommendations from the Committee on the Status of Species at Risk in Ontario, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming Endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note 3: **Committee on the Status of Endangered Wildlife in Canada Status:** The Committee on the Status of Endangered Wildlife in Canada exists to provide Canadians and their governments with advice regarding the status of wildlife species that are nationally at risk of extinction or extirpation. Committee on the Status of Endangered Wildlife in Canada classifies Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012)
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Note 4: ***Species at Risk Act*** **Sched. 1 Status:** The *Species at Risk Act* protects and ensures the recovery of Species at Risk listed on Schedule 1 as Extirpated, Endangered and Threatened, and their critical habitats at a federal level. Schedule 1 of the *Species at Risk Act* provides the legal classification of Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012).
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

3.5.3.2 Field Investigations Results

Vegetation

Vegetation communities were limited due to the fragmented landscape resulting from human disturbance. Where accessible, AECOM staff delineated vegetation communities that are shown in Figure 2 of the **Natural Environment Report** (**Appendix C**). Vegetation community descriptions are presented in **Table 3-23.** The flora lists are provided in Appendix C of the **Natural Environment Report** (**Appendix C**).

Table 3-23: Ecological Land Classification Communities – Site 9 Study Area

Ecological Land Classification Code	Ecological Land Classification Name	Community Description	Floristic Assessment	Ecological Land Classification Community within Potential Snow Storage Areas Located
CUM1-1	Dry – Moist Old Field Meadow	■ This community consisted of a variety of graminoid and herbaceous species, including Kentucky blue-grass, tall goldenrod, Canada goldenrod (*Solidago canadensis*), heath aster, chicory (*Cichorium intybus*) and wild carrot.	■ Total Species: 16 ■ Native Species: 6 (37.50%) ■ Non-native Species: 10 (62.50%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn.
CUW1	Cultural Woodland	■ This community consisted of a single layer of trees. The canopy was dominated by green ash. Kentucky bluegrass was abundant within the ground layer.	■ Total Species: 2 ■ Native Species: 2 (100%) ■ No presence of Species of Conservation Concern or Species at Risk plants or provincially significant vegetation communities	■ No – Proposed Snow Storage Area consists of manicured lawn.

Incidental Wildlife

Incidental wildlife observations were documented during the field investigations conducted by AECOM Ecologists. No incidental wildlife were observed during field investigations.

Aquatic Habitat

The Alloa Reservoir and Pumping Station site did not have any watercourses that provide fish habitat within the property boundary; however, the Alloa Municipal Drain was present immediately north of the site flowing west to east along – but entirely outside of – the northern property boundary. The Alloa Municipal Drain was classified by Fisheries and Oceans Canada in 2019 as a Type D municipal drain, which identified the watercourse as permanent with fall spawning or a combination of spring and fall spawning species present (Mandrak and Bouvier 2014; Ontario Ministry of Agriculture, Food and Rural Affairs 2021). Fish community data from open secondary source databases identified the Alloa Municipal Drain as having a warm water thermal regime and supporting a diverse community of small-bodied fish and Salmonid (trout) species (Northern Development, Mines, Natural Resources and Forestry, 2021b) (refer to Table 3-10 in the **Natural Environment Report, Appendix C**).

A large stormwater management facility was present north and west of the reservoir on the site. The facility was a dry, infiltration-style facility that featured an overflow spillway between two large berms north of the reservoir that ended in a rock check dam that diffused the overland flow northward across a fallow agricultural field towards the Alloa Municipal Drain. No defined channel that would allow fish passage from the Alloa Municipal Drain to the facility was present on the site. In addition to the spillway, a narrow, defined channel was present within the facility that conveyed flow within the facility southward along the west side of the site to an outlet to the Low Impact Development system present on the site. The Low Impact Development system collected flow from the stormwater management facility and the parking lot on the site and conveyed it via a cattail-filled drainage channel westward across the access laneway and then southward parallel to the access laneway to a receiving culvert crossing Mayfield Road before entering a buried drain south of Mayfield Road.

3.5.3.3 Significant Wildlife Habitat Assessment

The Significant Wildlife Habitat Assessment for the Site 9 Snow Storage Area is presented in **Table 3-24**. A detailed Species of Conservation Concern Habitat Assessment is provided in Appendix D of the **Natural Environment Report** (**Appendix C**).

Table 3-24: Significant Wildlife Habitat Assessment Summary – Site 9

Site	Seasonal Concentration Areas	Rare Vegetation Communities or Specialized Habitats for Wildlife	Habitats for Species of Conservation Concern	Animal Movement Corridors
Alloa Reservoir and Pumping Station	■ None. ■ Potential Snow Storage Area is located within a manicured lawn with trees.	■ None.	■ None	■ None.

3.5.3.4 Species at Risk Habitat Assessment

The Species at Risk Habitat Assessment and screening exercise for the Site 9 Snow Storage Area is presented in Appendix D of the **Natural Environment Report** (**Appendix C**).

There are no Species at Risk with medium probability of occurring within the Site 9 Study Area. The Potential Snow Storage Area is located within a manicured lawn. The remaining Species at Risk listed were identified to have low probability of occurrence within the Study Areas.

3.5.4 Fluvial Geomorphological Assessment

Fluvial geomorphological reach characterization was completed for this Study Area. A site visit was conducted at Mississauga Road and Creditview Road where the channel is defined and approximately 4 metre wide. However, the site was not further assessed due to watercourse being located on private property. Future detailed assessment is recommended when permission to enter is granted.

3.5.5 Socio-Economic Environment - Existing and Future Land Use

The following summarizes the existing site use and description of the proposed location for development within the site boundaries:

- Existing Site Use: Site 9 is a lake-based water transmission facility that is part of the west trunk system, which provides a direct supply to the local water distribution system. This water storage/pumping facility will need to be expanded in the future (additional pumping capacity, additional feedermains and storage).

- Description of the Proposed Location for Development Within the Site Boundaries: East side of the site, in place of existing turnaround area. Adjacent to existing agricultural lands slated for future development.

Future snow operations are not anticipated to conflict with existing and future site uses.

3.5.6 Stage 1 Archaeological Assessment

A review of available background information, as well as previous archaeological assessments showed that the study area of the Alloa Reservoir and Pumping Station had already been completely assessed. The site has been cleared of further archaeological concerns as per the **Stage 1 Archaeological Assessment Report** (**Appendix E**).

3.5.7 Cultural Heritage – Preliminary Impact Assessment

The Cultural Heritage Report identified built heritage resources and cultural heritage landscapes (referred to as BHRs/CHLs) adjacent to the Alloa Reservoir and Pumping Station site referred to as BHR/CHL 6 (12240 Creditview Road). There will be no direct or indirect impacts to this resource.

As per the recommendations, if a site within or adjacent to BHRs/CHLs is selected, suitable mitigation measures during construction may be required, such as establishing no-go zones adjacent to all of the potential BHRs/CHLs identified in the **Cultural Heritage Report** (**Appendix F**) and issuing instructions to construction crews in order to prevent impacts to existing structures.

Should the conceptual design for the proposed undertaking extend beyond the boundaries of the site, then a Qualified Heritage Professional should be retained to confirm impacts of the proposed work on the cultural heritage resources and assess if further mitigation is required.

3.5.8 Stormwater Management

Site 9 (Alloa Reservoir and Pumping Station) is located approximately 1 kilometre northeast of the Mayfield Road and Mississauga Road intersection in Caledon, Ontario. The site is accessible by means of a 200 metre facility laneway which travels north from Mayfield Road. Approximately 0.25 hectares of land has been identified as a potentially suitable location for the development of a snow storage facility, within the boundaries of Site 9. The identified land for development is situated on the southeast corner of the site. It is proposed that the turnaround loop at the bulk water station be developed to serve dual purposes –retaining its function as a bulk water fill station, but serving as a

snow storage facility as well. The site appears to drain towards on-site roadside ditches that convey runoff south down the access road towards Mayfield Road.

Toronto and Region Conservation Authority Regulatory Limits extend through the northern portion of the property (Etobicoke Creek watershed), encompassing approximately 50 metre of the northern edge of the site. Additionally, the site is situated within both the Toronto and Region Conservation Authority and Credit Valley Conservation watershed. A future subdivision development is planned for the lands east of the candidate location identified for possible snow storage facility development.

3.6 Site 10: 7120 Hurontario Street

3.6.1 Traffic Impact Assessment

The following summarizes the site-specific key findings from the high-level Traffic Impact Assessment (**Appendix A**) for Site 10:

- Increase the left turn storage lane length in the northbound direction at Hurontario Street and Derry Road to minimize potential blocking of the northbound through traffic.
- Additional green time may be needed for the southbound left turn and all through traffic approaches.
- There are two possible routing options via Hurontario Street to the site snow storage area (i.e., from Kingsway Drive and Derrycrest Drive). This could increase snow dumping processes at the site if operating in parallel.
- Increased pedestrian and vehicular traffic are anticipated with the completion of the Hazel McCallion Light-rail Transit and the City of Mississauga's future cycling network. Additional and more granular traffic impact studies are recommended once traffic volumes from new infrastructure reaches equilibrium.

For all snow storage sites, there is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams.

3.6.2 Geotechnical, Hydrogeological and Contaminated Site Assessment

BH-1/MW was drilled on the east side of site through landscape areas while BH-2 and BH-3 were drilled through the asphalt in the parking areas as per the supplemental **Hydrogeological Memorandum** (**Appendix B**) completed for 7120 Hurontario Street.

Based on the infiltration testing and analysis that was completed on site, it was determined that the field saturated vertical hydraulic conductivity of the surficial soils at the one location of testing was 1.0×10^{-6} metres per second and the percolation rate was 13 millimetres per hour.

The calculated infiltration rates for Site 10 indicate that the local shallow soils generally have a low permeability and may not provide significant infiltration capacity. Low Impact Development options may need to be limited to quality and peak flow control.

Groundwater was observed in one of the open boreholes upon the completion of the drilling at Site 10, at depths of 4.57 metres below ground surface. Groundwater monitoring was completed on the east side of the site from July to August 2023. Groundwater levels were recorded between 1.17 to 3.64 metres below ground surface during this time.

3.6.3 Natural Environment

3.6.3.1 Background Information Review

Designated Natural Areas

A summary of designated natural areas identified within the Site 10 Study Area is provided in **Table 3-25** below. Designated natural areas within and in the vicinity of the Study Areas are illustrated on Figure 1 of the **Natural Environment Report** (**Appendix C**).

Table 3-25: Natural Features – Site 10

Site	Wetlands	Woodlands	Significant Wildlife Habitat	Potential Snow Storage Area Located within Natural Designated Features (Yes/No)
Site 10: 7120 Hurontario Street	■ None	■ None	■ None	■ No

Vegetation Areas

Vegetation communities within the 120 metre buffer of the 7120 Hurontario Street Study Area were assessed through aerial imagery from 2022 as well as Credit Valley Conservation's Ecological Land Classification mapping downloaded from the open data portal (Credit Valley Conservation, 2022). Communities within this Study Area were largely anthropogenically disturbed and consisted of Cultural Meadows (CUM), as well as agricultural, recreational, private, or open spaces, that appear to be consistently managed according to aerial interpretation and Credit Valley Conservation data review.

No vegetation communities were present within the proposed 7120 Hurontario Street Snow Storage Site 10, as it is limited entirely to a parking lot based on aerial imagery interpretation.

Aquatic Habitat

Based on a review of the Fisheries and Oceans Canada Aquatic Species at Risk Mapping, there were no aquatic Species at Risk identified within the 7120 Hurontario Street Study Area (Site 10).

Terrestrial Species at Risk and Species of Conservation Concern

A list of wildlife Species at Risk and/or Species of Conservation Concern potentially present within the snow storage Study Area is presented in **Table 3-26**.

Table 3-26: Species at Risk and/or Species of Conservation Concern Potentially Present within the Site 10 Study Area

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 14	Source	Species at Risk / Species of Conservation Concern
7120 Hurontario Street	Amphibian	Jefferson Salamander	*Ambystoma jeffersonianum*	S2	END	END	END	ORAA	Species at Risk
7120 Hurontario Street	Bird	Acadian Flycatcher	*Empidonax virescens*	S2S3B	END	END	END	eBird, OBBA	Species at Risk
7120 Hurontario Street	Bird	Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	eBird, OBBA	Species at Risk
7120 Hurontario Street	Bird	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
7120 Hurontario Street	Bird	Cerulean Warbler	*Setophaga cerulea*	32B	END	END	THR	OBBA	Species at Risk
7120 Hurontario Street	Bird	Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	THR	THR	eBird, OBBA	Species at Risk
7120 Hurontario Street	Bird	Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species at Risk
7120 Hurontario Street	Bird	Henslow's Sparrow	*Centronyx henslowii*	S1B	END	END	END	OBBA	Species at Risk
7120 Hurontario Street	Bird	King Rail	*Rallus elegans*	S1B	END	END	END	OBBA	Species at Risk
7120 Hurontario Street	Bird	Least Bittern	*Ixobrychus exilis*	S4B	THR	THR	THR	OBBA	Species at Risk
7120 Hurontario Street	Bird	Louisiana Waterthrush	*Parkesia motacilla*	S2B	THR	THR	THR	OBBA	Species at Risk
7120 Hurontario Street	Bird	Piping Plover	*Charadrius melodus*	S1B	END	END	-	OBBA	Species at Risk
7120 Hurontario Street	Bird	Prothonotary Warbler	*Protonotaria citrea*	S1B	END	END	END	OBBA	Species at Risk
7120 Hurontario Street	Bird	Short-eared Owl	*Asio flammeus*	S4?B,S2S3N	THR	SC	SC	OBBA	Species at Risk
7120 Hurontario Street	Bird	Yellow-breasted Chat	*Icteria virens*	S1B	END	END	-	OBBA	Species at Risk
7120 Hurontario Street	Bird	Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	END	END	THR	eBird, OBBA	Species at Risk
7120 Hurontario Street	Mammals	Eastern Small-footed Myotis	*Myotis leibii*	S2S3	END	-	-	BCI	Species at Risk
7120 Hurontario Street	Mammals	Little Brown Myotis	*Myotis lucifugus*	S3	END	END	END	BCI	Species at Risk
7120 Hurontario Street	Mammals	Northern Myotis	*Myotis septentrionalis*	S3	END	END	END	BCI	Species at Risk
7120 Hurontario Street	Mammals	Tricolored Bat	*Perimyotis subflavus*	S3?	END	END	END	BCI	Species at Risk
7120 Hurontario Street	Bird	Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Golden-winged Warbler	*Vermivora chrysoptera*	S4B	SC	THR	THR	eBird, OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	SC	SC	eBird, OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Purple Martin	*Progne subis*	S3S4B	No Status	No Status	No Status	eBird, OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR	THR	eBird, Natural Heritage Information Centre, OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	American Coot	*Fulica americana*	S3B,S4N	NAR	NAR	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Bald Eagle	*Haliaeetus leucocephalus*	S4	SC	NAR	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Black Tern	*Chlidonias niger*	S3B,S4M	SC	NAR	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Black-crowned Night-Heron	*Nycticorax nycticorax*	S3B,S2N,S4M	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Blue-winged Teal	*Spatula discors*	S3B,S4M	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Canada Warbler	*Cardellina canadensis*	S5B	SC	SC	THR	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Canvasback	*Aythya valisineria*	S1B,S3N,S4M	-	-	-	OBBA	Species of Conservation Concern

Site	Taxon	Common Name	Scientific Name	S-Rank (Note 1)	*Endangered Species Act* Status (Note 2)	Committee on the Status of Endangered Wildlife in Canada Status (Note 3)	*Species at Risk Act* Schedule 1 Status (Note 14	Source	Species at Risk / Species of Conservation Concern
7120 Hurontario Street	Bird	Caspian Tern	*Hydroprogne caspia*	S3B,S5M	NAR	NAR	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Common Gallinule	*Gallinula galeata*	S3B	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Fish Crow	*Corvus ossifragus*	S1B,S3N	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Great Black-backed Gull	*Larus marinus*	S1B,S4N	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Great Egret	*Ardea alba*	S2B,S3M	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Peregrine Falcon	*Falco peregrinus*	S4	SC	NAR	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Redhead	*Aythya americana*	S2B,S4N	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Red-necked Grebe	*Podiceps grisegena*	S3	NAR	NAR	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Ruddy Duck	*Oxyura jamaicensis*	S3B,S4N,S5M	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Tufted Titmouse	*Baeolophus bicolor*	S3	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Upland Sandpiper	*Bartramia longicauda*	S2B	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	White-eyed Vireo	*Vireo griseus*	S1B	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Bird	Wilson's Phalarope	*Phalaropus tricolor*	S2B,S4M	-	-	-	OBBA	Species of Conservation Concern
7120 Hurontario Street	Insects	Monarch	*Danaus plexippus*	S2N,S4B	SC	END	SC	OBA	Species of Conservation Concern
7120 Hurontario Street	Reptiles	Midland Painted Turtle	*Chrysemys picta marginata*	S4	-	SC	SC	ORAA	Species of Conservation Concern
7120 Hurontario Street	Reptiles	Snapping Turtle	*Chelydra serpentina*	S4	SC	SC	SC	ORAA	Species of Conservation Concern

Note 1: **S rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:

S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure—Common, widespread, and abundant in the nation or state/province.
SNR – Unranked—Province conservation status not yet assessed.
SU – Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note 2: ***Endangered Species Act* Status**: The *Endangered Species Act* 2007 protects species listed as Threatened and Endangered on the Species at Risk in Ontario List on provincial and private land. The Minister lists species on the Species at Risk in Ontario list based on recommendations from the Committee on the Status of Species at Risk in Ontario, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming Endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note 3: **Committee on the Status of Endangered Wildlife in Canada Status:** The Committee on the Status of Endangered Wildlife in Canada exists to provide Canadians and their governments with advice regarding the status of wildlife species that are nationally at risk of extinction or extirpation. Committee on the Status of Endangered Wildlife in Canada classifies Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012)
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Note 4: ***Species at Risk Act* Sched. 1 Status:** The *Species at Risk Act* protects and ensures the recovery of Species at Risk listed on Schedule 1 as Extirpated, Endangered and Threatened, and their critical habitats at a federal level. Schedule 1 of the *Species at Risk Act* provides the legal classification of Species at Risk as follows:

Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (*Species at Risk Act* Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (*Species at Risk Act* Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (*Species at Risk Act* Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (*Species at Risk Act* Registry, 2012).
Not At Risk (NAR) – a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

3.6.3.2 Field Investigations Results

Vegetation

Vegetation communities were limited due to the fragmented landscape resulting from human disturbance. Where accessible, AECOM staff delineated vegetation communities. The 7120 Hurontario Street snow storage site information is based on background review and aerial imagery interpretation. No on-site field visits were completed as this Study Area consisted of largely highly developed areas.

Incidental Wildlife

Incidental wildlife observations were not documented by AECOM Ecologists for this site. As per above, the 7120 Hurontario Street snow storage site information is based on background review and aerial imagery interpretation. No on-site field visits were completed as this Study Area consisted of largely highly developed areas.

Aquatic Habitat

As per above, the 7120 Hurontario Street snow storage site information is based on background review and aerial imagery interpretation.

3.6.3.3 Significant Wildlife Habitat Assessment

The Significant Wildlife Habitat Assessment for the Site 10 Snow Storage Area is presented in **Table 3-27**.

Table 3-27: Significant Wildlife Habitat Assessment Summary – Site 10

Site	Seasonal Concentration Areas	Rare Vegetation Communities or Specialized Habitats for Wildlife	Habitats for Species of Conservation Concern	Animal Movement Corridors
7120 Hurontario Street	■ None	■ None	■ Candidate Habitat for Monarch	■ None

3.6.3.4 Species at Risk Habitat Assessment

The Species at Risk Habitat Assessment and screening exercise for the Site 10 Snow Storage Area is presented in the supplemental **Natural Environment Memorandum for 7120 Hurontario Street** (**Appendix C**).

Potentially suitable Species at Risk habitat may be present for Eastern Meadowlark (*Sturnella magna*) within the agricultural field north of the proposed snow storage site,

as they are relatively insensitive to habitat patch size (Ministry of Natural Resources and Forestry, 2013); however, based on aerial imagery, the agricultural field appears to be regularly maintained and mowed such that it is unlikely to provide habitat for Eastern Meadowlark. It is unlikely that any of the remaining Species at Risk identified through desktop review are present within the Study Area. There is no potential for Species at Risk occurring within the proposed now storage site as it is entirely limited to within a parking lot.

3.6.4 Fluvial Geomorphological Assessment

Fluvial geomorphological reach characterization, in addition to Rapid Geomorphic Assessment, quantitative geomorphological data collection, erosion threshold assessment, and a meander belt width delineation was completed for this Study Area.

An offline stormwater pond is present east of the reach and a drainage tributary which appears to convey surface runoff from Derry Road outlets into the channel from the east bank by the most upstream outer meander of the reach.

There is an outlet pipe present along the left (east) bank approximately 50 metre upstream of where the tributary outlets (just upstream of the most upstream outer meander).

Dense riparian vegetation surrounds the channel which strengthens the channel banks and limits the erosion potential.

The Rapid Geomorphic Assessment completed found the channel to be in “Regime”, with no significant evidence of instability. Visual assessment of sediment in suspension was identified at the site during field reconnaissance. The calculated critical discharge for the bed material entrainment at Fletchers Creek, on average, is 1.23 m^3/s. This critical discharge value is less than 1/3 of the calculated bankfull discharge of 11.7 m^3/s. The meander belt width was completed using the mapping approach and is 130 metre with its extent is limited by the confining valley walls.

Based on the results of the fluvial geomorphic assessment, the following recommendations are made:

- Increases in flow to the watercourses from the snow melt should consider the erosion threshold conditions for the site along Hurontario Street. The erosion threshold provides targets for the drainage network. Increases in flow have the potential to result in channel instability and lead to morphological adjustment. Aggradation of fine sediment was found along the bed of Fletchers Creek and that increases in flow will help to alleviate this but may also lead to increased erosion rates. It is recommended that care is taken to

maintain vegetation cover along and within the watercourses in order to maintain the existing channel stability.

- The meander belt refers to the lateral extent of floodplain occupation by a meandering watercourse both now and into the future. Protecting the meander belt area from encroachment serves the dual purposes of enabling a continuity of natural channel processes and of protecting property and structures from erosion. To prevent, eliminate or minimize the risks to life and property caused by erosion hazards, it is recommended to maintain the meander belt boundary.

3.6.5 Socio-Economic Environment - Existing Land Use

The following summarizes the existing site use and description of the proposed location for development within the site boundaries:

- **Existing Site Use:** Site 10 is a Region of Peel-owned multi-use office complex, with multiple parking lots. The Site has surplus parking area and is currently being used as a temporary snow storage area.
- **Description of the Proposed Location for Development Within the Site Boundaries:** The northwest parking lot is proposed to be redeveloped for dual use; as a snow storage facility in winter and parking in the summer.

Future snow operations are not anticipated to conflict with existing and future site uses.

3.6.6 Stage 1 Archaeological Assessment

The **Stage 1 Archaeological Assessment** (**Appendix E**) consisted of background research into the archaeological land use history of the Study Area using documentary sources, historic maps, and satellite imagery indicated that the Study Area of 7120 Hurontario Street had potential for containing archaeological resources. In addition, a property inspection was conducted to better assess existing conditions within the Study Area and to confirm areas of disturbance and/or archaeological potential that may not be available in the satellite imagery. The Stage 1 property inspection visually confirmed that the Study Area had been previously disturbed, consisting of a gravel driveway, ditches, and culverts, major landscaping, an office building, parking lots and associated infrastructure installation.

Given the results of this assessment, AECOM makes the following recommendations:

- Due to the presence of extensive and deep land alterations evident across the study area, no further archaeological work is recommended.

3.6.7 Cultural Heritage – Preliminary Impact Assessment

No built heritage resources and/or cultural heritage landscapes have been identified within or adjacent to Site 10. Should the design for the proposed undertaking extend beyond the boundaries of the current site, then a qualified heritage professional should be retained to confirm impacts of the proposed work on the cultural heritage resources and assess if further mitigation is required.

3.6.8 Stormwater Management

Site 10 (7120 Hurontario Street) is located approximately 400 metre west of the Hurontario Street and Derry Road intersection in Mississauga, Ontario. The site is accessible by means of multiple entrances (via Derrycrest Drive, Kingsway Drive, and Hurontario Street). Approximately 1.52 hectares of land has been identified as a potentially suitable location for development of a snow storage facility, within the borders of Site 10. The identified land for development is situated on the northwest corner of the site over an existing extended parking lot which accommodates the adjacent regional office building. It is proposed that the parking lot be converted for a dual purpose – to serve as a snow melt facility in the winter and to remain an extended parking lot in the offseason for continued parking use. The site appears to drain via existing storm infrastructure along Derrycrest Drive towards a nearby stormwater management pond (located off of Maritz Drive, 500 metre southeast of the proposed development site).

4. Policy Context

4.1 Provincial Policy Statement

The 2024 Provincial Policy Statement came into effect on October 20, 2024, and replaces the previous Provincial Policy Statement (2020) and A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020). The 2024 Provincial Policy Statement provides streamlined single document with provincial policy direction on matters related to land use planning and development that affect communities, such as ensuring the appropriate infrastructure is planned or available to accommodate current and future needs.

Relevance to this study: The key chapters and associated sections of policies that have been considered includes:

- Chapter 3: Infrastructure and Facilities:
  - 3.1 General Policies for Infrastructure and Public Service Facilities
  - 3.6 Sewage, Water and Stormwater
- Chapter 4: Wise Use and Management of Resources
  - 4.1 Natural Heritage
  - 4.6 Cultural Heritage and Archaeology
- Chapter 5: Protecting Public Health and Safety
  - 5.1 General Policies for Natural and Human-Made Hazards
  - 5.2 Natural Hazards
- Chapter 6: Implementation and Interpretation
  - 6.2 Co-ordination

This study is consistent with the Provincial Policy Statement through the implementation of a co-ordinated, integrated and comprehensive approach to dealing with infrastructure in accordance with Policy 6.2.

There are no permits to be obtained under the Provincial Policy Statement for any of the proposed snow storage sites; however, mitigation measures and best management practices will reduce the likelihood of, or minimize effects on identified candidate Species of Conservation Concern.

4.2 Greenbelt Plan

The Greenbelt Plan (2017) provides policies that provide permanent protection to the agriculture land base and ecological features and function of the landscape from urbanization. It includes lands protected by the Niagara Escarpment Plan and the Oak Ridges Moraine Conservation Plan. The Plan contains land use designations that are divided into Protected Countryside lands and Urban River Valley lands.

The Natural Heritage System is a part of the Natural System within Protected Countryside lands. The Natural Heritage System protects ecologically sensitive and/or significant features and functions that provide connectivity throughout the Greenbelt. Where infrastructure crosses the Natural Heritage System, design and construction practices shall minimize negative impacts on and disturbance of features and functions of the Natural Heritage System and, where reasonable, maintain or improve connectivity.

Relevance to this study: The Region of Peel is situated within the designated Greenbelt Plan Area and as such, the Greenbelt Plan policies have been reviewed in relation to the snow storage sites. The northeast corner of the Johnston Sports Park proposed snow storage area overlaps with the Protected Countryside and Natural Heritage System. There are no permits to be obtained under the Greenbelt Act associated with any of the snow storage sites carried forward for conceptual design; however, mitigation measures and best management practices will reduce the likelihood of, or minimize effects on identified natural heritage features.

4.3 Peel Region Official Plan

The Region of Peel Official Plan (April 2022 Consolidation) is a long-term plan for managing Peel's growth and development.

Chapter 2 (The Natural Environment) contains policies with the objective to ensure a healthy, resilient and self-sustaining natural environment within Peel Region.

The Region of Peel established the Greenlands System (Section 2.14) which outlines policies for natural heritage areas within the region. The Greenlands System in Peel is divided into three categories of natural heritage areas, as follows: Core Areas, Natural Areas and Corridors, and Potential Natural Areas and Corridors.

Relevance to this study: The Peel Region Official Plan was considered in relation to the proposed snow storage sites.

The following snow storage sites are not located within policy areas, but are within proximity to the Regional Greenlands System (Regional Official Plan Figure 7):

- The West Brampton Reservoir and Pumping Station (Site 3) ecology study area is within 40 metre of Region of Peel Core Woodland and is more than 500 metre away from Region of Peel Natural Areas and Corridors Woodland.
- The Johnston Sports Park (Site 5) ecology study area is within 500 metre of Region of Peel Core Area and Natural Areas and Corridors Woodland.
- The Tullamore Reservoir and Pumping Station (Site 6) ecology study area is within 200 metre of Region of Peel Natural Areas and Corridors woodland.
- The Alloa Reservoir and Pumping Station (Site 9) ecology study area is within 330 metre of Region of Peel Core Area Woodland.

Section 2.7 of the Regional Official Plan contains policies for Source Water Protection. Refer to **Section 4.9** regarding an overview of the source protection mapping summary for the snow storage sites carried forward to conceptual design.

4.4 Town of Caledon Official Plan

Caledon's Official Plan (Consolidated April 2018) provides a framework of policies that govern land use in the Town.

The Town of Caledon's Ecosystem Framework (Section 3.2) builds on the Regional Greenland System and consists of the following components:

- Natural Core Areas – includes all woodland and wetland core areas, NEC areas, Life Science ANSIs, Environmentally Significant Areas, Species at Risk habitat and Significant Wildlife Habitat.
- Natural Corridors – includes core fishery resource areas and all valley and stream corridors.
- Supportive Natural Systems – includes all other woodland, wetland, fishery core systems, NEC protection areas, Earth Science ANSIs, potential Environmentally Significant Areas, all other wildlife habitat, groundwater and native soil systems.
- Natural Linkages – all other wetlands, woodlands, all NEC protection areas, Earth Science ANSIs and potential Environmentally Significant Areas, fishery resource areas, groundwater and native soil systems.

Relevance to this study: The snow storage sites at Johnston Sports Park (Site 5), Tullamore Reservoir and Pumping Station (Site 6), and Alloa Reservoir and Pumping

Station (Site 9) are located within the Town of Caledon. The Town of Caledon Official Plan was considered in the screening of these snow storage sites, in addition to the Johnston Sports Park Master Plan. There are no applicable policies for Ecosystem Planning and Management that would preclude the three snow sites in Caledon.

4.5 City of Brampton Official Plan

The City of Brampton Official Plan (Office Consolidation September 2020) guides how the City will grow and develop. The new Official Plan also referred to as the “Brampton Plan” is currently being updated and in its final draft form at the time of this publication.

Relevance to this study: The snow storage sites at the Highway 50 Carpool lot (Site 1), Beckett Sproule Reservoir and Pumping Station (Site 2), West Brampton Reservoir and Pumping Station (Site 3), and 220 Westcreek Boulevard Trunk Sewers and Feedermain (Site 8) are located within the City of Brampton. The City of Brampton Official Plan was considered in the screening of these snow storage sites.

4.6 City of Mississauga Official Plan

The City of Mississauga Official Plan (Office Consolidation March 3, 2023) guides how the City will grow and develop to 2031, including policy framework to address transportation, housing, culture and heritage, the environment, and the economy.

Relevance to this study: The snow storage sites at the Clarkson Wastewater Treatment Plant (Site 4), Future Hanlan West Reservoir Expansion (Site 7) and 7120 Hurontario Street (Site 10) are located within the City of Mississauga. The City of Mississauga Official Plan was considered in the screening of these snow storage sites.

4.7 Toronto and Region Conservation Authority Requirements

The Toronto and Region Conservation Authority is authorized by the Ontario Regulation 41/24: Prohibited Activities, Exemptions, and Permits passed under Section 28 of the Conservation Authorities Act (1990). This regulation establishes guidelines for the mapping of regulated areas within conservation authorities’ jurisdictions where development could be subject to flooding, erosion, or dynamic beaches, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features. This regulation identifies the processes to be followed to obtain exemptions and permits to allow for prohibited activities to occur within these regulated areas.

Relevance to this study: The following snow storage site Study Areas are within the Toronto and Region Conservation Regulation limits:

- Site 1: Highway 50 Carpool lot
- Site 5: Johnston Sports Park
- Site 6: Tullamore Reservoir and Pumping Station
- Site 8: 220 Westcreek Boulevard Trunk Sewers and Feedermain (Brampton, Ontario).
- Site 9: Alloa Reservoir and Pumping Station

A permit may be required for the validated sites in accordance with Ontario Regulation 41/24: Prohibited Activities, Exemptions, and Permits for sites carried forward to design. At this time, the locations identified for the potential snow storage areas within the identified properties do not overlap the regulation limits.

4.8 Credit Valley Conservation Requirements

The Credit Valley Conservation is authorized by Ontario Regulation 41/24: Prohibited Activities, Exemptions, and Permits passed under Section 28 of the Conservation Authorities Act (1990). This regulation establishes guidelines for the mapping of regulated areas within conservation authorities' jurisdictions where development could be subject to flooding, erosion, or dynamic beaches, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features. This regulation identifies the processes to be followed to obtain exemptions and permits to allow for prohibited activities to occur within these regulated areas. **Relevance to this study**: The following snow storage site study areas are within the Credit Valley Conservation Regulation limits:

- Site 3: West Brampton Reservoir and Pumping Station
- Site 9: Alloa Reservoir and Pumping Station
- Site 10: 7120 Hurontario Street

A permit may be required in accordance with Ontario Regulation 41/24: Prohibited Activities, Exemptions, and Permits for those sites carried forward to design. At this time, the locations identified for the potential snow storage areas within the identified properties do not overlap the regulation limits.

4.9 Source Protection Plan

Projects proposed within a Source Water Protection vulnerable area are required to consider policies in the applicable Source Protection Plan including their impact with respect to the project. A watershed-based Source Protection Plan contains policies to reduce existing and future threats to drinking water in order to safeguard human health through addressing activities that have the potential to impact municipal drinking water systems. The CTC Source Protection Plan applies to all three Source Protection Areas in the Region: Credit Valley, Toronto and Region and Central Lake Ontario.

There are four types of vulnerable areas within the Plan:

1. **Wellhead Protection Areas** – Wellhead protection areas are areas of land around a municipal well where land use activities have the greatest potential to affect the quality of water flowing into the well.

2. **Intake Protection Zones** – An intake protection zones is the area around a surface body of water where water is drawn in and conveyed for municipal drinking water

3. **Highly Vulnerable Aquifers** – Aquifers are underground layers of water that supply wells. Highly vulnerable aquifers are susceptible to contamination due to their proximity to the ground surface or where the types of materials in the ground around it are highly permeable.

4. **Significant Groundwater Recharge Areas** – Significant groundwater recharge areas are characterized as having porous soils (e.g., sand or gravel), which allow for water to easily seep into the ground and flow to an aquifer.

Relevance to this study: Table 4-1 below summarizes the policy / source protection areas as they relate to the selected snow storage sites.

Table 4-1: Source Protection Mapping Summary

Site (#)	Conservation Authority Regulation Areas	Wellhead Protection Area (Yes/No)	Intake Protection Zone (Yes/No)	Significant Groundwater Recharge Area (Yes/No)	Highly Vulnerable Aquifer (Yes/No)
1	Toronto and Region Conservation Authority	■ No	■ No	■ No – a significant groundwater recharge area is located to the east of the site on Highway 50 (Score 4) (Note 1)	■ No
3	Credit Valley Conservation	No	No	No	Yes (Score 6)
5	Toronto and Region Conservation Authority	No	No	Yes (Primarily Score 4 on the proposed site, Score 6 at the north and west sides of site)	Yes (Score 6 at the north and west sides of the site)
6	Toronto and Region Conservation Authority	No	No	No	No
9	Toronto and Region Conservation Authority / Credit Valley Conservation	No	No	No	No
10	Credit Valley Conservation	No	No	No	No

Note 1: The score given to a Significant Groundwater Recharge Area and / or Highly Vulnerable Aquifer are indicative of the vulnerability of the source protection area, based on a scale of 1 to 10 (from low to high vulnerability).

As per the above table, the snow storage sites for the West Brampton Reservoir and Pumping Station (Site 3) and Johnston Sports Park (Site 5) are located within Highly Vulnerable Aquifers with a vulnerability score of 6. The snow storage study area of Johnston Sports Park is also within a Significant Groundwater Recharge Area.

According to the CTC Source Protection Plan, the specific circumstance outlined in the "Tables of Drinking Water Threats" should be reviewed to determine the threat to drinking water. According to the most recent tables from 2018, snow storage is considered a low risk for chloride contamination. Although de-icing salt is of concern at each site, salts within snow collected from roadways are best managed at the source through salt optimization programs. Furthermore, the Transportation Association of Canada cites research that found "…much of the salt that is applied to pavement is not

retained in the snow that is removed to snow disposal facilities. This is because chlorides tend to leave stockpiled snow soon after it is plowed. Only a small percentage of the salt that is applied to a road may be reaching the snow disposal facility'.

4.10 Procedure B-4 Guidelines for Snow Disposal and De-icing Operations in Ontario

The Ministry of the Environment Guideline B-4 Snow Disposal and De-Icing Operations in Ontario (Ontario Ministry of the Environment, 1994) is provided to minimize the environmental impact of snow collection and disposal practices and de-icing operations. The Ministry identifies a number of criteria to determine the suitability of snow storage sites related to potential impacts on water, including accessibility, surface and sub-surface drainage, and impacts on neighbouring drinking water wells.

Relevance to this study: The B-4 guidelines were considered in the screening of snow storage sites.

5. Phase 1: Problem or Opportunity Statement

Phase 1 of the five-phase Municipal Class Environmental Assessment planning process requires the proponent of an undertaking (i.e., the Region) to first document factors leading to the conclusion that the improvement is needed, and to develop a clear statement of the identified problems or opportunities to be addressed. As such, the problem or opportunity statement is the main starting point in the undertaking of a Municipal Class Environmental Assessment and becomes the central theme and integrating element of the Project. It also assists in setting the scope of the project.

The following problem or opportunity statement has been developed for this Municipal Class Environmental Assessment study:

Problem

- Over the winter, snow accumulates on the side of roads as plows clear the snow off the roadways. As the banks get higher, too much snow can become a safety issue by obstructing driver views and hindering pedestrian passage. In recent years, infrastructure enhancements to improve walkability, cycling and other modes of travel have reduced the areas where snow can be placed within built environments.
- Road Operations monitors snow accumulations and periodically removes the accumulated snow piles within the road right of ways. The removed snow needs to be taken somewhere to melt in an environmentally responsible way as it may contain road contaminants such as salt, oil, grease, heavy metals and garbage.
- Identifying appropriate snow storage sites has become an increasing challenge due to population growth and environmental disposal concerns. This issue may worsen due to the impacts of climate change. Many of the traditional locations used for storing snow are becoming unavailable or inappropriate for use.

Opportunity

- Strategically placed and well-designed snow disposal facilities are required in order to effectively store and manage the melt of the snow while mitigating against undesirable environmental and operational impacts.
- Through the Municipal Class Environmental Assessment planning and consultation process, a long list of snow storage sites will be screened to identify a short list of recommended snow storage sites. The Region will determine the phased implementation of the recommended sites complete with detailed design, construction and monitoring.

6. Phase 2: Alternative Solutions

6.1 Snow Storage Sites

Phase 2 of the Municipal Class Environmental Assessment process focused on evaluating the 12 snow storage sites (**Figure 1-1**) as per **Table 6-1** throughout the Region and selecting the validated sites to go forward to design and construction.

Table 6-1: Snow Storage Sites

Site	Location	Municipality	Validated Site
1	Highway 50 Carpool Lot	Caledon	Yes
2	Beckett Sproule Reservoir and Pumping Station	Brampton	No
3	West Brampton Reservoir and Pumping Station	Brampton	Yes
4	Clarkson Wastewater Treatment Plant	Mississauga	No
5	Johnston Sports Park	Caledon	Yes
6	Tullamore Reservoir and Pumping Station	Caledon	Yes
7	Future Hanlan West Reservoir expansion site	Mississauga	No
8	220 Westcreek Boulevard Trunk Sewers and Feedermain site	Brampton	No
9	Alloa Reservoir and Pumping Station	Caledon	Yes
10	7120 Hurontario Street	Mississauga	Yes
11	7771 Mayfield Road	Brampton	No
12	12052 The Gore Road, 7472 and 7480 Mayfield Road	Caledon	No

6.2 Site Evaluation Criteria

Each snow storage site was evaluated and screened based on their ability to address the Study's purpose and the criteria below in **Table 6-2**. The Ministry of Environment B4 Guidelines have also been considered in the site selection and screening process.

Table 6-2: Criteria for Screening Snow Storage Sites

Component	Criteria	Considerations
Land Use	■ Property ownership, including ease of acquisition and opportunities to share facilities ■ Site availability considering existing and planned land use and infrastructure	■ Preference for Regionally owned land or willing municipal host ■ Preference for site to be available within 5 years and be operable for a minimum of 10 years
Technical Environment	■ Proximity to Regional Roads and area to be serviced ■ Feasibility of implementation (available space, accessibility, constructability) ■ Existing drainage network or suitable outlet location ■ Available space to incorporate stormwater management for feasible snow storage area	■ Amount of total road kilometres for Regional Roads within 10 kilometres service area. Preference given for a minimum 375 kilometres capture radius ■ Preference for minimum site size of approximately 1.5 hectares and good road access with straight forward approvals ■ Preference for well defined existing drainage network with capacity for treatment
Natural Environment	■ Ecological Natural Environment Constraints ■ Stormwater Management (SWM) complexity – Low Impact Development suitability and suitable receiver (e.g., groundwater table, permeability, potential impacts to watercourse – chlorides) ■ Impact to stream form and function	■ Considerations include: ■ Potential effects from existing infrastructure (e.g., fragmentation, edge effects, noise and disturbance of road or train traffic) ■ Potential effect on terrestrial and aquatic natural heritage features ■ Potential effect on Species at Risk and their habitats ■ Potential for Environmental permits/authorizations requirements ■ Site should allow for straightforward and approvable stormwater management approaches, including salt and salt mitigation strategies ■ Preference is to at minimum, maintain the current channel processes and limit adverse impacts to channel morphology
Socio-Cultural Environment	■ Disruption to existing community during construction and operation of sites ■ Potential impacts to cultural heritage resources	■ Traffic, noise, and dust impacts ■ Consideration for cultural heritage resources, which include archaeological resources, built heritage landscapes and cultural heritage landscapes
Cost	■ Capital Cost, including perceived remediation costs as well as operation and maintenance	■ Preference to avoid purchase of lands and to have to enter into any agreements for access. All costs will be reviewed and confirmed at detailed design for the preferred snow storage sites.

6.3 Evaluation of Potential Snow Storage Sites

A total of 12 snow storage sites were identified and screened. **Table 6-3** presents the screening exercise completed for each snow storage site, which includes a description and associated figure reference along with the advantages and disadvantages for each site using the criteria above. The table also notes whether the snow storage site is validated and recommended to move forward to detailed design and eventual construction. The results of the supporting studies and feedback from agencies and stakeholders have been considered and incorporated into the screening, where applicable.

The evaluation and recommendations were reviewed and updated following the Public Information Centre based on additional information and feedback regarding the potential snow storage sites. The updated recommendations following the Public Information Centre included screening out Site 11 (7771 Mayfield Road) and Site 12 (12052 The Gore Road, 7472 and 7480 Mayfield Road) from the recommended sites for conceptual design.

Table 6-3: Evaluation of Potential Snow Storage Sites

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 1: Highway 50 Carpool Lot (Brampton) **Figure 1-2**	■ Existing Use: No existing uses on site. The land identified for potential snow storage is situated adjacent to the south side of the existing carpool lot and is primarily grass covered. ■ Future Use: – Potential expansion of the existing carpool lot. – Related Environmental Assessment: Highway 427 Industrial Secondary Plan (Area 47). ■ Conservation Authority: Toronto and Region Conservation Authority. ■ Regional Roads within 10 kilometres: 267 lane-kilometre. ■ Primary and Secondary Snow Removal within 10 kilometres: 10 kilometres.	**Land Use** ■ Regionally owned site. ■ Site potentially available – consideration for potential expansion of existing carpool lot. **Technical** ■ Open site for constructability. ■ Good road access. ■ Site has existing infrastructure that can be leveraged. ■ Well defined existing drainage network with a suitable outlet and onsite capacity to satisfy stormwater management treatment requirements. **Natural Environment** ■ Potential Snow Storage Area is not located within Natural Designated Features. ■ No Species at Risk with medium probability of occurring within the Study Area. ■ No sensitive features adjacent to this site are anticipated to be affected by increased water inputs from snow melt. ■ No fish habitat as defined under the Fisheries Act within the property boundaries. ■ Site allows for straightforward and approvable stormwater management approaches and provides opportunity to use stormwater servicing for Highway 50 corridor. ■ Secondary Plan Area 47 Environmental Assessment Master Environmental Servicing Plan identifies a Stormwater Management Facility to the south, which can potentially be used for snow storage stormwater management. If used, would need to demonstrate no impact to the Secondary Plan Area 47 Stormwater Management Facility. ■ No visible watercourses that are impacted (fluvial geomorphic assessment was not completed for this site). **Socio-Cultural** ■ Avoids disruptions to residential areas. ■ There is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. ■ No Built Heritage Resources/Cultural Heritage Landscapes within or adjacent to the site. **Cost** ■ Capital costs anticipated to be proportional to the size of the snow storage area, similar to other sites. Avoids purchase of lands and the need to have to enter into any agreements for access. The preliminary estimated cost is $1,409,793	**Land Use** ■ Need to consider daily commuter usage times of carpool lot. **Technical** ■ Less than 375 kilometres regional road within 10 kilometres. ■ Site size is under 1.5 hectares (approximately 0.4 hectares). ■ Site activities would have to be controlled during peak daily commuter usage times of carpool lot. **Natural Environment** ■ Disturbance to vegetation. Proposed Snow Storage Area consists entirely of CUM1-1 (Dry – Moist Old Field Meadow) community. ■ Incidental wildlife observed: Red-winged Blackbird *(Agelaius* phoeniceus*)*. ■ Candidate habitat for Monarch (Species of conservation concern). **Socio-Cultural** ■ Potential noise disruption to the adjacent potential industrial/commercial development. ■ There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams. ■ If the Highway 50 Carpool Lot Study Area cannot be avoided as per the Stage 1 Archaeological Assessment recommendations, then it will require Stage 2 test pit survey at 5 metre intervals. **Cost** ■ No unreasonable costs anticipated at this time. The preliminary estimated cost is $1,409,793	✓ Carried Forward **Good access and existing infrastructure that can be leveraged**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 2: Beckett Sproule Reservoir and Pumping Station (Brampton) Figure 1-3	■ Existing Use: Vacant space within Pumping Station property and temporary contractor's laydown area. ■ Future Use: – South part of property will be used for staging of pumping station expansion. Future Reservoir (post 2031) to be constructed. – Active construction on site is anticipated to be completed by 2030. Currently the contractor's laydown area. ■ Conservation Authority: Toronto and Region Conservation Authority ■ Regional Roads within 10 kilometres: 728 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 128 kilometres	**Land Use** ■ Regionally owned site. **Technical** ■ Over 375 kilometres regional road within 10 kilometres. Highest length of regional roads within 10 kilometres in relation to other sites. ■ Meets minimum site size. ■ Open site for constructability. ■ Well defined existing drainage network with capacity for treatment and adequate space to site stormwater control infrastructure. **Natural Environment** ■ Lower potential to encounter sensitive natural heritage features (site was not formally investigated). ■ No visible watercourses that are impacted (fluvial geomorphic assessment was not completed for this site). **Socio-Cultural** ■ Avoids disruptions to residential areas as existing surrounding land use is light industrial. **Cost** ■ Capital costs anticipated to be proportional to the size of the snow storage area, similar to other sites. Avoids purchase of lands and the need to have to enter into any agreements for access. As the site was screened out, a detailed cost breakdown was not developed.	**Land Use** ■ Pumping Station expansion planned; therefore, site would not be immediately available. ■ Given short term development plans (staging until 2026), and long-term plans (reservoir expansion approximately 2041), site would only be available as a snow storage facility for 15 years. ■ Potential site conflict with existing critical infrastructure at the site, including underground infrastructure. **Technical** ■ Separate entrance may need to be constructed. **Natural Environment** ■ Potential drainage conflict on site with Ministry of Transportation corridor (Highway 410); suitable outlet may be difficult to obtain. ■ Chlorides/salt contamination of soil is a concern given future use as a reservoir and future infrastructure planned. ■ Site would likely require traditional approaches to snow storage as opposed to Low Impact Development (onsite infiltration/retention) approaches to retard the movement of chlorides. ■ Concrete base may be required in place of asphalt, which is generally more porous to chloride infiltration. Additional mitigation measures (e.g., ethylene propylene diene monomer (EPDM) liners) may also be needed to prevent chlorides from impacting the site. **Socio-Cultural** ■ Potential for Built Heritage Resources/Cultural Heritage Landscapes within or adjacent to site (site was not formally investigated). ■ Potential for further archaeological assessments (site was not formally investigated). **Cost** ■ No unreasonable costs anticipated. As the site was screened out, a detailed cost breakdown was not developed.	**X** Screened Out **Conflicting future site development plans**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 3: West Brampton Reservoir and Pumping (Brampton) Figure 1-4	■ Existing Use: West Brampton Reservoir and Pumping Station. The land identified for potential snow storage development is situated north of the existing reservoir and is surrounded on the north, east, and west by an existing berm / spoil pile. ■ Future Use: Future Reservoir (post 2031) to be constructed, north section of the property. The West Brampton Reservoir and Pumping Station site is also being reviewed as a possible location to accommodate Fire Station 216. ■ Conservation Authority: Credit Valley Conservation ■ Regional Roads within 10 kilometres: 402 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 68 kilometres	**Land Use** ■ Regionally owned site. **Technical** ■ Over 375 kilometres regional road within 10 kilometres. ■ Meets minimum site size. ■ Open site with sufficient space for constructability. ■ Existing stormwater management infrastructure on site could be enhanced to service the needs of a snow storage facility. **Natural Environment** ■ Potential Snow Storage Area is not located within Natural Designated Features. ■ Potential Snow Storage Area is located outside of Candidate Bat Maternity Colonies (FOD2-3) located along the southern border the site property. ■ Watercourse that is mapped through this site is not regulated by Credit Valley Conservation based on their regulated floodplain limits. ■ Fluvial geomorphic assessment was conducted at Bovaird Drive where the channel was only slightly defined and approximately 1 metre wide. No erosion was observed and the artificial alteration to the channels' planform which has taken place is likely due to agricultural activities in the vicinity. Future detailed assessments are recommended for the watercourse adjacent to the site. **Socio-Cultural** ■ Avoids disruptions to residential areas. ■ There is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. ■ No Built Heritage Resources/Cultural Heritage Landscapes within or adjacent to site. ■ Site was previously assessed and has been cleared of further archaeological concerns. **Cost** ■ Capital costs anticipated to be proportional to the size of the snow storage area, similar to other sites. Avoids purchase of lands and to have to enter into any agreements for access. The estimate cost is $2,337,628	**Land Use** ■ This is the site of future reservoir expansion. Use as a snow storage site would be limited to an estimated 20 years given future development plan for a reservoir. ■ Potential conflict with Heritage Heights Secondary Plan ■ Site along entrance maybe in conflict with future feedermain/watermains. **Technical** ■ Poor grading on site would require extensive re-grading to accommodate snow storage. ■ Potential conflict with existing critical infrastructure at the site ■ Site security will need to be addressed. ■ Existing headwater stream and unclassified wetland area immediately downstream/adjacent to the site. Additional stormwater management considerations may apply. **Natural Environment** ■ The proposed storage area is adjacent to the Provincially Significant Huttonville Creek and Area Wetland Complex that may be impacted from increased water inputs from snow melt. Mitigation measures will be required. ■ Disturbance to vegetation. Proposed Snow Storage Area consists entirely of CUM1-1 (Dry – Moist Old Field Meadow) community. ■ One intermittent watercourse inside property boundary ■ May provide seasonal fish habitat. Fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries of the site. However, the proposed Snow Storage Area is not located on or immediately adjacent to a watercourse (i.e., within the regulated floodplain limits). ■ Candidate habitat for Monarch (Species of Conservation Concern). ■ Incidental wildlife observed included Canada Goose (*Branta canadensis*). ■ One Candidate Amphibian Movement Corridors – Amphibians may travel between breeding habitats located outside of the Potential Snow Storage Area. ■ The Species at Risk with medium probability of occurring within the Site 3 Study Area include: Bobolink and Eastern meadowlark. ■ Site is within Highly Vulnerable Aquifer area. **Socio-Cultural** ■ There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams. Further, Mississauga Road is proposed to be widened in the future to 6 lanes. There will be a median island in front of the intersection at the West Brampton Reservoir and Pumping Station, restricting movement to right in/right out. ■ The West Brampton Reservoir and Pumping Station site is being reviewed as a possible location for Fire Station 216. **Cost** ■ No unreasonable costs anticipated at this time. The estimate cost is $2,337,628	✓ Carried Forward **Proximity to the serviced areas and the available space**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 4: Clarkson Wastewater Treatment Plant (Mississauga) **Figure 1-5**	■ Existing Use: Vacant area within Clarkson Wastewater Treatment Plant property ■ Future Use: Potential Wastewater Treatment Plant Expansion as per Environmental Assessment: Clarkson Wastewater Treatment Plant Schedule C ■ Conservation Authority: Credit Valley Conservation ■ Regional Roads within 10 kilometres: 81 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 6 kilometres	**Land Use** ■ Regionally owned site. **Technical** ■ Meets minimum site size. ■ Open space in southwest corner of property. ■ Opportunity to enter/exit off of a secondary road. ■ Well defined existing drainage network with capacity to receive drainage from a potential snow storage location. **Natural Environment** ■ None identified (site was not formally investigated). ■ No visible watercourses that are impacted (fluvial geomorphic assessment was not completed for this site). **Socio-Cultural** ■ Avoids disruptions to residential areas. **Cost** ■ Cost is considered a disadvantage relative to other similar sites. As the site was screened out, a detailed cost breakdown was not developed.	**Land Use** ■ Potential conflict with future land use – open space areas are proposed for Wastewater Treatment Plant expansion as per recently completed Environmental Assessment. ■ The site is the location of the former Brampton Wastewater Treatment Plant. The condition of this site (brownfield) would likely require it to be capped as part of any future land use. This area may also be used for Wastewater Treatment Plant expansion construction staging. **Technical** ■ Less than 375 kilometres regional road within 10 kilometres ■ Potential conflict with existing critical infrastructure at the site ■ Site would require regrading. ■ Future land use / expansion of the Clarkson Wastewater Treatment Plant severely limits long-terms stormwater management infrastructure servicing potential. **Natural Environment** ■ Potential to encounter sensitive natural heritage features (site was not formally investigated). ■ Significant bird habitat in the southwest corner of the site ■ Appears to be a brownfield site (former Wastewater Treatment Plant) therefore, there is a potential for contamination. ■ Within Highly Vulnerable Aquifer area. **Socio-Cultural** ■ Proximity to Lakeside Park. ■ Potential for Built Heritage Resources/Cultural Heritage Landscapes within or adjacent to site (site was not formally investigated). ■ Potential for further archaeological assessments (site was not formally investigated). **Cost** ■ Capital costs anticipated to be higher than similar sites due to site security issues as well as potential for surplus material generation and off-site disposal. As the site was screened out, a detailed cost breakdown was not developed.	**X** Screened Out **As a result of the status of a separate site Environmental Assessment, proposed future site build-out, low lane-kilometres of Regional roads in the site's vicinity, and concerns regarding site contamination, this site was removed from further consideration**.

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 5: Johnston Sports Park (Caledon) **Figure 1-6**	■ Existing Use: Open Park Space. The section of land that has been identified for snow storage site development is currently planned to be a parking lot, as per the Town of Caledon/Johnston Sports Park Master Plan and should continue to act as such in the spring/summer months. ■ Future Use: A portion of the property is being sold by the Town of Caledon. This should not impact the potential of the site for snow storage. ■ Conservation Authority: Toronto and Region Conservation Authority limits are located nearby the identified section of land, but do not overlap the site. ■ Regional Roads within 10 kilometres: 301 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 0 kilometres	**Land Use** ■ Potential for shared joint use snow storage facility. ■ Winter operation may not be in conflict with existing use (recreation area/sports park) or the proposed Johnston Sports Park Master Plan. ■ There are opportunities to design a snow storage area which could also be used as a parking lot during warmer months, increase utility of the site year-round. **Technical** ■ Meets minimum site size. ■ Open site for constructability in southeast corner. ■ Opportunity to enter/exit off of a secondary road. ■ Well defined existing drainage network with capacity for treatment. Existing stormwater management infrastructure on site could be enlarged/improved to meet the needs of a potential snow storage facility. **Natural Environment** ■ Potential Snow Storage Area is not located within Natural Designated Features. ■ No disturbance to vegetation. Potential Snow Storage Area is located entirely within a parking lot that does not provide habitat for Species at Risk and Species of Conservation Concern. ■ Good SWM flexibility, anticipated less complexity compared to other sites. Potential to reconfigure existing Stormwater Management Facility. **Socio-Cultural** ■ There is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. ■ No direct impacts to Built Heritage Resources/Cultural Heritage Landscapes, however potential for indirect impacts as per the site's disadvantages. ■ Site was previously assessed and has been cleared of further archaeological concerns. **Cost** ■ Capital costs anticipated to be lower than similar sites due to partial development of existing site, including stormwater management; however, the Region does not own the site and will require an agreement with the Town of Caledon. The preliminary estimated cost is $1,225,293.	**Land Use** ■ Municipally owned. **Technical** ■ Less than 375 kilometres regional road within 10 kilometres. ■ The site straddles a watershed divide, which could complicate design and permitting requirements. ■ Outlet elevation limits depth of Low Impact Development for stormwater management **Natural Environment** ■ Potential for contributing Redside Dace habitat within Lindsay Creek as occupied reaches are confirmed approximately 2 kilometres downstream. Ministry of the Environment, Conservation and Parks could consider the reach located within the property as "contributing habitat" under the *Endangered Species Act*. This habitat may be impacted from melt water entering the watercourse. Mitigation measures will be required. ■ Within 500 metre of Region of Peel Core Area and Natural Areas and Corridors Woodland. ■ One permanent watercourse inside property boundary. ■ Fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries for Johnston Sports Park (Site 5). However, this Snow Storage Area is not located on or immediately adjacent to watercourse (i.e., within the regulated floodplain limits). ■ Majority of the site falls within a Significant Groundwater Recharge Area. ■ Portions of the site fall within a Highly Vulnerable Aquifer area. ■ Fluvial geomorphic assessment findings indicate that the increases in flow may have the potential to result in channel instability and lead to morphological adjustment. The Rapid Geomorphic Assessment completed found that the channel is in a "Transitional or Stressed" condition. **Socio-Cultural** ■ Proximity to some single-family residences. ■ There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams. ■ Potential indirect impact to Built Heritage Resource/Cultural Heritage Landscape 1 (6907 King Street, Caledon) and Built Heritage Resource/Cultural Heritage Landscape 2 (11416 Centreville Creek Road, Caledon) due to vibration. **Cost** ■ Land purchase or access agreement will be required. The preliminary estimated cost is $1,225,293 assuming an access agreement.	✓ Carried Forward **Proximity to the serviced areas and the available space. This site is proposed to be joint use and in line with the proposed Johnston Sports Park Master Plan**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 6: Tullamore Reservoir and Pumping Station (Caledon) **Figure 1-7**	■ Existing Use: Vacant area within Tullamore Reservoir and Pumping Station property. The land identified for development is situated adjacent to the bulk water station at the north end of the site and is primarily flat and grass covered. ■ Future Use: The water storage/pumping facility will need to be expanded in the future. Future construction to include additional reservoir cells and pumping station expansion. ■ Feasibility study of site completed in 2021. ■ Conservation Authority: Toronto and Region Conservation Authority ■ Regional Roads within 10 kilometres: 473 lane-kilometres. ■ Primary and Secondary Snow Removal within 10 kilometres: 30 kilometres	**Land Use** ■ Regionally owned site. ■ Minimal disturbance to reservoir operations and would increase utility of the site year-round. **Technical** ■ Over 375 kilometres regional road within 10 kilometres. ■ Meets minimum site size. ■ Open site for constructability in by bulk water dispensing station. ■ Good access with existing separate entrance. ■ Site has existing infrastructure that can be leveraged. ■ Separate Feasibility study completed in 2021 provided the presence of adequate water service at the street, and that the closest sanitary sewer connection is almost a kilometre from the site. ■ Well defined existing drainage network with capacity for treatment. Sufficient space for the implementation of stormwater management infrastructure. **Natural Environment** ■ Potential Snow Storage Area is not located within Natural Designated Features. ■ Proposed Snow Storage Area consists of manicured lawn. ■ Drainage from a proposed snow storage location would need to be routed to the east, as a future reservoir would be sited to the west of the proposed snow storage location. **Socio-Cultural** ■ There is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. ■ No direct or indirect impacts to Built Heritage Resources/Cultural Heritage Landscapes. ■ Portion of site was previously assessed and has been cleared of further archaeological concerns; however, portion of the property requires Stage 2 test pit survey at 5 metre intervals if the identified area cannot be avoided. **Cost** ■ Capital costs anticipated to be proportional to the size of the snow storage area, similar to the other sites. Avoids purchase of lands and to have to enter into any agreements for access. The preliminary estimated cost is $1,374,859.	**Land Use** ■ Potential conflict with future off leash facility. **Technical** ■ Separate Feasibility study completed in 2021 indicated that there is lack of storm sewer infrastructure for the site. ■ Potential conflict with existing critical infrastructure at the site. ■ Outlet elevation limits depth of Low Impact Development for stormwater management **Natural Environment** ■ Habitat for Redside Dace is located within the property boundaries. A meander belt assessment will be required to confirm the full extent of the habitat as regulated under the *Endangered Species Act* (i.e., meander belt plus 30 metre) to confirm whether regulated habitat is located within or adjacent to the storage area. Salt management will be essential for this site to prevent salt ladened runoff from entering Salt Creek. ■ One permanent watercourse inside property boundary. ■ Fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries for Site 6 (Tullamore Reservoir and Pumping Station). However, this Snow Storage Area is not located on or immediately adjacent to watercourse (i.e., within the regulated floodplain limits). ■ Incidental wildlife observations included American Crow, Killdeer, and Mourning Dove ■ Fluvial geomorphic assessment findings indicate that the increases in flow may have the potential to result in channel instability and lead to morphological adjustment. The Rapid Geomorphic Assessment completed determined the channel to be in “Regime” or stable. Minimal evidence of erosion was found within this reach. **Socio-Cultural** ■ There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams. ■ Proximity to some single-family residences. **Cost** ■ No unreasonable costs anticipated at this time. The preliminary estimated cost is $1,374,859.	✓ Carried Forward **Good access and existing infrastructure that can be leveraged**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 7: Future Hanlan Reservoir Expansion (Mississauga) **Figure 1-8**	■ Existing Use: Vacant land ■ Future Use: Hanlan Reservoir Expansion (post 2031) ■ Conservation Authority: Toronto and Region Conservation Authority ■ Regional Roads within 10 kilometres: 583 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 108 kilometres	**Land Use** ■ Regionally owned site **Technical** ■ Over 375 kilometres regional road within 10 kilometres. ■ Meets minimum site size. ■ Open space for constructability. ■ Opportunity to enter/exit from a secondary road. **Natural Environment** ■ Current site is degraded and colonized with phragmites. Low-impact drainage development may improve environmental conditions (site was not formally investigated). ■ No visible watercourses that are impacted (fluvial geomorphic assessment was not completed for this site). **Socio-Cultural** ■ Avoids disruptions to residential areas. ■ In an industrial area – fewer concerns about traffic impacts. **Cost** ■ Cost is considered a disadvantage relative to other similar sites. As the site was screened out, a detailed cost breakdown was not developed.	**Land Use** ■ Separate Feasibility Study completed. Potential conflict with future uses, which may include a training facility, storage facility, and pumping station. A potential training facility would likely be built in the near-term, with other potential uses planned beyond 2041. **Technical** ■ Site access concerns along Britannia Rd East (overgrown) with a dense thicket of large trees. Possible access off Britannia Road via a regulated area, or entry through private property. ■ Site security will be to be addressed. ■ Proximity to highways would require co-ordination with the MTO. ■ Drainage outlet access complicated by MTO corridor and onsite environmental features. **Natural Environment** ■ Proximity to sensitive natural heritage features, including unevaluated wetland located along the northwest of the property (site was not formally investigated). ■ Very wet and potential drainage conflict with MTO corridor (Highway 410 and 403); suitable outlet may be difficult to obtain. **Socio-Cultural** ■ Potential for Built Heritage Resources/Cultural Heritage Landscapes within or adjacent to site (site was not formally investigated). ■ Potential for further archaeological assessments (site was not formally investigated). **Cost** ■ Capital costs anticipated to be higher than other sites due to presence of unevaluated wetland on the site and access to potential storage areas. As the site was screened out, a detailed cost breakdown was not developed.	**X** Screened Out **Drainage and site access issues**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 8: 220 Westcreek Trunk Sewers and Feedermain (Brampton) **Figure 1-9**	■ Existing Use: Former Brampton Wastewater Treatment Plant Site. ■ Future Use: – Related Environmental Assessment: Etobicoke Creek Trunk Sewer Improvements and Upgrades Schedule C (completed). Design and construction will follow. – This area will be used as the main shaft for the tunneling works. ■ Conservation Authority: Toronto and Region Conservation Authority ■ Regional Roads within 10 kilometres: 704 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 132 kilometres	**Land Use** ■ Regionally owned site. ■ Does not appear to be conflicting land uses. ■ Alternative beneficial uses by the Region are likely limited, therefore snow storage may be the best use of the property. **Technical** ■ Over 375 kilometres regional road within 10 kilometres. ■ Meets minimum site size. ■ Open space for constructability. ■ Good access as existing road through site may be re-utilized. ■ Well defined existing drainage network with capacity for treatment. **Natural Environment** ■ None identified (site was not formally investigated). **Socio-Cultural** ■ Avoids disruptions to residential areas. **Cost** ■ Cost is considered a disadvantage relative to other similar sites. As the site was screened out, a detailed cost breakdown was not developed.	**Land Use** ■ Appears to be a brownfield site (former Wastewater Treatment Plant) with potential for contamination. ■ The condition of this site would likely require it to be capped as part of any future land use. **Technical** ■ Proximity to highways would require co-ordination with the MTO. ■ This site would likely be used for staging during construction of the proposed trunk sewer. ■ Situated partially within Toronto and Region Conservation Authority Regulated Limits, which will require a permit. **Natural Environment** ■ Proximity to sensitive natural heritage features and the majority of site falls within Toronto and Region Conservation Authority Regulated Area. ■ The site is located just north of Fletcher's Creek. Toronto and Region Conservation Authority staff noted that tree plantings and wetland restoration works have been completed in the vicinity, and the City of Brampton has trail and restoration plans in the vicinity. ■ Potential drainage conflict with MTO corridor (Highway 410 and 403); suitable outlet may be difficult to obtain. ■ Watercourse on site that may be impacted (fluvial geomorphic assessment not completed for this site to confirm potential impacts). **Socio-Cultural** ■ Potential for Built Heritage Resources/Cultural Heritage Landscapes within or adjacent to site (site was not formally investigated). ■ Potential for further archaeological assessments (site was not formally investigated). **Cost** ■ Capital costs anticipated to be significantly higher than other sites as the site appears to be a brownfield site with potential for contamination from previous operations. As the site was screened out, a detailed cost breakdown was not developed.	**X** Screened Out **Technical constraints**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 9: Alloa Reservoir and Pumping Station (Caledon) **Figure 1-10**	■ Existing Use: Vacant area within Alloa Reservoir and Pumping Station property. The identified land for development is situated on the southeast corner of the site. ■ Future Use: – Mayfield Road Environmental Assessment from Chinguacousy Road to Winston Churchill Boulevard. Widening is proposed as part of the improvements. – Future Reservoir (post 2031) to be constructed adjacent to site. – Future feedermains to and from the facility to be constructed. ■ A future subdivision development is planned for the lands east of the candidate location identified for possible snow storage facility development. ■ Conservation Authority: Toronto and Region Conservation Authority (North); Credit Valley Conservation (South) ■ Regional Roads within 10 kilometres: 287 lane-kilometres. ■ Primary and Secondary Snow Removal within 10 kilometres: 26 kilometres.	**Land Use** ■ Regionally owned site. ■ Adjacent school to the west (Malala Yousafzai Public School) will be closing. The Town of Caledon is considering purchasing the property for a Works Yard, therefore there is a possible joint use opportunity. ■ The adjacent school has a large private septic system which would need to be considered. **Technical** ■ Meets minimum site size. ■ Open site for constructability in southern area. ■ Good road access with opportunity to enter/exit off Mayfield Road. ■ Site has existing infrastructure that can be leveraged. ■ Well defined existing drainage network with capacity for treatment. **Natural Environment** ■ Potential Snow Storage Area is not located within Natural Designated Features. ■ The proposed snow storage area consists of manicured lawn and there is low potential for Species at Risk habitat or Significant Wildlife Habitat. There are core woodlands and Potential Natural Areas and Corridors in the vicinity but are unlikely to be impacted from increased water inputs from snow melt as they are more than 300 metre away. ■ No incidental wildlife was observed on site. ■ Fluvial geomorphic assessment findings show no evidence of erosion was observed and the artificial alteration to the channels' planform which has taken place is likely due to agricultural activities in the vicinity. Future detailed assessment is recommended when permission to enter is granted as no field data was collected to complete the meander belt width assessment. **Socio-Cultural** ■ There is no identifiable conflict with pedestrians at the site access/egress points since the snow removal truck routes do not coincide with the pedestrian network. ■ No direct or indirect impacts to Built Heritage Resources/Cultural Heritage Landscapes, including BHR/CHL 6 (12240 Creditview Road). ■ Site was previously assessed and has been cleared of further archaeological concerns. **Cost** ■ Capital costs anticipated to be proportional to the size of the snow storage area, similar to other sites. The preliminary cost estimate is $1,036,538.	**Land Use** ■ Peel is in preliminary discussions with Caledon to potentially build a dog park north of the bulk water dispensing station, although potential construction would be an estimated 10 years away, with Caledon to further determine whether there would be significant use by residents. ■ To the east, lands are part of the Settlement Area Boundary Expansion (SABE) - lands which have been preliminarily identified for future development - although Official Plans have not been finalized and are outside of secondary plan areas. The lands may be developed in the future. **Technical** ■ Less than 375 kilometres regional road within 10 kilometres. ■ Potential conflict with existing critical infrastructure at the site. ■ Minor space constraints which may impact the ability to site an appropriately sized stormwater management facility. **Natural Environment** ■ Within 330 metre of Region of Peel Core Area Woodland. ■ One permanent watercourse outside property boundary. ■ Fish habitat as defined under the *Fisheries Act* was identified within the Property Boundaries for Site 9 (Alloa Reservoir and Pumping Station). However, the Snow Storage Area is not located on or immediately adjacent to watercourse (i.e., within the regulated floodplain limits). **Socio-Cultural** ■ There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams. ■ Proximity to residential area (noise). **Cost** ■ No unreasonable costs anticipated at this time. The preliminary cost estimate is $1,036,538.	✓ Carried Forward **Good access and existing infrastructure that can be leveraged**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 10: 7120 Hurontario Street (Mississauga) **Figure 1-11**	■ Existing Use: Region of Peel building and parking lot. The identified land for development is situated on the northwest corner of the site over an existing extended parking lot which accommodates the adjacent regional office building. ■ Future Use: Region of Peel building and parking lot. ■ Conservation Authority: Credit Valley Conservation ■ Regional Roads within 10 kilometres: 370 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 74 kilometres	**Land Use** ■ Regionally owned site. ■ Surplus parking area and the site is currently being used as a temporary snow storage area. ■ It is proposed that the parking lot be converted to be dual purpose – to serve as a snow melt facility in the winter and to remain an extended parking lot in the offseason for continued parking use. **Technical** ■ Meets minimum site size. ■ Good access. ■ Well defined existing storm sewer drainage network with capacity for treatment ■ Retrofit of this site would not involve any further increases in impervious cover, and SWM upgrades may improve the treatment of stormwater quality from this site as compared to existing conditions. **Natural Environment** ■ Potential Snow Storage Area is not located within Natural Designated Features. ■ No vegetation communities were present, as it is limited entirely to a parking lot based on aerial imagery interpretation. ■ There is no potential for Species at Risk occurring within the proposed snow storage site as it is entirely limited to within a parking lot. ■ Based on a review of the Fisheries and Oceans Canada Aquatic Species at Risk Mapping, there were no aquatic Species at Risk identified within the 7120 Hurontario Street Study Area (Site 10). **Socio-Cultural** ■ Avoids residential areas (noise). ■ Study Area had been previously disturbed and no further archaeological work is recommended. ■ No direct or indirect impacts to Built Heritage Resources/Cultural Heritage Landscapes. **Cost** ■ Avoids purchase of lands and to have to enter into any agreements for access.	**Land Use** ■ Site anticipated to be available – no known conflicting uses planned at this time. However, need to consider nearby light show that uses the parking lot. **Technical** ■ Less than 375 kilometres regional road within 10 kilometres. ■ Existing land use activities will need to be accommodated simultaneous to those associated with snow storage. ■ Traffic flow with and adjacent to the site will require special design considerations. **Natural Environment** ■ The Rapid Geomorphic Assessment completed found the channel to be in “Regime”, with no significant evidence of instability. ■ Candidate Habitat for Monarch. ■ Potentially suitable Species at Risk habitat may be present for Eastern Meadowlark (Sturnella magna) within the agricultural field north of the proposed snow storage site. **Socio-Cultural** ■ There is a potential conflict with site traffic on-site and at access/egress locations, requiring measures to separate traffic streams. **Cost** ■ The preliminary cost estimate is $5,183,245, which is a higher cost compared to the other validated sites, however, is proportional to its size.	✓ Carried Forward **Surplus parking area that is currently being used as a temporary snow storage area**

Site Location	Site Description	Location Advantages	Location Disadvantages	Screening Results
Site 11: 7771 Mayfield Road (Brampton) Figure 1-12	■ Existing Use: Residential lot ■ Future Use: Former residential lot to be included in the future road allowance area. ■ Conservation Authority: Toronto and Region Conservation Authority ■ Regional Roads within 10 kilometres: 383 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 16 kilometres	**Land Use** ■ Regionally owned site. ■ Space anticipated to be available for a snow storage site with future road allowance. **Technical** ■ Over 375 kilometres regional road within 10 kilometres. ■ Good access. ■ Well defined existing drainage network. **Natural Environment** ■ None identified (site was not formally investigated). ■ No visible watercourses that are impacted (fluvial geomorphic assessment was not completed for this site). **Socio-Cultural** ■ Disruption is only anticipated during the construction phase. **Cost** ■ Capital costs anticipated to be similar to other sites. Avoids purchase of lands and to have to enter into any agreements for access. As the site was screened out, a detailed cost breakdown was not developed.	**Land Use** ■ Site includes residential development; however, the Region owns the property and this land will be used in the future road allowance area. **Technical** ■ Site size is under 1.5 hectares (0.77 hectares). ■ Potential spatial constraints for the siting/sizing of an appropriate stormwater management system. **Natural Environment** ■ Potential vegetation disturbance and/or removal. **Socio-Cultural** ■ Proximity to residential properties (noise). Adjacent land use is residential. ■ Potential for Built Heritage Resources/Cultural Heritage Landscapes within or adjacent to site (site was not formally investigated). ■ Potential for further archaeological assessments (site was not formally investigated). **Cost** ■ No unreasonable costs anticipated at this time. As the site was screened out, a detailed cost breakdown was not developed.	**X** Screened Out **Smaller site size and the proximity to existing residential.**
Site 12: 12052 The Gore Road, 7472 and 7480 Mayfield Road (Caledon) Figure 1-13	■ Existing Use: Three small private lots, currently zoned residential (X2) and auto repair (X1). ■ Future Use: Former residential and auto repair lots to be included in the future road allowance area. ■ Conservation Authority: Toronto and Region Conservation Authority ■ Regional Roads within 10 kilometres: 407 lane-kilometres ■ Primary and Secondary Snow Removal within 10 kilometres: 18 kilometres	**Land Use** ■ Regionally owned site. ■ Can be co-ordinated with the future expansion and improvements to the Gore Road and Mayfield Road intersection. **Technical** ■ Over 375 kilometres regional road within 10 kilometres. ■ Good access. **Natural Environment** ■ None identified (site was not formally investigated) ■ adjacent watercourse provides an outlet for site drainage. **Socio-Cultural** ■ Disruption is only anticipated during the construction phase. **Cost** ■ Capital costs anticipated to be similar to other sites. Avoids purchase of lands and to have to enter into any agreements for access. As the site was screened out, a detailed cost breakdown was not developed.	**Land Use** ■ Site availability to be confirmed once the proposed intersection upgrades are finalized. **Technical** ■ Site size is under 1.5 hectares (1.16 hectares). ■ Available space may be a concern, depending on the intersection upgrades. Site needs to be monitored to ensure it remains feasible once the intersection upgrades are confirmed. **Natural Environment** ■ Potential vegetation disturbance and/or removal ■ Watercourse on site that may be impacted (fluvial geomorphic assessment not completed for this site to confirm potential impacts). ■ Watercourse realignment subject to regulatory review/approval and may require additional requirements through the MCEA planning process. Depending on requirements and the intersection upgrades, this site may potentially be recommended to be removed in the future from being carried forward. **Socio-Cultural** ■ Proximity to residential properties (noise) ■ Potential for Built Heritage Resources/Cultural Heritage Landscapes within or adjacent to site (site was not formally investigated) ■ Potential for further archaeological assessments (site was not formally investigated). **Cost** ■ No unreasonable costs anticipated at this time. As the site was screened out, a detailed cost breakdown was not developed.	**X** Screened Out **Conflicts with future expansion and realignment of the Gore Road and Mayfield Road are unknown at this time**

6.4 Preferred Snow Storage Sites

Based on the evaluation presented in **Table 6-3,** six of the snow storage sites were screened out from further analysis and the following six sites were validated to go forward to design and construction:

- **Site 1: Highway 50 Carpool Lot**, in Caledon, is adjacent to the parking lot owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 3**: **West Brampton Reservoir and Pumping Station**, in Brampton, is owned by the Region and has been recommended to proceed due to its proximity to the serviced areas and the available space.
- **Site 5: Johnston Sports Park**, in Caledon, is owned by the Town of Caledon and has been recommended to proceed due to its proximity to the serviced areas and the available space. This site will be joint use and in line with the proposed Johnston Sports Park Master Plan.
- **Site 6: Tullamore Reservoir and Pumping Station**, in Caledon, is owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 9: Alloa Reservoir and Pumping Statio**n, in Caledon, is owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 10: 7120 Hurontario Street**, in Mississauga, is owned by the Region and has been recommended to proceed as this site has surplus parking area and is currently being used as a temporary snow storage area.

The validated sites carried forward for conceptual design (as described below) and future detailed design and construction provide near and long-term snow storage solutions that are environmentally sound and politically acceptable for the Region in order to safely dispose of any snow removed from the Region's roadways and facilities, while mitigating against undesirable environmental and operational impacts. An implementation and monitoring plan will be developed by the Region in order to phase in the proposed snow storage sites.

7. Preferred Undertaking – Project Descriptions and Conceptual Designs

7.1 Proposed Site Conditions and Conceptual Designs

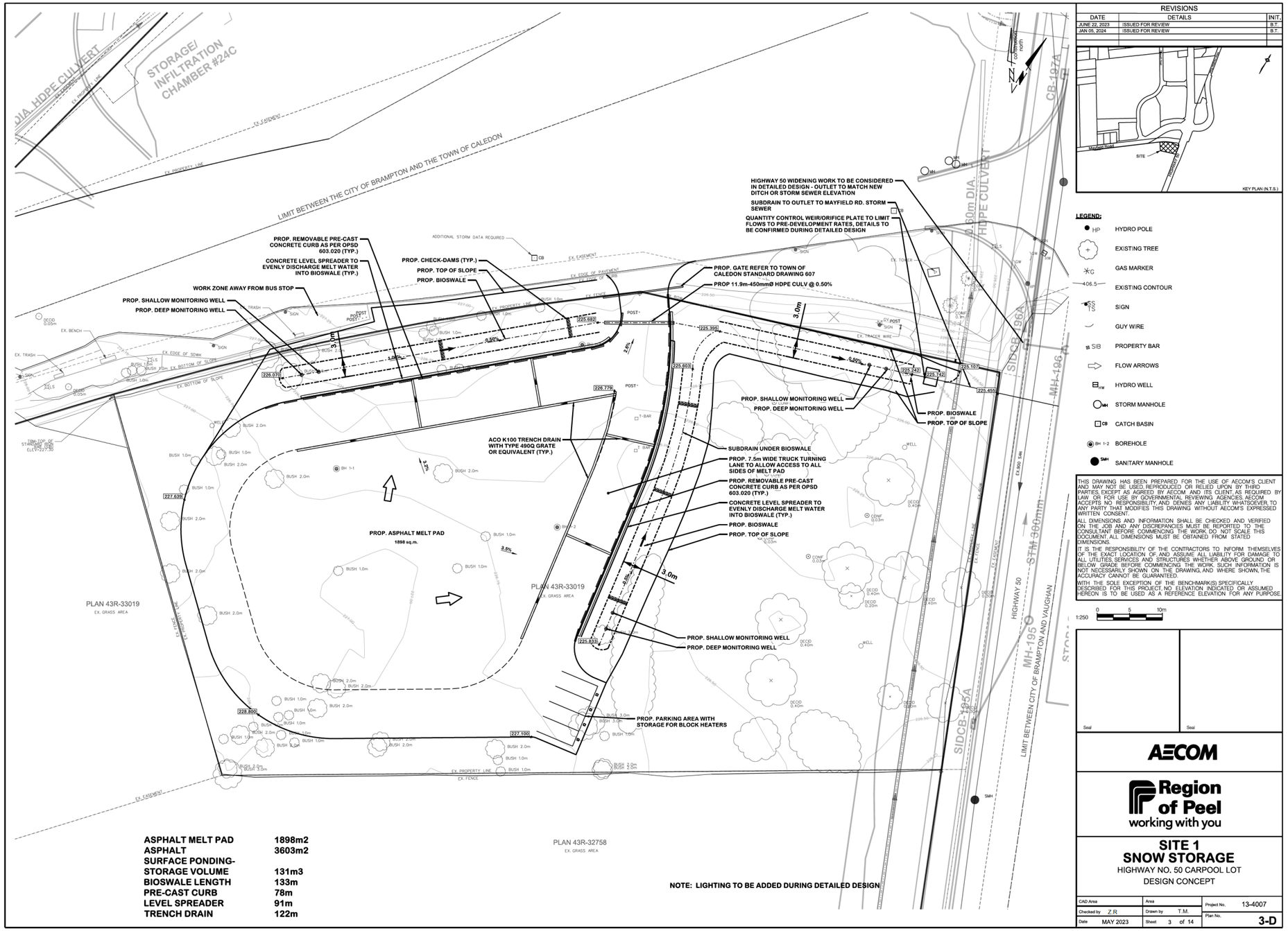
A description of the proposed conditions is provided below for the preferred snow storage sites, including information relating to the conceptual site plan and proposed site servicing strategy with respect to the conceptual stormwater management design. The associated conceptual designs are included in **Figure 7-1** through **Figure 7-6** and in Appendix B of the **Conceptual Snow Storage Facilities and SWM Servicing Approach Memorandum** (**Appendix G**). The conceptual designs for each site are subject to revisions and enhancements during the detailed design phase of the Project.

7.1.1 Site 1: Highway 50 Carpool Lot

The conceptual snow storage facility at Site 1 (**Figure 7-1**) currently includes the following:

- A 7.5 metre wide access laneway which encircles the snow storage pad for efficient snow storage volume and truck traffic flow through the facility.
  - The entrance laneway is located at the southern edge of the existing Highway 50 Carpool lot, positioned away from the southwest bus loop.
- A 1,900 m^2 snow storage pad, and a total site paved area of 3,600 m^2 (including access laneway, parking area, and snow storage pad).
- Bioswales along the north and east sides of the facility, to provide retention, attenuation and treatment of drainage conveyed towards the existing Highway 50 roadside SWM infrastructure.
- Highway 50 is scheduled for expansion between 2026 and 2028. After review of the 90% design drawings for the expansion, it appears that the proposed roadside ditch elevation (225.105 metre) is lower than the elevation of the proposed snow storage facility outlet ditch (225.107 metre) and thus the two are understood to be compatible at this time. This is to be confirmed during detailed design.
- Facility parking with block heaters.
- Facility lighting.
- Access gates which can be used to prevent public site access during the winter months.

Figure 7-1: Site 1 Conceptual Design

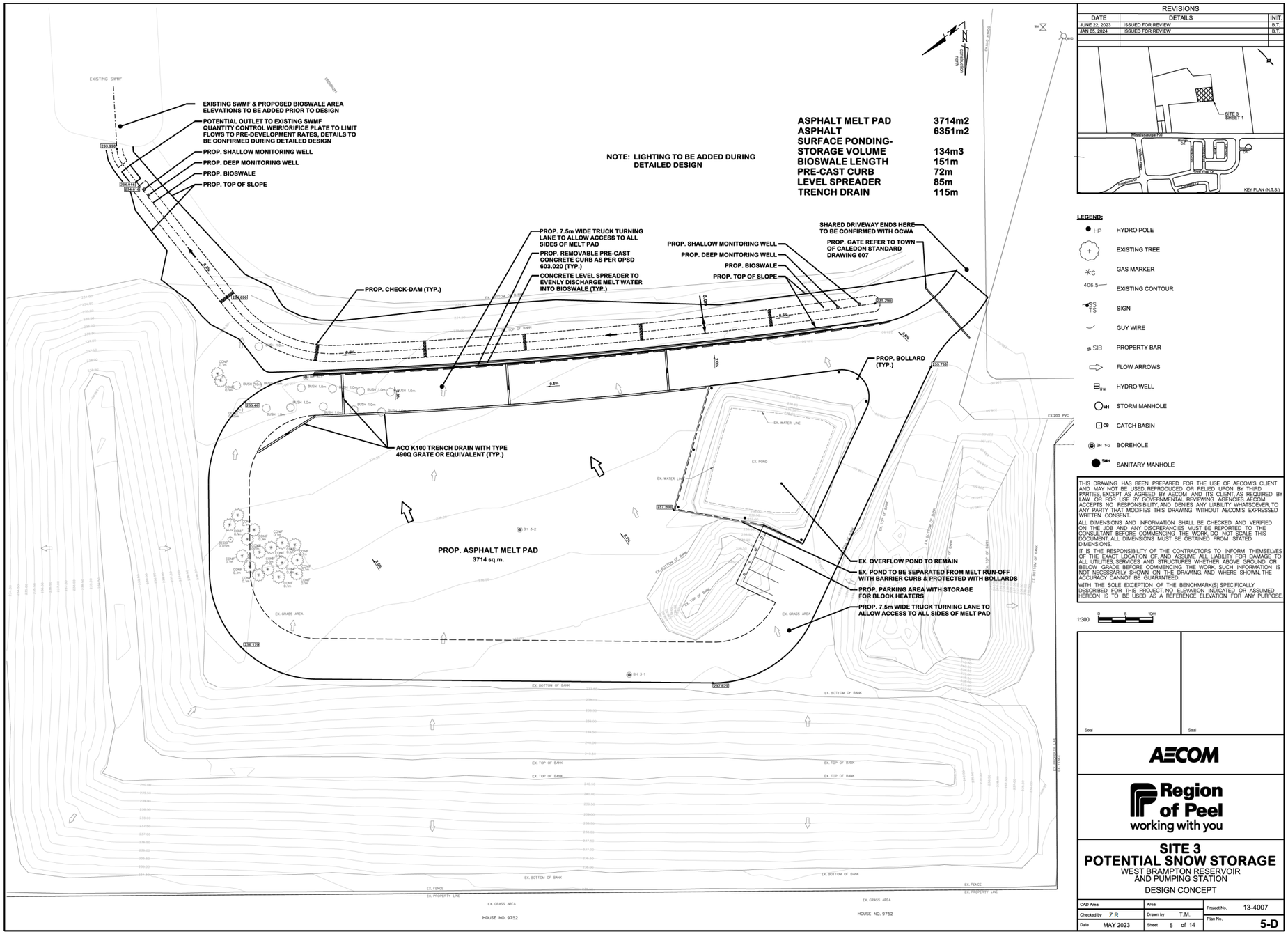


7.1.2 Site 3: West Brampton Reservoir and Pumping Station

The conceptual snow storage facility at Site 3 (**Figure 7-2**) is currently proposed to include the following:

- A 7.5 metre wide access laneway which encircles the snow storage pad for efficient snow storage volume and truck traffic flow through the facility.
  - The facility laneway is proposed to connect to the existing site access road that leads to the north section of the site and loop around the site blowout pond.
- A 3,700 m^2 snow storage pad, and a total site paved area of 6,300 m^2 (includes access laneway, parking area, and snow storage pad).
  - The facility would be built along the edge of the existing fill piles to avoid fill removal/ relocation.
  - The existing reservoir water overflow pond would remain and be separated by a barrier curb to prevent melt water from entering.
  - Since the Ontario Clean Water Agency operates the water pumping station/reservoir and is responsible for maintenance of the entire site, access and co-ordination must be discussed with the Ontario Clean Water Agency during detailed design to ensure that the dual site uses remain congruent.
- Bioswales along the south side of the facility, which will retain, attenuate, treat, and convey drainage away from the site.
  - It is proposed that bioswales servicing the site be connected to the existing site stormwater management pond, located approximately 100 metre from the proposed snow storage facility. Since infiltration rates in the area of the bioswales are good and they would be designed to control post-development to pre-development peak flow rates, it is anticipated that the stormwater management pond will likely not require enlargement to provide peak flow for the design event.
  - A 0.4 metre to 0.6 metre thick layer of sandy/gravel fill is present at the southeast corner of the site, which may support the implementation of a stormwater management retention feature in this location.
- Facility parking with block heaters.
- Facility lighting.

Figure 7-2: Site 3 Conceptual Design

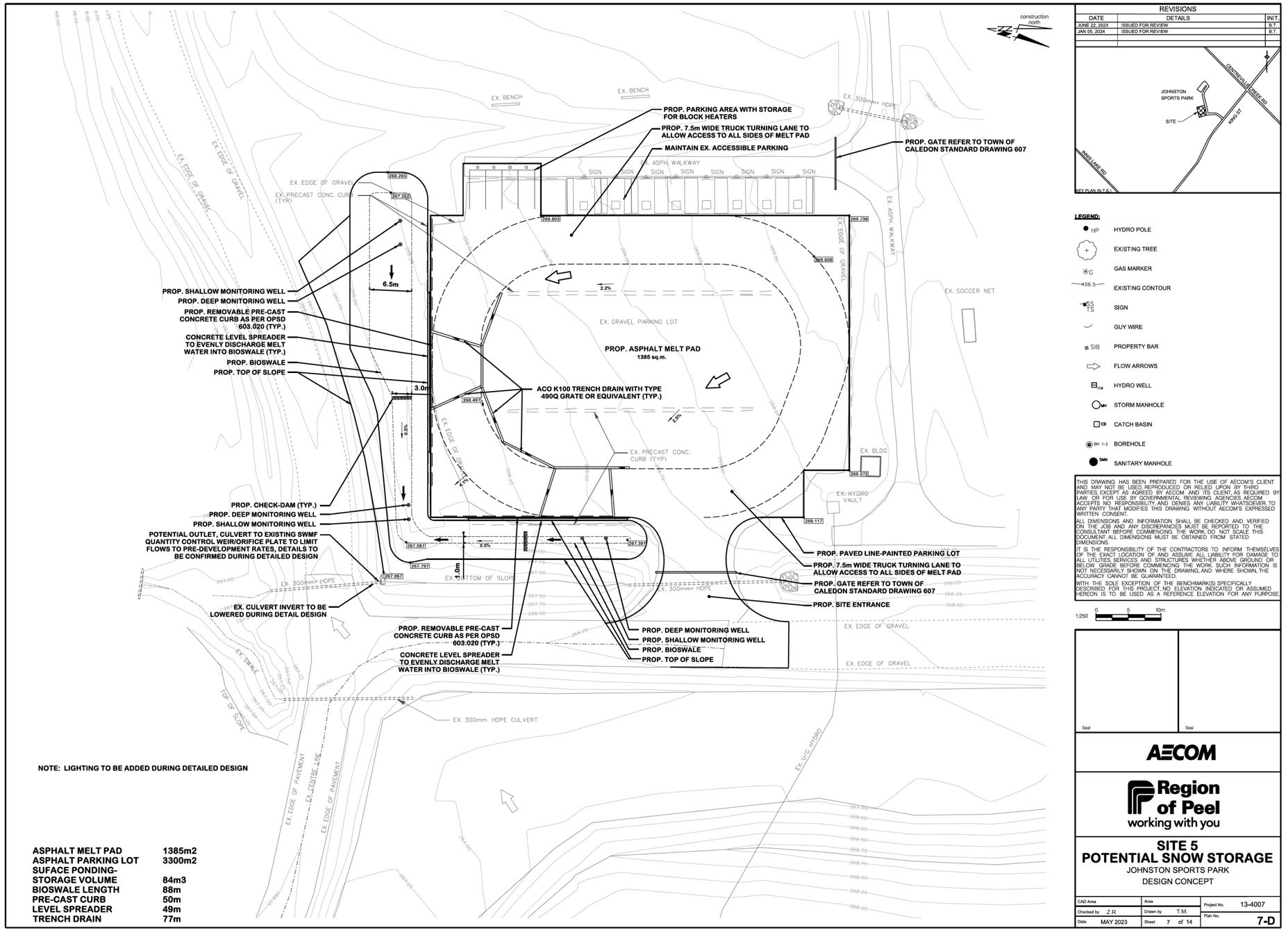


7.1.3 Site 5: Johnston Sports Park

The conceptual snow storage facility at Site 5 (**Figure 7-3**) would feature the following:

- A 7.5 metre wide access laneway utilizing the existing parking lot access.
  - The access road will be connected to the existing park internal roads.
- A 1,400 m^2 snow storage pad, and a total site paved area of 3,300 m^2 (includes access laneway, parking area, and snowmelt storage pad).
- Lined bioswales along the south side and southeast corner of the facility will attenuate, treat, and convey drainage towards the existing park SWM facility, 50 metre south of the proposed site.
- Since initial testing shows a high groundwater level in this area, the bioswale may need to be lined. Furthermore, the existing outlet elevation is constrained by the elevation of the culvert leading to the downstream SWM facility, which is approximately 0.5 metre from the ground surface. To provide the depth necessary for a bioswale, it is proposed that the culvert be lowered by approximately 0.5 metre.
- The site could act as a multi-purpose facility by serving as additional summer parking for the park grounds when snow storage is not required.
- Facility parking with block heaters.
- Facility lighting.
- Access gates which can be used to prevent public site access during the winter months.

Figure 7-3: Site 5 Conceptual Design

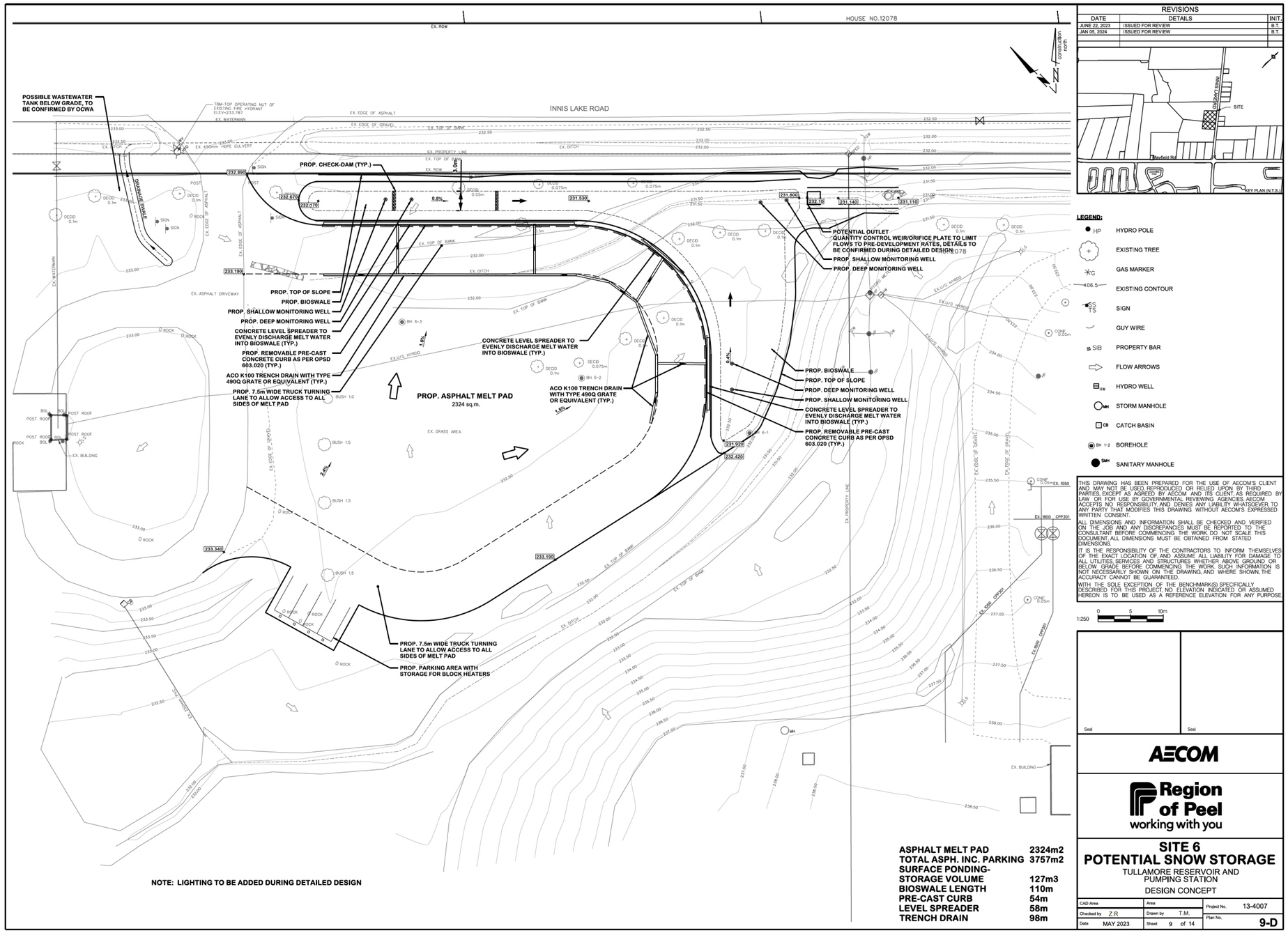


7.1.4 Site 6: Tullamore Reservoir and Pumping Station

The conceptual snow storage facility at Site 6 (**Figure 7-4**) would feature the following:

- A 7.5 metre wide access laneway which encircles the snow storage pad for efficient snow storage volume and truck traffic flow through the facility.
  - The facility laneway is currently proposed to be built adjacent to the existing turnaround loop at the bulk water dispensing station, located on the north side of the site.
  - Since the Ontario Clean Water Agency operates the water pumping station/reservoir and is responsible for maintenance of the entire site, access and co-ordination must be discussed with the Ontario Clean Water Agency during detailed design to ensure that the dual site uses remain congruent.
- A 2,300 m^2 snow storage pad, and a total site paved area of 3,700 m^2 (includes access laneway, parking area, and snowmelt storage pad).
- Lined bioswales along the northeast side of the facility, which would be used to attenuate, treat, and convey drainage to the nearby roadside ditches.
  - Since initial testing shows high groundwater level in this area, the bioswale may need to be lined and would need to tie into the existing outlet, which is approximately 1.0 metre from the ground surface.
- Facility parking with block heaters.
- Facility lighting.

Figure 7-4: Site 6 Conceptual Design

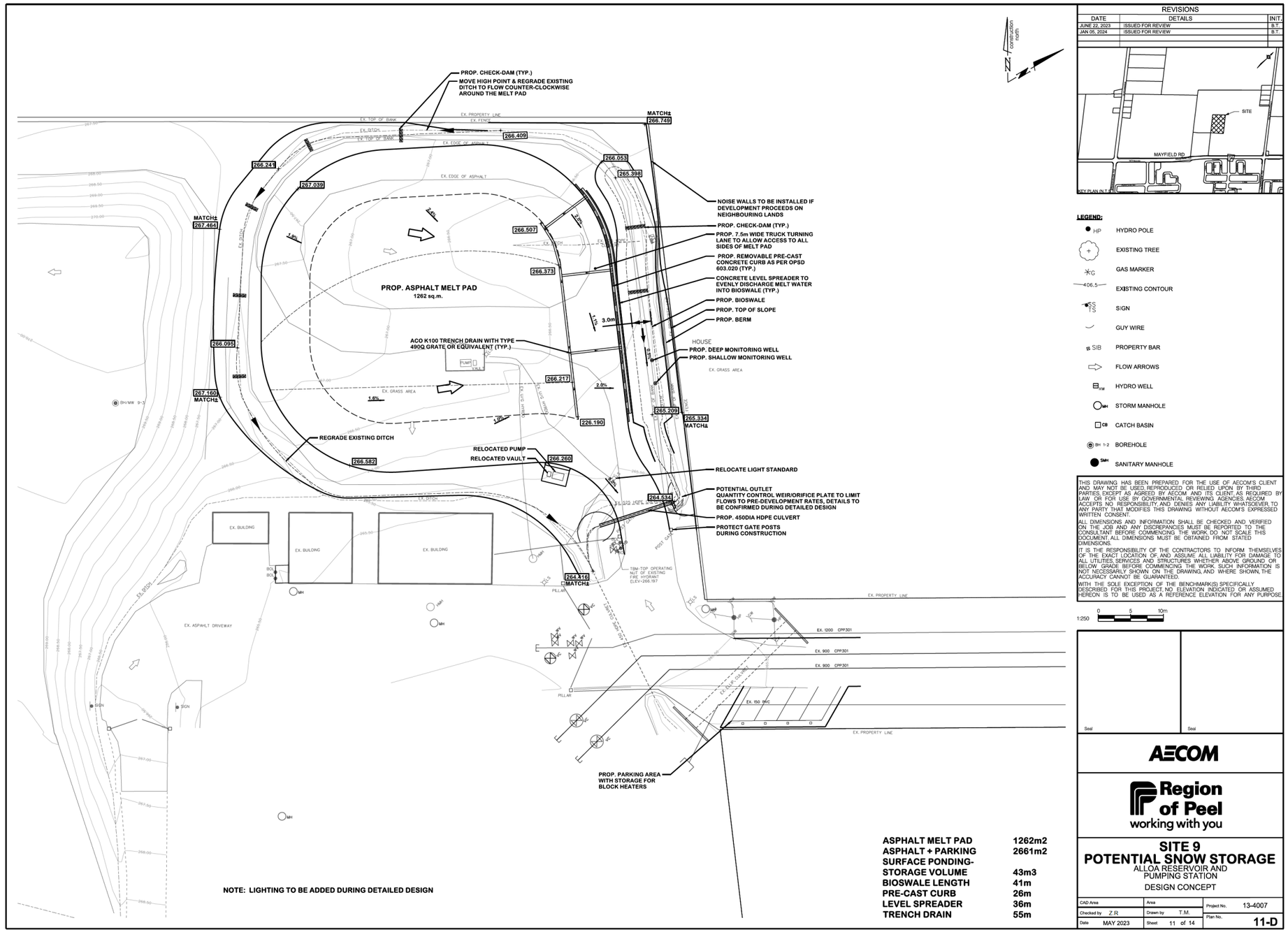


7.1.5 Site 9: Alloa Reservoir and Pumping Station

The conceptual snow storage facility at Site 9 (**Figure 7-5**) would feature the following:

- A 7.5 metre wide access laneway which encircles the snow storage pad for efficient snow storage volume and truck traffic flow through the facility.
  - This would replace the existing turnaround loop, which is part of the bulk water station, located on the east side of the site.
  - Since the Ontario Clean Water Agency operates the water pumping station/reservoir and is responsible for maintenance of the entire site, access and co-ordination must be discussed with the Ontario Clean Water Agency during detailed design to ensure that the dual site uses remain congruent.
- A 1,400 m^2 snow storage pad, and a total site paved area of 2,800 m^2 (includes access laneway, parking area, and snowmelt storage pad).
- Bioswales will be installed along the north side of the facility, which will retain, attenuate, treat, and convey drainage to the existing site stormwater infrastructure, and south towards Mayfield Road.
- Facility parking with block heaters.
- Facility lighting.
- Access gates which can be used to prevent public access to the snow storage area during the winter months.

Figure 7-5: Site 9 Conceptual Design

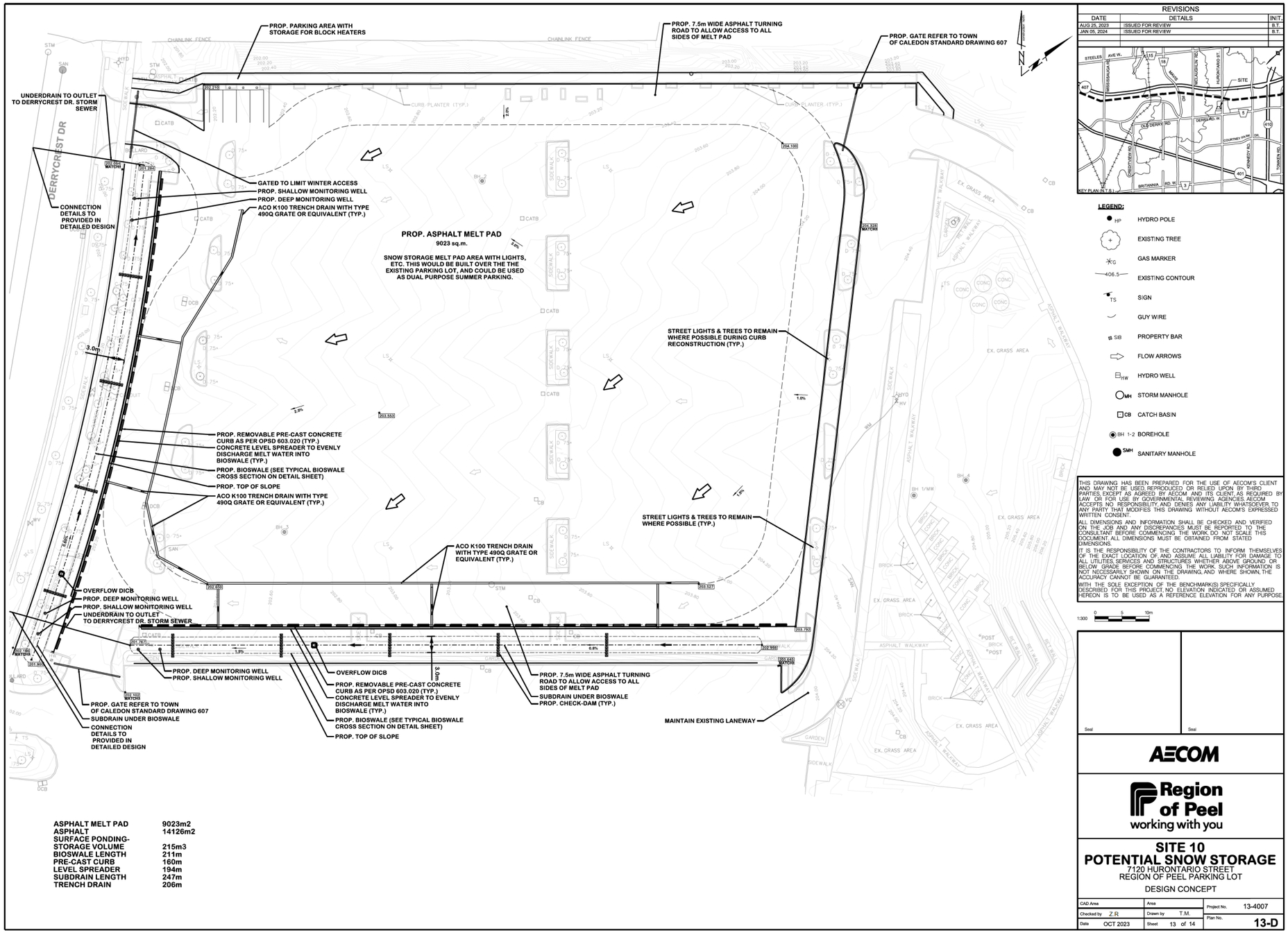


7.1.6 Site 10: 7120 Hurontario

The conceptual snow storage facility at Site 10 (**Figure 7-6**) would feature the following:

- A 7.5 metre wide access laneway which encircles the snow storage pad for efficient snow storage volume and truck traffic flow through the facility.
- An approximately 10,000 m^2 snow storage pad, and a total site paved area of 14,000 m^2 (includes access laneway, parking area, and snowmelt storage pad).
- Bioswales are proposed to be installed along the northeast and southwest side of the facility, which will treat and convey site drainage to the storm sewer network on Derrycrest Drive.
  - Since the infiltration rates at this site are low there will only be partial retention of runoff and bioswales are not anticipated to drain down between events (72 hour inter-event time within the Region of Peel). As such, an underdrain at the bottom of the feature is required to convey treated flows to the storm network.
  - The City of Mississauga stormwater criteria states that the minor system should be designed to accommodate the 10-year flows, as such the system is designed to attenuate the 100-year peak flow from the site to the 10-year peak flow.
  - Since the site is very large and highly impervious, the 90th percentile runoff volume + the snow melt volume is larger than the attenuation volume and thus the bioswale are sized to treat the larger of the two event volumes.
- A curb line is proposed along the site's east access laneway to divide the snow melt facility from the existing access laneway off Hurontario Steet, in effort to maintain through-traffic to the other office parking lots year-round.
- Facility parking with block heaters.
- Facility lighting.
- Three access gates which can be used to prevent public site access during the winter months.

Figure 7-6: Site 10 Conceptual Design



7.2 Summary of the Proposed Site Conditions Post-Snow Facility Development

Table 7-1 below summarizes the proposed site conditions and the required measures for stormwater management systems. It is noted that these values have been assessed based on a conceptual site plan and are subject to change during detailed design following further site assessment.

Table 7-1: Summary of Proposed Site Conditions with Snow Storage Facility

Parameter	Site 1: Highway 50 Carpool Lot	Site 3: West Brampton Reservoir and Pumping Station	Site 5: Johnston Sports Park	Site 6: Tullamore Reservoir and Pumping Station	Site 9: Alloa Reservoir and Pumping Station	Site 10: 7120 Hurontario Street
Site Area (m^2) (Note 1)	4,000	11,900	4000	4,000	2,500	15,200
Melt Pad Area (m^2)	1,900	3,700	1,400	2,300	1,400	10,000
Approximate Snow Storage Capacity (m^3) (Note 2)	3,800	7,400	2,800	4,600	2,800	20,000
Total Paved Area (m^2) (Note 3)	3,600	6,300	3,300	3,700	2,800	14,000
Post Developed Approximate Site % Impervious (Note 4)	90	53	83	93	95	92
100-Year Attenuation Volume Required (m^3)	170	275	153	175	68	247
Estimated Snowmelt (m^3) (Note 5)	25	47.5	18	29.5	17.3	128
90th Percentile Runoff Volume (m^3)	92	186	86	94	60	356

Note 1: The site area is representative of the blue dotted “potential snow storage area” within each site, which can be referenced on each of the existing conditions maps, that are provided in Appendix G.

Note 2: Assumes a snow storage height of 2 metre, which can be achieved by end dumping from the snow trucks and shaping the snow pile with a grader with side slopes of 1:2.

Note 3: The total paved area is inclusive of the paved site melt pad, storage lot, and any newly developed paved laneways that are proposed at each site.

Note 4: The assumed pre-developed site imperviousness is 0% for all sites (except site 10) – modified Rational Method utilized for attenuation volumes.

Note 5: Snowmelt that would occur during a 3 hour, 100-year storm. Snowmelt (3 hour) + 100-year attenuation volume = peak storage capacity required.

7.3 Preliminary Evaluation of Suitable Drainage Design Options

Initial screening and evaluation of suitable drainage design options has been completed and is presented in **Table 7-2**.

Due to the lack of storm sewer infrastructure across most sites (except 7120 Hurontario), SWM measures such as OGS units, underground vaults and chambers are not practically possible as they require deeper construction and a deeper outlet than that of a dry-basin, enhanced swale or bioswale to function properly.

A dry basin could be utilized to provide on-site attenuation volumes for some sites as they are effective at providing volume storage to offset peak discharge rates. However, space may be limited and they provide nominal removal of pollutants. A wet pond SWM facility would not be sufficient for the size of area proposed for operation at each site as such features are generally not efficient when servicing areas less than 5 hectares (Ontario Ministry of the Environment, 2003).

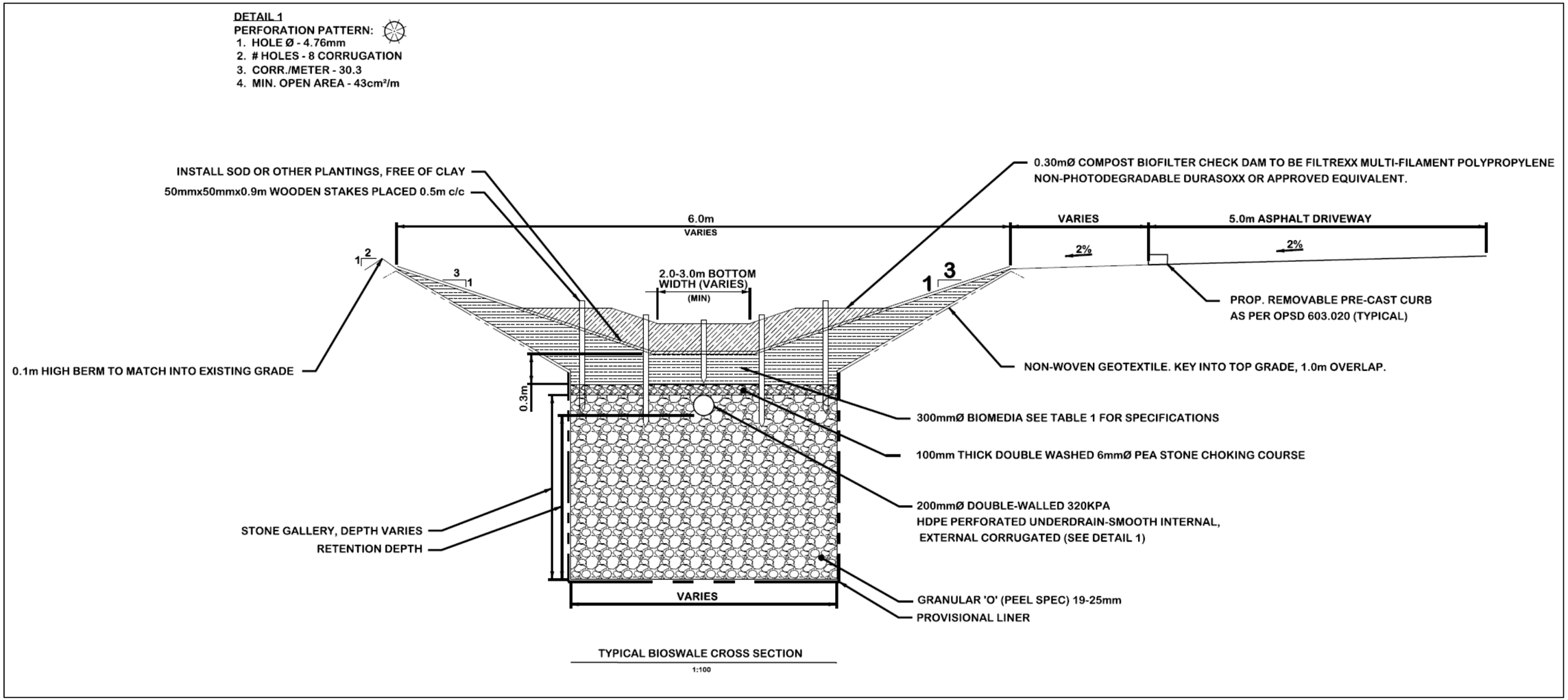
Bioswales are open-channel surface conveyance features that can be designed to provide both filtration and attenuation, with stormwater retention as well (depending on native soil conditions and groundwater considerations). If infiltration is desirable, small check dams could be incorporated within these features to detain surface water and to promote infiltration/filtration through the biomedia. Biofilter check dams can also be used to enhance attenuation and treatment in both lined and unlined swales. Bioswales include a subsurface storage layer and can thus provide more attenuation and storage than enhanced swales. They can also be lined with an impermeable liner should it be decided that infiltration is not desired due to water quality concerns or if there are high groundwater levels in the area. In such cases an underdrain is required at the base of the system and there would need to be a sufficient outlet from the bottom elevation of the storage layer to drain to.

Preliminary bioswale design details can be found in **Figure 7-7** and in Appendix B, Plan No. 14-D of the **Conceptual Snow Storage Facilities and SWM Servicing Approach Memorandum** (**Appendix G**).

Table 7-2: Low Impact Development Feasibility Assessment

Criteria / Options	Site 1: Highway 50 Carpool Lot	Site 3: West Brampton Reservoir and Pumping Station	Site 5: Johnston Sports Park	Site 6: Tullamore Reservoir and Pumping Station	Site 9: Alloa Reservoir and Pumping Station	Site 10: 7120 Hurontario Street
General Soil Type / Founding Soil	Stiff to hard silty clay till	Very stiff to hard silty clay till	Very stiff to hard silty clay till	Very stiff to hard silty clay till	Firm to stiff silty clay fill over stiff to hard silty clay till	Very stiff to hard silty clay till
Shallow Groundwater (Yes/No)	No No GW observed in BHs	No 4.26 to 4.5 metres below ground surface	Yes 0.11 to 0.32 metres below ground surface	Yes 0.66 to 1.83 metres below ground surface	No 3.23 to 5.25 metres below ground surface	No 1.17 to 3.64 metres below ground surface
Mean Hydraulic Conductivity	8.0×10^{-7} metres per second	3.35×10^{-6} metres per second	3.9×10^{-7} metres per second	7.65×10^{-7} metres per second	4.9×10^{-6} metres per second	1.0×10^{-6} metres per second
Mean Measured Infiltration Rate	44 millimetres per hour	62 millimetres per hour	34 millimetres per hour	43 millimetres per hour	67 millimetres per hour	13 millimetres per hour
OGS Unit	No	No	No	No	No	No
Bioswale	Yes	Yes	Yes	Yes	Yes	Yes
Dry-Basin	Yes	Yes	Yes	Yes	Yes	No
Wet Pond	No	No	No	No	No	No
Vault/Chamber	No	No	No	No	No	Yes
Permeable Pavement	No	No	No	No	No	No
Preferred	**Bioswale**	**Bioswale**	**Bioswale**	**Bioswale**	**Bioswale**	**Bioswale**

Figure 7-7: Bioretention Cross-section - General Detail



7.4 Preliminary Low Impact Development Design Details

For all sites, design infiltration rates were determined and preliminary design calculations were carried out to size the recommended bioswale systems and confirm their suitability. Refer to Appendix B for preliminary design drawings and Appendix C for conceptual calculations for each site in the **Conceptual Snow Storage Facilities and SWM Servicing Approach Memorandum** (**Appendix G**). A summary is provided in **Table 7-3**.

Sites 1,3, 9 and 10 do not have shallow groundwater, thus bioswales without a liner are proposed. Sites 5 and 6 have high groundwater and thus a liner is required as well as an underdrain at the base to drain down the system. Since an underdrain is required at the base, the depth of the bioswales are constrained by the outlet elevation. As such, for Site 5 it is proposed to lower the culvert downstream of the bioswale by approximately 0.5 metre to allow a total bioswale depth of 1 metre. Site 6 has approximately 1 metre elevation difference between ground level and the outlet and thus the bioswale is designed to be 1 metre deep.

All the bioswales are designed to capture the greater of either the 100-year attenuation volume + snow melt volume or the 90th percentile runoff volume + snow melt volume. Since Site 10 outlets to the minor system, attenuation of the 100-year to 10-year event is required. The site is large and highly impervious; the 90th percentile runoff volume + snow melt volume is greater than the 100-year attenuation volume and thus the bioswales are designed to capture this volume. This is a conservative approach and the size of the bioswales may be able to be reduced based on dynamic modelling or by combining the bioswale with an OGS to achieve the treatment requirements. This should be explored further during detailed design.

Table 7-3: Preliminary Low Impact Development Design Details

Criteria / Options	Site 1 Highway 50 Carpool Lot	Site 3 West Brampton Reservoir and Pumping Station	Site 5 Johnston Sports Park	Site 6 Tullamore Reservoir and Pumping Station	Site 9 Alloa Reservoir and Pumping Station	Site 10 7120 Hurontario Street
General Soil Type / Founding Soil	Stiff to hard silty clay till	Very stiff to hard silty clay till	Very stiff to hard silty clay till	Very stiff to hard silty clay till	Firm to stiff silty clay fill over stiff to hard silty clay till	Very stiff to hard silty clay till
Shallow Groundwater (Yes/No)	No	No 4.26 to 4.5 metres below ground surface	Yes 0.11 to 0.32 metres below ground surface	Yes 0.66 to 1.83 metres below ground surface	No 3.23 to 5.25 metres below ground surface	No 1.17 to 3.64 metres below ground surface
Design Infiltration Rate (mm/hr) (Note 1)	18	25	14	17	27	5
Storage Required (greater of 100yr attenuation + snowmelt or 90th percentile runoff volume + snow melt)	195 m^3	322 m^3	171 m^3	205 m^3	86 m^3	484 m^3 (Note 2)
Bioswale Length	133 m	151 m	88 m	110 m	41 m	211 m
Bioswale Depth	1.00 m	1.30 m	1.00 m	1.00 m	1.20 m	1.50 m
Bioswale Storage Volume	265 m^3	322 m^3	176 m^3	209 m^3	88 m^3	503 m^3
Drawdown Time (req. < 72 hours)	33 hours	28 hours	Lined	Lined	25 hours	150 hours (Note 3)

Note: 1: Safety factor of 2.5 applied to measured infiltration rate

Note: 2: Only at Site 10 is the 90th percentile runoff volume + snowmelt greater than the 100-year attenuation volume + snowmelt

Note: 3: This bioswale will have an underdrain at the base due to low infiltration rate/long draw down time

7.5 Climate Change Considerations

Climate change mitigation considers the potential for greenhouse gas emission reduction measures both during construction and over the long-term operation of the snow storage facilities; these considerations include:

- Minimizing potential effects during construction including the idling of construction equipment will be avoided, and equipment will be in good working order to reduce inefficiencies in the operation of the equipment.
- Incorporating the snow storage areas into the existing infrastructure of the sites.
- Site validation based on reduced haul times and capture of lane kilometres.
- Recommend optimizing cut and fill during construction when excavating for bioswale construction and regrading for proper flow to reduce amount of soil haulage required.

Climate change adaption considers the vulnerability of the snow storage sites to climate change effects and flexibility to incorporate climate change adaptation measures in design. In terms of the proposed snow storage sites, the Project Team has sized them using a conservative scenario, which is the 100-year storm attenuation volume in addition to the full daily snow melt amount, to ensure that more frequent, high-intensity storm events receive proper treatment and attenuation of peak flows.

7.6 Property and Easement Requirements

The Region owns the following sites and therefore there are no property requirements:

- Site 1: Highway 50 Carpool Lot
- Site 3: West Brampton Reservoir and Pumping Station
- Site 6: Tullamore Reservoir and Pumping Station
- Site 9: Alloa Reservoir and Pumping Station
- Site 10: 7120 Hurontario Street

Site 5 (Johnston Sports Park) will require an agreement with the Town of Caledon to construct and operate the proposed snow storage site as a joint use facility.

There are no easement requirements identified at this time for any of the validate snow storage sites.

7.7 Preliminary Cost Estimate

The preliminary estimated costs associated with the preferred snow storage sites are summarized below in **Table 7-4**. The estimated costs are based on the previously constructed Charleston Side Road Snow Storage Facility and prorated based on the size of asphalt area and the length of the bioswale proposed for each new site.

Refer to the **Conceptual Snow Storage Facilities and Stormwater Management Servicing Approach** (**Appendix G**) for further breakdown of the total cost, which considers site specific preparation and removals, storm system works, bioswale, surface works, lighting, engineering fees, and estimated escalation.

The preliminary cost estimates will be further reviewed and during the detailed design phase of each snow storage site.

Table 7-4: Preliminary Cost Estimates

Site	Location	Municipality	Preliminary Cost Estimate
1	Highway 50 Carpool Lot	Brampton	$1,409,793
3	West Brampton Reservoir and Pumping Station	Brampton	$2,337,628
5	Johnston Sports Park	Caledon	$1,225,293
6	Tullamore Reservoir and Pumping Station	Caledon	$1,374,859
9	Alloa Reservoir and Pumping Station	Caledon	$1,036,538
10	7120 Hurontario Street	Mississauga	$5,183,245

7.8 Permits and Approvals

The anticipated permits and approvals required prior to construction are summarized in **Table 7-5**. Permitting requirements will be confirmed during the preliminary and detailed design phase of the Project and where required, will require additional consultation with the applicable regulatory agencies.

Table 7-5: Anticipated Permits, Approvals and Legislative Requirements

Level of Government	Legislation	Governing Authority	Permit/Approval	Timing	Site(s)
Federal	*Species at Risk Act, 2002*	Environment and Climate Change Canada (ECCC)	■ No in-water work is proposed where habitat for Redside Dace has been identified, provided indirect impacts (e.g., water quality from melt water runoff) can be mitigated, it is unlikely a *Species at Risk Act* permit will be required; however, consultation with Fisheries and Oceans Canada may still be required. ■ No permit required for terrestrial Species at Risk – Contravention of *Species at Risk Act* is not anticipated provided vegetation removal occurs outside of the Species at Risk breeding bird season (April 1 to August 31).	Detailed Design	■ All snow storage sites
Federal	*Migratory Birds Convention Act, 1994*	Environment and Climate Change Canada (ECCC)	■ No permit required – Contravention of the *Migratory Birds Convention Act* is not anticipated provided vegetation removal occurs outside of the breeding bird season (April 1 to August 31).	Detailed Design	■ All snow storage sites
Federal	*Fisheries Act, 1985*	Fisheries and Oceans Canada	■ No in-water work is proposed, provided indirect impacts (e.g., water quality from melt water runoff) can be properly mitigated, it is unlikely approvals under the *Fisheries Act* will be required; however, consultation with Fisheries and Oceans Canada may still be required.	Detailed Design	■ All snow storage sites
Provincial	*Endangered Species Act, 2007*	Ontario Ministry of the Environment, Conservation and Parks	■ Most of the potential snow storage areas have low probability of supporting Species at Risk given that they are limited to mowed lawns, crop fields or disturbed meadows. ■ The West Brampton Reservoir and Pumping Station (Site 3) is located near suitable Bobolink and Eastern Meadowlark habitat, if confirmed through Species at Risk presence/absence surveys that these species are on site, then authorization under the *Endangered Species Act* may be required for removal of their confirmed habitat. ■ Regulated habitat for Redside Dace is located within the boundaries of the Tullamore Reservoir and Pumping Station snow storage Site 6 Study Area. A meander belt analysis should be undertaken to confirm the limits of the regulated habitat and approvals from Ministry of the Environment, Conservation and Parks may be required. ■ Consultation with Ministry of the Environment, Conservation and Parks may be required to confirm if there is Redside Dace regulated habitat within the Johnston Sports Park snow storage Site 5 Study Area. ■ There are no *Endangered Species Act* permits anticipated to be required for Potential Snow Storage Areas 1, 9 and 10.	Detailed Design	■ Site 3: West Brampton Reservoir and Pumping Station ■ Site 5: Johnston Sports Park ■ Site 6: Tullamore Reservoir and Pumping Station
Provincial	*Fish and Wildlife Conservation Act, 1997*	Ministry of Northern Development, Mines, Natural Resources and Forestry	■ Permit may be required at Site 5 should the destruction of the muskrat lodge be necessary in the stormwater pond; however, this is deemed as unlikely as the lodge is located outside of the Potential Snow Storage Area for Site 5.	Detailed Design	■ Site 5: Johnston Sports Park
Provincial	*Planning Act, 1990 and Provincial Policy Statement (Provincial Policy Statement; 2020)*	Ontario Ministry of Municipal Affairs and Housing	■ No permit required – There are no permits to be obtained under the Provincial Policy Statement; however, mitigation measures and best management practices will reduce the likelihood of, or minimize effects on identified candidate Species of Conservation Concern.	Detailed Design	■ All snow storage sites
Provincial	*Greenbelt Act, 2005 and Greenbelt Plan, 2017*	Ministry of Municipal Affairs and Housing	■ No permits required – There are no permits to be obtained under the Greenbelt Act; however, mitigation measures and best management practices will reduce the likelihood of, or minimize effects on identified natural heritage features.	Detailed Design	■ All snow storage sites

Level of Government	Legislation	Governing Authority	Permit/Approval	Timing	Site(s)
Provincial	*Environmental Assessment Act, 1990* Subject to the requirements of the *Ontario Heritage Act (Government of Ontario 1990) and the Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011).*	Ministry of Citizenship and Multiculturalism	■ Any subsequent recommend archaeological assessments (e.g., Stage 2,3,4) should be completed as early as possible during detailed design and prior to any ground disturbing activities (e.g., geotechnical drilling). ■ Archaeological concerns have not been addressed until reports have been entered into the Ontario Public Register of Archaeological Reports where those reports recommend that: – the archaeological assessment of the project area is complete and – all archaeological sites identified by the assessment are either of no further cultural heritage value or interest (as per Section 48(3) of the Ontario Heritage Act) or that mitigation of impacts has been accomplished through excavation or an avoidance and protection strategy.	Detailed Design	■ Site 1: Highway 50 Carpool Lot ■ Site 6: Tullamore Reservoir and Pumping Station
Provincial	Ontario *Water Resources Act*	Ontario Ministry of the Environment, Conservation and Parks	■ A Permit to Take Water under the Ontario *Water Resources Act* may be required. A Permit to Take Water is required for any water takings that exceed 50,000 Litres per day, except for certain water taking activities that have been prescribed by the Water Taking Environmental Activity and Sector Registry Regulation – Ontario Regulation 63/16. These prescribed water-taking activities require registration in the Environmental Activity and Sector Registry instead of a Permit to Take Water.	Detailed Design	■ All snow storage sites
Provincial	Ontario *Water Resources Act*	Ontario Ministry of the Environment, Conservation and Parks	■ Environmental Compliance Approval CLI – Form SW1 – Record of Future Alteration Authorized for Storm Sewers/Ditches/Culverts	Detailed Design	■ All snow storage sites
Provincial	Ontario *Water Resources Act*	Ontario Ministry of the Environment, Conservation and Parks	■ Environmental Compliance Approval – CLI – Form SW2 – Record of Future Alteration Authorized for Stormwater Management Facilities	Detailed Design	■ All snow storage sites
Provincial	Ontario Regulation 406/19 made under the E*nvironmental Protection Act*	Ontario Ministry of the Environment, Conservation and Parks	■ Excess Soil Registry Notice – As part of the project, construction activities may include excavation which may generate more soil than can be reused on the Site, material that is termed “excess soil. It is noted that the quantity of soil to be excavated and the quantity of excess soil to be removed from the Project Sites are not known at this time. If the volume of excess soil exceeds 2000 m3 a formal filing of a notice with Ministry of the Environment, Conservation and Parks would be required.	Detailed Design	■ All snow storage sites
Provincial	Ontario Regulation *41/24: Prohibited Activities, Exemptions, and Permits*	Toronto and Region Conservation Authority	■ Permit may not be required – While the property boundaries fall within regulation area, the potential Snow Storage Areas within the sites are not within regulated area. To be confirmed at detailed design based on final project footprint.	Detailed Design	■ Site 1: Highway 50 Carpool Lot ■ Site 5: Johnston Sports Park ■ Site 6: Tullamore Reservoir and Pumping Station ■ Site 9: Alloa Reservoir and Pumping Station
Provincial	Ontario Regulation *41/24: Prohibited Activities, Exemptions, and Permits*	Credit Valley Conservation	■ Permit may not be required – While the property boundaries fall within regulation area, the potential Snow Storage Areas within the sites are not within regulated area. To be confirmed at detailed design based on final project footprint.	Detailed Design	■ Site 3: West Brampton Reservoir and Pumping Station ■ Site 9: Alloa Reservoir and Pumping Station ■ Site 10: 7120 Hurontario Street
Provincial	*Occupational Health and Safety Act*	Ministry of Labour	■ Form 1000	Prior to Construction	■ All snow storage sites
Provincial	*Occupational Health and Safety Act*	Ministry of Labour	■ Notice of Project	Prior to Construction	■ All snow storage sites

7.9 Additional Studies and Commitments

The following additional commitments and future work that should be completed during detailed design is summarized below.

Site 1: Highway 50 Carpool lot

- If the impacts to the Highway 50 Carpool Lot Study Area cannot be avoided, then it will require Stage 2 test pit survey at 5 metre intervals. This should be completed in keeping with Section 2.1.2 of the Standards and Guidelines for Consultant Archaeologists (Ontario Government 2011).
- Mississaugas of the Credit First Nation and Six Nations of the Grand River requested Field Liaison Representative participation and subsequent report review for future stage 2 archaeological assessments. The Haudenosaunee Confederacy Chiefs Council has vested the Haudenosaunee Development Institute with the authority to represent the Haudenosaunee on matters relating to land development, and as such, should also be notified if any future stage 2 archaeological assessments are required.
- Update the Species at Risk habitat screening as protection statuses of species under the *Endangered Species Act* may change over time.
- A tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings, if any.
- AECOM was informed on September 7, 2023, that Highway 50 is scheduled for expansion between 2026 and 2028. After review of the 90% design drawings for the expansion, it appears that the proposed roadside ditch elevation (225.105 metre) is lower than the elevation of the proposed snow storage facility outlet ditch (225.45 metre) and thus the two are understood to be compatible at this time. This is to be confirmed during detailed design.
- Co-ordinate with the potential future industrial/commercial development proposed adjacent to the snow storage area.
- Engage with Metrolinx regarding proposed snow storage area.
- Additional and more granular traffic studies are recommended as part of detailed design to understand traffic flow on and around the site. This may necessitate further permits and approvals.
- Engage Haudenosaunee Treaty rights monitors for Site 1 to monitor implementation of the mitigation measures related to potential impacts to Monarchs. This includes that temporarily disturbed areas will be re-vegetated using non-invasive, preferably native plantings and/ or seed mix appropriate

to the site conditions and adjacent vegetation communities. Seed mixes should contain flowering herbaceous plants to support foraging habitat to pollinators, as well as Common Milkweed for Monarchs, wherever feasible. The Region can share the plans for areas that need to be re-vegetated that are temporarily disturbed as detail design progresses, where applicable and requested.

Site 3: West Brampton Reservoir and Pumping Station

- Potential Species at Risk presence/absence surveys following Ministry of the Environment, Conservation and Parks approved protocols and guidelines that may be required during detailed design, which are subject to change based on the updated Species at Risk habitat screening and design-related impacts to suitable Species at Risk, include but are not limited to the following:
  - Bobolink and Eastern Meadowlark Surveys
- Future detailed geomorphological assessment is recommended when permission to enter is granted.
- Update the Species at Risk habitat screening as protection statuses of species under the *Endangered Species Act* may change over time.
- A tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings, if any.
- Co-ordinate with the potential future fire station at this site that was being considered at the time of this report's publication.
- Since the Ontario Clean Water Agency operates the water pumping station/reservoir and is responsible for maintenance of the entire site, access and co-ordination must be discussed with the Ontario Clean Water Agency during detailed design to ensure that the dual site uses remain congruent.
- Additional and more granular traffic studies are recommended as part of detailed design to understand traffic flow on and around the site. This may necessitate further permits and approvals.
- As per the direction from Credit Valley Conservation staff, the post construction monitoring must include monitoring the SWM pond outfalls for erosion at Sites 3 and 10. The outfalls are expected to perform as a control to the system; however, with increased runoff reporting to the SWM pond, and pond performance decreasing due to age and accumulation of sediment, the outfall may not operate as designed. Any deficiencies noted in the pond infrastructure must be addressed to ensure there are no impacts to the downstream regulated watercourses.

- Attendance of Haudenosaunee Treaty rights monitors to monitor implementation of the mitigation measures related to potential impacts on Monarch, Species at Risk and PSW for Site 3.
- Engage Haudenosaunee Development Institute to participate in Species at Risk surveys, if the surveys are determined to be required during detailed design. At this time the potential habitat for Bobolink and Eastern Meadowlark are located outside of the proposed snow storage area within the property.

Site 5: Johnston Sports Park

- The information in the supporting studies for this site will need to be reviewed as the proposed area of land for snow storage facility development within the Johnston Sports Park was updated from that of the original location.
- Update the Species at Risk habitat screening as protection statuses of species under the *Endangered Species Act* may change over time.
- A tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings, if any.
- Caledon will be engaged through out the preliminary and detailed design process including design review.
- Initial groundwater monitoring was completed at the southeastern edge of the Johnston Sporks Park property, approximately 150 metre east of proposed lands for development and should be confirmed at the specific site location during detailed design. Additional and more granular traffic studies are recommended as part of detailed design to understand traffic flow on and around the site. This may necessitate further permits and approvals.
- Attendance of Haudenosaunee Treaty rights monitors to monitor implementation of the mitigation measures related to potential impacts on potential Redside Dace habitat for Site 5.

Site 6: Tullamore Reservoir and Pumping Station

- If the section of the Tullamore Reservoir and Pumping Station which has not been assessed cannot be avoided, then it will require Stage 2 test pit survey at 5 metre intervals. This should be completed in keeping with Section 2.1.2 of the Standards and Guidelines for Consultant Archaeologists (Ontario Government 2011).
- Mississaugas of the Credit First Nation and Six Nations of the Grand River requested Field Liaison Representative participation and subsequent report review for future stage 2 archaeological assessments. The Haudenosaunee

Confederacy Chiefs Council has vested the Haudenosaunee Development Institute with the authority to represent the Haudenosaunee on matters relating to land development, and as such, should also be notified if any future stage 2 archaeological assessments are required.

- Update the Species at Risk habitat screening as protection statuses of species under the *Endangered Species Act* may change over time.
- A tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings, if any.
- Meander belt analysis should be completed for Salt Creek on Site 6 to confirm the boundaries of regulated Redside Dace habitat.
- Since the Ontario Clean Water Agency operates the water pumping station/reservoir and is responsible for maintenance of the entire site, access and co-ordination must be discussed with the Ontario Clean Water Agency during detailed design to ensure that the dual site uses remain congruent.
- Additional and more granular traffic studies are recommended as part of detailed design to understand traffic flow on and around the site. This may necessitate further permits and approvals.
- Attendance of Haudenosaunee Treaty rights monitors to monitor implementation of the mitigation measures related to potential impacts on the core woodlands and Natural Areas and Corridors, including Species at Risk for Site 6.
- Engage Haudenosaunee Development Institute to participate in the recommended meander belt analysis.

Site 9: Alloa Reservoir and Pumping Station

- Future detailed geomorphological assessment is recommended when permission to enter is granted.
- Update Species at Risk habitat screening as protection statuses of species under the *Endangered Species Act* may change over time.
- A tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings, if any.
- Since the Ontario Clean Water Agency operates the water pumping station/reservoir and is responsible for maintenance of the entire site, access and co-ordination must be discussed with the Ontario Clean Water Agency during detailed design to ensure that the dual site uses remain congruent.

- Additional and more granular traffic studies are recommended as part of detailed design to understand traffic flow on and around the site. This may necessitate further permits and approvals.
- As per the direction from Credit Valley Conservation staff, the post construction monitoring must include monitoring the roadside ditch for erosion at Site 9 along Mayfield Road. As the exact quantities of the snowmelt and rainfall runoff are uncertain for any given year, the monitoring will determine the effectiveness of the system and identify the need to address any deficiencies.
- Attendance of Haudenosaunee Treaty rights monitors to monitor implementation of the mitigation measures related to potential impacts on Species at Risk for Site 9.
- Engage Haudenosaunee Development Institute to participate in the recommended fluvial geomorphological assessment.

Site 10: 7120 Hurontario Street

- Update the Species at Risk habitat screening as protection statuses of species under the *Endangered Species Act* may change over time.
- A tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings, if any.
- Special consideration should be given to the stormwater pond in the floodplain adjacent to the channel (east of the channel). The stormwater pond conveys surface runoff from Derry Road and discharges runoff into the channel by the most upstream meander of the reach. Use of the existing storm pond for snow melt could be further assessed as per the recommendations in the **Fluvial Geomorphic Assessment Memorandum** (**Appendix D**).
- Additional and more granular traffic studies are recommended as part of detailed design to understand traffic flow on and around the site. This may necessitate further permits and approvals.
- As per the direction from Credit Valley Conservation staff, the post construction monitoring must include monitoring the SWM pond outfalls for erosion at Sites 3 and 10. The outfalls are expected to perform as a control to the system; however, with increased runoff reporting to the SWM pond, and pond performance decreasing due to age and accumulation of sediment, the outfall may not operate as designed. Any deficiencies noted in the pond infrastructure must be addressed to ensure there are no impacts to the downstream regulated watercourses.

In addition to the site-specific commitments summarized above, the Region will need to carry out a high-level gap analysis on future snow storage needs to accommodate growth to 2041 aligned with the future planned growth and identify circled areas where Peel would focus to acquire more property, as needed.

The Region has also entered into an agreement with Haudenosaunee Development Institute. A copy of the agreement is included in **Appendix J**. The Region may also share the plans for areas that need to be re-vegetated that are temporarily disturbed with Haudenosaunee Development Institute as detail design progresses, where applicable and requested.

7.10 Preliminary Project Schedule

The Region will determine the phased implementation of the recommended sites complete with detailed design, construction and monitoring.

8. Anticipated Environmental Effects, Mitigation Measures, and Construction Monitoring

8.1 Potential Construction and Operation Related Effects and Mitigation Measures

Potential effects related to the construction and operation of the snow storage sites are anticipated to results in minor to moderate and predictable environmental impacts. By incorporating proper best management practices and construction techniques, adverse construction related effects can be minimized. In order to address potential effects, the following approach was taken:

- **Avoidance:** The first priority is to prevent the occurrence of negative or adverse environmental effects associated with construction of the snow storage sites.
- **Mitigation:** Where adverse environmental effects cannot be avoided, it will be necessary to develop appropriate measures to eliminate, or reduce to some degree, the negative effects associated with construction of the proposed snow storage sites.
- **Compensation:** In situations where appropriate mitigation measures are not available, or significant net adverse effects will remain following the application of mitigation measures, compensation measures may be required to counterbalance the negative effect through replacement in kind, or provision of a substitute or reimbursement. No compensation has been proposed at this time for the preferred snow storage sites.

The existing conditions (**Section 3**) were used as baseline against which changes due to the project (i.e., effects) were assessed. The mitigation measures summarized below (**Table 8-1**) are recommended to ensure that any short and long-term disturbances are managed efficiently through a variety of measures for each snow storage site. Detailed impact assessment and the provision of detailed recommendations for mitigation and compensation, if required, will be provided at the detailed design stage of the proposed works.

Table 8-1: Potential Construction and Operation Related Effects and Mitigation Measures

Indicator	Potential Effects	Potential Mitigation	Sites
Utilities	■ Potential need to relocate or protect existing utilities and infrastructure	During Preliminary/Detailed Design: ■ All subsurface utilities will be surveyed during the design phase to confirm utilities	■ All snow storage sites
Traffic	■ Potential conflict with site traffic on-site and at access/egress locations	During Detailed Design: ■ Implement appropriate measures to measures to separate traffic streams.	■ All snow storage sites
Stormwater Management	■ Salt and it's potential impacts on any receiving sites	During Construction and Operation: ■ Although de-icing salt is of concern at each site, salts within snow collected from roadways is best managed at the source through salt optimization programs. Furthermore, the Transportation Association of Canada cites research that found "…much of the salt that is applied to pavement is not retained in the snow that is removed to snow disposal facilities. This is because chlorides tend to leave stockpiled snow soon after it is plowed. Only a small percentage of the salt that is applied to a road may be reaching the snow disposal facility.	■ All snow storage sites
Natural Environment	■ Loss of vegetation	During Detailed Design: ■ Minimize vegetation removal to the extent possible. ■ A tree inventory and an Arborist Report may be required. The tree protection measures described in the Arborist Plan will be adhered to. During Construction: ■ Construction vehicle access should be limited to existing roadways and construction paths, where feasible. ■ Construction fencing and / or silt fencing, where appropriate, will be installed and maintained to clearly define the construction footprint, prevent accidental damage or intrusion to adjacent vegetation or Ecological Land Classification communities (manicured lawns and agricultural fields are not considered to be Ecological Land Classification communities) and prevent entry of sediment into the watercourse or wetland. ■ Temporarily disturbed areas will be re-vegetated using non-invasive, preferably native plantings and / or seed mix appropriate to the site conditions and adjacent vegetation communities. Seed mixes should contain flowering herbaceous plants to support foraging habitat to pollinators, as well as Common Milkweed for Monarchs, wherever feasible. ■ Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive 'D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the emerald ash borer, Agrilus planipennis (Fairmaire). To comply with this Directive, all Ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada.	■ All snow storage sites
Natural Environment	■ Potential effects to wildlife and wildlife habitat, including Species at Risk	During Construction: ■ Vegetation removal (i.e., ground cover, shrub and trees) will occur outside of the breeding bird season of April 1 to August 31 of any year to avoid contravention of the *Migratory Birds Convention Act*. If this is not possible, a nest survey will be undertaken prior to required activities in simple habitat (i.e., mowed lawns). Nest searches by an experienced searcher are required and will be completed by a qualified Biologist no more than 48 hours prior to vegetation removal. If an active nest of a migratory bird is found outside of this nesting period it still must be avoided until young birds have fledged. ■ All stockpiled materials of soil, overburden or similar materials are to be maintained at a 70 degrees or less by sloping off stockpiles to creak a slot angle that will not support nesting breeding birds during the breeding bird season (April 1 to August 31). ■ Construction personnel will be trained in ways to prevent a wildlife encounter from occurring, including the following: i. No personnel shall approach, feed or harass wildlife; ii. Food waste will be properly stored and disposed of; and iii. Vehicles will yield to wildlife. ■ If wildlife is encountered, measures will be implemented to avoid destruction, injury, or interference with the species, and / or its habitat. For example, construction activities will cease or be reduced, and wildlife will be encouraged to move off-site and away from the construction area on its own. A qualified Biologist will be contacted to define the appropriate buffer required from wildlife or to move the wildlife to a nearby suitable habitat outside of the construction site if necessary.	■ All snow storage sites

Indicator	Potential Effects	Potential Mitigation	Sites
Natural Environment	■ Sediment entering neighbouring properties and natural areas during construction when within 30 metre of a watercourse, waterbody or wetland	During Detailed Design: ■ Develop an Erosion and Sediment Control Plan prior to construction. The primary principles associated with sedimentation and erosion protection measures are to: i. Minimize the duration of soil exposure ii. Retain existing vegetation, where feasible, iii. Encourage re-vegetation, iv. Divert runoff away from exposed soils, v. Keep runoff velocities low, and vi. Trap sediment as close to the source as possible. During Construction: ■ Implement and monitor erosion and sedimentation control strategy	■ All snow storage sites
Natural Environment	■ Potential effects related to construction vehicle re-fuelling stations	During Construction: ■ Re-fuelling stations should be located at least 30 metre away from wetlands, watercourses or waterbodies. ■ Re-fuelling stations should be located within a centralized location on-site. ■ Re-fuelling stations should be constructed in a manner to prevent soil and/or surface and groundwater contamination from any leaks or spills. ■ An emergency response kit should be made available at each re-fuelling station in case of a spill. ■ All on-site crew members operating construction vehicles should be appropriately trained in handling a potential spill and have WHMIS Training. ■ All chemical transfer/maintenance should be conducted within the refuelling station areas.	■ All snow storage sites
Natural Environment	■ Potential soil and water contamination	During Construction: ■ A Spill Prevention and Contingency Plan will be developed and adhered to. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. ■ All machinery, construction equipment and vehicles arriving on site should be in clean condition (e.g., free of fluid leaks, soils containing seeds of plant material from invasive species) and be inspected and washed in accordance with the Clean Equipment Protocol for Industry (Halloran et al., 2013) prior to arriving and leaving the construction site in order to prevent the spread of invasive species between locations. ■ If removing stands of common reed (Phragmites australis) for construction, ensure to follow the best management practices for appropriate removal methods and disposal in accordance with the Invasive Phragmites – Best Management Practices (MNR, 2011).	■ All snow storage sites
Natural Environment	■ Potential effects related to snow melt during operations	During Construction and Operation: ■ Follow the Guidelines on Snow Disposal and De-icing Operations in Ontario (Ministry of the Environment, Conservation and Parks, 2011). ■ Locate Snow Storage facility away from environmentally sensitive areas to reduce impacts from melting the contaminated snow. ■ Direct disposal of snow or melt water runoff to watercourses should not be directly deposited into watercourses. ■ Treat the melt water in compliance with water quality regulations to protect the surface and groundwater resources. Where Redside Dace habitat has been identified within the property or downstream, melt water must meet the water quality requirements listed in the Guidance for Development Activities in Redside Dace Protected Habitat (Ministry of Natural Resources and Forestry, 2016) document. ■ Locate as close as possible to serviced areas to minimize operational costs and green-house gas emissions from moving the snow.	■ All snow storage sites
Natural Environment	■ Changes to Hydrology	During Detailed Design: ■ A more detailed impact assessment and mitigation measures will be provided during the Detailed Design stage of the Project. If a site within Credit Valley Conservation's jurisdiction is carried forward to Detailed Design, recommendations will include measures to maintain hydrological/conveyance function of adjacent HDF's. Measures may include bioswales and potentially further channeling runoff into an existing Stormwater Management Facility.	■ All snow storage sites

Indicator	Potential Effects	Potential Mitigation	Sites
Cultural Heritage Environment	■ Impacts to archaeological resources	During Detailed Design: ■ If the section of the Tullamore Reservoir and Pumping Station which has not been assessed cannot be avoided, then it will require Stage 2 test pit survey at 5 metre intervals. This should be completed in keeping with Section 2.1.2 of the Standards and Guidelines for Consultant Archaeologists (Ontario Government 2011). ■ If the Highway 50 Carpool Lot study area cannot be avoided, then it will require Stage 2 test pit survey at 5 metre intervals. This should be completed in keeping with Section 2.1.2 of the Standards and Guidelines for Consultant Archaeologists (Ontario Government 2011). ■ Where archaeological resources are impacted by Environmental Assessment project work, the Ministry of Citizenship and Multiculturalism will be notified by contacting archaeology@ontario.ca. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists. During Construction: ■ Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the Ontario Heritage Act. ■ The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11 the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.	■ Site 1: Highway 50 Carpool Lot ■ Site 6: Tullamore Reservoir and Pumping Station
Cultural Heritage Environment	■ Impacts to built heritage resources and cultural heritage landscaped	During Detailed Design: ■ There are potential indirect impacts due to vibration (within the 50 metre vibration buffer) from construction related activities for the following two resources: BHR/CHL 1; 6907 King Street, Caledon (Johnston Sports Park), and BHR/CHL 2; 11416 Centreville Creek Road, Caledon (Johnston Sports Park). Evaluation of impacts related to vibration activities requires assessment based on identification of specific construction methods proposed, distance between the sensitive receptor (i.e., a cultural heritage resource) and the construction activity, and anticipated vibration levels (millimetres per second). Given the proximity to the BHRs/CHLs to the snow storage site located at Johnston Sports Park, it is anticipated that in some locations vibrations limits may be exceeded and therefore, the following mitigation measures for vibration impacts should be implemented: – Prior to construction, determine which previously identified cultural heritage resources documented in this Cultural Heritage Report require vibration mitigation and monitoring – Document (review and establish) the structural condition of a building to determine if it is vulnerable to vibration impacts from the Project – Establish vibration limits based on structural conditions, founding soil conditions and type of construction vibration (refer to the Noise and Vibration report) During Construction: ■ Implement vibration mitigating measures on the construction site and/or at the building (i.e., modify construction procedures, if required) ■ Construction and post-construction monitoring may be required for historic buildings that were determined subject to vibration damage. The following monitoring activities are recommended for vibration impacts: – Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and – Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measures. Implement additional mitigation as required.	■ Site 5: Johnston Sports Park

Indicator	Potential Effects	Potential Mitigation	Sites
Air Quality and Noise	■ Dust emissions and noise during construction	During Construction: ■ Require contractor to implement provisions for dust control. It is recommended that non-chloride dust suppressants be applied during construction ■ Require contractor to halt work in event that dust emissions are found to be unacceptable ■ Use of low noise equipment during construction, where possible ■ Limit construction activity to within Noise By-law restrictions	■ All snow storage sites
Excess Materials Management	■ Discharge of a contaminant into the natural environment	During Construction: ■ Activities involving the management of excess soil should be completed in accordance with the Ministry of the Environment, Conservation and Parks current guidance document titled “Management of Excess Soil – A Guide for Best Management Practices” (2014) available online (http://www.ontario.ca/document/management-excess-soil-guide-best-management-practices) ■ All waste generated during construction must be disposed of in accordance with ministry requirements. ■ Ontario Regulation 406/19 requires a project leader for a project to comply with specific requirements before removing excess soil from a project area. These obligations apply to the projects and in the circumstances set out in the regulation. Generally, the requirements include the following: – Preparation of an assessment of past uses; – Preparation and implementation of a sampling and analysis plan; – Preparation of a soil characterization report; – Preparation of an excess soil destination assessment report; and – Development and implementation of a tracking system, if client will require	■ All snow storage sites
Control of Inadvertent Spills	■ Potential inadvertent spill of hazardous materials during construction	During Construction, require contractor to: ■ Store all oils, lubricants, fuels and chemicals in secure areas ■ Construction vehicle re-fuelling stations should be centralized away (30 metres) from natural areas and watercourses. ■ Contractor to have a spill management plan in place prior to construction	■ All snow storage sites
Socio-Economic Environment	■ Potential disruption to surrounding properties during construction	Prior to Construction: ■ Undertake notification to area residents and businesses During Construction: ■ Minimize construction duration (working days) ■ Affected property owners will be notified in advance (e.g., signage, notices), as to construction schedule/duration ■ General project information and updates will be provided through the Region’s website ■ Implement air and noise mitigation measures (see above)	■ All snow storage sites

8.2 Proposed Construction Monitoring

Contract tender documents will address mitigation in an explicit manner to ensure that compliance is maintained. The provision of an experienced field representative to review construction will ensure that the snow storage sites follow contract specifications and does not unnecessarily impact the environment and the surrounding community.

It is proposed that each snow storage site include a customized monitoring approach. Methods of monitoring system performance may include implementing monitoring wells in stormwater management / Low Impact Development features, surface water monitoring wells in any bioswales which may be constructed, along with the collection of water quality grab samples from relevant site outlets or features. For example, site outlet water quality can be measured and compared against the Provincial Water Quality Objectives to confirm that site discharge is not adversely affecting downstream water quality. Such a monitoring approach could also serve to inform the Region regarding maintenance timing/frequencies over the service life of the system.

Onsite inspection will be undertaken at each snow storage site to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.

All erosion and sediment control measures should be inspected weekly, after every rainfall and significant snow melt event, and daily during periods of extended rain or snow melt.

All damaged erosion and sediment control measures will be repaired and/or replaced within 48 hours of the inspection.

8.3 Post-Construction Monitoring

Following construction, the operation of the proposed snow storage sites are not expected to result in any negative impacts. Post construction inspection will be required following construction to ensure that any disturbances have been properly restored (e.g., grading, seeding and planting). Post construction monitoring is recommended, similar to the Region’s Charleston Sideroad snow storage facility to inform maintenance requirements and frequency. Monitoring of drainage feature performance (using shallow and deep monitoring wells include in the conceptual design) and water quality (using grab samples) is recommended. Additionally, periodic soil sampling is recommended to assess the rate of pollutant accumulation in the engineer bioswale soils. Monitoring details should be developed during detailed design specific to each of the preferred snow storage sites.

9. Consultation Summary

9.1 Notifications

9.1.1 Notice of Study Commencement and Public Information Centre

The Notice of Commencement and Public Information Centre was first issued on December 1, 2022, introducing the snow storage sites analysis and conceptual design project and inviting anyone with an interest in the study to attend to view the online Public Information Centre materials. The notice was distributed to the study's contact list, posted on the Region's website, and advertised in the Mississauga News, Brampton Guardian, Caledon Enterprise and Caledon Citizen on December 1, 2022.

Refer to **Appendix H** for a copy of the Notice of Commencement and Public Information Centre.

9.1.2 Notice of Completion

The Notice of Completion was first issued on November 21, 2024. The notice included information on how to access and review the Project File, including the process to provide comments. The notice was distributed to the study's contact list, posted on the Region's website, and advertised in the Mississauga News, Brampton Guardian, Caledon Enterprise and Caledon Citizen.

Refer to **Appendix H** for a copy of the Notice of Completion.

9.2 Public Information Centre

The Public Information Centre was held online in the format of a narrated video. Content was available starting December 8, 2022 on the Region's project website.

The purpose of the online Public Information Centre was to review the study purpose and snow storage sites analysis and conceptual design considerations, present the study timeline, next steps and how to stay engaged, and receive feedback on the snow storage sites recommended to proceed to conceptual design.

Refer to **Appendix H** for a copy of the Public Information Centre materials and public correspondence pertaining to this study. No public comments were received in response to the Public Information Centre.

9.3 Agency and Stakeholder Consultation

Relevant agencies and stakeholders associated with the snow storage sites were notified and engaged over the course of the study. The study's external agency and stakeholder contact list is included in **Appendix I**.

A Technical Advisory Committee was formed as part of the Project to obtain input with representatives from the following local municipalities and agencies:

- Region of Peel
- Toronto and Region Conservation Authority
- Credit Valley Conservation
- Town of Caledon
- City of Brampton
- City of Mississauga

The Technical Advisory Committee meeting was held on September 29, 2022 to introduce the Project and review the screening of the snow storage sites to obtain feedback and inform the screening process. Prior to the meeting the draft supporting studies were also circulated for review and comment.

A meeting with Town of Caledon was also held on August 18, 2022 regarding the Johnston Sports Park (Site 5) and location of the potential snow storage area.

In addition to meetings, written comments were also provided. **Table 9-1** summarizes the key incoming agency and stakeholder correspondence received by the Study Team. The detailed correspondence between the Study Team and all agencies and stakeholders is included in **Appendix I**.

Table 9-1: Key Agency and Stakeholder Correspondence

Agency / Stakeholder	Date	Summary of Correspondence	Summary of Study Team Response
Ministry of the Environment, Conservation and Parks	February 28, 2022	■ The ministry identified the following Indigenous communities that may have an interest in the Project: Mississaugas of the Credit First Nation, and Six Nations of the Grand River (Both the Haudenosaunee Confederacy Chiefs Council and the Haudenosaunee Development Institute).	■ Mississaugas of the Credit First Nation, and Six Nations of the Grand River (Both the Haudenosaunee Confederacy Chiefs Council and the Haudenosaunee Development Institute) have been engaged.
Ministry of the Environment, Conservation and Parks	December 29, 2022	■ Issued the “Areas of Interest” document, which provides guidance regarding the ministry’s interests with respect to the Class Environmental Assessment process. ■ Requested to circulate a draft copy of the report prior to the filing of the final report ■ Provide a copy of the final notice when issued to the ministry’s Central Region Environmental Assessment notification email account.	■ Draft Project File will be circulated to the Ministry of the Environment, Conservation and Parks. ■ The Notice of Completion will be issued to the noted email account.
Ministry of the Environment, Conservation and Parks	April 15, 2024 May 21, 2024	■ Confirmed the ministry had no comments on the April 2024 Draft Project File.	■ Comments noted.
Credit Valley Conservation	September 2, 2022	■ Reviewed the draft supporting studies and provided general and engineering comments.	■ Comments have been considered and incorporated.
Credit Valley Conservation	December 2, 2022	■ Confirmed receipt of the Notice of Commencement and Public Information Centre, provided reminder of comments from email dated September 2, 2022 and indicated further comments would be provided following the Technical Advisory Committee Meeting.	■ Comments have been considered and incorporated.
Credit Valley Conservation	April 11, 2024 April 30, 2024	■ Confirmed receipt of the Draft Project File and provided comments as follows: 1. It is understood that the collection of excess snow from the road right of way is a subjective process based on the specific locations where the visibility is obstructed. Please comment if there are any set criteria as to when or how much snow will be removed and relocated for any given year. 2. The post construction monitoring must include monitoring the SWM pond outfalls for erosion at Sites 3 and 10. The outfalls are expected to perform as a control to the system; however, with increased runoff reporting to the SWM pond, and pond performance decreasing due to age and accumulation of sediment, the outfall may not operate as designed. Any deficiencies noted in the pond infrastructure must be addressed to ensure there are no impacts to the downstream regulated watercourses. Please provide this commitment in the Project File Report. 3. The post construction monitoring must include monitoring the roadside ditch for erosion at Site 9 along Mayfield Road. As the exact quantities of the snowmelt and rainfall runoff are uncertain for any given year, the monitoring will determine the effectiveness of the system and identify the need to address any deficiencies. Please provide this commitment in the Project File Report. 4. The erosion and sediment control plans are expected as part of the detailed design submission. These are to include adequate erosion protection measures and Low Impact Development details. 5. Please consider using suitable native species in all SWM/ Low Impact Development features and for natural area restoration. Please refer to Credit Valley Conservation’s Plant Selection Guidelines (attached) when making species selections.	1. Snow removal volumes are difficult to predict based on many factors such as the variability of precipitation amounts each winter, and across the Region, along with potential complaints from residents. The capacity of each snow storage facility was estimated based on the paved area with snow end dumped from dump trucks with an approximate height of 1.5 metre. It is assumed that shaping of the snow pile is minimal and it is not stepped 2. Added as a commitments under **Section 7.9**. 3. Added as a commitments under **Section 7.9**. 4. Erosion and Sediment Control Plans will be provided at detailed design, where required. 5. Credit Valley Conservation’s Plant Selection Guidelines will be considered for native species planting selection.

Agency / Stakeholder	Date	Summary of Correspondence	Summary of Study Team Response
Toronto and Region Conservation Authority	September 22, 2022	■ Reviewed the draft supporting studies and provided detailed comments.	■ Comments have been considered and incorporated.
Toronto and Region Conservation Authority	January 1, 2023	■ Confirmed receipt of the Notice of Commencement and Public Information Centre, provided reminder of comments dated September 22, 2022 and indicated no further comments at that time.	■ Comments dated September 22, 2022 have been considered and incorporated.
Toronto and Region Conservation Authority	May 10, 2024	■ Confirmed that all comments have been addressed. ■ Requested to include Toronto and Region Conservation Authority in the Notice of Completion circulation to provide the final sign-off letter.	■ Toronto and Region Conservation Authority will be circulated a copy of the Notice of Completion.
City of Brampton	September 22, 2022	■ Requested to provide the existing and proposed drainage plans in the next submission ■ Confirm how water quality will be provided and if there the plan is to achieve 80% TSS removal with just the bioswales ■ Consider providing pre-treatment before runoff enters the bioswale as they will be prone to frequent build up of sediment. ■ Have you accounted for often the bio- swales and pre-treatment measures that are proposed will need to be cleaned? We understand this is preliminary design, but please consider this when finalizing SWM measures. ■ For sites like Site 3 that discharge into City of Brampton infrastructure, pre-treatment is required. ■ We understand that you may discharge into the existing SWM facility at Site 3, please confirm if it has capacity? ■ Will the bioswales be providing quantity control? If so, please consider that they would have to provide both quality and quantity control that the sediment will re-suspend at such high flows.	■ Noted. The City will be circulated a copy of the Project File and supporting studies. ■ The proposed design achieves 80% TSS removal with just the bioswales ■ Cleaning requirements will need to be determined/established once the pre-treatment units are completed/functional, since it is unclear how dirty the snow will be. ■ We are providing post to pre quantity control. Pre-treatment was considered, however there is limited space and elevation difference to include many options. The bioswales themselves provide pre-treatment prior to water entering City infrastructure. ■ The bioswales will provide quantity control.
City of Brampton	December 19, 2022	■ The West Brampton Reservoir and Pumping Station site is being reviewed as a possible location to put up Fire Station 216.	■ Comments noted and incorporated into the site screening. ■ The West Brampton Reservoir and Pumping Station has been recommended to proceed to conceptual design as a snow storage facility and future work will be further co-ordinated with the noted fire station, as required.
City of Brampton	May 2, 2024	■ Comment received from the City's Transportation Planning group for consideration regarding the Highway 50 Carpool Lot and future land uses in the area, their impact on the transportation system, and how retaining the Carpool Lot/GO Transit Stop can support the City and the Region's shared goal of shifting to sustainable modes prior to carrying this option forward.	■ The proposed snow storage area is located to the south of and not converting the existing Highway 50 Carpool Lot. Access to the proposed snow storage area will be by the existing Highway 50 Carpool lot but is not anticipated to conflict with the current use due to snow removal operations are considered to be taking place during the overnight hours.
Hydro One	December 12, 2022	■ Indicated that based on preliminary assessment, there are existing Hydro One Distribution assets in the subject area.	■ We will keep you updated on progress of the undertaking.
Ministry of Citizenship and Multiculturalism	January 26, 2024	■ Responded to the Notice of Commencement and confirmed the Stage 1 archaeological assessment (under Project Information Form number P123-0463-2021) has been completed for the proposed sites and has been entered into the Ontario Public Register of Archaeological Reports. ■ The ministry recommends that Stage 2 (and further stages of archaeological assessment, if recommended) be undertaken as early as possible during detailed design and prior to any ground disturbing activities. ■ The ministry recommends that the Cultural Heritage Report be completed for the sites.	■ A Cultural Heritage Report (**Appendix F**) has been completed to identify municipally, provincially, and federally recognized heritage properties, as well as to identify potential built heritage resources and cultural heritage landscapes within and/or adjacent to the snow storage site locations, in order to evaluate the potential impacts that the sites may have on cultural heritage resources.

Agency / Stakeholder	Date	Summary of Correspondence	Summary of Study Team Response
Ministry of Citizenship and Multiculturalism	April 30, 2024	■ Noted Site 10 (7120 Hurontario Street) was not included in the Stage 1 Archaeological Assessment and recommend that this location be screened for archaeological potential, and if necessary subjected to Stage 1 Archaeological Assessment, as soon as possible, so that the findings can be incorporated into the final version of the Project File. ■ In Table 6-3, it is unclear why the row for Site 11 makes no mention of the archaeological status of the site as either an advantage or disadvantage. ■ As the completion of archaeological assessment is not a permit or approval per se, we suggest renaming Table 7-5 to “Permits, Approvals and Legislative Requirements”. ■ Recommended to include a section summarizing the qualifications and roles of the staff involved in the preparation of the Cultural Heritage Report.	■ A Stage 1 Archaeological Assessment Report (**Appendix E)** has been prepared for Site 10 and is included in the final Project File. ■ Archaeological status added for Site 11 in Table 6-3. ■ Name of Table 7-5 revised as per the ministry’s recommendation. ■ Cultural Heritage Report (**Appendix F**) has been updated to include qualifications and role of staff.

9.4 Indigenous Community Consultation

The Region of Peel acknowledges the land on which we gather, and which the Region of Peel operates, is part of the Treaty Lands and Territory of the Mississaugas of the Credit. For thousands of years, Indigenous peoples inhabited and cared for this land, and continue to do so today. In particular we acknowledge the territory of the Anishinabek, Huron-Wendat, Haudenosaunee and Ojibway/Chippewa peoples; the land that is home to the Metis; and most recently, the territory of the Mississaugas of the Credit First Nation who are direct descendants of the Mississaugas of the Credit (Peel Aboriginal Network).

The following Indigenous Communities were notified as part of this study:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River (Elected Council)
- Haudenosaunee Development Institute

Mississaugas of the Credit First Nation requested to be engaged in the Project in a letter dated February 22, 2021. Mississaugas of the Credit First Nation were provided a copy of the draft Stage 1 Archaeological Assessment Report, Natural Environment Report and Cultural Heritage Report for review and comment. Field Liaison Representative participation and subsequent report review for future stage 2 archaeological assessments was requested.

Six Nations of the Grand River reviewed the Stage 1 Archaeological Assessment Report and confirmed no comments at the time and requested Field Liaison Representative participation and subsequent report review for future stage 2 archaeological assessments.

The Haudenosaunee Confederacy Chiefs Council has vested the Haudenosaunee Development Institute with the authority to represent the Haudenosaunee on matters relating to land development The Region has entered into an agreement with Haudenosaunee Development Institute to monitor environmental and/or archaeological field work for the Project and for the review of documents by Haudenosaunee Development Institute in connection with the environmental and archaeological field work required for the Project. A copy of the agreement is included in **Appendix J**.

The Haudenosaunee Development Institute was circulated the requested draft supporting studies. Below summarizes the comments received:

- “Snow Storage Sites Analysis and Conceptual Design Natural Environment Report – Environmental Treaty Rights Assessment” (dated November 13,

2023). Sites specific feedback for the preferred sites was shared with the Region related to lands, waters, species at risk, and a comparative assessment of site impacts. The Region of Peel provided responses to the comments on April 16, 2024.

- "Snow Storage Sites Analysis and Conceptual Design Natural Environment Report – Mitigation Engagement Strategy Plan" (dated Q1, 2024). The comments proposed a Mitigation Engagement Strategy Plan with recommendations pertaining to site selection, treaty land cumulative impacts, digital information system, buffer zone for aquatic habitats, erosion control measures and native vegetation restoration. The Region of Peel responded to the comments via email on September 20, 2024.

A meeting was also held with Haudenosaunee Development Institute on February 14, 2024 to discuss this Snow Storage Sites Analysis and Conceptual Design Project and other Region led projects.

The above noted documents provided by Haudenosaunee Development Institute and how comments have been considered to date are included in **Appendix J**. The site-specific commitments made to Haudenosaunee Development Institute in the Region's responses are also summarized in **Section 7.9** of this report.

Refer to **Appendix J** for the complete Indigenous consultation record.

The Region will continue to engage with the noted Indigenous Communities if there any substantial changes to the project/process or if applying for subsequent permits from the Ministry of the Environment, Conservation and Parks that may be of interest or concern to the identified communities.

10. Public Review of Project File and Next Steps

Placement of the Project File report for public review on the Region's website (**https://www.peelregion.ca/pw/transportation/construction/environmental-assessment/snow-storage-sites.asp**) completes the Municipal Class Environmental Assessment study. Pursuant to the Municipal Engineers Association Class Environmental Assessment document (October 2000, as amended in 2007, 2011 and 2015) snow storage facilities are "Schedule A" or pre-approved projects. However, the Region has elected to follow a similar process of that to a Schedule B Municipal Class Environmental Assessment planning framework for this study to allow for the evaluation of snow storage siting opportunities in consultation with key stakeholders, regulatory agencies, Indigenous communities, and the public.

The 30-day comment period commences on November 21, 2024 and ends on December 20, 2024. Interested persons could provide written comments to the study team by December 20, 2024. All comments and concerns were requested to be sent directly to the Region's Project Manager listed below.

- Syeda Banuri, M.Eng., P.Eng.
  Project Manager, Region of Peel
  10 Peel Centre Drive, Suite B
  Brampton, Ontario L6T 4B9
  Telephone: 416-407-7860
  Email: syeda.banuri@peelregion.ca

As the proposed snow storage sites qualify as Schedule A projects, no Section 16 Order request may be made to the Ministry of the Environment, Conservation and Parks (or Ministry) for an order requiring a higher level of study (i.e., requiring an individual/comprehensive Environmental Assessment approval before being able to proceed), or that conditions be imposed (e.g., require further studies), on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights.

All personal information included in the request – such as name, address, telephone number and property location – is collected, under the authority of section 30 of the Environmental Assessment Act and was collected and maintained for the purpose of creating a record that is available to the general public. As this information is collected for the purpose of a public record, the protection of personal information provided in the Freedom of Information and Protection of Privacy Act does not apply (s.37). Personal

information submitted is part of a public record that is available to the general public, unless requested that personal information remain confidential.

The Region intends to proceed with the phased implementation of the design and construction processes associated with the snow storage facility sites.

11. Conclusions

This Project File covers the process required to ensure that the proposed snow storage sites comply with the *Environmental Assessment Act*. The screening of the sites for snow storage facilities resulted in the following validated sites being recommended for design:

- **Site 1: Highway 50 Carpool Lot**, in Brampton, is adjacent to the parking lot owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 3**: **West Brampton Reservoir and Pumping Station**, in Brampton, is owned by the Region and has been recommended to proceed due to its proximity to the serviced areas and the available space.
- **Site 5: Johnston Sports Park**, in Caledon, is owned by the Town of Caledon and has been recommended to proceed due to its proximity to the serviced areas and the available space. This site will be joint use and in line with the proposed Johnston Sports Park Master Plan.
- **Site 6: Tullamore Reservoir and Pumping Station**, in Caledon, is owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 9: Alloa Reservoir and Pumping Statio**n, in Caledon, is owned by the Region and has been recommended to proceed largely due to good access and existing infrastructure that can be leveraged.
- **Site 10: 7120 Hurontario Street**, in Mississauga, is owned by the Region and has been recommended to proceed as this site has surplus parking area and is currently being used as a temporary snow storage area.

The six candidate sites are suitable to serve as snow storage facilities, based on a review of currently available background information and ability to provide stormwater management servicing to each location.

Subject to detailed design investigations, Low Impact Development-based servicing approaches are currently understood to be suitable for Sites 1, 3, 5, 6, 9, and 10, and may be required to satisfy site grading constraints.

The Municipal Class Environmental Assessment planning process has not identified any significant environmental concerns associated with each snow storage site that cannot be addressed by incorporating best management practices and established mitigation

measures during construction. The minor to moderate and predictable impacts can be addressed by recommended mitigation measures as presented in **Section 8**.

Servicing designs for each location are to be confirmed following the completion of detailed field studies and analysis. Facility design and construction of preferred snow storage facilities will be determined by the Region on an individual basis.