DURHAM – SCARBOROUGH
Bus Rapid Transit

Appendix C –
Natural Environmental Report

Prepared for Metrolinx
by IBI Group & Parsons

Metrolinx acknowledges that it operates on the lands of Indigenous Peoples, including the Anishinaabe, the Haudenosaunee and the Wendat peoples, and that these lands are covered by Treaty.

In particular, we wish to recognize that the proposed work and project study area of the Durham-Scarborough BRT is situated on the treaty territory of the Williams Treaties First Nations, and the Mississaugas of the Credit First Nation, and we acknowledge that the lands are covered by the Gunshot Treaty 1788, the Williams Treaty 1923, and the Williams Treaty Settlement of 2018.*

Metrolinx has a responsibility to recognize and value the rights of Indigenous Nations and Peoples and conduct business in a manner that is built on the foundation of trust, respect and collaboration. Metrolinx is committed to building meaningful relationships with Indigenous Nations and working towards meaningful reconciliation with the original caretakers of this land. We wish to thank Indigenous Nations for their contributions to these reports.

** Notwithstanding the foregoing, nothing in this acknowledgement shall be interpreted so as to indicate Metrolinx's position on any Treaty territory or right.*

NATURAL ENVIRONMENT REPORT - IMPACT ASSESSMENT

PRELIMINARY DESIGN AND ENVIRONMENTAL ASSESSMENT/ TRANSIT PROJECT ASSESSMENT PROCESS

DURHAM-SCARBOROUGH BUS RAPID TRANSIT

CITY OF TORONTO AND DURHAM REGION (CITY OF PICKERING, TOWN OF AJAX, TOWN OF WHITBY, AND CITY OF OSHAWA)

Prepared for:

IBI GROUP, PARSONS AND METROLINX

Prepared by:

LGL LIMITED
environmental research associates

DECEMBER 2021
(Revised February 2022)

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DECEMBER 2021
(Revised February 2022)
LGL PROJECT TA8893-2-14-1

EXECUTIVE SUMMARY

The Durham-Scarborough Bus Rapid Transit (DSBRT) project proposes approximately 36 kilometres of Bus Rapid Transit infrastructure along Highway 2 and Ellesmere Road connecting downtown Oshawa, Whitby, Ajax, Pickering and Scarborough. The corridor will improve connections between TTC, DRT and GO Transit services, allowing transit riders to get where they are going faster than before. IBI Group/Parsons is managing the project on behalf of Metrolinx. LGL Limited is providing environmental planning, natural heritage and arborist services.

This Natural Environment Report documents the results of the secondary source review as well as the detailed natural heritage existing conditions field investigations undertaken by LGL Limited between April 2019 and June 2020 during the pre-TPAP phase of the Preliminary Design Study and Environmental Assessment. The overall study area for the natural heritage secondary source existing conditions review included a 240 m wide corridor (120 m north and south) centred along Ellesmere Road, Kingston Road, Dundas Street and King Street/Bond Street within the study area. The study area for the detailed natural heritage field investigations focused on the DSBRT footprint (including the road rights-of-way and adjacent lands) within and directly adjacent to the road right-of-way and up to approximately 120 m north and south of the centreline depending on the natural heritage requirements for each discipline. The groundwater investigation was undertaken separately by Parsons and a summary is provided in **Section 4c**.

Section 2.0 outlines the various environmental policies, plans and legislation related to natural heritage that will need to be adhered to as part of the DSBRT project. A description of the natural heritage features, systems and policies outlined in each of the municipal Official Plans is also discussed for each municipality located within the study area. **Section 3.0** provides further information on the desktop and background data review, agency consultation and field surveys. **Section 4.0** describes in detail the existing conditions for all natural heritage features. A brief summary of existing conditions is provided below for each discipline.

Landforms and Physiology

According to Chapman and Putnam (1984), the entire study area is located within the South Slope and the Iroquois Plain physiographic regions. The bedrock formation and the distribution of the soil parent materials lie within Ontario County.

Bedrock Geology, Quaternary Geology and Soils

Bedrock consists of shale, limestone, dolostone and siltstone of the Georgian Bay Formation from the Upper Ordovician period (OGS 1991). Quaternary geology consists of deposits from the Pleistocene Epoch. Within the DSBRT study area, Woburn, Fox Sandy Loam, Brighton and Bottom Land soils are found within the former Scarborough Township. Woburn, Brighton, Bottom Land, Smithfield, Schomberg, Tecumseth, Granby, Darlington, Whitby, Bondhead, Simcoe and Lyons soils are found within the former Ontario County.

Groundwater

A search of the MECP water well records database was completed as part of the groundwater investigation. In summary, a total of 558 wells were identified within the study area. All water well records from Toronto were recent (2005 and later) and did not include static groundwater levels indicating these were unlikely to be water supply wells and more likely to be test holes where no wells were installed (i.e., holes abandoned upon completion). Water well records for Pickering, Ajax, Whitby and Oshawa dated back to 1947, 1946, 1956 and 1955, respectively, indicating that some older water

wells may still exist in the study area and these wells may still be in use by their owner. A total of 94 of the 558 water wells are located within the construction footprint of the DSBRT and may need to abandoned before construction begins. Despite the range for the maximum to minimum depth to groundwater, many records indicated shallower groundwater that may require construction dewatering during deeper excavations required for the DSBRT project.

Groundwater flow patterns are strongly influenced by the watercourses located within the study area. Shallow groundwater or indications of shallow groundwater were encountered at several sites within the study area. The Duffins Creek watershed was cited as having relatively high base flow indexes (BFIs) indicating that significant baseflow is from groundwater discharge. No significant groundwater recharge areas were identified in the study area. The Scarborough Aquifer is present throughout much of the western portion of the study area, but is buried beneath younger Quaternary deposits (e.g., glaciolacustrine, Halton Till etc.). There are numerous shallow Highly Vulnerable Aquifers (HVAs) located throughout the study area. No Well Head Protection Areas were identified within or near the study area.

Watercourses and Hydrological Features

A total of twenty-four (24) watercourses cross or lie within the DSBRT corridor and these watercourses are located within ten (10) watersheds. The first six watersheds are under the jurisdiction of the Toronto and Region Conservation Authority (TRCA) and the remaining four are under the jurisdiction of the Central Lake Ontario Conservation Authority (CLOCA).

Aquatic Environment

Section 4e provides a detailed description of the existing fish and fish habitat at each of the 24 watercourse crossings. **Table 5** provides the following for each watercourse crossing based on data obtained from external agencies and field investigations: flow (permanent, intermittent, ephemeral), thermal regime (warmwater, coldwater), fish habitat (direct, indirect), fish species present, substrate type, vegetation, species at risk/critical habitat present and the in-water works timing window.

Terrestrial Environment

Vegetation communities found within the study area consist of a mixture of forest, wetland and cultural communities. A large portion of the study area, within the road right-of-way, is associated with cultural communities and manicured areas that contain a high proportion of invasive and non-native plant species that are disturbance tolerant. A total of 29 ecosites/vegetation types were identified within the study area based on field surveys undertaken by LGL staff throughout the spring, summer and fall of 2019. A total of 305 plant species were recorded within the study area, however, 13 of these plants could only be identified to genus. Of the 292 plants identified to species, 167 are native (57%) and 125 are non-native (43%). Forest and wetland communities generally provide higher quality habitat and have a higher occurrence of native plant species that are more specialized. Higher quality vegetation communities with a more diverse range of native species were associated with designated natural areas including Highland Creek Swamp ANSI and associated ESAs, Ellesmere Woods ESA, and the Rouge River Valley ANSI and associated ESAs.

Wildlife

Valleylands associated with Highland Creek, Tributary of Highland Creek, Centennial Creek, and Rouge River/Little Rouge Creek (within Toronto); Petticoat Creek, Dunbarton Creek, and Pine Creek (within Pickering); West Duffins Creek, Duffins Creek and Carruthers Creek (within Ajax); Lynde Creek, Pringle Creek and Tributary of Corbett Creek (within Whitby); and Corbett Creek, Goodman Creek, and Oshawa Creek (within Oshawa) comprise the highest quality natural heritage features in the study area, provide important north-south local and regional movement corridors for wildlife, and support a moderate

diversity of wildlife species. These north-south naturalized linkages provide increased opportunity for wildlife utilization of habitats within and adjacent to the study area. Interspaced between these larger, more contiguous natural heritage features, are numerous open-country habitat types such as cultural communities, agricultural lands, and several aquatic habitat types. However, outside of these valleylands, the landscape is highly disturbed and supports limited natural heritage features (largely composed of manicured lands), resulting in the presence of a low to moderate diversity of wildlife species generally considered urban or tolerant of anthropogenic features and disturbance.

Seven herpetofauna species were identified within the DSBRT study area and four of these were observed by LGL during the 2019 field investigations. One invertebrate record was provided by CLOCA (Giant Swallowtail); although no invertebrates were documented by LGL during the 2019 field investigations. A total of nine mammal species were identified within the DSBRT study area and eight of these were observed by LGL during the 2019 field investigations.

A total of 47 bird species were documented within the vicinity of the study area during the breeding bird surveys conducted by LGL Limited, and an additional 22 species were identified through secondary sources (CLOCA 2019b, NHIC 2019a, TRCA 2019b). Potential Barn Swallow nesting habitat exists within the study area. The four crossings and bridge structures that are potential Barn Swallow nesting habitat include: Highland Creek (Crossing 1), Rouge River (Crossing 4), West Duffins Creek (Crossing 12) and Lynde Creek (Crossing 18). These bridge structures may provide nesting habitat for other species as well. Three species, American Robin, Canada Goose, and Red-winged Blackbird, were confirmed breeding within the DSBRT study area based on the observation of a nest with young/recently fledged young. The remaining 44 species were considered either observed, possible, or probable breeders. No stick nests or other nests, or evidence of nesting by other migratory birds, were observed during field investigations.

Significant Wildlife Habitat

The DSBRT study area is located within the Ministry of Natural Resources and Forestry's (MNRF's) Ecoregion 6E and Ecoregion 7E. Therefore, the site is subject to the *Significant Wildlife Habitat Criteria Schedules for Ecoregions 6E and 7E* (MNRF 2015). During LGL's 2019 field survey, no seasonal concentration areas were found within or in proximity to the study area. No rare vegetation communities or specialized habitats for wildlife were found within the study area; nor were any habitats for rare (provincially ranked S1 to S3 species) or special concern species found. Although no Significant Wildlife Habitat was documented as per the Provincial Policy Statement, many portions of the study area (all creeks and associated valley and riparian areas) do provide important local and regional animal movement corridors.

Species at Risk

A total of 16 species at risk (SAR) (as well as endangered bat species) have been recorded in the vicinity of the DSBRT study area by secondary source data. These 16 species include three aquatic SAR, one plant SAR, and 12 wildlife SAR (as well as endangered bat species). However, only two of these SAR were identified within the vicinity of the study area during LGL's field investigations including Barn Swallow (regulated as 'Threatened' under the Ontario ESA) and butternut (regulated as 'Endangered' by both the Ontario ESA and Canada SARA). One additional plant SAR (Kentucky coffee tree – regulated as 'Threatened' under the Ontario ESA and Canada SARA) was identified during the arborist investigation.

A high-level bat habitat characterization was completed and included a forest classification and identification of tree snags and cavities. Within the study area, some forest, swamp and cultural community types may provide suitable roosting habitat for SAR bats. In addition, 48 candidate snag habitat trees were identified within the study area. "Bat trees" have cavities, cracks, exfoliating bark or clumps of leaves that would be suitable for roosting.

Significant Natural Heritage Features

There are four Provincially Significant Wetlands (PSWs) and three Areas of Natural and Scientific Interest (ANSIs) located within the vicinity of the DSBRT study area. According to the TRCA (2019b) and City of Toronto (2019b), there are five Environmentally Significant Areas (ESAs) located directly within the study area (within their jurisdictions), and an additional three ESAs located just outside of but within the vicinity of the study area. CLOCA's NHS is present within a small portion of the Town of Ajax (east of Carruthers Creek) and is also located across the Town of Whitby and the City of Oshawa within the DSBRT study area typically associated with watercourses within this section of the study area.

In addition, there are 13 unevaluated wetlands located within the vicinity of the study area. Also, a Carolinian Core Natural Area is associated with the Rouge River Valley Life Science ANSI which is approximately 15 m to 18 m north and over 220 m south of the study area. Another Core Natural Area and Existing and Potential Connection/Area are associated with the Highland Creek Swamp ANSI and Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA), with associated natural features adjacent to/outside of the right-of-way, ranging between 15 m to 90 m from roadside edges. In addition, isolated Core Natural Areas were identified, but these are located outside of the study area.

This Natural Environment Report also includes the effects assessment of the preferred design undertaken by LGL Limited during the pre-TPAP and TPAP phase of the Preliminary Design Study and Environmental Assessment. The impacts to existing natural heritage features resulting from the preferred design alternative/DSBRT footprint are discussed as well as the proposed environmental protection/mitigation measures and recommendations for future work during the detail design phase.

Section 5.0 presents the effects assessment of the preferred design and includes a discussion of the impacts to natural heritage features resulting from the preferred design alternative/DSBRT footprint as well as the proposed environmental protection/mitigation measures. The environmental effects/impacts and the proposed environmental protection/mitigation measures are described separately for each natural heritage discipline under footprint impacts, construction impacts and operations impacts. **Section 6.0** outlines the recommendations for future work including permitting and monitoring requirements. A list of references is presented in **Section 7.0**.

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1.0 INTRODUCTION

1a. Background

In 2018, Metrolinx completed an Initial Business Case study, recommending a preferred Bus Rapid Transit (BRT) alignment between Downtown Oshawa (in Durham Region) and Scarborough City Centre (in the City of Toronto). The project has now advanced to the Preliminary Design and Environmental Assessment/Transit Project Assessment Process (TPAP) phase in accordance with the Metrolinx Business Case Framework, for capital investment projects. IBI Group/Parsons is managing the project on behalf of Metrolinx. LGL Limited is providing environmental planning, natural heritage and arborist services.

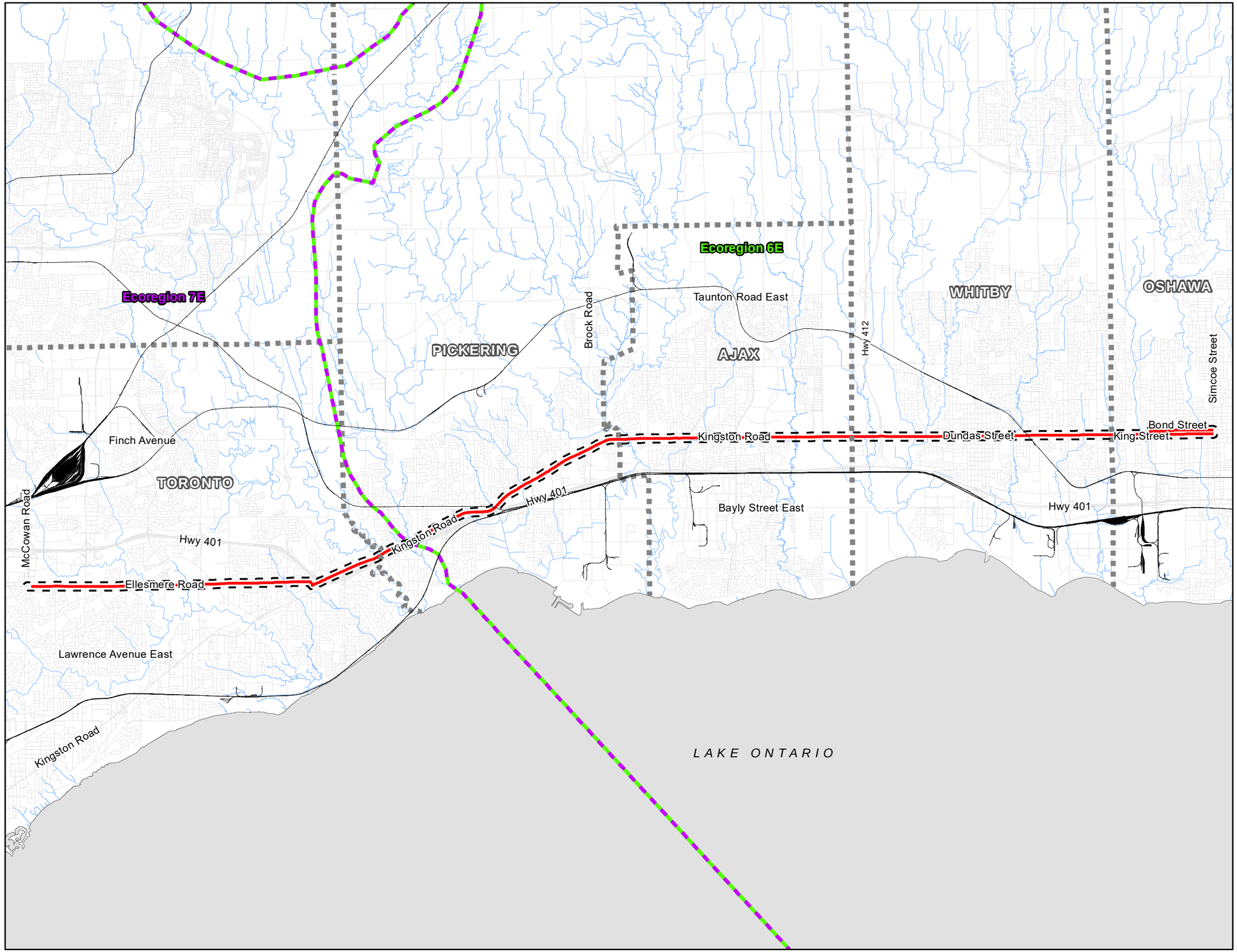
The Durham-Scarborough Bus Rapid Transit (DSBRT) project proposes approximately 36 kilometres of dedicated transit infrastructure, connecting downtown Oshawa, Whitby, Ajax, Pickering and Scarborough. This project builds on the existing PULSE service and will provide more dedicated transit infrastructure along Highway 2 and Ellesmere Road to connect into Scarborough Centre. The DSBRT is recognized as a crucial transportation corridor connecting people through Durham and Scarborough. The corridor has varied traffic, land use conditions and constraints. With rapid growth in the past decade, and an expectation for this growth to continue into the future, travel demand along the corridor will continue to increase and higher capacity transit will be needed to link communities and employment on both sides of the Toronto-Durham boundary. Transit infrastructure will include a range of solutions in different segments of the corridor ranging from queue jumps and mixed traffic priority measures to dedicated curb or median lanes.

This Natural Environment Report documents the results of the secondary source review as well as the detailed natural heritage existing conditions field investigations undertaken by LGL Limited in 2019 and 2020 during the pre-TPAP phase of the Preliminary Design Study and Environmental Assessment. A description of the existing natural heritage conditions within the study area is provided. The groundwater investigation was undertaken separately by Parsons and a summary is provided in **Section 4c**. This Natural Environment Report also includes the effects assessment of the preferred design undertaken by LGL Limited during the pre-TPAP and TPAP phase of the Preliminary Design Study and Environmental Assessment. The impacts to existing natural heritage features resulting from the preferred design alternative/DSBRT footprint are discussed as well as the proposed environmental protection/mitigation measures and recommendations for future work during the detail design phase.

1b. Study Area

The study area is located in the City of Toronto (Scarborough) and in Durham Region (City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa). The study area runs along Ellesmere Road, Kingston Road, Dundas Street and King Street (and along a portion of Bond Street), originating in the City of Toronto (at McCowan Road) and ending in the City of Oshawa (just east of Simcoe Street). A key map of the study area is presented in **Figure 1**.

The overall study area for the natural heritage secondary source existing conditions review included a 240 m wide corridor (120 m north and south) centred along Ellesmere Road, Kingston Road, Dundas Street and King Street/Bond Street within the study area (see **Figure 1**). The study area for the detailed natural heritage field investigations focused on the DSBRT footprint (including the road rights-of-way and adjacent lands) within and directly adjacent to the road right-of-way (ROW) and up to approximately 120 m north and south of the centreline depending on the natural heritage requirements for each discipline.



LEGEND

- Study Area Limits/Centreline
- Road
- Railway
- Municipal Boundary
- Watercourse
- Natural Heritage Investigation Area
- Lake Simcoe - Rideau Ecoregion 6E
- Lake Erie - Lake Simcoe Ecoregion 7E

Data Source: Ontario Ministry of Natural Resources and Forestry (LIO).

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KEY MAP OF STUDY AREA AND ECOREGION BOUNDARIES

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Project: TA8893	**Figure:** 1
Date: November, 2021	**Prepared By:** JJP
Scale: 1 : 145,000	**Checked By:** LS

2.0 ENVIRONMENTAL POLICY CONTEXT

This chapter outlines the various environmental policies, plans and legislation related to natural heritage that will need to be adhered to as part of the DSBRT project.

2a. Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) (Ministry of Municipal Affairs and Housing 2020) is issued under Section 3 of the *Planning Act* and provides policy direction on matters of provincial interest related to land use planning. The PPS includes a range of policies on the efficient use and management of land and infrastructure. One of the visions in the PPS is the development of land use patterns that promote a mix of housing, including affordable housing, employment, recreation, parks and open spaces, and transportation choices that increase the use of active transportation and transit, before other modes of travel.

The PPS states that planning authorities should plan for and protect corridors and ROWs for infrastructure, including transportation, transit and electricity generation facilities and transmission systems to meet current and projected needs. The PPS requires the planning of major infrastructure to support long-term economic prosperity by providing for an efficient, cost-effective, and reliable multi-modal transportation system that is integrated with adjacent systems, and those of other jurisdictions and is appropriate to address expected growth. In addition, the PPS states that planning for ROWs for transportation and infrastructure facilities must consider significant resources such as natural heritage, agriculture, and cultural heritage resources. The PPS encourages coordination between municipalities and other levels of government when planning for transit and infrastructure.

The DSBRT will be a crucial transportation corridor connecting people through Scarborough and Durham Region. By providing alternative options for transportation and increasing connectivity across the GTA, the DSBRT will directly serve regional urban growth centres such as the Scarborough Town Centre, downtown Pickering and Oshawa.

2b. Places to Grow Growth Plan for the Greater Golden Horseshoe, 2019

The Places to Grow Growth Plan for the Greater Golden Horseshoe (Growth Plan) (Ministry of Municipal Affairs and Housing 2019) provides a framework for implementing the Provincial vision for building stronger, prosperous communities by better managing growth in the region by 2041. The intent of the Growth Plan is to reduce urban sprawl and consumption of land while making more efficient use of existing infrastructure. The Growth Plan was originally approved in 2006 and amended in 2013 and 2017 by the Ministry of Municipal Affairs and Housing. The Plan has now been replaced with the 2019 Growth Plan that took effect on May 16, 2019.

The Growth Plan recognizes transit as the first priority for major transportation investments. It sets out a regional vision for transit and seeks to align transit with growth, by directing growth to major transit station areas and other strategic growth areas, including urban growth centres, and promoting transit investments in these areas.

One of the major changes in the 2019 Growth Plan is the inclusion of a streamlined approach that enables the determination of major transit stations areas to occur at a faster rate to accommodate development. A new policy allows municipalities to delineate and set density targets for major transit station areas in advance of the municipal comprehensive review, provided the protected major transit station area tool under the *Planning Act* is used.

The Growth Plan notes that the distribution of population for the City of Toronto is expected to grow to 3,190,000 in 2031, and for Durham Region is expected to grow to 970,000 in 2031. Portions of the

DSBRT study area are located within the Greater Golden Horseshoe Growth Plan Area and the Greenbelt Plan Area (see **Figure 2** and Schedule 1 in **Appendix A**). Schedule 2, *Places to Grow Concept*, shows that the study area lies within the 'Built-up Area-Conceptual', and 'Greenbelt Area', and passes through three 'Urban Growth Centres' and within the "Priority Transit Corridors' land use designation. The study area falls under the same land use designations in Schedule 4 *Urban Growth Centre* and in Schedule 5 *Moving People-Transit* (see **Appendix A**).

In general, the Growth Plan provides policy direction for identifying strategic growth areas as key areas for development, and directs intensification to urban areas, while ensuring that complete communities are achieved. The Growth Plan supports a transportation network that links urban growth areas through an extensive multi-modal system anchored by efficient public transit together with highway systems. The Growth Plan identifies several regional 'Urban Growth Centres' in the vicinity of the DSBRT study area including: Scarborough Town Centre, downtown Pickering, and downtown Oshawa. Downtown Oshawa and downtown Pickering function as the dominant Centres within Durham Region. These three 'Urban Growth Centres' identified in the Growth Plan connect to sections of the proposed DSBRT and will directly support strategic growth areas within the region by providing higher-order transit services.

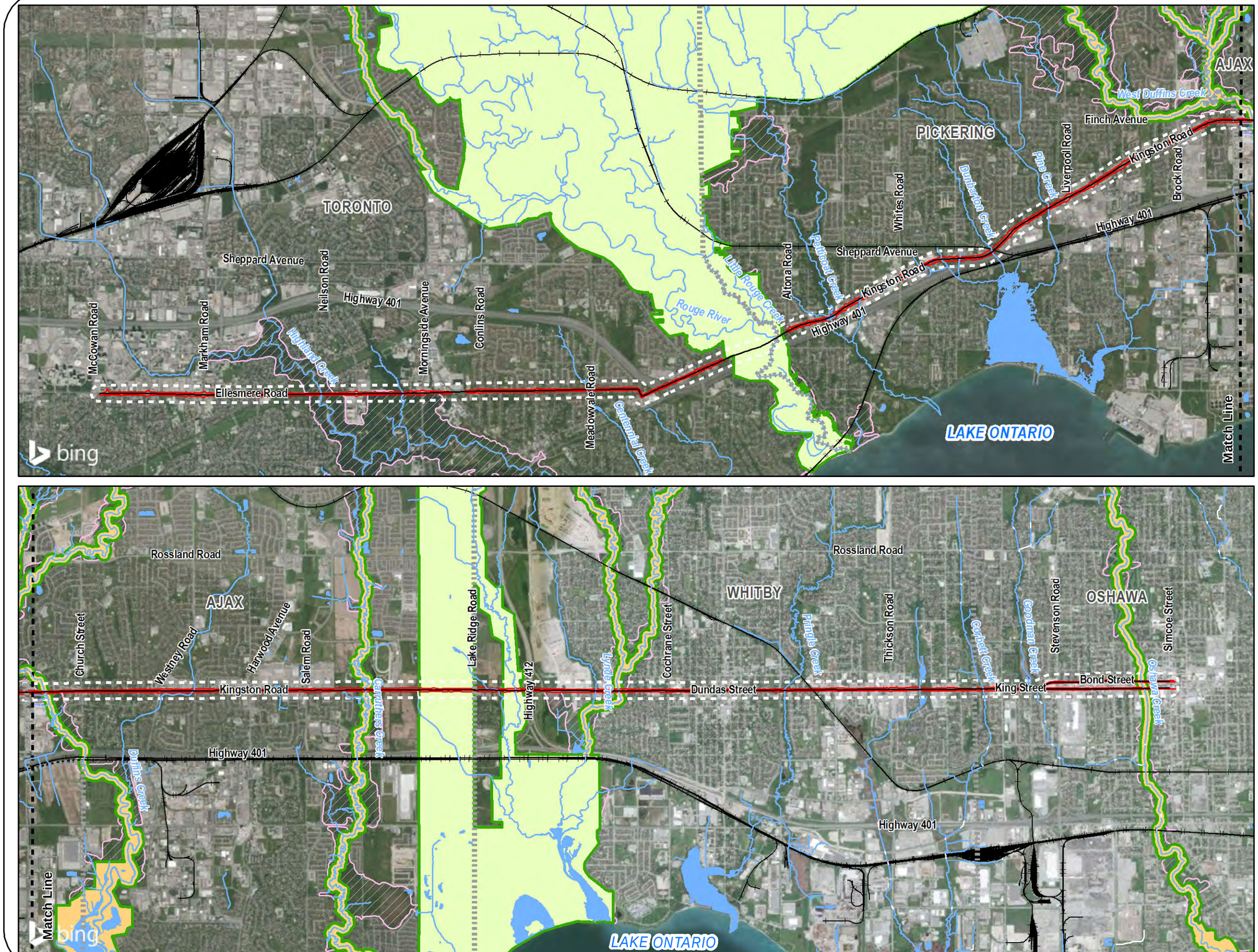
2c. Metrolinx Regional Transportation Plan, 2008 and 2041 Regional Transportation Plan for the Greater Toronto and Hamilton Area

The Regional Transportation Plan (RTP), also known as The Big Move: Transforming Transportation in the Greater Toronto and Hamilton Area (GTHA), released by Metrolinx (2008 – Approved Changes February 14, 2013), provides a vision, goals and objectives for the future in which transportation within the Greater Toronto and Hamilton Area is seamless, coordinated, efficient, equitable and user-centred. It reaches out 25 years into the future to guide and direct decision-making. Some of the goals and objectives presented in the RTP to guide decision-making applicable to the DSBRT include:

- increase of transportation options for accessing a range of destinations;
- improved transportation experience and travel time reliability; and,
- lower average trip time for people and goods.

The RTP allows for a regional rapid transit network that operates seamlessly across the region. Within the first 15 years of the RTP's implementation, a priority is placed on key regional projects that will add significant improvements to the GTHA's transportation system. Durham Region (Oshawa, Whitby, Ajax and Pickering) is identified in the RTP to have rapid transit access along Highway 2 to Toronto, with connections for travel further west to the Pearson Airport district along the new Finch/Sheppard corridor or the new Eglinton rapid transit corridor.

The GTHA has experienced rapid population, shifts in demographics, job changes and new transportation technologies. The 2041 Regional Transportation Plan for the Greater Toronto and Hamilton Area (adopted in 2018) continues the work from 'The Big Move'. The Plan was authorized by Metrolinx in 2018 and developed alongside experts all over the GTHA and with Go Transit service area municipalities. The Plan outlines how governments and transit organizations can work together to build a transportation system that puts travelling needs at the core of planning and operations. The Plan recommends the expansion of the existing transit network that supports the creation of a transit network that is comprehensive, connected, accessible, sustainable and focused on people. Within the Plan, other regional transit facilities/networks in delivery or development located in the vicinity of the study area are identified. The Plan sets the foundation of future and frequent rapid transit and advances key rapid transit projects. The DSBRT will complement the existing network and contribute to the momentum of being part of North America's largest rapid transit expansion program.



LEGEND

- Study Area Limits/Centreline
- Railway
- Municipal Boundary
- Grading Limits
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Growth Plan for the Greater Golden Horseshoe (2019)
- Protected Countryside Designation - Greenbelt Plan (2017)
- Urban River Valley Designation - Greenbelt Plan (2017)

Data Source: Ontario Ministry of Natural Resources and Forestry (LIO).

0 600 1,200 1,800 2,400 m

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PROVINCIAL PLAN AREAS

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Project:	TA8893	**Figure:**	2
Date:	November, 2021	**Prepared By:**	JJP
Scale:	1 : 60,000	**Checked By:**	LS

2d. Rouge National Urban Park Management Plan, 2019

The Rouge National Urban Park is located within Canada's largest metropolis, the Greater Toronto Area (GTA). The Rouge National Urban Park extends across three watersheds within the eastern limits of the GTA. The park is situated in the heart of the Rouge River watershed and is an important contributor to the headwaters of the West Duffins Creek watershed and portions of the Petticoat Creek watershed headwaters.

The *Rouge National Urban Park Act*, enacted in 2015 and amended in 2017, is tailored to the protection of the national urban park. The *Rouge National Urban Park Act* provides Parks Canada with the legislative framework to guide decision-making and offer the strongest protections for the park's ecosystems and cultural and agricultural resources. The *Rouge National Urban Park Act* requires the preparation of a management plan for the park within five (5) years of the park's establishment in 2015.

The Rouge National Urban Park Management Plan, prepared in 2019 by Parks Canada, is a foundational document that includes a ten-year implementation period guiding the protection of the park. The management plan includes three areas of guidance: an introduction, which provides the context for the management plan; four key strategies for park-wide guidance for natural heritage; and, six management area concepts that cover the geographic area to provide more area and site-specific planning.

The DSBRT is proposed to cross lands administered by Parks Canada (between Raspberry Road and Altona Road surrounding the Rouge River (Crossing 4) and its valleylands, both north and south of Kingston Road) and designated under Section 14(1) of the *Rouge National Urban Park Act*, and is subject to the Rouge National Urban Park Management Plan. Infrastructure improvements that support public purposes have been previously considered. Section 16 (1) of the *Rouge National Urban Park Act* permits the transfer of a maximum of 200 hectares (ha) of parkland to a federal, provincial or municipal authority for the installation or maintenance of public infrastructure, including public utilities or transportation corridors.

The Management Plan identifies a number of park management concept areas and identifies the future conditions and opportunities for each area. The DSBRT is proposed to cross two park management concept areas including Management Area 1 and Management Area 6. The study area crosses Management Area 1 (depicted on Map 5 – see **Appendix A)** and crosses through a proposed trail corridor, running adjacent to a Gateway Welcome Area and Glen Rouge Campground. Management Area 6 (depicted on Map 10 – see **Appendix A**) shows the external trail connections, specifically the 'Proposed Rapid Transit', reflecting the footprint of the DSBRT. The Plan notes a commitment by Parks Canada to participate in the municipal planning and urban design along Kingston Road, to reinforce the corridor's role as an easterly Pickering/Durham gateway into Rouge National Urban Park.

2e. Greenbelt Plan, 2017

The Greenbelt Plan was established under Section 3 of the *Greenbelt Act*, 2005, and took effect on December 16, 2004. The Greenbelt Plan was later updated and a revised plan was released by the Ministry of Municipal Affairs in 2017.

The Greenbelt Plan is comprised of several plan areas including: the Niagara Escarpment Plan area; Oak Ridges Moraine Conservation Plan area; Parkway Belt West Plan area; and, Greenbelt Plan 'Protected Countryside' and 'Urban River Valleys'. The Greenbelt Plan is also comprised of various geographic specific policies that apply to lands within the 'Protected Countryside' designation including the 'Agricultural System', 'Natural Heritage System', and 'Settlement Areas'.

Schedule 1 'Greenbelt Area' and Schedule 4 'Natural Heritage System' in the Greenbelt Plan (see **Appendix A**) show that the DSBRT study area lies predominately outside of the Greenbelt Plan Areas (and within the 'Settlement Areas Outside the Greenbelt' Area). However, portions of the DSBRT study area lie within areas designated by the Greenbelt Plan as 'Protected Countryside' – 'Natural Heritage System', and 'Urban River Valleys' (see **Figure 2**).

'Protected Countryside' Designation

The study area lies within the Greenbelt Plan Area, specifically within the 'Natural Heritage System' part of the 'Protected Countryside' designation, at the Rouge River/Little Rouge Creek valleylands (Crossing 4) and at two Tributaries of Lynde Creek (Crossings 15 and 16) – see **Figure 2.** Section 3.2.7 of the Greenbelt Plan provides policy direction for the Rouge River watershed. Along with other Rouge River tributaries, the Greenbelt Plan identifies a 600 metre (m) wide corridor for Little Rouge River as the main ecological corridor between Lake Ontario and the southern boundary of the Oak Ridges Moraine Conservation Plan. Land use planning within the Rouge River watershed must comply with regulations set forth by the TRCA and under the Rouge National Urban Park Management Plan (2019), and the Greenbelt Plan as well as other provincial plans and policies that are applicable to the area.

Section 3.2.2 of the Greenbelt Plan also outlines the policies that apply to the 'Natural Heritage System' of the 'Protected Countryside' designation. Development or site alteration within the 'Natural Heritage System' must demonstrate that there are no negative impacts on key natural heritage features or key hydrological features along with their associated functions. The policy also states that development must encourage and maintain connectivity between key natural heritage features and key hydrological features within 240 metres (m) of one another to encourage and facilitate the movement of native flora and fauna. In addition, the removal of other natural features not identified as key natural heritage features and key hydrological features should be avoided.

'Urban River Valley' Designation

Four watercourses designated as 'Urban River Valleys' under the Greenbelt Plan (2017) are located within the DSBRT study area, as presented in **Figure 2** and on the maps in **Appendix A**. The 'Urban River Valleys' include:

- West Duffins Creek (Crossing 12) crossing Kingston Road west of Church Street;
- Carruthers Creek (Crossing 14) crossing Kingston Road east of Salem Road;
- Lynde Creek (Crossing 18) crossing Dundas Street west of Cochrane Street; and,
- Oshawa Creek (Crossing 23) crossing King Street west of Simcoe Street.

Section 6 of the Greenbelt Plan outlines the policies that apply to the 'Urban River Valleys' designation. Only publicly owned lands are subject to the policies of the 'Urban River Valleys' designation. This designation is subject to the applicable Official Plan policies as long as they have regard for the objectives of the Greenbelt Plan. All existing, expanded or new infrastructure subject to the *Environmental Assessment Act* is permitted provided that it supports the needs of adjacent settlement areas or serves the significant growth and economic development expected in southern Ontario and supports the goals and objectives of the Greenbelt Plan. The need for the DSBRT was demonstrated in the Initial Business Case study and further explanation of the need and justification will be presented in the Environmental Project Report for this study.

In addition, a number of other policies are outlined under Section 3 of the Greenbelt Plan. In order to support connections between the Greenbelt's 'Natural Heritage System' and the local, regional and broader natural heritage systems of southern Ontario, the following should be undertaken by government and agencies:

- Consider how activities and land use changes within and abutting the Greenbelt relate to the areas of external connections and 'Urban River Valley' areas identified in the Greenbelt Plan;
- Promote and undertake appropriate planning and design to ensure that external connections and 'Urban River Valley' areas are maintained and/or enhanced; and,
- Undertake watershed planning, which integrates supporting ecological systems with those systems contained in the Greenbelt Plan.

As part of the DSBRT project, consideration has been made for the potential impacts of the DSBRT on the 'Urban River Valleys' and 'Protected Countryside' Greenbelt Plan designation areas within the study area. Efforts will be made to avoid/minimize impacts to the watercourses/valleys at each of the 'Urban River Valleys' and within the 'Protected Countryside' areas to the extent possible. Appropriate environmental protection and mitigation measures to maintain and/or enhance the "Protected Countryside' and 'Urban River Valleys' have been included in **Sections 5f** and **5j** (and will be included in the Environmental Project Report).

Section 3.2.6.2 of the Greenbelt Plan (2017) outlines policies for considering land conversions or redevelopment in or abutting the 'Urban River Valleys', and to strive for approaches that:

- Establish or increase the extent or width of a *vegetation protection zone* in natural self-sustaining vegetation, especially in the most ecologically sensitive areas (i.e. near the stream and below the stable top of bank);
- Increase or improve fish habitat in streams and in the adjacent riparian lands;
- Include landscaping and habitat restoration that increase the ability of native plants and animals to use the valley systems as both wildlife habitat and movement corridors; and,
- Seek to avoid or, if avoidance is not possible, minimize and mitigate adverse impacts associated with the quality and quantity of urban runoff into the valley systems.

These considerations have been assessed and the appropriate environmental protection and mitigation measures have been included in **Sections 5f** and **5j**. The impacts associated with the quality and quantity of urban runoff will be addressed in the Environmental Project Report (**Section 7)**).

Given that the Greenbelt Plan was updated in May 2017, regional and local Official Plans have generally completed conformity exercises to address changes to the Greenbelt Plan. The land use designations within the municipal Official Plans that apply at each of the 'Urban River Valleys' are consistent with the general intent of the Greenbelt Plan.

The Province is currently undergoing consultation on growing the size of the Greenbelt (see ERO 019-3136 on the Environmental Registry), which may result in the addition, expansion and further protection of Urban River Valleys. It is recommended that during detail design, the outcome of this consultation is reviewed for any changes.

2f. Endangered Species Act, 2007 and Species at Risk Act, 2002

The purpose of the Ontario *Endangered Species Act, 2007* (ESA 2007) is to protect Ontario's SAR and their habitats, and to promote the recovery of species that are at risk. Through research and field investigations, species presence/absence and suitability of habitat are assessed. A species included as a Species at Risk in Ontario (SAR) listed as an extirpated, endangered or threatened species receives protection under Section 9 of the Ontario ESA 2007. A species listed as endangered or threatened also receives habitat protection under section 10 of the Ontario ESA 2007. Habitat protection is important to protect and enhance a species' ability to carry out its life processes including reproduction, rearing, hibernation or feeding. A determination of whether a proposed development will contravene subsection 10(1) of the Ontario ESA 2007 is required prior to the undertaking. Where impacts to SAR are proposed, mitigation measures or overall benefit must be implemented as determined through Ontario Regulation 242/08 or through permitting under the Ontario ESA 2007.

The purpose of the Canada *Species at Risk Act* (SARA 2002) is to protect wildlife species and their critical habitat in Canada, and to promote the recovery of species that are at risk where these are identified on federal lands. Under the Canada SARA, the definition of federal land includes, but is not limited to Canada's oceans and waterways; national parks; military training areas; national wildlife areas; some migratory bird sanctuaries; and, First Nations reserve lands. Wildlife protection under the Canada SARA is associated with species listed under the registry as extirpated (no longer exist in the wild in Canada), endangered, or threatened. Species identified as special concern are also considered to prevent them from becoming endangered or threatened; however, general prohibitions under the Canada SARA do not apply to species of special concern. As noted in **Section 2d**, the DSBRT is proposed to cross the Rouge National Urban Park and lands administered by Parks Canada (between Raspberry Road and Altona Road) surrounding the Rouge River (Crossing 4) and its valleylands, both north and south of Kingston Road. As a result, there is federally-owned land located within the study area, and the Canada SARA therefore has the potential to apply to any federally-designated SAR/SAR habitat located within this federal land. Correspondence will take place as required with Environment and Climate Change Canada, Fisheries and Oceans Canada (DFO) and Parks Canada (during the TPAP and during detail design) to confirm whether there will be any impacts to any federally designated SAR or their habitat, and to ensure appropriate environmental protection and mitigation measures will be developed.

2g. Fisheries Act, 2019

The *Fisheries Act* was established to manage and protect Canada's fisheries resources. It applies to all waters of Canada and is binding to federal, provincial and territorial governments. DFO's former "No Net Loss Policy" under the federal *Fisheries Act* is actually a long-term policy objective to achieve overall net gain of productive capacity of fish habitat. The habitat programs of DFO, assisted by cooperative undertakings with other federal departments, provincial and territorial governments, private industry and non-government groups, is administered to achieve this policy objective for fisheries resources through various protection measures and resource planning initiatives.

On February 6, 2018, DFO introduced proposed amendments to restore lost protections and incorporate modern safeguards into the *Fisheries Act*. On August 28, 2019, these changes came into effect and strengthened fish and fish habitat protection provisions under the modernized *Fisheries Act*, as well as regulations that support these provisions.

These changes include:

- protection for all fish and fish habitats;

- restoring the previous prohibition against the "harmful alteration, disruption or destruction of fish habitat"; and,
- restoring a prohibition against causing "the death of fish by means other than fishing".

The amendments address key considerations including: prohibitions against causing the death of fish (other than by fishing) and the re-introduction of the concept of harmful alteration, disruption or destruction (HADD) of fish habitat regulated under the Act. If a HADD is unavoidable, authorization from DFO under Subsection 35(2) of the *Fisheries Act* may be issued.

2h. Conservation Authorities Act, 1990 and The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority, 2014

The *Conservation Authorities Act* was created by the Ontario Provincial Legislature in 1946 to ensure the conservation, restoration and responsible management of hydrological features through programs that balance human, environmental and economic needs. The purpose of a Conservation Authority is to deliver to the Province and municipalities a local resource management program at the watershed level.

Under Ontario Regulation 166/06 of the *Conservation Authorities Act* (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), the TRCA is responsible for managing the renewable natural resources within nine watersheds in the Greater Toronto Area. Under Ontario Regulation 42/06 of the *Conservation Authorities Act* (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), the CLOCA is responsible for managing the renewable natural resources within four major watercourses and eighteen minor watercourses draining an area of over 639 km^2. The goal of these regulations is to ensure public safety and property protection with respect to natural hazards (including erosion and flooding), and to safeguard watershed health by preventing pollution and destruction of sensitive environmental areas such as wetlands, shorelines, watercourses, and valleylands. These regulations provide TRCA and CLOCA with the authority to regulate interference and development within the regulated areas.

A total of 24 watercourses cross or lie within the DSBRT corridor and the study area crosses 10 watersheds. Six watersheds lie within TRCA's jurisdiction and four lie within CLOCA's jurisdiction (see **Section 4d**). Both TRCA and CLOCA staff are involved in the review of the DSBRT project (and provided secondary source natural heritage information) and have been invited to participate as part of the Technical Advisory Group. Meetings will take place as necessary with TRCA and CLOCA staff throughout the study to discuss the project in more detail. As part of the DSBRT project, a detailed natural heritage assessment has been conducted and a drainage/hydrology/stormwater/floodplain assessment will be completed and the results included in the Environmental Project Report. Environmental protection/mitigation measures will be provided in the Environmental Project Report to minimize impacts to slopes, erosion/sedimentation and flooding. The Environmental Project Report will also include a discussion of extreme weather events, erosion and sedimentation control and increases in lake and water levels and will outline the proposed design considerations and protection measures to mitigate these natural hazards.

The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority

The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority (TRCA 2014) is a Conservation Authority policy that enables the TRCA to implement legislation and delegate roles and responsibilities to third party organizations during all phases

of planning and development within watersheds regulated by the TRCA (TRCA 2018). The Living City Policies (LCP) incorporate the compilation of all existing plan and permit review procedures and are in place to facilitate TRCA review of planning and development applications and environmental assessments under Section 28 of the *Conservation Authorities Act*. The goal of this document is to strengthen existing policy while incorporating updated requirements made at the federal, provincial, and municipal levels, while emphasizing the restoration, remediation, and enhancements to existing natural heritage features.

In general, development, interference and alterations associated with infrastructure are not permitted within TRCA regulated areas. TRCA Policies for Environmental Planning state that the location and design of transportation infrastructure crossing valley and stream corridors, including new replacements or upgrades, do not cause impacts of flooding or erosion, ensure safe flood flows, avoid natural hazards and maintain the ecological and hydrological functions of the natural system per TRCA standards.

Policy section 8.9 of the LCP states that certain development, interference and alterations associated with infrastructure may need to be located within or cross valley and stream corridors, wetlands, watercourses, hazardous lands and/or other features of the natural system. Policy section 8.9.6. of the LCP states that development, interference and alterations associated with new, replacement or expanded transportation infrastructure crossing valley and stream corridors may be permitted where:

a) There are no upstream or downstream impacts to flooding and erosion;

b) Flood flows can be safely conveyed;

c) The crossing is situated at appropriate locations to avoid hazardous lands;

d) The ecological and hydrological functions of the valley or stream corridor are maintained by considering the following in accordance with TRCA Standards: and,

i. the physical characteristics and geomorphic processes of the watercourse;

ii. aquatic and terrestrial habitat;

iii. valley or stream corridor form;

iv. aquatic and terrestrial wildlife passage; and

v. pedestrian passage (e.g., trails).

e) For road widenings, the surface area of both the adjacent existing road and the new section of the road meet TRCA stormwater management criteria.

Since portions of the DSBRT study area lie within TRCA regulated areas, the LCP provide the full extent of review through the planning process to protect ecological form and function within significant natural heritage features.

2i. Migratory Birds Convention Act, 1994

The *Migratory Birds Convention Act*, 1994 (MBCA) prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or damaging, destroying, removing or disturbing of nests. Migratory insectivorous and non-game birds are protected year-round, and migratory game birds are protected from March 10 to September 1. Environment Canada provides Nesting Periods when migratory birds are most likely to be nesting, within a respective geographic zone. The DSBRT study area falls within Environment Canada's Nesting Zone C2 (Nesting Period: end of March – end of August). A number of bird species recorded within the study area are afforded protection under the MBCA (see

Section 4g). Bird species protected under the MBCA were documented across a variety of habitat types within the study area.

2j. Local and Regional Official Plans - Natural Heritage Features, Systems and Policies

A description of the natural heritage features, systems and policies outlined in each of the municipal Official Plans is discussed below for each municipality located within the study area. **Appendix A** presents the relevant environmental policy, mapping and schedules within each Official Plan. More detailed information about the overall land use within the study area is presented in the Socio-Economic and Land Use Report prepared by IBI Group as part of this project.

2ji. City of Toronto Official Plan, February 2019 Office Consolidation

The City of Toronto Official Plan was approved by the Ontario Municipal Board (now Local Planning Appeal Tribunal (LPAT)) in 2006. The statutory Five Year Review subsequently began in 2011. Due to the size of the City and the breadth of policy matters in the Official Plan, City of Toronto Council approved conducting the Official Plan Review in stages by thematic area in order to enable the public to focus more clearly on proposed Plan changes. The review for some thematic policy areas of the Official Plan is complete. The updated policies have been adopted by Council and are either in effect or are being adjudicated at the LPAT. Certain thematic policy areas are currently in the review process. As a result, the most recent Official Plan Consolidation of Chapters 1 to 5 and Schedules 1 to 4 came into effect in February 2019. The most recent Official Plan Consolidation of Chapters 6 and 7 came into effect as of June 2015.

Following public consultation, the City Planning Division developed policies pertaining to climate change and energy, the natural environment and green infrastructure. Official Plan Amendment (OPA) 262 was adopted by Council on November 2015 and designated 68 new Environmentally Significant Areas (ESAs) within the City of Toronto.

Natural Heritage Land Use Designations, Policies and Features in the City of Toronto

According to the City of Toronto Official Plan (2019 Office Consolidation), and as shown on Maps 19 and 22 (Land Use Plan, February 2019) in **Appendix A**, portions of the DSBRT study area cross through lands designated as 'Natural Areas' and 'Parks' within the City's 'Parks and Open Space Areas'. These areas constitute the natural heritage land use designations within the study area. Further information about these natural heritage designations as well as other natural heritage features located within the DSBRT study area is provided below and in Section 4.3 of the City of Toronto Official Plan.

***Parks and Open Space Areas**:* Lands designated as 'Parks and Open Space Areas' within the City of Toronto include the parks and open spaces, valleys, watercourses and ravines, portions of the waterfront, golf courses and cemeteries that comprise the Green Space System in Toronto. 'Parks and Open Space Areas' include 'Natural Areas', 'Parks' and 'Other Open Space Areas'. Development is generally prohibited within 'Parks and Open Space Areas' except for recreational and cultural facilities, conservation projects, cemetery facilities, public transit and essential public works and utilities where supported by appropriate assessment. The City's 'Parks' will be used primarily to provide public parks and recreational opportunities. The City's 'Natural Areas' will be maintained primarily in a natural state while allowing for the following:

- compatible recreational, cultural and educational uses and facilities that minimize adverse impacts on natural features and functions; and,

- conservation projects, public transit, public works and utilities for which no reasonable alternatives are available, that are designed to have only minimal adverse impacts on natural features and functions, and that restore and enhance existing vegetation and other natural heritage features.

Any development provided for in 'Parks and Open Space Areas' must meet the following criteria:

- protect, enhance or restore trees, vegetation and other natural heritage features and maintain or improve connectivity between natural heritage features;
- preserve or improve public visibility and access, except where access will damage sensitive natural heritage features or areas, or unreasonably restrict private property rights;
- maintain, and where possible create linkages, between parks and open spaces to create continuous recreational corridors;
- maintain or expand the size and improve the usability of publicly owned 'Parks and Open Space Areas' for public parks, recreational and cultural purposes;
- respect the physical form, design, character and function of 'Parks and Open Space Areas'; and,
- provide comfortable and safe pedestrian conditions.

Development is not permitted within the natural heritage system. Development in or near the natural heritage system must:

- recognize natural heritage values and potential impacts on the natural ecosystem as much as is reasonable in the context of other objectives for the area; and,
- minimize adverse impacts and, when possible, restore and enhance the natural heritage system.

All proposed development in or near the natural heritage system must be evaluated to assess the development's impacts on the natural heritage system and identify measures to mitigate impacts on and/or improve the natural heritage system.

Green Space System and Greenbelt 'Protected Countryside': Map 2 (Urban Structure, February 2019) in the City of Toronto Official Plan (see **Appendix A**) shows the City's 'Green Space System' surrounding four watercourses/valleylands crossing the DSBRT corridor including Highland Creek (Crossing 1), the Tributary of Highland Creek (Crossing 2), Centennial Creek (Crossing 3) and the Rouge River (Crossing 4). The Rouge River and associated valleylands are also identified on Map 2 as Greenbelt 'Protected Countryside'.

Important Natural Features: Map 7A (Identified Views from the Public Realm, February 2019) in the City of Toronto Official Plan (see **Appendix A**) identifies the Rouge River (Crossing 4) within the DSBRT study area as an 'Important Natural Feature'.

City Parkland and Natural Heritage System: Map 8A (City Parkland, June 2006) and Map 9 (Natural Heritage System, February 2019) in the City of Toronto Official Plan show that the four watercourses crossing the DSBRT corridor within the study area (Highland Creek, the Tributary of Highland Creek, Centennial Creek and the Rouge River) are all identified as City Parkland areas and are part of the City's 'Natural Heritage System' (see **Appendix A**). A few additional locations along the DSBRT corridor are also identified as part of the City's 'Natural Heritage System' including the area northwest of Ellesmere Road and McCowan Road, the hydro corridor just west of Highland Creek, the area northeast and

southwest of Ellesmere Road and Military Trail, the area surrounding Ellesmere Road/Kingston Road and Highway 401, and the area northwest of Kingston Road and Port Union Road.

Designated Natural Areas: Map 12A (Environmentally Significant Areas, February 2019) and Map 12B (Provincially Significant Wetlands and Areas of Natural and Scientific Interest, February 2019) in the City of Toronto Official Plan (see **Appendix A**) identify the three ESAs (Highland Forest/Morningside Park Forest and Highland Creek West, Ellesmere Woods and Little Rouge Forest) and one ANSI (Rouge River Valley) located in the vicinity of the DSBRT corridor.

Site and Areas Specific Policies: The study area also crosses through one natural heritage area affected by the Site and Areas Specific Policies (#384 - Rouge National Park) as depicted on Map 33 (Site and Area Specific Policies, October 2016) (see **Appendix A**). City-owned lands located within or adjacent to this area are exempt from Policies 2.3.2(4) and 4.3(8) of the City of Toronto Official Plan which prohibit the disposal of City-owned land in the Green Space System or the 'Parks and Open Space Areas', provided that the lands are transferred from time to time to the federal government for the purpose of the Rouge National Urban Park (City of Toronto By-law No. 1590-2012).

2jii. Durham Region Official Plan Consolidation, May 2020

Durham Region's first Official Plan was prepared in 1976. In 1993, a new Official Plan was approved by the Ministry of Municipal Affairs and Housing, and contains policies and maps to guide the type and location of land uses in the Region to 2031. Three amendments to the Durham Regional Official Plan (including applications for two residential dwelling lot severances and an application to implement key transportation network changes recommended in the Transportation Master Plan) were recently approved by Council and have been in effect since the May 11, 2017 Office Consolidation. A recent consolidated version was released in May 2020. When viewed as a whole, a framework or regional structure is formed by the land use categories described in the Official Plan. This regional structure is further detailed through the official plans of each of the Regions eight local area municipalities.

In 2019, the Region launched Envision Durham, which is the Municipal Comprehensive Review of the Region's Official Plan. Envision Durham is an opportunity to plan for a progressive and forward-looking land use planning vision for Durham Region to 2041, through the replacement of the current Official Plan. The review will consider several factors, including the use and protection of Durham Region's land and resources, which will help with decision making on long-term growth and development. As of spring 2021, the Region is in the Direct Stage of this project and is requesting public input on proposed policy directions including some initial findings of the Growth Management Study component of Envision Durham.

Natural Heritage Land Use Designations, Policies and Features in Durham Region

According to the Durham Region Official Plan (May 2020 Consolidation), and as shown on Schedule 'A' Map A4 (Regional Structure), portions of the DSBRT study area cross through lands identified as the 'Greenlands System' (see **Appendix A**). Under the 'Greenlands System', the study area passes through lands designated 'Major Open Space Areas' and lands designated 'Greenbelt Boundary" and "Open Space Linkage' in the vicinity of Kingston Road and Lakeridge Road near two Tributaries of Lynde Creek. These areas constitute the natural heritage land use designations within the study area. Further information about these natural heritage designations, as well as other natural heritage features located within the DSBRT study area, is provided below.

Major Open Space Areas: lands designated 'Major Open Space Areas' within the DSBRT study area are generally associated with the main watercourses and valleylands within the study area (including the east portion of the Rouge River (Crossing 4), Petticoat Creek (Crossing 5), West Duffins Creek (Crossing 12), Carruthers Creek (Crossing 14), two Tributaries of Lynde Creek (Crossings 15 and 16 including an area west of Crossing 15 west Lake Ridge Road), Lynde Creek (Crossing 18), and Oshawa Creek (Crossing 23). The 'Major Open Space Areas' in the Region of Durham generally include key natural heritage and hydrological features, prime agricultural lands, and lands of lesser agricultural significance. Apart from buildings of agricultural, agricultural-related and secondary uses, policy 10 A.2.2 in the Official Plan states that development or site alteration within 'Major Open Space Areas' needs to demonstrate that there will not be negative effects on key natural heritage or hydrological features.

***Greenbelt Boundary*:** this area within the Region of Durham is further discussed under **Section 2e** (Greenbelt Plan, 2017).

***Greenbelt Natural Heritage System and Key Natural Heritage and Hydrologic Feature*s**: Schedule 'B'-Map 'B1d' (Greenbelt Natural Heritage System and Key Natural Heritage and Hydrologic Features) in the Region of Durham Official Plan shows that although the DSBRT study area lies predominantly within designated 'Urban Areas', portions of the corridor lie within designated areas of 'Key Natural Heritage and Hydrological Features' surrounding the watercourses and valleylands within the study area, and the 'Greenbelt Natural Heritage System' as noted above (see **Appendix A**).

Within the Durham Region Official Plan, 'Key Natural Heritage Features' can include significant habitat of endangered, threatened, special concern and rare species; fish habitat; wetlands; life science ANSIs; significant valleylands; significant woodlands; significant wildlife habitats; sand barres, savannahs and tallgrass prairies; and, alvars. 'Key Hydrological Features' can include permanent and intermittent streams; wetlands; lakes, and their littoral zones; kettle lakes, and their surface catchment areas; seepage areas and springs; and, aquifers and recharge areas. Policy 2.3.15 in the Durham Region Official Plan states that site alteration and development within *Key Natural Heritage* and *Hydrological Features* and their associated vegetated protection zones are not permitted. Existing, expanding, and/or planned infrastructure within these features are subject to policies of the Greenbelt Plan and the Durham Region Official Plan. Within urban zones, the vegetation protection zone should be determined by an Environmental Impact Study in accordance with Council approved Environmental Impact Studies (EIS) Guidelines.

Within the Durham Region Official Plan, the area designated 'Greenbelt Natural Heritage System' includes areas of the Greenbelt Protected Countryside with the highest concentrations of the most sensitive and significant natural features and functions. Section 2.3.13 of the Durham Region Official Plan states that the 'Greenbelt Natural Heritage System' must be managed in accordance with both the policies within the Greenbelt Plan and the Durham Region Official Plan. Under this land designation, the 'Greenbelt Natural Heritage System' is managed as a connected integrated system.

2jiii. City of Pickering Official Plan, Edition 8, October 2018

As a local area municipality of Durham Region, the Durham Region Official Plan provides the overall framework for the City of Pickering Official Plan. Since being adopted by Council in 1997, numerous amendments have been made to the City of Pickering Official Plan, resulting in the current City of Pickering Official Plan Edition 8 (October 2018). The City is currently conducting a review of the Official Plan and the Official Plan is being updated through a series of individual amendments.

Natural Heritage Land Use Designations, Policies and Features in the City of Pickering

According to the City of Pickering Official Plan (Edition 8, October 2018), and as shown on Schedule 1 (Sheet 1) (Land Use Structure), portions of the DSBRT study area cross through lands identified as 'Open Space System' (see **Appendix A**). The Official Plan states that lands designated as part of the 'Open Space System' are intended to be used mainly for conservation, restoration, environmental education, recreation, and ancillary purposes. Under the 'Open Space System', the study area passes through lands designated 'Natural Areas' which are associated with the main watercourses and valleylands within the study area (including the east portion of the Rouge River, Petticoat Creek, Amberlea Creek/Tributaries of Amberlea Creek, Dunbarton Creek, and Pine Creek), and lands designated as 'Greenbelt Boundary' in the vicinity the Rouge River at Kingston Road west of Altona Road. These areas constitute the natural heritage land use designations within the study area.
The City's natural heritage features are further outlined on Schedules III A (Resource Management: The Natural Heritage System), III B (Resource Management: Key Natural Heritage Features), III C (Resource Management: Key Natural Heritage Features/Key Hydrologic Features) and III D (Resource Management: High Aquifer Vulnerability, Groundwater Recharge Areas). These Schedules are presented in **Appendix A** and reflect information from the MNRF, Region of Durham, TRCA, CLOCA and the City of Pickering. The key natural heritage features located in the vicinity of the DSBRT corridor outlined in these Schedules include the following:

- ***Natural Heritage System (Schedule III A)***: the 'Natural Heritage System' includes the natural areas associated with some of main watercourses and valleylands within the DSBRT study area (including the east portion of the Rouge River, Petticoat Creek, Dunbarton Creek and West Duffins Creek at the east City limits);
- ***Greenbelt Natural Heritage System (Schedule III A) and Greenbelt Boundary (Schedule III B)***: located in the vicinity of the Rouge River at Kingston Road west of Altona Road;
- ***Significant Woodlands (Schedule III B)***: surrounding the Rouge River, Petticoat Creek, Amberlea Creek, Tributary of Amberlea Creek, Pine Creek, and around lands at the Notion and Kingston Road intersection in the vicinity of West Duffins Creek;
- ***Rouge River Valley Life Science ANSI (Schedule III B)***: located surrounding Kingston Road around the Rouge River at the west limits of the City of Pickering;
- ***Shorelines, Significant Valleylands, Stream Corridors, Hazardous Lands and Permanent/Intermittent Streams (Schedule III C)***: generally surrounding the watercourse and valleylands located in the vicinity of the study area;
- ***Flood Plain Special Policy Area (Schedule III C)***: located surrounding Kingston Road from east of Brock Road to Notion Road at the east limits of the City of Pickering;
- ***High Aquifer Vulnerability Areas (Schedule III D)***: covering the entire study area with the exception of the west limits of the City of Pickering to east of Petticoat Creek; and,
- ***Groundwater Recharge Area (Schedule III D)***: one area located just south of the study area at Petticoat Creek and within the study area between Valley Farm Road and Brock Road.

Within the City of Pickering Official Plan, several policy sections describe constraints to development within the City's natural areas. Policy Section 10.12 acknowledges the protection of significant and sensitive key natural heritage and hydrologic features and their inter-related systems. The implementation of an Environmental Report is required in the event of site alteration or development within and/or near features.

Policy Section 16.51 on 'Key Natural Heritage and Key Hydrological Features' states that where development or site alteration is proposed, no adverse effects on key natural heritage features related to ecological functions must be demonstrated. Section 16.51 (d) states that if a feature is a PSW, an ANSI and/or significant portions of the habitat of endangered, rare and threatened species, or their related minimum *vegetation protection zone*, proposed refinements to the boundary or the extent of the feature require formal confirmation from the Province prior to development.

Policy Section 10. 22 on Shorelines, Significant Valleylands, Stream Corridors, and Hazardous Lands states that development and site alteration in certain areas associated with flooding hazards along a watercourse or stream corridor is limited. Due to flooding, erosion, and other emergencies, approval of the Conservation Authorities and the City is required. Additionally, the study area is subject to policy section 10.22. As identified on Schedule III C, a small section of the study area lies within the 'Flood Plain Special Policy Area' surrounding Kingston Road from east of Brock Road to Notion Road. The communities in these areas are situated on lands susceptible to flooding. Policy Section 10.23 (b) states that a permit may be obtained if development, including the rehabilitation of, and extension to, existing buildings or structures, within this Flood Plain Special Policy Area provides appropriate flood protection measures. More detailed information can be found in Section 16. 32 of the City of Pickering Official Plan.

2jiv. Town of Ajax Official Plan Office Consolidation, January 2016

The Town of Ajax Official Plan was adopted by Council in April 2000. Since then, numerous amendments have been made to the Official Plan, resulting in the current Town of Ajax Official Plan Office Consolidation (January 2016). The policies within the Official Plan are designed to address the compounding impacts of natural areas and watersheds. The Official Plan establishes the principles, goals and policies guiding the decisions on environmental protection. Implementation measures that avoid and/or minimize impacts to Ajax's freshwater resources are considered when dealing with growth and development in the Town.

Natural Heritage Land Use Designations, Policies and Features in the Town of Ajax

According to the Town of Ajax Official Plan (Office Consolidation, January 2016), and as shown on Schedule 'A-1' (Land Use) and Schedule B (Environment), portions of the DSBRT study area cross through lands identified as the 'Greenlands System' (see **Appendix A**). The 'Greenlands System' is characterized by an interconnected natural heritage system, productive soils, agricultural uses, rural uses, and open space. The 'Greenlands System' is dynamic and evolving in response to climate change, urbanization, and human activities. Climate moderation, water supply and filtration, flooding and erosion protection, greenhouse gases reduction, nutrient cycles, and habitat for plants, birds, and animals are just some of the benefits the 'Greenlands System' provides to support a healthy local ecosystem.

Under the 'Greenlands System', the study area passes through lands designated 'Environmental Protection', 'Open Space' and 'Rural Area'. The 'Greenlands System' also connects with and includes portions of the Provincial Greenbelt. A portion of the land within the study area is also designated as 'Greenbelt Boundary' within the 'Rural Area' between Audley Road North and Lakeridge Road. All these areas constitute the natural heritage land use designations within the study area. Further information on each natural heritage designation is provided below and more details regarding goals and policies can be found in Section 2.2 of the Town of Ajax Official Plan.

Environmental Protection: The 'Environmental Protection' designation weaves through the 'Urban Area' and 'Greenbelt', connecting the ecological features and ecological functions of the natural heritage system that are vital to the health of the community. The land and water resources within this designation

lying within the DSBRT study area are predominantly characterized by the watercourses and valleylands associated with West Duffins Creek, Duffins Creek, Carruthers Creek and a Tributary of Lynde Creek (just south of Kingston Road), and other natural heritage features and areas, and hydrologic features. According to the Town of Ajax Official Plan adverse effects and/or negative impacts on the natural heritage system should be avoided or reduced as possible.

The development criteria for lands within the 'Environmental Protection' designation (and for lands within the 'Greenbelt Boundary') require an Environmental Impact Study when development or site alteration is proposed within any key natural heritage feature or key hydrologic feature, or within 120 metres of the 'Environmental Protection' designation. An Environmental Impact Study determines the need to provide more than a minimum 30-metre *vegetation protection zone* and documents the major adverse effects and/or negative impacts on the natural heritage system.
Open Space: Includes two areas within the DSBRT study area in the southwest corner of Kingston Road and Ritchie Avenue, and south of Kingston Road east of Galea Drive. 'Open Space' lands are characterized by natural features and active and/or passive recreational opportunities such as trails. The Town's aim is to establish 'Open Space' and 'Parks' with amenities that encourage physical activity, wellness and informal use opportunities for a wide range of users.

Greenbelt Boundary: The lands within the DSBRT study area lying within the 'Greenbelt Boundary' are characterized as 'Rural Area' (between Audley Road North and Lake Ridge Road). These constitute lands that are characterized by high quality soil for growing crops, such as fruit, vegetables, and field crops; and other agricultural uses such as livestock raising and agri-businesses; rural uses; and recreational uses.

Rural Area: As noted above, the **'**Rural Areas' within the DSBRT are part of the 'Greenbelt Boundary' and are comprised of rural and agricultural lands that define the boundaries of the Town and distinguish the rural portion of Ajax from the 'Urban Area'. Permitted uses within the 'Rural Area' designation include recreational uses, tourism bed and breakfast establishments, existing and new agricultural uses, farm practices and a full range of agricultural, agriculture-related and secondary uses including commercial greenhouses and seasonal locally grown produce stands, forestry and resource management uses.

A few other natural heritage features within the DSBRT study area outlined in the Town of Ajax Official Plan (Schedule B) include the following:

Municipal Storm Water Management Pond (Schedule 'B' Environment): one stormwater management pond is located within the DSBRT study area north of Kingston Road between Harwood Avenue North and Salem Road North, a second is located south of Kingston Road west of Carruthers Creek, and a third is located north of Kingston Road east of Carruthers Creek.

Special Policy Area – Notion Road/Pickering Village (Schedule 'A-1 (Land Use), Schedule B (Environment) and Schedule D (Special Policy Area)): this Special Policy Area lies within the DSBRT study area east of Notion Road surrounding Kingston Road. This Special Policy Area recognizes that the Notion Road area and portions of Pickering Village have historically existed in the flood plain and that strict adherence to Province-wide policies concerning new development would result in social and economic hardships for this community. Development within this Special Policy Area may be permitted, subject to site specific policies instead of the policies designated for One Zone areas (undeveloped flood plains). As a result, policies are established and used within the defined limits of the Special Policy Area where the Province of Ontario, the TRCA and the Town of Ajax agree to accept a higher level of flood risk. Any proposed changes to the boundaries, policies, and land uses of this Special Policy Area may only be initiated by the Town and must be approved by the Ministers of Municipal Affairs and Housing

and Natural Resources and Forestry, in accordance with criteria and procedures established by the Province. The need for changes to a Special Policy Area, such as boundary adjustments, may result from updated flood plain mapping. Further details can be found in Section 2.5.5 of the Town of Ajax Official Plan.

Lands Subject to Area Specific Policies (Schedule G):

- Employment Policy Area 1 (located south of Kingston Road and East of Norton Road within the study area) - states that before the expansion of existing non-prestige employment uses, lands south of Kingston Road and east of Notion Road are subject to various requirements including topographical constraints. In addition, future employment uses in proximity to valley systems in this area shall be sensitive to their environmental function. Lands within 50 metres of the 'Environmental Protection' designation shall be subject to the provisions of Section 2.2.5 of the Town of Ajax Plan. Further, appropriate mitigating measures, which may include building setback requirements, shall be included in the implementing zoning and through the evaluation of development proposals. Section 3.3.6 of the Town of Ajax Official Plan provides further information on this Area.
- Area Specific Policy 6.3 (located between Harwood Avenue North and Audley Road North south of Kingston Road within the study area) – details the development planned in this area and states that stormwater management facilities shall be permitted adjacent to or within the 'Environmental Protection' designation subject to the approval of the Town and the Conservation Authority. The relocation and restoration of an existing Tributary of the Lynde Creek (to the west of Audley Road North) from the Audley Road ROW (between Kingston Road and Highway 401) will be permitted subject to the approval of the Town of Ajax and the Conservation Authority. Section 6.3 of the Town of Ajax Official Plan provides further information on this Area Specific Policy.
- Area Specific Policy 6.5 (located north of Kingston Road between Carruthers Creek and Audley Road North) – details development plans and urban design study for this area include a quarter horse race track and associated facility together with a gaming establishment and associated facilities, retail stores and administration offices. A portion of the horse race track is permitted to be developed within the abutting 'Environmental Protection' designation, subject to the approval of the Town and the Conservation Authority. As well, the accessory dwellings and structures associated with the race track operations immediately to the west of Carruthers Creek may be used in conjunction with race track operations subject to any provisions relating thereto contained within the Development Agreement and/or Site Plan Agreement for this site. The barn structures and valleylands immediately to the west of Carruthers Creek shall only be used in conjunction with the race track operations until such time as detailed in the associated Development Agreement for this site. Section 6.5 of the Town of Ajax Official Plan provides further information on this Area Specific Policy.
- Area Specific Policy 6.18 (located both north and south of Kingston Road from east of Carruthers Creek to Audley Road North) – details the retail development planned for this area. Section 6.18 of the Town of Ajax Official Plan provides further information on this Area.

2jv. Town of Whitby Official Plan Office Consolidation, July 2018

The first Town of Whitby Official Plan was approved by Council in 1994. Since then numerous modifications, deferrals, referrals and various amendments have been made to the Official Plan. The Town of Whitby Official Plan was recently updated through a Municipal Comprehensive Review (Official Plan Amendment 105) and, in June 2018, was approved by the LPAT. The Official Plan referenced in this report includes the July 2018 Office Consolidation. A number of remaining Official Plan Amendments have been adopted by Whitby Council but are awaiting final approval by the Region of Durham and the LPAT.

Natural Heritage Land Use Designations, Policies and Features in the Town of Whitby

According to the Town of Whitby Official Plan (Office Consolidation, July 2018), and as shown on Schedule 'A' (Land Use) in **Appendix A**, portions of the DSBRT study area cross through lands identified as 'Major Open Space' and 'Greenbelt Protected Countryside Boundary'. These areas constitute the natural heritage land use designations within the study area. Further information on each natural heritage designation is provided below and more details regarding goals and policies related to natural heritage and environmental management within these two areas can be found in Section 4.9 and Section 5.0 of the Official Plan.

Major Open Space: The land within the DSBRT study area designated 'Major Open Space' includes the watercourses and valleylands within the study area associated with three Tributaries of Lynde Creek (Crossings 15-17), Lynde Creek (Crossing 18), Pringle Creek (Crossing 19), Tributary of Corbett Creek (Crossing 20) and the area west of Corbett Creek (Crossing 21) as well as the CNR Railway and Hydro Corridor. This designation includes significant portions of the Town's 'Natural Heritage System' (described below), and also includes large parks and existing recreational facilities, conservation areas, the Lake Ontario Waterfront, former lake Iroquois Beach, the Oak Ridges Moraine, utility corridors and other open space and rural lands within the Town of Whitby. The goal for lands within the 'Major Open Space' designation is to establish, maintain, preserve, and enhance an integrated and linked system of public open spaces, natural heritage and hydrologic features, agricultural lands, rural uses, parkland, and recreational facilities that meets the needs of present and future residents and maintains a healthy and resilient 'Natural Heritage System'. Permitted uses in the 'Major Open Space' designation include active and/or passive recreational and conservation uses, forest, wildlife and fisheries management, community gardens, and private recreation uses that have minimal negative impacts on the environment.

Greenbelt Protected Countryside Boundary*:* The Provincial Greenbelt Plan provides legislated protection to the agricultural land base and the ecological features and functions occurring on the landscape, and the Town of Whitby Official Plan contains policies that are intended to implement the Greenbelt Plan. This designation within the study area generally surrounds the Tributary of Lynde Creek (Crossing 16) west of Highway 412 surrounding Dundas Street West.

The natural heritage features/environmental management areas within the 'Major Open Space' and 'Greenbelt Protected Countryside Boundary' in the vicinity of the DSBRT study area in the Town of Whitby are further characterized in Schedule C (Environmental Management), Appendix 1 (Technical Mapping of Environmental Elements) and Appendix 2 (Water Resources) (see **Appendix A**), and are described below with further details provided in Section 5.0 (Environmental Management) of the Town of Whitby Official Plan:

Natural Heritage System: The 'Natural Heritage System' within the Town of Whitby is comprised of an interconnected system of key natural heritage and hydrologic features, and areas within the Town including any associated vegetation protection zones. These key natural heritage features include: wetlands; habitat of endangered species and threatened species; significant woodlands; significant valleylands, including the applicable lands within the 'Urban River Valleys' identified in the Greenbelt Plan; significant wildlife habitat; fish habitat; watercourses with associated riparian corridors, life science ANSIs, sand barrens, tallgrass prairies, alvars, and savannahs. The 'Natural Heritage System' also includes lands which have been identified and targeted for restoration and enhancement to create linkage areas and connections. Schedule C shows the 'Natural Heritage System' within the Town of Whitby located in the vicinity of the DSBRT corridor (see **Appendix A**). This designation includes the area surrounding the watercourses/valleylands crossing the DSBRT corridor including three Tributaries of Lynde Creek (Crossings 15-17), Lynde Creek (Crossing 18), Pringle Creek (Crossing 19) and CPR

railway, Tributary of Corbett Creek (Crossing 20) and the area west of Corbett Creek (Crossing 21) as well as a natural area extending west of the Tributary of Lynde Creek (Crossing 17) east of Highway 412 surrounding Dundas Street West. According to the Official Plan, the 'Natural Heritage System' must be retained and enhanced wherever possible.

Development and site alteration within lands designated as 'Natural Heritage System' is not permitted within key hydrologic features and key natural heritage features, including the associated *vegetation protection zone*. Exceptions include land uses for conservation, flood or erosion control, fish, forest, and wildlife management, trails, small-scale structures, infrastructure where no alternatives exist, and existing agricultural uses. Development or site alteration is only permitted on lands within or adjacent to the 'Natural Heritage System', in accordance with the provisions of the Official Plan and where it has been demonstrated that there will be no negative impact to the features and ecological functions of the Town of Whitby Official Plan features within the 'Natural Heritage System'. An Environmental Impact Study is required to be prepared in accordance with the policies of Section 5.4.2 of the Official Plan, demonstrating that there will be no negative impact on the natural heritage or hydrologic features or their ecological functions, and determining the appropriate extent of a vegetation protection zone that is of sufficient width to protect the feature and its functions from negative impacts resulting from the proposed development and associated activities that may occur before, during, and after construction

Additional natural heritage features within the 'Natural Heritage System' are shown on Appendix 1 and Appendix 2 (see **Appendix A**) and include the following features located within the DSBRT corridor:

- Watercourses;
- Riparian corridors – generally around the watercourses located within the study area;
- Provincially Significant Wetland – one PSW (Lynde Creek Coastal Wetland Complex);
- Wetland (other/unevaluated) – one unevaluated wetland at the Tributary of Corbett Creek (Crossing 20);
- Woodlands – generally located around the watercourses/valleylands in the study area and in the vicinity of the PSW;
- Highly Vulnerable Aquifers – located throughout the study area in particular west of the CNR railway crossing of Dundas Street East; and,
- Significant groundwater recharge areas – four areas crossing Dundas Street throughout the study area.

Greenbelt Natural Heritage System: the lands located around the Tributary of Lynde Creek (Crossing 16) surrounding Dundas Street West west of Highway 12 lie within the 'Greenbelt Natural Heritage System'. A combination of policies apply to the 'Greenbelt Natural Heritage System' which includes the 'Natural Heritage System' policies in Section 5.3.7, the EIS requirements in Section 5.4.2, the 'Major Open Space' and 'Agricultural' land use sections, as well as additional policies in the 'Mineral Aggregate' and 'Infrastructure' sections. Lands indicated as 'Natural Heritage System' located within the Greenbelt Plan are also subject to policies in Section 4.9.

Natural Hazards: **'**Natural Hazard' areas include land exhibiting poor drainage, unstable or organic soils, flood susceptibility, erosion hazards such as steep slopes or any other physical condition which could cause property damage, loss of life, or lead to the deterioration or degradation of the environment, if developed. Schedule C shows the 'Natural Hazard' areas surrounding the watercourses/valleylands/floodplains and their erosion hazards crossing the DSBRT corridor. Without the approval of the Conservation Authority, development and site alteration, or placing or removal of fill of

any kind, in these areas is not permitted. The lands shown as 'Natural Hazards' are managed to complement and protect adjacent land uses from any natural hazards or their adverse effects and/or to provide adequate protection to areas of significant ecological function. More detailed information can be found in Section 5.3.10 in the Town of Whitby Official Plan.

2jvi. City of Oshawa Official Plan Office Consolidation, April 2021

The Minister of Municipal Affairs first approved the City of Oshawa Official Plan on February 12, 1987. The purpose of the Official Plan is to establish a unified set of policies and land use designations which will guide primarily the physical development and redevelopment of the City of Oshawa. Since 1987, numerous reviews and changes/amendments to the Official Plan have been required to allow new development or redevelopment proposals and to ensure that the Official Plan continues to meet the changing economic, social and environmental needs of the City. This has resulted in the current City of Oshawa Official Plan Office Consolidation (April 2021), which presents a consolidation of the City of Oshawa Official Plan and subsequent amendments, as approved and/or modified by the Region of Durham and the LPAT.

Natural Heritage Land Use Designations, Policies and Features in the City of Oshawa

According to the City of Oshawa Official Plan (Office Consolidation, April 2021), and as shown on Schedule 'A' (Land Use December 2020), portions of the DSBRT study area cross through lands designated as 'Greenland Areas', specifically lands identified as 'Open Space and Recreation' (see **Appendix A**). The City of Oshawa Official Plan provides an open space and recreation system which serves the City in relation to recreation and environmental protection, including the protection and enhancement of 'Greenland Areas' as a continuous, interconnected system of natural and/or recreational open spaces that weaves through the City from the Oak Ridges Moraine to Lake Ontario. Lands identified as 'Open Space and Recreation' within the City of Oshawa include components of the City's 'Natural Heritage System', valleylands, conservation areas, marshes, scenic vistas, the Lake Ontario waterfront, parts of the Oak Ridges Moraine and other natural environments, and recreational resources such as Regional and City level parks. The 'Open Space and Recreation' designation is described below and further information is provided in Section 2.6.1 of the City of Oshawa Official Plan.

Open Space and Recreation: within the DSBRT study area, lands surrounding the watercourse and valleylands associated with Corbett Creek (Crossing 21), Goodman Creek (Crossing 22) and Oshawa Creek (Crossing 23) are designated 'Open Space and Recreation' within the 'Major Urban Area'. Lands designated as 'Open Space and Recreation' within the 'Major Urban Area' permit recreation, conservation, reforestation, cemeteries, allotment gardens, community gardens, nursery gardening, existing golf courses and campground uses. Permitted uses are subject to Policy Section 2.6.1.6 and Section 5.0 Environmental Management of the City of Oshawa Official Plan for areas within or in proximity to components of the 'Natural Heritage System'.

The natural heritage features located within the 'Open Space and Recreation' designation in the vicinity of the DSBRT study area in the City of Oshawa are further characterized in Schedule 'D-1' and Schedule 'D-2' (Environmental Management), Schedule 'F1-A' (Natural Heritage System Components) and Schedule 'F-1B' (High Volume Recharge Areas and Greenbelt Natural Heritage System) (see **Appendix A**). Schedule 'D-1' designates portions of the DSBRT study area within the 'Natural Heritage System', 'Hazard Lands' and 'Two Zone Floodplain Management Policy Area'. Schedule 'D-2' and 'F-1B' identify study area lands within 'High Volume Recharge Lands'. Schedule 'F1-A' identifies the portions of the DSBRT study area that are identified as 'Natural Cover Regeneration/Restoration Areas', 'Key Natural Heritage Features and Key Hydrologic Features', 'Riparian Corridors' and watercourses. These

features are described below with further detail provided in Section 5.0 (Environmental Management) of the City of Oshawa Official Plan.

Natural Heritage System: Land designated part of the 'Natural Heritage System' within the DSBRT study area is located around the watercourse and valleylands within the study area associated with Corbett Creek (Crossing 21), Goodman Creek (Crossing 22) and Oshawa Creek (Crossing 23). The 'Natural Heritage System' within the City of Oshawa includes lands with the highest concentration of the most sensitive and/or significant natural heritage and hydrologic features and functions. Achieving a healthy, self-sustaining, connected 'Natural Heritage System' is integral to ensuring a healthy and resilient watershed. Protection of this system is necessary to support ecological integrity including healthy terrestrial, wildlife, wetland and aquatic ecosystems.

Within the 'Natural Heritage System' all development or site alteration shall be designed to ensure that no building or other site alterations impede the movement of plants and animals Citywide within the 'Natural Heritage System'. Development and site alteration are prohibited within the 'Key Natural Heritage Features and Key Hydrologic Features, 'Riparian Corridors', and 'High Volume Recharge Areas'. However, development and site alteration may be permitted in these areas and/or any associated buffers for some projects/uses if these areas and/or associated buffers are also identified as 'Hazards Lands'. Policy Section 5.4.4 (d2) states that development and site alteration is permitted for infrastructure, such as transportation, provided that policies under Section 5.8 are met.

Hazard Lands: Land designated as 'Hazard Lands' within the DSBRT study area is also located around the watercourse and valleylands within the study area associated with Corbett Creek (Crossing 21), Goodman Creek (Crossing 22) and Oshawa Creek (Crossing 23). Development and site alterations should be directed away from flooding and erosion hazards and access associated with watercourses. Hazard lands should be used primarily for the preservation and conservation of land and/or the environment, and should be managed to complement adjacent land uses and protect land uses from any physical hazards and their effects. When 'Hazard Lands' coincide with the 'Natural Heritage System', as they do within the DSBRT study area, the lands are subject to Policy 5.4.4 of the City of Oshawa Official Plan. Building setbacks are determined by the City of Oshawa and CLOCA under section 28 of the *Conservation Authorities Act*. For more detailed information refer to section 5.8 of the City of Oshawa Official Plan.

Two Zone Floodplain Management Policy Area: The area surrounding Goodman Creek (Crossing 22) both north and south of King Street is identified as a 'Two Zone Floodplain Management Policy Area' within the DSBRT study area.

High Volume Recharge Areas: Areas in the vicinity of the three watercourses within the DSBRT study area (Corbett Creek, Goodman Creek and Oshawa Creek) are identified as 'High Volume Recharge Areas' (HVRAs). Removal or disruption to these areas will impact groundwater and surface water resources as well as those natural heritage features and habitat that rely on groundwater inputs and surface water quality and quantity. Development and site alteration within HVRAs (or parts thereof) located beyond the limits of the 'Natural Heritage System' may be permitted provided that a hydrogeological impact assessment is conducted which demonstrates, to the satisfaction of the City, in consultation with the Conservation Authority, that the proposed development and/or site alteration will result in no significant loss to recharge functions attributed to the HVRA.

Natural Cover Regeneration/Restoration Areas: Land designated as 'Natural Cover Regeneration/Restoration Areas' are located north of King Street at Corbett Creek and north of King Street at Goodman Creek within the DSBRT study area.

Key Natural Heritage Features and Key Hydrological Features: Land designated as 'Key Natural Heritage Features and Key Hydrological Features' is located within the DSBRT study area only surrounding Oshawa Creek both north and south of King Street and Bond Street. These features are a component of the 'Natural Heritage System'.

Development and/or site alteration is prohibited within key natural heritage and/or hydrological features, and their associated *vegetation protection zone* in accordance with Policy 5.3.5. An exception to this clause is granted in accordance with policy section 5.4.4. Development and/or site alteration in proximity to key heritage and/or hydrological features is subject to an Environmental Impact Assessment in accordance with Section 5.5 of the City of Oshawa Official Plan. An appropriate related *vegetation protection zone* with sufficient width is required to ensure key features and its functions are not adversely affected by the proposed change. Policy section 5.3.5 (a) sets the appropriate minimum width for watercourses, PSWs, wetlands and wooded areas and is further summarized in Table 6: Key Natural Heritage and Hydrological Features-Minimum Areas of Influence and Minimum *Vegetation Protection Zones*. For provincially significant features, the minimum width requirement is 30 metres. For wetlands and PSWs, the minimum width requirement is 15 metres. For features that include wooded areas that are not provincially significant woodlands, the minimum width requirement is determined under Policy 5.12.2 of the City of Oshawa Official Plan.

Riparian Corridors: areas in the vicinity of the three watercourses within the DSBRT study area (Corbett Creek, Goodman Creek and Oshawa Creek) are identified as 'Riparian Corridors'. These lands support fish and aquatic resources, and increase the vegetation network connectivity. 'Riparian Corridors' are fundamental components of the 'Natural Heritage System'. Thirty-metre-wide buffers on either side of watercourses are required to delineate riparian corridors. Policy section 5.4.9 states that a reduction in the buffer may be considered to the minimum width of 15 metres if through an appropriate study it is determined that the proposed action will not have any adverse effects on riparian corridors.

3.0 METHODOLOGY

3a. Desktop and Background Data Review

Data was obtained from published data sources and unpublished information made available by relevant external agencies/stakeholders. This data was then reviewed and used to identify data gaps and deficiencies, and to scope the type, location and level of detail for field investigations (see **Section 3c.** below). **Section 7.0** (References) lists all published and unpublished data sources referenced during the natural heritage existing conditions investigations. All of the most recent Plans, Policies, Legislation and Official Plans referenced in **Section 2.0** were accessed online.

The overall study area for the initial natural heritage desktop and background existing conditions data review included the DSBRT footprint covering the existing ROW and adjacent lands/habitats up to 120 m (north and south) from the future DSBRT footprint (see **Figure 1**). The groundwater investigation was undertaken separately by Parsons and a summary is provided in **Section 4c**.

Aquatic Environment

Several background sources were reviewed for information pertaining to fish and fish habitat within the DSBRT study area. Specifically, documents found on the websites of the TRCA and CLOCA regarding specific watersheds/subwatersheds and watercourses were examined. Both CLOCA and TRCA also provided additional aquatic resources/fisheries information for the study area in June 2019 and August 2019 respectively as well as additional information in 2021. MECP also provided specific information regarding species at risk in 2021. In addition, the 'Make a Map' feature of the Natural Heritage Information Centre (NHIC) of the MNRF website was examined for aquatic SAR as was the Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Mapping.

Terrestrial Environment

The geographical extent, composition, structure and function of vegetation communities within the DSBRT study area were initially identified through air photo interpretation and a review of secondary source data, and later confirmed during the detailed field investigations. Air photos were interpreted by LGL Limited to determine the limits and characteristics of the vegetation communities in the study area. Additional information for areas within the City of Toronto, and within TRCA and CLOCA jurisdictions, were incorporated to the extent possible using the Ecological Land Classification (ELC) data and designated natural area mapping provided from these agencies. Other background information reviewed included mapping from Carolinian Canada and SAR data from the NHIC. Detailed field investigations were conducted in late spring, summer and fall of 2019 to confirm existing conditions as these relate to vegetation and vegetation communities (see **Section 3c**).

Wildlife

An investigation of the wildlife and wildlife habitat found in the study area was carried out using air photo interpretation, a review of secondary source data, and field surveys. The TRCA, CLOCA, MNRF Aurora District Office, and Ontario Nature were contacted to request fauna element occurrence data. Information concerning wildlife SAR previously recorded within the vicinity of the study area was obtained from the NHIC. MNRF provided SAR information for each municipality although this data was not specific to the study area. SAR occurrence information/occurrence records were requested from MECP were not provided. Data obtained from CLOCA and TRCA provided element occurrence records for an array of wildlife species, including SAR. Ontario Nature provided reptile and amphibian data.

More general information relating to wildlife and wildlife habitat was obtained following a review of published and non-published sources (see **Section 7.0**), including avian data obtained from Bird Studies Canada.

3b. Agency Consultation

Table 1 outlines the external agencies/stakeholders that were contacted by the DSBRT study team (including Metrolinx, IBI Group, Parsons and LGL Limited) between March 2019 and January 2020 to obtain natural heritage data for the DSBRT study area, and provides details on the data requested and received by each agency. External agencies were only contacted to obtain background natural heritage data that has not been published or that could not otherwise be obtained through literature and online searches.

A record of all external agency correspondence related to natural heritage has been kept on file with the study team but has not been included as an Appendix is this report due to the sensitive nature of some of the information, in particular SAR data.

3c. Field Surveys

Detailed natural heritage field surveys were conducted by LGL Limited between April 2019 and June 2020 within the DSBRT study area. The field investigations covered the existing ROW and immediately adjacent areas, as well as areas up to 120 m north and south of the DSBRT footprint, depending on site conditions and the requirements for each natural heritage discipline. An additional field survey for aquatic habitat was conducted on July 30, 2021, to document existing conditions at a watercourse located to the south of the DSBRT corridor.

Aquatic Environment

Site investigations were conducted at all 24 watercourses within the DSBRT study area to document existing conditions regarding fish and fish habitat. Fish sampling was not conducted at most crossings as good datasets exist and were made available from the various regulatory agencies. However, sampling was deemed necessary at six sites for which data were not available (Crossings 3, 7, 8, 9, 15 and 17). Electrofishing was conducted at these sites on June 1, 2020. Site investigations focused on the physical characterization of habitat within approximately 50 m upstream and 100 m downstream of the crossings. These surveys were conducted on June 11 and 12, June 24 and 26, and October 9 and 11, 2019 and on April 24, 2020. As mentioned above, an additional survey was conducted at a single location on July 30, 2021. Features are described in **Section 4e** and are mapped on air photos. **Appendix B** presents a photographic record of the watercourses and **Appendix C** presents the aquatic survey data including the habitat mapping overlayed onto aerial photos.

Terrestrial Environment

Field surveys were undertaken to identify, categorize and map local ecosites and vegetation types throughout the study area. Field surveys were undertaken, and vegetation communities classified according to the Ecological Land Classification for Southern Ontario: First Approximation and its Application (Lee *et al*. 1998), to the extent possible. Walking surveys were undertaken collecting species presence and species density information. Observations recorded included habitat inclusions where these were too small to delineate, and noted habitat disturbances. Detailed field investigations conducted focused on an area up to approximately 30 m to 50 m from the paved/gravel shoulder, both north and south of Ellesmere Road / Kingston Road / Dundas Street / King Street and Bond Street (the DSBRT study area) in order to confirm existing conditions as these relate to vegetation and vegetation communities.

TABLE 1.
SUMMARY OF CONSULTATION WITH EXTERNAL AGENCIES REGARDING NATURAL HERITAGE DATA

External Agency	Data Requested	Data Received
Ministry of Natural Resources and Forestry (MNRF), Aurora District Office	• An application for a License to Collect Fish for Scientific Purposes was sent to MNRF's Aurora District Office on May 29, 2019. • Fisheries information including fish collection records (in addition to ARA GIS layers from Land Information Ontario (LIO)), fish community/habitat information, important/exceptional fish habitat, critical habitat present, and in-water works timing windows. • Significant habitat information including amphibian breeding, interior forest and other significant wildlife habitat data. • An application for a License to Collect Fish for Scientific Purposes was sent to MNRF's Aurora District Office on February 25, 2020.	• The final signed License to Collect Fish for Scientific Purposes was provided to LGL on June 25, 2019. • LIO Mapping (accessed online between April and November 2019) for designated natural areas, watercourses, waterbodies, water temperatures, designated natural areas, wetlands, NHIC 1 x 1 m grid squares and species lists, aquatic resources layer (including thermal regime and species collection records), natural heritage areas (including Greenbelt Plan Areas/Designations and the Growth Plan for the Greater Golden Horseshoe), roads, municipal boundaries, and railways. • Confirmation that up-to-date fish community information should be available from TRCA and CLOCA, and that some significant wildlife habitat information may be available from the TRCA and CLOCA but will likely require on-site field investigations during appropriate seasons. • Confirmation that interior forest habitat should be determined using recent leaf-on aerial photography. • NHIC natural areas database for the ANSIs, Life Science Sites, and PSWs located in the vicinity of the study area. • The final signed Licence to Collect Fish for Scientific Purposes was provided to LGL on May 8, 2020.
Ministry of Environment, Conservation and Parks (MECP)	• SAR information/occurrence records including all updated SAR records in proximity to the study area including any sensitive/restricted species records. It was noted that based on LGL's secondary source review (i.e., review of NHIC and TRCA data), there are records for eight SAR in proximity to the study area (within the last 20 years) including Peregrine Falcon, Bank Swallow, Eastern Meadowlark, Snapping Turtle, Butternut, Redside Dace, Eastern Pondmussel and American Eel. • SAR information regarding aquatic species at seven watercourses	• No data received as of Winter 2021. • Data received via email on December 21, 2021 regarding aquatic SAR at the seven watercourses specified in the request.
Ontario Nature	• Wildlife Information including the Ontario Reptile and Amphibian (Herpetofauna) Atlas, and herpetofauna occurrence data.	• Ontario Reptile and Amphibian Atlas. • Herpetofauna occurrence data.

TABLE 1.
SUMMARY OF CONSULTATION WITH EXTERNAL AGENCIES REGARDING NATURAL HERITAGE DATA

External Agency	Data Requested	Data Received
	• Observation lists for squares (https://ontarionature.org/oraa/maps/[ontarionature.org]).	
Toronto and Region Conservation Authority (TRCA)	• Fisheries/watercourse information including fish collection records (including mussels), fish habitat data, watercourse thermal regime, barrier locations in close proximity to the study area, and flow regime (permanent, intermittent, ephemeral). • Monitoring locations. • Fish sampling stations within the study area including databases, mapping and catch data. • Wildlife information including species occurrences/ updated fauna data points for birds (any updated not already on open data sites), mammals (any updated not already on open data sites) including bats, and amphibians. • Botany/vegetation information including updated flora data points and rare plant occurrences (any updated not already on open data sites), and tree inventories. • Significant natural areas information including ESAs, interior forest cover and locally significant wetlands (including GIS/mapping info). • SAR information including any updated data available for aquatic species, wildlife and plants (not already on open data sites).	• Regulation limits, fauna occurrences, watercourses, fish barrier information, fish and fish habitat data, native flora lists, interior forest data (2013), post construction restoration guidelines, restoration for typical native plants, stormwater management pond planting guidelines, ELC and ESA information, natural cover, subwatersheds, and watersheds, flora occurrences, modelled refined targets, natural cover (2017).
Central Lake Ontario Conservation Authority (CLOCA)	• Fisheries/watercourse information including fish collection records (including mussels), fish habitat data, watercourse thermal regime, barrier locations in close proximity to the study area, and flow regime (permanent, intermittent, ephemeral). • Monitoring locations. • Fish sampling stations within the study area including databases, mapping and catch data. • Wildlife information including species occurrences /updated fauna data points for birds (any updated not already on open data sites), mammals (any updated not	• Natural Heritage Aquatic Resources Memo (dated June 12, 2019). • Fisheries and water temperature data, wildlife habitat network map, and NHIC SAR information. • CLOCA Open Data available online including ELC data, flora/ fauna occurrences, drainage (watercourses), terrestrial monitoring stations (for additional species records), aquatic monitoring stations (for additional species records), and regulation limits. • ESA information.

TABLE 1.
SUMMARY OF CONSULTATION WITH EXTERNAL AGENCIES REGARDING NATURAL HERITAGE DATA

External Agency	Data Requested	Data Received
	already on open data sites) including bats, and amphibians. • Botany/vegetation information including updated flora data points and rare plant occurrences (any updated not already on open data sites), and tree inventories. • Significant natural areas information including ESAs, interior forest cover and locally significant wetlands (including GIS/mapping info). • SAR information including any updated data available for aquatic species, wildlife and plants (not already on open data sites).	
Carolinian Canada	• All data displayed within the Carolinian Canada 'The Big Picture' maps within the study area including: - Carolinian Core Natural Areas - Other Significant Natural Areas - Potential Habitat Corridors - 1984 Carolinian Canada Sites - Information regarding tallgrass prairie communities, historical communities, and potential habitat.	• 'The Big Picture' database including the Carolinian Core Natural Areas, Other Significant Natural Areas, and Potential Habitat Corridors.
Tallgrass Ontario	• The tallgrass ecosystems data displayed within Tallgrass Ontario's 'Tallgrass Ecosystems and Recovery Areas' figure for the study area including: - Physiographic Region: Iroquois Plain - Tallgrass Element Observation: Tracked Indicator Species (post 1980) - Tallgrass Element Observation: Tracked Indicator Species (pre 1980 or unknown) Tracked Tallgrass Community - Current Habitat Range - Historic Habitat Range	• No data received as of winter 2021.
City of Toronto	• Updated ESA information (including GIS/mapping info).	• City of Toronto Open Data available online including Natural Heritage Systems 2015 data set, Ravine and Natural Features Protection Bylaw dataset, municipal boundary, and street layers. • City of Toronto ESAs and other designated natural areas info.
Durham Region	• ESA and natural heritage systems data (including GIS/mapping info).	• Greenbelt Plan designations (January 2020).

Numerous field surveys were undertaken between May and October 2019. Additional visits took place in May and June 2019 in wetlands and good quality forested areas to record any early spring/ephemeral plant presence (see **Appendix D**). The Arborist Report (LGL Limited 2021) documents the results of the tree inventory undertaken by LGL Limited in the winter and spring of 2020. The study area for the arborist investigation included the DSBRT ROW/project limits and adjacent zones of influence in areas that have the potential to be impacted by the proposed development. Generally, this included up to 6 m beyond the DSBRT ROW/project limits with the exception of lands within the City of Toronto Ravine and Natural Feature Protection (RNFP) boundary, which requires trees to be surveyed within 12 m of the zones of influence.

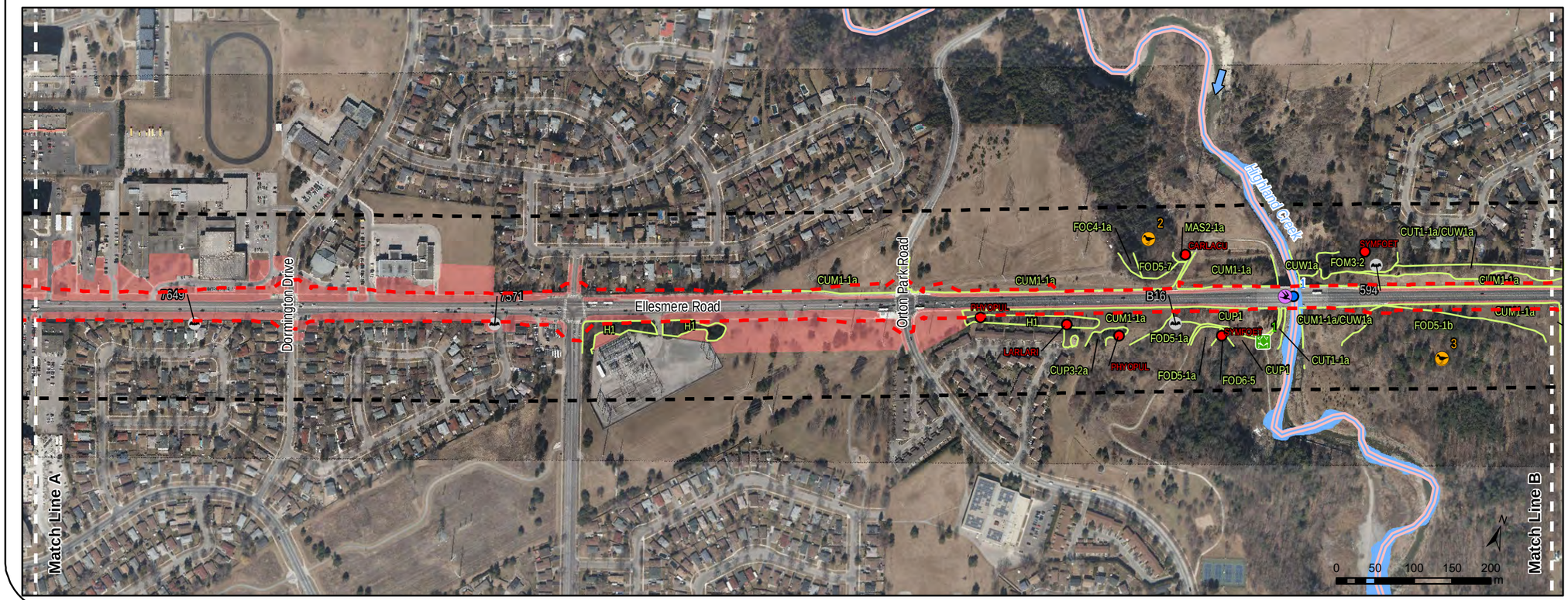
Wildlife

Detailed field investigations to document wildlife and wildlife habitat were conducted by LGL in spring/early summer of 2019 (and winter/spring of 2020 for bat habitat characterization) and focused on the proposed DSBRT footprint and adjacent lands up to 50 m (north and south) from the future DSBRT footprint (see **Figures NER-1a – NER-1i)**. Surveys conducted included targeted anuran (frog and toad) and breeding bird surveys following provincially recognized protocols such as the Ontario Marsh Monitoring Program and the Ontario Breeding Bird Atlas Protocol, and a high-level bat habitat characterization which included forest classification and identification of tree snags and cavities. Incidental observations of wildlife were recorded during the 2019 field investigations.

A summary of 2019 and 2020 survey dates, tasks, weather and survey personnel is presented in **Table 2**.

TABLE 2.
SUMMARY OF DATE OF WILDLIFE INVENTORY, TASK, WEATHER AND PERSONNEL

Date of Inventory	Task	Weather	Personnel Involved
April 25, 2019	Anuran survey	Overcast, 10^{C}, winds 9 km/hr	David Smith (LGL) Jordan Pietroniro (LGL)
May 21, 2019	Anuran survey	Partial cloud cover, 15^{C}, winds 5 km/hr	Dana Couture (LGL) Jordan Pietroniro (LGL)
June 11, 2019	Breeding bird survey and incidental wildlife survey	Clear, 14^{C}, calm	Judson Venier (LGL)
June 12, 2019	Breeding bird survey and incidental wildlife survey	Clear, 8^{C}, calm	Judson Venier (LGL)
June 27, 2019	Anuran survey	Clear skies, 22^{C}, winds 9 km/hr	Julia Shonfield (LGL) Jordan Pietroniro (LGL)
June 26, 2019	Breeding bird survey and incidental wildlife survey	Clear, 18^{C}, calm	Judson Venier (LGL)
February 13, 21, March 4,13, and April 22, 28, 23, 2020	Bat habitat characterization	Varied	Lisa Catcher (LGL) Jordan Pietroniro (LGL) Trent Meyers (LGL)



Data Sources: LGL Limited field surveys, Ontario Ministry of Natural Resources and Forestry (LIO). Contains information licenced under the Open Government Licence - Ontario.

LEGEND

- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Cold Thermal Regime
- Warm Thermal Regime
- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Confirmed Breeding at Breeding Bird Point Count Station
- Potential Barn Swallow Nesting Habitat
- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare

Vegetation Communities

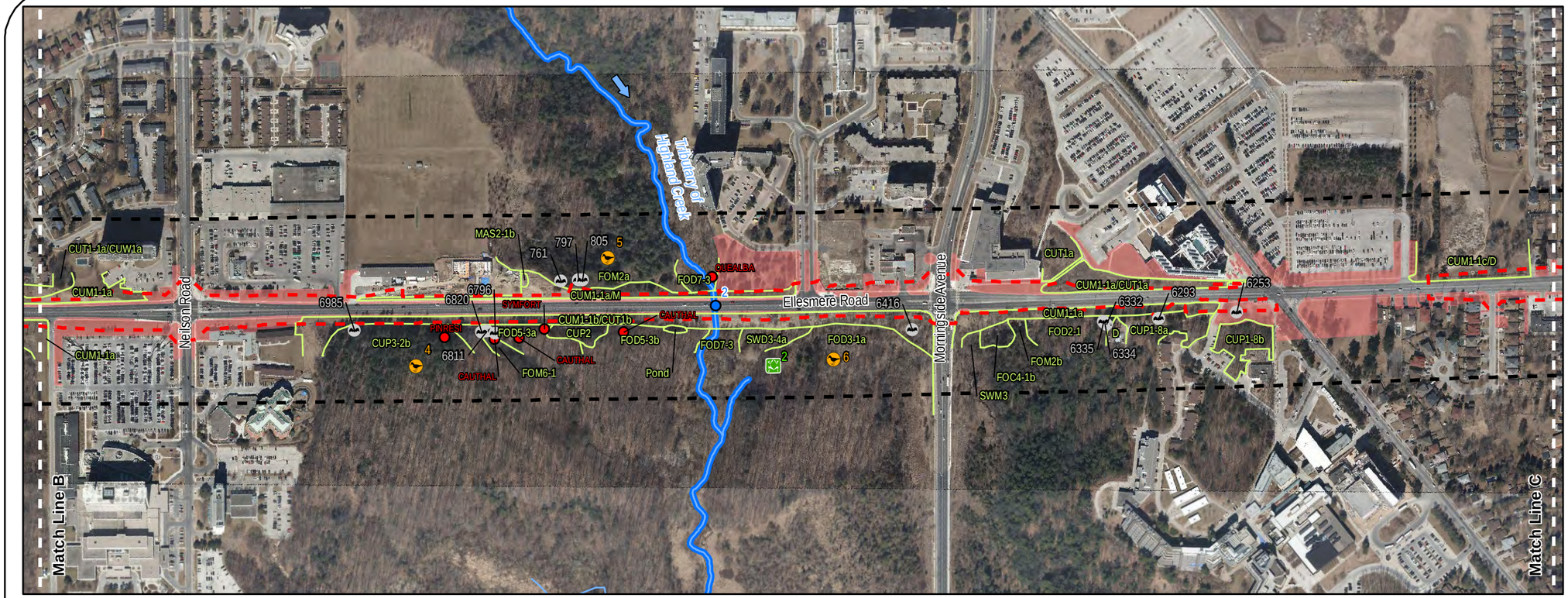
- Manicured Vegetation Community
- Vegetation Community Boundary

Ag	Agricultural
CUM1-1 (a-i)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1- 8 (a,i)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (a,i)	White Pine Coniferous Plantation Type
CUT1 (a-c)	Mineral Cultural Thicket Ecosite
CUT1-1 (a-c)	Sumac Cultural Thicket Type
CUW1 (a-w)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC4-1 (a,i)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
FOD3-1 (a,i)	Dry-Fresh Poplar Deciduous Forest Type
FOD5-1 (a,i)	Dry-Fresh Sugar Maple Deciduous Forest Type
FOD5-3 (a,i)	Dry-Fresh Sugar Maple-Oak Deciduous Forest Type
FOD5 (a-c)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (a-c)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (1-5)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (a-i)	Mineral Shallow Marsh Ecosite
MAS2-1 (a-i)	Cattail Mineral Shallow Marsh Type
SWD3 (a-c)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (a-c)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

LGL LIMITED
environmental research associates

Project:	TA8893	**Figure:**	NER-1a
Date:	November, 2021	**Prepared By:**	JJP
Scale:	1 : 6,000	**Checked By:**	LS



Data Sources: LGL Limited field surveys, Ontario Ministry of Natural Resources and Forestry (LIO). Contains information licenced under the Open Government Licence - Ontario.

LEGEND

- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Cold Thermal Regime
- Warm Thermal Regime
- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Confirmed Breeding at Breeding Bird Point Count Station
- Potential Barn Swallow Nesting Habitat
- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare

Vegetation Communities

- Manicured Vegetation Community
- Vegetation Community Boundary

Ag	Agricultural
CUM1-1 (e-i)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1- 8 (a,i)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (a,i)	White Pine Coniferous Plantation Type
CUT1 (a-e)	Mineral Cultural Thicket Ecosite
CUT1-1 (a-c)	Sumac Cultural Thicket Type
CUW1 (a-w)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC4-1 (a,i)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
FOD3-1 (a,i)	Dry-Fresh Poplar Deciduous Forest Type
FOD5-1 (a,i)	Dry-Fresh Sugar Maple Deciduous Forest Type
FOD5-3 (a,i)	Dry-Fresh Sugar Maple-Oak Deciduous Forest Type
FOD5 (a-e)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (a-c)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (1-5)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (a-i)	Mineral Shallow Marsh Ecosite
MAS2-1 (a-h)	Cattail Mineral Shallow Marsh Type
SWD3 (a-i)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (a-i)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

LGL LIMITED
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Project:	TA8893	**Figure:**	NER-1b
Date:	November, 2021	**Prepared By:**	JJP
Scale:	1 : 6,000	**Checked By:**	LS

LEGEND

- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Cold Thermal Regime
- Warm Thermal Regime
- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Confirmed Breeding at Breeding Bird Point Count Station
- Potential Barn Swallow Nesting Habitat
- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare
- Rouge National Urban Park

Vegetation Communities

- Manicured Vegetation Community
- Vegetation Community Boundary

Ag	Agricultural
CUM1-1 (a-j)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1-8 (a,b)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (a,b)	White Pine Coniferous Plantation Type
CUT1 (b-e)	Mineral Cultural Thicket Ecosite
CUT1-1 (a-c)	Sumac Cultural Thicket Type
CUW1 (a-w)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC4-1 (a,b)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
FOD3-1 (a,b)	Dry-Fresh Poplar Deciduous Forest Type
FOD5-1 (a,b)	Dry-Fresh Sugar Maple Deciduous Forest Type
FOD5-3 (a,b)	Dry-Fresh Sugar Maple-Oak Deciduous Forest Type
FOD5 (b-e)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (a-c)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (i-s)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (a-l)	Mineral Shallow Marsh Ecosite
MAS2-1 (a-h)	Cattail Mineral Shallow Marsh Type
SWD3 (b-e)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (b-e)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

LGL LIMITED
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Project:	TA8893	**Figure:**	NER-1c
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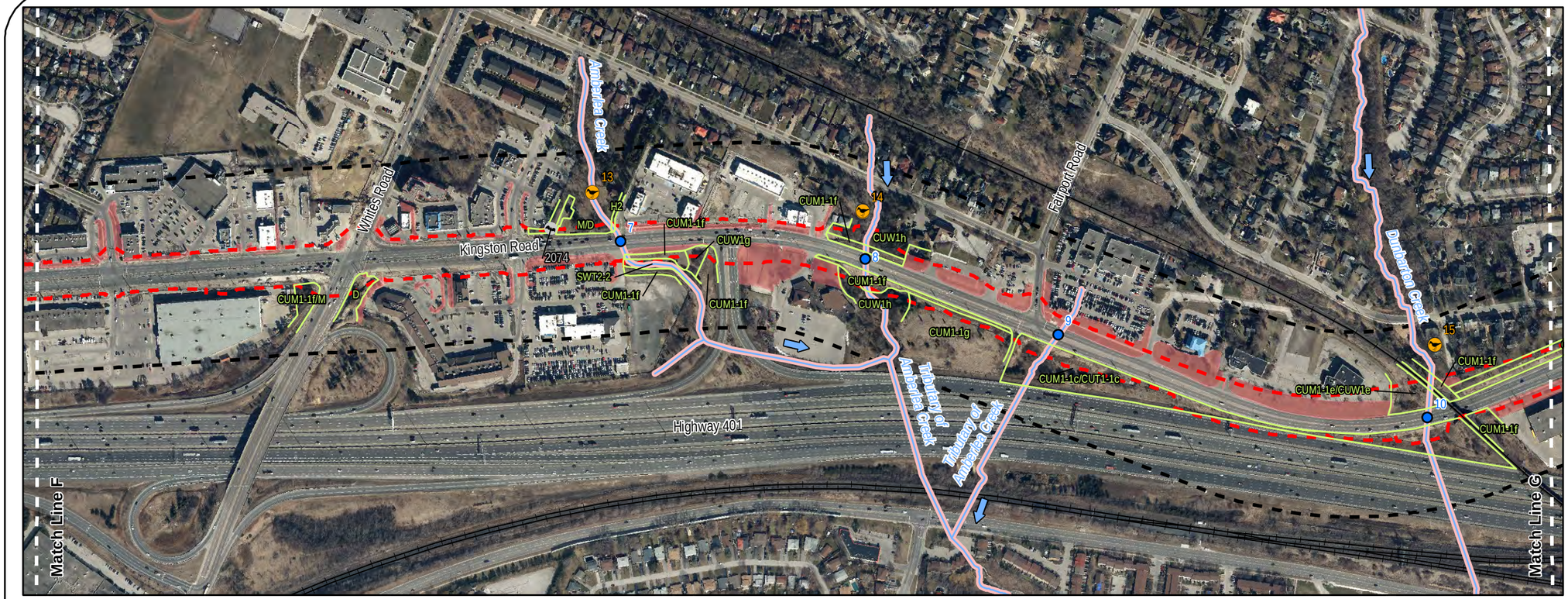

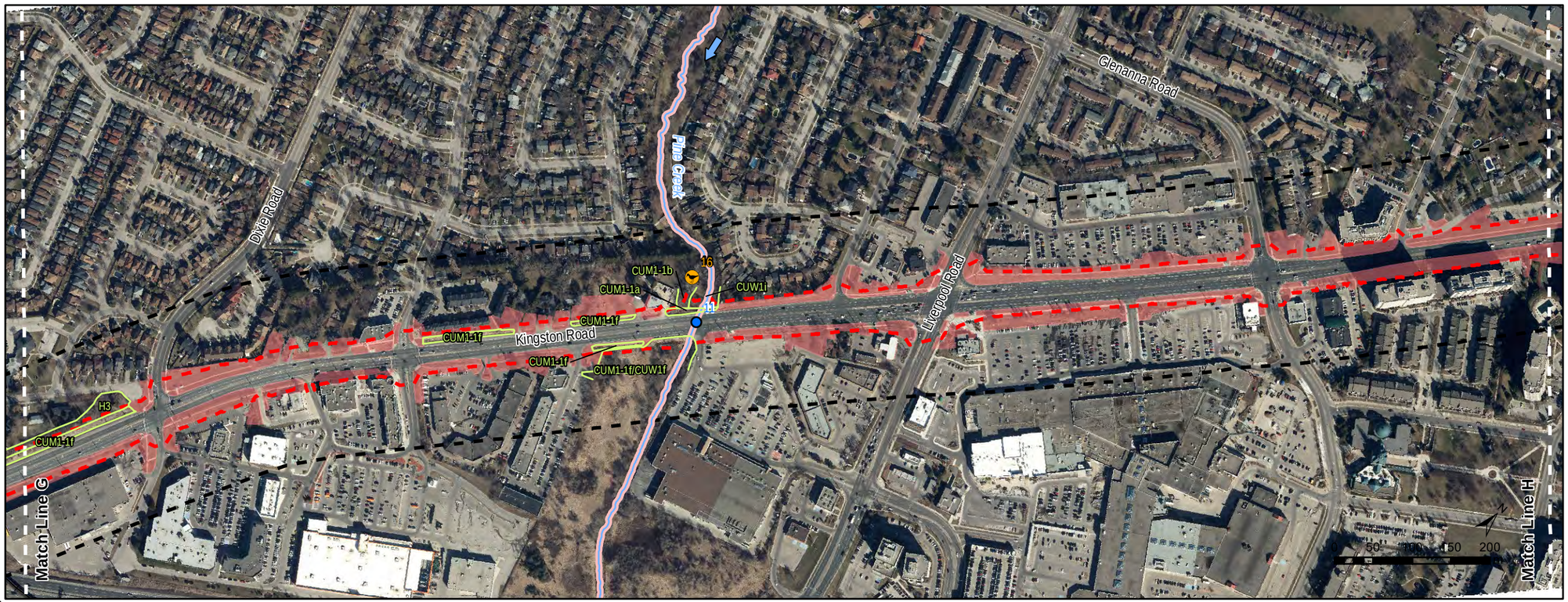

LEGEND

- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Cold Thermal Regime
- Warm Thermal Regime
- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Confirmed Breeding at Breeding Bird Point Count Station
- Potential Barn Swallow Nesting Habitat
- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare

Vegetation Communities

- Manicured Vegetation Community
- Vegetation Community Boundary

Ag	Agricultural
CUM1-1 (e-i)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1- 8 (e,i)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (e,i)	White Pine Coniferous Plantation Type
CUT1 (e-i)	Mineral Cultural Thicket Ecosite
CUT1-1 (e-i)	Sumac Cultural Thicket Type
CUW1 (e-w)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC1-1 (e,i)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
FOD3-1 (e,i)	Dry-Fresh Poplar Deciduous Forest Type
FOD5-1 (e,i)	Dry-Fresh Sugar Maple Deciduous Forest Type
FOD5-3 (e,i)	Dry-Fresh Sugar Maple-Oak Deciduous Forest Type
FOD5 (e-i)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (e-i)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (1-5)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (e-i)	Mineral Shallow Marsh Ecosite
MAS2-1 (e-i)	Cattail Mineral Shallow Marsh Type
SWD3 (e-i)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (e-i)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

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Project:	TA8893	**Figure:**	NER-1d
Date:	November, 2021	**Prepared By:**	JJP
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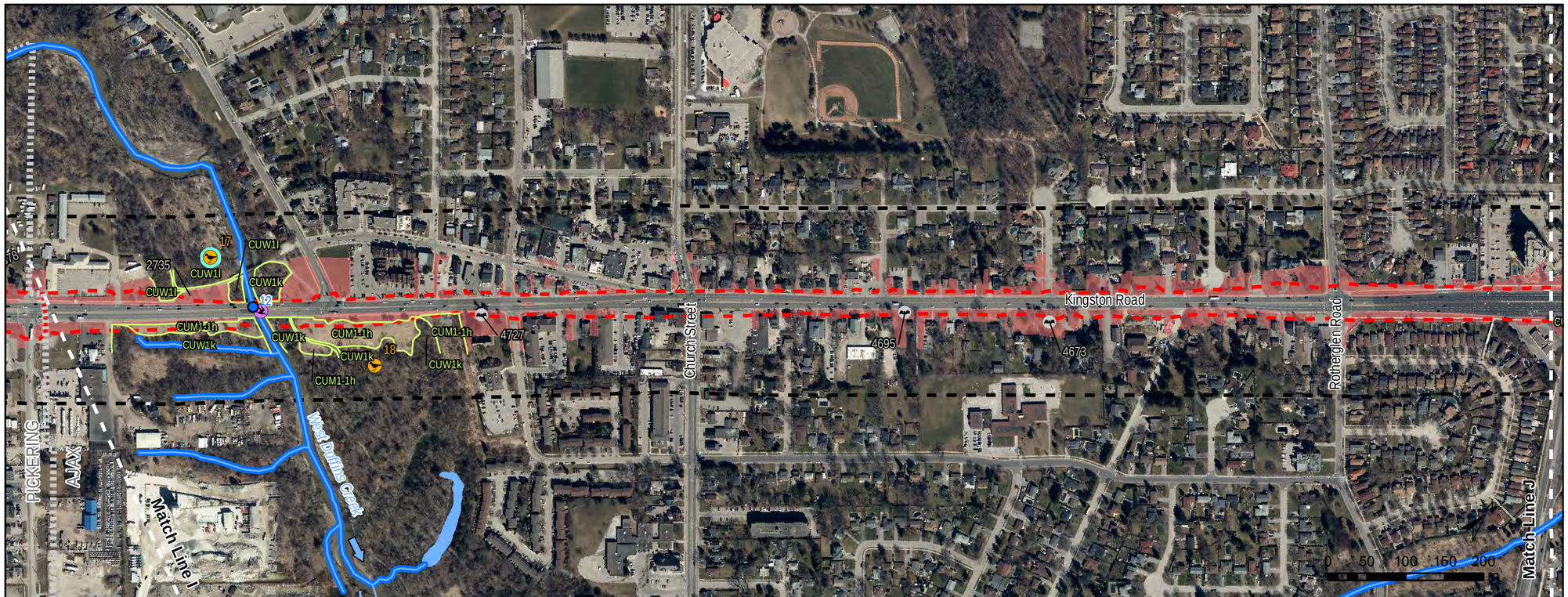


Data Sources: LGL Limited field surveys, Ontario Ministry of Natural Resources and Forestry (LIO). Contains information licenced under the Open Government Licence - Ontario.

LEGEND

- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Cold Thermal Regime
- Warm Thermal Regime
- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Confirmed Breeding at Breeding Bird Point Count Station
- Potential Barn Swallow Nesting Habitat
- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare

Vegetation Communities

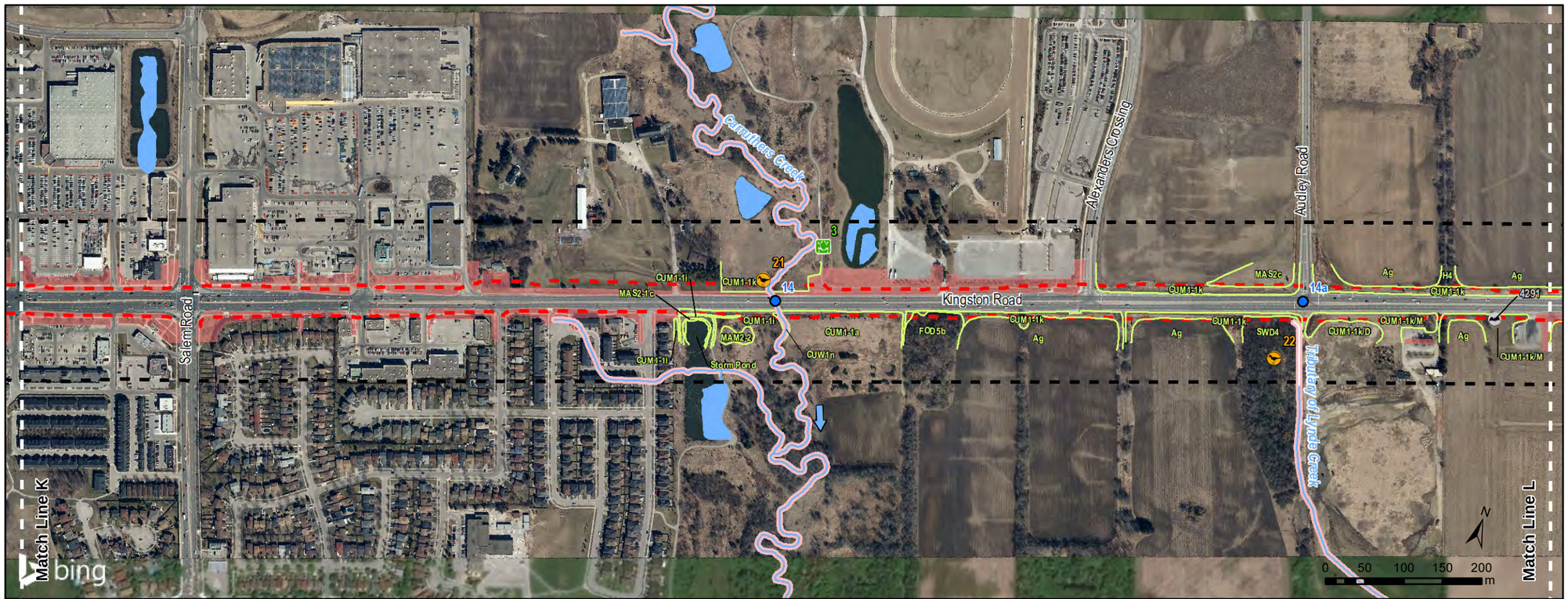
- Manicured Vegetation Community
- Vegetation Community Boundary

Ag	Agricultural
CUM1-1 (e-i)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1- 8 (a,i)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (a,i)	White Pine Coniferous Plantation Type
CUT1 (e-i)	Mineral Cultural Thicket Ecosite
CUT1-1 (e-i)	Sumac Cultural Thicket Type
CUW1 (e-i)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC4-1 (a,i)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
FOD3-1 (a,i)	Dry-Fresh Poplar Deciduous Forest Type
FOD5-1 (a,i)	Dry-Fresh Sugar Maple Deciduous Forest Type
FOD5-3 (a,i)	Dry-Fresh Sugar Maple-Oak Deciduous Forest Type
FOD5 (e-i)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (e-i)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (1-5)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (e-i)	Mineral Shallow Marsh Ecosite
MAS2-1 (a-h)	Cattail Mineral Shallow Marsh Type
SWD3 (e-i)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (e-i)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

LGL LIMITED
environmental research associates

Project:	TA8893	**Figure:**	NER-1e
Date:	November, 2021	**Prepared By:**	JJP
Scale:	1 : 6,000	**Checked By:**	LS



LEGEND

- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Cold Thermal Regime
- Warm Thermal Regime
- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Confirmed Breeding at Breeding Bird Point Count Station
- Potential Barn Swallow Nesting Habitat
- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare

Vegetation Communities

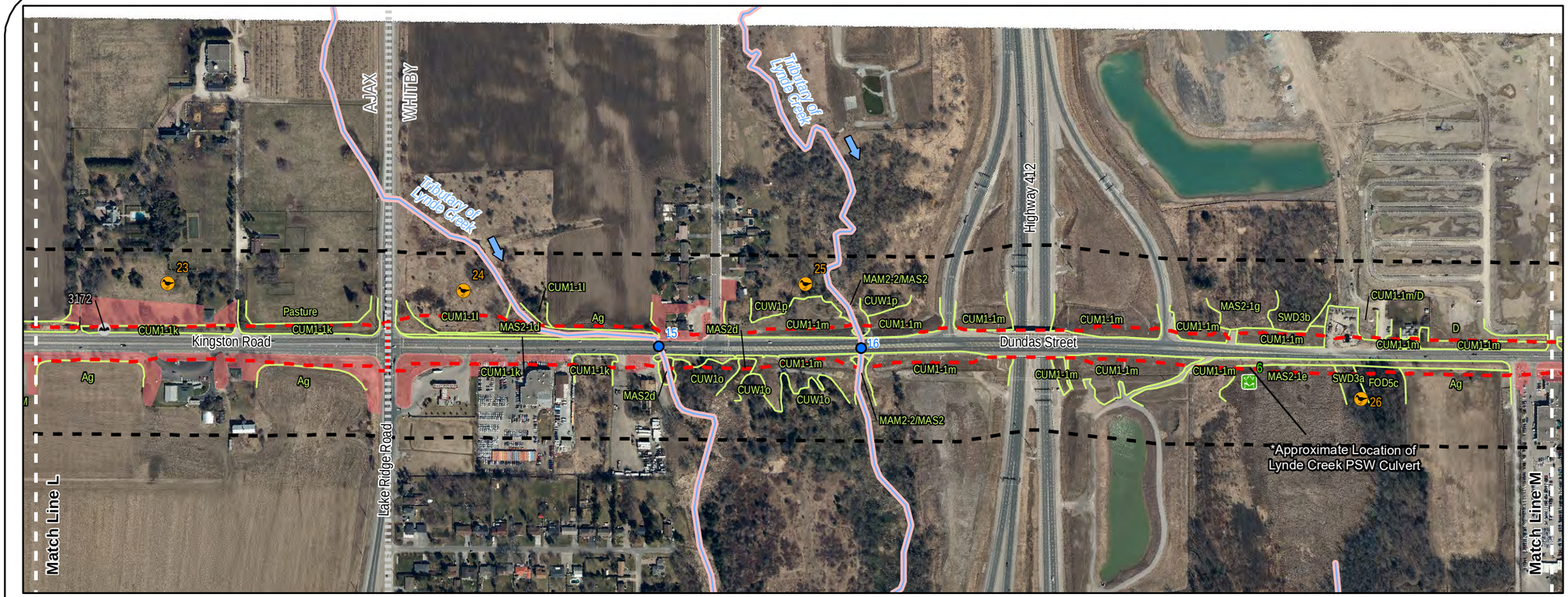
- Manicured Vegetation Community
- Vegetation Community Boundary

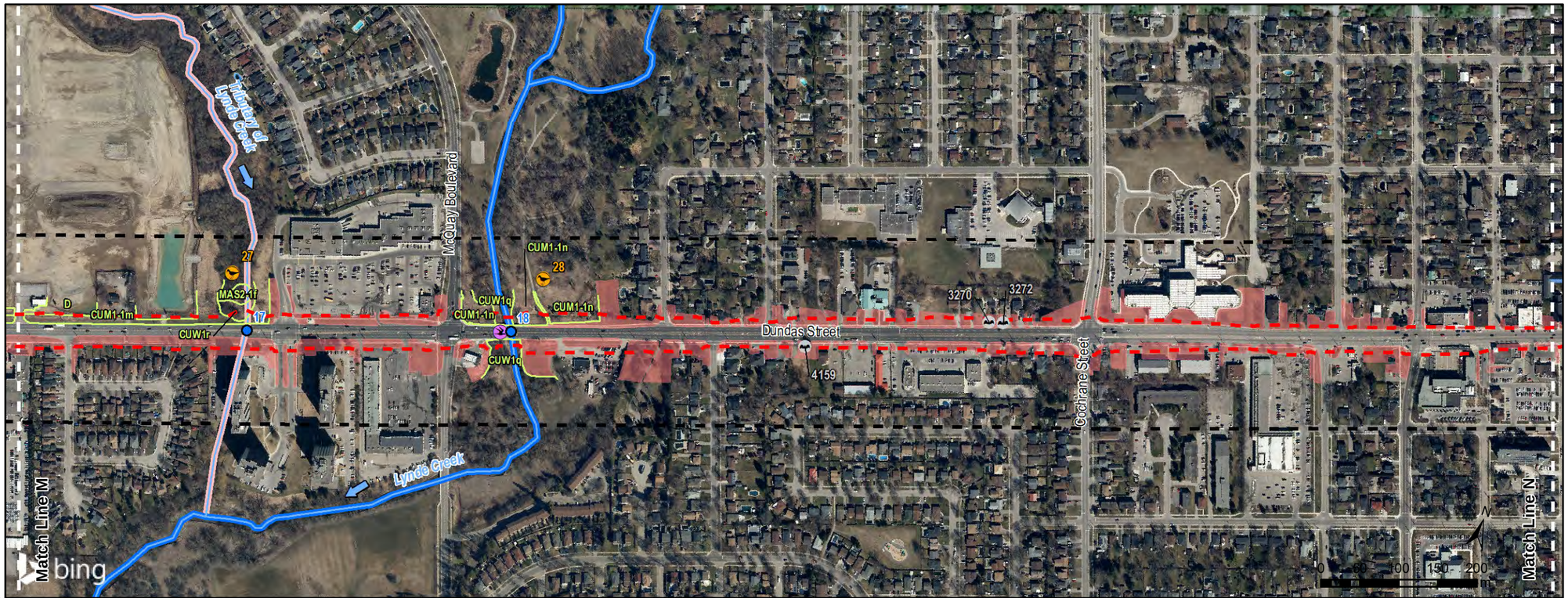
Ag	Agricultural
CUM1-1 (e-i)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1- 8 (e,i)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (e,i)	White Pine Coniferous Plantation Type
CUT1 (e-i)	Mineral Cultural Thicket Ecosite
CUT1-1 (e-i)	Sumac Cultural Thicket Type
CUW1 (e-w)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC4-1 (e,i)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
FOD3-1 (e,i)	Dry-Fresh Poplar Deciduous Forest Type
FOD5-1 (e,i)	Dry-Fresh Sugar Maple Deciduous Forest Type
FOD5-3 (e,i)	Dry-Fresh Sugar Maple-Oak Deciduous Forest Type
FOD5 (e-i)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (e-c)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (1-5)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (e-i)	Mineral Shallow Marsh Ecosite
MAS2-1 (e,i)	Cattail Mineral Shallow Marsh Type
SWD3 (e-i)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (e-i)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

LGL LIMITED
environmental research associates

Project:	TA8893	**Figure:**	NER-1f
Date:	November, 2021	**Prepared By:**	JJP
Scale:	1 : 6,000	**Checked By:**	LS





LEGEND

- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Cold Thermal Regime
- Warm Thermal Regime
- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Confirmed Breeding at Breeding Bird Point Count Station
- Potential Barn Swallow Nesting Habitat
- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare

Vegetation Communities

- Manicured Vegetation Community
- Vegetation Community Boundary

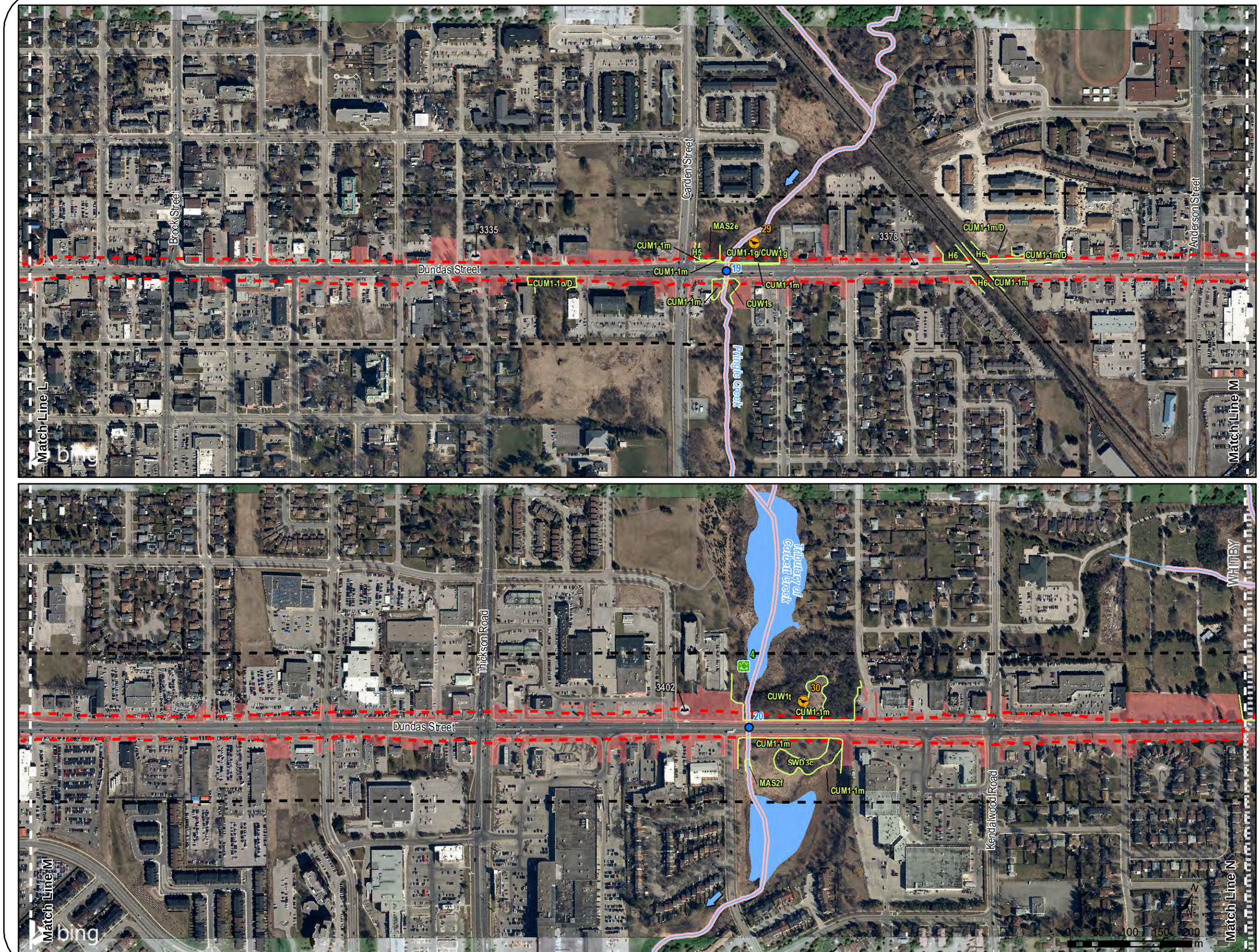
Ag	Agricultural
CUM1-1 (e-i)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1- 8 (a,h)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (a,h)	White Pine Coniferous Plantation Type
CUT1 (a-c)	Mineral Cultural Thicket Ecosite
CUT1-1 (a-c)	Sumac Cultural Thicket Type
CUW1 (a-w)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC4-1 (a,h)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
FOD3-1 (a,h)	Dry-Fresh Poplar Deciduous Forest Type
FOD5-1 (a,h)	Dry-Fresh Sugar Maple Deciduous Forest Type
FOD5-3 (a,h)	Dry-Fresh Sugar Maple-Oak Deciduous Forest Type
FOD5 (a-c)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (a-c)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (1-5)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (a-i)	Mineral Shallow Marsh Ecosite
MAS2-1 (a-h)	Cattail Mineral Shallow Marsh Type
SWD3 (a-c)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (a-c)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

LGL LIMITED
environmental research associates

Project:	TA8893	**Figure:**	NER-1g
Date:	November, 2021	**Prepared By:**	JJP
Scale:	1 : 6,000	**Checked By:**	LS

Data Sources: LGL Limited field surveys, Ontario Ministry of Natural Resources and Forestry (LIO). Contains information licenced under the Open Government Licence - Ontario.



Data Sources: LGL Limited field surveys, Ontario Ministry of Natural Resources and Forestry (LIO). Contains information licenced under the Open Government Licence - Ontario.

LEGEND

- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Cold Thermal Regime
- Warm Thermal Regime
- Anuran Monitoring Station
- Breeding Bird Point Count Station
- Confirmed Breeding at Breeding Bird Point Count Station
- Potential Barn Swallow Nesting Habitat
- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare

Vegetation Communities

- Manicured Vegetation Community
- Vegetation Community Boundary

Ag	Agricultural
CUM1-1 (a-j)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1- 8 (a,h)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (a,h)	White Pine Coniferous Plantation Type
CUT1 (a-c)	Mineral Cultural Thicket Ecosite
CUT1-1 (a-c)	Sumac Cultural Thicket Type
CUW1 (a-w)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC4-1 (a,h)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
FOD3-1 (a,h)	Dry-Fresh Poplar Deciduous Forest Type
FOD5-1 (a,h)	Dry-Fresh Sugar Maple Deciduous Forest Type
FOD5-3 (a,h)	Dry-Fresh Sugar Maple-Oak Deciduous Forest Type
FOD5 (a-c)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (a-c)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (1-5)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (a-j)	Mineral Shallow Marsh Ecosite
MAS2-1 (a-h)	Cattail Mineral Shallow Marsh Type
SWD3 (a-c)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (a-c)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

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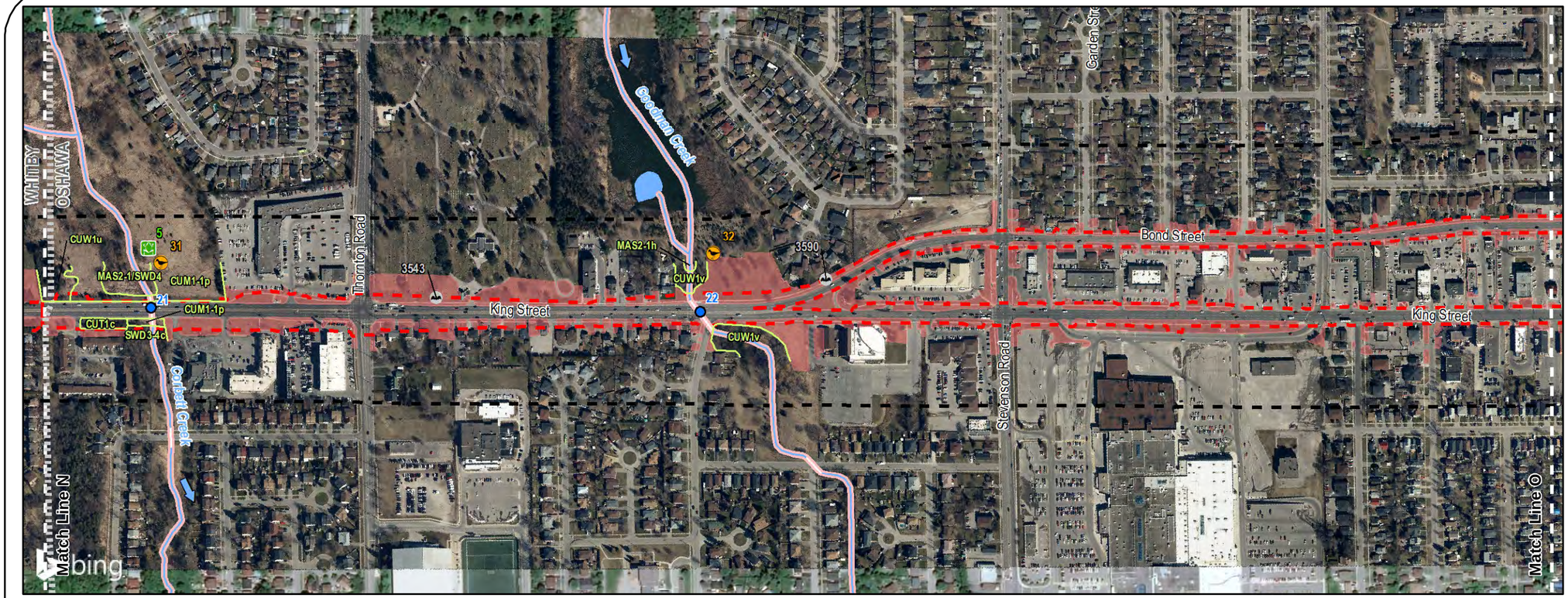

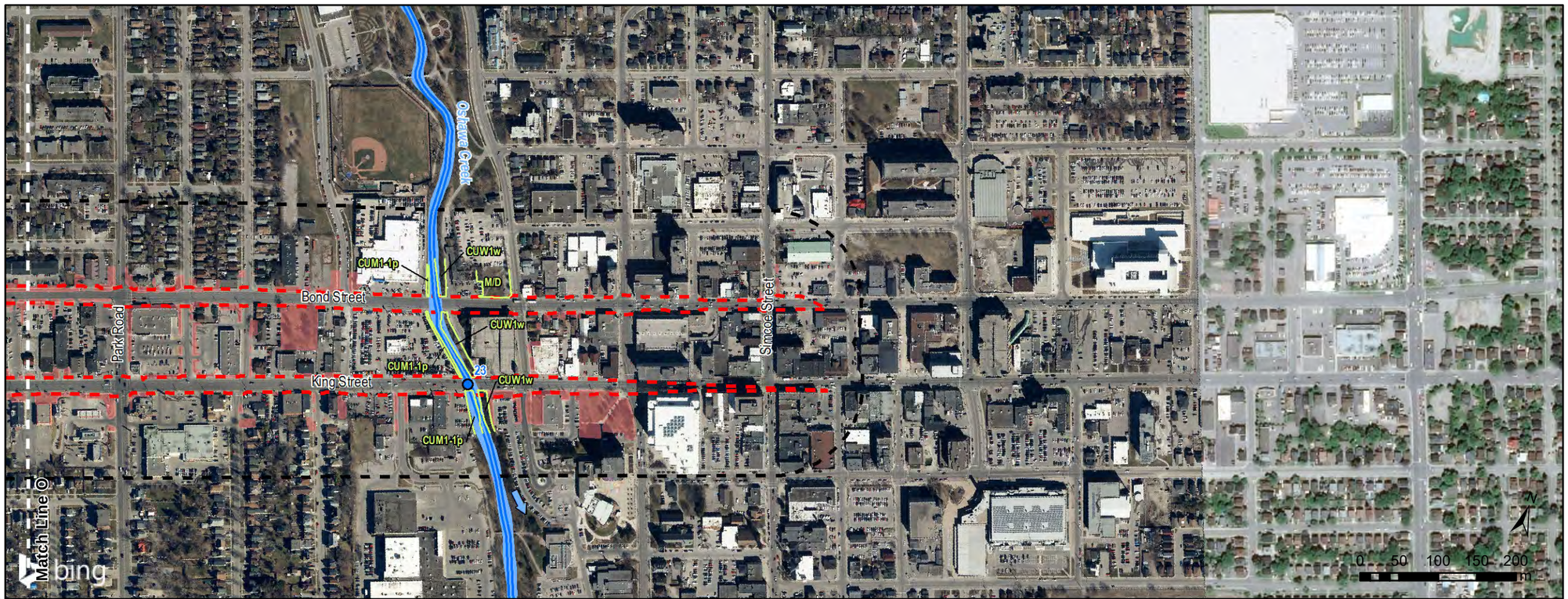

LEGEND

- Railway
- Municipal Boundary
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- Potential Bat Trees
- Watercourse Crossing
- Species of Concern and/or Rare

Vegetation Communities

- Manicured Vegetation Community
- Vegetation Community Boundary

Ag	Agricultural
CUM1-1 (e-i)	Dry-Moist Old Field Meadow
CUP1	Deciduous Plantation
CUP1-3	Black Walnut Deciduous Plantation Type
CUP1- 8 (e,i)	Red Oak Deciduous Plantation Type
CUP2	Mixed Plantation
CUP3-2 (e,i)	White Pine Coniferous Plantation Type
CUT1 (e-i)	Mineral Cultural Thicket Ecosite
CUT1-1 (e-i)	Sumac Cultural Thicket Type
CUW1 (e-w)	Mineral Cultural Woodland Ecosite
D	Disturbed
FOC4-1 (e,i)	Fresh-Moist White Cedar Coniferous Forest Type
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest Type
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FOD5-1 (e,i)	Dry-Fresh Sugar Maple Deciduous Forest Type
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FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOM2 (e-i)	Dry-Fresh White Pine-Maple-Oak Mixed Forest Type
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest Type
FOM6-1	Fresh-Moist Sugar Maple-Hemlock Mixed Forest Type
H (1-5)	Hedgerow
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh Type
MAS2 (e-i)	Mineral Shallow Marsh Ecosite
MAS2-1 (e-i)	Cattail Mineral Shallow Marsh Type
SWD3 (e-i)	Maple Mineral Deciduous Swamp Ecosite
SWD3-4 (e-i)	Manitoba Maple Mineral Deciduous Swamp Type
SWD4	Mineral Deciduous Swamp Ecosite
SWM3	Birch-Poplar Mineral Mixed Swamp Type
SWT2-2	Willow Mineral Thicket Swamp Type

ECOLOGICAL LAND CLASSIFICATION, WILDLIFE AND AQUATIC ENVIRONMENTS

LGL LIMITED
environmental research associates

Project:	TA8893	**Figure:**	NER-1i
Date:	November, 2021	**Prepared By:**	JJP
Scale:	1 : 6,000	**Checked By:**	LS

Data Sources: LGL Limited field surveys, Ontario Ministry of Natural Resources and Forestry (LIO). Contains information licenced under the Open Government Licence - Ontario.

4.0 EXISTING CONDITIONS

4a. Landforms and Physiology

The area between Lake Ontario and the interlobate moraine has been divided into three regions: the Iroquois Plain, the Peel Plain, and the South Slope. According to Chapman and Putnam (1984), the entire study area is located within the South Slope and the Iroquois Plain physiographic regions. A description of these regions is presented below. The bedrock formation and the distribution of the soil parent materials lie within Ontario County.

South Slope

The South Slope is the southern slope of the interlobate moraine and includes the strip south of the Peel Plain. The South Slope extends from the Niagara Escarpment to the Trent River and covers approximately 940 square miles. The central portion consists of the former Ontario and Durham Counties. The area is scattered with thin, long drumlins that point upwards along the slope, whereas streams flow in the opposite direction, downwards. Gullies cut by drainage and grey slopes made up of eroding soil are common within this physiographic region. Within the former Township of Scarborough, there is a rolling till plain of bold flutings travelling approximately 30 degrees west of north, and drumlins. The South Slope contains various soil types. The former Scarborough Township contains slightly acidic soil. Chapman and Putnam (1984) states that Scarborough was founded on a deep gently rolling loamy soil, where stones are not numerous.

Iroquois Plain

The Iroquois Plain extends around the western part of Lake Ontario from the Niagara River to the Trent River for a total distance of 190 miles (Chapman & Putnam 1984). Within the geographic unit of Scarborough, the former shoreline lies close to the present shoreline of Lake Ontario. The Scarborough Bluffs are made up of cliffs that cut out in Pleistocene deposits composed of tills, varved clay and interglacial sands of various ages. The portion of land between the top of the cliff and the former lake shoreline is a wave-cut terrace, originally laid out by the Iroquois (Chapman & Putnam 1984). East of the Scarborough Bluffs, the plain widens. Highland Creek and the Rouge River carried sand into the old lake constructing a sand plain in the southeast corner of the former Scarborough Township and neighbouring areas of Pickering. In general, the Iroquois Plain region of Ontario County consists of drumlins and clay plains. The shoreline is marked by cliffs cut in the till plain, or by gravel bars across the valley (Chapman & Putnam 1984).

4b. Bedrock Geology, Quaternary Geology and Soils

Bedrock consists of shale, limestone, dolostone and siltstone of the Georgian Bay Formation from the Upper Ordovician period (Ontario Geological Survey 1991).

Quaternary geology consists of the following deposits from the Pleistocene Epoch:

- Halton Till (Ontario-Erie lobe): predominantly silt to silty clay matrix, high in matrix carbonate content and clast poor;
- Till: undifferentiated, predominantly sandy silt to silt matrix, commonly rich in clasts, often high in total carbonate content;
- Glaciolacustrine deposits: silt and clay, minor sand; basin and quiet water deposits; and,

- Glaciolacustrine deposits: sand, gravelly sand and gravel; nearshore and beach deposits (Barnett, Cowan and Henry 1991).

At a finer scale, quaternary geology consists of modern and older river deposits associated with the major watercourses; glacial lake deposits associated with Lake Iroquois and the Peel Ponds; and, glacial ice deposits associated with the Laurentide Ice Sheet during the Wisconsinan glaciation (Sharpe 1980).

Within the DSBRT study area, Woburn, Fox Sandy Loam, Brighton and Bottom Land soils are found within the former Scarborough Township **(**see **Table 3).** Woburn, Brighton, Bottom Land, Smithfield, Schomberg, Tecumseth, Granby, Darlington, Whitby, Bondhead, Simcoe and Lyons soils are found within the former Ontario County (see **Table 3**). Report No. 23 of the Soil Survey of Ontario County (Olding, Wicklund and Richards 1990) was referred to for the description and classification of the soil series within the DSBRT study area. A description and classification of each soil type are provided below.

TABLE 3.
SOILS SUMMARY TABLE

Symbol and Name	Soil Type	Soil Materials
SCARBOROUGH TOWNSHIP SOILS		
Wol-Woburn	Loam	Calcareous brown loam till
Fsl- Fox Sandy Loam	Sandy Loam	
Brsl-Brighton	Sandy Loam	Calcareous sand
B.L. – Bottom Land		Recent alluvial deposits
ONTARIO COUNTY SOILS (WESTERN PORTION OF THE REGION OF DURHAM)		
Wol-Woburn	Loam	Calcareous brown loam till
Brsi- Brighton	Sandy Loam	Calcareous sand
B.L.-Bottom Land		Recent alluvial deposits
Scl- Smithfield	Clay Loam	Calcareous clay
Shc- Schomberg	Clay Loam	Calcareous clay
Tsl-Tecumseth	Sandy Loam	Calcareous sand
Gsl- Granby	Sandy Loam	Calcareous sand
Dal- Darlington	Loam	Clay loam till derived from limestone and shale
Whi-Whitby	Loam	Clay loam till derived from limestone and shale
BI-Bondhead	Loam	Calcareous grey loam and sandy loam till
Sic-Simcoe	Clay Loam	Calcareous clay
LI-Lyons	Loam	Calcareous grey loam and sandy loam till

Woburn

Woburn soils are found within the City of Pickering. Woburn soils are well-drained and developed from loam and calcareous till.

Fox Sandy Loam

Fox Sandy Loam soils are found along the south near Lake Ontario. The Fox Sandy Loam soils developed on well sorted sandy outwash materials of medium lime content and are characteristic of the Grey-Brown Podzolic Great Soil Group.

Brighton

Brighton soils developed from light brownish grey coarse textured sand and gravel. The surface texture is usually sandy loam. The parent materials are calcareous. Brighton soils have good external and internal drainage. The Brighton series is classified as Grey-Brown Podzolic soils.

Bottom Land

The Bottom Land soils within the study area occur along watercourses and are subject to periodic flooding. The alluvial materials that are deposited vary considerably in texture.

Smithfield

The Smithfield series is the imperfectly drained member of the Schomberg catena. Smithfield soils have developed from stonefree, calcareous clay. The surface texture is generally a clay loam.

Schomberg

The Schomberg soils have developed from stonefree clay. The parent material is very calcareous. The surface texture varies from a silt loam to a clay loam. The Schomberg soils are mostly found along the Lake Ontario shore. The external drainage is good, and the internal drainage is fair.

Tecumseth

The Tecumseth series is the imperfectly drained member of the Brighton catena. The internal drainage is moderately good due to the coarse texture of the materials. The Tecumseth series is classified as Grey-Brown Podzolic soils.

Granby

The Granby series is the poorly drained member of the Brighton catena, and occurs in association with the Brighton and Tecumseth series. The profile is moderately shallow and highly mottled. The Granby soils have poor drainage. The Granby series is Dark Grey Gleisolic.

Darlington

The Darlington soils are found within the Town of Whitby and City of Pickering. The drainage of Darlington soils is good to moderately good. The surface reaction is usually slightly alkaline, and the parent material is highly calcareous. The surface texture varies from a loam to a silt loam.

Whitby

The Whitby series is the imperfectly drained member of the Darlington catena and is mapped in association with the Darlington soils. The soils are developed from loam to clay loam calcareous till. The surface horizon varies in texture from loam to a silt loam.

Bondhead

The Bondhead soils are mapped from Whitby in the south to Lake Simcoe in the north. The Bondhead soils are developed from loam and sandy loam calcareous till. The till is light brownish-grey in colour and contains numerous limestone fragments. Bondhead soils have good internal drainage.

Simcoe

The Simcoe soils are the poorly drained member of the Schomberg catena. The soils are developed from stonefree, calcareous lacustrine materials. The profile is mottled and drab, and the organic matter content is high. The external and internal drainage of the Simcoe soils is poor.

Lyons

The profile of Lyons soils is characteristic of the Dark Grey Gleisolic group. The Lyons soils occur on level and depressional topography. Both the surface drainage and the internal drainage of Lyons soils are poor.

4c. Groundwater

The groundwater investigation was undertaken separately by Parsons. The Preliminary Groundwater Study (Parsons 2021) provides details of the preliminary groundwater assessment. The following provides a summary of existing conditions.

Topography and Drainage

The topography of the study area is generally flat to rolling hills and slopes downward regionally to the south towards Lake Ontario. Ground elevation in the study area ranges from greater than 100 to approximately 160 masl in the east Scarborough section, and less than 100 to greater than 120 masl in the east section through Pickering, Ajax, Whitby, and west Oshawa.

There are several watercourses and ravines that cross the study area (see **Section 4d and 4e**) and flow southward to Lake Ontario. The expected direction of shallow groundwater flow is generally southward toward Lake Ontario, but could be affected locally by various watercourses (rivers, creeks and ravines), shallow more permeable fills, post-glacial lacustrine, and beach deposits that are present in the study area. The deeper regional groundwater flow is expected to be southerly throughout the study area, towards Lake Ontario, and potentially affected by deeper watercourses.

Groundwater Site Conditions

Shallow groundwater or indications of shallow groundwater were encountered at the following sites:

- Observed at three locations in sand, silty clay or sand silt west of Brock Road (at Liverpool Road) in Pickering near Pine Creek.
- Measured in two monitoring wells at “Elevation of 81.0 m and 81.0 m” near the Pine Creek culvert and where a watermain is proposed to be replaced.
- Observed “wet soils” in typically silty clay at seven boreholes all in Pickering, near Dixie Road crossing, near Pine Creek.
- Measured between 2.6 to 4.1 mbgs or elevations of 81.0 to 81.5 masl in four monitoring wells near Pine Creek (compare to Pine Creek at 80.4 m).

- Observed at various boreholes, specifically four of ten advanced in west Pickering at depths ranging from 3.9 to 6.1 m, all sixteen boreholes advanced in east Pickering, and in most of the thirteen advanced in Ajax.

None of the information reviewed provided a direction of the shallow groundwater flow or quality (i.e., chemistry). Hydraulic conductivity testing was completed at two monitoring wells in west Pickering where the watermain is proposed to be replaced near Pine Creek. The results were 1×10^{-7} m/s and 6×10^{-8} m/s which is typical of a silt to silty sand.

Source Water

The Approved Updated Assessment Report: Central Lake Ontario Source Protection Area (CLOSPA 2015) and the Approved Updated Assessment Report: Toronto and Region Source Protection Area (TRSPA 2015) were reviewed as part of the groundwater investigation to determine if the DSBRT project could potentially effect source water used drinking water in the study area. The relevant findings related to the groundwater study were similar for both reviewed reports and are summarized as follows:

- Most drinking water within the CLOSPA and TRSPA is from Lake Ontario, with a small percentage being from groundwater. All drinking water within the study area is from Lake Ontario.
- Locally shallow sodium and chloride concentrations can increase in urbanized areas due to road salting, but groundwater is of good quality within the study area. There are naturally elevated concentrations of iron, manganese and elevated hardness.
- No long-term permits for groundwater (or surface water) takings were identified within the study area.
- No significant groundwater recharge areas were identified in the study area.
- The overburden thickness was in the "Low" range.
- The Duffins Creek watershed was cited as having relatively high base flow indexes (BFIs) indicating that significant baseflow is from groundwater discharge.
- The Scarborough Aquifer is present throughout much of the western portion of the study area, but is buried beneath younger Quaternary deposits (e.g., glaciolacustrine, Halton Till etc.).
- Groundwater flow patterns are strongly influenced by streams.
- No Well Head Protection Areas were identified within or near the study area.
- Provincially Significant Wetlands are located in the study area (see **Section 4j**).
- There are shallow Highly Vulnerable Aquifers (HVAs) located throughout the study area.

The Source Water Protection Information Atlas (MECP 2018) was subsequently reviewed to accurately identify the locations of HVAs within the study area as well as the locations of Intake Protection Zones (IPZs) for municipal water treatment plants on the shores of Lake Ontario. The results are summarized as follows:

- There are four IPZs associated with municipal supply intakes in Lake Ontario, specifically one in east Scarborough (Toronto), one in Pickering-Ajax, one in Whitby and one in Oshawa. The IPZs are based on potential spills along the Lake Ontario shores and in watercourses further inland that flow to the lake; however, none extend far enough to be within the study area.
- There are no Well Head Protection Areas (WHPAs) in the study area.

- There are no significant groundwater recharge areas within the study area and the nearest is the Rouge River Valley.
- There are numerous shallow HVAs throughout the study area.

Municipal Use

The study area is highly urbanized with most properties connected to municipal drinking water systems that are supplied from Lake Ontario. One small portion of the study area might have active water wells, specifically along the boundary between Ajax and Whitby where some agricultural land use is evident and, therefore, may have domestic and/or irrigation and livestock wells. This area may need further evaluation based on the depth of construction and potential for construction dewatering to occur in this area. Overall, groundwater within the study area is not used by any municipality for drinking water.

Permits to Take Water

A search of MECP's Permit to Take Water (PTTW) database was completed in January 2021 (MECP 2021). The following permits were identified within or near the study area:

- Permit 7671-BP3JSZ issued to the City of Pickering for groundwater construction dewatering approximately 150 m south of the study area at a property on Glenanna Road.
- Permit 2758-ABMQSA issued to R.A.B. Properties Limited for groundwater dewatering approximately 100 m south of the east of Markham Road.

Given the nature (i.e., dewatering) and locations of these PTTWs, it very unlikely that there would be an interference with respect to potential construction dewatering during the DSBRT project construction.

Water Wells

A search of the MECP water well records database was completed as part of the groundwater investigation. The locations of wells identified by the search are presented in **Appendix E**. In summary, a total of 558 wells were identified within the study area, including 41 in east Scarborough (Toronto), 167 in Pickering, 76 in Ajax, 188 in Whitby and 86 in Oshawa. **Table 4** summarizes relevant information from the water well records search by municipality.

Bedrock is relatively deep through the DSBRT project and was not required to be considered as part of the groundwater investigation. Despite the range for the maximum to minimum depth to groundwater, many records indicated shallower groundwater that may require construction dewatering during deeper excavations required for the DSBRT project.

All water well records from Toronto were recent (2005 and later) and did not include static groundwater levels indicating these were unlikely to be water supply wells and more likely to be test holes where no wells were installed (i.e., holes abandoned upon completion). Water well records for Pickering, Ajax, Whitby and Oshawa dated back to 1947, 1946, 1956 and 1955, respectively, indicating that some older water wells may still exist in the study area and these wells may still be in use by their owner.

TABLE 4.
SUMMARY OF WELL RECORDS

Municipality	Average Well Depth (m)	Average Depth to Bedrock (m)	Minimum Depth to Groundwater (m)	Maximum Depth to Groundwater (m)	Average Depth to Groundwater (m)
East Scarborough (Toronto)	7.9	Not Encountered	NA	NA	NA
Pickering	10.2	18.6	0.3	27.4	5.0
Ajax	17.5	13.8	0.9	17.1	5.9
Whitby	9.9	19.7	0.6	25.9	5.1
Oshawa	5.6	Not Encountered	2.1	9.8	2.1

At the request of Metrolinx, the water well records search was modified to include only the area within the construction footprint of the DSRBT to generate a list of potentially existing wells that may need to be abandoned before construction begins. This search produced a subset of 94 well records of the 558 over the entire construction footprint.

4d. Watercourses and Hydrological Features

A total of twenty-four (24) watercourses cross the DSBRT corridor (with twenty-five (25) crossings total including two crossings of Oshawa Creek at King Street and Bond Street). Four are located within the City of Toronto (Crossings 1-4); seven are located within the City of Pickering (Crossings 5-11); four are located within the Town of Ajax (Crossings 12-14a); six are located within the Town of Whitby (Crossings 15-20); and, three are located within the City of Oshawa (Crossings 21-23). All watercourses are shown on **Figures NER-1a to NER-1i.** These watercourses are located within ten (10) watersheds: Highland Creek; Rouge River; Petticoat Creek, Frenchman's Bay (Amberlea, Dunbarton and Pine Creeks); Duffins Creek, Carruthers Creek, Lynde Creek; Pringle Creek; Corbett Creek; and, Oshawa Creek. The first six watersheds are under the jurisdiction of the TRCA and the remaining four are under the jurisdiction of CLOCA.

4e. Aquatic Environment

This section describes the existing fish and fish habitat at each watercourse crossing and is presented geographically from west to east and further subdivided by municipality. This discussion is based on field investigations that were completed on June 11 and 12, June 24 and 26, and October 9 and 11, 2019 and on April 24 and June 1, 2020 and on July 30, 2021, and incorporates fish and fish habitat data that have been obtained from external agencies (MNRF, MECP, TRCA and CLOCA). Sentinel species of cold-water systems may use certain historically cold-water watercourses as transitional habitats. **Table 5** presents a summary of fish and fish habitat conditions at each of the watercourses. **Appendix B** presents a photographic record of the watercourses and **Appendix C** presents the aquatic survey data including the habitat mapping overlayed onto aerial photos.

TABLE 5.
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	Flow	Thermal Regime*	Fish Habitat	Fish Species Present	Substrate Type	Vegetation	Species at Risk/ Critical Habitat Present**	In Water Works Timing Window***
HIGHLAND CREEK WATERSHED								
Crossing 1: Highland Creek	Permanent	Warmwater	Direct	Creek Chub, Blacknose Dace, Longnose Dace, White Sucker, Fathead Minnow, Rainbow Trout, Chinook Salmon (MNRF 2019a) Not sampled by LGL; Chinook Salmon observed at site visit (October 9, 2019)	Boulder, cobble, gravel, armourstone	N/A	N/A	July 1- March 31
Crossing 2: Tributary of Highland Creek	Permanent	Coldwater	Indirect	Creek Chub, Blacknose Dace, Fathead Minnow, Longnose Dace, White Sucker (MNRF 2019a) Not sampled by LGL	Sand, gravel	N/A	N/A	June 15 – September 15
Crossing 3: Centennial Creek	Intermittent (piped downstream)	Warmwater	Indirect	Not provided (MNRF 2019) Not sampled by LGL due to absence of water	N/A	*Phragmites*	N/A	July 1- March 31
ROUGE RIVER WATERSHED								
Crossing 4: Rouge River	Permanent	Warmwater	Direct	Not provided (MNRF 2019) Blacknose Dace, Central Stoneroller, Common Shiner, Creek Chub, Logperch, Longnose Dace, Pumpkinseed, Rainbow Darter, Smallmouth Bass, Stonecat, White Sucker (TRCA 2019b) Not sampled by LGL; Gizzard Shad observed at site visit (October 9, 2019)	Sand, gravel, silt, boulder, cobble, detritus	*Elodea canadensis*	Potential Eastern Pondmussel *(Ligumia nasuta*) habitat (downstream only) Possible American Eel (*Anguilla*	July 15- March 31

TABLE 5.
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	Flow	Thermal Regime*	Fish Habitat	Fish Species Present	Substrate Type	Vegetation	Species at Risk/ Critical Habitat Present**	In Water Works Timing Window***
							rostrata)	
PETTICOAT CREEK WATERSHED								
Crossing 5: Petticoat Creek	Permanent	Warmwater	Direct	Brook Stickleback, Central Stoneroller, Creek Chub, Blacknose Dace, Fathead Minnow, Johnny Darter, Northern Redbelly Dace, Rainbow Darter, White Sucker (MNRF 2019a) Not sampled by LGL; White Sucker, Creek Chub and Blacknose Dace observed during site visit (October 9, 2019)	Boulder, cobble, silt, gravel, clay	Watercress (*Nasturtium officinale), Phragmites,* grasses	N/A	July 1- March 31
Crossing 6: Tributary of Petticoat Creek	Permanent	Warmwater	Direct	Brook Stickleback, Central Stoneroller, Creek Chub, Blacknose Dace, Fathead Minnow, Johnny Darter, Northern Redbelly Dace, Rainbow Darter, White Sucker (MNRF 2019a) Not sampled by LGL	Concrete, rip rap boulders, cobble, gravel, sand	Grasses, cattails, bulrush (*Typha* sp.)	N/A	July 1- March 31
FRENCHMAN'S BAY WATERSHED								
Crossing 7: Amberlea Creek	Permanent	Warmwater	Upstream – indirect, Downstream - potential direct	Not provided (MNRF 2019) Sampled by LGL - no catch	Cobble, gravel, silt	N/A	N/A	July 1- March 31

TABLE 5.
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	Flow	Thermal Regime*	Fish Habitat	Fish Species Present	Substrate Type	Vegetation	Species at Risk/ Critical Habitat Present**	In Water Works Timing Window***
Crossing 8: Tributary of Amberlea Creek	Permanent	Warmwater	Upstream – indirect, Downstream – potential direct, downstream of Kingston Road only	Not provided (MNRF 2019) Sampled by LGL - no catch	Boulders, cobble, gravel, sand	Grasses, watercress	N/A	July 1- March 31
Crossing 9: Tributary of Amberlea Creek	Permanent	Warmwater	Upstream - piped, Downstream - indirect	Not provided (MNRF 2019) Sampled by LGL - no catch	Sand, boulder, cobbles	Grasses, cattails, algae	N/A	July 1- March 31
Crossing 10: Dunbarton Creek	Permanent	Warmwater	Direct	Creek Chub, Goldfish (MNRF 2019a) Not sampled by LGL; Creek Chub observed during site visit (October 9, 2019)	Rip rap boulders, cobble, gravel, silt	Grasses, watercress	N/A	July 1- March 31
Crossing 11: Pine Creek	Permanent	Warmwater	Direct	Central Mudminnow, Common Shiner, Creek Chub, Blacknose Dace, Logperch, White Sucker (MNRF 2019a) Not sampled by LGL, several Creek Chub observed during site visit (October 9, 2019)	Sand, gravel, cobble, boulder, detritus, exposed clay	N/A	N/A	July 1- March 31

TABLE 5.
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	Flow	Thermal Regime*	Fish Habitat	Fish Species Present	Substrate Type	Vegetation	Species at Risk/ Critical Habitat Present**	In Water Works Timing Window***
DUFFINS CREEK WATERSHED								
Crossing 12: West Duffins Creek	Permanent	Coldwater	Direct	Creek Chub, Blacknose Dace, Johnny Darter, Longnose Dace, Rainbow Darter, Rainbow Trout, Stonecat, White Sucker (MNRF 2019a) Not sampled by LGL; Chinook Salmon observed during site visit (October 11, 2019)	Sand, boulder, cobble, gravel, silt	N/A	Occupied Redside Dace (*Clinostomus elongatus*) Possible American Eel	June 15 – September 15
Crossing 13: Duffins Creek	Permanent	Coldwater	Direct	Carp and Minnows, *Salmonidae* sp., Bluntnose Minnow, Brassy Minnow, Brook Stickleback, Brown Bullhead, Common Carp, Common Shiner, Creek Chub, Blacknose Dace, Emerald Shiner, Fathead Minnow, Finescale Dace, Golden Shiner, Johnny Darter (MNRF 2019a) Not sampled by LGL	Cobble, boulder, gravel, sand, detritus	N/A	Contributing Redside Dace Possible American Eel	June 15 – September 15
CARRUTHERS CREEK WATERSHED								
Crossing 14: Carruthers Creek	Permanent	Warmwater	Direct	Banded Killifish, Bluntnose Minnow, Common Shiner, Creek Chub, Blacknose Dace, Fathead Minnow, Johnny Darter, Tesselated Darter, Longnose Dace, Pumpkinseed, Rock Bass, White Sucker (MNRF 2019a) Not sampled by LGL	Cobble, gravel, sand, silt	N/A	Historic Redside Dace (no current status) Possible American Eel	July 1- March 31

TABLE 5.
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	Flow	Thermal Regime*	Fish Habitat	Fish Species Present	Substrate Type	Vegetation	Species at Risk/ Critical Habitat Present**	In Water Works Timing Window***
LYNDE CREEK WATERSHED								
Crossing 14a: Tributary of Carruthers Creek	Intermittent	Warmwater	Upstream piped/no habitat, Downstream potential direct	Not provided (MNRF 2019) Not sampled by LGL	Silt, detritus, muck	*Phragmites*, cattails, grasses	N/A	July 1- March 31
Crossing 15: Tributary of Lynde Creek	Intermittent /ephemeral	Warmwater	Indirect	Not provided (MNRF 2019) Sampled by LGL - no catch	Silt, detritus	Cattails, *Phragmites*	N/A	July 1- March 31
Crossing 16: Tributary of Lynde Creek	Permanent	Coolwater	Direct	Not provided (MNRF 2019) Blacknose Dace, Bluntnose Minnow, Brook Stickleback, Creek Chub, Fathead Minnow, Lamprey sp., White Sucker (CLOCA, 2019a)	Silt, cobble, sand, gravel, detritus	Emergent grasses, cattails	Possible American Eel	June 15- September 15
Crossing 17: Tributary of Lynde Creek	Permanent /piped downstream	Warmwater	Direct	Not provided (MNRF 2019) Sampled by LGL Blacknose Dace, Creek Chub, Fathead Minnow	CSP	Grasses	N/A	July 1- March 31
Crossing 18: Lynde Creek	Permanent	Coldwater	Direct	Creek Chub, Fathead Minnow, Johnny Darter, Longnose Dace, Pumpkinseed, Rainbow Darter, Rock Bass, Sand Shiner, Sea Lamprey, Smallmouth Bass, White Sucker (MNRF 2019a) Migratory Rainbow Trout, Chinook Salmon (CLOCA 2019a)	Cobble, boulder, gravel, sand, silt	N/A	No status Possibly occupied Redside Dace (requires study)	July 15 – September 15

TABLE 5.
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	Flow	Thermal Regime*	Fish Habitat	Fish Species Present	Substrate Type	Vegetation	Species at Risk/ Critical Habitat Present**	In Water Works Timing Window***
				Not sampled by LGL; Chinook Salmon observed during site visit (October 11, 2019)			Possible American Eel	
PRINGLE CREEK WATERSHED								
Crossing 19: Pringle Creek	Permanent	Coolwater	Direct	Creek Chub, Blacknose Dace, Johnny Darter, Tesselated Darter, Longnose Dace, Rainbow Trout (MNRF 2019a) Rainbow Trout, Chinook Salmon (CLOCA 2019a) Not sampled by LGL; Chinook Salmon, Johnny Darter, Blacknose Dace, Creek Chub, Cyprinid sp. observed during site visit (October 11, 2019)	Rip rap boulder, cobble, gravel, sand, silt	Watercress	N/A	June 15 – September 15
CORBETT CREEK WATERSHED								
Crossing 20: Tributary of Corbett Creek	Intermittent	Warmwater	Direct	Creek Chub, Longnose Dace, White Sucker (MNRF 2019a) Not sampled by LGL	Detritus, silt	Duckweed (*Lemna* sp.), *Phragmites*, cattails, grasses	N/A	July 1- March 31
Crossing 21: Corbett Creek	Permanent	Warmwater	Direct	Bluntnose Minnow, Brook Stickleback, Brown Bullhead (MNRF 2019a) Not sampled by LGL	Silt, detritus, sand, silt, gravel, rip rap	Cattails, grasses	N/A	July 1- March 31
OSHAWA CREEK WATERSHED								

TABLE 5.
EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	Flow	Thermal Regime*	Fish Habitat	Fish Species Present	Substrate Type	Vegetation	Species at Risk/ Critical Habitat Present**	In Water Works Timing Window***
Crossing 22: Goodman Creek	Permanent	Warmwater	Direct	Bluntnose Minnow, Brook Stickleback, Common Shiner, Creek Chub, Blacknose Dace, Fathead Minnow, Goldfish, Johnny Darter, Tesselated Darter, Longnose Dace, Northern Redbelly Dace, Pumpkinseed, Rock bass, Rainbow Darter, White Sucker (MNRF 2019a) Not sampled by LGL; Cyprinid sp. and Creek Chub observed during site visit (October 11, 2019)	Gravel, silt, sand	Grasses, watercress	N/A	July 1- March 31
Crossing 23: Oshawa Creek (King Street and Bond Street Crossings)	Permanent	Coldwater	Direct	Chinook Salmon, Alewife, Bluntnose Minnow, Brook Trout, Common Shiner, Creek Chub, Blacknose Dace, Fathead Minnow, Johnny Darter, Tessellated Darter, Logperch, Longnose Dace, Mottled Sculpin, Pumpkinseed, Rainbow Trout, Rock bass, Sea Lamprey, Smallmouth Bass (MNRF 2019a) Chinook Salmon, Rainbow Trout, American Eel (CLOCA 2019a) Not sampled by LGL; Chinook Salmon observed during site visit.	Boulder, cobble, gravel	N/A	Possible American Eel	July 15- March 31

Thermal Regime* = To be determined during detail design due to conflicting information from secondary sources.
SAR/Critical Habitat** = American Eel (*Anguilla rostrata*) occupation is possible at Crossings 4, 12-14, 16, 18, and 23, but requires study to confirm.
In Water Works Timing Window*** = Based on generally accepted timing windows typical for Southern Ontario watercourses and letter dated December 14, 2021 from Ken Mott (MNDMNRF) to Madelin Blacha (Metrolinx) via email.

4ei. City of Toronto

Four watercourse crossings are located within the City of Toronto. The first three (Crossings 1-3) are situated within the Highland Creek watershed and the fourth (Crossing 4) lies within the Rouge River watershed.

Crossing 1: Highland Creek

Highland Creek at the crossing of Ellesmere Road lies within a wide, deep valley. It crosses under the road via a high, multi-span bridge. According to the TRCA (1999), this area of Highland Creek is part of the East Highland Creek subwatershed. It is a highly altered watercourse that has been affected by urban development upstream, especially during the last century (TRCA 1999). Poor or no storm water management in these upstream areas has led to degraded water quality and very unstable (flashy) flows (TRCA 1999). Combined with a lack of forest cover in upstream sections, which has led to a paucity in large woody debris in the creek (which provides current breaks and fish habitat) and the fragmentation of fish habitat due to barriers to fish passage, the watercourse supports a relatively small, pollution-tolerant fish community (TRCA 1999). Migratory salmonids (stocked, non-native sportfish) use Highland Creek for spawning and several Chinook Salmon (*Onchorynchus tshawytscha*) were observed during LGL's site investigation on October 9, 2019. Highland Creek has a warmwater thermal regime (MNRF 2019a).

In the vicinity of Ellesmere Road (both upstream and downstream), the watercourse consists of a constructed channel made up of a series of step pools comprised of armourstone "steps" into deeper pools with large boulder substrates. The banks are vertical armourstone walls approximately 2 m high that extend greater than 50 m upstream and 60 m downstream of the bridge. Depths range from 15 cm to 75 cm and widths from approximately 14 m upstream and under the structure, to 30 m downstream where the armourstone ends. Substrates are comprised of boulders, cobble and gravel. Instream cover is provided by boulders/armourstone. Where the armourstone ends, the channel widens and braids, and morphology becomes dominated by riffles. Small side channels that flow around grassy and willow-vegetated islands convey higher flows. No instream vegetation was observed. Erosion was evident upstream of the armourstone and downstream of the step pools, especially along the banks. The floodplain was well-vegetated with cultural meadow/woodland/thickets, plantations and mixed forest communities dominating the valley slopes in the vicinity of the study area. The entire valley lies within the Highland Forest/Morningside Park Forest and Highland Creek West Environmentally Significant Area (City of Toronto 2019b)/Morningside Park Forest ESA (TRCA). As mentioned above, adult Chinook Salmon were observed. No other fish were seen.

Crossing 2: Tributary of Highland Creek

The small tributary of Highland Creek that passes under Ellesmere Road at Crossing 2 is also located within the East Highland Creek subwatershed. North of Ellesmere Road, the watercourse lies within Ellesmere Woods ESA (City of Toronto 2019b). South of Ellesmere Road, the watercourse lies within the Highland Forest/Morningside Forest Park and Highland Creek West ESA (City of Toronto 2019b)/Morningside Park Forest ESA (TRCA), and the Highland Creek Swamp ANSI. It consists of a small, shallow, narrow channel (0.5 m wide, 10 cm deep) that passes through a deciduous forest upstream of the crossing. Substrates are comprised of sand and gravel and morphology of riffles and pools. The pool located within 50 m of the crossing was approximately 2.0 m to 2.5 m wide and 70 cm deep and was a plunge pool located downstream of a knickpoint. No instream vegetation was observed. Instream cover is provided by willow roots and bank undercutting in the plunge pool. As of October 2019, all flows were being pumped out of the creek and into a storm sewer up slope (and had been since at least the spring) to accommodate emergency works at and in the fill above the culvert. It is unknown where this storm sewer

outlets, but LGL was told by an on-site worker that it discharges directly into Highland Creek near Morningside Avenue to the southeast. The large diameter corrugated steel pipe (CSP) culvert has been lined with a black plastic pipe and grouted. As of October 2019, it was being extended at the downstream end. Because there was an active construction area at the downstream end of the culvert during the site investigations, the downstream portion of this watercourse could not be accessed. Instead, LGL biologists observed the downstream channel from the edge of the work zone. Due to the flow bypass in place upstream, there was no flow through the culvert and the downstream channel was dry. Based on what could be seen through observations made partially up the road slope, the channel was well-defined, approximately 2 m wide with vertical/undercut banks directly downstream of the culvert and rip rap substrates. Some large woody debris was noted in the channel. Because the flow bypass had been in place for such an extended period of time, it is likely that this watercourse constitutes indirect fish habitat only. It is considered to have a coldwater thermal regime (MNRF 2019a).

Crossing 3: Centennial Creek

Centennial Creek forms its own subwatershed within the Highland Creek watershed. It has a warmwater thermal regime (MNRF 2019a) and is an open channel upstream but is piped (for approximately 275 m) downstream of Ellesmere Road. It enters the storm water system (the piped section) via a ditch inlet located at the edge of the Ellesmere Road slope. The ditch inlet is surrounded by a low concrete wall that has a small diameter (10 cm) opening at its upstream side. This small pipe is protected from accumulating debris by a small grate. The upstream channel is undefined and passes through a dense patch of *Phragmites*. The riparian area is dominated by cultural woodland directly north of Ellesmere Road and a deciduous forest further north. The small corridor through which Centennial Creek flows is surrounded by residential properties. There was no flow observed at the time of the site investigation and no evidence that there had been any recent flows. It is likely that this portion of Centennial Creek is intermittently flowing and potentially ephemeral. Fish sampling was attempted at this location, but there was not enough water to successfully sample. This watercourse constitutes indirect fish habitat only.

Crossing 4: Rouge River

The crossing of the Rouge River is situated at the eastern edge of the City of Toronto at its border with the City of Pickering. It lies within the Rouge River Valley ANSI and the Little Rouge Forest ESA both located north of Kingston Road, and the Rouge National Urban Park and the Glen Rouge Campground, run by the TRCA, which is located to the north and west of Kingston Road at this location. The Rouge Marsh Area ANSI, Rouge River Marshes Wetland Complex (PSW) and Rouge Marsh Area ESA are located surrounding the Rouge River in the vicinity of but south of the DSBRT corridor (south of Kingston Road). In addition, Little Rouge Creek enters the Rouge River immediately north of the Kingston Road crossing. As such, the study area falls within two subwatersheds/fisheries management zones (FMZs): Lower Little Rouge River and Lower Main Rouge River (TRCA 2011). Both of the subwatersheds/FMZs are classified as warmwater migratory routes (TRCA 2011).

Little Rouge Creek within the study area is characterized as a wide (10 m to 13 m), shallow (15 cm to 20 cm) watercourse comprised of runs. Substrates are sand, gravel and silt. There is very little instream cover with the exception of a large woody debris jam near the mouth where an island has formed. Small patches of Canadian waterweed (*Elodea canadensis*) in the side channel around this island (i.e., not the main thalweg) are the only instream vegetation observed.

The Rouge River upstream of the Kingston Road crossing can be characterized as a large, slow-moving river that has a morphology of pools and deep runs. Substrates are comprised of boulder, cobble and detritus. An old concrete ford is present downstream of a pedestrian bridge approximately 140 m

upstream of the crossing. Depths range from 30 cm to 100 cm and widths from 15 m to 20 m. Instream cover is provided by large woody debris. No instream vegetation was observed. A large pool exists under a large, multi-span bridge that is approximately 100 cm deep. The downstream channel is comprised solely of run habitat with an average depth of 40 cm. These runs are relatively featureless with no observed instream cover and no instream vegetation. Substrates are sand and a concrete wall forms the east bank of the watercourse. Riparian vegetation within the entire study area is cultural meadow/cultural woodland located directly adjacent to the watercourse and Kingston Road (and deciduous forest further north), and the banks are fairly steep, comprised of sand and show signs of erosion in some areas. Gizzard Shad (*Dorosoma cepedianum*) and cyprinids were observed. In addition, anglers were present and informed LGL biologists that they were targeting salmon. Two SAR have the potential to exist within the Rouge River at and/or downstream of the Kingston Road crossing. DFO mapping of Eastern Pondmussel (*Ligumia nasuta*) illustrates that this species may be present downstream of the crossing and American Eel (*Anguilla rostrata*) has the potential to be present at the crossing, but requires study for confirmation. Both are is discussed in **Section 4i** below.

4eii. City of Pickering

A total of seven watercourse crossings occur within the City of Pickering. Two are located within the Petticoat Creek watershed (Crossings 5 and 6) and five are located within the Frenchman's Bay watershed (Crossings 7-11).

Crossing 5: Petticoat Creek

Petticoat Creek within the study area has a warmwater thermal regime (MNRF 2019a) and is comprised of the main Petticoat Creek upstream and downstream of Kingston Road with a small tributary that flows into the main creek at the upstream end of the culvert. Petticoat Creek lies within the Petticoat Creek Forest ESA both north and south of Kingston Road (TRCA 2019b). Water passes under the road through an open-footed concrete culvert. Upstream the channel morphology is a mix of riffles and runs with channel widths ranging from 2 m to 3 m and depths from 10 cm to 15 cm. The channel widens to approximately 3 m at the upstream end of the culvert where the small tributary enters and there are wingwalls. Substrates are coarse and comprised of boulder, cobble, gravel and silt with some exposed clay. Instream cover is provided by boulders, cobble, instream emergent vegetation (watercress - *Nasturtium officinale*), overhanging grasses and shrubs/small trees. Instream vegetation is comprised solely of watercress, which indicates that groundwater inputs are present. The small tributary had coarse substrates (boulder, cobble, gravel) and had riffle morphology only. The channel is approximately 1 m wide and 10 cm deep. It crosses a driveway that is private property, thus the details of the crossing could not be examined. Riparian vegetation for both watercourses is cultural meadow and deciduous plantations (with deciduous forest further north), with some manicured grass associated with the private property present along the main Petticoat Creek channel.

Downstream of Kingston Road the channel is straight and travels approximately 40 m before entering a box culvert under Highway 401 to the south. Morphology is mostly riffles and substrates are comprised of boulder, cobble and gravel. The channel is approximately 2 m wide and 10 cm deep. Instream cover is provided by woody debris and tree roots. Instream vegetation is sparse and comprised of *Phragmites*, grasses and a few small patches of watercress. The riparian area is comprised of cultural meadow, cultural thicket, a mix of large and small deciduous trees, and deciduous swamp.

Fish were observed in the main Petticoat Creek channel upstream and downstream of the crossing, although the majority were observed upstream. None were observed in the small tributary, but it also constitutes direct fish habitat as there are no barriers to prevent fish movement into this watercourse. Fish

species identified included White Sucker (*Catostomus commersonii*), Creek Chub (*Semotilus atromaculatus*) and Blacknose Dace (*Rhinichthys atratulus*).

Crossing 6: Tributary of Petticoat Creek

This warmwater tributary of Petticoat Creek (MNRF 2019a) is a narrow, shallow watercourse (approximately 1 m wide and 10 cm deep) that flows through a concrete box culvert under Kingston Road. The culvert has a bend in it, such that light was not showing through. It is also not embedded and, at the upstream end, water travels as sheet flow over the concrete floor with water depths less than 0.5 cm. A concrete pad extends from the upstream end of the culvert for several meters between wingwalls that extends this sheet flow upstream. This sheet flow creates a barrier to fish passage during low flow conditions. Upstream of this concrete pad, the substrates are comprised of rip rap boulders, cobble and gravel. Morphology is riffles and runs. There are some instream grasses and the channel is lined with cattails (*Typha* sp.). Riparian vegetation is comprised of cultural meadow, some willow trees (*Salix* sp.) and a shallow marsh/thicket swamp further north of Kington Road. Downstream of Kingston Road the channel is in a more natural state. Instream vegetation is comprised of grasses, bulrush (*Scirpus* sp.) and cattails, and substrates of boulder, cobble, gravel and sand. Morphology is riffle/run with a mean width of 1.5 m and depth of 10 cm. Banks are steep with some erosion noted. Riparian vegetation includes cultural woodland and a narrow strip of deciduous trees located between a car dealership and a fire hall. No fish were observed but this watercourse likely constitutes direct fish habitat.

Crossing 7: Amberlea Creek

This small watercourse flows through a vacant residential property upstream of Kingston Road, passes under the road via a concrete box culvert with a bend in it, then parallels the roadway on the downstream side adjacent to a commercial building that is under construction. MNRF (2019a) mapping indicates that this watercourse has a warmwater thermal regime. Upstream, the channel is approximately 1 m wide and 10 cm deep with substrates comprised of cobble, gravel and silt. Morphology is a run. Approximately 20 m upstream of the culvert a very large debris jam has almost completely blocked flows such that the water level upstream of the jam is approximately 1 m higher. Erosion is evident on the steep banks downstream of this debris jam. Riparian vegetation is generally manicured/disturbed with some dense shrubs and deciduous trees. No instream vegetation is present. Downstream the riparian corridor is more open and is comprised of cultural meadow, cultural woodland and thicket swamp (and is interspersed with small willow trees and cattails). The channel morphology is run and the channel is narrow (1 m) and shallow (10 cm). Substrates are the same as those observed upstream. Overhanging vegetation is dense and this, along with boulder and cobble substrates and cattails, constitutes instream cover. No fish were observed and none were captured during an LGL electrofishing survey downstream of Kingston Road. No barriers to fish passage were observed in the downstream section. As such, the upstream portion of the channel can be considered indirect fish habitat (the culvert and the debris jam likely form barriers) and the downstream channel can be considered potential direct fish habitat.

Crossing 8: Tributary of Amberlea Creek

The watercourse at Crossing 8 has been identified as warmwater by MNRF (2019a). It passes underneath Kingston Road via a concrete box culvert that is not embedded (i.e., sheet flow). Riparian vegetation both upstream and downstream is cultural meadow/cultural woodland. Substrates are comprised of boulders (rip rap and natural), cobble, gravel and sand. The upstream channel is lined with gabion baskets, only some of which are still intact. Most have partially or completely failed, indicating very large and unstable flows. Erosion along the banks is also evident. At least one gabion basket has been wrapped around a riparian tree. Channel width is approximately 1 m to 1.5 m and depth approximately

20 cm. Morphology is riffle/run/pool with the riffles forming over eroded gabions and the runs existing for short sections downstream of the riffles and one pool at the upstream end of the culvert. Drops in elevation are present that are approximately 15 cm to 20 cm. Instream cover is provided by the substrates and large woody debris. No instream vegetation was observed. Downstream of the culvert, the gabion baskets that were likely put in place to control water flow along a fairly steep gradient have been moved and twisted such that there is a 0.5 m drop at the end of the concrete floor of the culvert and another drop of approximately 0.5 m through the eroded gabion baskets. A pool exists at the downstream end of this erosion that is approximately 2 m wide and 50 cm deep. Further downstream the channel slope flattens and width increases (approximately 4 m to 5 m). The channel is shallow (15 cm) and morphology is runs and riffles. Large boulders are present and small islands have formed within the channel around these boulders and around large accumulations of rip rap. Instream cover is provided by substrates and sparse large woody debris. Instream vegetation is very sparse and comprised of grasses and small patches of watercress. No fish were observed and none were captured downstream of Kingston Road during an LGL electrofishing survey. It is very unlikely that fish can pass under Kingston Road due to the large gradient drops. Due to the apparently unstable and likely flashy flows, direct fish habitat is precarious. This watercourse should be considered indirect fish habitat and potential direct fish habitat downstream of Kingston Road only.

Crossing 9: Tributary of Amberlea Creek

The watercourse at Crossing 9 has been identified as warmwater by MNRF (2019a). It is piped under and upstream of Kingston Road and emerges via a concrete box culvert south of the roadway. The open channel is approximately 40 m long and ends at another concrete box culvert that conveys flows under Highway 401. Through the Highway 401, culvert water flows as sheetflow and it is likely that fish can not pass from downstream habitats (also, no light could be seen through the culvert indicating that it is very long and/or curved). Riparian vegetation consists of cultural meadow/cultural woodland. Substrates are a mix of sand, boulder (rip rap) and cobble. The channel is relatively stable except for a section at the fenceline to the Highway 401 ROW where the channel bends slightly. In this location, the concrete fencepole base and the surrounding bank are exposed and eroding. Channel width is fairly consistent at 1.5 m and depth at 10 cm. Morphology consists of riffles and runs. Instream cover is provided by boulders, instream grasses and overhanging riparian vegetation. Instream vegetation consists of small patches of grasses and much algae growth. No fish were observed and none were captured during an LGL electrofishing survey. This watercourse should be considered indirect fish habitat.

Crossing 10: Dunbarton Creek

Dunbarton Creek at Crossing 10 consists of two short sections of open channel with crossings of other transportation features both upstream (railway) and downstream (Highway 401). The upstream section, situated in a deep valley, is between 15 m and 20 m long and the downstream section is approximately 5 m long. The crossing of Kingston Road is via a concrete box culvert that is not embedded and passes flows as sheet flow less than 0.5 cm deep. The upstream channel emerges from a large diameter CSP culvert that passes flows under the railway. This culvert is perched by approximately 10 cm. The west bank of the watercourse is a very large gabion basket wall that is several meters high. The east slope is very steep, but is vegetated with cultural meadow and deciduous trees and shrubs and grasses/forbs. The entire bed of the channel is gabion baskets and morphology is runs with one riffle. Channel width is approximately 2 m and depth 10 cm. Instream cover is provided by rip rap boulders, woody debris and some emergent vegetation. The instream emergent vegetation consists of some grasses and some dense patches of watercress. Where the gabion basket channel lining meets the upstream end of the box culvert, another small (10 cm) drop is present. From there water travels as sheet flow through the culvert under Kingston Road.

At the downstream end of the culvert there is a 20 cm drop into an approximately 5 m by 5 m pool. At the downstream end of this pool, water again flows as sheet flow into the box culvert that conveys the watercourse under Highway 401. The pool is approximately 30 cm deep and many Creek Chub were observed during LGL's field investigations. These fish appeared to be trapped in this pool due to the drop at the upstream end and the sheet flow through the downstream culvert. They can likely travel at least downstream during higher flow conditions. Substrates in the pool are comprised of boulder, cobble, gravel and silt. Riparian vegetation consists of cultural meadow and cultural thicket. This area was an active work site with materials placed inside the downstream culvert, including pea gravel bags that diverted flow to one side of the culvert. A wood ramp had been constructed to allow worker access to the culvert down the slope on the west bank. No fish were observed in the upstream channel and, considering the barriers to fish passage (20 cm drop at downstream end, sheet flow, 10 cm drop at upstream end), it is unlikely that fish can travel to the upstream portion of the watercourse. However, because there were many apparently healthy fish observed in the downstream pool, the entire watercourse should be considered direct fish habitat. Dunbarton Creek is considered to have a warmwater thermal regime according to MNRF mapping (MNRF 2019a).

Crossing 11: Pine Creek

Pine Creek crosses Kingston Road through a concrete box culvert situated at a skew to the roadway. It is a warmwater (MNRF 2019a) watercourse feeding into Frenchman's Bay. Upstream, the watercourse is lined with rip rap boulders with a gabion basket across the channel immediately upstream of the culvert. In amongst the rip rap is sand and gravel substrates. The banks have also been lined with rip rap. Morphology is riffles (2 m wide, 10 cm deep) and instream vegetation is sparse. Rip rap and some woody debris constitutes instream cover. Riparian vegetation consists of cultural meadow and cultural woodland with some deciduous trees. The culvert is embedded or has filled with sediments (sand) such that there is a low flow channel present through it. Downstream, morphology is mostly run with a large pool (7 m long, 0.5 m deep) located approximately 15 m from the culvert. The run sections are approximately 1 m to 1.5 m wide and 15 cm deep. Substrates are comprised of sand, gravel, cobble, boulder and detritus with exposed clay evident in the pool. Riparian vegetation is cultural meadow and cultural woodland with some shrubs. Instream cover is provided by undercut banks and overhanging vegetation. Instream vegetation is absent. Many Creek Chub were observed within the downstream pool and, therefore, this watercourse constitutes direct fish habitat.

4eiii. Town of Ajax

A total of four watercourse crossings occur within the Town of Ajax. Two are located within the Duffins Creek watershed (Crossings 12 and 13), one is located within the Carruthers Creek watershed (Crossing 14), and one within the Lynde Creek watershed (Crossing 14a).

Crossing 12: West Duffins Creek

The West Duffins Creek crossing of Kingston Road is conveyed via a two-span bridge. The Major Spink Area ESA (TRCA 2019b) lies along the West Duffins Creek just north of the DSBRT corridor. The watercourse within the study area is located within the Lower Duffins Creek subwatershed/FMZ and is categorized as a "large riverine" watercourse (TRCA 2004). MNRF mapping indicates that it has a coldwater thermal regime (MNRF 2019a). Morphology throughout the upstream and downstream sections investigated is mainly run with a large pool located underneath the structure and a small riffle downstream. Channel widths vary from 13 m to 15 m and substrates are dominated by sand, with lesser amounts of boulder/cobble, gravel and silt. Water depth varies from 10 cm to 100 cm from riffles to

pools, but averages approximately 30 cm in run habitat. Instream cover and vegetation is lacking, with very sparse large woody debris the only cover observed. Erosion of the sandy banks was noted in several locations. Riparian vegetation was dominated by cultural woodland/cultural meadow both upstream and downstream of Kingston Road with deciduous forest further north and south. Chinook Salmon were observed during the site investigation on October 11, 2019, and this watercourse within the study area is likely used as a migratory corridor for large salmonids. This watercourse is considered by MECP to be occupied Redside Dace (*Clinostomus elongatus*) habitat and potential American Eel habitat (see **Section 4i** below).

Crossing 13: Duffins Creek

The watercourse at Crossing 13 passes under Kingston Road via a three-cell box culvert with flows passing through the east cell only. This watercourse is located within the Millers Creek subwatershed/FMZ and is categorized as "intermediate riverine coldwater" habitat (TRCA 2004a). MNRF (2019a) also identified this watercourse as coldwater. Duffins Creek has been realigned in the past throughout the entire section investigated, likely to accommodate residential and commercial developments. It flows perpendicular to Kingston Road along Chapman Drive, crosses Kingston Road, then parallels it to Westney Road where it once again turns 90 degrees to flow south perpendicular to Kingston Road. The channel, both upstream and downstream of the crossing, is fairly straight and uniform in most habitat characteristics. Channel widths vary from 4 m to 5 m and depths from 10 cm to 40 cm. Morphology is mostly runs with a few very small riffles. Substrates are comprised of cobble, boulder, gravel, sand and detritus. Instream cover is provided by boulder/cobble, overhanging vegetation and some organic and woody debris. Riparian vegetation consists of cultural meadow, cultural thicket and cultural woodland and is dominated by herbaceous species mixed with small, scattered trees and shrubs. Gabion baskets line the steeper banks both upstream and downstream of the culvert. The remainder of the banks are well-vegetated. No fish were observed during the field investigation, but this watercourse should be considered direct fish habitat. It is considered contributing Redside Dace habitat by MECP (see **Section 4i** below).

Crossing 14: Carruthers Creek

Carruthers Creek passes under Kingston Road via a concrete culvert. The watercourse was historically categorized as "intermediate riverine coldwater" by the TRCA (2004a), but has since been updated to coolwater in the Carruthers Creek Watershed Plan 2021 to 2031 (Durham Region and TRCA 2020) and as warmwater habitat by MNRF (2019a). North of Kingston Road, the riparian area consists of cultural meadow. South of Kingston Road, the watercourse travels through cultural meadow and cultural woodland (with large deciduous riparian trees lining the banks) and a meadow marsh is located west of Carruthers Creek. Overhanging grasses are common and dense near the roadway. *Phragmites* is also present in these areas. Morphology consists almost exclusively of run habitat with one pool located immediately upstream of the culvert. Channel widths range from 4 m to 7 m and depths from 10 cm to 70 cm. Banks were steep in some areas and erosion was evident, especially along the outside bends. Substrates were comprised of cobble, gravel, sand and silt. Instream vegetation is absent and instream cover is provided by cobble, overhanging riparian vegetation and sparse woody/organic debris. No fish were observed during the site investigation (October 11, 2019), but this watercourse is direct fish habitat and historic habitat for Redside Dace (see **Section 4i** below).

Crossing 14a: Tributary of Lynde Creek

This westernmost tributary of Lynde Creek (Kinsale subwatershed) lies exclusively to the south of Dundas Street and is located at the Audley Road intersection. Upstream, no open habitat exists, and it

appears that a small amount of overland drainage is conveyed to the northeast corner of the intersection where it is directed into what is likely a ditch inlet, although at the time of the site investigation (July 30, 2021), this area was obscured by a large amount of cut *Phragmites*. Catch basins were observed on Audley Road (both east and west sides) at the intersection which likely collect road runoff and convey it into the storm water system. This storm water then appears to be conveyed via a concrete box culvert diagonally across the Kingston Road where it outlets into a north-south ditch approximately 16 m from the edge of pavement. At the downstream end of the culvert, a pool of standing water was present at the time of the site visit that was approximately 5 m by 5 m and 10 cm deep and surrounded by dense *Phragmites*. Another pool of standing water was present further downstream (~4 m x 5 m, 10 cm deep) at a ford. In between the two pools is an area of dense *Phragmites* with no defined channel. Downstream of the second pool, the swale becomes more defined with a steeper east bank and less instream vegetation. This section is bordered by dense willow shrubs on the east bank and cattails that are growing along both banks. The width of the swale is approximately 3 m wide and the depth 10 cm. Much filamentous green algae was observed along growing from the substrates (muck, silt, detritus). Downstream of this section, the swale narrows and becomes dominated by grasses. The channel within the swale is undefined and approximately 1 m wide and 5 cm deep. No flow was observed and no fish were seen. Due to the steep east banks of the swale, the floodplain extends to the west into a deciduous swamp forest. The area adjacent to the swale has been cleared of trees, but is still well-vegetated with herbaceous species and woody shrubs. Standing water was observed in vehicle ruts and often contained emergent wetland vegetation. As CLOCA (2021) has suggested, barring barriers to fish passage, the entire swale could be seasonal, direct, warmwater fish habitat.

4eiv. Town of Whitby

Six watercourse crossings occur within the Town of Whitby. Four are located within the Lynde Creek watershed (Crossings 15-18), one within the Pringle Creek watershed (Crossing 19) and one within the Corbett Creek watershed (Crossing 20).

Crossing 15: Tributary of Lynde Creek

This small tributary of Lynde Creek crosses Dundas Street via a concrete box culvert. It lies within CLOCA's NHS. This watercourse is part of the Kinsale subwatershed of Lynde Creek (CLOCA 2006). Upstream, the channel is poorly defined and runs parallel to Dundas Street within the north ditch. The channel was not flowing during the site investigations (October 11, 2019; June 1, 2020), but was wet in patches and through the culvert. The channel contains dense cattails and *Phragmites* growth. Adjacent to the ditch/watercourse to the north is an active agricultural field as well as a shallow marsh and cultural meadow. Conditions are similar downstream of the crossing with a poorly defined channel through *Phragmites* that is wet in patches, but not flowing. The riparian vegetation downstream consists of cultural woodland and shallow marsh. Substrates consist of silt and detritus. This watercourse is likely an intermittent or ephemeral feature and supports indirect fish habitat only. LGL sampled the small pool at the downstream end of the culvert, but there was no catch, reinforcing the conclusion that this tributary supports indirect fish habitat only. MNRF (2019a) mapping indicates that this watercourse has a warmwater thermal regime.

Crossing 16: Tributary of Lynde Creek

The tributary of Lynde Creek that crosses Dundas Street at Crossing 16 is a larger, permanently-flowing watercourse. It lies within CLOCA's NHS. It crosses under the road via a large, open-footed concrete arch culvert. Upstream and downstream channel conditions are similar with channel widths ranging from 3.5 m to 12 m (the widest portions are directly upstream and downstream of the culvert) and depths from

20 cm to 100 cm. Morphology is exclusively run habitat and substrates are comprised of silt, cobble, sand, gravel and detritus. Instream cover is provided by large woody debris and emergent vegetation. Instream vegetation is present along the banks (emergent grasses and cattails). The water was turbid at the time of the site investigation (October 11, 2019). Riparian vegetation consists of cultural meadow, cultural woodland (including scattered deciduous trees), meadow marsh and shallow marsh. Although no fish were observed during the site investigation, this watercourse constitutes direct, coolwater fish habitat. This watercourse has the potential to support American Eel habitat (see **Section 4i** below).

Crossing 17: Tributary of Lynde Creek

This small tributary of Lynde Creek has an open channel upstream only and is piped downstream. It lies within CLOCA's NHS. MNRF (2019a) mapping indicates that this watercourse has a warmwater thermal regime. The open channel upstream is poorly defined and contained some standing water at the time of the site investigation (October 11, 2019), but was flowing during June 1, 2020 fish sampling. The wetted width is approximately 1 m. The watercourse flows through a cultural meadow, deciduous cultural woodland and shallow marsh. The upstream end of the CSP that conveys flows from the north side of Dundas Street into the storm water system has a large trash grate affixed to it to prevent materials from entering. Three species of fish were captured from this watercourse upstream of Dundas Street during LGL's electrofishing survey. Therefore, this feature is direct fish habitat.

Crossing 18: Lynde Creek

Lynde Creek at the crossing of Dundas Street is located within the Main Lynde Creek subwatershed (CLOCA 2006) and has been mapped by MNRF (2019a) as a coldwater watercourse. It lies within an CLOCA's NHS. In a memorandum from CLOCA (2019a) regarding this project, available data from temperature loggers placed in the watercourse as part of their regular monitoring program indicates that Lynde Creek is coolwater within the study area. CLOCA (2019a) also reported that migratory Rainbow Trout (*Oncorhynchus mykiss*) and Chinook Salmon (both sensitive coldwater species) have been observed during their spawning runs in the vicinity of the study area. The creek is relatively straight within close proximity to the Dundas Street crossing and passes under the roadway via a single-span bridge. Upstream, the creek is located within a park and downstream there is a manicured private property within the east side of the floodplain. Riparian vegetation is a mix of cultural meadow and cultural woodland upstream, and cultural woodland and manicured grass downstream. Upstream, the channel is dominated by run habitat with one riffle located approximately 12 m upstream of the bridge. Water depths range from 10 cm in the riffle to 30 cm in the runs. Channel widths are 7 m at the riffle and 10 m at the runs and through the structure. The banks are relatively steep, but stable, and well-vegetated with grasses and overhanging trees. Substrates are comprised of cobble, boulder, gravel, sand and silt. Instream cover is provided by boulder/cobble substrates and sparse woody debris. Downstream conditions are similar to upstream with a mix of runs and riffles and a single pool. The pool is located downstream of a sheet pile wall that is embedded across the channel. It is lower in the centre forming a thalweg and plunge pool downstream (approximately 50 cm deep). This wall does not pose a barrier to fish passage. Many Chinook Salmon were observed during the site investigation on October 11, 2019 and some appeared to be spawning (both upstream and downstream of the crossing). Although currently not listed as SAR habitat, this crossing has the potential to support Redside Dace and American Eel (see **Section 4i** below).

Crossing 19: Pringle Creek

Pringle Creek crosses under Dundas Street through a three-cell concrete box culvert. The middle and east cells are bermed at the upstream end such that all flows travel through the west cell. In addition, the western cell has several wooden baffles anchored to its floor to form current breaks and catch sediments

to aid in the establishment of a low flow channel. There is a concrete ramp leading into the culvert that is approximately 0.5 m high over which water passes as sheet flow during low flow conditions (as was occurring during the October 11, 2019 site investigation). This sheet flow forms a barrier to fish passage at low flow conditions. CLOCA (2019a) has reported that migratory salmonids are present in this creek (Rainbow Trout and Chinook Salmon) and that successful spawning of Rainbow Trout has likely occurred there. Temperature data loggers indicate that Pringle Creek is coolwater within the study area (CLOCA 2019a). Pringle Creek lies within CLOCA's NHS.

Upstream of the crossing, the channel consists of a single run with an approximately 5 m width and 30 cm depth. Substrates are comprised of rip rap boulder and cobble, gravel, sand and silt. Instream cover is provided by the substrates and overhanging riparian vegetation. No instream vegetation was observed. The riparian area consists of cultural meadow, cultural woodland and shallow marsh, and contains deciduous trees and shrubs with grasses and other herbaceous species mixed in. The banks are vertical, but low and stable. Downstream of the culvert, the morphology is mixed with riffles, runs and pools. The channel also meanders more relative to upstream, and some bank erosion was noted at the outside bends. The banks closest to the bridge are lined with rip rap and filter cloth, indicating that channel works have occurred in the past. Substrates are similar to upstream with a reduced amount of rip rap. Instream vegetation is limited to a few patches of watercress. Instream cover is provided by boulders, cobble and some debris. Riparian vegetation consists of cultural meadow and cultural woodland. There are storm water outfalls on the east side of the floodplain that are situated in a wing wall. The outflow from these have created a channel/eroded area such that it is permanently connected to the main channel and the two "dry" cells of the culvert. Therefore, fish habitat extends along the downstream end of the west cell of the culvert and into the two other cells (from downstream only). Many fish were observed in the downstream channel and within the culvert during the October 11, 2019 site investigation. These included Chinook Salmon, Johnny Darter (*Etheostoma nigrum*), Blacknose Dace, Creek Chub and other unidentified cyprinids.

Crossing 20: Tributary of Corbett Creek

This small tributary of Corbett Creek crosses under Dundas Street via a concrete box culvert. The Tributary of Corbett Creek lies within CLOCA's NHS. It has been mapped as warmwater habitat by MNRF (2019a). Upstream of the crossing, it emerges from a large cattail marsh approximately 30 m upstream. Through the marsh, there does not appear to be a defined channel and there is a large online pond located approximately 190 m upstream. A relatively wide, straight open channel exists for the 30 m from the cattail marsh and cultural woodland area to the culvert. This channel is approximately 5 m wide and 10 cm deep with no observable flow during the site investigation on October 11, 2019. The banks were steep and vegetated with deciduous trees and shrubs on the east side and *Phragmites* on the west. Instream vegetation consists of duckweed (*Lemna* sp.) and instream cover is provided by the duckweed and organic debris. Substrates consist of detritus and silt. Downstream, the channel is an undefined swale densely vegetated with *Phragmites* alternating with cattails and grasses and lying within cultural meadow and shallow marsh. Approximately 115 m downstream, the watercourse enters another online pond. Instream vegetation consists of duckweed and emergent species (see above). The water both upstream and downstream was clear, but had an oily sheen. No fish were observed but this watercourse supports direct fish habitat (CLOCA 2021).

4ev. City of Oshawa

Three watercourse crossings are located within the City of Oshawa, one within the Corbett Creek watershed (Crossing 21) and two within the Oshawa Creek watershed (Crossings 22 and 23).

Crossing 21: Corbett Creek

Corbett Creek passes under King Street through two culverts: a CSPA and a CSP. The CSPA is located to the west of the CSP and conveys most of the flow. The CSP is situated slightly higher than the CSPA and was conveying very little flow at the time of the site investigation (October 11, 2019). CLOCA (2021) has specified that this watercourse is managed as warmwater.. Corbett Creek lies within CLOCA's NHS.

Upstream of the crossing, Corbett Creek flows through cultural meadow, cultural woodland, shallow marsh, and deciduous swamp vegetation communities within a defined channel. This channel is approximately 2 m wide and 30 cm deep and consists entirely of run habitat. There is rip rap at the upstream end of the culverts over which the water was flowing, but the upstream substrates are comprised of silt and detritus. This upstream channel is fairly u-shaped in cross section, which is typical of watercourses that flow through wetlands. Instream cover is provided by woody debris and overhanging vegetation. Instream vegetation is absent, except at the upstream end of the culvert where there are some cattails and grasses growing within the widened wetted width.

Downstream, the channel flows through cultural thicket and deciduous swamp vegetation communities, and conditions are very different when compared to the upstream section. Substrates are comprised of sand, silt and gravel with approximately 15 m of rip rap downstream of the culverts. There is a relatively steep gradient within these 15 m and a riffle has formed here. The two channels meet from the two culverts and form a pool at the end of the rip rap/riffle. This pool is approximately 2 m wide and 30 cm deep. Downstream, flows are restricted by many small debris jams and the morphology is shallow (15 cm), slow run. Channel widths remain at 2 m. The banks are fairly steep and are partially vegetated with some erosion evident. Instream cover is provided by rip rap, woody debris and organic and human-made debris (i.e., trash). Instream vegetation is absent. No fish were observed, but this creek is reported to support a warm and coolwater fish community (CLOCA 2019a).

Crossing 22: Goodman Creek

Goodman Creek crosses King Street through a concrete culvert that has a 90 degree bend such that the downstream end is on the east side of Waverly Street, a road that runs perpendicular to King Street. Goodman Creek lies within CLOCA's NHS.

Upstream, the channel is approximately 75 m long and is straight. At the upstream end of the 75 m long channel, the creek is discharged from a large online pond via a concrete pipe culvert. The upstream channel consists of mainly run habitat with a concrete block-lined pool at the upstream end. The concrete block-lined pool is separated from the downstream run by a steeply-sloped 30 cm drop. There is a small debris jam near the culvert where the channel narrows. Mean width of the watercourse is 2 m with a depth of 15 cm, with the pool slightly wider and deeper (3 m width, 30 cm depth). Substrates are comprised of silt. Instream cover is provided by emergent vegetation. This instream emergent vegetation lines the banks throughout the run habitat. Riparian vegetation is comprised of cultural woodland and shallow marsh vegetation communities interspersed with manicured areas (both east and west of the watercourse).

As mentioned above, the culvert bends by 90 degrees somewhere under King Street as its downstream end faces east on the east side of Waverly Street. The downstream channel is relatively shallow and wide (10 cm to 30 cm depth and 2 m to 4 m width). Substrates are comprised of gravel, sand and silt. Instream cover is provided by woody debris. Morphology is dominated by riffles with two pools and a run. No instream vegetation is present, but there are a few patches of watercress along the banks. Some erosion of

the banks was noted. The riparian area is dominated by cultural woodland (large deciduous trees) and manicured areas immediately south of King Street. No fish were observed in the downstream channel but several unidentified cyprinids and one Creek Chub were observed upstream during LGL's field investigation on October 11, 2019; therefore, this watercourse supports direct fish habitat. CLOCA/MNR (2013b) and MNRF (2019a) mapping indicates that Goodman Creek has a warmwater thermal regime.

Crossing 23: Oshawa Creek (Two Crossings at King Street and Bond Street)

Oshawa Creek crosses under Bond Street through a two-span bridge and under King Street via a concrete arch bridge (single span). Oshawa Creek lies within CLOCA's NHS. The riparian area is restricted to an approximately 20 m wide corridor that conveys the watercourse through downtown Oshawa. This corridor has vertical (gabion basket and/or concrete) or near vertical slopes leading down either to the creek bank or a narrow, vegetated floodplain. The surrounding land use is completely urban and a pedestrian path parallels the creek for its entire length through the study area. Oshawa Creek is considered a coldwater watercourse both by CLOCA/MNR (2013b) and by MNRF (2019a) mapping. It supports migratory salmonids (CLOCA 2019a) along with several other species of warmwater and coolwater fish (CLOCA/MNR 2013b). One fish SAR (American Eel - *Anguilla rostrata*) has been documented within Oshawa Creek (CLOCA/MNR 2013b; CLOCA 2019a) and is discussed in **Section 4i** below.

Oshawa Creek through the study area is relatively straight, approximately 7 m to 11 m wide with coarse substrates (boulder, cobble, gravel) and a morphology of riffles and runs. Riffles are approximately 15 cm deep and runs are approximately 20 cm deep. Riparian vegetation consists of cultural woodland and cultural meadow (including terrestrial grasses and forbs). No instream vegetation was noted during the site investigation (October 11, 2019). Instream cover is provided by boulders. Many Chinook Salmon were observed during the site investigation and this watercourse supports many additional species of warmwater and coolwater fish within the vicinity of the study area (CLOCA 2013a; CLOCA/MNR 2013b).

4f. Terrestrial Environment

This section discusses the vegetation and vegetation communities, and flora located within the vicinity of the DSBRT study area. Tree resources are addressed in the Arborist Report (LGL 2021).

Vegetation and Vegetation Communities

The study area falls within the Lake Simcoe-Rideau Ecoregion 6E and Lake Erie-Lake Simcoe Ecoregion 7E presented on **Figure 1** (MNRF 2019a). Vegetation communities found within the study area consist of a mixture of forest, wetland and cultural communities. A large portion of the study area, within the road ROW, is associated with cultural communities and manicured areas that contain a high proportion of invasive and non-native plant species that are disturbance tolerant. Overall, cultural vegetation communities delineated were observed to be in a disturbed state associated with existing land use practices. Forests identified are generally part of larger vegetation communities that extend beyond the study area, typically associated with watercourses and valleylands that cross Ellesmere Road/Kingston Road where large tracts of protected forest habitat were observed. These areas are typically associated with significant natural areas including the Highland Creek Swamp ANSI and the Rouge River Valley ANSI. Such larger natural features are typically located within the City of Toronto limits. Several cultural woodland, meadow marsh and shallow marsh communities are associated with water crossings, the provincially significant Lynde Creek Coastal Wetland Complex and/or several environmentally significant areas identified within or adjacent to the study area. Many of the natural areas were

historically identified by the TRCA (TRCA 1982) and refined by the City of Toronto in 2012 (North-South Environmental *et al.* 2012) and CLOCA (CLOCA 2019b) and across Durham Region.

Vegetation communities were classified according to the Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee *et al*. 1998), to the extent possible. In instances where edges are not representative of the larger vegetation community present, a stand description was not taken (see **Appendix D** for copies of th**e** Ecological Land Classification Sheets).

A total of 29 ecosites/vegetation types were identified within the study area based on field surveys undertaken by LGL staff throughout the spring, summer and fall of 2019. The range of vegetation communities present within the study area include several deciduous (FOD2-1, FOD3-1, FOD5-1, FOD5-3, FOD5-7, FOD5, FOD6-5 and FOD7-3), coniferous (FOC4-1) and mixed forest types (FOM2, FOM3-2 and FOM6-1). Wetland communities include Reed-Canary Grass Mineral Meadow Marsh (MAM2-2), Mineral Shallow Marsh (MAS2), Cattail Mineral Shallow Marsh (MAS2-1), Willow Mineral Thicket Swamp (SWT2-2), Birch-Poplar Mineral Mixed Swamp (SWM3), and several deciduous swamps (SWD3, SWD3-4 and SWD4). Cultural community types were also identified including Mineral Cultural Meadow (CUM1-1), Mineral Cultural Thicket (CUT1 and CUT1-1), and Mineral Cultural Woodland (CUW1), along with various plantation types (CUP1, CUP1-3, CUP1-8, CUP2 and CUP3-2). The communities identified include numerous combined vegetation communities including Mineral Cultural Meadow/Mineral Cultural Thicket (CUM1-1/CUT1 and CUM1-1/CUT1-1), Mineral Cultural Meadow/Mineral Cultural Woodland (CUM1-1/CUW1), Mineral Cultural Thicket/Mineral Cultural Woodland (CUT1/CUW1 and CUT1-1/CUW1), Mineral Meadow Marsh/Mineral Shallow Marsh (MAM2-2/MAS2), Mineral Shallow Marsh/Swamp Thicket (MAS2-1/SWT2-2) and Mineral Shallow Marsh/Deciduous Swamp (MAS2-1/SWD4). These communities were either too small to delineate separately, or boundaries were difficult to distinguish often because communities were in successional transition (i.e., changes in species structure within an ecological community made it difficult to identify or define a hard boundary).

Several small wetland patches typically less than 0.1 ha, or long narrow strips associated with roadside ditches that are dominated by common reed (*Phragmites australis*), were identified as inclusions within cultural meadow communities or manicured areas especially along ditches adjacent to Ellesmere Road/Kingston Road/Dundas Street. Many of these inclusions were dry and likely established due to seasonal runoff from the road network and commercial areas.

Areas not identified as Ecological Land Classification (ELC) vegetation communities were observed; primarily manicured areas (M) associated with sidewalks, parks, front yards, commercial development, cemeteries, etc., and hedgerows (H). Manicured areas also included mown lawns, gardens and planted trees. As noted above, common reed, and to a much less extent, cattails (*Typha* spp.), were noted to have established along roadside ditches.

The various ELC vegetation communities, manicured areas and hedgerows identified during field surveys undertaken by LGL staff are described in **Table 6** and are presented in **Figures NER-1a** to **NER-1i**. The ELC Field Sheets are presented in **Appendix D**.

Flora

Detailed field investigations undertaken across the study area in 2019 included documenting species presence. A vascular plant list was prepared as a result of botanical survey data collected for vegetation communities identified in **Table 6**. A total of 305 plant species were recorded within the study area, however, 13 of these plants could only be identified to genus. Of the 292 plants identified to species, 167

are native (57%) and 125 are non-native (43%). The overall percentage of native species in the study area is low when compared with the percentage of native plant species in the flora of Ontario (73%: Kaiser 1983). This is a reflection of the high degree of residential, commercial, and industrial land uses within the study area, with an associated high proportion of cultural communities and manicured areas, and an increased diversity of non-native and/or invasive species. This ultimately serves to promote the establishment and continued dispersal of these species.

Forest and wetland communities generally provide higher quality habitat and have a higher occurrence of native plant species that are more specialized. Higher quality vegetation communities with a more diverse range of native species were associated with designated natural areas including Highland Creek Swamp ANSI and associated ESAs, Ellesmere Woods ESA, and the Rouge River Valley ANSI and associated ESAs.

The detailed plant list of species observed is presented in **Appendix F**. The acronyms and definitions used in the species lists are presented in **Appendix G.**

The following discussion provides a more detailed summary of existing conditions and vegetation communities identified within the respective municipalities across the study area. For details regarding plant communities discussed below, please refer to **Table 6** and **Figures NER-1a** to **NER-1i**.

4fi. City of Toronto

The DSBRT study area located within the City of Toronto (from McCowan Road to west of Altona Road) is dominated by manicured areas and cultural communities. Areas of mown grass, planted trees and decorative gardens are typically associated with sidewalks, residential areas and commercial development. Planted species within this area include a wide variety of horticulturally derived and native trees and shrubs. Within this segment of the study area, there are also several designated natural areas. The provincially significant Highland Creek Swamp ANSI and Highland Creek-Morningside Wetland Complex PSW are associated with Highland Creek and the Tributary of Highland Creek, and are located within the area east of Orton Park Road to east of Morningside Avenue, south of Ellesmere Road with several small wetland pockets associated with the PSW also located north of Ellesmere. The Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA) and a Carolinian Core Natural Area/Existing and Potential Connection/Area are also located within the ANSI. Within the vicinity of this ANSI is the Ellesmere Woods ESA, north of Ellesmere Road just west of Mornelle Court. Further east is the Rouge River Valley ANSI within which are several ESAs including the Little Rouge Forest and the Rouge Marsh Area ESAs (see designated natural area descriptions presented in **Section 4j**).

Along the edge of cultural communities identified within and adjacent to the ROW, within the vicinity of the Highland Creek Swamp ANSI and associated ESAs, edge habitat of deciduous, mixed and coniferous forest and plantation communities are present (FOC4-1a and b, FOD5-7, FOM3-2, FOD5-1b, CUP3-2, FOD5-3a and b, FOM2a and b, CUP2, FOD2-1 and CUP1-8). Within the vicinity of the Rouge River Valley ANSI and associated ESA, edge habitat of deciduous and mixed forest communities and a shallow marsh were observed (FOD3-1b, FOM2c and MAS2b). Portions of wooded habitat identified as cultural woodland within this ANSI were observed from within the Kingston Road ROW including from along the bridge that crosses the Rouge River/Little Rouge Creek. As such, the cultural woodland identification used (CUW1e and CUM1-1d/CUW1d) is only representative of edge habitat and may not accurately reflect the larger vegetation communities associated with the Rouge River valley riparian habitat. Overall, surveyed portions of communities associated with designated natural areas are typically located at the top of roadside berms or along lower slopes and beyond the toe of slope associated with the road

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
Terrestrial-Natural/Semi-Natural			
FOC	CONIFEROUS FOREST		
FOC4-1a - b	Fresh-Moist White Cedar Coniferous Forest	**Canopy:** dominated by eastern white cedar (*Thuja occidentalis*). **Understorey:** includes choke cherry (*Prunus virginiana*), alternate-leaved dogwood (*Cornus alternifolia*) and common buckthorn (*Rhamnus cathartica*). **Ground Cover:** includes swallow-wort (*Cynanchum rossicum*) and wild sarsaparilla (*Aralia nudicaulis*).	• Tree cover > 60% (FO). • Conifer trees > 75% of canopy cover (C). • White cedar dominant (4). • Dominated entirely by white cedar (-1). • Middle to lower slopes and tableland, seepage and bottomlands.
FOD	DECIDUOUS FOREST		
FOD2-1	Dry-Fresh Oak-Red Maple Deciduous Forest	**Canopy:** includes red oak (*Quercus rubra*), red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), eastern white cedar and white pine (*Pinus strobus*). **Understorey:** includes alternate-leaved dogwood, and common buckthorn. **Ground Cover:** includes riverbank grape (*Vitis riparia*), swallow-wort and Pennsylvania sedge (*Carex pennsylvanica*).	• Tree cover >60% (FO). • Deciduous trees >75% of canopy cover (D). • Oak species dominant with maples or other species (2). • Either Oak or Red Maple can dominate (-1).
FOD3-1a - b	Dry-Fresh Poplar Deciduous Forest	**Canopy:** includes white birch (*Betula papyrifera*), basswood (*Tilia americana*), large-tooth aspen (*Populus grandidentata*), and Manitoba maple (*Acer negundo*). **Understorey:** includes common buckthorn and tartarian honeysuckle (*Lonicera tatarica*). **Ground Cover:** includes swallow-wort, Canada goldenrod (*Solidago canadensis*) and Kentucky bluegrass (*Poa pratensis*).	• Tree cover >60% (FO). • Deciduous trees >75% of canopy cover (D). • Trembling aspen, largetooth aspen or white birch or similar associates dominant (3). • Dry-Fresh (-1).
FOD5-1a - b	Dry-Fresh Sugar Maple- Deciduous Forest	**Canopy:** includes Sugar maple (*Acer saccharum* ssp. *saccharum*), American beech, red oak, white pine and black cherry (*Prunus serotina*). **Understorey:** includes choke cherry, scarlet hawthorn (*Crataegus pedicellata*) and common buckthorn. **Ground Cover:** includes alternate-leaved dogwood and tartartian honeysuckle.	• Tree cover >60% (FO). • Deciduous trees >75% of canopy cover (D). • Sugar maple with other deciduous associates (5). • Almost entirely dominated by sugar maple (-1).
FOD5-3a - b	Dry-Fresh Sugar Maple-Oak	**Canopy:** includes Sugar maple, red oak (*Quercus rubra*), American beech and white pine.	• Tree cover >60% (FO). • Deciduous trees >75% of canopy cover (D).

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SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
	Deciduous Forest	**Understorey:** includes alternate-leaved dogwood, common buckthorn and choke cherry. **Ground Cover:** includes herb-robert (*Geranium robertianum*), swallow-wort, large-leaved aster (*Eurybia macrophyllus*), blue-stem goldenrod (*Solidago caesia*), and white avens (*Geum canadense*).	• Sugar maple with other deciduous associates (5). • Almost entirely dominated by sugar maple (-3).
FOD5-7	Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest	**Canopy:** includes sugar maple, black cherry (*Prunus serotina*), trembling aspen (*Populus tremuloides*) and eastern hemlock (*Tsuga canadensis*). **Understorey:** includes choke cherry, common buckthorn, guelder rose (*Viburnum opulus*) and sugar maple. **Ground Cover:** includes yellowish enchanter's nightshade (Circaea *lutetiana* spp. *canadensis*), poison-ivy (*Rhus radicans* spp. *negundo*), swallow-wort, and white trillium (*Trillium grandiflorum*).	• Tree cover >60% (FO). • Deciduous trees > 75% of canopy cover (D). • Sugar maple with other deciduous associates (5). • Black cherry is also present (-7).
FOD5a - c	Dry-Fresh Sugar Maple Deciduous Forest	**Canopy:** includes sugar maple, black walnut (*Juglans nigra*), basswood, black cherry and Manitoba maple. **Understorey:** includes wild black current (*Ribes americanum*), choke cherry, common buckthorn and tartarian honeysuckle. **Ground Cover:** includes riverbank grape, swallow-wort, small jack-in-the-pulpit (*Arisaema triphyllum*), and yellow dog's-tooth violet (*Erythronium americanum*).	• Tree cover >60% (FO). • Deciduous trees >75% of canopy cover (D). • Sugar maple with other deciduous associates (5).
FOD6-5	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest	**Canopy:** includes sugar maple, American beech, white birch, yellow birch (*Betula alleghaniensis*), basswood and eastern white cedar. **Understorey:** includes wild black currant (*Ribes americanum*), chokecherry and alternate-leaved dogwood. **Ground Cover:** includes swallow-wort, lily-of-the-valley (*Convallaria majalis*) and white trillium.	• Tree cover >60% (FO). • Deciduous trees >75% of canopy cover (D). • Sugar maple with ashes, maples and elm associates (6). • Uncommon associates with sugar maple (-5).
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest	**Canopy:** includes white willow (*Salix alba*), crack willow (*S. fragilis*), Manitoba maple and trembling aspen. **Understorey:** includes red-osier dogwood (*Cornus sericea*) and riverbank grape. **Ground Cover:** includes tall goldenrod (*Solidago altissima*), yellow avens (*Geum aleppicum*) and rice cut	• Tree cover >60% (FO). • Deciduous trees >75% of canopy cover (D). • White elm, willows, black walnut, basswood and ashes dominate separately or in variable mixtures (7).

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
		grass (*Leersia oryzoides*).	• Often resulting from cultural influences (-3).
FOM	MIXED FOREST		
FOM2a - c	Dry-Fresh White Pine-Maple-Oak Mixed Forest	**Canopy:** includes white pine, eastern white cedar, eastern hemlock, white elm (*Ulmus americana*) and trembling aspen. **Understorey:** includes smooth juneberry (*Amelanchier laevis*), alternate-leaved dogwood and common buckthorn. **Ground Cover:** includes ostrich fern (*Matteuccia struthiopteris* var. *latiusculum*), yellow avens, yellowish enchanter's nightshade, lily-of-the-valley and riverbank grape.	• Tree cover >60% (FO). • Conifer trees >25% and deciduous tree species >25% canopy cover (M). • White pine with sugar maple, and red oak, dominant species varies (2).
FOM3-2	Dry-Fresh Sugar Maple-Hemlock Mixed Forest	**Canopy:** includes sugar maple, red maple, red oak, basswood and Manitoba maple. **Understorey:** includes common buckthorn, multiflora rose, guelder rose, sugar maple and winged spindle tree. **Ground Cover:** includes swallow-wort, bitter nightshade, Pennsylvania sedge and spotted touch-me-not (*Impatiens capensis*).	• Tree cover >60% (FO). • Conifer trees >25% and deciduous tree species >25% canopy cover (M). • Hemlock with sugar maple, red maple or red oak, dominant species varies (3). • Hemlock with sugar maple, sugar maple >25% of canopy cover (-2).
FOM6-1	Fresh-Moist Sugar Maple – Hemlock Mixed Forest	**Canopy:** includes sugar maple, eastern hemlock, black cherry and red ash (*Fraxinus pennsylvanica*). **Understorey:** includes choke cherry, alternate-leaved dogwood and round-leaved dogwood (*Cornus rugosa*). **Ground Cover:** includes yellowish enchanter's nightshade, herb-robert, swallow-wort, zig-zag goldenrod and blue cohosh (*Caulophyllum thalictroides*).	• Tree cover >60% (FO). • Conifer trees >25% and deciduous tree species >25% canopy cover (M). • Hemlock with sugar maple, yellow birch, dominant species varies (6). • Hemlock with sugar maple, sugar maple >25% of canopy cover (-1).
Terrestrial-Cultural			
CUM	CULTURAL MEADOW		
CUM1-1a - p	Dry – Moist Old Field Meadow	**Emergent:** includes trembling aspen, green ash (*Fraxinus pennsylvanica*), scotch pine (*Pinus sylvestris*) and staghorn sumac (*Rhus hirta*). **Understorey:** includes common buckthorn (*Rhamnus cathartica*) and red raspberry (*Rubus idaeus*). **Ground Cover:** includes Kentucky bluegrass, smooth brome (*Bromus inermis*), wild carrot (*Daucus carota*), swallow-wort, clovers (*Trifolium repens, T. pratense*),	• Cultural community (CU). • Tree cover and shrub cover < 25% (M). • Mineral soil (1). • This community can occur on a wide range of soil moisture regimes (Dry-Moist) (-1).

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
		Canada goldenrod (*Solidago canadensis*), common reed (*Phragmites australis*), and New England aster (*Symphyotrichum novae-angliae*).	
CUM/CUT	CULTURAL MEADOW / THICKET		
CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	Dry – Moist Old Field Meadow/ Sumac Cultural Thicket	**Emergent:** includes green ash and trembling aspen. **Understorey:** thicket inclusions are dominated by staghorn sumac. **Ground Cover:** includes Kentucky bluegrass, smooth brome, swallow-wort, Canada goldenrod, and white heath aster (*Symphyotrichum ericoides*).	• Cultural communities (CU). • Tree cover and shrub cover < 25% (M). • Tree cover <25%; shrub cover >25% (T). • Mineral soil (1). • These communities can occur on a wide range of soil moisture regimes (Dry-Moist) and in thicket communities sumac is dominant (-1).
CUM1-1/CUT1	Dry – Moist Old Field Meadow/ Mineral Cultural Thicket	**Emergent:** includes green ash, black walnut (*Juglans nigra*), apple (*Malus* sp.), and Norway maple (*Acer platanoides*). **Understorey:** includes smoke-tree (*Cotinus coggygria*), tartarian honeysuckle, common buckthorn, and staghorn sumac. **Ground Cover:** includes Kentucky bluegrass, smooth brome, butter and eggs (*Linaria vulgaris*), horseweed (*Conyza canadensis*), Canada goldenrod and Canada thistle (*Cirsium arevense*).	• Cultural communities (CU). • Tree cover and shrub cover < 25% (M). • Tree cover <25%; shrub cover >25% (T). • Mineral soil (1). • These communities can occur on a wide range of soil moisture regimes (Dry-Moist) (-1).
CUM/CUW	CULTURAL MEADOW / WOODLAND		
CUM1-1a/CUW1a to CUM1-1g/CUW1g	Dry – Moist Old Field Meadow/ Mineral Cultural Woodland	**Canopy:** includes black walnut, white spruce (*Picea glauca*), Austrian pine (*Pinus nigra*), eastern white cedar (*Thuja occidentalis*), white elm, white birch (*Betula papyrifera*), trembling aspen, Manitoba maple (*Acer negundo*), Siberian elm (*Ulmus pumila*), and willows (*Salix* sp.). **Understorey:** includes winged spindle tree (*Euonymus alata*), white ash (*Fraxinus americana*), staghorn sumac, riverbank grape, and common buckthorn. **Ground Cover:** species includes bluegrasses (*Poa* sp.), Canada goldenrod, bird's-foot trefoil (*Lotus corniculata*), poison-ivy, swallow-wort, common reed, garlic mustard (*Alliaria petiolata*) and smooth brome.	• Cultural communities (CU). • Tree cover and shrub cover < 25% (M). • 35% < tree cover ≤ 60% (W). • Mineral soil (1). • These communities can occur on a wide range of soil moisture regimes (Dry-Moist) • (-1).

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
CUT	CULTURAL THICKET		
CUT1a - c	Mineral Cultural Thicket	**Emergent:** includes white spruce, Colorado spruce (*Picea pungens*), eastern red cedar (*Juniperus virginiana*), eastern white cedar (*Thuja occidentalis*), trembling aspen, and Manitoba maple. **Understorey:** includes staghorn sumac, common buckthorn, Russian olive (*Elaeagnus angustifolia*), riverbank grape, green ash and common buckthorn (*Rhamnus cathartica*). **Ground Cover:** includes clovers, smooth brome, ribgrass (*Plantago lanceolata*), and swallow-wort.	• Cultural community (CU). • Tree cover <25%; shrub cover >25% (T). • Mineral soil (1).
CUT1-1 a-c	Sumac Cultural Thicket	**Emergent:** includes Siberian elm, eastern cottonwood (*Populus deltoides*) and black locust (*Robinia pseudo-accacia*). **Understorey:** dominated by staghorn sumac. **Ground Cover:** includes variable crown-vetch, wild carrot, swallow-wort, and large-leaved aster.	• Cultural community (CU). • Tree cover <25%; shrub cover >25% (T). • Mineral soil (1). • Sumac is dominant (-1).
CUT/CUW	CULTURAL THICKET / CULTURAL WOODLAND		
CUT1/CUW1	Sumac Cultural Thicket/Mineral Cultural Woodland	**Canopy:** includes Austrian pine (*Pinus nigra*), Scotch pine (*Pinus sylvestris*), black walnut, silver maple (*Acer saccharinum*), and Manitoba maple. **Understorey:** includes eastern red cedar, red ash, staghorn sumac, and common buckthorn (*Rhamnus cathartica*). **Ground Cover:** includes Kentucky bluegrass, riverbank grape, swallow-wort, white heath aster, Canada goldenrod and common reed.	• Cultural community (CU). • Tree cover <25%; shrub cover >25% (T). • 35% < tree cover ≤ 60% (W). • Mineral soil (1).
CUT1-1/CUW1	Sumac Cultural Thicket/Mineral Cultural Woodland	**Canopy:** includes Siberian elm, Norway maple, basswood, white elm, and eastern white cedar. **Understorey:** dominated by staghorn sumac. **Ground Cover:** includes orchard grass (*Dactylis glomerata*), Canada bluegrass (*Poa compressa*), garlic mustard and common dandelion (*Taraxacum officinale*).	• Cultural community (CU). • Tree cover <25%; shrub cover >25% (T). • 35% < tree cover < 60% (W). • Mineral soil (1). • Sumac is dominant (-1).
CUP	CULTURAL PLANTATION		
CUP1	Deciduous Plantation	**Canopy:** includes basswood, black locust, red ash, and eastern white cedar. **Understorey:** includes multiflora rosa (*Rosa multiflora*),	• Cultural communities (CU). • Tree cover is <60% (P). • Deciduous tree species > 75% of canopy cover

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
		choke cherry (*Prunus virginiana*), and common buckthorn. **Ground Cover:** includes garlic mustard, yellow avens, and creeping Charlie (*Glechoma hederacea*).	(1). • Community resulting from, or maintained by, anthropogenic-based influences.
CUP1-3	Black Walnut Deciduous Plantation	**Canopy:** includes black walnut, white elm, bur oak (*Quercus macrocarpa*), basswood and Manitoba maple. **Understorey:** includes choke cherry and red ash. **Ground Cover:** includes Canada goldenrod, riverbank grape and white snakeroot (*Ageratina altissima*).	• Cultural communities (CU). • Tree cover is <60% (P). • Deciduous tree species > 75% of canopy cover (1). • Black walnut dominant (-3). • Community resulting from, or maintained by, anthropogenic-based influences.
CUP1-8a and CUP1-8b	Red Oak Deciduous Plantation	**Canopy:** includes red oak, ironwood (*Ostrya virginiana*), black cherry (*Prunus virginiana*), sugar maple and eastern white pine. **Understorey:** includes common buckthorn and tartarian honeysuckle. **Ground Cover:** includes yellowish enchanter's nightshade, riverbank grape, poison-ivy, and swallow-wort.	• Cultural communities (CU). • Tree cover is <60% (P). • Deciduous tree species > 75% of canopy cover (1). • Red oak dominant (-8). • Community resulting from, or maintained by, anthropogenic-based influences.
CUP2	Mixed Plantation	**Canopy:** includes Austrian pine, white pine, red oak, sugar maple, and basswood. **Understorey:** includes choke cherry, winged spindle tree, and tartartian honeysuckle. **Ground Cover:** includes riverbank grape, wild sarsaparilla, swallow-wort and zig-zag goldenrod (*Solidago flexicaulis*).	• Cultural communities (CU). • Tree cover is <60% (P). • Coniferous tree species > 25% and deciduous tree species > 25% of canopy cover (2).
CUP3-2 a-b	White Pine Coniferous Plantation	**Canopy:** includes white pine, Norway spruce (*Picea abies*), eastern white cedar, bur oak, red oak and black walnut. **Understorey:** includes tartarian honeysuckle. **Ground Cover:** includes swallow-wort, smooth brome, and orchard grass.	• Cultural communities (CU). • Tree cover is <60% (P). • Coniferous tree species > 75% of canopy cover (3). • White pine dominant (-2).
CUW	CULTURAL WOODLAND		
CUW1a - w	Mineral Cultural Woodland	**Canopy:** includes Austrian pine, Norway spruce, white pine, white elm, Siberian elm, basswood, eastern cottonwood, trembling aspen, hybrid willow (*Salix X pendulina*) and black walnut. **Understorey:** includes eastern red cedar, Japanese	• Cultural communities (CU). • 35% < tree cover < 60% (W). • Mineral Soil (1).

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
		knotweed (*Polygonum cuspidatum*), thimble-berry (*Rubus occidentalis*), winged spindle tree, common buckthorn, willows, guelder rose (*Viburnum opulus*), and tartarian honeysuckle. **Ground Cover:** includes Kentucky bluegrass, swallow-wort, garlic mustard, yellow avens, riverbank grape, glandular touch-me-not (*Impatiens glandulifera*), goutweed (*Aegopodium podagraria*), Indian hemp (*Apochynum cannabinum*), lungwort (*Pulmonaria officinalis*) and swallow-wort.	
Wetland			
MAM	MEADOW MARSH		
MAM2-2	Reed-Canary Grass Mineral Meadow Marsh	**Emergent:** includes white willow and silver maple. **Ground Cover:** includes reed-canary grass (*Phalaris arundinacea*), panicled aster (*Symphyotrichum lanceolatus* spp. *herperius*), and Canada goldenrod.	• Tree or shrub cover <25% (MA). • Flooding seasonal, species less tolerant of prolonged flooding (M). • Mineral soil (2). • Reed-canary grass dominant (-2).
MAM/MAS	MEADOW MARSH / SHALLOW MARSH		
MAM2-2/MAS2	Reed-Canary Grass Mineral Meadow Marsh/Mineral Shallow Marsh	**Emergent:** includes Manitoba maple. **Ground Cover:** includes reed-canary grass, panicled aster, American wild mint (*Mentha arvensis* ssp. *borealis*), spotted joe-pye-weed (*Eupatorium maculatum*) and fox sedge (*Carex vulpinoidea*).	• Tree or shrub cover <25% (MA). • Flooding seasonal, species less tolerant of prolonged flooding (M). • Standing or flowing water for much of the growing season (S). • Mineral soil (2). • Reed-canary grass dominant (-2).
MAS	SHALLOW MARSH		
MAS2a - f	Mineral Shallow Marsh	**Emergent:** trembling aspen, Manitoba maple and hybrid willow. **Understorey:** willows (*Salix discolor*) and Missouri willow (*Salix eriocephala*). **Ground Cover:** dominated by common reed with riverbank grape, swallow-wort and Canada goldenrod.	• Tree or shrub cover <25% (MA). • Water up to 2 m deep, with standing or flowing water for much of the growing season (S). • Mineral soil (2). • Dominated by emergent hydrophytic macrophytes.
MAS2-1a - h	Cattail Mineral Shallow Marsh	**Emergent:** trembling aspen, and crack and white willow, and Manitoba maple.	• Tree or shrub cover <25% (MA). • Water up to 2 m deep, with standing or flowing

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
		Understorey: includes eastern white cedar and Missouri willow. **Ground Cover:** cattails (*Typha* spp.) dominate with spotted touch-me-not (*Impatiens*), blue vervain (*Verbena hastata*), sedges (*Carex stipata*, *C. hystericina*, and *C. lacustris*), horsetails (*Equisetum arvense* and *E. pratense*), sensitive fern (*Onoclea sensibilis*), Canada anemone (*Canadensis anemone*), dame's rocket (*Hesperis matronalis*), and purple loosestrife (*Lythrum salicaria*).	water for much of the growing season (S). • Mineral soil (2). • Cattails are dominant (-1). • Dominated by emergent hydrophytic macrophytes.
MAS/SWD	SHALLOW MARSH / DECIDUOUS SWAMP		
MAS2-1/SWD4	Cattail Mineral Shallow Marsh/Mineral Deciduous Swamp	**Emergent:** black walnut and white willow. **Understorey:** includes red-osier dogwood. **Ground Cover:** includes spreading bentgrass (*Agrostis stolonifera*), elecampane (*Inula helenium*), spotted jewel-weed (*Capensis impatiens*), purple-stemmed aster (*Symphyotrichum puniceum*), narrow-leafed cattail (*Typha angustifolia*), and field mint (*Mentha arvensis*).	• Tree or shrub cover <25% (MA). • Water up to 2 m deep, with standing or flowing water for much of the growing season (S). • Mineral soil (2). • Tree or shrub cover >25% and dominated by hydrophytic shrub and tree species (SW). • Deciduous tree cover >75% of canopy cover (D). • Mineral soils and less common associates of willow, white elm, birch and aspen (4).
MAS/SWT	SHALLOW MARSH / THICKET SWAMP		
MAS2-1/SWT2-2	Cattail Mineral Shallow Marsh/Willow Mineral Thicket Swamp	**Emergent:** willows (*Salix* sp.) and black walnut. **Understorey:** includes willows and guelder rose. **Ground Cover:** dominated by cattails (*Typha* sp.) and includes purple loosestrife (*Lythrum salicaria*), blue vervain, spotted joe-pye-weed, reed canary grass and white bedstraw (*Galium mullugo*).	• Tree or shrub cover <25% (MA). • Water up to 2 m deep, with standing or flowing water for much of the growing season (S). • Mineral soil (2). • Tree or shrub cover >25% and dominated by hydrophytic shrub and tree species (SW). • Tree cover ≤25%; hydrophytic shrubs >25% (T). • Mineral soils, areas where flooding duration is short, substrate is aerated spring/early summer (2). • Willows dominant (-2).
SWT	THICKET SWAMP		
SWT2-2	Willow Mineral Thicket Swamp	**Emergent:** crack willow. **Understorey:** dominated by willows and includes red-osier dogwood and guelder rose.	• Tree or shrub cover >25% and dominated by hydrophytic shrub and tree species (SW).

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
		Ground Cover: includes spotted touch-me-not, blue vervain, cattails and awl-fruited sedge.	• Deciduous tree cover <25%; hydrophytic shrubs > 25% (T). • Mineral soil (2). • Willows are dominant (-2).
SWD	DECIDUOUS SWAMP		
SWD3a - c	Maple Mineral Deciduous Swamp	**Canopy:** includes Manitoba maple, freeman's maple (*Acer X freemanii*), willows and black walnut. **Understorey:** includes red ash, Manitoba maple and choke cherry. **Ground Cover:** includes white and yellow avens, white bedstraw, Canada goldenrod, giant goldenrod and dame's rocket.	• Tree or shrub cover >25% and dominated by hydrophytic shrub and tree species (SW). • Deciduous tree cover >75% of canopy cover (D). • Mineral soils and maple dominant (3).
SWD3-4a - c	Manitoba Maple Mineral Deciduous Swamp	**Canopy:** includes Manitoba maple, willows, black walnut, freeman's maple (*Acer X freemanii*), and balsam poplar (*Betula balsamifera*) and trembling aspen. **Understorey:** includes red ash, Manitoba maple, balsam poplar, and choke cherry. **Ground Cover:** includes spotted touch-me-not, swallow-wort, reed canary grass, blue vervain, large-leaved aster, white snakeroot, giant goldenrod, and cattails.	• Tree or shrub cover >25% and dominated by hydrophytic shrub and tree species (SW). • Deciduous tree cover >75% of canopy cover (D). • Mineral soils and less common associates of willow, white elm, birch and aspen (4).
SWD4	Mineral Deciduous Swamp	**Canopy:** white elm, crack willow, Manitoba maple and silver maple. **Understorey:** includes Manitoba maple, red ash, guelder rose and common buckthorn. **Ground Cover:** includes riverbank grape and Canada goldenrod.	• Tree or shrub cover >25% and dominated by hydrophytic shrub and tree species (SW). • Deciduous tree cover >75% of canopy cover (D). • Mineral soils and less common associates of willow, white elm, birch and aspen (4).
SWM3	Birch-Poplar Mineral Mixed Swamp	**Canopy:** balsam poplar, trembling aspen, white ash and eastern white cedar. **Understorey:** includes balsam poplar, red ash, red-osier dogwood, common buckthorn and common elderberry (*Sambucus canadensis*). **Ground Cover:** includes riverbank grape, coltsfoot (*Tussilago farfara*) and narrow-leaved cattail.	• Tree or shrub cover >25% and dominated by hydrophytic shrub and tree species (SW). • Deciduous tree cover >25% and coniferous tree cover >25% of canopy cover (M). • Mineral soils, and birch and poplar species variably dominant (3).
OTHER*	MANICURED AND HEDGEROW		
M and H	Manicured	Areas where large expanses of grass/shrubs/trees are	

TABLE 6.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Comments
	grasses and planted shrubs and/or trees	maintained and/or planted. **Planted/established trees/shrubs:** includes Norway maple, sugar maple, common hackberry (*Celtis occidentalis*), red oak, bur oak, maiden-hair tree (*Ginkgo biloba*), tulip tree (*Liriodendron tulipifera*), honey locust (*Gleditsia triacanthos*), black locust (*Robinia pseudo-acacia*), Canadian redbud (*Cercis canadensis*), Kentucky coffee-tree (*Gymnocladus dioicus*), Colorado spruce, Norway Spruce, white spruce, eastern red cedar, eastern cottonwood, hybrid willow, silver variegated dogwood (*Cornus alba 'elegantissima'*), Japanese Yew (*Taxus cuspidata*), hawthorns (*Crataegus* spp.), Canada plum (*Prunus nigra*), honeysuckles (*Lonicera* spp.), staghorn sumac, and common buckthorn. **Grasses**: includes bluegrasses, smooth brome, reed-canary grass, sweet manna grass (*Glyceria maxima*), Canada goldenrod, bird's-foot trefoil, ribgrass, common plantain (*Plantago major*), and common dandelion.	

*Not identified by the ELC.

bed. Forest, plantation and woodland edges are typically disturbed where ground flora is often dominated by dog-strangling vine (*Cynanchum rossicum*).

Several TRCA L1 to L3 species of concern and/or species rare in Toronto (Varga 2000) were observed (see **Section 4i**). Several of these species were observed as planted within manicured areas including red pine (*Pinus resinosa*) and white spruce (*Picea glauca*). Naturally occurring species include ninebark (*Physocarpus opulifolius*), lake-bank sedge (*Carex lacustris*) and skunk-cabbage (*Symplocarpus foetidus*); species which were typically observed beyond the ROW.

Within the ROW, adjacent to designated natural areas, vegetation includes hedgerows, cultural meadow, cultural plantation, cultural woodland, cultural meadow/cultural thicket, cultural thicket/cultural woodland, and a small portion of Sugar Maple Deciduous Forest. Dominant ground flora within these communities include dog-strangling vine (*Cynanchum rossicum*), Canada goldenrod (*Solidago canadensis*), blue grasses (*Poa* spp.) and smooth brome (*Bromus inermis*). Dominant to occasional species within the shrub layer include staghorn sumac (*Rhus typhina*), common buckthorn (*Rhamnus cathartica*), honeysuckle species (*Lonicera* spp.) and winged spindle tree (*Euonymus alata*). Cultural woodlands typically include a mix of tree species several of which were observed to be planted. Species include aspens (*Populus* spp.), Norway maple (*Acer platanoides*), sugar maple (Acer *saccharum* ssp. *saccharum*), black locust (*Robinia pseudo-acacia*), Austrian Pine (*Pinus nigra*) and spruces (*Picea* spp.). Overall, vegetation communities within the City of Toronto segment of the DSBRT study area are heavily influenced by local land use practices including commercial and residential development, and infrastructure. Vegetation communities associated with designated natural areas, especially associated with the Highland Creek Swamp ANSI and Highland Creek-Morningside Wetland Complex PSW and associated ESAs, were less influenced by local land use patterns further away from Ellesmere Road, beyond community edges.

4fii. City of Pickering

The area within the DSBRT study area located within the City of Pickering (generally from Altona Road to Notion Road) is dominated by manicured areas and cultural communities. Areas of mown grass, planted trees and decorative gardens are typically associated with sidewalks, residential areas and commercial development. Planted species within these areas include a wide variety of horticulturally derived and native trees and shrubs. The easterly sections of the Rouge River Valley ANSI and Little Rouge Forest ESA, and the Petticoat Creek Forest ESA and Major Spink Area ESA are designated natural areas located within the City of Pickering segment of the study area (see site descriptions presented in **Section 4j).** Cultural woodland (CUW1e) within the eastern edge of the Rouge River Valley ANSI and within the Little Rouge Forest ESA was observed from within the Kingston Road ROW, along the bridge that crosses the Rouge River/Little Rouge Creek. As such, the cultural woodland identification used is only representative of edge habitat and may not accurately reflect the larger vegetation communities associated with the Rouge River valley riparian habitat. Within the cultural woodland, Manitoba maple was observed as abundant with white pine and white spruce as rare to occasional. The Petticoat Creek Forest ESA is located east of Rougemount Drive and is associated with Petticoat Creek. In this area, vegetation communities south of Kingston Road include cultural meadow, cultural meadow/cultural thicket, and a Manitoba Maple Mineral Deciduous Swamp (SWD3-4b) with a cattail shallow marsh inclusion. This swamp community is adjacent to the ROW, located at the base of slope associated with the road bed. North of Kingston Road is a Black Walnut Deciduous Plantation (CUP1-3) with abundant riverbank grape (*Vitis riparia*) and goldenrod (*Solidago canadensis*) in the ground layer. Anthropogenic disturbance was noted within the community as viewed from within the ROW, likely associated with adjacent land use including residential and commercial development. The Major Spink Area ESA is

located west of Elizabeth Street and is associated with West Duffins Creek (approximately 110 m north of Kingston Road).

Throughout this segment, vegetation communities are dominated by cultural communities including cultural meadow and cultural woodland habitat, which is typically associated with watercourses including a Tributary of Amberlea Creek, Amberlea Creek and Pine Creek. These communities are typically in a disturbed state, and dominant to abundant flora includes Manitoba maple (*Acer negundo*), black walnut (*Juglan nigra*), black locust, tartarian honeysuckle (*Lonicera tatarica*), choke cherry (*Prunus virginiana*), common buckthorn, dog-strangling vine, Canada goldenrod, blue grasses and smooth brome. Other vegetation communities include a Cattail Shallow Marsh/Willow Mineral Thicket Swamp (MAS2-1/SWT2-2) associated with a Tributary of Petticoat Creek outside and east of the ESA, and a Willow Mineral Thicket Swamp (SWT2-2) associated with a Tributary of Amberlea Creek. Numerous species within the swamp thicket appeared to be planted, and this area was surrounded by cultural communities, construction, commercial development and infrastructure.

Several species rare in Durham Region (Varga 2000) were observed (see **Section 4i**). Several of these species were observed as planted within manicured areas including fragrant sumac (*Rhus aromatic*) and smooth sumac (*Rhus glabra*). Naturally occurring species include Virginia stickseed (*Hackelia virginiana*); species which were observed beyond the ROW.

Overall, vegetation communities within the City of Pickering segment are heavily influenced by local land use practices including commercial and residential development, and infrastructure.

4fiii. Town of Ajax

The DSBRT study area within the Town of Ajax (generally from just east of Notion Road to Lake Ridge Road) is dominated by manicured areas and cultural communities. Areas of mown grass, planted trees and decorative gardens are typically associated with sidewalks, residential areas and commercial development. Planted species within these areas include a wide variety of horticulturally derived and native trees and shrubs. A portion of the Major Spink Area ESA is the only designated natural area located within the vicinity (but north of and outside of) the Town of Ajax segment of the study area (located west of Elizabeth Street and associated with West Duffins Creek). A very small portion of the east end of this segment of the study area is within CLOCA's Natural Heritage System (NHS) (see **Figure NER-2**). This includes a Mineral Deciduous Swamp (SWD4), an unevaluated wetland, associated with an intermittent watercourse that is a Tributary of Lynde Creek located at the southwest corner of Kingston Road and Audley Road. A very small portion of the study area at the northwest corner of Kingston Road and Lake Ridge Road also appears to be within the NHS, where the vegetation is comprised of cultural meadow within the road ROW. Several of the unevaluated wetlands identified are also associated with drainage and with Carruthers Creek.

Cultural communities are present throughout this segment, typically associated with watercourses and agricultural fields. At West Duffins Creek, north of Kingston Road, cultural woodland includes a mix of trees like white elm (*Ulmus americana*), Manitoba maple, black walnut, crack willow (*Salix fragilis*), and white willow (*S. alba*). Riverbank grape is occasional to abundant in the shrub layer and dog-strangling vine, goutweed (*Aegopodium podagraria*), and garlic mustard (*Alliaria petiolata*) are abundant to dominant in the ground flora. South of Kingston Road, vegetation communities include cultural meadow dominated by blue grasses with abundant dog-strangling vine. Along the edges of the cultural woodland surveyed species include trembling aspen (*Populus tremuloides*), eastern cottonwood (*Populus deltoides*), basswood (*Tilia americana*), black walnut, sugar maple and black locust. Riverbank grape is occasional to abundant in the shrub layer and the ground flora was typically dominated by disturbance dependent

species with native species occasionally observed including ostrich fern (*Matteuccia struthiopteris* var. *pennsylvanica*) and American great bulrush (*Scirpus validus*). Anthropogenic disturbance was noted throughout large portions of these woodland communities associated with adjacent residential land use and heavy use of the Trans-Canada Trail that bisects the vegetation communities associated with West Duffins Creek. Cultural communities and manicured areas were associated with Duffins Creek, further east, dominated by cultural meadow and cultural thicket/cultural woodland with small inclusions of marsh habitat along the creek banks. Similarly, vegetation communities associated with Carruthers Creek are dominated by cultural habitat with a cattail shallow marsh along the edge of a stormwater pond, and a small Reed-canary Grass Meadow Marsh adjacent and outside of the ROW.

Within lands east of Carruthers Creek to Lake Ridge Road cultural meadow habitat is dominant adjacent to Kingston Road where common reed (*Phragmites australis*) dominates roadside ditches and adjacent low-lying areas. A Sugar Maple Deciduous Forest (FOD5b) was observed from the edge of the ROW with several large dead trees noted in the canopy. Further east the Mineral Deciduous Swamp (SWD4) was observed to also be associated with a drainage feature, as noted above. Plant species observed within this community include white elm, maple trees (*Acer* spp.), and crack willow with common buckthorn abundant within the portion of habitat observed.

Several species rare in Durham Region (Varga 2000) were observed (see **Section 4i**). Several of these were observed as planted within manicured areas including fragrant sumac (*Rhus aromatic*) and smooth sumac (*Rhus glabra*). Naturally occurring species include Virginia stickseed and cow-parsnip (*Heracleum lanatum*), which were observed beyond the ROW.

Overall, vegetation communities within the Town of Ajax segment of the study area are heavily influenced by local land use practices including commercial and residential development, infrastructure and agriculture.

4fiv. Town of Whitby

The area within the DSBRT study area located within the Town of Whitby (from Lake Ridge Road to east of Kendalwood Road) is dominated by manicured areas and cultural communities. Areas of mown grass, planted trees and decorative gardens are typically associated with sidewalks, residential areas and commercial development. Planted species within these areas include a wide variety of horticulturally derived and native trees and shrubs. This segment of the study area bisects a portion of CLOCA's NHS typically where it is associated with watercourses and the provincially significant Lynde Creek Coastal Wetland Complex (see **Figure NER-2**). This PSW (see designated natural area site descriptions presented in **Section 4j**) is just east of Highway 412, along the north, but primarily south side of Dundas Street. South of Dundas Street a portion of a Mineral Cattail Shallow Marsh (MAS2-1e) within the PSW, is within the study area. Cultural meadow habitat within the ROW intervenes lands between Dundas Street and this shallow marsh. North of Dundas Street habitat within the study area is comprised of cultural meadow associated the ROW with wetland habitat further north. The PSW is in part supported by drainage and road runoff and does not provide fish habitat within the vicinity of the study area. A narrow Maple Mineral Deciduous Swamp (SWD3a) borders the shallow marsh to the east, adjacent to a narrow Sugar Maple Deciduous Forest (FOD5c), as observed from within the ROW. Several unevaluated wetlands are associated with Tributaries of Lynde Creek and Corbett Creek. One wetland was identified north of Dundas Street and east of Lake Ridge Road, but none was observed northwest of the Highway 412 off-ramp and Dundas Street. A shallow marsh (MAS2-1f) was observed north of Dundas Road and west of McQuay Boulevard, but its northern limit differed. Two other wetlands, further east are associated with the Tributary of Corbett Creek.

Cultural meadow, cultural woodland, meadow marsh and shallow marsh habitat comprise the riparian habitat associated with Lynde Creek, Pringle Creek and Corbett Creek. A mix of trees species were observed within portions of cultural woodland surveyed including Manitoba maple, black walnut, hybrid willow (*Salix X pendulina*), white willow, white elm, and black locust. Species like Norway maple, Norway spruce (*Picea abies*), and horse chestnut (*Aesculus hippocastanum*) are occasionally to rarely present. Common buckthorn, tartarian honeysuckle, and a variety of willow species were observed within the shrub layer. Meadow habitat included large-toothed aspen (*Populus grandidentata*), eastern red cedar (*Juniperus virginiana*), dog-strangling vine, tufted vetch (*Vicia cracca*), smooth brome, blue grasses, goldenrods, Canada thistle (*Cirsium arvense*), and clovers (*Trifolium repens* and *T. pratense*). Shallow marsh communities included common reed observed as abundant to dominant. The Maple Mineral Deciduous Swamp (SWD3c) associated with a Tributary of Corbett Creek was observed to be in a disturbed state with invasive species and dumping noted.

One butternut tree (*Juglans cinera*) was identified within the vicinity of Dundas Street and Highway 412. This plant species is regulated as 'Endangered' under the Ontario ESA 2007. This tree is located outside of the ROW, north of Dundas Street (also see **Section 4i**). Based on the butternut location, recent road works along Dundas Street in the vicinity, and the fact that impacts associated with the DSBRT are typically not expected outside of the ROW, no assessment of this butternut tree was undertaken. Several species considered rare in Durham Region (Varga 2000) were observed, but their GPS location was recorded with an error. These rare species include sky blue aster (*Symphyotrichum oolentangiensis*) within cultural woodland (CUW1r presented on **Figure NER-1g**) and lake-bank sedge within cultural meadow/cultural woodland (CUM1-1g/CUW1g presented on **Figure NER-1h**). Both of these species were observed beyond the ROW.

Overall, vegetation communities within the Town of Whitby segment of the study area are heavily influenced by local land use practices including commercial and residential development, and infrastructure.

4fv. City of Oshawa

The area within the DSBRT study area located within the City of Oshawa (from just east of Kendalwood Road to east of Simcoe Street) is dominated by manicured areas and cultural communities. Areas of mown grass, planted trees and decorative gardens are typically associated with sidewalks, residential areas and commercial development. Planted species within these areas include a wide variety of horticulturally derived and native trees and shrubs. This segment of the study area includes King Street and a portion of Bond Street. This segment of the study area bisects a portion of CLOCA's NHS typically where it is associated with watercourses (see **Figure NER-2**). One unevaluated wetland is located at the municipal boundary with the Town of Whitby east of Thornton Road and north of King Street at Corbett Creek (Crossing 21). A second unevaluated wetland is identified north of King Street associated with Goodman Creek (Crossing22).

Cultural meadow, cultural woodland, meadow marsh and shallow marsh habitat comprise the riparian habitat associated with Corbett Creek, Goodman Creek and Oshawa Creek. A mix of trees species were observed within cultural woodlands surveyed including Manitoba maple, black walnut, white elm, Siberian elm (*Ulmus pumila*), Freeman's maple (*Acer X fremannii*), green ash (*Fraxinus pennsylvanica*), Norway spruce, white spruce, Scots pine (*Pinus sylvestris*), trembling aspen and white willow. Common buckthorn, Japanese knotweed (*Polygonum cuspidatum*), red-osier dogwood (*Cornus sericea*), choke cherry and winged spindle tree were observed within the shrub layer. Meadow habitat includes emergent Manitoba maple, common apple (*Malus pumila*), Scots pine, staghorn sumac, and Siberian elm with dog-strangling vine, smooth brome, blue grasses, goldenrods, common plantain (*Plantago major*), dame's

rocket (*Hesperis matronalis*) and glandular touch-me-not (*Impatiens glandulifera*) occasional to dominant in the ground layer.

Several species rare in Durham Region (Varga 2000) were observed (see **Section 4i**). Several of these were observed as planted within manicured areas including smooth sumac and white spruce. Naturally occurring species include sky blue aster and cow-parsnip which were observed beyond the ROW.

Overall, vegetation communities within the City of Oshawa segment of the study area are heavily influenced by local land use practices including commercial and residential development, and infrastructure.

4g. Wildlife

There are many natural heritage features located within the study area between McCowan Road in the City of Toronto and Simcoe Street in the City of Oshawa, mainly associated with the main watercourses/valleylands located within the study area. Valleylands associated with Highland Creek, Tributary of Highland Creek, Centennial Creek, and Rouge River/Little Rouge Creek (within Toronto); Petticoat Creek, Dunbarton Creek, and Pine Creek (within Pickering); West Duffins Creek, Duffins Creek and Carruthers Creek (within Ajax); Lynde Creek, Pringle Creek and Tributary of Corbett Creek (within Whitby); and Corbett Creek, Goodman Creek, and Oshawa Creek (within Oshawa) comprise the highest quality natural heritage features in the study area, provide important north-south local and regional movement corridors for wildlife, and support a moderate diversity of wildlife species. These north-south naturalized linkages provide increased opportunity for wildlife utilization of habitats within and adjacent to the study area. Interspaced between these larger, more contiguous natural heritage features, are numerous open-country habitat types such as cultural meadows, thickets, woodlands, plantations, agricultural lands, and several aquatic habitat types (meadow marsh, shallow marsh, deciduous swamp, mixed swamp and thicket swamp).

However, outside of these valleylands, the landscape is highly disturbed and supports limited natural heritage features (largely composed of manicured lands), resulting in the presence of a low to moderate diversity of wildlife species generally considered urban or tolerant of anthropogenic features and disturbance.

A summary of wildlife habitat conditions for each municipality is provided below.

4gi City of Toronto

Wildlife habitat within the City of Toronto was relatively diverse but consisted largely of anthropogenic influenced areas including manicured lands, hedgerows, cultural meadow, cultural thicket, cultural woodland and cultural plantation communities. Aquatic features also included four watercourses (Highland Creek, Tributary of Highland Creek, Centennial Creek and the Rouge River/Little Rouge Creek), along with mineral shallow marsh, mineral deciduous swamp and mineral mixed swamp habitats. The Rouge River/Little Rouge Creek feature is expected to function as a regionally significant wildlife movement corridor because of the linear natural areas associated with the feature in an otherwise highly disturbed landscape. Additionally, this feature provides an important contiguous corridor for wildlife movement as it extends all the way from the Oak Ridges Moraine to Lake Ontario. Several ESAs intersect the study area within Toronto including the Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA), Ellesmere Woods ESA, and Little Rouge Forest ESA (with Rouge Marsh Area ESA just south of the study area, and Centennial Forest and Rouge Park Swamp ESA just north of the study area). Two ANSIs including Highland Creek Swamp ANSI and Rouge River Valley ANSI are also located within the study area. The

Highland Creek-Morningside Wetland Complex PSW is located both north and south of Ellesmere Road and surrounding Morningside Avenue in the Highland Creek floodplain. The Rouge River Marshes Wetland Complex PSW is located just south of the study area. See **Section 4j** for additional information on designated natural areas. Forested areas were very limited in distribution and were composed of various deciduous forest communities (including sugar maple, black cherry, poplar, and oak), coniferous and mixed forest types, as well plantation communities.

4gii City of Pickering

Wildlife habitat in the City of Pickering consisted largely of highly anthropogenic influenced areas including manicured lands and cultural meadow, thickets, woodland and plantations. The footprint of Highway 401 in this area is large and further adds to the disturbance in the City of Pickering. Higher quality natural heritage features are found along the watercourse crossings of the Rouge River/Little Rouge Creek located at the westerly edge of the City; this feature is expected to function as a locally significant wildlife movement corridor, as mentioned previously. Other aquatic features also included the small watercourses located within the City including Petticoat Creek, a Tributary of Petticoat Creek, Amberlea Creek, two Tributaries of Amberlea Creek, Dunbarton Creek, and Pine Creek and associated mineral shallow marsh, mineral deciduous swamp, and mineral thicket swamp communities. The Little Rouge Forest ESA and Rouge River Valley ANSI straddle the border of Toronto and Pickering. Along with these natural heritage features, the Petticoat Creek Forest ESA and Major Spink Area ESA also intersect the study area within the City of Pickering. The Rouge Marsh Area ESA, Rouge River Marshes Wetland Complex PSW, Frenchman's Bay Marsh ESA, and Frenchman's Bay Coastal Marsh ANSI and PSW are located just south of/adjacent to the study area and can also provide significant wildlife habitat. Forested areas were very limited in distribution and were composed entirely of black walnut plantation communities.

4giii Town of Ajax

Wildlife habitat in the Town of Ajax consisted largely of highly anthropogenic influenced areas, primarily agricultural lands, commercial/industrial lands, hedgerows, cultural meadows, thickets, woodlands and plantations, as well as manicured grass. Higher quality natural heritage features were restricted largely to the West Duffins Creek (which spans Pickering and Ajax and is a watercourse connected to the Lower Duffins Creek Wetland Complex PSW and Duffins Creek Coastal Marsh ANSI – although both of these designated natural areas are located well south of the DSBRT study area), Major Spink Area ESA (which spans Pickering and Ajax), the Duffins Creek (which also connects to the Lower Duffins Creek Wetland Complex PSW and Duffins Creek Coastal Marsh ANSI), and Carruthers Creek valleylands (connected to the Carruthers Creek Wetland Complex PSW and Shoal Point Wetlands ANSI – although both of these designated natural areas are also located well south of the DSBRT study area). These features are expected to function as locally significant wildlife movement corridors because of the linear natural areas associated with the features in an otherwise highly disturbed landscape. Other aquatic features included mineral shallow marsh, mineral deciduous swamp, and mineral meadow marsh communities. Forested areas were very limited in distribution and were composed of cultural woodlands and plantations and one deciduous forest community, generally situated along the watercourses.

4giv Town of Whitby

Wildlife habitat in the Town of Whitby consisted largely of anthropogenic influenced areas, primarily agricultural lands, commercial/industrial lands, hedgerows, and cultural meadows and woodlands. Higher quality natural heritage features are situated along the Tributaries of Lynde Creek - connected to the Lynde Creek Coastal Wetland Complex PSW and Lynde Shores Coastal Wetlands (Candidate Site) ANSI

which is located south of the study area, Pringle Creek, and the Tributary of Corbett Creek valleylands. These features are expected to function as locally significant wildlife movement corridors because of the linear natural areas associated with the features in an otherwise highly disturbed landscape. The valleys associated with Lynde Creek are considered by CLOCA to be Landscape Corridors within the Wildlife Habitat Network as per the Wildlife Corridor Protection and Enhancement Plan (CLOCA 2015). As noted above, the entire study area east of Whitby towards the end of Oshawa is considered environmentally sensitive (low - unnamed) by CLOCA. Other aquatic features also include small mineral shallow marsh, ample mineral deciduous swamp, and mineral meadow marsh communities. Forested areas were limited in distribution and were composed of cultural woodlands and one deciduous forest community located east of Highway 412 south of Dundas Street.

4gv City of Oshawa

Wildlife habitat in the City of Oshawa consisted largely of anthropogenic influenced areas, primarily containing commercial/industrial/residential lands, parkland, and cultural meadows, thickets and woodlands. The entire study area east of Whitby towards the end of Oshawa is considered environmentally sensitive (low - unnamed) by CLOCA. Aquatic features included three small watercourses (Corbett Creek, Goodman Creek and Oshawa Creek). These watercourses are associated with mineral shallow marsh and mineral deciduous swamp communities. Forested areas were relatively sparse in this city and were composed of cultural thicket and cultural woodland communities only. The valleys associated with Corbett Creek, Goodman Creek and Oshawa Creek are also considered by CLOCA to be Landscape Corridors within the Wildlife Habitat Network as per the Wildlife Corridor Protection and Enhancement Plan (CLOCA 2015).

Herpetofauna

Methodologies outlined in the Marsh Monitoring Program (2000) were followed to confirm the presence of anuran species, document potential breeding habitat/areas, and confirm the nature, extent and significance of amphibian usage. Six stations were strategically placed throughout the study area where amphibian breeding habitat was suspected (based on aerial photo interpretation and initial field review) and where access was permitted. **Figures NER-1a to NER-1i** present the locations of the stations. Anuran surveys were conducted on three separate occasions during the spring and summer of 2019. Each survey was conducted during appropriate weather conditions, beginning one half hour after sunset and concluding just prior to midnight (see **Table 2**). Surveys were completed during periods of peak anuran breeding activity and vocalization. Anuran breeding evidence was documented for four species during the 2019 surveys. Vocalizing male American Toad (*Anaxyrus americanus*), Green Frog (*Lithobates clamitans*), Gray Tree Frog (*Hyla versicolor)* and Spring Peeper *(Pseudacris crucifer)* were noted within the study area, or in the immediate vicinity of the study area. A summary of anuran species is presented in **Table 7** and further details (including call level codes and habitat type) are provided in **Appendix H**. Overall, the majority of aquatic habitats observed throughout the study area displayed evidence of amphibian breeding during 2019 survey periods. It is noted that a high level of traffic noise interfered with the ability to hear anuran vocalizations in some locations. Amphibian breeding behaviour was observed in the following locations; Highland Creek (south of Ellesmere Road, east of Orton Park Road), isolated marsh areas within Morningside Park (south of Ellesmere Road, west of Morningside Avenue), pond (north of Kingston Road East, east of Carruthers Creek), storm water management pond (south of Kingston Road East, east of Galea Drive), marsh (north of Dundas Street East, east of Kathleen Street), and within Lynde Creek Coastal Wetland Complex PSW (south of Dundas Street West, east of Highway 401).

Amphibian occurrence records within the vicinity of the study area were obtained from the Ontario Reptile and Amphibian Atlas (ORAA, Ontario Nature 2019) and CLOCA (2019b). Data obtained from the ORAA indicated records for four species: American Toad, Green Frog, Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) and Midland Painted Turtle (*Chrysemys picta marginata*). Data received from CLOCA contained a record for Snapping Turtle (*Chelydra serpentina*) in the vicinity of the study area. Of these species, American Toad and Green Frog were identified by LGL during the 2019 field investigations, as noted above. Other reptile and amphibian species are expected to be found within the study area; though, an assemblage that is generally considered tolerant of anthropogenic influences is expected to be present within the lands examined.

Of the four amphibian species observed by LGL in 2019, none are identified as SAR. One herpetofauna SAR has been recorded in the vicinity of the study area based on records from secondary data sources (CLOCA) noted above: Snapping Turtle. Refer to **Section 4i** for further details on SAR.

Invertebrates

One invertebrate record was provided by CLOCA: Giant Swallowtail (*Papilio cresphontes*). This species is not at risk but is afforded protection under the FWCA. No invertebrates were documented by LGL during the 2019 field investigations.

Birds

Breeding bird surveys were conducted during the breeding bird season when most birds are on their territories engaged in breeding activities, and between the hours of 5:00 and 10:00 am, in accordance with the Ontario Breeding Bird Atlas protocol (2001). A point count methodology was utilized, where a point count location was surveyed for ten minutes and all species seen and heard were recorded. Breeding evidence was recorded to determine if the species was a possible, probable or confirmed breeder following protocols of the Ontario Breeding Bird Atlas (Cadman et al., 2007). Point count locations were situated to ensure representation of the predominant habitat types within the study area. Incidental species observations, including those of birds, were also collected on all study area visits. The locations of the 32 breeding bird point count stations are presented in **Figures NER-1a-1i**.

A total of 47 bird species were documented within the vicinity of the study area during the breeding bird surveys conducted by LGL Limited, and an additional 22 species were identified through secondary sources (CLOCA 2019b, NHIC 2019a, TRCA 2019b). Survey conditions and dates are detailed in **Table 2**. Each of these bird species as well as species status is presented in **Table 7** and further details of the bird species documented by LGL are presented in **Appendix I.**

Forty-six of the 47 bird species documented during breeding bird surveys conducted by LGL Limited are considered common to the community types found within the DSBRT study area and include primarily urban tolerant species. However, one SAR, Barn Swallow (*Hirundo rustica*), was observed during the first survey on June 11, 2019. No Barn Swallow nests were observed within the study area; however, potential Barn Swallow nesting habitat exists within the study area. The four crossings and bridge structures that are potential Barn Swallow nesting habitat include: Highland Creek (Crossing 1), Rouge River (Crossing 4), West Duffins Creek (Crossing 12) and Lynde Creek (Crossing 18). These bridge structures may provide nesting habitat for other species as well (see Figures NER-1a, 1c, 1e and 1g). Barn Swallow are considered possible breeders; this SAR is further discussed in **Section 4i**.

TABLE 7.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA BY LGL AND SECONDARY SOURCE DATA

Wildlife	Scientific Name	Common Name	Species Status under Legislation/ Local Sensitivity				Source of Species Identification	
			Canada SARA	Ontario ESA	Legal Status	Local	LGL[1]	Secondary Source[2]
Herpetofauna	*Anaxyrus americanus*	American Toad	-	-	-	L4	*	*
	Thamnophis sirtalis	Eastern Gartersnake	-	-	-	L4		*
	Lithobates clamitans	Green Frog	-	-	-	L4	*	*
	Hyla versicolor	Gray Tree Frog	-	-	FWCA(P)	L2	*	*
	Chrysemys picta	Midland Painted Turtle	-	-	-	L4		*
	Pseudacris crucifer	Spring Peeper	-	-	-	L2	*	*
	Chelydra serpentina	Snapping Turtle	SC	SC	-	L3		*
Invertebrates	*Papilio cresphontes*	Giant Swallowtail	-	-	FWCA(P)	-		*
Birds	*Corvus brachyhrynchos*	American Crow	-	-	-	L5	*	
	Carduelis tristis	American Goldfinch	-	-	MBCA	L5	*	
	Setophaga ruticilla	American Redstart	-	-	MBCA	L3	*	
	Turdus migratorius	American Robin	-	-	MBCA	L5	*	
	Haliaeetus leucocephalus	Bald Eagle	-	SC	FWCA(P)	-		*
	Icterus galbula	Baltimore Oriole	-	-	MBCA	L5	*	
	Riparia riparia	Bank Swallow	-	THR	MBCA	L3		*
	Hirundo rustica	Barn Swallow		THR	MBCA	L4	*	
	Ceryle alcyon	Belted Kingfisher	-	-	FWCA(P)	L4	*	
	Poecile atricapillus	Black-capped Chickadee	-	-	MBCA	L5	*	
	Nycticorax nycticorax	Black-crowned Night Heron	-	-	MBCA	L3		*
	Polioptila caerulea	Blue-gray Gnatcatcher	-	-	MBCA	L4	*	
	Cyanocitta cristata	Blue Jay	-	-	FWCA(P)	L5	*	
	Dolichonyx oryzivorus	Bobolink	THR	THR	MBCA	L2		*
	Molothrus ater	Brown-headed Cowbird	-	-	-	L5	*	
	Branta canadensis	Canada Goose	-	-	MBCA	L5	*	
	Bombycilla cedrorum	Cedar Waxwing	-	-	MBCA	L5	*	
	Dendroica pensylvanica	Chestnut-sided Warbler	-	-	MBCA	L3	*	

TABLE 7.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA BY LGL AND SECONDARY SOURCE DATA

Wildlife	Scientific Name	Common Name	Species Status under Legislation/ Local Sensitivity				Source of Species Identification	
			Canada SARA	Ontario ESA	Legal Status	Local	LGL[1]	Secondary Source[2]
	Chaetura pelagica	Chimney Swift	THR	THR	MBCA	L4		*
	Spizella passerina	Chipping Sparrow	-	-	MBCA	L5	*	
	Petrochelidon pyrrhonota	Cliff Swallow	-	-	MBCA	L5	*	
	Quiscalus quiscula	Common Grackle	-	-	-	L5	*	
	Chordeiles minor	Common Nighthawk	THR	SC	MBCA	L3		*
	Geothlypis trichas	Common Yellowthroat	-	-	MBCA	L4		*
	Accipiter cooperii	Cooper's Hawk	-	-	FWCA(P)	L4		*
	Picoides pubescens	Downy Woodpecker	-	-	MBCA	L5	*	
	Tyrannus tyrannus	Eastern Kingbird	-	-	MBCA	L4	*	
	Sturnella magna	Eastern Meadowlark	THR	THR	MBCA	L3		*
	Sayornis phoebe	Eastern Phoebe	-	-	MBCA	L5	*	
	Sturnus vulgaris	European Starling	-	-	-	L+	*	
	Aquila chrysaetos	Golden Eagle	-	END	FWCA(P)	-		*
	Dumetella carolinensis	Gray Catbird	-	-	MBCA	L4	*	
	Ardea herodias	Great Blue Heron	-	-	MBCA	L3	*	
	Butorides virescens	Green Heron	-	-	-	L4	*	
	Picoides villosus	Hairy Woodpecker	-	-	MBCA	L4	*	
	Carpodacus mexicanus	House Finch	-	-	MBCA	L+	*	
	Passer domesticus	House Sparrow	-	-	-	L+	*	
	Troglodytes aedon	House Wren	-	-	MBCA	L5	*	
	Limosa haemastica	Hudsonian Godwit	-	-	MBCA	-		*
	Passerina cyanea	Indigo Bunting	-	-	MBCA	L4	*	
	Ixobrychus exilis	Least Bittern	THR	THR	MBCA	L2		*
	Zenaida macroura	Mourning Dove	-	-	MBCA	L5	*	
	Oporornis philadelphia	Mourning Warbler	-	-	MBCA	L3	*	
	Vermivora ruficapilla	Nashville Warbler	-	-	MBCA	L3	*	

TABLE 7.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA BY LGL AND SECONDARY SOURCE DATA

Wildlife	Scientific Name	Common Name	Species Status under Legislation/ Local Sensitivity				Source of Species Identification	
			Canada SARA	Ontario ESA	Legal Status	Local	LGL[1]	Secondary Source[2]
	Cardinalis cardinalis	Northern Cardinal	-	-	MBCA	L5	*	
	Colaptes auratus	Northern Flicker	-	-	MBCA	L4		*
	Stelgidopteryx serripennis	Northern Rough-winged Swallow	-	-	MBCA	L4		*
	Icterus spurius	Orchard Oriole	-	-	MBCA	L5		*
	Falco peregrinus/anatum/tundrius	Peregrine Falcon	SC	SC	FWCA(P)	L4		*
	Dendroica pinus	Pine Warbler	-	-	MBCA	L4		*
	Sitta canadensis	Red-breasted Nuthatch	-	-	MBCA	L4		*
	Vireo olivaceus	Red-eyed Vireo	-	-	MBCA	L4	*	
	Phalaropus lobatus	Red-necked Phalarope	THR	SC	MBCA	L3		*
	Buteo jamaicensis	Red-tailed Hawk	-	-	FWCA(P)	L5	*	
	Agelaius phoeniceus	Red-winged Blackbird	-	-	-	L5	*	
	Columba livia	Rock Dove (Pigeon)	-	-	-	L+	*	
	Pheucticus ludovicianus	Rose-breasted Grosbeak	-	-	MBCA	L4	*	
	Buteo lagopus	Rough-legged Hawk	-	-	FWCA(P)	-		*
	Passerculus sandwichensis	Savannah Sparrow	-	-	MBCA	L4	*	
	Calidris pusilla	Semipalmated Sandpiper	-	-	MBCA	-		*
	Melospiza melodia	Song Sparrow	-	-	MBCA	L5	*	
	Actitis macularius	Spotted Sandpiper	-	-	MBCA	L4	*	
	Melospiza georgiana	Swamp Sparrow	-	-	MBCA	L4	*	
	Cygnus buccinator	Trumpeter Swan	-	-	MBCA	L+	*	
	Vireo gilvus	Warbling Vireo	-	-	MBCA	L5	*	
	Sitta carolinensis	White-breasted Nuthatch	-	-	MBCA	L4		*
	Empidonax traillii	Willow Flycatcher	-	-	MBCA	L4	*	
	Aix sponsa	Wood Duck	-	-	MBCA	L4	*	
	Dendroica petechia	Yellow Warbler	-	-	MBCA	L5	*	

TABLE 7.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA BY LGL AND SECONDARY SOURCE DATA

Wildlife	Scientific Name	Common Name	Species Status under Legislation/ Local Sensitivity				Source of Species Identification	
			Canada SARA	Ontario ESA	Legal Status	Local	LGL[1]	Secondary Source[2]
Mammals	*Neovison vison*	American Mink	-	-	FWCA(F)	L4	*	
	Sylvilagus floridanus	Eastern Cottontail	-	-	FWCA(G)	L4	*	*
	Sciurus carolinensis	Eastern Gray Squirrel	-	-	FWCA(G)	L5	*	
	Castor canadensis	Beaver	-	-	FWCA(F)	L3	*	
	Microtus pennsylvanicus	Meadow Vole	-	-	-	L4		*
	Ondatra zibethica	Muskrat	-	-	FWCA(F)	L4	*	
	Procyon lotor	Northern Raccoon	-	-	FWCA(F)	L5	*	
	Tamiasciurus hudsonicus	Red Squirrel	-	-	FWCA(F)	L4	*	
	Odocoileus virginianus	White-tailed Deer	-	-	FWCA(G)	L4	*	

SARA – federal *Species at Risk Act*:
END - Endangered
THR – Threatened
SC - Special Concern

ESA - *Ontario Endangered Species Act*, 2007
END – Endangered
THR – Threatened
SC - Special Concern

Source of Species Identification:
[1]Species recorded within the study area during field investigations (LGL 2019).
[2]Species identified by secondary source data, including Ontario Reptile and Amphibian Atlas, CLOCA and TRCA.

Other:
Significant Wildlife Habitat Technical Guide:
SWH – Area Sensitive Species
INT - Interior Species
TRCA – Toronto and Region Conservation Authority L Rank (1-5) – Sensitive Species include those ranked as L1 to L3.
For definitions of species ranks, refer to **Appendix G.**

Legal Status:
MBCA - *Migratory Birds Convention Act*
ESA - E*ndangered Species Act, 2007*
SARA - *Species at Risk Act*
FWCA - *Fish and Wildlife Conservation Act*
(P) Protected Species (G) Game species (F) Furbearing mammals

Thirty-six of the bird species documented by LGL Limited are considered migratory and are regulated under the MBCA, while three species, Blue Jay (*Cyanocitta cristata*), Red-tailed Hawk (*Buteo jamaicensis*) and Belted Kingfisher (*Ceryle alcyon*), are protected under the *Fish and Wildlife Conventions Act* (FWCA). Only eight of the observed bird species are not under any legislative protection: House Sparrow (*Passer domesticus*), Brown-headed Cowbird (*Molothrus ater*), European Starling (*Sturnus vulgaris*), Red-winged Blackbird (*Agelaius phoeniceus*), Rock Dove (*Columba livia*), American Crow (*Corvus brachyhrynchos*), Green Heron (*Butorides virescens*) and, Common Grackle (*Quiscalus quiscula*). Four of the species observed are considered area sensitive according to the Significant Wildlife Habitat Technical Guide (MNR 2000): Savannah Sparrow *(Passerculus sandwichensis*), Hairy Woodpecker (*Picoides villosus*), Blue-gray Gnatcatcher (*Polioptila caerulea*) and American Redstart (*Setophaga ruticilla).* No species of concern according to TRCA were documented; however, three species, Savannah Sparrow, Nashville Warbler (*Vermivora ruficapilla*) and Chestnut-sided Warbler (*Dendroica pensylvanica*) are considered Level 1 (highest priority of conservation concern) within Durham and Toronto (Couturier, 1999).

Three species, American Robin (*Turdus migratorius*), Canada Goose (*Branta canadensis*) and Red-winged Blackbird, were confirmed breeding within the DSBRT study area based on the observation of a nest with young/recently fledged young. The American Robin nest was located under the West Duffins bridge at breeding bird station 17 (Crossing 12) and the Red-winged Blackbird young were documented at breeding bird station 19 (Crossing 13). The Canada Goose young were observed at breeding bird station 20. These nests/confirmed breeding locations are presented on **Figures NER-1a-1i**. The remaining 44 species were considered either observed, possible, or probable breeders. No stick nests or other nests, or evidence of nesting by other migratory birds, were observed during field investigations.

Of the 22 additional bird species identified through secondary sources, seventeen are considered migratory and are regulated under the MBCA, while five species, Peregrine Falcon (*Falco peregrinus/anatum/tundrius*), Golden Eagle (*Aquila chrysaetos*), Rough-legged Hawk (*Buteo lagopus*), Bald Eagle (*Haliaeetus leucocephalus*) and Coopers Hawk (*Accipiter cooperii*), are protected under the FWCA. Eight of the species identified are considered area sensitive according to the Significant Wildlife Habitat Technical Guide (MNR 2000): Bald Eagle, Bobolink (*Dolichonyx oryzivorus),* Coopers Hawk, Eastern Meadowlark (*Sturnella magna*), Least Bittern (*Ixobrychus exilis*), Pine Warbler (*Dendroica pinus*), White-breasted Nuthatch (*Sitta canadensis*), and Red-breasted Nuthatch (*Sitta canadensis*). Seven of the species identified are considered species of concern according to TRCA including Red-necked Phalarope (*Phalaropus lobatus*), Least Bittern, Eastern Meadowlark, Common Nighthawk (*Chordeiles minor*), Bobolink, Black-crowned Night Heron (*Nycticorax nycticorax*), and Bank Swallow (*Riparia riparia*). Four species, Least Bittern, Common Nighthawk, Black-crowned Night Heron and Bald Eagle, are considered Level 1 (highest priority of conservation concern) within Durham. Within Toronto, only Least Bittern, Common Nighthawk and Black-crowned Nighthawk are considered Level 1 (highest priority of conservation concern).

An additional ten SAR birds were identified as being located in the vicinity of the study area by secondary source data (CLOCA 2019b, NHIC 2019a and TRCA 2019b), and each species is discussed further in **Section 4i.**

Mammals

Eight mammal species were identified during LGL's 2019 field investigations in the study area (see **Table 7** and **Appendix I** for more details). Eastern gray squirrel (Sciurus carolinensis), white-tailed deer (*Odocoileus virginianus*), and eastern cottontail (*Sylvilagus floridanus*) were identified across a variety of habitats within multiple municipalities of the study area. Within Toronto, eastern gray squirrel (along with

red squirrel (*Tamiasciurus hudsonicus*)) was located near the Highland Creek valleylands. Eastern gray squirrel was also located within the West Duffin Creek valleylands (Ajax). White-tailed deer were observed within the Rouge River valley (Toronto) and near Petticoat Creek (Pickering). Eastern cottontail was found in almost all municipalities, typically within watercourse valleylands. Fresh beaver (*Castor canadensis*) activity was also noted at Pine Creek and Lynde Creek.

Additionally, a raccoon (*Procyon lotor)* family was observed within a highly urban area along Kingston Road in Pickering. Muskrat (*Ondatra zibethicus*) was also observed within the vicinity of the Carruthers Creek valleylands (Ajax), and American Mink (*Neovison vison*) within the Pringle Creek valleylands (Whitby). The mammal species documented by LGL represent an assemblage that readily utilizes human influenced landscapes.

Two mammal species (including one not identified during LGL's 2019 field investigations: meadow vole (*Microtus pennsylvanicus*)) have been identified within the study area based on records received from TRCA (2019). Species recorded by TRCA also include eastern cottontail. Based on the habitat types present, additional mammal species which prefer open-county/agricultural, thicket, deciduous forest, coniferous forest, mixed forest, wetland, aquatic and anthropogenic habitats have the potential to be found within the study area. Generally, the mammal species expected within the study area represent an assemblage that readily utilizes human influenced landscapes.

None of the mammal species identified in the study area (by LGL's field investigations and by the TRCA element occurrence data) are designated as SAR. All of the mammal species identified within the study area are protected under the FWCA with the exception of meadow vole. One mammal species recorded in the study area, Beaver, is considered a sensitive species (as defined by TRCA L Rank: 1-3; **Table 7**).

In addition to incidental observations of mammals during all field visits, a high-level bat habitat characterization was completed in conjunction with the tree inventory in winter/spring 2020. Results of the bat habitat characterization are discussed in **Section 4i.**

4h. Significant Wildlife Habitat

The Provincial Policy Statement defines wildlife habitat as: "*areas where plants, animals, and other organisms live, and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species*."

Criteria for determining the significance of wildlife habitat are provided by the MNRF. The DSBRT study area is located within MNRF Ecoregion 6E and Ecoregion 7E (see **Figure 1**). Therefore, the site is subject to the Significant Wildlife Habitat Criteria Schedules for Ecoregions 6E and 7E (MNRF 2015). The following types of significant wildlife habitat are identified for Ecoregions 6E and 7E:

- Seasonal concentration areas of animals;
- Rare vegetation communities or specialized habitats for wildlife;
- Habitats of species of conservation concern; and,
- Animal movement corridors.

Seasonal concentration areas may include waterfowl stopover and staging areas, shorebird migratory stopover areas, raptor wintering areas, bat hibernacula or maternity colonies, turtle wintering areas, reptile

hibernacula, colonial nesting bird sites, migratory butterfly stopover areas, landbird migratory stopover areas or winter deer yards. During LGL's 2019 field survey, no seasonal concentration areas were found within or in proximity to the study area. No rare vegetation communities or specialized habitats for wildlife were found within the study area; nor were any habitats for rare (provincially ranked S1 to S3 species) or special concern species found.

Although no Significant Wildlife Habitat was documented as per the Provincial Policy Statement, many portions of the study area (as noted in **Section 4g**; all creeks and associated valley and riparian areas) do provide important local and regional animal movement corridors.

4i. Species at Risk

A total of 16 SAR (as well as endangered bat species) have been recorded in the vicinity of the DSBRT study area by secondary source data, including data obtained from MNRF (NHIC), DFO, TRCA and CLOCA. These 16 species include three aquatic SAR, one plant SAR, and 12 wildlife SAR (as well as endangered bat species). However, only two of these SAR were identified within the vicinity of the study area during LGL's field investigations including Barn Swallow (regulated as 'Threatened' under the Ontario ESA) and butternut (regulated as 'Endangered' by both the Ontario ESA and Canada SARA). One additional plant SAR (Kentucky coffee tree – regulated as 'Threatened' under the Ontario ESA and Canada SARA) was identified during the arborist investigation. The 17 aquatic, plant and wildlife SAR recorded within the vicinity of the study area (and the endangered bat species) are further discussed below.

Aquatic Species at Risk

A search of the NHIC database (MNRF 2019a), the DFO aquatic SAR mapping (2019) as well as records from TRCA and CLOCA, and personal communication with MECP, was completed and identified three aquatic SAR that have been reported from the watercourses found within the study area including American Eel (*Anguilla rostrate*), Redside Dace (*Clinostomus elongatus*) and Eastern Pondmussel (*Ligumia nasuta*).

American Eel, listed as 'Endangered' provincially and 'Threatened' federally (Committee on the Status of Endangered Species in Canada - COSEWIC), has been reported from Oshawa Creek (Crossing 23) within close proximity to the study area by CLOCA and NHIC mapping. According to MECP, six additional watercourses may provide habitat for this species as well, but its presence requires further study. Provincially, this species receives protection under the Ontario ESA 2007. Although American Eel is listed federally as 'Threatened' by COSEWIC, it has 'No Status' under the federal Canada SARA and therefore is not regulated federally. Recent experience with this species indicates that it will not require permitting under the Ontario ESA 2007 due to its general habitat requirements and transient behaviour. However, its presence in Oshawa Creek will automatically trigger a review by DFO under the *Fisheries Act* for any works occurring within the high water mark of the watercourse.

Redside Dace, a provincially and federally 'Endangered' species, were reported from two squares encompassing Carruthers Creek (Crossing 14) in 1999. It is not known whether this species still exists within this watercourse as it was not mapped by DFO 2021 mapping, but was reported at Crossing 12 (West Duffins Creek). Redside Dace occupied habitat at Crossing 12, along with contributing habitat at Crossing 13 (Duffins Creek), was reported by MECP in December 2021. In addition, MECP indicated that Crossing 18 (Lynde Creek) is possibly occupied Redside Dace habitat, but study is required to make a definitive determination. This species is protected under the Ontario ESA 2007 and Canada SARA. Further consultation with DFO and MECP is needed to determine next steps regarding permitting for this species.

Eastern Pondmussel is mapped on DFO SAR mapping (2019) as occurring within the Rouge River marsh habitat associated with its confluence with Lake Ontario downstream of Kingston Road. However, the shaded area of habitat shown on the mapping indicates that this habitat extends north of the Highway 401 crossing, but south of Kingston Road. As such, a portion of the study area (around Crossing 4) contains potential habitat for this species. However, as Eastern Pondmussel is listed as 'Special Concern' both provincially and federally, it is not protected under either the Ontario ESA 2007 or Canada SARA.

Plant Species at Risk

The MNRF Natural Heritage Areas Mapping identified one plant SAR (butternut – regulated as 'Endangered' by both the Canada SARA and the Ontario ESA) as being recorded within the DSBRT study area. This butternut tree element occurrence record was identified within the vicinity of Brock Road and West Duffins Creek, within the City of Pickering/Town of Ajax. However, during field investigations, no butternut trees were identified within this portion of the study area. Within the Town of Whitby, one butternut tree was observed from within the ROW, close to the edge of a cultural meadow and cattail shallow marsh, north of Dundas Street. This tree is located outside of the ROW. In addition, three butternuts were identified during the arborist survey within the vicinity of Morningside Park in the City of Toronto. The location of these three butternuts are presented in the Arborist Report (LGL 2021). **Section 5i** discusses the assessment of impacts to the identified butternut trees and commitments to future work during detail design.

In addition, a total of 125 Kentucky coffee trees were identified as planted amenity trees within the study area during the arborist survey. The locations of these trees are presented in the Arborist Report (LGL 2021). Kentucky coffee tree is regulated as 'Threatened' under the Ontario ESA and the Canada SARA. Management Biologists with the MECP have advised that streetscape Kentucky coffee trees are likely cultivars and, as such, do not require Ontario ESA authorizations.

No other plant SAR ('Threatened', 'Endangered', or 'Special Concern') were identified during LGL's 2019 field investigations.

Seventeen plant species of concern or regionally rare plant species were identified within vegetation communities across the study area. **Table 8** presents a summary of these species with the associated vegetation community and segment or municipality in which each was observed. Plant species listed in **Table 8** are only presented in vegetation communities within the respective region or municipality in which the species' status is TRCA L1 to L3 or rare in Toronto or Durham (Varga 2000). All of the species listed in **Table 8** have populations that are provincially secure. Species locations for many of the species listed in **Table 8** are presented on **Figures NER-1a to NER-1i**. Several species with frequent presence including meadow horsetail (*Equisetum pratense*), poison-ivy (*Rhus radicans* ssp. *negundo*) and white spruce are not presented. Gray-headed coneflower (*Ratibida pinnata*) was identified within the Town of Ajax. This species is ranked provincially as S2S3 with a population that is vulnerable to imperilled. Numerous individuals were observed within a manicured area/cultural meadow associated with Carruthers Creek, adjacent to Casino Ajax (Ajax Downs). Gray-headed coneflower is typical of prairie habitat and it is very likely that this species was included in a seed mix installed at some point within the area.

Wildlife Species at Risk

A total of 12 wildlife SAR, including one herpetofauna and 11 birds (as well as endangered bat species) have been recorded within the vicinity of the DSBRT study area based on secondary source data. These

secondary source records have been attributed to several data sources as described below. As noted in **Section 4g**, only one wildlife SAR (Barn Swallow) was confirmed at one location within the study area during LGL's 2019 field investigations. Based on the habitat where the Barn Swallow was observed, it is considered possibly breeding within the study area.

Wildlife occurrence record data from NHIC (2019a) identified records for four wildlife SAR which have been recorded in the vicinity of the study area including three bird species (Peregrine Falcon (*Falco peregrinus)*, Bank Swallow (*Riparia riparia)* and Eastern Meadowlark (*Sturnella magna)*) and one herpetofauna species (Snapping Turtle).

Wildlife occurrence record data received from CLOCA (2019b) included records for all 12 identified wildlife SAR which have been recorded in areas around the study area in the past 20 years, including 11 bird species and one herpetofauna species listed below.

Bald Eagle	*Haliaeetus leucocephalus*	Eastern Meadowlark	*Sturnella magna*
Bank Swallow	*Riparia riparia*	Golden Eagle	*Aquila chrysaetos*
Barn Swallow	*Hirundo rustica*	Least Bittern	*Ixobrychus exilis*
Bobolink	*Dolichonyx oryzivorus*	Peregrine Falcon	*Falco peregrinus*
Chimney Swift	*Chaetura pelagica*	Red-necked Phalarope	*Phalaropus lobatus*
Common Nighthawk	*Chordeiles minor*	Snapping Turtle	*Chelydra serpentine*

TABLE 8.
REGIONALLY RARE PLANT SPECIES RECORDED WITHIN THE STUDY AREA

Plant Community	Scientific Name	Common Name	Rarity Status[1]			Study Area Segments (Municipality)[2]				
			TRCA	Toronto - Varga	Durham - Varga	City of Toronto	City of Pickering	Town of Ajax	Town of Whitby	City of Oshawa
FOD5-3a, FOM3-2, MAS2-1e, SWD4	*Equisetum pratense*	meadow horsetail	L3	R1		X				
M, H, CUM1-1a/CUW1a, CUM1-1e/CUW1e, CUM1-1g, CUM1-1i, CUM1-1k, CUP1-3, CUT1a, CUT1b/CUW1b, CUW1b, CUW1e, CUW1h, CUW1v, FOD5c	*Picea glauca*	white spruce	L3			X				
CUP1	*Boehmeria cylindrica*	false nettle		R5		X				
H1, CUM1-1i, CUM1-1n	*Larix laricina*	tamarack	L3	R3		X				
M, CUP3-2b, CUT1b	*Pinus resinosa*	red pine	L2	R3		X				
FOD5-3b, FOM6-1	*Caulophyllum thalictroides*	blue cohosh	L3			X				
M, FOD7-3	*Quercus alba*	white oak	L3		R4	X				
H1, CUP3-2a	*Physocarpus opulifolius*	ninebark	L3	R6	R2	X				
CUW1r, FOM3-2	*Euonymus obovatus*	running strawberry-bush	L3	R5		X				
M	*Rhus aromatica*	fragrant sumac			R1		X	X		
M, FOD5b	*Rhus glabra*	smooth sumac			R1			X		X
M, CUM1-1e, CUP1-8b, FOC4-1b, FOD5-1a, FOD5-7, MAS2-1a, SWM3	*Rhus radicans* ssp. *negundo*	poison-ivy		R5		X				
CUW1m, CUW1r, CUW1w	*Symphyotrichum*	sky blue aster		R6	R2			X	X	X

TABLE 8.
REGIONALLY RARE PLANT SPECIES RECORDED WITHIN THE STUDY AREA

Plant Community	Scientific Name	Common Name	Rarity Status[1]			Study Area Segments (Municipality)[2]				
			TRCA	Toronto - Varga	Durham - Varga	City of Toronto	City of Pickering	Town of Ajax	Town of Whitby	City of Oshawa
	oolentangiense									
FOD5-3a, FOD6-5, FOM3-2	*Symplocarpus foetidus*	skunk-cabbage		R6	R4	X				
CUM1-1g/CUW1g, MAM2-2/MAS2, MAS2-1a	*Carex lacustris*	lake-bank sedge		R5		X				
CUM1-1p, CUW1k	*Heracleum lanatum*	cow-parsnip			R4			X		X
CUM1-1f, CUW1c, CUW1i, CUW1l, CUW1s	*Hackelia virginiana*	Virginia stickweed			R4		X	X		

[1]Refer to **Appendix G** for Acronyms and Definitions used in species lists.
[2]Segments by municipality delineated across the study area are outlined in **Section 4f**, and are presented on **Figures NER-1a** to **NER-1i.**

TRCA also provided wildlife occurrence record data and identified one wildlife SAR (Bank Swallow), recorded in 2005.

Each of the 12 wildlife SAR recorded within the vicinity of the study area (and the endangered bat species), their respective legal status, dates observed, preferred habitat/biological requirements, habitat suitability of the study area, likelihood of presence within the study area and survey results (if completed) are discussed below and in **Table 9.**

Additional wildlife SAR records were provided by MNRF in February 2019 through Metrolinx (MNRF 2019d). The MNRF data describes 32 additional wildlife SAR (not documented by other secondary sources) including 21 birds, 3 invertebrates, 5 mammals (including 4 bats) and 3 herpetofauna. These SAR have been recorded within the five DSBRT municipalities (City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa) but are not specific to the DSBRT study area. As a result, it is not known whether these 32 additional wildlife SAR were recorded within the vicinity of the study area. **Appendix J** provides further details on these additional SAR including their location, legal status, dates observed, biological requirements/preferred habitat and habitat suitability of the study area/likelihood of presence within the study area.

Golden Eagle
Natural heritage data provided by CLOCA indicated records of Golden Eagle within the last 20 years within the vicinity of the study area. Golden Eagle is regulated 'Endangered' under the Ontario ESA but has no designation under the Canada SARA. Golden Eagles nest in remote, undisturbed areas, usually building their nests on ledges on a steep cliff or riverbank, but they will also use large trees if needed. In Ontario, breeding Golden Eagles are presently known only from the Hudson Bay Lowland. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Golden Eagle were identified during LGL's 2019 breeding bird field investigations.

Chimney Swift
Natural heritage data provided by CLOCA indicated records of Chimney Swift within the last 20 years within the vicinity of the study area. Chimney Swift is regulated as 'Threatened' under the Ontario ESA and Canada SARA. The Chimney Swift nests in urban and rural areas, largely in chimneys but also in hollowed trees or caves, and forages mainly over open areas (over forests, ponds, and residential areas). Field investigations in 2019 identified marginally suitable habitat for this species, including anthropogenic areas and open habitats that were identified across the study area. However, no Chimney Swifts were identified during LGL's 2019 field investigations.

Common Nighthawk
Natural heritage data provided by CLOCA indicated records of Common Nighthawk within the last 20 years within the vicinity of the study area. Common Nighthawk is listed as 'Special Concern' under the Ontario ESA and is regulated as 'Threatened' under the Canada SARA; however, this species is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA. Common Nighthawk nest in a wide range of open, vegetation-free rural and urban habitats such as logged forests, forest clearings, grasslands, open forests, and rocky outcrops. They may also nest on flat gravel rooftops. Open habitats (e.g. parking lots, parkland and gravel rooftops) which have the potential to support Common Nighthawk, were identified across much of the study area. However, no Common Nighthawks were observed during LGL's 2019 breeding bird surveys.

TABLE 9.
WILDLIFE SPECIES AT RISK SUMMARY

Scientific Name	Common Name	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Aquila chrysaetos	Golden Eagle	END		2015	Typically inhabits dry, rugged open country and grasslands, over which it soars in search of small mammals and other prey. This eagle usually constructs a large stick nest on a cliff ledge; it occasionally nests in trees.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Chaetura pelagica	Chimney Swift	THR	THR	2018	Urban/rural areas where the individuals have access to chimneys to use as nesting and resting sites. Open areas required for foraging.	Urbanized areas/open habitats associated with the study area have the potential to function as suitable habitat for this species.
Chordeiles minor	Common Nighthawk	SC	THR	2013	Nests in a wide range of open, vegetation-free habitats (i.e., logged forests, forest clearings, grasslands, open forests and rocky outcrops).	Open habitats suitable to support this species are present within the study area. Gravel rooftops, in particular, have the potential to provide nesting habitat for this species.
Dolichonyx oryzivorus	Bobolink	THR	THR	2017	Open country/grasslands and agricultural.	Open country, meadow and agricultural habitat types at the locations identified provide habitat suitable to support Bobolink, although the open-country habitats identified during LGL's 2019 surveys typically did not consist of grass-dominated vegetation as preferred by this species.
Falco peregrinus/anatum/tundrius	Peregrine Falcon	SC	SC	2018	This species nests on tall building ledges in large cities or rocky cliffs.	Field investigations in spring/early summer of 2019 identified only marginally suitable habitat for this species.

TABLE 9.
WILDLIFE SPECIES AT RISK SUMMARY

Scientific Name	Common Name	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Haliaeetus leucocephalus	Bald Eagle	SC		2018	This species nests in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Hirundo rustica	Barn Swallow	THR		2018	Open country and agricultural.	Habitat considered suitable to support foraging Barn Swallow (open country and agricultural) was identified across much of the study area with the exception of forested areas. Field investigations undertaken by LGL in late spring/early summer of 2019 identified foraging Barn Swallow at one site within the study area.
Ixobrychus exilis	Least Bittern	THR	THR	2014	Least Bittern are typically found in wetland communities, particularly large contiguous tracts of coastal wetland habitat.	No habitat considered suitable to support this species was identified within the study area.
Riparia riparia	Bank Swallow	THR		2017	Bank Swallows live along rivers, streams, lake shorelines, or reservoirs. Nests are excavated along vertical surfaces such as eroded stream banks, sand/gravel piles and road cuts.	Watercourses and other open areas, including eroded river banks, associated with the study area have the potential to function as suitable habitat for the species.
Sturnella magna	Eastern Meadowlark	THR	THR	2017	Open country, meadows and agricultural.	Open country, meadow and agricultural habitat types at the locations identified provide habitat suitable to support Eastern Meadowlark, although open-country habitats identified during LGL's 2019 surveys typically did not consist of grass-dominated vegetation as preferred by this species.

TABLE 9.
WILDLIFE SPECIES AT RISK SUMMARY

Scientific Name	Common Name	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Phalaropus lobatus	Red-necked Phalarope	SC	SC	2019	Red-necked phalaropes are small shorebirds that prefer breeding areas dominated by graminoid or emergent aquatic vegetation and tend to avoid sparsely vegetated or shrubby habitats.	No habitat considered suitable to support this species was identified within the study area.
Chelydra serpentina	Snapping Turtle	SC	SC	2018	Aquatic habitats.	Aquatic habitats suitable to support this species are present within the study area. Potential exists for Snapping Turtles (from surrounding aquatic communities) to use road-shoulders present within the study area as nesting habitat. Similarly, Snapping Turtles from surrounding areas may use habitats within the study area during overland movements from one aquatic area to another.

Bobolink
Natural heritage data provided by CLOCA indicated records of Bobolink within the last 20 years within the vicinity of the study area. The Bobolink, a species with a broad distribution across southern Ontario, is regulated 'Threatened' under the Ontario ESA and Canada SARA. Bobolinks are typically described as residents of grassland communities with an abundance of grass species that are typical of old fields (Cadman *et al.* 2007). Bobolinks are also commonly associated with agricultural lands. Open-country, meadow and agricultural habitat types found across the study area have the potential to provide habitat suitable to support this species. However, the open-country habitats identified during LGL's 2019 surveys typically did not consist of grass dominated vegetation as preferred by this species. No Bobolinks were identified during LGL's 2019 field investigations.

Peregrine Falcon
Natural heritage data provided by CLOCA and NHIC indicated records of Peregrine Falcon within the last 20 years within the vicinity of the study area. The Peregrine Falcon is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not a regulated species under either act. Historically, the Peregrine Falcon has nested almost exclusively on rocky ledges near waterbodies; however, this species now nests on tall building ledges in large cities. Only marginally suitable for this species was identified during field investigations. Breeding bird surveys conducted in 2019 by LGL did not identify this species.

Bald Eagle
Natural heritage data provided by CLOCA indicated records of Bald Eagle within the last 20 years within the vicinity of the study area. Bald Eagle is listed 'Special Concern' under the Ontario ESA (but is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA) and has no status under the Canada SARA. Bald Eagles nest in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting. In Ontario, they nest throughout the north, with the highest density in the northwest near Lake of the Woods. Historically they were also relatively common in southern Ontario, especially along the shore of Lake Erie. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Bald Eagle were identified during LGL's 2019 breeding bird field investigations.

Barn Swallow
Natural heritage data provided by CLOCA indicated records of Barn Swallow within the last 20 years within the vicinity of the study area. Barn Swallow is regulated as 'Threatened' under the Ontario ESA. Barn Swallow is not a regulated species under the Canada SARA. The Barn Swallow generally builds mud nests on bridges, walls, ledges and barns (Cadman *et al.* 2007). The Barn Swallow typically forages in open areas such as agricultural lands, meadows or over water. Habitat considered suitable to support foraging Barn Swallow was identified across much of the study area, with the exception of forested habitats. Nesting habitat for this species has the potential to be found in the study area, including bridges, buildings and other man-made structures. Breeding bird surveys conducted in 2019 documented one Barn Swallow at Station Number 12 within the City of Pickering; however, no nests were observed.

Least Bittern
Natural heritage data provided by CLOCA indicated records of Least Bittern within the last 20 years within the vicinity of the study area. The Least Bittern is regulated as 'Threatened' under the Ontario ESA and Canada SARA. Least Bittern are typically found in wetland communities, particularly large contiguous tracts of coastal wetland habitat. No habitat considered suitable to support this species was identified within the study area. Breeding bird surveys conducted in 2019 did not identify this species.

Bank Swallow
Natural heritage data provided by TRCA, CLOCA and NHIC indicated records of Bank Swallow within the last 20 years within the vicinity of the study area. Bank Swallow is regulated as 'Threatened' under the Ontario ESA but is not regulated under the Canada SARA. The Bank Swallow generally nests along rivers, streams, lake shorelines or reservoirs. Nests are excavated along vertical surfaces such as eroded stream banks, sand/gravel piles and road cuts. Field investigations undertaken by LGL in 2019 identified marginally suitable nesting habitat for this species, including eroded watercourse banks that were identified across the study area. However, no Bank Swallows were identified during LGL's 2019 breeding bird surveys.

Eastern Meadowlark
Natural heritage data provided by CLOCA and NHIC indicated records of Eastern Meadowlark within the last 20 years within the vicinity of the study area. The Eastern Meadowlark, a species with a broad distribution across southern Ontario, is regulated 'Threatened' under the Ontario ESA and the Canada SARA. The Eastern Meadowlark, formerly a prairie species, has adapted to agricultural practices of the European settlers (hayfields, pastures, etc.) (Cadman *et al.* 2007). As farming practices have become more efficient, Eastern Meadowlark numbers have declined. Open-country, meadow and agricultural habitat types found across the study area have the potential to provide habitat suitable to support this species. However, open-country habitats identified during LGL's 2019 surveys typically did not consist of grass dominated vegetation as preferred by this species. No Eastern Meadowlark were identified during LGL's 2019 field investigations.

Red-necked Phalarope
Natural heritage data provided by CLOCA indicated records of Red-necked Phalarope, with occurrence dates ranging from 1999 to 2019, within the vicinity of the study area. Red-necked Phalarope is listed as 'Special Concern' under the Ontario ESA and the Canada SARA. This species lives in coastal and inland marshes where it feeds in shallow ponds and nests on the grassy edges. It avoids mud and dense shrubs. The Red-necked Phalarope breeds on Hudson Bay and James Bay in the summer but during spring and fall migration may occasionally be observed in the rest of Ontario. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Red-necked Phalarope were identified during LGL's 2019 breeding bird field investigations.

Snapping Turtle
Natural heritage data provided by CLOCA and NHIC indicated records of Snapping Turtle within the last 20 years within the vicinity of the study area. The Snapping Turtle is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not a regulated species ('Endangered' or 'Threatened') under either act. Snapping Turtle is generally associated with aquatic settings such as lakes, ponds, bays and inlets. This is a highly aquatic species but Snapping Turtles may leave the water to seek out new aquatic habitats or to lay eggs. The potential exists for Snapping Turtles (from surrounding aquatic communities) to use road shoulders present within the study area as nesting habitat and Snapping Turtles from surrounding areas may use habitats within the study area during overland movements from one aquatic area to another. Suitable habitat for Snapping Turtle may include storm water management facilities, ponds, watercourses and other aquatic habitats found across the study area. Field investigations in spring/early summer of 2019 identified potentially suitable habitat for this species, including a variety of aquatic habitats identified across the study area. However, no Snapping Turtles were identified during LGL's 2019 field investigations; although no targeted surveys for this species were conducted.

Bats

Forest communities with mature trees have the potential to provide suitable roosting habitat for endangered bat species (all regulated bat species under the Ontario ESA), including eastern small-footed myotis (*Myotis leibii*), little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), and tri-coloured bat (*Perimyotis subflavus*). The Ontario ESA affords protection for endangered bat species (subsection 9(1)) and their habitat (subsection 10(1)). Given that species-specific habitat regulations have not yet been developed for SAR bats, habitat is protected according to the general definition provided in the Ontario ESA. Specifically, according to section 2(1), the Act protects "an area, on which the species depends, directly or indirectly, to carry on its life processes, including processes such as reproduction, rearing, hibernation, migration or feeding".

Mature trees which could contain suitable roosting habitat for SAR bats are likely present in association with treed portions of the study area. Lake Ontario, which is situated south of the study area, offers suitable foraging habitat for bat species. Additionally, many of the forests identified are generally part of larger vegetation communities that extend beyond the study area, typically associated with watercourses and valleylands. These watercourses also offer suitable foraging habitat. Little brown myotis and northern myotis will use cavities in the trees or exfoliating bark, while tri-coloured bat roosts in clumps of leaves in the foliage. Little brown myotis will frequently use buildings while the other three endangered bat species will use buildings, but far less frequently. Eastern small-footed myotis is a saxicolous (rock-loving) species and will frequently roost in rock piles, talus or crack and crevices in rock outcrops.

Within the study area, many forest communities were noted including several deciduous (FOD2-1, FOD3-1, FOD5-1, FOD5-3, FOD5-7, FOD5, FOD6-5 and FOD7-3), coniferous (FOC4-1) and mixed (FOM2, FOM3-2 and FOM6-1) forest types. In addition to forest communities, the following swamps may also provide habitat: Birch-Poplar Mineral Mixed Swamp (SWM3), and several deciduous swamps (SWD3, SWD3-4 and SWD4). Cultural community types identified that may also provide habitat include: Mineral Cultural Woodland (CUW1), along with various plantation types (CUP1, CUP1-3, CUP1-8, CUP2 and CUP3-2). In addition to the forest classification completed, a search for "bat trees" and a snag tree assessment was completed in winter/spring 2020 during leaf off conditions. Bat trees are those which have cavities, cracks, exfoliating bark or clumps of leaves that would be suitable for roosting. Typically trees that are considered candidate bat trees exhibit the following characteristics:

- tallest in the community;
- cavities/crevices often originating as cracks, scars, knot holes or woodpecker cavities;
- a diameter at breast height greater than 25 cm (for the purposes of this survey, trees with a DBH greater than 20 cm were included); and,
- loose or peeling bark.

The assessment of bat habitat found a variety of candidate snag habitat trees within the study area; a total of 48 trees were documented. Details of species and tree attributes are included in the **Table 10** and locations of snags are included in **Figures NER-1a to NER-1i**.

TABLE 10.
CANDIDATE SNAG HABITAT TREES AND TREE ATTRIBUTES

Tree ID	Species	DBH (cm)	Habitat Description	Municipality
3543	*Acer saccharum ssp. saccharum*	74	Knot hole	City of Oshawa
3590	*Acer platanoides*	55	Crack	City of Oshawa
1887	*Acer negundo*	85	Rot and cavity	City of Pickering

TABLE 10.
CANDIDATE SNAG HABITAT TREES AND TREE ATTRIBUTES

Tree ID	Species	DBH (cm)	Habitat Description	Municipality
5446	*Salix sp.*	61	Rot and cavity	City of Pickering
B7	*Fraxinus pennsylvanica*	48	Sloughing bark	City of Pickering
2678	*Aesculus hippocastanum*	41	Cavity at 2m 20cm opening	City of Pickering
2074	*Catalpa speciosa*	33	Cavity rot	City of Pickering
5456	*Acer negundo*	31	Crack	City of Pickering
1806	*Acer negundo*	23	Rot and broken leader cavity	City of Pickering
4821	*Prunus sp.*	22	Wound and rot crack	City of Pickering
5568	*Acer negundo*	21	Rot and cavity	City of Pickering
4870	*Acer platanoides*	20	Sloughing and wound	City of Pickering
6811	*Acer saccharum ssp. saccharum*	150	Crack rot	City of Toronto
5599	*Salix sp.*	80	Crack	City of Toronto
1240	*Acer negundo*	74	Rot and cavity	City of Toronto
1292	*Acer negundo*	70	Crack and rot	City of Toronto
7571	*Acer saccharinum*	67	Cavity at base	City of Toronto
B16	*Acer saccharum ssp. saccharum*	63	Multiple cavities and sloughing bark	City of Toronto
1377	*Acer negundo*	61	Rot and cavity	City of Toronto
5604	*Ulmus pumila*	55	Crack	City of Toronto
7101	*Pinus strobus*	49	One stem dead multiple cavities and sloughing bark	City of Toronto
6985	*Acer saccharum ssp. saccharum*	48	Crack	City of Toronto
6293	*Thuja occidentalis*	44	Wound cavity	City of Toronto
6334	*Thuja occidentalis*	40	Woodpecker holes	City of Toronto
5594	*Acer negundo*	37	Wound cavity	City of Toronto
5586	*Acer negundo*	33	Small cavity	City of Toronto
7649	*Morus alba*	32	Crack in stem over sidewalk	City of Toronto
6335	*Thuja occidentalis*	32	Large crack	City of Toronto
761	*Betula papyrifera*	31	Cavity	City of Toronto
6796	*Tsuga canadensis*	31	Cavities	City of Toronto
6416	*Acer negundo*	30	Crack	City of Toronto
594	*Acer saccharum ssp. saccharum*	27	One stem dead and cavities	City of Toronto
805	*Thuja occidentalis*	25	Cavity	City of Toronto
797	*Thuja occidentalis*	24	Cavities	City of Toronto
6253	*Malus sp.*	22	Crack	City of Toronto
5589	*Acer negundo*	21	Crack and rot	City of Toronto
6332	*Thuja occidentalis*	26	Wound cavity	City of Toronto
3172	*Populus deltoidesssp. deltoides*	73	Rot and cavity	Town of Ajax
4673	*Salix x sepulcralis*	70	Rot, cavity, and crack	Town of Ajax
4727	*Picea abies*	70	Cavity and rot	Town of Ajax
4695	*Acer platanoides*	60	Cavity and rot	Town of Ajax
4291	*Acer saccharinum*	58	Cavity	Town of Ajax
3272	*Acer negundo*	140	Cavity rot	Town of Whitby
3335	*Acer saccharum ssp. saccharum*	90	Cavity and sloughing bark	Town of Whitby
3270	*Acer platanoides*	76	Rot and cavity	Town of Whitby
3402	*Acer saccharum ssp. saccharum*	72	Cavity and rot	Town of Whitby
3378	*Aesculus hippocastanum*	55	Cavity	Town of Whitby
4159	*Acer platanoides*	55	Crack and frost rot	Town of Whitby

4j. Significant Natural Heritage Features

The natural heritage features, systems and policies identified in the local and regional municipal Official Plans (for the City of Toronto, Durham Region, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa) as well as the Greenbelt Plan areas and Rouge National Urban Park are described in **Sections 2d, 2e and 2j.** The following provides a description of the designated natural areas located within or in close proximity to the study area.

Designated Natural Areas

Designated natural areas include areas identified for protection by the MNRF, TRCA, CLOCA and upper and lower tier municipalities. All designated natural areas within the vicinity of the study area are presented in **Figure NER-2**. Those designated areas presented in **Figure 2** and **Figure NER-2** but not discussed below include natural areas that are over 120 m from the study area (both north and south) where impacts from the proposed DSBRT development will not occur.

Provincially Significant Wetlands

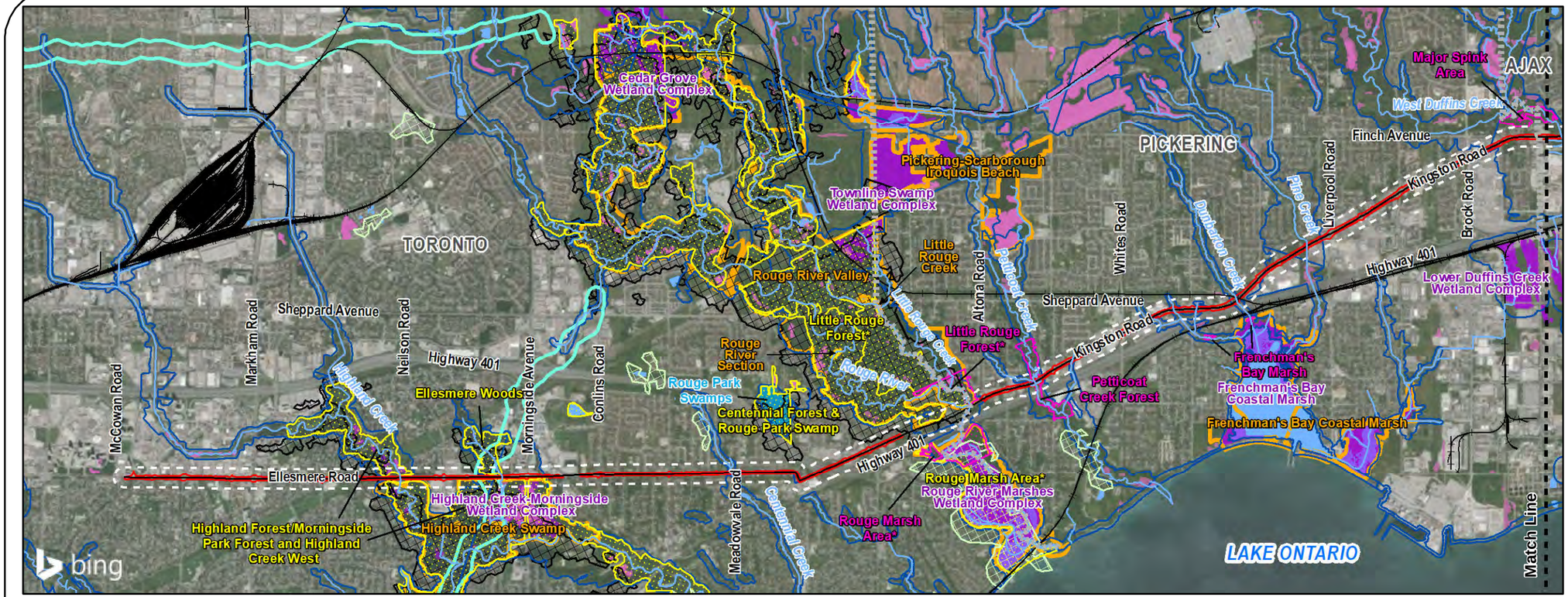
There are four Provincially Significant Wetlands (PSWs) located within the vicinity of the study area. In the City of Toronto is the Highland Creek-Morningside Wetland Complex located both north and south of Ellesmere Road and surrounding Morningside Avenue in the Highland Creek floodplain. In the City of Toronto and partly within the City of Pickering is the Rouge River Marshes Wetland Complex located south of the study area just beyond 120 m from the roadway. Within the City of Pickering is the Frenchman's Bay Coastal Marsh, which is located south of Highway 401 and is over 120 m from the roadway. In the Town of Whitby is the Lynde Creek Coastal Wetland Complex, located north, but primarily south of Dundas Street adjacent to the ROW. A description of each PSW is provided below and the locations are presented on **Figure NER-2**.

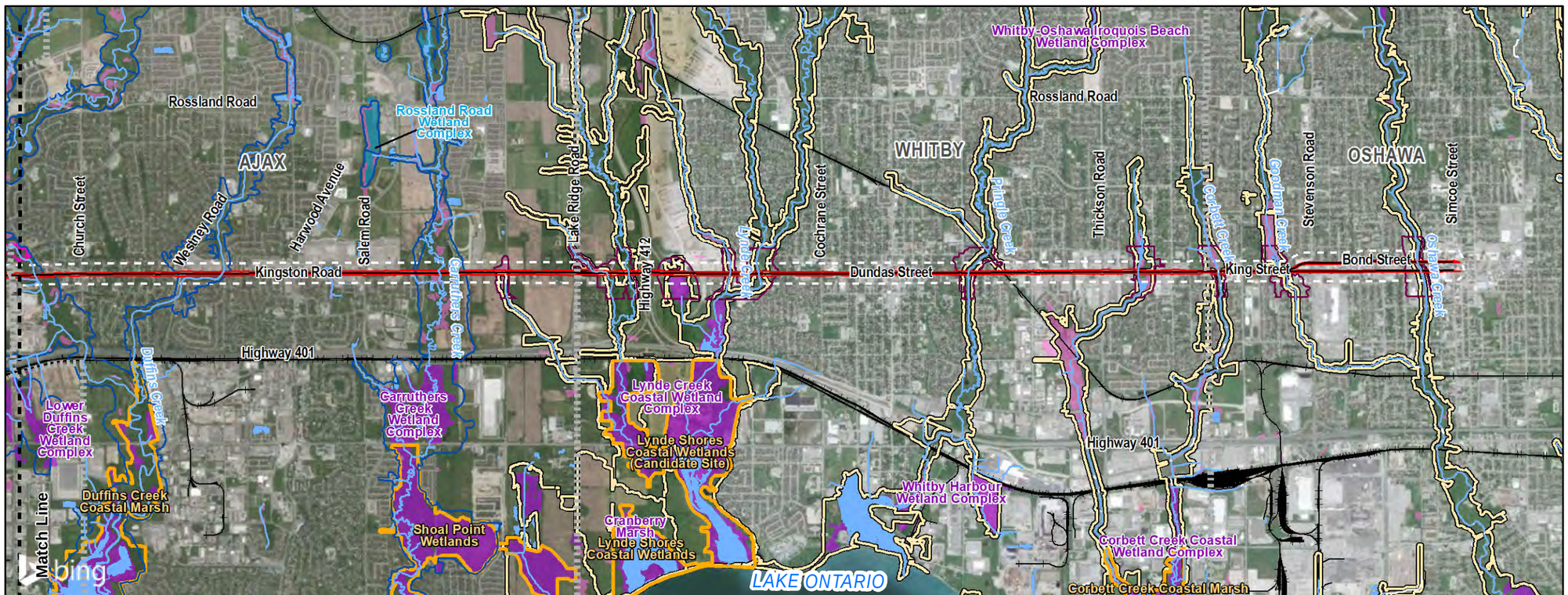
Highland Creek-Morningside Wetland Complex

Within the City of Toronto, the Highland Creek-Morningside Wetland Complex PSW consists of several wetlands located both north and south of Ellesmere Road within the Highland Creek floodplain. Wetlands within this PSW are also within the Highland Creek Swamp ANSI south of Ellesmere Road and within the Highland Forest/Morningside Park Forest and Highland Creek West ESA both south and north of Ellesmere Road. Portions of this PSW are located approximately 25 m south and approximately 32 m north, of the study area.

Rouge River Marshes Wetland Complex PSW

Within the City of Toronto, the Rouge River Marshes Wetland Complex PSW covers an area of 55.7 ha and is bounded by Lake Ontario and Highway 401. This PSW includes marshes along the floodplain of the Rouge River and coastal marshes at the river mouth. Floodplain wetlands on the east side of the Rouge River lies within the City of Pickering in Durham Region. Wetlands are comprised of swamp and marsh communities (North-South Environmental *et al.* 2012). This PSW is located approximately 200 m south of the study area.





LEGEND

- Study Area Limits/Centreline
- Railway
- Municipal Boundary
- Grading Limit
- Natural Heritage Investigation Area
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Regulation Limit (CLOCA)
- Regulation Limit (TRCA)
- Area of Natural and Scientific Interest (ANSI)
- Environmentally Significant Area (City of Toronto)
- Environmentally Significant Area (TRCA)
- Natural Heritage System (CLOCA)
- Evaluated Wetland Provincial
- Evaluated Wetland Other
- Wetland Not Evaluated per OWES
- Carolinian Core Natural Areas (Carolinian Canada)
- Isolated Natural Areas (Carolinian Canada)
- Existing and Potential Connections (Carolinian Canada)

* Both TRCA and City of Toronto data are shown.

Data Sources: Carolinian Canada Coalition, Central Lake Ontario Conservation Authority, Toronto and Region Conservation Authority, City of Toronto & Ontario Ministry of Natural Resources and Forestry (LIO).

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FEATURES OF CONFIRMED OR CANDIDATE PROVINCIAL SIGNIFICANCE

LGL LIMITED
environmental research associates

Project:	TA8893	**Figure:**	NER-2
Date:	November, 2021	**Prepared By:**	JJP
Scale:	1 : 60,000	**Checked By:**	LS

Frenchman's Bay Coastal Marsh PSW
The Frenchman's Bay Coastal Marsh PSW includes 45.2 hectares of coastal wetland habitat composed of 12% swamp and 88% marsh. Marsh habitat typically consists of robust emergents such as cattails, grasses and sedges, which are abundant to dominant within the marshes. Other plant species also include submerged aquatic vegetation (NHIC 2019b). This PSW is located south of Highway 401 and is over 120 m south of the study area.

Lynde Creek Coastal Wetland Complex PSW
Within the Town of Whitby, the Lynde Creek Coastal Wetland Complex is located immediately south of Dundas Street and east of Highway 412. The large Cattail Mineral Shallow Marsh identified south of Dundas Street is complexed with the PSW. This wetland lies directly within the study area, approximately 10 m to 15 m from the roadside edge. Overall, the larger PSW is comprised of swamps and marshes that cover an area of 147.4 ha (NHIC 2019b), most of which is located south of Highway 401.

Unevaluated Wetlands
Unevaluated wetlands include wetlands that have not been evaluated using the Ontario Wetland Evaluation System (OWES) and are not identified as provincially significant. Within the vicinity of the study area, there are 13 unevaluated wetlands presented in **Figure NER-2**.

Within the City of Toronto two unevaluated wetlands are located between Port Union Road and Altona Road. One is an isolated and narrow strip of shallow marsh north of Kingston Road. The second is at the border of the City of Toronto and City of Pickering located at the Rouge River (Crossing 4) north of Kingston Road. This wetland is a narrow strip of habitat just east of the Rouge River. Below the Kingston Road bridge, which crosses over the Rouge River, this wetland habitat is not continuous in areas where heavy trampling from public use was observed. Detailed surveys along the Rouge River below the Kingston Road bridge were not undertaken. Both of these wetlands are outside of the grading limits associated with the study area.

Within the Town of Ajax, four unevaluated wetlands are located spanning Kingston Road. One is associated with drainage south of Kingston Road, between Harwood Avenue and Salem Road. The second is located east of Galea Drive also south of Kingston Road associated with Crossing 14 (Carruthers Creek), which is a small meadow marsh dominated by reed-canary grass. Further east are two wetlands at Audley Road, one north and one south of Kingston Road. The area north of Kingston Road is a shallow marsh dominated by common reed. The wetland to the south is comprised of a Mineral Deciduous Swamp with abundant common buckthorn in the shrub layer. This wetland is situated within a low-lying area that is associated with a road drain, and is surrounded by agricultural fields.

Within the Town of Whitby are five unevaluated wetlands that span across Dundas Street West, typically associated with tributaries of Lynde Creek and Corbett Creek. One is located at the northeast corner of Dundas Street and Lake Ridge Road and is comprised in part by a cattail shallow marsh. Another is located immediately northwest of the Highway 412 off-ramp and Dundas Street, however, this was not observed during field investigations. A third unevaluated wetland is located west of McQuay Boulevard and north of Dundas Street. This wetland was identified during field investigations and includes a shallow marsh (MAS2-1f), but the wetland limit was observed to be further north from Dundas Street. Further east are two other unevaluated wetlands one north and one south of Dundas Street, east of Springwood Street surrounding the Tributary of Corbett Creek. To the south, this wetland is a shallow marsh community that is dominated by common reed. North of Dundas Street is a large shallow marsh wetland community dominated by cattails. Both of these wetlands are associated with a Tributary of Corbett Creek (Crossing 20).

Within the City of Oshawa, two unevaluated wetlands are located in the vicinity of the study area. The first unevaluated wetland is located at the municipal boundary, east of Thornton Road and north of King Street. This wetland is identified as a Mineral Cattail Shallow Marsh/Mineral Deciduous Swamp and is associated with Corbett Creek (Crossing 21) (but is not located within the grading limits of the study area). A second unevaluated wetland is located north of King Street, just outside and adjacent to the study area. This large wetland appears to include a shallow marsh with abundant to dominant cattails and a large area of open water. This wetland is associated with Goodman Creek (Crossing 22).

Areas of Natural and Scientific Interest

There are three Areas of Natural and Scientific Interest (ANSIs) located in the vicinity of the study area including the Highland Creek Swamp Life Science ANSI, the Rouge River Valley Life Science ANSI and the Frenchman's Bay Coastal Marsh ANSI. A description of each ANSI is provided below and the locations are presented on **Figure NER-2**.

Highland Creek Swamp Life Science ANSI

Within the City of Toronto, the provincially significant Highland Creek Swamp Life Science ANSI is located east of Orton Park Road to east of Morningside Avenue, along the south side of Ellesmere Road, and is approximately 221 ha in size. This natural area occurs along Highland Creek and the Tributary of Highland Creek and includes cedar-tamarack swamp, hemlock-cedar bottomland forests, sugar maple-red oak beech slopes and sedge-graminoid marsh (NHIC 2019b). This feature is located within proximity to the study area.

Rouge River Valley Life Science ANSI

Primarily within the City of Toronto, with a small eastern portion within the City of Pickering in Durham Region, the provincially significant Rouge River Valley Life Science ANSI covers an area of 830.59 ha. This ANSI includes the valleys of the Rouge River and Little Rouge Creek, floodplain and tablelands (North-South Environmental *et al.* 2012). The ANSI provides habitat to a wide range of flora and fauna. Portions of this ANSI are included in the Rouge River Marshes Wetland Complex PSW. In addition, two smaller Earth Science ANSIs are contained within the Rouge River Valley Life Science ANSI, including the Little Rouge Creek and Rouge River Section Earth Science ANSIs, both of which are greater than 1000 m north of the study area. The Rouge River Valley Life Science ANSI is located within the study area, but associated natural areas are typically located outside of the ROW approximately 15 m to 18 m north of the study area, and over 220 m to the south. However, Kingston Road is conveyed via a bridge that crosses over the Rouge River and Little Rouge Creek.

Frenchman's Bay Coastal Marsh Life Science ANSI

Within the City of Pickering, the Candidate Frenchman's Bay Coastal Marsh Life Science ANSI is located at the north end of Frenchman's Bay which covers an area of 14.9 ha comprised of marsh habitat (NHIC 2019b). The marsh is dominated by cattails, reed-canary grass, and sedges.

Carolinian Core Natural Areas and Carolinian Existing and Potential Connections

Carolinian Canada is the southernmost region of Canada and contains more rare and endangered species of plants and animals than any other part of Canada. Species include over 125 SAR. Forest and wetland cover have been significantly reduced over time, and now the Carolinian zone occupies only 1% of Canada's land area (Carolinian Canada). As a result, Carolinian Core Natural Areas and Carolinian Existing and Potential Connections/Areas have been identified in support of conserving and protecting Carolinian remnants within existing natural heritage systems.

Carolinian Core Natural Area is associated with the Rouge River Valley Life Science ANSI which is adjacent and north, as well as over 220 m south, of the study area. Across this section of the study area, Kingston Road is conveyed via a bridge that crosses over the Rouge River and Little Rouge Creek.

Another Core Natural Area and Existing and Potential Connection/Area are associated with the Highland Creek Swamp ANSI and Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA), with associated natural features adjacent to the ROW and within the study area. In addition, isolated Core Natural Areas were identified, but these are located outside of the study area.

Environmentally Significant Areas – TRCA Jurisdiction

According to the TRCA (2019b) and City of Toronto (2019b), there are five Environmentally Significant Areas (ESAs) located directly within the study area (including Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA) - overlapping and considered one ESA, Ellesmere Woods ESA, Little Rouge Forest ESA, Petticoat Creek Forest ESA and Major Spink Area ESA), and an additional three ESAs located just outside of but within the vicinity of the study area (Centennial Forest and Rouge Park Swamp ESA, Rouge Marsh Area ESA and Frenchman's Bay Marsh ESA). A description of each ESA is provided below and the locations are presented on **Figure NER-2**.

Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA)

Within the City of Toronto, the Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA) extends south of Highway 401, along Highland Creek, east to the University of Toronto Scarborough campus, southeast along Highland Creek south of Kingston Road and southwest along Highland Creek to Lawrence Avenue, within the Highland Creek valley associated with both Highway Creek (Crossing 1) and the Tributary of Highland Creek (Crossing 2). This ESA covers an area of 242.0 ha and Ellesmere Road bisects this ESA between east of Military Trail to west of Neilson Road. This ESA includes steep slopes and bottomlands with a diversity of forest types, and swamps, meadow and shallow marsh communities with seepages present along lower slopes (North-South Environmental *et al*. 2012; NHIC 2019b). Cultural meadow habitat typically intervenes between the gravel shoulder and the limits of the ESA both north and south of Ellesmere Road.

Ellesmere Woods ESA

Within the City of Toronto, the Ellesmere Woods ESA is located between Neilson Road and Morningside Avenue, south of Military Trail, north of Ellesmere Road. This ESA covers an area of 16.2 ha that has topographic diversity with a variety of forested communities with seepages present along the toe of slope. (North-South Environmental *et al*. 2012). Cultural meadow habitat typically intervenes between the gravel shoulder and the limits of the ESA north of Ellesmere Road. Coniferous, mixed and deciduous forest are within approximately 10 m to 15 m of Ellesmere Road.

Centennial Forest and Rouge Park Swamp ESA

Within the City of Toronto, ESAs were re-assessed in 2012, and the Centennial Forest and Rouge Park Swamp ESA is now known as the Centennial Forest and Swamp ESA. This ESA is located north of Highway 401 and is typically over 400 m north of the study area. This ESA covers an area of 58.7 ha, consists primarily of large mature silver maple mineral deciduous swamp with numerous vernal pools. Along the ESA edges, habitat includes green ash mineral deciduous swamp and meadow marsh habitats (North-South Environmental *et al.* 2012).

Rouge Marsh Area ESA

Within the City of Toronto and the western edge of the City of Pickering, the Rouge Marsh Area ESA is included in the Rouge River Marshes Wetland Complex PSW and the Rouge River Valley Life Science ANSI. The ESA covers an area of 64.4 ha including the mouth of the Rouge River south of Highway 401, east of Port Union Road. This site is a large area of high quality marsh with abundant standing water

(North-South Environmental *et al.* 2012). The ESA is approximately 220 m south of (and outside of) the study area, south of Highway 401.

Little Rouge Forest ESA
The Little Rouge Forest ESA is part of the Rouge River Valley Life Science ANSI and includes two Provincial Earth Science ANSIs. The ESA covers an area of 259.2 ha, located north of Kingston Road to north of Twyn Rivers Drive, west of Sheppard Avenue East, east to the municipal boundary of the City of Toronto and the City of Pickering. This ESA includes a wide variety of primarily forest, swamp, and marsh communities (North-South Environmental *et al.* 2012; NHIC 2019b). Portions of this ESA are approximately 10 m north of Kingston Road.

Petticoat Creek Forest ESA
Within the City of Pickering, the Petticoat Creek Forest ESA covers an area of 2.3 ha with forest that extends from the Petticoat Creek Conservation Area north to Sheppard Avenue (NHIC 2019b), east of Rougemount Drive to west of Old Forest Road. Vegetation includes mature mixed forest and swamp habitat with uncommon species associations. This ESA is bisected by Kingston Road and the study area. Cultural meadow habitat within the ROW intervenes lands between Kingston Road and adjacent habitat at the toe of slope that includes a deciduous cultural plantation, swamp and a shallow marsh inclusion.

Frenchman's Bay Marsh ESA
Within the City of Pickering, the Frenchman's Bay Marsh ESA includes 15 ha of beach, wetland, forest, meadow and successional habitats. This area includes a variety of significant species with a high diversity of supporting communities. This ESA is over 250 m south of (and outside of) the study area, and is located south of Highway 401.

Major Spink Area ESA
Within the City of Pickering, with a small eastern portion within the Town of Ajax, the Major Spink Area ESA covers an area of 2.3 ha within the Petticoat Creek floodplain and associated slopes of West Duffins Creek. This area is located east of Brock Road and north of Kingston Road. Much of the woodland within this ESA is dominated by Manitoba maple and willows with patches of eastern hemlock (*Tsuga canadensis*), with some mature forest (NHIC 2019b). This ESA is approximately 110 m north of Kingston Road.

Natural Heritage System – CLOCA Jurisdiction

CLOCA's Natural Heritage System was published in December 2017, and updated in July 2021. The NHS was developed merging the Functional NHS (FNHS) comprised of "valued natural components" (includes core habitat areas and corridors, riparian corridors including those for species at risk, wetlands and woodlands > 0.5 ha, PSWs, and ANSIs) with the Targeted Terrestrial NHS (TTNHS). The TTNHS was used to determine "where additional natural cover should occur adjacent to the FNHS, in order to achieve watershed health targets" (CLOCA July 2010 (rev. December 2011).

5.0 EFFECTS ASSESSMENT OF THE PREFERRED DESIGN

The DSBRT will consist of approximately 36 kilometres of dedicated transit infrastructure, connecting downtown Oshawa, Whitby, Ajax, Pickering and Scarborough. Transit infrastructure for the DSBRT includes a range of solutions in different segments of the corridor ranging from queue jumps and mixed traffic priority measures to dedicated curb or median lanes. An impact assessment was undertaken to determine impacts to natural heritage features as a result of the preferred design alternative/footprint of the DSBRT. This assessment was conducted using the grading/footprint limits provided to LGL by Parsons on November 9, 2020. The grading/footprint limits for the DSBRT are presented in **Figures NER-1a** to **NER-1i**.

Although impacts to the natural heritage features within the DSBRT study corridor have been avoided/minimized to the extent possible (since the BRT lanes and platforms/stops are generally in the median and curbside), some impacts are unavoidable in order to meet Metrolinx design standards and to accommodate the proposed widening and geometry associated with the DSBRT. The following sections discuss the impacts to existing natural heritage features resulting from the preferred design alternative/DSBRT footprint as well as the proposed environmental protection/mitigation measures. Environmental protection/mitigation measures include avoidance/minimization of natural heritage features/areas (to the extent possible), and site-specific mitigation, compensation and monitoring measures.

The environmental effects/impacts of the undertaking and the proposed environmental protection/mitigation measures are described separately for each natural heritage discipline under the following three categories and, as much as possible, are further separated for each municipality within the DSBRT study area:

- Footprint Impacts – long-term/permanent impacts on the existing natural heritage features located within the DSBRT study area that will potentially be disturbed or displaced through the introduction of the DSBRT;
- Construction Impacts – potential short-term/temporary disruption effects on the existing natural heritage features resulting from the actual construction of the DSBRT; and,
- Operations Impacts – potential long-term disruption effects on the existing natural heritage features resulting from the operation/maintenance of the DSBRT.

5a. Landforms and Physiology

5ai. Footprint Impacts and Mitigation

The entire DSBRT study area is located within the South Slope and the Iroquois Plain physiographic regions. Impacts to these landform features within the DSBRT study area were assessed and determined to be fairly insignificant considering that the DSBRT will be constructed within an area that has been previously disturbed by the original construction of Ellesmere Road, Kingston Road, Dundas Street and King Street/Bond Street (and other crossroads) within the study area, and by past and current land use practices, settlement and development that have already significantly impacted the landform features/physiography in the study area. For example, construction activities (such as road construction and watercourse alterations (including piping) to accommodate current infrastructure), have already resulted in impacts to the soils, groundwater, watercourses, terrestrial, riparian, and aquatic habitat, and significant natural heritage features within the study area.

Within the South Slope and Iroquois Plain physiographic regions, there is potential for impacts to the hydrologic cycle of the watersheds located within the DSBRT study area (see **Section 5d** for the impact

assessment and mitigation measures outlined for watercourses and hydrological features). In addition, soils of the South Slope are relatively impermeable so any precipitation that falls within this region quickly runs off to the local watercourses (TRCA 1999). **Section 5b** provides the impact assessment and mitigation measures proposed for soils (and the erosion/sedimentation control plan) within the study area.

Additionally, within the Iroquois Plain physiographic region, the beach deposits are a significant source of groundwater. The Iroquois beach deposits locally represent a shallow aquifer system along the southcentral part of the watershed that still serves as a potable drinking water source for the surrounding smaller communities (CLOCA 2004). The deposits provide groundwater discharge to streams in areas where stream valleys cut through the deposits into the underlying till. These deposits are thin with very high-water tables and can be easily contaminated, which in turn can result in impacts to the streams and aquatic life (CLOCA 2004). **Section 5c** provides the impact assessment and mitigation measures proposed for groundwater.

5aii. Construction Impacts and Mitigation

Construction-related impacts to the landform/physiographic features within the DSBRT study area are expected to be minimal considering that settlement/development (as described above in **Section 5ai**) have already significantly impacted/altered the landform features and physiology in the study area.

5aiii. Operations Impacts and Mitigation

The operation and maintenance activities of the DSBRT will not affect the landforms and physiographic features in the vicinity of the study area.

5b. Bedrock Geology, Quaternary Geology and Soils

5bi. Footprint Impacts and Mitigation

Bedrock and Quaternary Geology

The bedrock within the DSBRT study area consists of shale, limestone, dolostone and siltstone of the Georgian Bay Formation from the Upper Ordovician period (Ontario Geological Survey 1991). The quaternary geology consists of modern and older river deposits associated with the major watercourses, glacial lake deposits associated with Lake Iroquois and the Peel Ponds, and glacial ice deposits associated with the Laurentide Ice Sheet during the Wisconsinan glaciation (Sharpe 1980). A description of the impacts to each geological deposit is presented below for each municipality.

City of Toronto
Within the City of Toronto, the DSBRT will impact 20.40 ha of glacial deposits of Newmarket/Northern/Bowmanville Till with low-medium permeability, 8.74 ha of glacial lake deposits with high permeability, and 3.46 ha of river deposits with variable permeability. A total area of 32.60 ha of geological deposits within the City of Toronto will be impacted.

City of Pickering
Within the City of Pickering, the DSBRT will impact 10.82 ha of glacial deposits of Newmarket/Northern/Bowmanville Till with low-medium permeability, 26.51 ha of glacial lake deposits with low permeability, and 0.49 ha of river deposits with variable permeability. A total area of 37.82 ha of geological deposits within the City of Pickering will be impacted.

Town of Ajax
Within the Town of Ajax, the DSBRT will impact 11.12 ha of glacial deposits of Newmarket/Northern/Bowmanville Till with low-medium permeability, 17.07 ha of glacial lake deposits with low permeability, and 1.75 ha of river deposits with variable permeability. A total area of 28.92 ha of geological deposits within the Town of Ajax will be impacted.

Town of Whitby
Within the Town of Whitby, the DSBRT will impact 14.19 ha of glacial deposits of Newmarket/Northern/Bowmanville Till with low-medium permeability, 12.50 ha of glacial lake deposits with low permeability, 1.75 ha of river deposits with variable permeability, and 1.45 ha of organic deposits with high permeability. A total area of 29.89 ha of geological deposits within the Town of Whitby will be impacted.

City of Oshawa
Within the City of Oshawa, the DSBRT will impact 5.79 ha of glacial deposits of Newmarket/Northern/Bowmanville Till with low-medium permeability, 3.93 ha of glacial lake deposits with high permeability, 1.53 ha of glacial lake deposits with low permeability, and 0.49 ha of river deposits with variable permeability. A total area of 11.74 ha of geological deposits within the City of Oshawa will be impacted.

The loss of these geological deposits as a result of the DSBRT is unavoidable and required to meet Metrolinx design standards and to accommodate the proposed widening and geometry associated with the DSBRT.

Excess and Contaminated Soils

The long-term impacts on the existing soils within the DSBRT study area that will be displaced or lost through the introduction of the DSBRT are categorized as footprint impacts. The impacts to the terrain located within the study area have been minimized to the extent possible as the DSBRT infrastructure will be located where the existing municipal roads and existing settlement area have already altered the terrain.

However, a large volume of soil will be displaced by excavation activities. Excess soil may be generated that cannot be reused along the DSBRT corridor. The excess soil may be stained, odorous, containing debris or found to be contaminated. The excess soil will require management as waste. Final soil profiles will be defined during the detail design phase prior to construction activities. Regulatory requirements in place at the time of construction and excess materials management guidelines and specifications (i.e. O.Reg. 406/19 – On-Site and Excess Soil Management, OPSS 180 – General Specification for the Management of Excess Materials, Management of Excess Soil – A Guide for Best Management Practices (MECP 2014), the Excess Soil Management Policy Framework (MECP 2016), and TRCA/CLOCA guidelines) will be used to develop an Excess Materials Management Plan during detail design to manage excess/contaminated soils.

The Excess Soil Management Policy Framework (MECP 2016) states that excess soil management and disposal have implications for greenhouse gas emissions. The transportation of excess soil around the province emits greenhouse gases which contributes to climate change. Local reuse of excess soil is therefore encouraged and can reduce emissions by reducing the distance excess soil is transported for reuse or disposal.

The disposal of excess soil within the 'Greenbelt Area' will be avoided and managed in accordance with the 'Protected Countryside' policies in the Greenbelt Plan (MMAH 2017), and 'A Culture of Conservation' policies contained in the Growth Plan (MMAH 2019). Section 3.4.2 of the Greenbelt Plan and Section 4.2.9 of the Growth Plan state that:

- Municipalities must develop excess soil reuse strategies as part of planning for growth and development.
- Municipal planning policies and relevant development proposals must incorporate best practices for the management of excess soil generated and fill received during development or site alteration, including *infrastructure* development, to ensure that:
  - any excess soil is reused on-site or locally to the maximum extent possible and, where feasible, excess soil reuse planning is undertaken concurrently with development planning and design;
  - appropriate sites for excess soil storage and processing are permitted close to areas where proposed development is concentrated or areas of potential soil reuse; and,
  - fill quality received and fill placement at a site will not cause an adverse effect with regard to the current or proposed use of the property or the natural environment, and is compatible with adjacent land uses.

The On-Site and Excess Soil Management Regulation (O. Reg. 406/19) under the *Environmental Protection Act* also requires that any fill placed in environmentally sensitive areas meets Table 1 standards. Any soil placed on cropland or pasture must meet the definition of topsoil as per the *Municipal Act.*

Soil/Earth Slope Stability

Soil conditions and soil/earth slope stability within the study area varies locally. It is recommended that site-specific investigations (including boreholes/test pits and visual inspection – in combination with further geotechnical investigations) be undertaken during detail design in the vicinity of areas of soil disturbance as necessary to obtain soils characteristics data. The potential impacts of the proposed construction works on soil stability/earth slopes should be assessed along with the more detailed soils data prior to construction and appropriate mitigation measures to maintain soil and earth slope stability should be identified and incorporated into the design.

5bii. Construction Impacts and Mitigation

Construction impacts on the existing soils within the DSBRT study area include short-term or temporary disturbance to soils during construction activities. The soils within the DSBRT study area range from being well-drained to moderately-drained to imperfectly or poorly drained (refer to **Section 4b**). The clay and loam soils located along the DSBRT study area are more susceptible to erosion and will be impacted during construction activities. Consequently, soil disturbance associated grading, drainage improvements, culvert/structure modifications, etc., may result in erosion of, and sedimentation to, sensitive receiving watercourses. For this reason, an Erosion and Sedimentation Control Plan (including an erosion monitoring and sediment report program) will be developed during detail design prior to construction including measures to monitor and maintain erosion and sedimentation control during construction to ensure their effectiveness.

Standard erosion and sedimentation control measures will be followed during construction in accordance with OPSS 805 (Construction Specification for Temporary Erosion and Sediment Control Measures) to minimize construction-related impacts on surface water quality and fish habitat. Site-specific erosion and

sedimentation control measures to be implemented prior to construction, maintained during construction and removed after construction (once soils have stabilized) will be identified prior to construction following a number of different guidelines including TRCA's Erosion and Sediment Control Guide for Urban Construction (2019a) and Silt Smart - Erosion and Sediment Control Effectiveness Monitoring and Rapid Response Protocol for Large Urban Development Sites (Credit Valley Conservation, MNR, MOE, DFO 2012).

Erosion and sedimentation control measures will include:

- placing flow checks at regular intervals in ditches down-gradient from areas of soil disturbance in rural sections;
- stabilizing/reinforcing ditches based on ditch slope down-gradient from areas of soil disturbance in rural sections;
- managing surface water at the construction site to prevent contact with exposed soils and/or treating surface water that comes in contact with exposed soils using stormwater detention ponds, basins, traps and bags;
- protecting inlets to catch basins and maintenance holes in urban sections;
- placing silt fence along stream margins in areas of soil disturbance;
- limiting the extent and duration that soils are exposed to the elements to the minimum area and time necessary to perform the work;
- applying old field seed and mulch, tackifier and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; and,
- monitoring and maintenance of erosion and sedimentation control measures during construction to ensure their effectiveness.

These environmental protection measures will greatly reduce the potential for soil erosion and impairment of surface water quality and fish habitat.

As noted in **Section 5bi**, during construction, a large volume of soil will be displaced by excavation activities. This may generate excess soils that cannot be reused as part of the construction of the DSBRT. Therefore, there is potential for disturbance to/disposal of contaminated waste and/or soils during construction. **Section 5bi** outlines the mitigation measures that will be in place to manage excess/contaminated soil. In addition, surface water will be managed at the construction site to prevent contact with exposed soil and/or surface water that comes in contact with exposed soils will be treated using stormwater detention ponds, basins, traps and bags.

5biii. Operations Impacts and Mitigation

Bedrock geology, quaternary geology and soils will not be disturbed by the operation and maintenance activities of the DSBRT.

5c. Groundwater

5ci. Footprint Impacts and Mitigation

Water Wells

There are over 500 water wells in the study area that may be permanently affected by the DSBRT footprint, and more specifically by construction dewatering that may be required (see **Section 5cii** below for details). Based on a search of MECP water well records, a total of 94 of these water wells were identified within the construction footprint and in the vicinity of several watercourses that cross the study area. The list of water well records in the DSBRT project footprint is presented in **Appendix E**. One small portion the study area might have active water wells, specifically along the boundary between Ajax and Whitby where some agricultural land use is evident. Additional inspection of the individual water well records (and a desktop review) will be required to verify the list of wells and map their locations. Any further evaluations would likely require mail surveys/field verification activities in order to ensure impacts to these water wells are mitigated. See **Section 5cii** below for mitigation associated with construction.

Municipal Water Supply

Overall, groundwater is not used by municipalities for drinking water in and near the study area. Therefore, no impacts to the municipal drinking water supply is anticipated. The study area does not include any IPZs and, therefore, impacts to these IPZs due to discharge during construction dewatering is unlikely.

Aquifers

Aquifers identified in the study area include the Scarborough Aquifer in the west section, west of the Rouge Valley, and numerous shallow HVAs throughout. The HVAs may have shallow wells that are in use and may be susceptible to impacts by the DSBRT project due to potential construction dewatering. See **Section 5cii** below for mitigation associated with construction dewatering.

Surface Water Bodies

A number of watercourses cross the study area flowing north to south towards Lake Ontario. Duffins Creek was identified as having significant base flow from groundwater. Any of the study area watercourses could potentially be impacted by discharge during construction dewatering of groundwater and such impacts are typically mitigated by conditions of PTTWs or Environmental Activity and Sector Registration (EASR) approvals and a required Water Taking and Discharge Plan. See **Section 5cii** below for more details.

5cii. Construction Impacts and Mitigation

Construction and associated dewatering activities for deep excavations may be required for major structural works at 13 locations within the DSBRT footprint, specifically at the following locations (with names associated with structural works/culvert numbers – refer to Preliminary Groundwater Study 2021): Petticoat Creek culvert (C-01), Dunbarton Creek culvert (C-02), CN Rail bridge – York Subdivision (B-04), Duffins Creek bridge (B-05), Miller's Creek culvert (C-04), Carruthers Creek culvert (C-05), Lynde Creek culvert (C-06), Lynde Creek bridge (B-07), Pringle Creek culvert (C-07), CP Rail bridge – Belleville Subdivision (B-08), Oshawa Creek bridge – King Street (B-09) and Oshawa Creek bridge – Bond Street (B-10). In addition, dewatering may be required to replace a section of watermain west of the

Pine Creek culvert (C-03). The Pine Creek culvert may also require extension, which may require construction dewatering.

MECP requires a PTTW or an EASR for groundwater takings exceeding 50,000 liters per day (L/day). For construction, a PTTW is required for dewatering extraction rates that exceed 400,000 L/day. An EASR is required for a rate between 50,000 and 400,000 L/day. The Approved Geotechnical Investigation Report: Watermain Replacement Kingston Road BRT- Dixie Road to Liverpool Road, and the Approved Geotechnical Investigation: Pine Creek Culvert Extension Kingston Road BRT-Dixie Road to Liverpool Road (Golder 2018 and 2020) were reviewed for construction dewatering and it was determined that excavations for placement of the culvert bedding, backfill and embankment fill must be fulfilled in dry conditions. Groundwater control or unwatering must be designed and implemented by a specialist contractor and be drawn down to a depth of at least 1 m below the excavation base level, or as necessary, to ensure stable conditions during excavation. Surface water must be directed away from the excavation areas to prevent ponding of water. A category 3 PTTW is required by the MECP for water takings in excess of 400,000 L/day. The proponent will be responsible for obtaining any required discharge approvals and documentations. Pumping discharge will also comply with any requirements from the local municipalities and conservation authorities.

The following additional mitigation measures for groundwater during construction will be required:

- Groundwater control measures will be required, and permits must be active anytime when dewatering is needed.
- Groundwater control will be designed, and volumes of groundwater discharge must be continuously monitored at discharge locations and a total daily volume must be recorded to ensure compliance of the PTTW maximum flow rate. The proponent will be responsible for designing and supplying appropriate groundwater treatment equipment and daily inspection of the discharge will be required at each location to verify the dewatering discharge system is functioning as designed.
- The proponent may monitor groundwater quality prior to treatment to confirm whether groundwater meets requirements without treatment. Groundwater level will be measured at selected nearby monitoring wells (see below).
- Erosion and sediment control measures must be implemented and maintained during construction and construction zones must be isolated using standard perimeter silt fencing and additional erosion and sediment controls as required.
- The combined dewatering rate from all sources will be considered when assessing the dewatering permitting requirements for the project.

In addition, as noted above, several surface watercourses flow across the study area from north to south towards Lake Ontario, and numerous shallow HVAs are present that may still be in use despite being in a highly urbanized area with a municipal potable water distribution system that does not rely on groundwater. In addition, 500 water wells (94 of which were identified within the construction footprint) are located in the study area. **Appendix E** presents a list of water well records in the DSBRT project footprint. The list of wells within the study area will be verified during detail design prior to construction. These surface watercourses, shallow HVAs and water wells may be affected by the construction of the DSBRT project. Specifically, construction dewatering may interfere with the quantity and quality of groundwater in nearby water wells and the discharge could impact the shallow HVAs and surface watercourses. A more detailed understanding of the construction activities that may require construction dewatering (including at the 13 locations noted above) is required during the detail design phase. This will allow for an additional and more localized evaluation at potential construction dewatering sites, and will allow the project team to calculate estimates of construction dewatering rates and confirm the need

for appropriate MECP approvals. In addition, this will confirm the locations of nearby water wells that may be in use near the proposed dewatering locations (with likely requirement for mail surveys/field verification activities). Any required MECP approvals will have elements, that when implemented, will mitigate interference and impacts from construction dewatering (e.g., such as best practices, prescriptive regulation, monitoring and reporting). Mitigation of interference and/or impacts is typically addressed by EASRs/PTTWs. For volumes less than 50,000 L/day that do not require MECP approval, industry standard best practices must be adhered to and documented (similar to those in the Water Taking and Discharge Plan required for an EASR).

5ciii. Operations Impacts and Mitigation

Post-construction of the DSBRT, surface water drainage of melted snow during the de-icing season may result in road salt related impacts to soil, groundwater and surface water. This surface water drainage must be managed/controlled through the standard drainage engineering/municipal storm sewer system design to mitigate impacts to surface water.

Water wells in shallow HVAs that are currently in use within the study area for potable purposes must also be considered in order to avoid impacts to groundwater at these locations post-construction. This requires a better understanding of water wells that are in use within the study area proximal to the proposed dewatering locations (See **Section 5ci and 5cii**).

5d. Watercourses and Hydrological Features

5di. Footprint Impacts and Mitigation

A comprehensive assessment of the impacts of the DSBRT on existing drainage patterns (storm and surface drainage) and watercourses is on-going and will continue during the detail design phase. As a result of the introduction of new impervious areas, volumes of runoff and local peak flows will likely increase. There may also be water quality impacts in the form of increased erosion and contaminant (e.g., oils, road salt) input. A preliminary drainage and stormwater management plan is currently being prepared to address these potential impacts, and will be updated as necessary during detail design in consultation with regulatory agencies (including TRCA/CLOCA). The proposed drainage/stormwater management measures will be discussed in detail in the Environmental Project Report (**Section 4.7).** Where feasible, the plan for the management of stormwater will adhere to the TRCA's The Living City Policies (TRCA 2014), at least within the TRCA's jurisdiction. Low impact development (LID) measures will be incorporated to the extent possible where stormwater management is required along the DSBRT to achieve stormwater management as per TRCA and CLOCA stormwater management criteria. Runoff generated by the new DSBRT lanes will be collected and treated using approved stormwater management practices employing a treatment-train approach including source, conveyance and end-of-pipe measures, where feasible (see Environmental Project Report **Section 7**). The stormwater management plan will ensure that no negative impacts to the hydrological and ecological function of the receiving watercourses/ features will result from the project.

A total of 24 watercourses cross the DSBRT corridor within 10 watersheds (with 25 crossings total including two crossings of Oshawa Creek at King Street and Bond Street). Six of the watersheds (Highland Creek, Rouge River, Petticoat Creek, Frenchman's Bay (Amberlea, Dunbarton and Pine Creeks), Duffins Creek and Carruthers Creek) are located under TRCA's jurisdiction, and four of the watersheds (Lynde Creek, Pringle Creek, Corbett Creek and Oshawa Creek) are located under CLOCA's jurisdiction. All watercourses are shown on **Figures NER-1a** to **NER-1i**. A description of the watercourses located within each municipality of the DSBRT corridor and the proposed work are provided below.

City of Toronto

A total of four watercourses/hydrologic features cross the DSBRT corridor within the City of Toronto including Highland Creek (Crossing 1), Tributary of Highland Creek (Crossing 2), Centennial Creek (Crossing 3) and the Rouge River (Crossing 4). At three of these watercourses (Crossings 1, 2 and 4), no in-water work is proposed and no changes to impervious surfaces located at the crossings will occur. At one watercourse (Centennial Creek - Crossing 3), the feature is piped as a trunk sewer downstream and the open channel upstream enters the pipe via a ditch inlet. This upstream end of the storm trunk will be extended by 6 m and the ditch inlet will be relocated.

City of Pickering

A total of seven watercourses/hydrologic features cross the DSBRT corridor within the City of Pickering including Petticoat Creek (Crossing 5), Tributary of Petticoat Creek (Crossing 6), Amberlea Creek (Crossing 7), two Tributaries of Amberlea Creek (Crossings 8 and 9), Dunbarton Creek (Crossing 10) and Pine Creek (Crossing 11). The culverts associated with Crossings 5 and 10 will be extended and are discussed further in **Section 5e** below. Potential works at Crossings 7-9 and 11 are to be designed by others and are not within the scope of the DSBRT project and not discussed further herein. No work is proposed at Crossing 6.

Town of Ajax

A total of four watercourses/hydrologic features cross the DSBRT corridor within the Town of Ajax including West Duffins Creek (Crossing 12), Duffins Creek (Crossing 13) and Carruthers Creek (Crossing 14) and a tributary of Lynde Creek (Crossing 14a). The three-span bridge structure at West Duffins Creek (Crossing 12) will be widened to accommodate the DSBRT, and the culverts at Duffins Creek (Crossing 13) and Carruthers Creek (Crossing 14) will be extended. These works are discussed below in **Section 5e**. Of note is that West Duffins Creek (Crossing 12) is occupied Redside Dace habitat and Carruther's Creek (Crossing 14) is identified as a priority hydrologic crossing improvement site in the Carruthers Creek Watershed Plan as it is a current pinch-point for flows (Durham Region and TRCA 2020). No works are planned at the Duffins Creek (Crossing 13) and the tributary of Lynde Creek (Crossing 14a).

Town of Whitby

A total of six watercourses/hydrologic features cross the DSBRT corridor within the Town of Whitby including three Tributaries of Lynde Creek (Crossings 15-17), Lynde Creek (Crossing 18), Pringle Creek (Crossing 19) and Tributary of Corbett Creek (Crossing 20). The single span bridge at Lynde Creek (Crossing 18) will be widened to accommodate the DSBRT, and the culverts associated with the remaining features (Crossing 15, 16, 17, 19 and 20) will be extended. Of note is that Lynde Creek (Crossing 18), while currently not listed as occupied Redside Dace habitat, has the potential to be considered habitat for this SAR should additional information become available. The works at these crossings are discussed below in **Section 5e**.

City of Oshawa

A total of three watercourses/hydrologic features cross the DSBRT corridor within the City of Oshawa including Corbett Creek (Crossing 21), Goodman Creek (Crossing 22) and Oshawa Creek (Crossing 23). No work is proposed at Goodman Creek (Crossing 22). The culverts associated with Corbett Creek (Crossing 21) will be extended, and the two bridges associated with Oshawa Creek at the King Street and Bond Street crossings (Crossing 23) will be replaced. Of note is the recent record for American Eel, a

SAR, within Oshawa Creek (Crossing 23) which needs to be considered during detailed design. The works at these crossings are discussed below in **Section 5e**.

Overall drainage volume will increase at all crossings due to the increased impervious surface area associated with the widened DSBRT and associated runoff directed to the receiving watercourses and hydrologic features.

General mitigation of effects to watercourses and hydrologic features related to drainage and stormwater management will be discussed in the Environmental Project Report (**Section 4.7)**. Mitigation that will be applied to effects caused by construction and operations are presented in **Sections 5dii** and **5diii** and in **Section 5e** (related to aquatic environment).

5dii. Construction Impacts and Mitigation

Impacts to watercourses and hydrologic features are most likely to occur during the construction phase of the DSBRT due to the exposure of soils from grading and vegetation removals, drainage improvements, culvert/structure modifications, excavations, stockpiling, vehicle refueling and maintenance and other construction-related activities.

Erosion and Sedimentation Control

As discussed in **Section 5bii**, an Erosion and Sedimentation Control Plan (including an erosion monitoring and sediment report program) will be developed during detail design prior to construction including measures to monitor and maintain erosion and sedimentation control during construction to ensure their effectiveness. See **Section 5bii** for a discussion about the proposed erosion and sedimentation control measures and the guidelines to be followed to ensure effective erosion and sedimentation control during construction.

Additional general environmental protection measures that will be employed to reduce the potential effects on watercourses/hydrologic features include:

- work areas will be delineated with construction fencing to minimize the area of disturbance;
- appropriate sediment control structures will be installed prior to and maintained during construction to prevent entry of sediments into the watercourses;
- surface water that comes in contact with exposed soils will be treated using stormwater detention ponds, basins, traps and bags;
- where cofferdams are to be employed, unwatering effluent will be treated prior to discharge to receiving watercourses;
- cofferdams will be constructed using pea gravel bags or equivalent to isolate the work area and maintain flow; and,
- disturbed riparian areas will be vegetated and/or covered with an erosion control blanket as quickly as possible to stabilize the banks and minimize the potential for erosion and sedimentation.

These environmental protection measures will greatly reduce the potential for soil erosion and impairment of surface water quality.

Best Management/Construction Practices

There is also the potential for impacts to water quality from spills or other materials/equipment entering the water during construction (see **Section 5bi** and **5bii**). Implementation of best management practices during construction will reduce the potential for spills or other materials/equipment from entering the water. The following measures will be employed:

- all equipment maintenance and refueling will be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refueling will be conducted at least 30 m distance from any surface drainage feature to prevent the entry of petroleum, oil or lubricants (POL) to the watercourses;
- storage, stockpiling and staging areas will be delineated prior to construction and inspected during construction;
- construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from any surface drainage features to prevent their entry into the watercourses; and,
- all spills that could potentially cause damage to the environment will be reported to the Spills Action Centre of the MECP. In the event of a spill, containment and clean-up will be completed quickly and effectively. A "Spill Response Plan" and the appropriate contingency materials to absorb or contain a spill will be on the site at all times; no construction machinery or vehicles will cross any watercourse at any time during construction.

Stormwater Management

As noted in **Section 5di**, a preliminary drainage and stormwater management plan is currently being prepared to ensure construction and post-construction conditions maintain flow to downstream habitats, maintain existing water temperatures and ensure water quality and quantity is not impaired. The drainage and stormwater management plan will be updated as necessary during detail design in consultation with regulatory agencies (including TRCA/CLOCA). The proposed drainage/stormwater management measures will be discussed in detail in the Environmental Project Report (**Section 4.7**). Where feasible, the plan for the management of stormwater will adhere to the TRCA's The Living City Policies (TRCA 2014), at least within the TRCA's jurisdiction. The stormwater management plan will also ensure that no negative effects regarding the hydrological and ecological function of the receiving watercourses/features will occur. Some of the general mitigation measures will include:

- A stormwater management facility will be designed to detain a minimum of a 2-hour 25 mm storm event for 24 hours to address water quantity and erosion concerns. Where agencies demonstrate a need, other detention times or additional quantity sizing requirements will be considered during the detail design phase in consultation with stakeholders.
- When designing best management practices, consideration will be given to measures for reducing environmental impacts to surface and groundwater, including those related to temperature and salt, where feasible.
- Bridge run-off will be discharged to stormwater management facilities where feasible (preferably a pond or swale) prior to discharge to watercourses where this can be achieved and will not cause unacceptable environmental, highway design, safety or operational problems.
- Where feasible, opportunities for providing ease of containment of accidental spills will be provided during the design of stormwater management facilities.
- Low impact development (LIDs) measures will be incorporated to the extent possible where stormwater management is required along the DSBRT to achieve stormwater management as per TRCA/CLOCA stormwater management criteria.

5diii. Operations Impacts and Mitigation

The potential impacts to the watercourses and hydrologic features from the operation of the DSBRT are generally limited to water quality alterations due to roadway contaminants, mainly salt application in winter. Mitigation for effects on water quality during operation of the DSBRT are included in the Environmental Project Report (**Section 4.7)**. For road salt, mitigation will follow Environment Canada's *Code of Practice for the Environmental Management of Road Salts* (2004) as well as the *Five-year Review of Progress: Code of Practice for the Environmental Management of Road Salts* (2012).

5e. Aquatic Environment

5ei. Footprint Impacts and Mitigation

As described in **Sections 4e** and **5di** above, a total of 25 watercourses cross the DSBRT corridor within 10 watersheds (with 25 crossings total including two crossings of Oshawa Creek at King Street and Bond Street). All watercourses are shown on **Figures NER-1a** to **NER-1i**. All 24 watercourses support fish habitat. Impacts to the aquatic environment (fish and fish habitat) have been minimized to the extent possible by design refinements. However, work that could potentially affect the aquatic environment is proposed at 14 of the watercourse crossings (note that works at Crossings 7-9 and 11 are being designed by others and are not within the scope of the DSBRT project). Direct or indirect effects on these watercourses/the aquatic environment can result from culvert/bridge extensions/widenings, wingwall/headwall construction, channel/ditch realignment, riparian vegetation clearing, modifications to drainage due to increase in impermeable surfaces and the addition of stormwater management features. **Section 5d** discusses impacts to the watercourses/hydrological features and the proposed mitigation measures. Potential impacts to aquatic SAR are discussed in **Section 5i**.

The footprint of the DSBRT corridor (and associated culvert/structure modifications) will result in a number of permanent changes to the aquatic environment at 14 watercourse crossings within the study limits, all of which constitute fish habitat (directly or indirectly). However, through proper mitigation measures and careful planning, the impacts can be minimized to prevent negative effects to fish and fish habitat.

A summary of the watercourse crossings, existing culvert/structure conditions, proposed works, the impacts/net environmental effects of those works on the aquatic environment and site-specific mitigation at each watercourse (separated by municipality) is provided in **Table 11**.

Effects to aquatic habitat from the DSBRT will mainly involve the alteration of habitat through enclosure within/under culverts/bridges, almost exclusively due to extensions of existing culverts and bridge widenings/replacements. There may also be affects due to channel realignments (Crossing 15), the construction of retaining walls (Crossing 5) and extensions of in-water bridge piers (Crossing 12). The area of aquatic habitat that may potentially be altered through the proposed works at watercourse crossings was calculated using the channel widths and proposed lengths of disturbance. This information is presented in **Table 11.**

Effects on aquatic habitat vary by watercourse as there are different types of habitats present within the DSBRT study area. Indirect fish habitat is that in which fish are not present, but the habitat contributes to downstream direct habitat. Direct fish habitat is habitat in which fish directly occupy. The works at Crossings 3, 7-9, 15 and 20 will affect indirect fish habitat and at 7 and 8 there is also potential direct fish habitat downstream of the crossings.

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
City of Toronto	1: Highland Creek	Three span bridge 76.8 m, 29 m long	No in-water work proposed	No impacts within channel	None required
	2: Tributary of Highland Creek	2210 mm diameter pipe arch culvert, 36 m long	No in-water work proposed	No impacts within channel	None required
	3: Centennial Creek	Ditch inlet to 2500 mm diameter circular concrete pipe (trunk sewer inlet), 78 m long	Extend trunk sewer and relocate inlet by 6 m	3 m^2 of warmwater, indirect fish habitat	• Works to be conducted within the warmwater timing window (July 15-March 31) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	4: Rouge River	Six span bridge 221 m, 23 m long	No in-water work proposed	No impacts within channel	None required
City of Pickering	5: Petticoat Creek	2450x6150 mm concrete box culvert, 43 m long	Extend by 7.95 m on each end	19.9 m^2 upstream and 15.9 m^2 downstream (35.8 m^2) of warmwater, direct fish habitat Potential effects of retaining wall on tributary parallel to north road slope	• Works to be conducted within the warmwater timing window (July 15-March 31) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
					dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	6: Tributary of Petticoat Creek	2400x2400 mm concrete box culvert, 86 m long	No in-water work proposed	No impacts within channel	None required
	7: Amberlea Creek	1820x1820 mm concrete box culvert, 45 m long	Designed by others. Not in DSBRT project scope	N/A	• N/A
	8: Tributary of Amberlea Creek	1520x2440 mm concrete box culvert, 51 m long	Designed by others. Not in DSBRT project scope	N/A	• N/A
	9: Tributary of Amberlea Creek	1200x1200 mm concrete box culvert, 58 m long	Designed by others. Not in DSBRT project scope	N/A	• N/A
	10: Dunbarton Creek	1800x3000 mm concrete box culvert, 57 m long	Extend by 30 m at upstream end and connect to existing CSP culvert under CN Rail	60 m^2 of warmwater, direct fish habitat	• Works to be conducted within the warmwater timing window (July 15-March 31) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry"

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
					• Vegetation removals will require replacement
	11: Pine Creek	2620x6100 mm concrete box culvert, 42 m long	Designed by others. Not in DSBRT project scope	N/A	• N/A
Town of Ajax	12: West Duffins Creek	Three-span bridge 64 m, 22 m long	Widen by 7.2 m downstream	100.8 m^2 of new 'enclosure' of coldwater, direct fish habitat 7.65 m^2 of coldwater direct fish habitat removed for extended bridge pier	• Works to be conducted within the Redside Dace timing window (July 1-September 15) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	13: Duffins Creek	3000x12000 mm 2-cell box culvert, 58 m long	No in-water work proposed	No impacts within channel	• None required
	14: Carruthers Creek	1900x5500 mm concrete box culvert, 34 m long	Extend by 12 m at upstream end	66 m^2 of warmwater, direct fish habitat	• Works to be conducted within the warmwater timing window (July 15-March 31) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
					to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	14a: Tributary of Lynde Creek	1280x1860 mm concrete box culvert, unknown length	No in-water work proposed	No impacts within channel	None required
Town of Whitby	15: Tributary of Lynde Creek	1500x1800 mm concrete box culvert, 53 m long	Extend by 10 m at both ends, and 300 m realignment in north ditch	20 m^2 of warmwater, indirect fish habitat (extensions) and 300 m^2 of warmwater, indirect fish habitat from ditch realignment	• Works to be conducted within the warmwater timing window (July 15-March 31) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement • Implement natural channel design into

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
					realignment channel to maintain, or enhance natural fluvial processes
	16: Tributary of Lynde Creek	3500 x12800 mm structural arch culvert, 28 m long	Extend by 7.8 upstream and 5 m downstream	128 m^2 of coolwater, direct fish habitat	• Works to be conducted within the warmwater timing window (July 15-September 15) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	17: Tributary of Lynde Creek	2000 mm diameter CSP culvert, 158 m long, storm trunk inlet	Extend by 10 m at upstream end	10 m^2 of warmwater, direct fish habitat	• Works to be conducted within the warmwater timing window (July 15-March 31) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
					during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	18: Lynde Creek	19.2 m single span bridge, 19 m long	Widen the north side of the bridge by 8.9 m and the south side by 7.4 m	277 m^2 of 'enclosure' of coldwater, direct fish habitat	• Works to be conducted within the coldwater timing window (June 15-September 15) or Redside Dace timing window if this species is found to occupy this habitat (July 1-September 15) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	19: Pringle Creek	2400x6100 mm concrete box and 2400x9600 2-cell concrete box culvert, 26 m long	Extend by 5.5 m upstream and 9.5 m downstream	62.5 m^2 of coolwater, direct fish habitat	• Works to be conducted within the coldwater (June 15-September 15) timing window to avoid impacts to the

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
					spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	20: Tributary of Corbett Creek	1800x1250 mm concrete box, 40 m long	Extend by 7.5 m at upstream end	37.5 m^2 of warmwater, direct fish habitat	• Works to follow the warmwater timing window (July 15-March 31) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
City of Oshawa	21: Corbett Creek	1900x2500 mm CSPA and 2300 mm diameter CSP culverts, 48 m long	Extend culverts by 12 m at downstream end	24 m^2 of warmwater, direct fish habitat	• Works to be conducted within the warmwater (July 15-March 31) timing window to avoid impacts to the

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
					spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	22: Goodman Creek	2150x3800 mm concrete box culvert, 58 m long	No in-water work proposed	No impacts within channel	None required
	23: Oshawa Creek (King Street)	3.7x17.6 m arch bridge, 17 m long	Like for like replacement	No permanent impacts to channel	• Works to be conducted within the coldwater timing window (June 15-September 15) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement
	23: Oshawa Creek (Bond Street)	Two span bridge 2.9x16.3 m, 20 m long	Replace with a 17 m single span bridge, 17 m	6.3 m^2 'enclosure' of coldwater, direct fish	• Works to be conducted within the coldwater

TABLE 11.
SUMMARY OF WATERCOURSE CROSSINGS, EXISTING CULVERT/STRUCTURE CONDITIONS, PROPOSED IN-STREAM WORK, IMPACTS/NET ENVIRONMENTAL EFFECTS AND SITE-SPECIFIC MITIGATION

Municipality	Crossing # Watercourse Name	Existing Culvert/Structure Conditions	Proposed Works	Impacts/Net Environmental Effects	Site-specific Mitigation
			long	habitat	timing window (June 15-September 15) to avoid impacts to the spawning, nursery and migratory periods of local fish populations (applicability and dates to be confirmed with appropriate provincial and federal agencies during detail design) • Work will be done "in-the-dry" • Vegetation removals will require replacement

The works at Crossings 5-6, 10, 12-14, 16-18 19, 20, 21 and 23 will affect direct fish habitat. Bridge 'enclosures', the area of aquatic habitat that is present under the widened portion of bridges, will affect Crossings 12, 18 and 23 (Bond Street bridge). This type of effect does not have a direct impact on fish habitat other than increased shading and potential loss of riparian vegetation; the actual physical habitat of the channel will not change. The exception to this is at Crossing 12 where there is a bridge pier in the water that will need to be extended to accommodate the bridge widening. At eight crossings (1, 2, 4, 6, 13, 14a, 22 and 23 King Street bridge), no in-water work is proposed and no effects to the aquatic habitat are expected to occur. This has ensured the avoidance of impacts to the aquatic environment at some of the larger watercourses in the study area including Highland Creek (Crossing 1), the Rouge River (Crossing 4), and Oshawa Creek (Crossing 23 – King Street Bridge).

Fish and wildlife friendly culvert and bridge design will continue to be considered as part of this project during the detail design/pre-construction phase, where feasible. No new barriers to fish passage will be created from works associated with this project and a fish passage analysis will be conducted during detail design for existing and proposed conditions at all crossings where direct fish habitat is present or potentially present. Opportunities to improve fish passage via culvert works will be considered further during the detail design/pre-construction phase, where feasible. This is especially important at Carruthers Creek (Crossing 14), where Durham Region and TRCA (2020) have identified this crossing as a priority ecological connectivity improvement area in the Carruthers Creek Watershed Plan as it is currently a barrier to terrestrial and aquatic animal movement/migration. (Durham Region and TRCA 2020). DSBRT structure/culvert modifications have been designed to maintain and promote wildlife passage across the landscape. These culvert designs will be revisited during detail design in accordance with TRCA's crossing guidelines to ensure fish and wildlife passage (TRCA 2015). Where sheet flow occurs in culverts, the installation of flow deflectors can help deepen flows and capture sediment to form low flow channels that can pass fish. At Crossing 19 (Pringle Creek), there are baffles secured to the concrete bottom of the culvert currently. There is also a concrete "ramp" at the upstream end of the culvert over which water spills as an extremely shallow sheet which forms a barrier during low flow conditions. Eliminating this ramp would be beneficial to restoring fish passage within this watercourse. General mitigation of effects to the aquatic environment resulting from increased impervious surface area and potential temperature increases are discussed in the Environmental Project Report (**Section 4.7)**. Mitigation that will be applied to effects caused by construction and operations are presented in **Sections 5eii** and **5eiii**. For mitigation regarding direct effects on the aquatic environment, measures to be taken (to be reviewed during detail design) generally include minimizing the design to keep necessary bridge widenings and culvert extensions as short as possible, employing retaining walls to reduce encroachment into riparian areas and confining work to as small an area as possible.

Consultation with DFO during detail design will be necessary to determine whether harmful alteration, disruption or destruction (HADD) of fish habitat will occur at locations where works are proposed below the high water line (i.e., within the bankfull width of the channel) in fish habitat. Currently, this consultation consists of the preparation and submission of request for review forms and subsequent consultation with DFO biologists. This process is used to determine next steps which could include proceeding with the works under a letter of advice or the application for an authorization under the *Fisheries Act*. Requests for review forms should be submitted to DFO for all crossings where culvert or bridge works are proposed (all crossings except Crossings 1, 2, 4, 6, 13 and 22). A *Fisheries Act* Authorization will be secured during detail design, if required. Fish Collector's permits for salvage will also be obtained during the detail design/pre-construction phase as required.

5eii. Construction Impacts and Mitigation

Construction impacts to the aquatic environment (fish and fish habitat) include the temporary disruption of site-specific habitat, changes to water quality and quantity including temporary disruption of flows, increased water temperatures, erosion and sediment inputs to the watercourses, changes to floodplain and riparian vegetation, barriers to fish passage and potential impacts to aquatic SAR.

Section 5ei discusses additional mitigation measures and the assessment of footprint impacts to the aquatic environment. **Table 11** in **Section 5ei** presents a summary of the watercourse crossings, existing culvert/structure conditions, proposed works, the impacts/net environmental effects of those works on the aquatic environment and site-specific mitigation at each watercourse (separated by municipality). Potential impacts to aquatic SAR during construction are discussed in **Section 5i**.

In addition to the mitigation associated with watercourses/hydrological features presented in **Section 5dii** above, the following mitigation measures will be employed to avoid/minimize impacts to the aquatic environment during construction. Additional site-specific mitigation may be necessary to mitigate impacts to the aquatic environment. The potential need for additional site-specific mitigation will be investigated during detail design through consultation with permitting agencies (e.g., TRCA, CLOCA, DFO, and MECP).

In-Water Works

Where feasible, structures will be constructed outside of the watercourse banks, eliminating the need for in-water works. However, at many of the crossings, in-water work may be necessary. At all locations where in-water work is proposed, cofferdams (pea gravel bags, sheet piles, etc.) will be used to isolate the work area from the watercourse to enable work to be done in-the-dry (OPSS 517 Construction Specification for Dewatering). Flow will be maintained through either damming and pumping or fluming. If possible, work will be done during the driest part of the year when the lowest flows are present. This will minimize disturbance to fish habitat at the site and downstream. To further reduce the potential for serious harm, the following environmental protection measures will be implemented:

- Construction will be staged such that both water flow and traffic flow can be maintained.
- All works will be performed in-the-dry by using temporary flow bypass systems and cofferdams to isolate the work areas.
- No in-water work (or work on watercourse banks) will be permitted from April 1 to June 30 to protect spawning warmwater fish, incubating eggs and fry emergence and migratory periods of local fish populations, and from September 16 to June 30 (July 14 where Smallmouth Bass are present) to protect coldwater fish spawning, egg incubation and fry emergence and migratory periods of local fish populations (and to protect Redside Dace). Construction timing window applicability and dates will be confirmed with appropriate provincial and federal agencies during detail design. Dewatering designs will be completed following TRCA's Draft guidelines for dewatering (TRCA 2013) to ensure no negative impacts occur during throughout the working-in-the-dry process.
- Where cofferdams are to be employed, dewatering effluent will be treated prior to discharge to receiving watercourses (OPSS 517).
- Cofferdams will be constructed using pea gravel bags, sheet piling or other appropriate material to isolate the work area, and flow will be maintained at all stations.
- Only clean material free of particulate matter will be placed in the watercourse (OPSS 1005 Streambed Material).

Fish isolated by construction activities (if present) will be captured by a qualified fisheries specialist and safely released to the watercourse (OPSS 182 General Specification for Environmental Protection for Construction In and Around Waterbodies and on Waterbody Banks). In addition, any proposed dewatering extraction and discharge must not negatively impact fish habitat and must be completed using TRCA's Technical Guidelines for the Development of Environmental Management Plans for Dewatering (TRCA 2013).

Best Management/Construction Practices

Section 5dii discusses the best management/construction practices to be employed during construction to reduce the potential for spills or other materials/equipment from entering the water and impacting the aquatic environment.

Erosion and Sedimentation Control

Effective erosion and sedimentation control will be achieved throughout the project with careful planning and design, stringent construction supervision, monitoring of the site, and maintenance of control works throughout the operational life. As discussed in **Section 5bii** and **Section 5dii**, an Erosion and Sedimentation Control Plan (including an erosion monitoring and sediment report program) will be developed during detail design prior to construction including measures to monitor and maintain erosion and sedimentation control during construction to ensure their effectiveness. Standard erosion and sedimentation control measures will be followed during construction in accordance with OPSS 805 (Construction Specification for Temporary Erosion and Sediment Control Measures) to minimize construction-related impacts on surface water quality and fish habitat. See **Section 5bii** for a detailed discussion about the proposed erosion and sedimentation control measures and the guidelines to be followed to ensure effective erosion and sedimentation control during construction.

A number of additional OPSSs (in addition to OPSS 805) related to erosion and sedimentation control are also recommended to ensure that the erosion and sedimentation control measures are implemented including:

- General Specification for Environmental Protection for Construction In and Around Waterbodies and on Waterbody Banks (OPSS 182) to cover the environmental protection requirements and mitigation measures that apply to construction involving work in and around waterbodies and on waterbody banks.
- Construction Specification for Seed and Cover (OPSS 803) to stabilize disturbed areas.
- Construction Specification for Topsoil (OPSS 802) and Sodding (OPSS 803) to address the requirements for stockpiling, placing and supplying topsoil and to cover the requirements for sodding.
- General Specification for the Management of Excess Materials (OPSS 180) to ensure material generated during maintenance of sediment control measures will be taken off-site for disposal.

Erosion and sedimentation will have a minor effect on surface water quality and the aquatic environment provided these measures are installed pre-construction, maintained during construction and removed post-construction following soil re-stabilization.

Maintenance of Riparian Vegetation/Restoration and/or Enhancement of Aquatic Habitat

Maintaining riparian vegetation to the extent possible will help to stabilize the watercourse banks, provide shading/cover for the watercourse, filter contaminants, and improve wildlife habitat and aesthetics. The proponent will be responsible for vegetation management. The following environmental protection/mitigation measures are recommended:

- Prior to construction, trees/shrubs to be retained will be clearly identified in the field by the installation of tree/shrub protection barrier in accordance with OPSS 801 (Construction Specification for the Protection of Trees).
- Trees/shrubs identified to remain, which become damaged by construction activities, will be repaired or replaced.
- In areas where riparian vegetation removal is necessary to accommodate construction, measures to protect the local fish communities will include the following: no clearing of mature trees providing a bank stabilization function; no felling of trees into the watercourse; minimize the amount of debris produced from entering the watercourse; and, only clearing the vegetation required to complete the necessary works.

In addition, restoration and/or enhancement of aquatic habitat will be completed at the end of construction works at all watercourses. At a minimum, the following will be implemented as restoration/enhancement during the detail design phase of the project for all crossings where works (in-water or riparian) are proposed:

- Banks and riparian areas will be planted with native grasses and shrubs to provide increased shading and allochthonous inputs to the watercourse.
- Where restoration and enhancement will not suffice to offset/mitigate impacts, compensation will be employed.
- Compensation plans, if necessary, will be completed during detail design in consultation with regulatory agencies.

Stormwater Management

Section 5dii discusses some general mitigation measures to manage stormwater which will help avoid/minimize impacts to the aquatic environment. Further details will be provided in the Environmental Project Report (**Section 4.7**).

5eiii. Operations Impacts and Mitigation

The potential impacts to the aquatic environment (fish and fish habitat) from the operation of the DSBRT are generally limited to water quality alterations due to roadway contaminants, mainly salt application in winter and hot asphalt during summer. Mitigation for effects on water quality are included in the Environmental Project Report (**Section 4.7)** and in **Section 5diii** above.

5f. Terrestrial Environment

5fi. Footprint Impacts and Mitigation

Implementation of the DSBRT has the potential to result in footprint impacts to vegetation and vegetation communities including:

- displacement of and/or disturbance to vegetation and vegetation communities; and,

- displacement of and/or disturbance to rare, threatened or endangered vegetation and vegetation communities (discussed in **Section 5i**).

Displacement of/Disturbance to Vegetation and Vegetation Communities

Displacement of/disturbance to vegetation and vegetation communities has been avoided/minimized to the extent possible. However, some impacts to vegetation/vegetation communities are unavoidable in order to meet Metrolinx design standards for the DSBRT and to accommodate the proposed widening and geometry associated with the DSBRT. The loss of vegetation and vegetation communities, as a result of the preferred design alternative/DSBRT footprint, has been broken down into impacts within each of the five associated municipalities located within the DSBRT study area. Overall, there will be a loss of 40.14 ha of vegetation communities (including anthropogenically influenced lands such as agricultural, manicured and disturbed land and hedgerows), resulting in impacts to terrestrial and wetland communities with the removal of 0.11 ha of forest communities and 0.55 ha of wetland communities. The majority of the impacts will be to anthropogenically influenced lands with the loss of 29.96 ha and to cultural vegetation communities with the loss of 9.52 ha. All of the vegetation communities identified within the study area are considered to be widespread and common in Ontario and secure globally. No vulnerable community type was identified during botanical surveys.

Table 12 provides a summary of the vegetation removals due to the preferred design alternative/DSBRT footprint, which are broken down into impacts within each of the five municipalities within the study area. A discussion of impacts within each municipality follows **Table 12**. The natural areas/ELC vegetation communities and the DSBRT grading limits/footprint are presented in **Figures NER-1a** to **NER-1i** in **Section 3c**. Impacts to significant natural heritage features (including designated natural areas, plan policy areas and TRCA/CLOCA regulation areas) along with the proposed environmental protection/mitigation measures are presented in **Section 5j**.

TABLE 12.
SUMMARY OF VEGETATION REMOVALS WITHIN THE DSBRT GRADING LIMITS/FOOTPRINT

Vegetation Impacts within Municipalities	Total Area to be Impacted (Ha)
City of Toronto	
Cultural Communities (CUM1-1a, CUM1-1a/CUT1a and CUM1-1b/CUT1b, CUT1b and c, CUM1-1a/CUW1a to CUM1-1c/CUW1c, CUM1-1a/M, CUM1-1c/D, CUP1, CUP1-8a, CUP3-2b and CUW1c)	2.51
Forest Communities (FOD5-1b, FOM2a)	0.04
Anthropogenically Influenced Lands (Manicured and Hedgerows)	8.97
Subtotal for City of Toronto	***11.52 ha***
City of Pickering	
Cultural Communities (CUM1-1/CUT1 and CUM1-1c/CUT1-1c, CUM1-1a, b, f, and g, CUM1-1e/CUW1e and CUM1-1f/CUW1f, CUM1-1f/M, CUP1-3, CUW1e to j)	2.90
Wetland Communities (MAS2-1/SWT2-2, SWT2-2 and SWD3-4b)	0.25
Anthropogenically Influenced Lands (Manicured, Disturbed and Hedgerows)	10.67
Subtotal for City of Pickering	***13.82 ha***
Town of Ajax	
Cultural Communities (CUM1-1a and h to k, CUM1-1k/M, CUT1b/CUW1b,	2.54

TABLE 12.
SUMMARY OF VEGETATION REMOVALS WITHIN THE DSBRT GRADING LIMITS/FOOTPRINT

Vegetation Impacts within Municipalities	Total Area to be Impacted (Ha)
CUW1k, l and n)	
Wetland Communities (MAS2c and SWD4)	0.07
Forest Communities (FOD5b)	0.053
Anthropogenically Influenced Lands (Agricultural, Manicured and Disturbed)	4.64
Subtotal for Town of Ajax	***7.30 ha***
Town of Whitby	
Cultural Communities (CUM1-1k to n, CUM1-1m/D and CUM1-1o/D, CUM1-1g/CUW1g, CUW1o, and q to t)	3.32
Wetland Communities (MAS2d and e, MAS2-1d and e, MAM2-2/MAS2, SWD3a and c)	0.58
Forest Communities (FOD5c)	0.05
Anthropogenically Influenced Lands (Agricultural, Manicured, Disturbed and Hedgerows)	5.44
Subtotal for Town of Whitby	***9.39 ha***
City of Oshawa	
Cultural Communities (CUM1-1p, CUT1c, CUW1u to w)	0.19
Wetland Communities (SWD3-4c)	0.02
Anthropogenically Influenced Lands (Manicured and Disturbed)	2.37
Subtotal for City of Oshawa	***2.58 ha***
Total Vegetation Impacts (ha) for the DSBRT Study Area	***44.61 ha***

City of Toronto

A total of 11.52 ha of vegetated habitat will be removed within the DSBRT grading limits/footprint from McCowan Road to east of Port Union Road in the City of Toronto, with the greatest impact to manicured/hedgerow areas (loss of 8.77 ha). There will be a loss of 2.51 ha of cultural vegetation communities with the greatest impact to cultural meadow communities with the removal of 2.24 ha, as well as impacts to cultural woodland (loss of 0.07 ha) and cultural plantation (loss of 0.05) communities. Impacts of 0.105 ha to FOD5-1b and CUM1-1b/CUW1b vegetation communities are from within the Highland Creek Swamp Life Science ANSI and the Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA). Overall, impacts resulting in the loss of vegetation within these cultural communities are considered to be minor. Cultural meadows, thickets, woodlands and plantations are widespread and common throughout Ontario and typically host a range of disturbance tolerant plant species. It is expected that most plant species associated with those cultural communities that are displaced and/or disturbed due to the proposed construction will re-colonize available lands adjacent to the new ROW post-construction. Disturbance activities often serve to promote the establishment and/or spread of certain plant species such as those disturbance tolerant species.

Minor impacts will occur across two forest communities (FOD5-1b and FOM2a), with a total impact of 0.04 ha across the very edges of these three communities. The FOD5-1b community is associated with the Highland Creek Swamp ANSI and the Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA). Edges to be impacted typically abut manicured or cultural meadow where non-native and/or invasive species were observed as occasional to abundant. Overall, impacts to the very small portions of edge habitat noted above are considered to be

very minor. These forest communities are considered widespread, common in Ontario and secure globally. No grading work/extension of the road footprint is proposed within the Rouge River/Little Rouge Creek valleylands and therefore impacts to the vegetation/vegetation communities and significant natural heritage features located in this area (including the Rouge River Marshes Wetland Complex PSW, Rouge River Valley Life Science ANSI, Rouge Marsh Area ESA and Little Rouge Forest ESA) have been avoided.

City of Pickering

A total of 13.82 ha of vegetated habitat will be removed within the DSBRT grading limits/footprint from west of Altona Road to east of Brock Road in the City of Pickering, with the greatest impact to manicured/disturbed areas (loss of 10.67 ha). There will be a loss of 2.90 ha of cultural vegetation communities with the greatest impact to cultural meadow communities with the removal of 2.29 ha, as well as impacts to cultural woodland (loss of 0.34 ha) and cultural plantation (loss of 0.27 ha) communities. Impacts associated with CUW1e of 0.007 ha are associated with a small tableland portion of woodland on the northwest corner of Kingston Road and Altona Road. This area is not within any significant natural area associated with the Rouge River, however, it lies just within the boundary of the Rouge National Urban Park. The CUP1-3 community north of Kingston Road associated with Petticoat Creek lies within the Petticoat Creek Forest ESA. Overall, impacts resulting in the loss of vegetation within these cultural communities are considered to be minor. Cultural meadows, thickets, woodlands and plantations are widespread and common throughout Ontario and typically host a range of disturbance tolerant plant species. It is expected that most species displaced and/or disturbed within the cultural communities due to the proposed construction will re-colonize available lands adjacent to the new ROW post-construction. Disturbance activities often serve to promote the establishment and/or spread of certain plant species such as those disturbance tolerant species.

Minor impacts will occur across three wetland communities (MAS2-1/SWT2-2, SWT2-2 and SWD3-4b) with a total impact of 0.25 ha across the edges of these three communities. The SWD3-4b community is associated with Petticoat Creek and lies within the Petticoat Creek Forest ESA. Edges to be impacted abut cultural meadow where non-native and/or invasive species were observed as occasional to abundant. Overall, impacts to the small portions of edge habitat noted above are considered to be very minor. These wetland communities are considered widespread, common in Ontario and secure globally.

Town of Ajax

A total of 7.30 ha of vegetated habitat will be removed within the DSBRT grading limits/footprint from west of Elizabeth Street to Lake Ridge Road in the Town of Ajax, with the greatest impact to manicured, disturbed and agricultural areas (4.64 ha) of which almost all of this impact is to manicured areas adjacent to roads. There will be a loss of 2.54 ha of cultural vegetation communities, with the greatest impact to cultural meadow communities with the removal of 2.46 ha, as well as impacts to cultural thicket/cultural woodland (loss of 0.01 ha) and cultural woodland (loss of 0.08 ha) communities. Cultural communities at the north and south west corners of Lake Ridge Road and Kingston Road are within an area identified as 'Protected Countryside' within the Greenbelt Plan (2017). Within this area, only cultural roadside habitat will be removed with no impacts to adjacent agricultural lands expected. Overall, impacts resulting in the loss of vegetation associated with these cultural communities are considered to be minor. Cultural meadows, thickets and woodlands are widespread and common throughout Ontario and typically host a range of disturbance tolerant plant species. It is expected that most plant species displaced and/or disturbed within the cultural communities due to the proposed construction will re-colonize available lands adjacent to the new ROW post-construction. Disturbance activities often serve to promote the establishment and/or spread of certain plant species such as those disturbance tolerant species.

Minor impacts to one forest community (FOD5b) is expected with a total impact of 0.05 ha across the very edge of this community. The edge of this community (located south of Kingston Road east of Carruthers Creek) is approximately 1 m from the road edge and persists in a very disturbed state with abundant common, non-native and/or invasive plant species present. Overall, impacts to the portion of edge habitat noted above are considered to be very minor. This forest community is considered widespread, common in Ontario and secure globally.

Minor impacts will occur across two wetlands (MAS2c and SWD4) with a total impact of 0.07 ha across the edge of these two communities. The MAS2c community is partly associated with a ditch along the north side of Kingston Road at Audley Road, and is dominated by common reed.. Edges of the MAS2c and SWD4 communities abut cultural meadow where non-native and/or invasive species were observed as occasional to abundant. Overall, impacts to these portions of edge habitat are considered to be minor. These wetland communities are considered widespread, common in Ontario and secure globally.

Town of Whitby

A total of 9.39 ha of vegetated habitat will be removed within the DSBRT grading limits/footprint from Lake Ridge Road to east of Garrard Road/Kendalwood Road in the Town of Whitby, with the greatest impact to manicured, disturbed and agricultural areas and hedgerows (5.44 ha) of which 5.17 ha is comprised of manicured areas adjacent to roads. There will be a loss of 3.32 ha of cultural vegetation communities, with the greatest impact to cultural meadow communities with the removal of 3.12 ha, as well as impacts to cultural woodland (loss of 0.19 ha). Overall, impacts resulting in the loss of vegetation within these cultural communities are considered to be minor. Cultural meadows and woodlands are widespread and common throughout Ontario and typically host a range of disturbance tolerant plant species. It is expected that most plant species displaced and/or disturbed within the cultural communities due to the proposed construction will re-colonize available lands adjacent to the ROW post-construction. Disturbance activities often serve to promote the establishment and/or spread of certain plant species such as those disturbance tolerant species.

Minor impacts will occur across one forest community (FOD5c), with a total impact of 0.05 ha across the very edge of this community. The edge of this community (located south of Dundas Street east of Highway 412) is approximately 1 m to 2 m from the road edge where non-native and/or invasive plant species were observed as rare to occasional. Overall, impacts to the portion of edge habitat noted above are considered to be minor. This forest community is considered widespread, common in Ontario and secure globally.

Impacts will occur across several wetland communities (MAS2d and e, MAS2-1d and e, MAM2-2/MAS2, SWD3a and c), with a total impact of 0.58 ha across the edges of these communities. Impacts will be greatest to the MAS2-1d community with removals of 0.32 ha. This community is partly within a ditch along the north side of Dundas Street, east of Lake Ridge Road, and is associated with a Tributary of Lynde Creek, with another portion of this community impacted within the Town of Ajax (see discussion in the previous section). Wetlands MAS2d and MAM2-2/MAS2 lie within low-lying areas associated with another Tributary of Lynde Creek just west of Highway 412. Wetlands MAS2-1e and SWD3a are associated with the Lynde Creek Coastal Wetland Complex PSW and are within CLOCA's NHS. Overall, impacts to the edges of wetland communities noted above are considered to be moderate. These wetland communities are considered widespread, common in Ontario and secure globally.

City of Oshawa

A total of 2.58 ha of vegetated habitat will be removed within the proposed DSBRT grading limits/footprint from west of Thornton Road to the end of the study area just east of Simcoe Street, with the greatest impact to manicured and disturbed areas (loss of 2.37 ha). There will be a loss of 0.19 ha of

cultural vegetation communities including impacts to cultural meadow (loss of 0.08 ha), cultural thicket (loss of 0.08 ha), and cultural woodland (0.03 ha). Overall, impacts resulting in the loss of vegetation within these cultural communities are considered to be minor. Cultural meadows, thickets and woodlands are widespread and common throughout Ontario and typically host a range of disturbance tolerant plant species. It is expected that most plant species displaced and/or disturbed within the cultural communities due to the proposed construction will re-colonize available lands adjacent to the new ROW post-construction. Disturbance activities often serve to promote the establishment and/or spread of certain plant species such as those disturbance tolerant species.

Minor impacts to one wetland community (SWD3-4c) will result in the removal of 0.02 ha. This wetland is associated with Corbett Creek on the south side of King Street. The northern edge of this deciduous swamp is somewhat disturbed with non-native and/or invasive species observed as occasional to abundant. Overall, impacts to this edge habitat are considered to be minor. This wetland community is considered widespread, common in Ontario and secure globally.

Removal of Wetland and Forest Communities, Compensation and Planting Plans

As part of the evaluation of mitigation and compensation associated with vegetation community impacts, a high-level review of respective environmental policy guidelines/documents was undertaken to highlight compliance requirements. These documents include:

- Metrolinx Vegetation Guideline (Metrolinx 2020);
- Guideline for Determining Ecosystem Compensation (TRCA 2018);
- The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority (TRCA 2014);
- Rouge National Urban Park Management Plan (Parks Canada 2019); and,
- Upper and lower tier municipal tree protection by-laws including:
    - City of Toronto Tree Protection By-laws (Trees on City Streets, City of Toronto Municipal Code Chapter 813, Article II; Private Tree By-law, City of Toronto Municipal Code Chapter 813, Article III; Ravine and Natural Feature Protection By-law, City of Toronto Municipal Code Chapter 658; Parks By-law, City of Toronto Municipal Code Chapter 608, Article VII), City of Pickering Tree Protection By-laws (City of Pickering Tree Protection By-Law 6108/03; City of Pickering Boulevard Maintenance By-law 6831/08), Town of Ajax Tree Protection By-laws (Tree Protection By-Law 137-2006; Boulevard Tree Protection By-Law 138-2006), Town of Whitby Tree Protection By-laws (Town of Whitby By-law: Tree Protection By-Law 4640-00; Town of Whitby Property and Boulevard Maintenance By-law 6937-15), City of Oshawa Tree Protection By-laws (City of Oshawa City Trees By-Law 78-2008; City of Oshawa Boulevard By-law 136-2006), and the Region of Durham Tree Protection By-law (The Regional Municipality of Durham Regional Woodland By-Law 30-2020).

The Metrolinx Vegetation Guideline (Metrolinx 2020) recognizes TRCA's Guideline for Determining Ecosystem Compensation (2018) (herein referred as the TRCA ecosystem compensation protocol) and the approach for replacing natural features lost through development and/or infrastructure where impacts cannot be avoided. Two main approaches outlined in the TRCA ecosystem compensation protocol include replicating ecosystem structure and replicating the land base. However, the Metrolinx Vegetation

Guideline notes that '*replicating the land base* [approach that] *involves securing or acquiring land, ..will not be done as part of Metrolinx's approach to vegetation compensation*, thus *no funds will be diverted towards the acquisition of property'* (Sections 3.1.3 and 3.2.3.3, Metrolinx 2020). The Metrolinx Vegetation Guideline recommends a landscape science-based approach for vegetation compensation that reflects the basic principles of the TRCA ecosystem compensation protocol, in addition to following the requirements of applicable by-laws and regulations, with baseline compensation that includes a 1:1 replacement ratio (Metrolinx 2020) (also see Arborist Report, LGL 2021). It is acknowledged by TRCA that the full land base requirements as determined by their *'Guideline for a feature lost to infrastructure may not be achievable given that municipalities typically own ROW lands sized only to accommodate the infrastructure itself with little surplus land remaining. In these cases, the land area removed from the natural system from all infrastructure projects can be tracked by TRCA and the municipality, and compiled together so that cumulative losses to the land base of the natural system can be quantified (TRCA 2018)'.*

Numerous principles and standards for the above referenced environmental policy documents overlap, and the foremost that overlap are presented below.

- Avoidance of the natural system is the priority but, where this is not possible, impacts will be minimized to the extent possible including impacts associated with access, construction, operations and maintenance.
- Compensation is recommended when avoidance of the natural system is not possible.
- An environmental monitoring and contingency plan will be prepared where infrastructure is permitted within valley or stream corridors, wetlands, woodlands, and/or hazardous lands or sites (to address potential emergencies during construction).
- Compensation through ecological restoration such as the creation or enhancement of habitat will be undertaken, planning of which will be carried out early in the detail design phase to maximize options for restoration to the natural system.
- Compensation will be based on habitat type (ELC) impacted, size or area (ha) of impact, and its function.
- Where the creation of habitat is identified, it will be located outside of the identified natural system from where impacts occur and connected to or contiguous with this system, to the extent possible.
- Compensation of habitat is preferred as close to the original location and within the same watershed, to the extent possible.
- Compensation will serve to improve the size, connectivity, and shape of the local ecosystem and the larger natural heritage system, which will include expanding woodlots, hedgerows, wetlands and meadows to buffer and connect important natural features.
- Compensation may have specific requirements that need to be incorporated in the design and implementation of works (i.e., use by particular species, transplanting plant material (where feasible), invasive species management, promoting biodiversity, maintaining or restoring Carolinian vegetation communities, etc.).
- Replacement of trees at a ratio representative of their ecosystem function and service, as determined by the individual tree approach, where access to contiguous habitat outside of the ROW excludes determining mean basal area for a feature.
- Factors to be considered when establishing agreements for compensation include documenting baseline conditions and impacts, specific vegetation objectives or targets for both preferred and

incompatible species (i.e., non-native and/or invasive/hazardous species), considerations for location, siting (i.e., topography, soil conditions, vegetation compatibility, compatibility with adjacent land uses, etc.) and timing, detailed planting plans, implementation monitoring and subsequent monitoring of planted material, etc.

- Post-construction planting plans should consult local municipal arborists to ensure the planting list consists of climate change resilient species.

Metrolinx/the proponent may consider cash-in-lieu for impacts associated with conservation authority or municipal lands, but funds will be used only for tree compensation as part of vegetation compensation to improve components of the natural heritage system, adhering to restoration principles outlined, to the extent possible. Thus, cash-in-lieu for vegetation compensation through ecological restoration would be used for actual tree compensation for the purposes of creating or enhancing the natural heritage system for the benefit of either increasing contiguous habitat, providing buffering capacity, increasing habitat connectivity, etc. As previously noted, Metrolinx's approach to cash-in-lieu does not include monies for securing or acquiring land as part of vegetation compensation (Sections 3.1.3 and 3.2.3.3, Metrolinx 2020). Further investigation of this compensation measure in conjunction with Metrolinx/the proponent and respective regulatory agencies, will be required during detail design. Cash-in-lieu compensation must be submitted prior to permit issuance.

In the case of federally owned lands associated with the Rouge National Urban Park, where efforts to protect the natural system from impacts is not possible, the Rouge National Urban Park Management Plan (Parks Canada 2019) will guide planning and implementation, as required. Specifically, infrastructure proposals requiring land will demonstrate a net ecological gain prior to Parks Canada approvals and the removal of these lands. Parks Canada *will seek to embed design features and operational practices that maintain or restore ecological integrity in external plans, environmental assessments, and operations for infrastructure on non-park lands next to or traversing the park.* In anticipation of future infrastructure improvements, the *Rouge National Urban Park Act permits the transfer of a maximum of 200* [ha] *of park land to a federal or provincial authority, including the* [TRCA], *or to a municipal authority, if the disposal is required for the purposes of the installation or maintenance of public infrastructure, including public utilities or transportation corridors.* The proponent will identify and mitigate any cumulative effects resulting from the DSBRT project during detail design. **Section 5ji** discusses in more detail the very minor anticipated impacts to the Rouge National Urban Park (loss of 0.06 ha) as a result of the DSBRT preferred design alternative/DSBRT footprint.

Compliance with the above noted principles and standards is required to be applied to final vegetation community impact areas which may be refined during the detail design phase. During detail design, a further review of the environmental policy guidelines/documents, as well as agency consultation (with TRCA, CLOCA, MECP, MNRF, Parks Canada, etc.), will be undertaken to ensure compliance and agreement, while working towards successful project completion.

All works will be undertaken in accordance with the Ontario Regulation 166/06, TRCA's Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.

Compensation and mitigation measures associated with vegetation impacts, outlined in the following sections, reflects the policies and standards of those environmental policy guidelines/documents listed above. A further, detailed review to ensure compensation and mitigation compliance will be undertaken during detail design.

Vegetation Community Offsets/Compensation

Terrestrial and wetland impacts associated with the DSBRT will result in the removal of 0.14 ha of forest and 0.92 ha of wetland. During the detail design phase, design refinements to further minimize impacts to forest and wetland communities will be undertaken, to the extent possible. At that time, a summary of vegetation removals within each watershed will be provided if required for compensation purposes. Tree protection hoarding plans must also be submitted and approved prior to any permit issuance. The removal of wetland and forest communities will be offset/compensated through restoration, through habitat creation and/or the enhancement of nearby vegetation communities, to the extent possible. Disturbed lands that are suitable for restoration post-construction, will be restored. Where suitable habitat to restore wetland is less than calculated removals, the restoration of forest habitat in lieu of wetland, will be considered in discussion with agency staff. Where lands are identified for forest and wetland offsetting, no fill placement will be undertaken and plantings will be installed into natural, good quality soils. If, during construction, additional forest or wetland habitat is impacted, additional offsetting will be undertaken. During detail design, and in compliance with relevant environmental policy (as noted above) discussion with municipal and agency staff (including TRCA, CLOCA, MECP, MNRF and Parks Canada, as required) will be undertaken to identify suitable sites for offsetting to compensate for habitat loss as part of implementing the project.

Restoration of suitable forest and/or wetland habitat will be undertaken at a compensation ratio to be determined through further discussion with regulatory agencies (e.g., TRCA, CLOCA, MECP, MNRF, Parks Canada, etc.), as part of implementing this project. Compensation will be undertaken following applicable Tree By-laws and Ecological Restoration with replacement at a 1:1 ratio on an individual tree basis (Metrolinx 2020), and will be in accordance with applicable environmental policies and the standards of respective agencies and municipalities. A preliminary calculation has been undertaken, the results of which are presented in the Arborist Report (LGL 2021), available under separate cover. Site suitability of lands where habitat restoration and/or enhancement could be undertaken, typically within or adjacent to the ROW, will consider the following:

- site conditions for specific habitat function (e.g., suitability for wetland creation/restoration where variable or prolonged flooding conditions are possible for wetland species, etc.);
- habitat for species protected under the Ontario ESA 2007, if confirmed that the DSBRT will impact existing SAR habitat and where mitigation or a permit is required;
- ensuring that compensation occurs as close to the location of vegetation removals as possible and typically within the same watershed/sub-watershed;
- ensuring that compensation is prioritized on lands adjacent to existing forest to increase contiguous habitat;
- ensuring that restoration/enhancement is undertaken outside of existing natural features;
- ensuring provision of buffering capacity to protect existing vegetation communities;
- increasing species diversity;
- supporting/increasing habitat connectivity; and,
- improving habitat conditions to facilitate the movement of wildlife.

The City of Toronto requires replacement ratios by tree category as follows as per the City of Toronto By-laws:

- Private tree located on the Project Site: 3:1;

- Private tree located on property adjacent to the Project Site or on the boundary of the Project Site and adjacent property: 3:1;
- Park tree: 3:1;
- RNFP tree: healthy tree >10 cm: 3:1; healthy tree <10 cm: 1:1; poor condition tree: 1:1; tree injury: 1:1; hedge removal: 1 tree per 5 m of hedge removed; and,
- City tree: 3:1.

The City of Oshawa has noted that if compensation planting is completed on-site, it must be completed in consultation with both CLOCA and City of Oshawa Parks staff. The City of Oshawa noted that, if compensation planting is completed off-site, there can be no net loss of planting. Planting plans must be developed in consultation with both CLOCA and City of Oshawa Parks staff.

Compensation will be in accordance with applicable environmental policies and the standards of respective agencies and municipalities. A high-level summary of potential compensation options is provided below. However, during detail design, as noted above, environmental policies/guidelines will be reviewed in detail and agency consultation will continue to ensure compliance and agreement regarding compensation for habitat loss.

- Discussions with respective municipal and regulatory staff will be undertaken to determine if compensation for the DSBRT can be tracked as part of cumulative losses with other infrastructure projects. In this regard, compensation may be explored through existing municipally owned lands and existing ecological restoration programs.
- Compensating for land loss of habitat on a 1:1 ratio within the same ecosystem, to the extent possible, while adhering to the baseline compensation of individual trees at a 1:1 ratio. Offsetting habitat loss will be on lands in close proximity to removals and where feasible to extend contiguous habitat within natural heritage systems to maintain/extend connectivity. Calculating compensation must also take into account vegetation type using the Ecological Land Classification system.
- Where compensation is undertaken, reporting components will include a description of impacted ecosystems, a description of any proposed compensation locations, a proposed work plan, detail design drawings, a construction phasing plan, monitoring plan, etc.

When suitable restoration sites cannot be identified, the option to provide cash-in-lieu will be discussed and will adhere to criteria set out in the respective environmental policy guideline documents listed above, as well as municipal by-laws. As noted above, cash-in-lieu for vegetation compensation through ecological restoration will only be used for actual tree compensation for the purposes of creating or enhancing the natural heritage system for the benefit of either increasing contiguous habitat, providing buffering capacity, increasing habitat connectivity, etc. Cash-in-lieu compensation must be submitted prior to permit issuance.

Impacts to wetland communities within the study area will be to small portions of meadow marsh, shallow marsh, thicket swamp and deciduous swamp habitat. These wetlands are typically located along several watercourses that bisect the study area or along low-lying areas adjacent to roads. These wetland vegetation communities provide valuable ecological functions such as flood mitigation, and habitat for more sensitive wildlife and plant species. It is expected that post-construction, new wetland areas will be created as a result of changes in drainage related to the construction of the DSBRT, and this can, in part, mitigate for removals of similar wetland types. Additionally, edge management, which would include high-density plantings of robust, native wetland plant species, will be considered (see discussion below). Such plantings can mitigate impacts related to invasive species establishment/encroachment further into

wetlands, and can increase local diversity. Other mitigation measures include the removal of dumped garbage, and the treatment of invasive species such as common reed.

Impacts to forest communities within the study area (deciduous and mixed forest) will be to very small portions along existing forest edges, which are already in a disturbed state. However, forest edge management will be implemented to enhance edges, and to try to mitigate the establishment of invasive species along disturbed edges (see discussion below). It is recommended that restoration plantings not be undertaken in fill, but in areas with suitable soil conditions for sustained vegetation growth and health. Where these conditions cannot be met, soil amendments primarily incorporating/mixing suitable soils into the top 0.3 to 1.0 m of fill will be considered.

Where restoration is undertaken as part of compensation, the proponent will be required to provide a warranty on planted materials to ensure that the newly planted material survives and fulfils the intended function. A two-year warranty applies to planted materials when part of a restoration plan for the City of Toronto. The spread of aggressive or non-native plant species will be appropriately managed.

Forest Edge Management

The removal of forest vegetation along existing forest edges or the removal of a portion of a forested feature that results in the exposure of a new forest edge will have several negative impacts along forest borders and potentially within the forest interior. Some of the direct and indirect impacts as a result of newly exposed edges include:

- exposure of the retained vegetation to the effects of increased light, wind, and sun which results in decreased soil moisture;
- exposure to salt spray;
- reduced establishment of shade tolerant plant species and an overall reduction in plant species richness and abundance;
- increased invasion/spread of aggressive non-native plant species;
- loss of native seedbank;
- decreased presence of interior habitat;
- exposure of “edge” trees to windthrow;
- changes in wildlife diversity and abundances;
- destabilization of landforms composed of unconsolidated material and/or soil compaction; and
- changes to hydrology.

Forest edge management in accordance with the TRCA Forest Edge Management Plan Guidelines (2004) is recommended at impacted forest communities, including deciduous and mixed forests and deciduous and thicket swamps across the study area. Where new edges are exposed, forest management techniques will be implemented to mitigate the associated impacts to forest communities. As part of the forest edge management, mitigation measures will include, but not be limited to the following:

- Planting of appropriate native trees, shrubs and ground flora, which will be undertaken as soon as possible following vegetation removals. Plantings along the disturbed forest edges will provide a protective buffer to newly exposed forest edges which have become exposed to a greater potential for aggressive and invasive species infiltration further into the forest interior, alteration due to a greater incident of light penetrating further into the forest with potential for decreased soil moisture and

increased windthrow. Plant species used within the buffer will be somewhat similar to those in the adjacent habitat and be non-invasive in nature.

- Woody stock will be planted at high densities along new edges to increase buffering capacity over time.
- Grading within areas where edges will be newly created will be designed to meet existing grades a minimum of 3 m away from the tree drip-line, to the extent possible.
- Compaction of soils on lands immediately adjacent to the newly exposed forest edge will be minimized to the extent possible. Construction activities can result in cut roots, and soil compaction due to re-grading and fill placement. Cut tree roots can reduce a tree's capacity to uptake and transfer water and nutrients, and soil compaction can result in a decrease in air spaces within the soil, which can reduce the infiltration capacity of the soil, limit soil oxygen and limit root penetration. Decompaction efforts and methodology will be site specific. Where decompaction is required, it will extend to a minimum depth of approximately 25 cm.
- Drainage patterns adjacent to newly created edges will be maintained to avoid changes in soil moisture, to the extent possible. This is especially important around wetland areas and forest communities with substrates that maintain increased moisture capacity.
- Suitable tree protection fencing will be installed and regularly maintained along any newly exposed forest edges.
- The spread/invasion of aggressive plant species must be immediately mitigated. The inclusion of filter fabric along all tree protection fencing to enhance protection from the spread of invasive, aggressive plant species, will be undertaken.
- The proponent will be required to provide a warranty on planted material to ensure that the newly planted material survives and fulfils the intended function. The spread of aggressive or non-native plant species will be appropriately managed.

Prior to construction during detail design, forest edge management will be considered for those communities where forest edge management is recommended.

Invasive Species Management

Efforts to control non-native and invasive plant species that become established, as well as prevent the establishment of new non-native and invasive plant species, at a minimum, will include the following:

- Consideration of relevant regulations where feasible including the federal *Plant Protection Act* and *Seeds Act* and the provincial *Invasive Species Act* and *Weed Control Act* with restrictions on spreading four species including black dog-strangling vine (*Cynanchym louiseae*), dog-strangling vine (*Cynanchum rossicum*), Japanese knotweed (*Reynoutria japonica* var. *japonica*), and European common reed (*Phragmites australis* spp. *australis*). Dog-strangling vine can establish dense stands typically in meadow habitat but can also invade into forested sites displacing native species. Emerging or established populations observed will be effectively treated especially in areas identified for compensation or mitigation.
- Managing dense patches of common buckthorn, garlic mustard, Canada thistle (*Cirsium arvensis*), and Russian or Autumn olive (*Elaeagnus angustifolia* and *E. umbellata*) will be undertaken.
- Overall and where feasible, consideration for the management of invasive species will include the existing species composition, the nature of the invasive species, potential impacts of spread, type of control including the use and type of herbicide, etc.

- Application of treatment/mitigation methods will vary depending on site conditions and will consider indirect and direct impacts and incorporate up to date best management practices.
- Invasive species treatment may include several treatment applications over time.
- Herbicide treatments will be applied at the optimal time by licensed, experienced personnel. Herbicide treatment will be used in conjunction with cutting or mowing to also mitigate spread by seed. Invasive species management is particularly important where habitat creation and/or enhancement is undertaken to support restoration trajectories/objectives.
- Minimize the exposure of bare soil and, where bare soil persists, these areas will be planted with a non-invasive annual cover crop for an interim period, while preferred species become established.
- Prohibit the use of non-native and invasive ornamental plants for landscaping (e.g., Norway maple, purple loosestrife, Japanese knotweed, Japanese honeysuckle, etc.).

Planting Plans

A DSBRT detailed landscape planting plan (including landscape composition planting layout drawings) will be developed during the detail design phase prior to construction and once areas identified for restoration have been determined in consultation with the respective agencies and municipalities. Restoration plans and replanting plans (along with erosion control fencing plans) must be submitted prior to permit issuance. The planting of forest and wetland habitat must be undertaken with the appropriate native and non-invasive and locally appropriate plant species that will be presented on site-specific plans to be developed by an experienced landscape architect/ecologist. Local municipal arborists should be consulted regarding the planting plan to ensure the planting list consists of climate change resilient species. At a minimum, planting plans will show the following:

- Where planting plan(s) will be developed by Metrolinx (if applicable), plan(s) will include at a minimum 2 years of successful monitoring and native herbaceous cover in the form of native seed mixes, shrubs and trees, in accordance with the local site conditions. Selection of planting materials can include appropriate plants to keystone species' lifecycle requirements that benefits the ecosystem following Indigenous Knowledge and Indigenous Nations' engagement recommendations.
- Detailed maps of the planting locations along with the respective allocations of tree, shrub, herbaceous and grass species to be planted inclusive of species, ratio of plantings or abundances, and stock size.
- A description of the best management practices that are to be followed in the planting and tending of these sites for a minimum of five years following the initial planting stage. In particular, management will need to be undertaken for those invasive/aggressive plant species.
- Species like ash (*Fraxinus* sp.) and American beech (*Fagus grandifolia*) will not comprise greater than 5% of stock quantities to be planted, and cottonwood (*Populus deltoides*) will not be incorporated as part of planting due to its aggressive nature.
- Where there is potential for grading impacts to alter hydrology (i.e., increased/decreased slopes, channel realignments, etc.), in areas identified for planting, plant species selection will be of species suitable to expected conditions post-construction.
- The proponent will be required to provide a warranty on planted materials to ensure that the newly planted material survives and fulfils the intended function.
- Planting plans will follow a natural approach to the landscaping of adjacent lands and will ensure that the character of the transportation infrastructure is appropriate to the surrounding landscape (i.e., boulevard plantings as part of streetscaping in urban areas, naturalized and native/non-invasive plantings adjacent to existing natural areas, etc.).

General Environmental Protection/Mitigation Measures

The additional environmental protection/mitigation measures outlined below will be reviewed during detail design to minimize and mitigate footprint-related impacts associated with the construction of the DSBRT. Measures included below are a result of best industry practices and are based on a review of relevant policy guidelines/documents. During detail design, additional mitigation measures may be identified through a further review of policies and/or agency discussion.

- Efforts to minimize encroachment, displacement of, and disturbance to vegetation/vegetation communities will be undertaken, to the extent possible. Avoidance of wetlands and forest will be prioritized to the extent possible.
- Current Best Management Practices (BMPs) will be incorporated to inform, avoid and mitigate impacts throughout the DSBRT study area, including within regulated areas, designated natural areas, federal lands, etc.
- Maintain existing topography to the extent possible to minimize grade changes to adjacent natural areas.
- The placement of fill will not be permitted within hazardous lands, watercourses, wetlands and other areas to mitigate interference with the hydrological function of a wetland, or in areas where compensation planting may be undertaken to mitigate interference with the growth of planted tree and shrub stock.
- Impacts to natural habitat associated with the Rouge National Urban Park (see **Section 5j** for further details) will demonstrate a net ecological gain. Discussion with Parks Canada staff prior to construction will be undertaken as necessary to discuss vegetation impacts of park lands and for approval. During detail design, further review of the Rouge National Urban Park Management Plan (2019) will be undertaken to ensure compliance with key strategies.
- If required, incorporate SAR planning into planting areas, to the extent possible.
- Monitoring of compensation planting areas will include contingencies to mitigate for plant mortality, species incompatibility with site conditions, invasive species presence, etc.
- Plant removal and maintenance will comply with the requirements of the MBCA. Thus, disturbance, clearing or disruption (i.e., maintenance, etc.) of vegetation where birds may be nesting will be completed outside of the migratory bird nesting timing window of April 1 to August 31 (see **Section 5gii.**). Where mowing of vegetation is required, pollinator habitat will be considered by avoiding late summer mowing in areas with suitable pollinator plant species that may also negatively impact pollinator larvae on host plants, such as milkweed.
- Implement appropriate erosion and sediment controls and best management practices to mitigate construction impacts including the installation of a cover crop, erosion control blanket, etc.
- Minimize encroachment into areas where vegetation is to be retained by installing suitable protective fencing.
- Flush cut tree stumps and minimize grubbing, to the extent possible.
- Explore opportunities to pre-stress shrubs and certain tree species along forest edges, by cutting to encourage suckering and minimize negative impacts to newly exposed edges, until such a time when these areas are stabilized with permanent plantings and preferred seed mixes post-construction.

- The application of a nurse crop with a preferred seed mix is recommended. Fast growing nurse crops provide temporary cover while the preferred seed mix becomes established, helping to suppress weeds. Suitable nurse crop species include Virginia wild rye (*Elymus virginicus*), Canada wild rye (*Elymus canadensis*), common oat (*Avena sativa*) and buckwheat (*Fagopyrum esculetnum*). Due to its potential to interfere with the establishment of preferred species, annual rye (*Lolium multiflorum*) is not recommended for use.
- Preferred seed mixes for restoration projects are outlined in the Metrolinx Vegetation Guideline (2020) with species' selection including native species in compliance with multiple conservation authority jurisdictions. These seed mixes were designed to be used in a variety of soil and moisture conditions. Plant species will also be native to the City of Toronto and Durham Region. Seed mixes will be applied at the specified rate of 22-25 kg/ha or adjusted as necessary to suit application method and site conditions.

5fii. Construction Impacts and Mitigation

The temporary displacement of and/or disturbance to vegetation and vegetation communities will occur as a result of the construction of the DSBRT associated with grading, the construction work around bridges, and the extension/replacement of culverts, etc. In addition, the inadvertent spread of non-native invasive plants could take place during construction.

Vegetation impacts from construction may be associated with equipment operating in areas identified for protection. Therefore, areas designated for protection will be clearly shown on all construction plans and marked in the field using tree protection barriers in accordance with the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019a) and OPSS 801 – Construction Specification for the Protection of Trees. The City of Toronto (Urban Forestry) Tree Protection Policy and Specifications for Construction Near Trees will also be followed. Tree protection hoarding plans must be submitted and approved prior to permit issuance. Efforts will be taken during construction to minimize impacts to existing forest and wetland vegetation communities located within the study area. Wherever possible, regionally rare species will be avoided. Where these plant species cannot be avoided, they will be salvaged through transplanting into nearby vegetation communities with suitable habitat characteristics that will afford ongoing protection, where feasible (see **Section 5i** for more details on rare plant species). Mitigation and monitoring measures to take place during construction will be further developed during the detail design phase.

Siltation of natural vegetation arising from soil erosion of exposed soils can arise if appropriate sediment control is not undertaken. An Erosion and Sedimentation Control Plan will be in place prior to the start of construction (see **Section 5bii**) to address this issue.

Non-native invasive plants can establish in natural areas during construction displacing native plant species over time. The inadvertent spread of aggressive or non-native plant species will be appropriately managed. Efforts to control non-native species that have become established, as well as to prevent the establishment of new non-native plants, is important to maintain the health and diversity of natural ecological systems.

Riparian Habitat and Valleyland Management

The DSBRT will cross numerous watercourses, and at these crossings, consideration will be given to providing an access management plan to avoid/minimize encroachment, where feasible. Also, vegetation along the banks of watercourses will be retained to the extent possible. Where such vegetation is

identified for retention, filter fabric will be installed to delineate sections of vegetation to be retained to mitigate encroachment.

Where feasible, disturbance to riparian areas will be avoided within 30 m of the watercourse in particular within sensitive features or where sensitive aquatic species are present. Riparian habitat will be retained at a minimum of 3 m to 5 m from the bank edge of any watercourse impacted during construction. This measure is expected to ensure bank stability, mitigate erosion, and mitigate negative impacts to aquatic habitat. Suitable tree protection fencing and erosion control fencing will be installed and regularly maintained. Restoration/enhancement of riparian habitat will be undertaken during construction immediately following the completion of work in riparian zones. Suitable deep rooting graminoid, herbaceous and shrub species, with a variety of trees where suitable, will be installed to prevent streambank erosion and improve riparian conditions. Plant species selected will be native and/or non-invasive.

Where valleylands are impacted, the zone of construction impacts will be limited, and staging areas will be well outside of forested valleys. Suitable tree protection fencing and erosion control fencing will be installed and regularly maintained. Tree protection hoarding plans must be submitted and approved prior to permit issuance. Restoration of newly impacted edges will be undertaken, and methods for the enhancement of these areas will be carried out as outlined in **Section 5fi** (under forest edge management). Plant species selected will be native and/or non-invasive.

The proponent will be required to provide a warranty on planted materials to ensure that the newly planted material survives and fulfils the intended function. A two-year warranty applies to planted materials when part of a restoration plan for the City of Toronto. The spread of aggressive or non-native plant species will be appropriately managed.

General Environmental Protection/Mitigation Measures

During detail design, efforts will be made to minimize encroachment to vegetation communities/natural areas associated with access and staging during construction (as well as associated with operations and maintenance) to the extent possible. Avoidance of wetlands and forest will be prioritized to the extent possible. At a minimum, the following general construction best management practices and environmental protection/mitigation measures will be implemented during construction to minimize and mitigate construction-related impacts associated with the construction of the DSBRT. Measures included below are a result of best industry practices and are based on a review of relevant policy guidelines/documents. During detail design, additional mitigation measures may be identified through a further review of policies/guidelines and/or agency discussion. Consideration will be given to erosion and sediment control measures outlined in the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019a) and Silt Smart-Erosion and Sediment Control Effectiveness Monitoring and Rapid Response Protocol for Large Urban Development Sites (Credit Valley Conservation, MNR, MOE, DFO 2012). These include but will not be limited to the following:

- the inclusion of filter fabric along all tree protection fencing and edge management fencing to enhance protection from the spread of invasive, aggressive plant species;
- implement methods for the short-term stabilization of soils, including but not limited to, coir fibre or a suitable alternative, as required;
- utilize vegetation cover to protect any exposed surfaces and inhibit the establishment of invasive species in accordance with construction specific standards (i.e., OPSS 804 Construction Specification for Seed and Cover);

- topsoil from stockpiles will be in accordance with construction specific standards (i.e., OPSS 802 Construction Specification for Topsoil);
- old field seed mix and mulching or erosion control blanket, in accordance with construction specific standards, will be placed in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization;
- tree protection will be in accordance with construction specifications (i.e., OPSS 801 Construction Specification for the Protection of Trees and the City of Toronto (Urban Forestry) Tree Protection Policy and Specifications for Construction Near Trees) to minimize impacts and ensure no construction activity will occur within the tree protection zone. The Arborist Report (LGL 2021) outlines in detail the environmental protection and mitigation measures proposed to protect trees identified to be retained;
- riparian and valleyland management of impacted edges will be undertaken, as required as per TRCA's Forest Edge Management Plan Guidelines (2004);
- ensure efforts are made to prevent the spread of invasive plant species during construction both on and off site. Sanitation of construction equipment will be undertaken in accordance with the Clean Equipment Protocol (2013) and at a minimum will include sanitation of construction vehicles and equipment prior to leaving and moving to the next site. A cleaning station will be set up, so vehicles and equipment can be inspected and cleaned regularly; and,
- An environmental monitoring and contingency plan in accordance with TRCA/CLOCA Standards may be required to address potential emergencies during construction where valley or stream corridors, wetlands, woodlands and/or hazardous lands are impacted.
- Any construction activities should mitigate damage to recent wetland restoration work undertaken in the valleylands north of Crossing 14 (Carruthers Creek) by the Town of Ajax, Region of Durham and TRCA, and manage the presence of invasive species.
- The valleylands south of Carruthers Creek (Crossing 14) have been identified as a priority restoration area in the Carruthers Creek Watershed Plan (Durham Region and TRCA 2020) (and will soon be transferred to public ownership). Post-construction restoration should be focused on this site and impacts should be minimized through appropriate controls.

5fiii. Operations Impacts and Mitigation

Impacts to vegetation and vegetation communities are transient and primarily relate to footprint and construction impacts. It is expected that post-construction, new wetland areas will be created as a result of changes in drainage related to the construction of the DSBRT, and that this, in part, mitigates for removals of similar wetland types. Where vegetation offsetting is determined and restoration of forest and/or wetland is additionally undertaken, maintenance associated with any prescribed restoration monitoring and maintenance of manicured areas during the operation and maintenance phase, including removal of dumped garbage, will be on-going.

Efforts to control non-native and invasive plant species that have become established, as well as prevent the establishment of new non-native and invasive plant species, at a minimum must be implemented (see **Section 5fi and Section 5fii).**

De-icing salts can have negative impacts on plants growing adjacent to the road ROW, with typical exposure within 10 m to 30 m from the pavement edge. Plant exposure is through root uptake or when seeds germinate during the next growing season. Tree and shrub above ground plant parts are also

exposed to aerial salt deposition when de-icing salts are applied to roads, affecting both forest and landscape species. Salt stress in plants results in abnormalities by damaging root, leaf and shoot tissue. Salt stress results in reductions in water uptake and loss of photosynthetic capacity that reduce plant growth.

To mitigate the effects of salt spray, reduce its use in lieu of an alternate, less harmful substance and ensure planting is undertaken with salt tolerant species that can withstand salt exposure where planting is undertaken close to the roadside, while planting less tolerant species further away from the roadside. Recommended salt tolerant tree and shrub species, both native and horticultural species, include but are not limited to:

- honey locust (*Gleditsia triacanthos*);
- Kentucky coffee-tree (*Gymnocladus dioicus*);
- Colorado spruce (*Picea pungens*);
- Austrian pine (*Picea nigra*);
- red oak (*Quercus rubra*);
- bur oak (*Quercus macrocarpa*);
- Japanese tree lilac (*Syringa reticulata*);
- paper birch (*Populus papyrifera*);
- white cedar (*Thuja occidentalis*);
- Red osier dogwood (*Cornus sericea*);
- common juniper (*Juniperus communis*);
- Staghorn sumac (*Rhus typhina*);
- shrubby cinquefoil (*Potentilla fruticosa*); and,
- elderberry (*Sambucus canadensis*).

Several of the native species noted above would also serve to provide screening where planted in higher densities to aid in edge management (see **Section 5fi**), where newly exposed edges require protection.

5g. Wildlife

5gi. Footprint Impacts and Mitigation

Implementation of the DSBRT has the potential to result in footprint impacts to wildlife and wildlife habitat including:

- displacement of/disturbance to wildlife and wildlife habitat;
- barrier effects on wildlife passage;
- wildlife/vehicles conflicts;
- wildlife passage considerations for enhanced functionality; and,
- displacement of significant wildlife habitat (discussed in **Section 5h**), and/or rare, threatened or endangered wildlife (discussed in **Section 5i)**.

Displacement of/Disturbance to Wildlife and Wildlife Habitat

A discussion of the wildlife habitat conditions and displacement of/disturbance to wildlife/wildlife habitat as a result of the preferred design alternative/DSBRT footprint is provided for each municipality below.

City of Toronto
Wildlife habitat within the City of Toronto was relatively diverse but consisted largely of anthropogenic influenced areas including manicured lands, hedgerows, cultural meadow, cultural thicket, cultural woodland and cultural plantation communities. Aquatic features also included four watercourses (Highland Creek, Tributary of Highland Creek, Centennial Creek and the Rouge River/Little Rouge Creek), along with mineral shallow marsh, mineral deciduous swamp and mineral mixed swamp habitats. The Rouge River/Little Rouge Creek feature is expected to function as a regionally significant wildlife

movement corridor because of the linear natural areas associated with the feature in an otherwise highly disturbed landscape, as well as an important contiguous corridor for wildlife movement. There are several ESAs, two ANSIs and a PSW located in the vicinity of the study area. **Section 5f** and **Section 5j** outline in detail the impacts to the ELC vegetation communities (including cultural meadow, thicket, plantation and woodland communities, and deciduous and mixed forest communities) and designated natural areas within the City of Toronto.

Limited negative effects are anticipated within the City of Toronto as wildlife habitats identified within the study area consist almost entirely of previously modified/disturbed wildlife habitat with low habitat diversity and limited habitat potential. Efforts should be made to minimize impacts to habitats affected by the DSBRT in the vicinity of the watercourses, the Highland Creek Swamp Life Science ANSI and the Highland Forest, Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA). No extension of the road platform is proposed in the vicinity of the Rouge River/Little Rouge Creek valleyland which will maintain opportunity for wildlife movement through this feature.

City of Pickering

Wildlife habitat in the City of Pickering consisted largely of highly anthropogenic influenced areas including manicured lands and cultural meadow, thickets, woodland and plantations. Higher quality natural heritage features are found along the watercourse crossings of the Rouge River/Little Rouge Creek located at the westerly edge of the City; this feature is expected to function as a regionally significant wildlife movement corridor. Other aquatic features also included the small watercourses located within the City including Petticoat Creek, a Tributary of Petticoat Creek, Amberlea Creek, two Tributaries of Amberlea Creek, Dunbarton Creek, and Pine Creek, and associated mineral shallow marsh, mineral deciduous swamp, and mineral thicket swamp communities. There are several ESAs, PSWs, and ANSIs located in the vicinity of the study area. **Section 5f** and **Section 5j** outline in detail the impacts to the ELC vegetation communities (including cultural meadow, thicket, plantation and woodland communities and deciduous and thicket swamp communities) and designated natural areas within the City of Pickering. Forested areas were very limited in distribution and were composed entirely of black walnut plantation communities. Breeding bird surveys conducted in 2019 documented one Barn Swallow individual (regulated as 'Threatened' under the Ontario ESA) at Breeding Bird Point Count Station Number 12, within the City of Pickering; however, no nests were observed. Potential impacts to Barn Swallow and other wildlife SAR are discussed in **Section 5i**.

Limited negative effects are anticipated within the City of Pickering as wildlife habitats identified within the study area consist almost entirely of previously modified/disturbed wildlife habitat with low habitat diversity and limited habitat potential. Efforts should be made to minimize impacts to habitats affected by the DSBRT in the vicinity of the watercourses and the Petticoat Creek Forest ESA. No extension of the road platform is proposed in the vicinity of the Rouge River/Little Rouge Creek valleyland (located at the westerly edge of the City of Pickering) which will maintain opportunity for wildlife movement through this feature.

Town of Ajax

Wildlife habitat in the Town of Ajax consisted largely of highly anthropogenic influenced areas, primarily agricultural lands, commercial/industrial lands, hedgerows, cultural meadows, thickets, woodlands and plantations, as well as manicured grass. Higher quality natural heritage features were restricted largely to the West Duffins Creek (which spans Pickering and Ajax), Major Spink Area ESA (which spans Pickering and Ajax), and the Duffins Creek and Carruthers Creek valleylands. These features are expected to function as locally significant wildlife movement corridors because of the linear natural areas associated with the features in an otherwise highly disturbed landscape. Other aquatic features included

mineral shallow marsh, mineral deciduous swamp, and mineral meadow marsh communities. Forested areas were very limited in distribution and were composed of cultural woodlands and plantations and one deciduous forest community, generally situated along the watercourses. **Section 5f** outlines in detail the impacts to the ELC vegetation communities (including cultural meadow, thicket and woodland communities, a deciduous forest community, deciduous swamp and shallow marsh communities) and designated natural areas within the Town of Ajax.
Limited negative effects are anticipated within the Town of Ajax as wildlife habitats identified within the study area consist almost entirely of previously modified/disturbed wildlife habitat with low habitat diversity and limited habitat potential. Efforts should be made to minimize impacts to habitats affected by the DSBRT in the valleylands/natural areas associated with the watercourses described above and to maintain opportunity for wildlife movement in these areas.

Town of Whitby
Wildlife habitat in the Town of Whitby consisted largely of anthropogenic influenced areas, primarily agricultural lands, commercial/industrial lands, hedgerows, and cultural meadows and woodlands. Higher quality natural heritage features are situated along the three Tributaries of Lynde Creek and Lynde Creek (associated with the Lynde Creek Coastal Wetland Complex PSW and CLOCA's NHS, Pringle Creek, and the Tributary of Corbett Creek valleylands, which spans Whitby and Oshawa. These features are expected to function as locally significant wildlife movement corridors because of the linear natural areas associated with the features in an otherwise highly disturbed landscape. In fact, the valleys associated with Lynde Creek are considered by CLOCA to be Landscape Corridors within the Wildlife Habitat Network as per the Wildlife Corridor Protection and Enhancement Plan (CLOCA 2015). Other aquatic features also include small mineral shallow marsh, ample mineral deciduous swamp, and mineral meadow marsh communities. Forested areas were limited in distribution and were composed of cultural woodlands and one deciduous forest community located east of Highway 412 south of Dundas Street. **Section 5f** and **Section 5j** outline in detail the impacts to the ELC vegetation communities (including cultural meadow and woodland communities, a deciduous forest community, and meadow marsh, shallow marsh and deciduous swamp communities) and designated natural areas within the Town of Whitby.

Limited negative effects are anticipated within the Town of Whitby as wildlife habitats identified within the study area consist almost entirely of previously modified/disturbed wildlife habitat with low habitat diversity and limited habitat potential. Efforts should be made to minimize impacts to habitats affected by the DSBRT associated with the Tributaries of Lynde Creek, Pringle Creek, and the Tributary of Corbett Creek and the Lynde Creek Coastal Wetland Complex PSW, as well as to impacts within the associated NHS in order to maintain opportunity for wildlife movement through these features.

City of Oshawa
Wildlife habitat in the City of Oshawa consisted largely of anthropogenic influenced areas, primarily containing commercial/industrial/residential lands, parkland, and cultural meadows, thickets and woodlands. The entire study area east of Whitby towards the end of Oshawa is considered environmentally sensitive (low – unnamed) by CLOCA. Aquatic features included three small watercourses (Corbett Creek, Goodman Creek and Oshawa Creek). Forested areas were relatively sparse in this City and were composed of cultural thicket and cultural woodland communities only. The valleys associated with Corbett Creek, Goodman Creek and Oshawa Creek, within CLOCA's NHS are also considered by CLOCA to be Landscape Corridors within the Wildlife Habitat Network as per the Wildlife Corridor Protection and Enhancement Plan (CLOCA 2015). **Section 5f** and **Section 5j** outline in detail the impacts to the ELC vegetation communities (including cultural meadow, thicket and woodland communities, and a deciduous swamp community) and designated natural areas within the City of Oshawa.

Limited negative effects are anticipated in the City of Oshawa as wildlife habitats identified within the study area consist almost entirely of previously modified/disturbed wildlife habitat with low habitat diversity and limited habitat potential. Efforts should be made to minimize impacts to habitats affected by the DSBRT associated with Corbett Creek, Goodman Creek and Oshawa Creek valleylands and the associated NHS, to maintain opportunity for wildlife movement through these features.

Barrier Effects on Wildlife Passage

No new barriers to wildlife passage are expected to occur as a result of the DSBRT. All major corridors associated with valleylands will be maintained to facilitate wildlife passage. DSBRT structure/culvert modifications have been designed to maintain and promote wildlife passage across the landscape.

The bridge structures/larger culverts at several watercourse/valley crossings within the study area provide the only significant wildlife passage corridors as nearly the entire DSBRT corridor is highly urbanized, disturbed and fragmented from surrounding natural areas (if present at all), and much of the lands do not generally accommodate wildlife passage. These crossings are: Highland Creek, Tributary of Highland Creek, Centennial Creek, and Rouge River/Little Rouge Creek (within Toronto); Petticoat Creek, Tributary of Petticoat Creek, Amberlea Creek, two Tributaries of Amberlea Creek, Dunbarton Creek, and Pine Creek (within Pickering); West Duffins Creek, Duffins Creek and Carruthers Creek (within Ajax); Lynde Creek, Pringle Creek and Tributary of Corbett Creek (within Whitby); and Corbett Creek, Goodman Creek, and Oshawa Creek (within Oshawa). Lands in the vicinity of these structures/culverts comprise some of the highest quality natural heritage features within the vicinity of the study area and provide important north south movement corridors for wildlife within, or in the immediate vicinity of, the study area. The highly disturbed environment mentioned above also provides some function to funnel wildlife species towards these corridors by forcing them to move laterally until they reach a suitable crossing area. It should be noted that the structure characteristics (e.g. grates, angled construction, lack of dry area, etc.) associated with several of these crossings (namely: Centennial Creek, Dunbarton Creek and Carruthers Creek) either prohibit or significantly reduce the ability of wildlife to safely cross through the structure. Carruthers Creek (Crossing #14) is identified as a priority ecological connectivity improvement area in the Carruthers Creek Watershed Plan (TRCA 2021) as it is currently a barrier to terrestrial and aquatic animal movement/migration. Any improvements to the function of this crossing at conveying wildlife should be considered (e.g., increased openness ratio, terrestrial crossing opportunity, etc.).

Openness ratio (OR) is a calculation which is used to determine the tunnel effect created by a structure and thus the likelihood wildlife species would utilize that structure. This evaluation is completed by analysing a structure's component measurements (i.e., height x width / structure length). Generally, a greater OR value is expected to increase the likelihood of wildlife utilization of a given structure or culvert. To maximize the OR, structures should be designed to have a larger opening and the shortest length possible, since wildlife species are more likely to enter a culvert if they can see light at the other end. Minimum OR was determined by a review of secondary source data regarding wildlife passage at road crossings (Clevenger et al. 2001). The minimum OR for small animals should be 0.05 and the minimum OR for large animals should be 0.6. Research indicates that small mammals prefer small diameter openings (e.g., concealment may decrease exposure to predation), and subsequently, smaller OR structures (Ministry of Transportation 2017). A minimum clearance height of 3 m for structures that will provide passage for large animals (e.g. white-tailed deer) is recommended. In addition, natural substrates should be used to encourage wildlife to utilize crossing structures. Ground cover should be continuous with the substrates found outside and adjacent to the structural entrances thereby encouraging animals to pass through the structure (Yanes et al. 1995).

TABLE 13.
EXISTING AND PROPOSED OPENNESS RATIOS FOR CULVERTS/STRUCTURES WITHIN THE STUDY AREA

Crossing	Existing								Proposed								Net Change for Wildlife Passage
	Length (m)	Rise (m)	Span (m)	OR	*Large Mammals*	*Mid-sized Mammals*	*Small Mammals*	*Herps*	Length (m)	Rise (m)	Span (m)	OR	*Large Mammals*	*Mid-sized Mammals*	*Small Mammals*	*Herps*	
Petticoat Creek (#5)	43	2.45	6.15	0.35	No	Yes	Yes	Yes	59	2.45	6.15	0.26	No	Yes	Yes	Yes	Decrease in the capacity for Mid-sized Mammals, Small Mammals and Herp wildlife to pass through structure
Tributary of Petticoat Creek (#6)	86	2.4	2.4	0.07	No	No	Yes	No	100	2.4	2.5	0.06	No	No	Yes	No	Slight decrease in the capacity for Small Mammals to pass through structure
Amberlea Creek (#7)	45	1.82	1.82	0.07	No	No	Yes	No	71	1.82	1.82	0.05	No	No	Yes	No	Slight decrease in the capacity for Small Mammals to pass through structure
Tributary of Amberlea Creek (#8)	51	1.52	2.44	0.07	No	No	Yes	No	81	1.52	2.44	0.05	No	No	Yes	No	Slight decrease in the capacity for Small Mammals to pass through structure
Tributary of Amberlea Creek (#9)	58	1.2	1.2	0.02	No	No	No	No	70	1.2	1.2	0.02	No	No	No	No	Openness ratio (existing and proposed) not suitable for wildlife to pas through structure.
Dunbarton Creek (#10)	57	1.80	3.00	0.09	No	No	Yes	No	87	1.80	3.00	0.06	No	No	Yes	No	Decrease in the capacity for Small Mammals to pass through structure

TABLE 13.
EXISTING AND PROPOSED OPENNESS RATIOS FOR CULVERTS/STRUCTURES WITHIN THE STUDY AREA

Crossing	Existing								Proposed								Net Change for Wildlife Passage
	Length (m)	Rise (m)	Span (m)	OR	*Large Mammals*	*Mid-sized Mammals*	*Small Mammals*	*Herps*	Length (m)	Rise (m)	Span (m)	OR	*Large Mammals*	*Mid-sized Mammals*	*Small Mammals*	*Herps*	
Pine Creek (#11)	42	2.62	6.10	0.38	No	Yes	Yes	Yes	72	2.62	6.10	0.22	No	Yes	Yes	Yes	Decrease in the capacity for Mid-sized Mammals, Small Mammals and Herp wildlife to pass through structure
West Duffins Creek (#12)	22	-	64	-	N/A	N/A	N/A	N/A	29.2	-	64	-	N/A	N/A	N/A	N/A	OR unknown – no assessment
Duffins Creek (#13)	58	1.2	3	0.06	No	No	Yes	No	63.4	1.2	3	0.06	No	No	Yes	No	No change to openness ratio
Carruthers Creek (#14)	34	1.90	5.50	0.31	No	Yes	Yes	Yes	50	1.90	5.50	0.21	No	Yes	Yes	Yes	Decrease in the capacity for Mid-sized Mammals, Small Mammals and Herp wildlife to pass through structure
Lyndre Creek PSW Relocated Culvert (Circular)	41	1.2	-	0.11	No	No	Yes	Yes	71	1.2	-	0.06	No	No	Yes	Yes	Slight decrease in capacity for Small Mammals and Herp. Wildlife to pass through structure
Lynde Creek (#18)	19	-	19.20	-	N/A	N/A	N/A	N/A	43	-	19.20	-	N/A	N/A	N/A	N/A	OR unknown – no assessment
Pringle Creek (#19)	26	2.40	6.10	0.56	No	Yes	Yes	Yes	44	2.40	6.10	0.34	No	Yes	Yes	Yes	Decrease in the capacity for Mid-sized Mammals, Small Mammals and Herp wildlife to pass through structure

TABLE 13.
EXISTING AND PROPOSED OPENNESS RATIOS FOR CULVERTS/STRUCTURES WITHIN THE STUDY AREA

Crossing	Existing								Proposed								Net Change for Wildlife Passage
	Length (m)	Rise (m)	Span (m)	OR	*Large Mammals*	*Mid-sized Mammals*	*Small Mammals*	*Herps*	Length (m)	Rise (m)	Span (m)	OR	*Large Mammals*	*Mid-sized Mammals*	*Small Mammals*	*Herps*	
Corbett Creek (#21 -circular)	48	2.30	-	0.35	No	Yes	Yes	Yes	60	2.30	-	0.28	No	Yes	Yes	Yes	Decrease in the capacity for Mid-sized Mammals, Small Mammals and Herp wildlife to pass through structure
Corbett Creek (#21 -arch)	48	1.90	2.50	0.10	No	Yes	Yes	Yes	60	1.90	2.50	0.08	No	No	Yes	No	Loss of function for Mid-sized Mammals and Herps and decrease in the capacity for Small Mammals to pass through structure
Oshawa Creek (#23 -Bond St.)	20	2.90	16.30	2.36	Yes	Yes	Yes	Yes	17	2.90	17.00	2.90	Yes	Yes	Yes	Yes	Increase for all wildlife groups to pass through structure
Oshawa Creek (#23 -King St.)	17	3.70	17.60	3.83	Yes	Yes	Yes	Yes	17	3.70	17.60	3.83	Yes	Yes	Yes	Yes	No change in the capacity for all wildlife groups to pass through structure

Animal Group	*Min. OR**	*Notes:*
Large mammals (e.g. deer)	≥ 0.6-1.0	Recommend width and height both ≥3 m, but no less than 2 m tall
Mid-sized mammals (e.g. fox, raccoon, skunk)	≥0.4, but no less than 0.1	Width and height each ≥1 m
Small mammals (e.g. mouse, vole, squirrel)	≥0.05	Width and height each 0.3-1.0 m
Herps (e.g. frog, salamander, turtle, snake)	≥0.25, but no less than 0.1	Recommend width and height both ≥1 m, but no less than 0.5 m - Length ideally less than 25 m

An assessment of the OR at 11 watercourse crossings (9 watercourses) that offer the highest quality wildlife habitat/connectivity potential and are part of the construction of the DSBRT was undertaken (see **Table 13**). Work being completed at each of these 16 crossings consists largely of lengthening of existing culverts/structures. Where no culvert/structure work is proposed (see **Section 5di** and **5ei**) or where the existing footprint will remain unchanged (e.g. works limited to asphalt removal, deck replacement, etc.), no assessment has been undertaken.

Overall, the OR for the culverts/structures reviewed will largely result in a slight to modest decrease in OR value; however, the suitability of the culverts/structures to safely convey the four wildlife groupings (large mammals, mid-sized mammals, small mammals and herpetofauna) will remain largely unchanged. Most notably, the lengthening of the arch structure at Corbett Creek will result in the loss of suitability for mid-sized mammals and herpetofauna. The Oshawa Creek (Bond Street) crossing works will result in a modest increase in OR for all animal groups. OR values at the Oshawa Creek (King Street) crossing will remain unchanged. OR calculations at two crossings (West Duffins Creek and Lynde Creek) could not be calculated as complete structure dimensions are not available at this time. However, both structures are relatively large bridges and are expected to facilitate safe movement for all wildlife groups.

As part of project implementation, once proposed culvert/structure sizes are confirmed, OR will be re-calculated for each of the culverts/structures to determine whether target animal groups can use the culverts/structures for passage. Where feasible, the culvert/structure size must reflect an approximate OR to facilitate animal movement. Currently, there is no plan to construct new crossing structures. Where crossing structure sizing is constrained by existing sizing, or other technical limitations, enhancement of crossing sites will be considered where feasible (see below).

Wildlife/Vehicle Conflicts

Wildlife/vehicle conflicts along/in the vicinity of the DSBRT corridor are poorly understood. However, frequent use of natural habitat corridors (primarily associated with watercourse crossings) and existing crossing structures was noted during field investigations. Because these corridors will be maintained under the DSBRT project through construction or maintenance of appropriately sized structures, no additional conflicts are expected to occur, and the structures will allow for the continued use of these wildlife corridors for all species of wildlife.

Wildlife Passage Recommendations for Enhanced Functionality

Where feasible, implement the following wildlife passage recommendations where existing infrastructure footprints are expanded to enhance the functionality of crossing structures.

Planting at Wildlife Crossing Structures

Low stature vegetation is considered an important component of wildlife crossing use by reptiles, amphibians and small mammals (Cavallaro et al. 2005). Bare and exposed earth surrounding the entrance to a wildlife passage will deter use by wildlife as a result of perceived vulnerability to predators. To the extent possible, all existing natural vegetation will be salvaged surrounding all crossing locations. Where vegetation has been removed or is found to be absent, in the immediate vicinity of crossings, planting of low stature vegetation (e.g., grasses and small shrubs) will occur where feasible. Shrubs will be spaced apart from one another by approximately 3-5 m, as to not cause a visual obstruction of the wildlife crossing structure.

Internal Cover at Wildlife Crossing Structures

Reptiles, amphibians and small mammals prefer low stature vegetation or other forms of shelter within crossing structures (Cavallaro et al. 2005). An assessment of light penetration into the crossing structures

will be required during detail design to determine if adequate vegetation growth and establishment as cover will occur. Other natural forms of cover such as stumps, logs (preferably hollowed), and rock piles, can be used to provide shelter and moist microclimates for wildlife. It is recommended that a mix of stumps, logs and rock piles be placed within each of the crossing structures identified above. Cover objects will be present at intervals of approximately every 10 m, within enclosed areas. Rock piles may be constructed out of rip-rap or other similar sized material, but will be no larger than 0.5 m height x 1 m wide, to avoid impediment of wildlife movement through the structure. Similarly, logs placed within the crossing structure will be oriented lengthwise within the structure wall so as to not impede wildlife movement.

Given the limited modifications to existing structures associated with the DSBRT, opportunity for enhancement of existing crossings may be limited; however, where possible, these considerations will be incorporated during the detail design phase.

Substrate Materials within Wildlife Crossing Structures
Natural substrates will be used to encourage wildlife to utilize crossing structures. Ground cover will be continuous with the substrates found outside and adjacent to the structural entrances thereby encouraging animals to pass through the structure. Substrates covering the ground within and surrounding the crossing structures will contain a mix of soil and small granular materials, matching what is found on lands surrounding the crossing structures (locally excavated soils is recommended).

Wildlife Barrier/Funnel Fencing
Where it is necessary to expand existing roadways or associated infrastructure, wildlife crossing structures (e.g., bridges and culverts) can be used to enable wildlife movement across roads (Beier et al. 2008). Funnel and/or barrier fencing is the most effective way to guide wildlife to a given crossing structure and reduce road-mortality (Clevenger 2001; Ministry of Transportation 2017). Construction of wildlife barrier/funnel fencing is recommended at several crossing structures, specifically those which contain larger natural heritage systems, and which will experience bridge or culvert extensions/widening. It is recommended that wildlife barrier/funnel fencing be included at the crossing of Petticoat Creek, West Duffins Creek, Duffins Creek, Carruthers Creek (within Ajax), Lynde Creek, Pringle Creek, Tributary of Corbett Creek (within Whitby), Corbett Creek, and Oshawa Creek (within Oshawa) to improve their effectiveness at safely moving wildlife across the landscape. Further analysis at a site-specific level during detail design prior to construction will be required to determine fencing requirements and to further explore fencing type required (e.g., small animal fencing vs. large animal fencing). Wildlife barrier/funnel fencing will be constructed to tie-into crossing structures (identified above) and extend to the edge of natural areas associated with crossings (or to the extent feasible).

5gii. Construction Impacts and Mitigation

Construction activities associated with the implementation of the DSBRT have the potential to result in temporary construction impacts to wildlife and wildlife habitat including:

- displacement of/disturbance to wildlife and wildlife habitat during construction;
- barrier effects on wildlife passage during construction;
- wildlife/vehicle conflicts during construction;
- potential impacts to migratory birds during construction; and,
- displacement of rare, threatened or endangered wildlife (discussed in **Section 5i)**.

The majority of species residing in habitats within or directly adjacent to the DSBRT ROW are generally tolerant of anthropogenic disturbances. However, efforts will be made to ensure that impacts to areas

containing more sensitive wildlife habitat (e.g. natural areas/valleylands and designated natural areas) are minimized during construction to the extent possible and to maintain opportunity for wildlife movement through the natural areas/valleylands.

Construction duration and disturbance in the vicinity of existing culverts and bridges will be minimized to the extent possible to reduce the potential for increase in road mortality caused by wildlife avoidance of these structures.

Wildlife salvage must occur prior to clearing and grubbing activities associated with construction where feasible, particularly in wetland habitats, to preserve vulnerable wildlife species (e.g., herpetofauna). All applicable Wildlife Collector's permits will be obtained prior to any salvage activities.

A number of bird species listed under the MBCA are located within the study area. The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests. While migratory insectivorous and non-game birds are protected year-round, migratory game birds are only protected from March 10 to September 1. Environment Canada provides Nesting Periods when migratory birds are most likely to be nesting, within a respective geographic zone. The DSBRT study area falls within Environment Canada's Nesting Zone C2 (Nesting Period: end of March – end of August). To comply with the requirements of the MBCA, disturbance, clearing or disruption of vegetation where birds may be nesting must be completed outside the migratory bird nesting timing window of April 1 to August 31. In the event that these activities must be undertaken from April 1 to August 31, a pre-clearing nest survey will be conducted by a qualified avian biologist to identify and locate active nests of species covered by the MBCA.

5giii. Operations Impacts and Mitigation

Operations/maintenance activities associated with the implementation of the DSBRT have the potential to result in operations impacts to wildlife and wildlife habitat including:

- barrier effects on wildlife passage; and,
- potential disturbance to wildlife from noise, light and visual intrusion.

No new barriers to wildlife passage are expected to occur as a result of the operation of the DSBRT. All major corridors associated with natural areas/valleylands will be maintained and where structure works (e.g., widening, etc.) will occur, crossing structures will mimic (or exceed suitability for wildlife crossing where appropriate) the existing crossings to facilitate wildlife passage.

Noise, light and visual intrusion may alter wildlife activities and patterns. In the DSBRT project setting, wildlife has generally become acclimatized to the noise, light and visual conditions associated with the operation of the roadways within the study area, and only those fauna that are tolerant of human activities tend to persist. Given that wildlife found within the study area are generally acclimatized to the presence of road infrastructure, disturbance to wildlife from any increase in noise, light and visual intrusion potentially caused by the operation of the DSBRT is not expected to have any significant adverse effects.

Potential disturbance caused by light pollution from the proposed improvements to the transportation network can be mitigated by using reflectors to focus light beams onto the DSBRT and away from natural heritage features adjacent to the DSBRT corridor. In addition, mitigation for the potential for bird collisions with bus shelters constructed of glass, is recommended. Bird-friendly, patterned glass could be incorporated that makes the glass more visible to birds. This can also be accomplished by adding decals to glass.

5h. Significant Wildlife Habitat

During LGL's 2019 field survey, no seasonal concentration areas were found within or in proximity to the study area. No rare vegetation communities or specialized habitats for wildlife were found within the study area; nor were any habitats for rare (provincially ranked S1 to S3 species) or special concern species found. As a result, there will be no impacts to Significant Wildlife Habitat as per the Provincial Policy Statement.

While no Significant Wildlife Habitat was documented as per the Provincial Policy Statement, many portions of the study area (as noted in **Section 4g**; all creeks and associated valley and riparian areas) are expected to provide important local and regional animal movement corridors. Wildlife movement and corridor function must be maintained by establishing crossing structure design criteria and prescribing a number of mitigation measures which will ensure continued opportunity for wildlife to safely move across the local landscape. These design criteria and mitigation measures are described in **Sections 5gi, 5gii** and **5giii)**.

5i. Species at Risk and Plant Species of Concern/Regionally Rare Plant Species

5ii. Footprint Impacts and Mitigation

Implementation of the DSBRT has the potential to result in the disturbance to/displacement of rare, threatened or endangered aquatic, plant and wildlife SAR and SAR habitat, as well as plant species of concern/regionally rare plant species. As discussed in **Section 5f, Section 5g and Section 5j**, impacts to vegetation/vegetation communities, wildlife/wildlife habitat and significant natural heritage features will be minimized to the extent possible to minimize impacts to SAR/SAR habitat and removals of plant species of concern/regionally rare plant species.

As noted in **Section 4i**, a total of 16 SAR (as well as endangered bat species) have been recorded in the vicinity of the DSBRT study area by secondary source data and external agencies. These 16 species include three aquatic SAR, one plant SAR, and 12 wildlife SAR (as well as endangered bat species). However, only two of these SAR were identified within the vicinity of the study area during LGL's field investigations including Barn Swallow (regulated as 'Threatened' under the Ontario ESA) and butternut (regulated as 'Endangered' by both the Ontario ESA and Canada SARA). One additional plant SAR (Kentucky coffee tree – regulated as 'Threatened' under the Ontario ESA and Canada SARA) was identified during the arborist investigation. The 17 aquatic, plant and wildlife SAR (as well as endangered bat species) recorded within the vicinity of the study area are further discussed below. Plant species of concern/regionally rare plant species are also discussed further below.

Further correspondence will take place with external agencies (i.e. MECP, DFO, Environment and Climate Change Canada and Parks Canada) during the detail design phase prior to construction, as required, to discuss the SAR (and SAR habitat) that have been identified or have the potential to be located in the vicinity of the study area (in particular Redside Dace, American Eel, butternut, Bobolink, Barn Swallow, Bank Swallow, Eastern Meadowlark and SAR bat species), any potential impacts of the proposed work on these federally/provincially designated species and their habitat, and appropriate protection/mitigation/monitoring/compensation measures. A determination of whether a proposed development will contravene subsection 10(1) of the Ontario ESA 2007 and/or the Canada SARA 2002 is required prior to the undertaking. The requirements for permitting under the Ontario ESA (Ontario Regulation 242/08, etc.) and Canada SARA will be reviewed and confirmed with MECP, DFO, Environment and Climate Change Canada and Parks Canada as necessary to determine whether mitigation or overall benefit are required. Prior to construction, further targeted field investigations must be undertaken as required for SAR during the appropriate season using specified specific standardized protocols. Surveying for these species must be conducted to establish their presence or absence, and, thus,

the appropriate steps for protection and permitting. Fish and Wildlife Collector's permits for salvage will also be obtained during the detail design/pre-construction phase as required.

Plant SAR and SAR Habitat, and Plant Species of Concern/Regionally Rare Plant Species

As noted in **Section 4i,** two plant SAR that are regulated under the Ontario ESA and the Canada SARA were identified during LGL's botanical and arborist field investigations within the vicinity of the DSBRT study area including Kentucky coffee tree and butternut. Impacts to these two plant SAR were assessed and are described below. No other plant SAR were identified during LGL's field investigations.

Kentucky Coffee Tree

A total of 125 Kentucky coffee trees were identified as planted streetscape/amenity feature trees within the study area during the arborist survey. A total of 81 of the 125 Kentucky coffee trees located within the study area will be removed as a result of the DSBRT (see Arborist Report LGL Limited 2021 for locations). Kentucky coffee tree is regulated as 'Threatened' under the Ontario ESA and the Canada SARA (Schedule 1). However, Management Biologists with the MECP have advised that streetscape Kentucky coffee trees are likely cultivars and, as such, do not require Ontario ESA authorizations (MECP 2019). None of the Kentucky coffee trees identified are located on federal lands and, therefore, permitting under the Canada SARA will not be required. As a result, no further action is required under the Ontario ESA or Canada SARA.

Butternut

A total of four butternut trees were identified within the DSBRT study area; three within the vicinity of Morningside Park in the City of Toronto, identified during the arborist survey (refer to Arborist Report LGL Limited 2021 for locations), and one additional Butternut tree (located outside of the ROW) north of Dundas Street and just east of the Highway 412 on-ramp located in the Town of Whitby, as observed from within the ROW during the botanical investigations. Its location is close to the edge of a cultural meadow and cattail shallow marsh. Butternut is regulated as 'Endangered' under the Ontario ESA and the Canada SARA (Schedule 1). Based on the current grading limits/DSBRT footprint, no direct impacts to these four butternuts are anticipated. However, works will occur within the 50 m habitat protection zone of all four butternuts. Prior to construction during detail design, a detailed butternut survey must be undertaken within 50 m of the proposed limits of disturbance during the appropriate window (i.e., leaf on) to determine if any additional butternut trees are present and thus appropriate steps for protection, mitigation or permitting under the Ontario ESA. Also, at that time, a Butternut Health Assessment must be undertaken for each of the four butternuts identified as well as any additional butternut trees identified. This assessment will be conducted by an MNRF designated Butternut Health Assessor. Since the grading limits lie within the 50 m habitat project zone (of the four identified butternuts), consultation with MECP will take place during the detail design phase to determine if mitigation or permitting under the Ontario ESA is required.

Where butternut trees are identified to be retained, fencing will be used to delineate where encroachment must not occur. During detail design, if SAR planting is identified as a requirement and planting in suitable areas adjacent to the ROW or in compensation areas is acceptable, planting, tending, monitoring and reporting of SAR planting will be adhered to as per criteria/conditions under the Ontario ESA 2007.

None of the four butternuts identified are located on federal land (i.e., Rouge National Urban Park) and, therefore, the Canada SARA does not apply and consultation with federal agencies/permitting under the Canada SARA will not be required.

Plant Species of Concern and Regionally Rare Plant Species

As noted in **Section 4i**, 17 plant species identified as rare in Toronto and/or Durham or as TRCA species of concern (L1 to L3), were observed within several vegetation communities across with the study area (see **Table 8**). Many of these plants were identified on lands outside of the grading limits/DSBRT footprint. All of the species listed in **Table 8** have populations that are provincially secure.

Where warranted (i.e., trees < 3 cm dbh, etc.), during detail design, efforts will be made to locate/identify plant species of concern/regionally rare plants that will be impacted by the DSBRT. Where removal of plant species of concern/regionally rare plant species cannot be avoided, these plant species will be salvaged through transplanting into nearby vegetation communities (prior to construction or the previous growing season) with suitable habitat characteristics that will afford ongoing protection, where feasible. A transplantation/relocation plan will be prepared during detail design as required for appropriate species.

Aquatic SAR and SAR Habitat

Three potential aquatic SAR are found within the study area: Eastern Pondmussel, Redside Dace and American Eel.

A portion of the study area (around the Rouge River - Crossing 4) contains potential habitat for Eastern Pondmussel. Eastern Pondmussel is listed as 'Special Concern' both provincially and federally, and is not protected under either the Ontario ESA 2007 or Canada SARA. Works at the Rouge River, downstream of which Eastern Pondmussel had been reported on DFO Aquatic Species at Risk mapping, will be limited to the roadside/bridge deck. Therefore, there will be no effects on this species or its habitat.

Redside Dace, a provincially and federally 'Endangered' species, has been reported as present (occupied) in West Duffins Creek (Crossing 12) and Duffins Creek (Crossing 13) is considered to be contributing habitat for this species. In addition, Lynde Creek (Crossing 18) is possible occupied habitat, although at this time its status as direct Redside Dace habitat is not known. Carruthers Creek (Crossing 14) is historic habitat for this species and does not have protected status as a result. The bridge widening at Crossing 12 and, potentially, the works at Crossing 18, have the potential to impact this 'Endangered' species and its habitat. No works at Crossing 13 are proposed. Consultation with MECP and DFO during detail design will be necessary to determine permitting requirements for the works proposed at Crossing 12. In addition it is recommended that discussions also occur with MECP and DFO regarding the status of Redside Dace habitat within Lynde Creek at Crossing 18 at that time.

American Eel is listed as 'Endangered' provincially under the Ontario ESA and 'Threatened' federally by COSEWIC. It has been reported to occur in Oshawa Creek (Crossing 23 – Bond Street and King Street Crossings) within close proximity to the study area and to possibly occur at Crossings 4 (Rouge River), 12 (West Duffins Creek), 13 (Duffins Creek), 14 (Carruthers Creek), 16 (Tributary of Lynde Creek), and 18 (Lynde Creek). This species has broad habitat requirements rather than specialized critical habitats that are often associated with other species. Provincially, this species receives protection under the Ontario ESA 2007. Although American Eel is listed federally as 'Threatened' by COSEWIC, it has 'No Status' under the federal Canada SARA and therefore is not regulated federally. Recent experience with this species indicates that it will not require permitting under the Ontario ESA 2007 due to its general habitat requirements and transient behaviour. However, its presence in Oshawa Creek will automatically trigger a review by DFO under the *Fisheries Act* for any works occurring within the high water mark of Oshawa Creek and is recommended regarding the status of American Eel habitat at the other watercourses mentioned above. Consultation with MECP during detail design will be necessary to address the potential need for permitting requirements under the Ontario ESA as well.

Wildlife SAR and SAR Habitat

A total of 12 wildlife SAR, including one herpetofauna and 11 birds (as well as endangered bat species) have been recorded within the vicinity of the DSBRT study area based on secondary source data (see **Section 4i**). As noted above, only one wildlife SAR (Barn Swallow) was confirmed at one location within the study area during LGL's 2019 field investigations. Based on the habitat where the Barn Swallow was observed, it is considered possibly breeding within the study area.

A brief review of each species' status, the results of field surveys carried out, and the potential impacts to the SAR and their populations as a result of the DSBRT is provided below.

Golden Eagle
The Golden Eagle is regulated 'Endangered' under the Ontario ESA but has no designation under the Canada SARA. As previously noted in **Section 4i**, field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Golden Eagle were identified during LGL's 2019 breeding bird field investigations. No requirement for follow up targeted field surveys or permitting under the Ontario ESA (or Canada SARA – not regulated) is anticipated for this species.

Chimney Swift
The Chimney Swift is regulated as 'Threatened' under the Ontario ESA and Canada SARA. As previously noted in **Section 4i**, field investigations in 2019 identified marginally suitable habitat for this species, including anthropogenic areas and open habitats that were identified across the study area. However, no Chimney Swifts were identified during LGL's 2019 field investigations. No requirement for follow up targeted field surveys or permitting under the Ontario ESA or Canada SARA is anticipated for this species.

Common Nighthawk
The Common Nighthawk is listed as 'Special Concern' under the Ontario ESA and is regulated as 'Threatened' under the Canada SARA; however, this species is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA. Open habitats (e.g. parking lots, parkland and gravel rooftops) which have the potential to support Common Nighthawk, were identified across much of the study area. As previously noted in **Section 4i**, no Common Nighthawks were observed during LGL's 2019 breeding bird surveys. No requirement for follow up targeted field surveys or permitting under the Canada SARA (or Ontario ESA – not regulated) is anticipated for this species.

Bobolink
The Bobolink is regulated as 'Threatened' under the Ontario ESA and Canada SARA. As previously noted in **Section 4i**, field investigations in 2019 identified marginally suitable habitat for this species, including open-country, meadow and agricultural habitat types found across the study area. However, these open-country habitats identified during LGL's 2019 surveys typically did not consist of grass dominated vegetation as preferred by this species. No Bobolinks were identified during LGL's 2019 field investigations. During detail design, the requirement for follow up targeted field surveys (undertaken during the appropriate season using MNRF/MECP protocols) and potential permitting under the Ontario ESA and Canada SARA will be assessed for this species.

Peregrine Falcon
The Peregrine Falcon is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not a regulated species under either act. As previously noted in **Section 4i**, field investigations in 2019 identified marginally suitable habitat for this species. Breeding bird surveys conducted in 2019 by LGL did not identify this species. No requirement for follow up targeted field

surveys or permitting under the Ontario ESA or Canada SARA is anticipated for this species (this species is not regulated under either act).

Bald Eagle

The Bald Eagle is listed 'Special Concern' under the Ontario ESA (but is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA) and has no status under the Canada SARA. As previously noted in **Section 4i**, field investigations in spring/early summer of 2019 did not identify suitable habitat for this species within the study area. No Bald Eagle were identified during LGL's 2019 breeding bird field investigations. No requirement for follow up targeted field surveys or permitting under the Ontario ESA or Canada SARA is anticipated for this species (this species is not regulated under either act).

Barn Swallow

The Barn Swallow is regulated as 'Threatened' under the Ontario ESA. Barn Swallow is not a regulated species under the Canada SARA. As previously noted in **Section 4i**, field investigations in spring/early summer of 2019 identified habitat considered suitable to support foraging Barn Swallow across much of the study area, with the exception of forested habitats. Nesting habitat for this species has the potential to be found in the study area, including bridges, buildings and other man-made structures. Breeding bird surveys conducted in 2019 documented one Barn Swallow individual at Station Number 12, within the City of Pickering; however, no nests were observed. During detail design, the requirement for follow up targeted field surveys (undertaken during the appropriate season using MNRF/MECP protocols) and potential permitting under the Ontario ESA will be assessed for this species. No requirement for permitting under the Canada SARA is anticipated as this species is not regulated under this act.

Least Bittern

The Least Bittern is regulated as 'Threatened' under the Ontario ESA and Canada SARA. As previously noted in **Section 4i**, field investigations in spring/early summer of 2019 did not identify habitat considered suitable to support this species within the study area. Breeding bird surveys conducted in 2019 did not identify this species. No requirement for follow up targeted field surveys or permitting under the Ontario ESA or Canada SARA is anticipated for this species.

Bank Swallow

The Bank Swallow is regulated as 'Threatened' under the Ontario ESA but is not regulated under the Canada SARA. As previously noted in **Section 4i**, field investigations in spring/early summer of 2019 identified marginally suitable nesting habitat for this species, including eroded watercourse banks that were identified across the study area. However, no Bank Swallows were identified during LGL's 2019 breeding bird surveys. During detail design, the requirement for follow up targeted field surveys (undertaken during the appropriate season using MNRF/MECP protocols) and potential permitting under the Ontario ESA will be assessed for this species. No requirement for permitting under the Canada SARA is anticipated as this species is not regulated under this act.

Eastern Meadowlark

The Eastern Meadowlark is regulated 'Threatened' under the Ontario ESA and Canada SARA. As previously noted in **Section 4i**, field investigations in 2019 identified marginally suitable habitat for this species, including open-country, meadow and agricultural habitat types found across the study area. However, these open-country habitats identified during LGL's 2019 surveys typically did not consist of grass dominated vegetation as preferred by this species. No Eastern Meadowlark were identified during LGL's 2019 field investigations. During detail design, the requirement for follow up targeted field surveys (undertaken during the appropriate season using MNRF/MECP protocols) and potential permitting under the Ontario ESA and Canada SARA will be assessed for this species.

Red-necked Phalarope
The Red-necked Phalarope is listed as 'Special Concern' under the Ontario ESA and the Canada SARA; however, this species is not a regulated species under either act. As previously noted in **Section 4i**, field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Red-necked Phalarope were identified during LGL's 2019 breeding bird field investigations. No requirement for follow up targeted field surveys or permitting under the Ontario ESA or Canada SARA is anticipated for this species (this species is not regulated under either act).

Snapping Turtle
The Snapping Turtle is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not a regulated species ('Endangered' or 'Threatened') under either act. As previously noted in **Section 4i**, field investigations in 2019 identified suitable habitat for Snapping Turtle, including storm water management facilities, ponds, watercourses and other aquatic habitats found across the study area. No Snapping Turtles were identified during LGL's 2019 field investigations, although no targeted surveys for this species were conducted. No requirement for follow up targeted field surveys or permitting under the Ontario ESA or Canada SARA is anticipated for this species (this species is not regulated under either act).

Bats
Forest communities with mature trees have the potential to provide suitable roosting habitat for four endangered bat species (all regulated bat species under the Ontario ESA), including eastern small-footed myotis, little brown myotis, northern myotis and tri-coloured bat. The Ontario ESA affords protection for endangered bat species (subsection 9(1)) and their habitat (subsection 10(1)). Given that species-specific habitat regulations have not yet been developed for SAR bats, habitat is protected according to the general definition provided in the Ontario ESA. Specifically, according to section 2(1), the Act protects "an area, on which the species depends, directly or indirectly, to carry on its life processes, including processes such as reproduction, rearing, hibernation, migration or feeding".

A high-level bat habitat characterization was completed by LGL Limited and included a forest classification and identification of tree snags and cavities. Within the study area, some forest, swamp and cultural community types may provide suitable roosting habitat for SAR bats. Mature trees which could contain suitable roosting habitat for SAR bats are likely present in association with treed portions of the study area. Lake Ontario, which is situated south of the study area, offers suitable foraging habitat for bat species. Additionally, many of the forests identified are generally part of larger vegetation communities that extend beyond the study area, typically associated with watercourses and valleylands. These watercourses also offer suitable foraging habitat.

The assessment of bat habitat undertaken by LGL Limited also identified 48 candidate snag habitat trees within the study area. Details of species and tree attributes are included in the **Table 10** and locations of snags are included in **Figures NER-1a** to **NER-1i**. During detail design, the requirement for follow up targeted field surveys for bats (including acoustic surveys) and potential permitting for SAR bats under the Ontario ESA will be assessed for these species.

5iii. Construction Impacts and Mitigation

Construction of the DSBRT has the potential to result in the disturbance to/displacement of rare, threatened or endangered aquatic, plant and wildlife SAR and SAR habitat, and plant species of concern/regionally rare plant species. As noted in **Section 5ii**, 17 aquatic, plant and wildlife SAR have been recorded in the vicinity of the study area (as well as endangered bat species) although only three of these SAR were identified within the vicinity of the study area during LGL's botanist/arborist field

investigations including Barn Swallow, butternut and Kentucky coffee tree. Seventeen plant species of concern/regionally rare plant species were also observed within several vegetation communities across the study area.

Section 5ii provides more details on impacts to SAR/SAR habitat and plant species of concern/regionally rare plant species, as well as commitments for future work during the detail design phase. Impacts to SAR/SAR habitat as well as to plant species of concern/regionally rare plant species during construction will be minimized to the extent possible.

For Redside Dace, the Redside Dace/coldwater timing window (July 1-September 15) will need to be adhered toOther site-specific mitigation may be necessary and will be determined through agency consultation during detail design. In addition, if federally-listed aquatic SAR (i.e., Redside Dace) are present within a watercourse, and dewatering will occur during construction, a Canada SARA permit may be necessary for the rescue of potentially stranded fish. This will be determined during detail design.

Due to the general habitat requirements of American Eel and the nature of the works proposed at the two crossings of Oshawa Creek (Crossings 23 – Bond Street and King Street), no additional site-specific mitigation will likely be required for this species, unless otherwise specified by MECP during detail design consultations.

5iiii. Operations Impacts and Mitigation

The operation and maintenance activities of the DSBRT should not result in any impacts to SAR/SAR habitat or plant species of concern/regionally rare plant species.

5j. Significant Natural Heritage Features

5ji. Footprint Impacts and Mitigation

The DSBRT spanning from McCowan Road to east of Simcoe Street is planned to travel adjacent to/or near to significant natural heritage features (including designated natural areas, plan policy areas and regulation areas) and will result in some impacts to natural areas within these features/areas. **Figures 2** and **NER-2** present the location of these features/areas as well as the grading limits/DSBRT footprint.

One of four PSWs located within the vicinity of the study area will be impacted. The Lynde Creek Coastal Wetland Complex PSW is located within the Town of Whitby and is partly within the study area generally south of Dundas Street. Impacts to this PSW are expected only south of Dundas Street. Five of 13 unevaluated wetlands identified within the vicinity of the study area will be impacted, two within the Town of Ajax and three within the Town of Whitby, all within CLOCA's jurisdiction. One of three ANSIs located within the vicinity of the study area will be impacted. A very small portion of the Highland Creek Swamp Life Science ANSI in the City of Toronto will be impacted due to the DSBRT. Of the ESAs located within the vicinity of the study area, impacts to two named ESAs will occur. These include two ESAs within Toronto and Pickering which are typically within TRCA's jurisdiction. Within CLOCA's jurisdiction, impacts to CLOCA's NHS will occur within the DSBRT study area from west of Lake Ridge Road in Ajax through to the east end of the study area through Whitby and Oshawa.

Regulated areas across TRCA and CLOCA jurisdictions will also be impacted where these hazard lands lie within the grading limits/DSBRT footprint, typically associated with watercourse crossings.

Greenbelt Plan Areas ('Protected Countryside' Designation and 'Urban River Valleys' Designation) will be impacted where these lands lie within the grading limits/DSBRT footprint. Carolinian Core Natural Areas and Carolinian Existing and Potential Areas are also located within proximity of the study area and

will be impacted. In addition, a very small portion of the Rouge National Urban Park will be impacted (0.06 ha) by grading in the City of Pickering, where the park is adjacent to Altona Road east of the Rouge River.

The loss of area within each of the affected significant natural heritage features (designated natural areas, plan policy areas and regulation areas) has been separated by municipality and TRCA/CLOCA jurisdiction, and is summarized in **Table 14**. Overall, impacts will affect both terrestrial and wetland communities (see **Section 5fi**).

TABLE 14.
IMPACTS TO DESIGNATED NATURAL AREAS, PLAN POLICY AREAS, AND REGULATION AREAS

Designated Natural Area / Plan Policy Area / Regulation Area	Municipality/Jurisdiction	Total Area to be Impacted (ha)*
Designated Natural Areas		
Highland Creek Swamp Life Science ANSI	Toronto	0.005
Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto) and Morningside Park Forest ESA (TRCA) (these ESAs overlap and are considered one ESA for the purposes of this report)	Toronto/TRCA	0.10
Petticoat Creek Forest ESA	Pickering/TRCA	0.44
Unevaluated Wetlands (6)	Ajax and Whitby/CLOCA	0.16
Lynde Creek Coastal Wetland Complex PSW	Whitby	0.12
CLOCA's Natural Heritage System	Ajax/CLOCA	0.05
	Whitby/CLOCA	4.57
	Oshawa/CLOCA	1.22
	Designated Natural Areas Total	**6.80**
Regulation Area		
TRCA Regulation Area (natural areas)	Toronto, Pickering, Ajax	8.13
CLOCA Regulation Area (natural areas)	Ajax, Whitby, Oshawa	5.04
	Regulation Area Total (natural areas)	**13.17**
Plan Policy Areas		
Greenbelt Plan		
Protected Countryside	Ajax and Whitby	5.12
Urban River Valley	Ajax, Whitby, Oshawa	2.25
	Sub-total	**7.37**
Rouge National Urban Park		
Rouge National Urban Park	Toronto	0.04
Rouge National Urban Park	Pickering	0.04
	Sub-total	**0.08**
Carolinian Canada		
Carolinian Existing and Potential Areas	Toronto	0.83
Carolinian Core Natural Areas	Toronto	0.92
	Sub-total	**1.75**
	Plan Policy Areas Total	**9.20**

**Totals from respective areas are not always cumulative where natural areas, plan and regulation areas correspond.*

City of Toronto

Impacts to vegetation communities within the Highland Creek Swamp Life Science ANSI and the Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA) (these ESAs overlap and are considered one ESA) in the City of Toronto are associated with impacts to Dry-Fresh Sugar Maple Deciduous Forest (FOD5-1b). These impacts also affect the Carolinian Core Natural Area and Carolinian Existing and Potential Areas where these plan policy areas correspond with the aforementioned ANSI and ESAs. Impacts to the Rouge River/Little Rouge Creek and the numerous designated natural areas located in the Rouge River/Little Rouge Creek valleylands have been avoided as work will not extend past the existing roadway footprint in this area. A very small portion of 0.02 ha at the edge of the CUM1-1c/CUW1c will be impacted, and this area is within the Rouge National Urban Park.

City of Pickering

Within the City of Pickering, a small area of Mineral Cultural Woodland (CUW1e) of 0.007 ha will be impacted due to the DSBRT that is associated with the Rouge National Urban Park. Several vegetation communities that are associated with the Petticoat Creek Forest ESA will be impacted, and these include manicured areas, CUM1-1f, CUM1-1/CUT1, CUP1-3 and SWD3-4b, with a total impact of 0.44 ha of which 0.22 ha is associated with the deciduous swamp (SWD3-4b).

Town of Ajax

Within the Town of Ajax, minor impacts will occur to three unevaluated wetlands. The first unevaluated wetland is located at Carruthers Creek (Crossing 14) and impacts will occur within the grading limits south of Kingston Road at this location in an area identified as Mineral Cultural Meadow (CUM1-1i). The second unevaluated wetlands are associated with drainage that crosses Kingston Road at the Tributary of Lynde Creek (Crossing 14a), south of Kingston Road. This second unevaluated wetland is also located within CLOCA's NHS. Impacts to the third unevaluated wetland will occur within the grading limits north of Kingston Road to a very small portion of this unevaluated wetland identified as a Mineral Shallow Marsh (MAS2c); this wetland is dominated by common reed. Notable disturbance was observed and non-native, aggressive plant species were recorded as occasional to abundant at this location, and this wetland is partly associated with the roadside ditch. A total of 0.05 ha of CLOCA's NHS will be impacted.

Cultural Woodland (CUW1k) and Cultural Meadow (CUM1-1h) will be impacted in association with West Duffins Creek (Crossing 12). This area is associated with several trails and is identified as an 'Urban River Valley' as per the Greenbelt Plan (2017). Further east, Cultural Woodland (CUW1n) and Cultural Meadow (CUM1-1i and k) will be impacted in association with Carruthers Creek (Crossing 14). This area is identified as an 'Urban River Valley' as per the Greenbelt Plan (2017). A narrow strip of land west of Lake Ridge Road includes a Cultural Meadow (CUM1-1k) and manicured areas that will be impacted by the grading limits/DSBRT footprint. These areas are part of the 'Protected Countryside' as per the Greenbelt Plan (2017).

Town of Whitby

Within the Town of Whitby, impacts will occur to the Lynde Creek Coastal Wetland Complex PSW which includes impacts to a Cattail Mineral Shallow Marsh (MAS2-1e) and a Maple Mineral Deciduous Swamp (SWD3a). Other impacted areas are associated with tributaries that bisect the study area including tributaries of Lynde Creek and Pringle Creek. These areas are identified within CLOCA's NHS and overall a total of 4.57 ha within the NSH will be impacted. Impacts are associated with areas that are dominated by cultural habitat including Mineral Cultural Meadow and Cultural Woodland (CUM1-1m and CUW1o), with Mineral Shallow Marsh and Meadow Marsh communities present (MAS2d and MAM2-2/MAS2). Within the Town of Whitby, minor impacts will occur to three unevaluated wetlands. The first unevaluated wetland is located at the Tributary of Lynde Creek (Crossing 15) and minor impacts will occur within the grading limits north of Dundas Street at this location in an area identified as Cattail Mineral Shallow Marsh (MAS2-1d). The second unevaluated wetland is located east of the Tributary of Lynde Creek (Crossing 16) and minor impacts will occur within the grading limits at the Highway 412 southbound off ramp north of Dundas Street at this location in an area identified as Dry-Moist Old Field Meadow (CUM1-1m). The third unevaluated wetland is located at the Tributary of Lynde Creek (Crossing 17) and minor impacts will occur within the grading limits north of Dundas Street in an area identified as Cattail Mineral Shallow Marsh (MAS2-1f), with the Mineral Cultural Woodland (CUW1r) impacted north of Dundas Street.

Along a Tributary of Lynde Creek (Crossing 16), Reed-canary Grass Mineral Meadow Marsh/Mineral Shallow Marsh (MAM2-2/MAS2) will also be impacted by the grading limits/DSBRT footprint. This area is identified as 'Protected Countryside' as per the Greenbelt Plan (2017). Just east of this area, Cultural Woodland (CUW1q) and Cultural Meadow (CUM1-1n) will be impacted in association with Lynde Creek (Crossing 18). This area is associated with trails in an adjacent low-lying area, and the vegetation communities along Lynde Creek include a range of non-native and invasive species observed as occasional to abundant. Lynde Creek is identified as an 'Urban River Valley' as per the Greenbelt Plan (2017).

City of Oshawa

Within the City of Oshawa, impacts totalling 1.23 ha to CLOCA's NHS will affect cultural communities associated with Corbett Creek and Oshawa-Goodman Creek. Impacted vegetation communities include Mineral Cultural Meadow and Woodland (CUM1-1p and CUW1v and w). Impacts to Cultural Woodland (CUW1w) and Cultural Meadow (CUM1-1p) are associated with Oshawa Creek (Crossing 23). This riparian area is restricted to an approximately 20 m wide corridor with vertical (gabion basket and/or concrete) or near vertical slopes leading down either to the creek bank or a narrow, vegetated floodplain. The surrounding land use is urban and a pedestrian path parallels the creek. Vegetation communities are disturbed with a range of non-native and aggressive species observed as occasional to abundant. Oshawa Creek is identified as an 'Urban River Valley' as per the Greenbelt Plan (2017).

Plan Policy and Regulation Areas

Across the study area, impacts within TRCA's and CLOCA's regulation limits have been identified. Impacts are typically along watercourse crossings that bisect the study area with a total of 13.17 ha of natural areas to be impacted, including 5.54 ha of manicured and disturbed areas. **Figure NER-2** presents TRCA's and CLOCA's regulation limits as well as the grading limits/DSBRT footprint.

Within TRCA's regulation limit (Toronto, Pickering and Ajax), natural areas impacted include Dry-Fresh Sugar Maple Deciduous Forest (FOD5b and FOD5-1b), Fresh-Moist Willow Lowland Deciduous Forest

(FOD7-3) and Dry-Fresh White Pine-Maple-Oak Mixed Forest (FOM2a) totalling 0.09 ha, Manitoba Maple Mineral Deciduous Swamp (SWD3-4b) and Willow Mineral Thicket Swamp (SWT2-2) totalling 0.24 ha, Mineral Cultural Woodland and Plantation (0.78 ha), and as well as 3.14 ha of Mineral Cultural Meadow, Cultural Meadow/Cultural Thicket, Cultural Thicket/Cultural Woodland, manicured and disturbed areas. The total impacts to natural areas within TRCA's regulation limits that also includes manicured areas is 8.13 ha.

Within CLOCA's regulation limit (Ajax, Whitby and Oshawa), natural areas impacted include Dry-Fresh Sugar Maple Deciduous Forest (FOD5c) totalling 0.05 ha, Cattail Mineral Shallow Marsh (MAS2-1d and e), Mineral Deciduous Swamp (SWD4), Manitoba Maple Mineral Deciduous Swamp (SWD3-4c), Reed-Canary Grass Mineral Meadow Marsh/Mineral Shallow Marsh (MAM2-2/MAS2), Cattail Mineral Shallow Marsh (MAS2-1d and e), Mineral Shallow Marsh (MAS2c, d and e), and Maple Mineral Deciduous Swamp (SWD3a and c) totalling 0.66 ha, Mineral Cultural Woodland and Plantation (0.23 ha), as well as 2.75 ha of Mineral Cultural Meadow and Thicket, disturbed areas, hedgerows and agricultural lands. The total impacts to natural areas within CLOCA's regulation limits that also includes manicured areas is 5.04 ha.

Within the Greenbelt Plan Area, 7.37 ha of cultural, forest, wetland and manicured areas will be impacted in Ajax, Whitby and Oshawa. Impacts of 5.12 ha are within the 'Protected Countryside' designation in Ajax and Whitby where these lands bisect the study area within the vicinity of Lake Ridge Road and Highway 412. Impacts to the 'Protected Countryside' designation under the Greenbelt Plan (2017) located in the vicinity of the Rouge River/Little Rouge Creek have been avoided as work will not extend past the existing roadway footprint in this area. Impacts of 2.25 ha are within the 'Urban River Valley' designation in Ajax, Whitby and Oshawa associated with four watercourses across the study area located within the Greenbelt Plan Area including West Duffins Creek (Crossing 12 in Ajax), Carruthers Creek (Crossing 14 in Ajax), Lynde Creek (Crossing 18 in Whitby) and Oshawa Creek (Crossing 23 in Oshawa).

Impacts to the majority of the lands within the Rouge National Urban Park have been avoided as work will not extend past the existing roadway footprint through most of this area. However, an area of 0.04 ha of habitat will be impacted within the City of Toronto that includes impacts to a Mineral Cultural Meadow/Mineral Cultural Woodland (CUM1-1c/CUW1c). Also, an area of 0.04 ha of habitat will be impacted within the City of Pickering (east of the Rouge River crossing) that includes impacts to a Mineral Cultural Woodland (CUW1e) north of Kingston Road due to the grading limits/DSBRT footprint in this area.

Impacts within the Carolinian Core Natural Areas (loss of 0.92 ha) and the Carolinian Existing and Potential Areas (loss of 0.83 ha) are associated with the impacts to vegetation communities within the Highland Creek Swamp Life Science ANSI and the Highland Forest/Morningside Park Forest and Highland Creek West ESA (City of Toronto)/Morningside Park Forest ESA (TRCA) in the City of Toronto. Impacts to the Carolinian Core Natural Area associated with the Rouge River/Little Rouge Creek and the numerous designated natural areas located in the Rouge River/Little Rouge Creek valleylands have been avoided as work will not extend past the existing roadway footprint in this area.

Avoidance and protection of vegetation communities located within designated natural areas, plan policy areas and regulation areas are important to mitigate impacts to the extent possible. Where impacts cannot be avoided, the environmental protection/mitigation measures presented throughout this report (in particular throughout **Section 5f**) including vegetation community offsets/compensation for habitat loss, forest and wetland edge management, riparian habitat and valleyland management, invasive species management and planting plans will also serve to mitigate impacts. Mitigation within impacted

Carolinian Conservation Areas must include increasing biodiversity of Carolinian species and habitat where suitable. This is especially important where such species are rare or occasional within the impacted area, to be determined during detail design. Impacts within Carolinian Core, Existing and Potential Areas, and within the Rouge National Urban Park, must be mitigated/compensated as outlined in **Section 5f**, to be further defined during detail design.

Overall, the environmental protection/mitigation measures outlined in this report (in particular for Terrestrial Environment (**Section 5f**), Wildlife (**Section 5g**) and SAR (**Section 5i**)) will help maintain/enhance impacted designated natural areas, natural areas within TRCA's and CLOCA's regulation limits, and plan policy areas associated with the Greenbelt Plan Areas, Rouge National Urban Park Management Plan Areas and Carolinian Canada Natural Core Areas/Existing and Potential Areas. These measures will also help to support connections between Natural Heritage Systems and the local, regional and broader natural heritage systems of southern Ontario.

Consideration and conformity with respective environmental policy guidelines/documents and standards are outlined in **Section 5fi**, and include the Metrolinx Vegetation Guideline (Metrolinx 2020), Guideline for Determining Ecosystem Compensation (TRCA 2018), Forest Edge Management Plan Guidelines (TRCA 2004b), The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority (TRCA 2014), the Rouge National Park Urban Management Plan (Parks Canada 2019) and upper and lower tier municipal tree protection by-laws. These guidelines/policies/plans will be followed to protect ecological form and function and provide compensation/mitigation to significant natural heritage features, to the extent possible. Where the grading limits/DSBRT footprint correlates with key natural heritage or hydrological features and Natural Heritage Systems across the City of Toronto, Durham Region and respective municipalities within the Region, impacts associated with infrastructure must conform with municipal policy to the extent possible where impacts cannot be avoided (see **Section 2j**). Retention and enhancement of such features must be undertaken where feasible, and relevant municipal environmental policy and by-laws will be adhered to, to the extent possible, to be further defined during detail design.

Any design refinements necessary will be completed during the detail design phase prior to construction to delineate the designated natural areas, plan policy areas, and regulations areas, and the construction areas within them, as well as to address the guidelines/policies/plans noted above as well as the Greenbelt Plan (2017). During detail design, consultation will continue with municipal and agency staff (including TRCA, CLOCA, MECP, MNRF, Parks Canada, etc.,) as required to ensure compensation and mitigation compliance and agreement for habitat loss within the forest/wetland communities/significant natural heritage features and to identify any additional required mitigation measures to ensure impacts to these areas are minimized to the extent possible. Staging and stockpile areas should be identified on the design drawings during the detail design phase. Stockpile areas should be located outside of the floodplain and vegetated areas, and ideally outside of regulated areas.

5jii. Construction Impacts and Mitigation

The temporary displacement of and/or disturbance to vegetation and vegetation communities associated with significant natural heritage features (designated natural areas, plan policy areas and regulation areas) will occur as a result of the construction of the DSBRT associated with grading, the construction work around bridges, and the extension/replacement of culverts, etc.

Vegetation impacts from construction in these areas may be associated with equipment operating in areas identified for protection. Therefore, designated natural areas, plan policy areas and regulation areas designated for protection will be clearly shown on all construction plans and marked in the field using

tree protection barriers in accordance with the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019a) and OPSS 801 – Construction Specification for the Protection of Trees. The City of Toronto (Urban Forestry) Tree Protection Policy and Specifications for Construction Near Trees should also be followed. Efforts will be taken during construction to minimize impacts to the existing forest and wetland vegetation communities within these sensitive areas. **Section 5f** provides more details on impacts to the vegetation and vegetation communities/natural areas as well as commitments for future work during the detail design phase. Impacts to significant natural heritage features will be minimized to the extent possible.

Vegetation clearing, mitigation and compensation within and/or adjacent to environmentally sensitive areas must comply with mitigation protocols already established, to the extent possible. Consultation with external agencies (including TRCA, CLOCA, MECP, MNRF, Parks Canada) and municipal staff will be required during detail design to ensure compliance with the applicable environmental policy, guidelines and plans regarding acceptable mitigation/compensation protocols.

5jiii. Operations Impacts and Mitigation

The operation and maintenance activities of the DSBRT will not affect the designated natural areas, plan policy areas and regulation areas located in the vicinity of the DSBRT study area.

6.0 RECOMMENDATIONS FOR FUTURE WORK

During detail design, the proponent will continue to work closely with municipal staff at the City of Toronto, Durham Region, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa as well as relevant agencies to address any outstanding natural heritage requirements. The following sections outline the commitments to future work during detail design as part of project implementation.

6a. Permitting Requirements

Prior to construction during the detail design phase, the proponent will secure the necessary natural heritage permits and approvals for the implementation of the DSBRT including, but not limited to, the following:

- Ontario ESA and Canada SARA permits, as required;
- Fish and Wildlife Collector's permits for salvage, as required;
- *Fisheries Act* Authorization, as required; and,
- any other permits/approvals from MECP.

Permits related to municipal tree protection by-laws and other applicable tree injury/removal permits will be obtained from municipalities as required during detail design prior to construction. These permits are discussed further in the Arborist Report (LGL 2021).

Consultation with agencies (i.e., TRCA, CLOCA, MECP, MNRF, Parks Canada, DFO, Environment and Climate Change Canada) will continue as necessary during detail design to discuss any permits/approvals required related to natural heritage. It should be noted that Metrolinx is generally not subject to the legal requirements of municipal by-laws, conservation authorities permitting processes, and the *Planning Act* and, as such, is legally unable to obtain authorizations for these requirements. Notwithstanding, Metrolinx/the proponent will work closely with municipalities and conservation authorities to achieve conformance to their respective requirements, thereby securing "approvals". This will include engaging in consultation/negotiation processes and submitting design information, where appropriate, without formally entering into the permitting process. Compensation and mitigation compliance and agreement for habitat loss will be undertaken with TRCA and CLOCA and any additional required mitigation measures will be identified during the detail design/pre-construction phase. Restoration of suitable forest and/or wetland habitat will be undertaken at a compensation ratio to be determined through further discussion with regulatory agencies (including TRCA/CLOCA) as part of implementing this project. Compensation will be in accordance with applicable environmental policies and the standards of respective agencies and municipalities.

None of the watercourses crossed by the DSBRT project are scheduled under the *Canadian Navigable Waters Act* (CNWA), and a *Navigation Protection Act* opt-out request has not been submitted for any of the culverts/structures within the DSBRT study area. All works on unscheduled waterways that were not opted-out are to be treated as 'legacy' works and must therefore be considered the same as any work on a scheduled waterway. An application must always be submitted for works proposed at these waterways and approval must be received prior to undertaking any activities. As a result, prior to the commencement of any work and during detail design, for all proposed works on the waterways within the DSBRT study area, the proponent will be required to either submit a voluntary application and receive an Approval document or undertake the owner-led Public Resolution Process with no Transport Canada involvement. During detail design, the proponent will make a determination regarding how to proceed and consultation with Transport Canada will take place as required. CNWA provisions will also be reviewed during detail

design and the proponent will be required to adhere to the current legislation and obtain/submit any required permits/approvals under the CNWA prior to construction, if required.

A more detailed understanding of the construction activities that may require construction dewatering is required during the detail design/pre-construction phase. This will allow for an additional and more localized evaluation at potential construction dewatering sites, and will allow the project team to calculate estimates of construction dewatering rates and confirm the need for appropriate MECP approvals. In addition, this will confirm the locations of nearby water wells that may be in use near the proposed dewatering locations (with likely requirement for mail surveys/field verification activities). The combined dewatering rate from all sources will be considered when assessing the dewatering permitting requirements for the project. The proponent will be responsible for obtaining any required discharge approvals and documentations including any PTTW and/or EASR approvals prior to construction. A Water Taking and Discharge Plan must be prepared prior to construction. Pumping discharge will also comply with any requirements from the local municipalities and conservation authorities.

6b. Monitoring Requirements and Commitments for Future Work

Table 15 provides a summary of the natural heritage commitments (including monitoring requirements) outlined throughout **Section 5.0** of this report that must be completed during detail design prior to construction. This table will be the basis for the natural heritage components of the Environmental Compliance Plan which will be developed during the detail design phase to ensure that the commitments to natural heritage mitigation are completed throughout the detail design/pre-construction, construction and operations phases of the project and that the mitigation is effective.

The following natural heritage-related plans/reports will be prepared during the detail design phase (and these are included in **Table 15**):

- An Excess Materials Management Plan including management protocols for excess and contaminated soils. This Plan must comply with Ontario Provincial Standards (including OPSS 180), Management of Excess Soil – A Guide for Best Management Practices (MECP 2014), the Excess Soil Management Policy Framework (MECP 2016) and TRCA/CLOCA guidelines.
- An Erosion and Sedimentation Control Plan (including an erosion monitoring and sediment report program) including measures to monitor and maintain erosion and sedimentation control during the construction of the DSBRT to ensure the effectiveness of the erosion/sedimentation control measures.
- A Water Taking and Discharge Plan to manage construction dewatering/groundwater, if required.
- The Drainage/Stormwater Management Plan will be updated in consultation with regulatory agencies (including TRCA/CLOCA) to manage storm and surface drainage/runoff and build upon the drainage/stormwater management mitigation measures/practices outlined in the Environmental Project Report (**Section 4.7**).
- Any additional Environmental Reports/Surveys required (e.g., undertaking targeted SAR surveys, Butternut Health Assessment) in support of acquiring provincial/federal SAR permits.
- A detailed Landscape Planting Plan (including landscape composition planting layout drawings and consideration of plantings at the station sites) once areas identified for restoration have been determined in consultation with respective agencies. A one to two year watering plan for new plantings is to be considered during detail design, as required.
- An Environmental Monitoring and Contingency Plan, if required, (in accordance with TRCA/CLOCA standards), to address potential emergencies during construction where valley or stream corridors, wetlands, woodlands and/or hazardous land are impacted.

- Additional and meaningful engagement with Indigenous Nations is required for in-water works and related restoration works.
- Metrolinx will share a list of design and restoration plans to Indigenous Nations for them to identify which they would like to review. Review cycles, the expected level of effort, and review timelines will need to be determined by the respective Proponent and Indigenous Nations.
- Excel tables with data on species occurrence lists for the DSBRT project will be shared with Indigenous Nations at a time that supports monitoring and restoration planning.
- Metrolinx welcomes and supports constructive dialogue and input with regards to buffers and timing windows as segments of the project progress through detailed design. During the detailed design phase of the project, and if applicable, Metrolinx's draft Wildlife Management Plans will be circulated for review and input to Indigenous Nations.

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
Landforms and Physiology	See commitments for Soils, Groundwater and Watercourses/Hydrological Features.	TRCA, CLOCA, MECP, Municipalities
Bedrock Geology, Quaternary Geology and Soils	Define final soil profiles and prepare an Excess Materials Management Plan to manage excess/contaminated soils/materials. Prepare an Erosion and Sedimentation Control Plan (including an erosion monitoring and sediment report program) including measures to monitor and maintain erosion and sedimentation control during construction to ensure their effectiveness. Site-specific erosion and sedimentation control measures to be implemented prior to construction, maintained during construction and removed after construction (once soils have stabilized) will be identified prior to construction following a number of different guidelines including TRCA's Erosion and Sediment Control Guide for Urban Construction (2019a) and Silt Smart - Erosion and Sediment Control Effectiveness Monitoring and Rapid Response Protocol for Large Urban Development Sites (Credit Valley Conservation, MNR, MOE, DFO 2012). It is recommended that site-specific investigations (including boreholes/test pits and visual inspection – in combination with further geotechnical investigations) be undertaken during detail design in the vicinity of areas of soil disturbance as necessary to obtain soils characteristics data. The potential impacts of the proposed construction works on soil stability/earth slopes should be assessed along with the more detailed soils data prior to construction and appropriate mitigation measures to maintain soil and earth slope stability should be identified and incorporated into the design.	TRCA, CLOCA, MECP
Groundwater	Additional inspection of the individual water well records (and a desktop review) will be required to verify the list of wells and map their locations. Any further evaluations would likely require mail surveys/field verification activities in order to ensure impacts to these water wells are mitigated. MECP requires a PTTW or an EASR for groundwater takings exceeding 50,000 liters per day (L/day). For construction, a PTTW is required for dewatering extraction rates that exceed 400,000 L/day. An EASR is required for a rate between 50,000 and 400,000 L/day. For volumes less than 50,000 L/day that do not require MECP approval, industry standard best practices must be adhered to and documented (similar to those in the Water Taking and Discharge Plan required for an EASR). The proponent will be responsible for obtaining any required discharge approvals and documentations including any PTTW and/or EASR approvals. A Water Taking and Discharge Plan must be prepared prior to construction. Pumping discharge will also comply with any requirements from the local municipalities and conservation authorities. The combined dewatering rate from all sources will be considered when assessing the dewatering permitting requirements for the project. A more detailed understanding of the construction activities that may require construction dewatering (including	TRCA, CLOCA, MECP, Municipalities

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	at the noted 13 locations) is required during the detail design phase. This will allow for an additional and more localized evaluation at potential construction dewatering sites, and will allow the project team to calculate estimates of construction dewatering rates and confirm the need for appropriate MECP approvals. In addition, this will confirm the locations of nearby water wells that may be in use near the proposed dewatering locations (with likely requirement for mail surveys/field verification activities). Groundwater control will be designed, and volumes of groundwater discharge must be continuously monitored at discharge locations and a total daily volume be recorded to ensure compliance of the PTTW maximum flow rate. The proponent will be responsible for designing and supplying appropriate groundwater treatment equipment and daily inspection of the discharge will be required at each location to verify the dewatering discharge system is functioning as designed. The proponent may monitor groundwater quality prior to treatment to confirm whether groundwater meets requirements without treatment. Groundwater level will be measured at selected nearby monitoring wells.	
Watercourses and Hydrological Features	A comprehensive assessment of the impacts of the DSBRT on existing drainage patterns (storm and surface drainage) and watercourses is on-going and will continue during the detail design phase. The preliminary Drainage/Stormwater Management Plan will be updated in consultation with regulatory agencies (including TRCA/CLOCA) to manage storm and surface drainage/runoff and build upon the drainage/stormwater management mitigation measures/practices outlined in the Environmental Project Report (**Section 4.7**). Where feasible, the plan for the management of stormwater will adhere to the TRCA's The Living City Policies (TRCA 2014), at least within the TRCA's jurisdiction. Low impact development (LID) measures will be incorporated to the extent possible where stormwater management is required along the DSBRT to achieve stormwater management as per TRCA and CLOCA stormwater management criteria. Runoff generated by the new DSBRT lanes will be collected and treated using approved stormwater management practices employing a treatment-train approach including source, conveyance and end-of-pipe measures, where feasible. The stormwater management plan will ensure that no negative impacts to the hydrological and ecological function of the receiving watercourses/features will result from the project. Prepare an Erosion and Sedimentation Control Plan (see above under Bedrock Geology, Quaternary Geology and Soils). All works on unscheduled waterways that were not opted-out are to be treated as 'legacy' works and must therefore be considered the same as any work on a scheduled waterway. An application must always be submitted for works proposed at these waterways and approval must be received prior to undertaking any activities. As a result, prior to the commencement of any work and during the detail design/pre-construction	TRCA, CLOCA, MECP, MNRF, Transport Canada, Municipalities

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	phase, for all proposed works on the waterways within the DSBRT study area, the proponent will be required to either submit a voluntary application and receive an Approval document or undertake the owner-led Public Resolution Process with no Transport Canada involvement. During detail design, the proponent will make a determination regarding how to proceed and consultation with Transport Canada will take place as required. CNWA provisions will also be reviewed during the detail design/pre-construction phase and the proponent will be required to adhere to the current legislation and obtain/submit any required permits/approvals under the CNWA prior to construction, if required.	
Aquatic Environment	The design of the DSBRT crossings over watercourses will be confirmed to minimize impacts on the aquatic environment. Additional site-specific mitigation may be necessary to mitigate impacts to the aquatic environment during construction. The potential need for additional site-specific mitigation will be investigated through consultation with permitting/stakeholder agencies (e.g., TRCA, CLOCA, MNDMNRF, MECP and DFO). Mitigation proposed at the culverts/structures requiring improvements (to be reviewed during the detail design/pre-construction phase) includes minimizing the design to keep necessary bridge widenings and culvert extensions as short as possible, employing retaining walls to reduce encroachment into riparian areas and confining work to as small an area as possible. Fish and wildlife friendly culvert and bridge design will continue to be considered as part of this project during the detail design/pre-construction phase. No new barriers to fish passage will be created from works associated with this project. Opportunities to improve fish passage via culvert works will be considered further during the detail design/pre-construction phase, where feasible. This is especially important at Carruthers Creek (Crossing 14), where Durham Region and TRCA (2020) have identified this crossing as a priority ecological connectivity improvement area in the Carruthers Creek Watershed Plan as it is currently a barrier to terrestrial and aquatic animal movement/migration. (Durham Region and TRCA 2020). DSBRT structure/culvert modifications have been designed to maintain and promote wildlife passage across the landscape. An analysis of existing and proposed fish passage for jumping and non-jumping fish will be completed at all watercourses that constitute direct (or potential direct) fish habitat. These culvert designs will be revisited during detail design in accordance with TRCA's crossing guidelines to ensure fish and wildlife passage (TRCA 2015). Consultation with DFO will be necessary to determine whether harmful alteration, disruption or destruction (HADD) of fish habitat will occur at locations where works are proposed below the high water line (i.e., within the bankfull width of the channel) in fish habitat. Currently, this consultation consists of the preparation and submission of request for review forms and subsequent consultation with DFO biologists. This process is used to determine next steps which could include proceeding with the works under a letter of advice or the application for an authorization under the *Fisheries Act*. Requests for review forms should be submitted to DFO for all crossings where culvert or bridge works are proposed (all crossings except Crossings 1,2, 4 and 22). A *Fisheries Act* Authorization will be obtained, if required. Secure any required Fish Collector's permits for salvage during	TRCA, CLOCA, MNDMNRF, MECP, DFO, Indigenous Nations

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	the detail design/pre-construction phase as required. No in-water work (or work on watercourse banks) will be permitted from April 1 to June 30 (July 14 where Smallmouth Bass are present) to protect spawning warmwater fish, incubating eggs and fry emergence and migratory periods of local fish populations, and from September 16 to June 30 (July 14 where Smallmouth Bass are present) to protect coldwater fish spawning, egg incubation and fry emergence and migratory periods of local fish populations (and to protect Redside Dace). Construction timing window applicability and dates will be confirmed with appropriate provincial and federal agencies during detail design. Dewatering designs will be completed following TRCA's Draft guidelines for dewatering (TRCA 2013) to ensure no negative impacts occur during throughout the working-in-the-dry process. Prepare an Erosion and Sedimentation Control Plan (see above under Bedrock Geology, Quaternary Geology and Soils). Ensure restoration/enhancement for all crossings is implemented where work (in-water or riparian) is proposed. Where restoration/enhancement will not suffice to offset/mitigation impacts, compensation will be employed. Compensation plans, if necessary, will be completed in consultation with regulatory agencies. Draft compensation plans will be shared with Indigenous Nations. Update the Drainage/Stormwater Management Plan (see above under Watercourses/Hydrological Features).	
Terrestrial Environment	Commence consultation with CLOCA and TRCA early in detail design to develop the vegetation compensation strategy in parallel with design refinements to minimize impacts. Delineate natural heritage feature limits and ELC vegetation communities at a detail design level to inform impacts both temporary and permanent and development of restoration and compensation strategies. Prepare an Environmental Monitoring and Contingency Plan, if required, (in accordance with TRCA/CLOCA standards) to address potential emergencies during construction where valley or stream corridors, wetlands, woodlands and/or hazardous land are impacted. Compensation through ecological restoration such as the creation or enhancement of habitat will be undertaken, and the planning of which will be carried out early in the detail design phase to maximize options for restoration to the natural system. Compensation should be implemented coincident with the timing of natural heritage removals on a subwatershed	TRCA, CLOCA, MECP, MNDMNRF, Parks Canada, Municipalities, Indigenous Nations

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	scale (i.e., Creek by Creek) to ensure no net loss of ecological value over the period of project implementation, where possible. Cash-in-lieu for impacts associated with conservation authority or municipal lands will be considered by Metrolinx/the proponent, but funds will be used only for tree compensation as part of vegetation compensation to improve components of the natural heritage system, adhering to restoration principles outlined, to the extent possible. Thus, cash-in-lieu for vegetation compensation through ecological restoration would be used for actual tree compensation for the purposes of creating or enhancing the natural heritage system for the benefit of either increasing contiguous habitat, providing buffering capacity, increasing habitat connectivity, etc. Further investigation of this compensation measure in conjunction with Metrolinx/the proponent and respective regulatory agencies, will be required during detail design. Cash-in-lieu compensation must be submitted prior to permit issuance. Metrolinx, as a Crown agency of the Province of Ontario, is generally not subject to the legal requirements of the *Conservation Authorities Act* and the conservation authorities permitting processes. However, Metrolinx/the proponent will work closely with conservation authorities to achieve conformance to their respective requirements (including TRCA's Living City Policies), thereby securing "approvals". During the detail design/pre-construction phase, engagement with TRCA and CLOCA will continue including consultation/negotiation processes and submitting design information, where appropriate, without formally entering into the permitting process. Compliance with the noted principles and standards of all applicable environmental policy guidelines/documents (including the Metrolinx Vegetation Guideline (2020), Guideline for Determining Ecosystem Compensation (TRCA 2018), The Living City Policies (TRCA 2014), the Rouge National Urban Park Management Plan (Parks Canada 2019), and upper and lower tier municipal tree protection By-laws) and Ontario Regulations (including O.Reg. 166/06) must be applied to the final vegetation community impact areas which may be refined during the detail design phase. The upper and lower tier municipal tree protection By-laws include: City of Toronto Tree Protection By-laws (Trees on City Streets, City of Toronto Municipal Code Chapter 813, Article II; Private Tree By-law, City of Toronto Municipal Code Chapter 813, Article III; Ravine and Natural Feature Protection By-law, City of Toronto Municipal Code Chapter 658; Parks By-law, City of Toronto Municipal Code Chapter 608, Article VII), City of Pickering Tree Protection By-laws (City of Pickering Tree Protection By-Law 6108/03; City of Pickering Boulevard Maintenance By-law 6831/08), Town of Ajax Tree Protection By-laws (Tree Protection By-Law 137-2006; Boulevard Tree Protection By-Law 138-2006), Town of Whitby Tree Protection By-laws (Town of Whitby By-law: Tree Protection By-Law 4640-00; Town of Whitby Property and Boulevard Maintenance By-law 6937-15), City of Oshawa Tree Protection By-laws (City of Oshawa City Trees By-Law 78-2008; City of Oshawa Boulevard By-law 136-2006), and the Region of Durham Tree Protection By-law (The	

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	Regional Municipality of Durham Regional Woodland By-Law 30-2020). During detail design, a further detailed review of these environmental policy guidelines/documents as well as agency consultation (with TRCA, CLOCA, MECP, MNDMNRF, Parks Canada, etc.), will be undertaken to ensure compensation and mitigation compliance and agreement for habitat loss and to identify any additional required mitigation measures. Discussion with municipal staff as well as the above noted agencies will be undertaken to identify suitable sites for offsetting to compensate for habitat loss as part of implementing the project. Restoration of suitable forest and/or wetland habitat will be undertaken at a compensation ratio to be determined through further discussion with regulatory agencies (e.g., TRCA, CLOCA, MECP, MNDMNRF, Parks Canada, etc.), as part of implementing this project. Compensation will be in accordance with applicable environmental policies and the standards of respective agencies and municipalities. Compensation will be undertaken following applicable Tree By-laws and Ecological Restoration with replacement at a 1:1 ratio on an individual tree basis (Metrolinx 2020), and will be in accordance with applicable environmental policies and the standards of respective agencies and municipalities. Specific compensation requirements for municipal tree replacement ratios are outlined in the Arborist Report (LGL 2021). The City of Toronto requires replacement ratios by tree category as follows as per the City of Toronto By-laws: • Private tree located on the Project Site: 3:1; • Private tree located on property adjacent to the Project Site or on the boundary of the Project Site and adjacent property: 3:1; • Park tree: 3:1; • RNFP tree: healthy tree >10 cm: 3:1; healthy tree <10 cm: 1:1; poor condition tree: 1:1; tree injury: 1:1; hedge removal: 1 tree per 5 m of hedge removed; and, • City tree: 3:1. The City of Oshawa has noted that if compensation planting is completed on-site, it must be completed in consultation with both CLOCA and City of Oshawa Parks staff. The City of Oshawa noted that, if compensation planting is completed off-site, there can be no net loss of planting. Planting plans must be developed in consultation with both CLOCA and City of Oshawa Parks staff. Review/update the proposed environmental protection/mitigation/monitoring measures for vegetation/vegetation communities/natural areas, and undertake design refinements to further minimize impacts to forest and wetland communities to the extent possible (especially associated with access and staging during construction). Ensure tree protection hoarding plans are submitted and approved prior to permit issuance. Provide a summary of vegetation	

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	removals within each watershed if required for compensation purposes. Maintenance of any prescribed restoration and manicured areas during the operation and maintenance phase, including removal of dumped garbage, will be on-going. Ensure the proponent provides a warranty on planted materials to ensure that the newly planted material survives and fulfils the intended function. A two-year warranty applies to planted materials when part of a restoration plan for the City of Toronto. Forest/wetland edge and riparian and valleyland management will be undertaken for those communities where such management is recommended and in accordance with TRCA's Forest Edge Management Plan Guidelines (2004). Prepare a detailed landscape planting plan (including landscape composition planting layout drawings and consideration of plantings at the station sites) once areas identified for restoration have been determined in consultation with the respective agencies and municipalities to help mitigate impacts to the adjacent natural and cultural environment. Submit restoration plans and replanting plans (along with erosion control fencing plans) prior to permit issuance. The planting plan will include recommended actions to minimize the spread of non-native and invasive/aggressive plant species. Local municipal arborists should be consulted regarding the planting plan to ensure the planting list consists of climate change resilient species. Monitoring of compensation planting areas will include contingencies to mitigate for plant mortality, species incompatibility with site conditions, invasive species presence, etc. Where regionally rare plant species cannot be avoided during construction, they will be salvaged through transplanting into nearby vegetation communities with suitable habitat characteristics that will afford ongoing protection, where feasible. Efforts to control non-native and invasive plant species that have become established, as well as prevent the establishment of new non-native and invasive plant species, at a minimum will be implemented during the operations/construction phase.	
Wildlife	Once proposed culvert/structure sizes are confirmed, openness ratio (OR) will be re-calculated for each of the culverts/structures to determine whether target animal groups can use the culverts/structures for passage. Where feasible, the culvert/structure size must reflect an approximate OR to facilitate animal movement. Currently, there is no plan to construct new crossing structures. Where crossing structure sizing is constrained by existing sizing, or other technical limitations, enhancement of crossing sites will be considered, where feasible. Although opportunity for enhancement of existing crossings (culverts/structures) may be limited (due to the	TRCA, CLOCA, MNDMNRF, MECP, Parks Canada, Environment and Climate Change Canada,

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	limited modifications to existing culverts/structures associated with the DSBRT), wildlife passage recommendations will be reviewed and, where feasible, will be incorporated into the design to enhance the functionality of crossing structures for wildlife passage. An assessment of light penetration into the crossing structures will be conducted to determine if adequate vegetation growth and establishment as cover will occur. Further analysis at a site-specific level will be required to determine wildlife barrier/funnel fencing requirements and to further explore fencing type required (e.g. small animal fencing vs. large animal fencing). Wildlife salvage will occur prior to clearing and grubbing activities associated with construction where feasible, particularly in wetland habitats, to preserve vulnerable wildlife species (e.g., herpetofauna). All applicable Wildlife Collector's permits will be obtained prior to any salvage activities. A number of bird species recorded within the study area are afforded protection under the MBCA. Bird species protected under the MBCA were documented across a variety of habitat types within the study area. To comply with the requirements of the MBCA, ensure disturbance, clearing or disruption of vegetation where birds may be nesting is completed outside the migratory bird nesting timing window of April 1 to August 31. In the event that these activities must be undertaken from April 1 to August 31, a pre-clearing nest survey will be conducted by a qualified avian biologist to identify and locate active nests of species covered by the MBCA.	Municipalities
Species at Risk and Plant Species of Concern/Regionally Rare Plant Species	Further correspondence will take place with external agencies (i.e. MECP, DFO, Environment and Climate Change Canada and Parks Canada) during the detail design phase prior to construction, as required, to discuss the SAR (and SAR habitat) that have been identified or have the potential to be located in the vicinity of the study area (in particular Redside Dace, American Eel, butternut, Bobolink, Barn Swallow, Bank Swallow, Eastern Meadowlark and SAR bat species), any potential impacts of the proposed work on these federally/provincially designated species and their habitat, and appropriate protection/mitigation/monitoring/compensation measures. A determination of whether a proposed development will contravene subsection 10(1) of the Ontario ESA 2007 and/or the Canada SARA 2002 is required prior to the undertaking. The requirements for permitting under the Ontario ESA (Ontario Regulation 242/08, etc.) and Canada SARA will be reviewed and confirmed with MECP, DFO, Environment and Climate Change Canada and Parks Canada as necessary to determine whether mitigation or overall benefit are required. Prior to construction, further targeted field investigations will be undertaken as required for SAR during the appropriate season using specified specific standardized protocols (see **Section 5ii**). Surveying for these species will be conducted to establish their presence or absence, and, thus, the appropriate steps for protection and permitting. A detailed butternut survey must be undertaken within 50 m of the proposed limits of disturbance during the	MECP, Environment and Climate Change Canada, DFO, Parks Canada TRCA/CLOCA (for plant species of concern/regionally rare plant species)

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	appropriate window (i.e., leaf on) to determine if any additional butternut trees are present and thus appropriate steps for protection, mitigation or permitting under the Ontario ESA. Also, at that time, a Butternut Health Assessment must be undertaken for each of the four butternuts identified as well as any additional butternut trees identified. This assessment will be conducted by an MNRF designated Butternut Health Assessor. During detail design, if SAR planting is identified as a requirement and planting in suitable areas adjacent to the ROW or in compensation areas is acceptable, planting, tending, monitoring and reporting of SAR planting will be adhered to as per criteria/conditions under the Ontario ESA 2007. For Redside Dace at West Duffins Creek (Crossing 12) and at Lynde Creek (Crossing 18; if, during detail design, it is determined that the species is present there), the Redside Dace/coldwater timing window (July 1-September 15) will need to followed. Other site-specific mitigation may be necessary and will be determined through agency consultation during detail design. In addition, if federally-listed aquatic SAR (i.e. Redside Dace) are present within a watercourse, and dewatering will occur during construction, a Canada SARA permit may be necessary for the rescue of potentially stranded fish. This will be determined during detail design. Appropriate permits under the Ontario ESA and Canada SARA will be obtained for impacts to SAR/SAR habitat, as required. Where warranted (i.e., trees < 3 cm dbh, etc.), efforts will be made to locate/identify plant species of concern/regionally rare plants that will be impacted by the DSBRT. Where removal of plant species of concern/regionally rare plant species cannot be avoided, these plant species will be salvaged through transplanting into nearby vegetation communities (prior to construction or the previous growing season) with suitable habitat characteristics that will afford ongoing protection, where feasible. A transplantation/relocation plan will be prepared during detail design as required for appropriate species.	
Significant Natural Heritage Features	Any design refinements necessary will be completed to delineate the designated natural areas, plan policy areas, and regulations areas, and the construction areas within them, as well as to address the guidelines/policies/plans noted under Terrestrial Environment above (as well as the Greenbelt Plan (2017)). Review for any changes per outcome of the Province's consultation on growing the size of the Greenbelt (see ERO 019-3136 on the Environmental Registry), which may result in the addition, expansion and further protection of Urban River Valleys. Consultation will continue with municipal and agency staff (including TRCA, CLOCA, MECP, MNDMNRF, Parks Canada, etc.,) as required to ensure compliance with the applicable environmental policies, guidelines and plans regarding acceptable mitigation/compensation protocols for habitat loss within the forest/wetland communities/significant natural heritage features, and to identify any additional required mitigation measures to ensure impacts to these areas are minimized to the extent possible. Staging and stockpile areas should be	TRCA, CLOCA, MECP, MNDMNRF, Parks Canada, Municipalities

TABLE 15.
NATURAL HERITAGE COMMITMENTS SUMMARY

Natural Heritage Factor	Natural Heritage Commitments for Future Work During Detail Design Phase	Agencies to be Consulted
	identified on the design drawings during the detail design phase. Stockpile areas should be located outside of the floodplain and vegetated areas, and ideally outside of regulated areas.	

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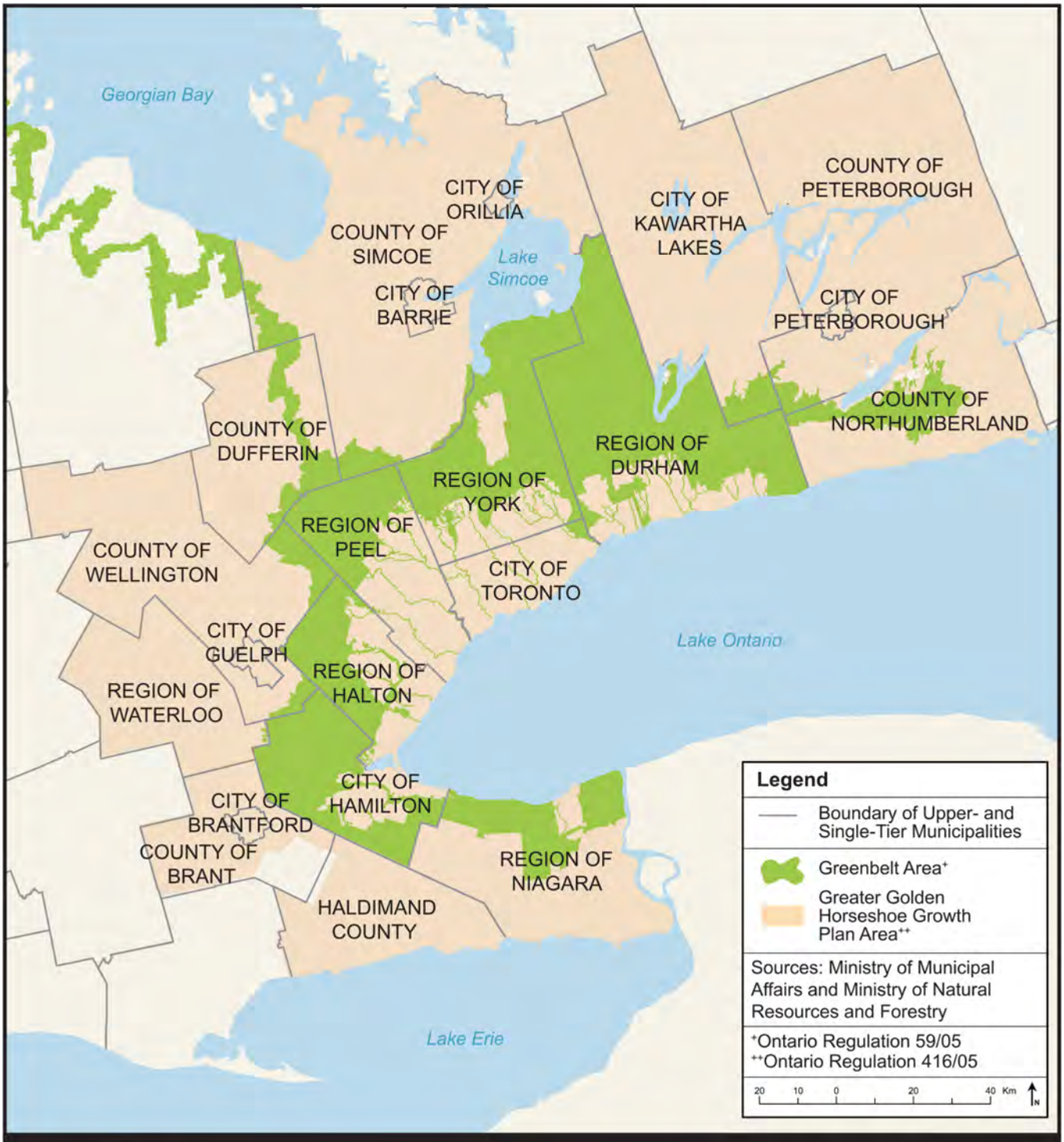
APPENDICES

APPENDIX A.
ENVIRONMENTAL POLICY, MAPPING AND SCHEDULES

PLACES TO GROW GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE, 2019



Ontario

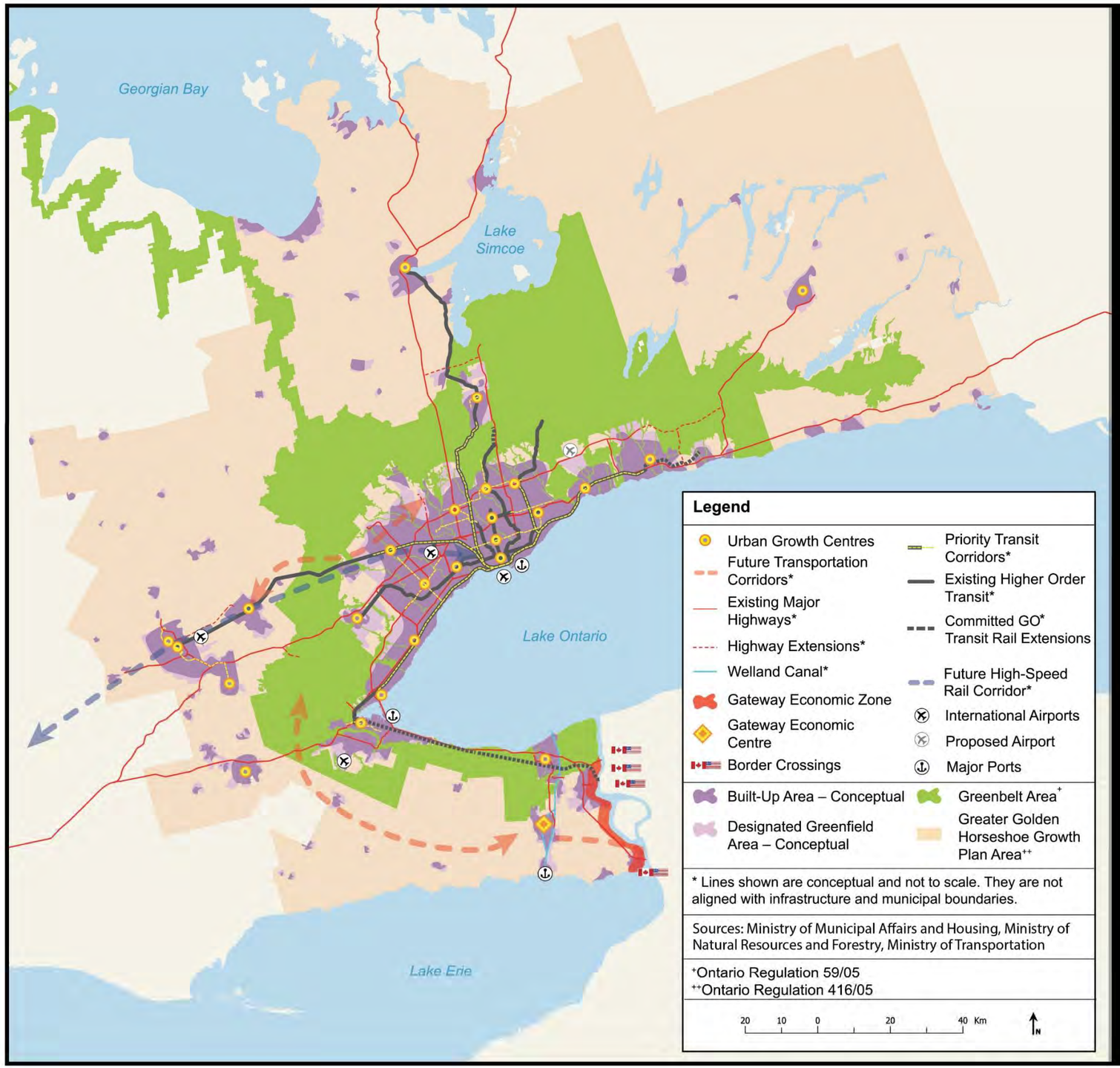
PLACES TO GROW

GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE, 2017

SCHEDULE 1

Greater Golden Horseshoe Growth Plan Area

Note: The information displayed on this map is not to scale, does not accurately reflect approved land-use and planning boundaries, and may be out of date. For more information on precise boundaries, the appropriate municipality should be consulted. For more information on Greenbelt Area boundaries, the Greenbelt Plan should be consulted. The Province of Ontario assumes no responsibility or liability for any consequences of any use made of this map.



Ontario

SCHEDULE 2

A Place to Grow Concept

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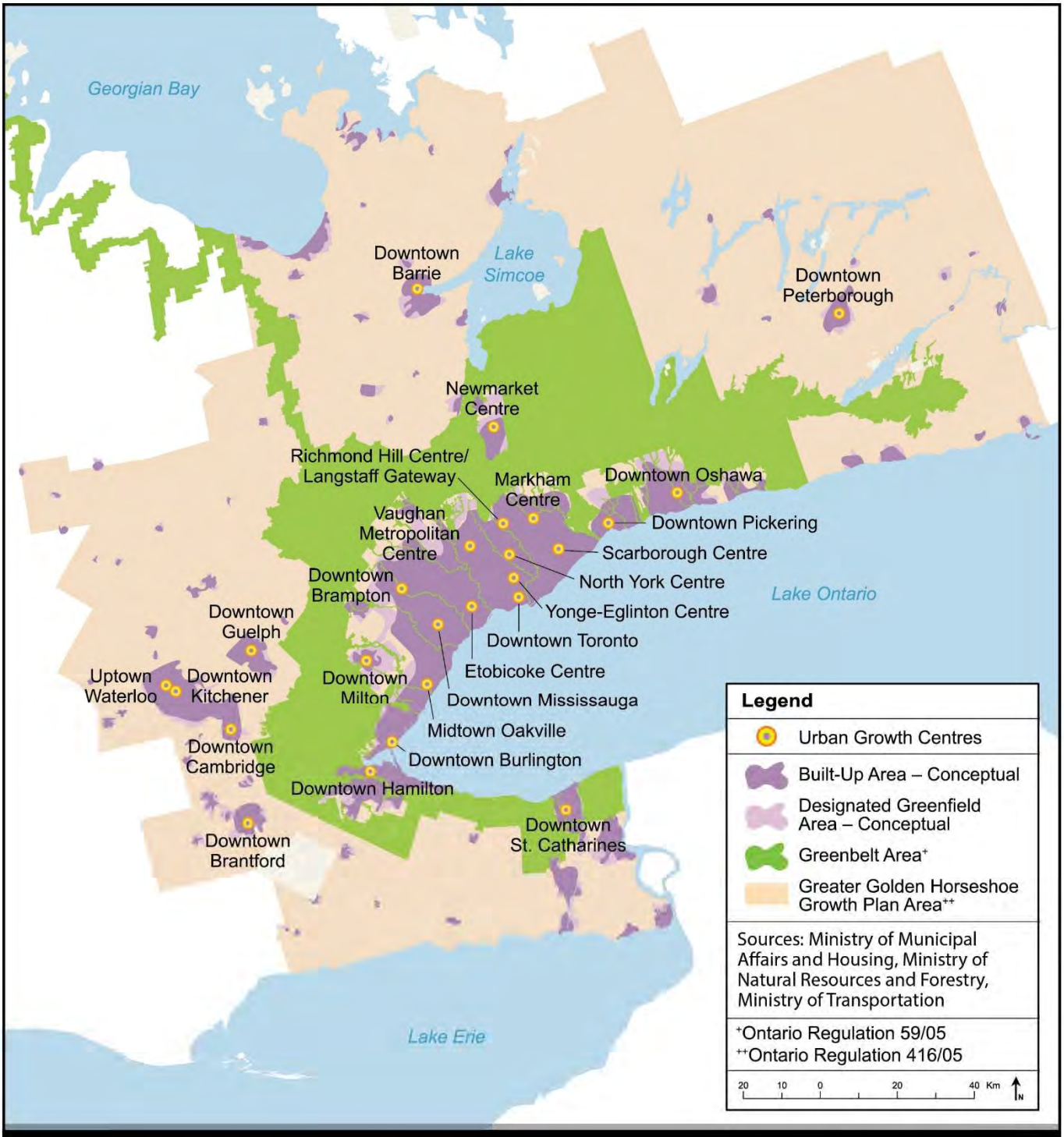
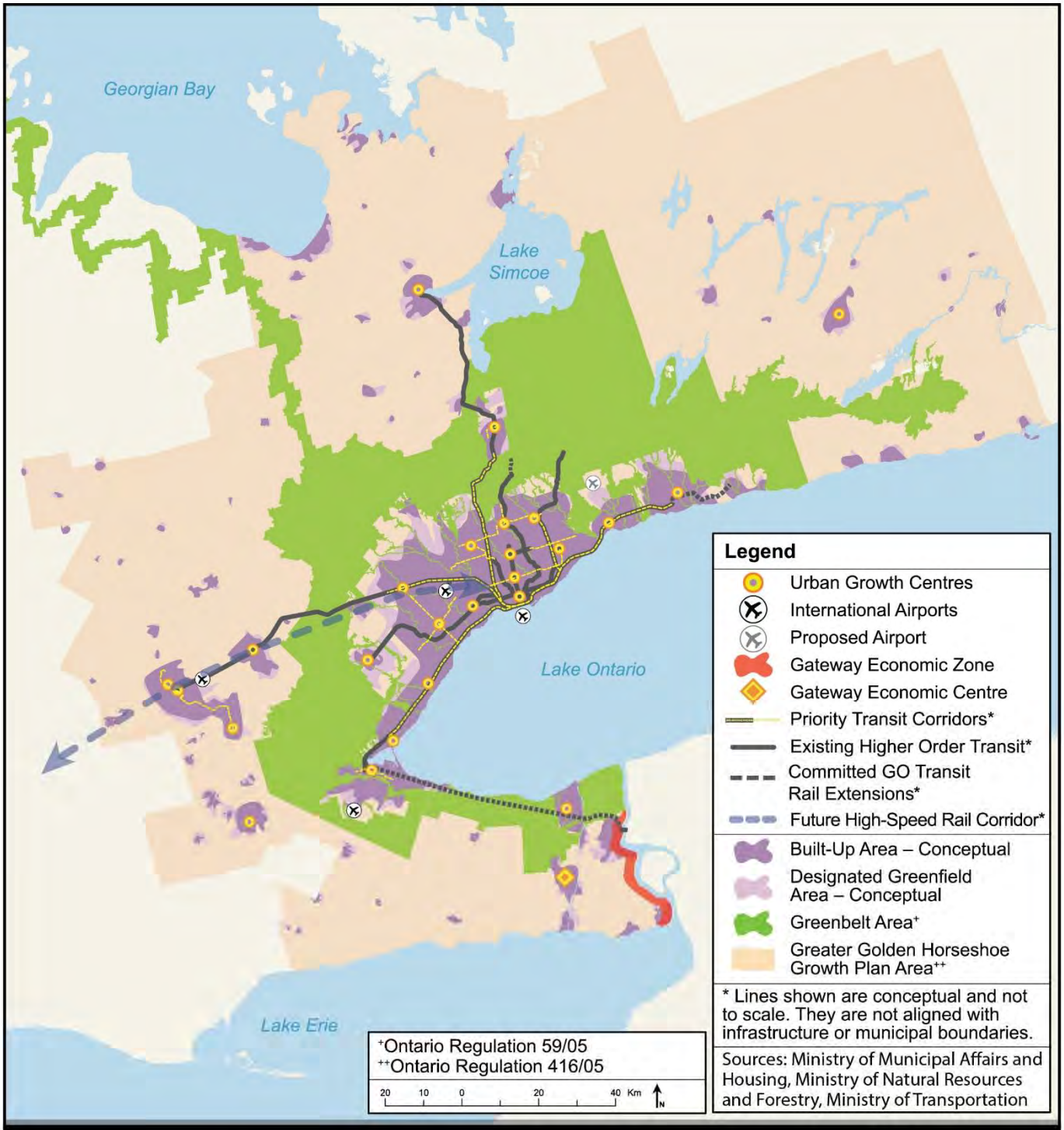


Ontario

SCHEDULE 4

Urban Growth Centres

Note: The information displayed on this map is not to scale, does not accurately reflect approved land-use and planning boundaries, and may be out of date. For more information on precise boundaries, the appropriate municipality should be consulted. For more information on Greenbelt Area boundaries, the Greenbelt Plan should be consulted. The Province of Ontario assumes no responsibility or liability for any consequences of any use made of this map.



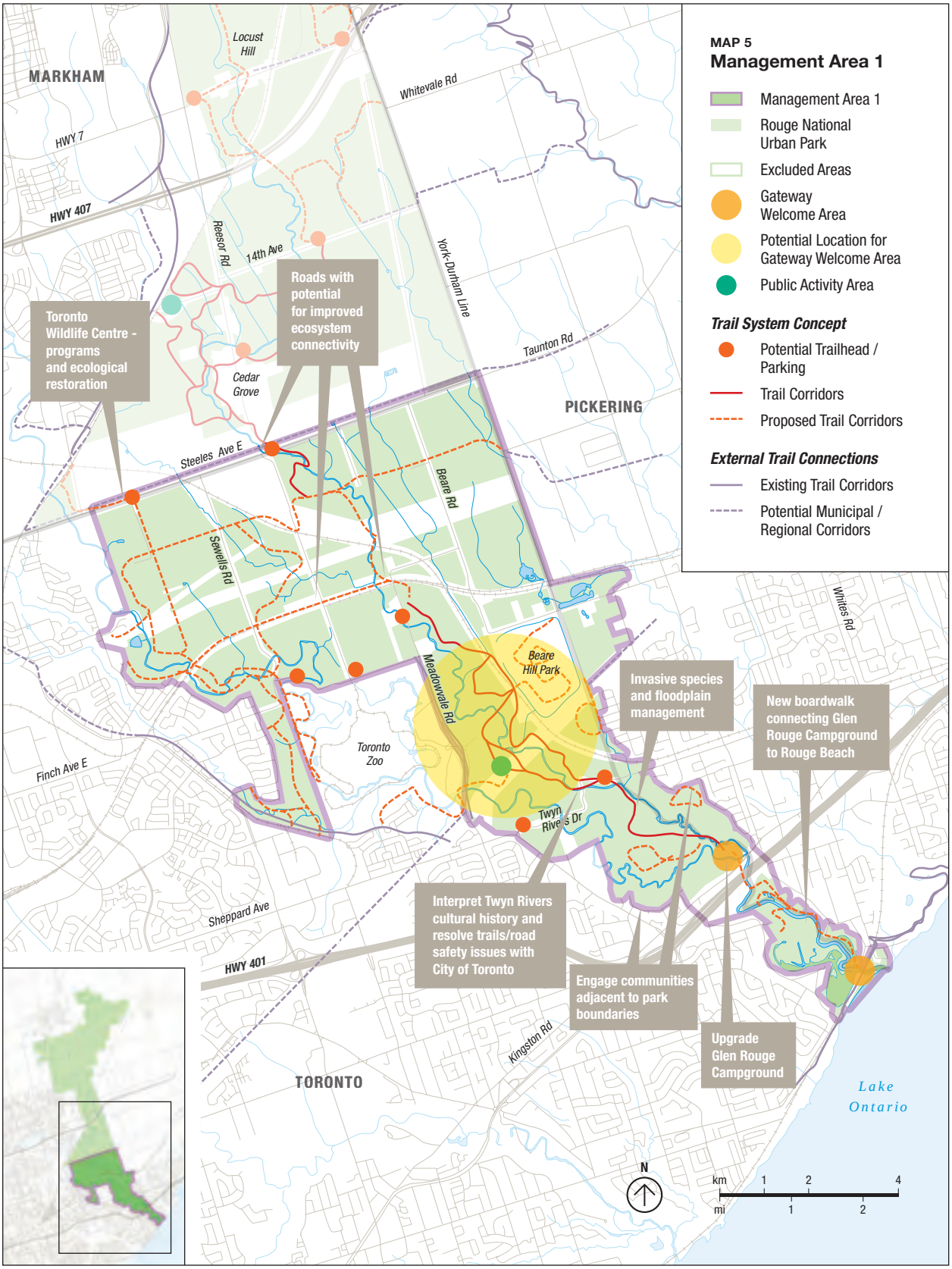
Ontario

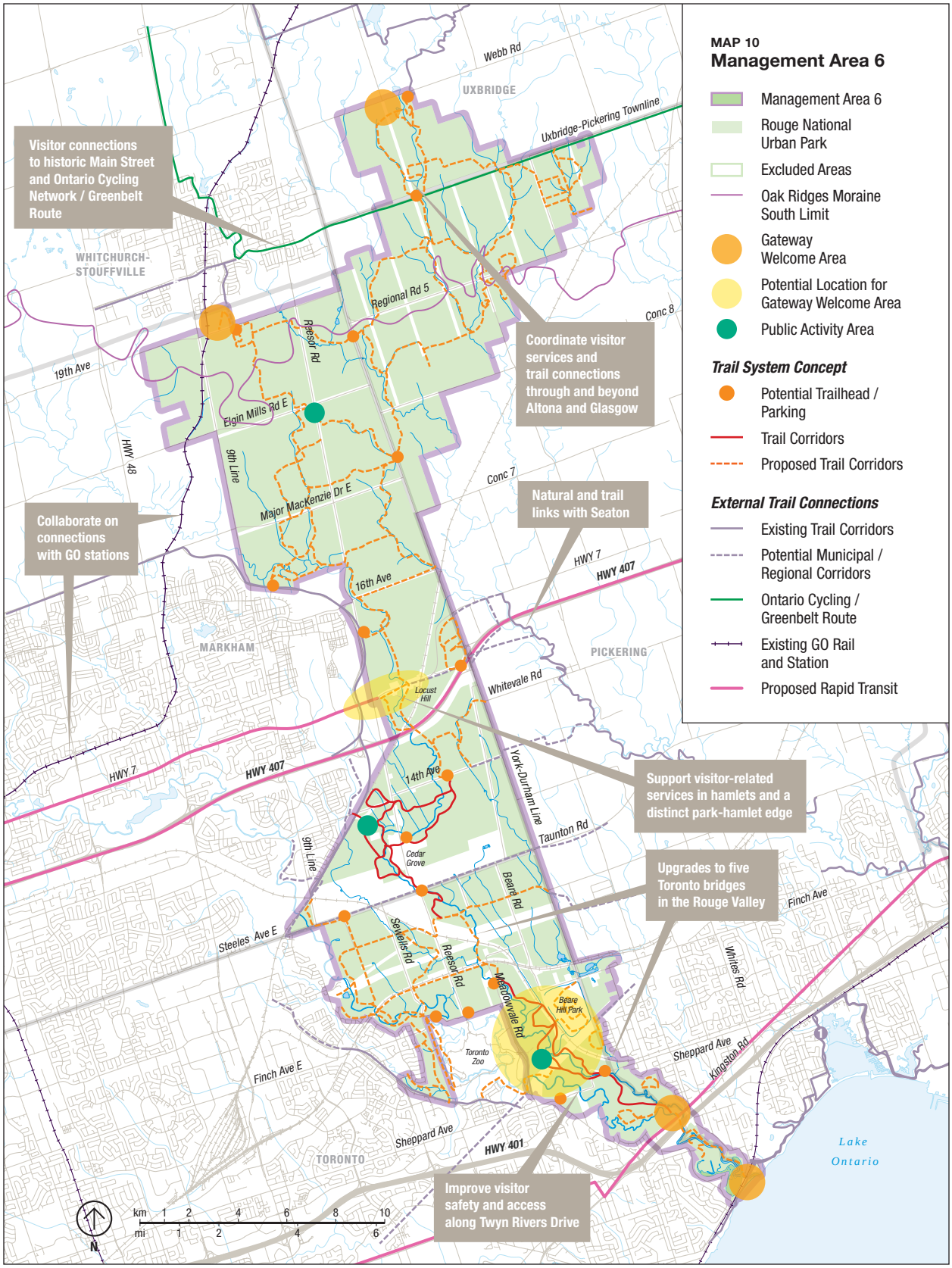
SCHEDULE 5

Moving People - Transit

Note: The information displayed on this map is not to scale, does not accurately reflect approved land-use and planning boundaries, and may be out of date. For more information on precise boundaries, the appropriate municipality should be consulted. For more information on Greenbelt Area boundaries, the Greenbelt Plan should be consulted. The Province of Ontario assumes no responsibility or liability for any consequences of any use made of this map.

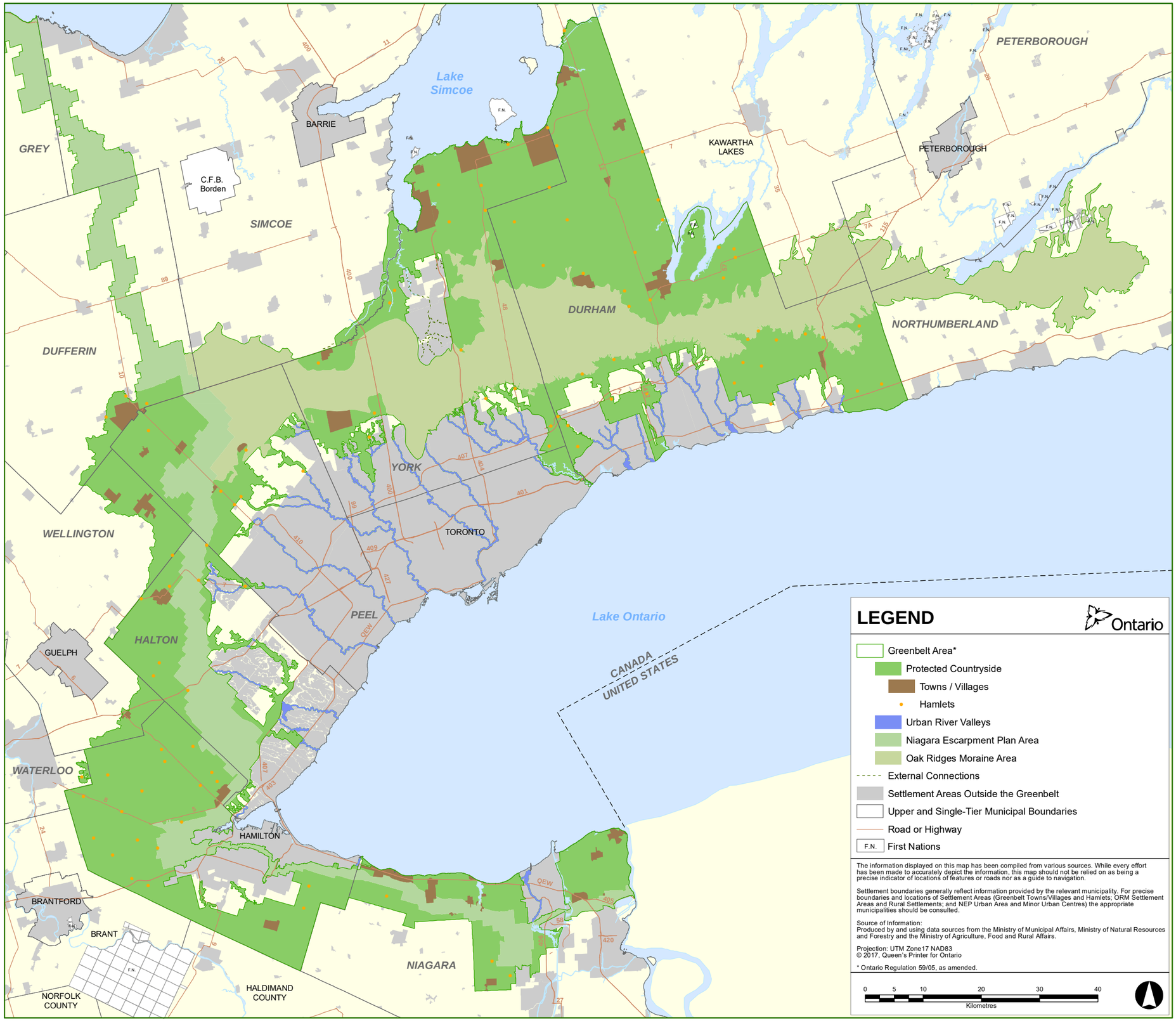
ROUGE NATIONAL URBAN PARK MANAGEMENT PLAN, 2019


MAP 5
Management Area 1
Management Area 1
Rouge National Urban Park
Excluded Areas
Gateway Welcome Area
Potential Location for Gateway Welcome Area
Public Activity Area
Trail System Concept
Potential Trailhead / Parking
Trail Corridors
Proposed Trail Corridors
External Trail Connections
Existing Trail Corridors
Potential Municipal / Regional Corridors
MARKHAM
PICKERING
TORONTO
Lake Ontario
Locust Hill
Whitevale Rd
HWY 7
HWY 407
Reesor Rd
14th Ave
York-Durham Line
Taunton Rd
Cedar Grove
Steeles Ave E
Beare Rd
Sewells Rd
Whites Rd
Beare Hill Park
Meadowvale Rd
Toronto Zoo
Finch Ave E
Twyn Rivers Dr
Sheppard Ave
HWY 401
Kingston Rd
Roads with potential for improved ecosystem connectivity
Toronto Wildlife Centre - programs and ecological restoration
Invasive species and floodplain management
New boardwalk connecting Glen Rouge Campground to Rouge Beach
Interpret Twyn Rivers cultural history and resolve trails/road safety issues with City of Toronto
Engage communities adjacent to park boundaries
Upgrade Glen Rouge Campground
N
km 1 2 4
mi 1 2


MAP 10
Management Area 6
Management Area 6
Rouge National Urban Park
Excluded Areas
Oak Ridges Moraine South Limit
Gateway Welcome Area
Potential Location for Gateway Welcome Area
Public Activity Area
Trail System Concept
Potential Trailhead / Parking
Trail Corridors
Proposed Trail Corridors
External Trail Connections
Existing Trail Corridors
Potential Municipal / Regional Corridors
Ontario Cycling / Greenbelt Route
Existing GO Rail and Station
Proposed Rapid Transit
Visitor connections to historic Main Street and Ontario Cycling Network / Greenbelt Route
Coordinate visitor services and trail connections through and beyond Altona and Glasgow
Natural and trail links with Seaton
Collaborate on connections with GO stations
Support visitor-related services in hamlets and a distinct park-hamlet edge
Upgrades to five Toronto bridges in the Rouge Valley
Improve visitor safety and access along Twyn Rivers Drive
UXBRIDGE
WHITCHURCH-STOUFFVILLE
MARKHAM
PICKERING
TORONTO
Webb Rd
Uxbridge-Pickering Townline
Regional Rd 5
Conc 8
Conc 7
19th Ave
Elgin Mills Rd E
Reesor Rd
9th Line
HWY 48
Major MacKenzie Dr E
16th Ave
HWY 7
HWY 407
Whitevale Rd
Locust Hill
14th Ave
York-Durham Line
Taunton Rd
Cedar Grove
Beare Rd
Steeles Ave E
Sewells Rd
Meadowvale Rd
Beare Hill Park
Toronto Zoo
Finch Ave E
Sheppard Ave
HWY 401
Finch Ave
Whites Rd
Kingston Rd
Lake Ontario
km 1 2 4 6 8 10
mi 1 2 4 6
N

GREENBELT PLAN, 2017

greenbelt PLAN 2017



LEGEND

- Greenbelt Area*
- Protected Countryside
- Towns / Villages
- Hamlets
- Urban River Valleys
- Niagara Escarpment Plan Area
- Oak Ridges Moraine Area
- External Connections
- Settlement Areas Outside the Greenbelt
- Upper and Single-Tier Municipal Boundaries
- Road or Highway
- F.N. First Nations

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations of features or roads nor as a guide to navigation.

Settlement boundaries generally reflect information provided by the relevant municipality. For precise boundaries and locations of Settlement Areas (Greenbelt Towns/Villages and Hamlets; ORM Settlement Areas and Rural Settlements; and NEP Urban Area and Minor Urban Centres) the appropriate municipalities should be consulted.

Source of Information:
Produced by and using data sources from the Ministry of Municipal Affairs, Ministry of Natural Resources and Forestry and the Ministry of Agriculture, Food and Rural Affairs.

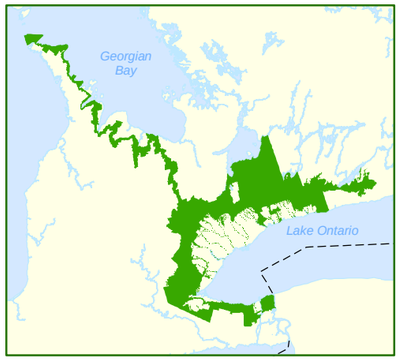
Projection: UTM Zone17 NAD83

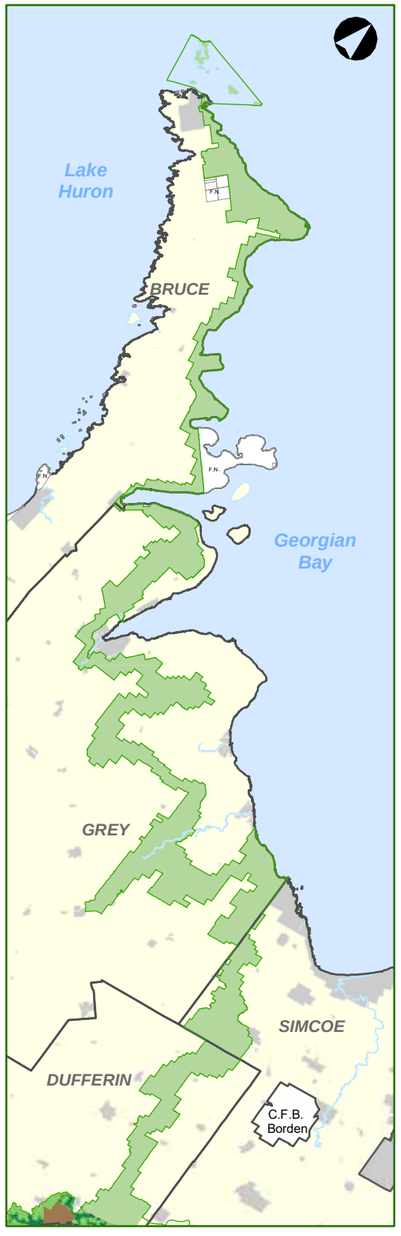
* Ontario Regulation 59/05, as amended.

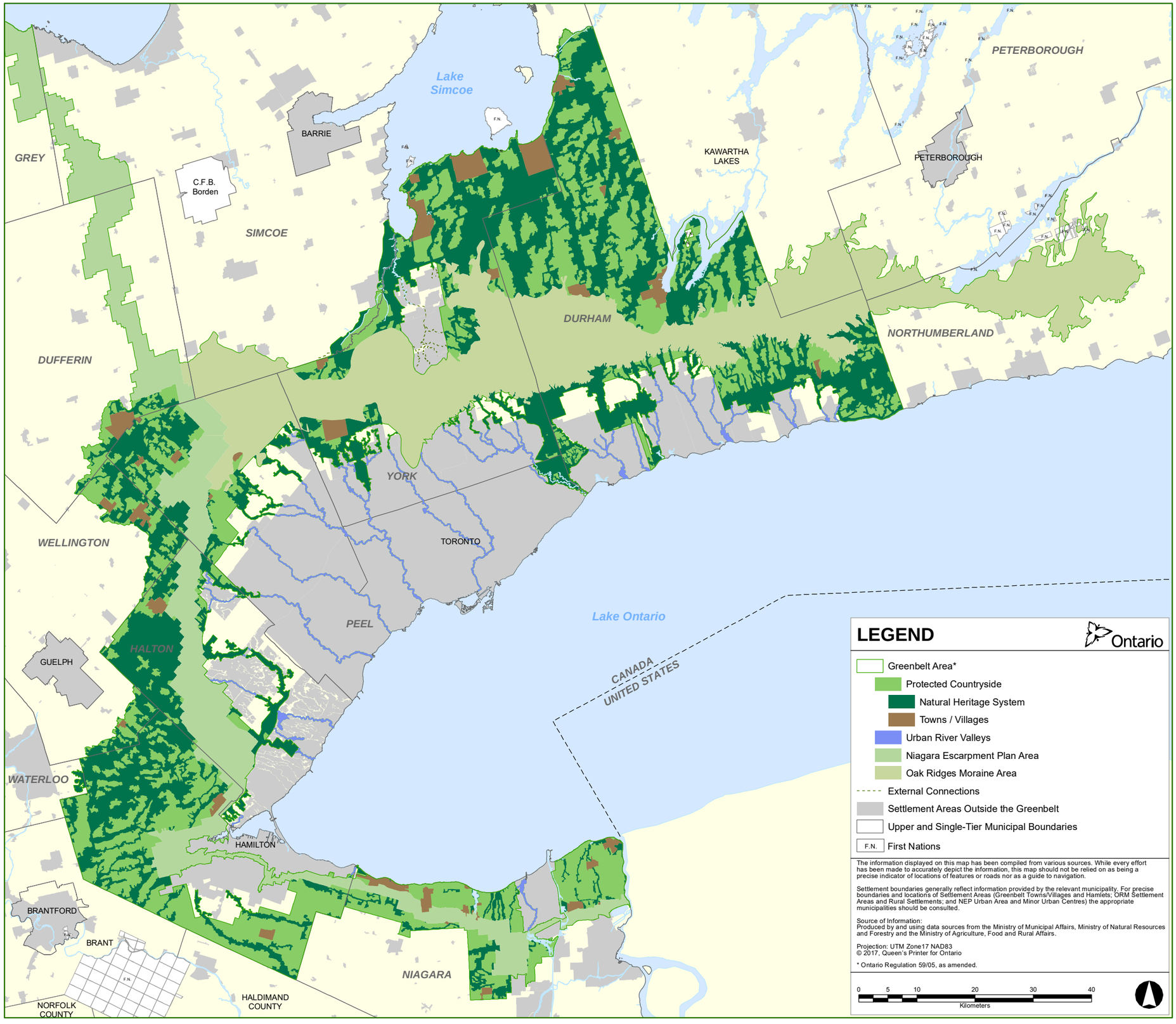
0 5 10 20 30 40
Kilometres

Schedule 1: Greenbelt Area

greenbelt PLAN 2017







LEGEND

Ontario

- Greenbelt Area*
- Protected Countryside
- Natural Heritage System
- Towns / Villages
- Urban River Valleys
- Niagara Escarpment Plan Area
- Oak Ridges Moraine Area
- External Connections
- Settlement Areas Outside the Greenbelt
- Upper and Single-Tier Municipal Boundaries
- F.N. First Nations

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Projection: UTM Zone17 NAD83

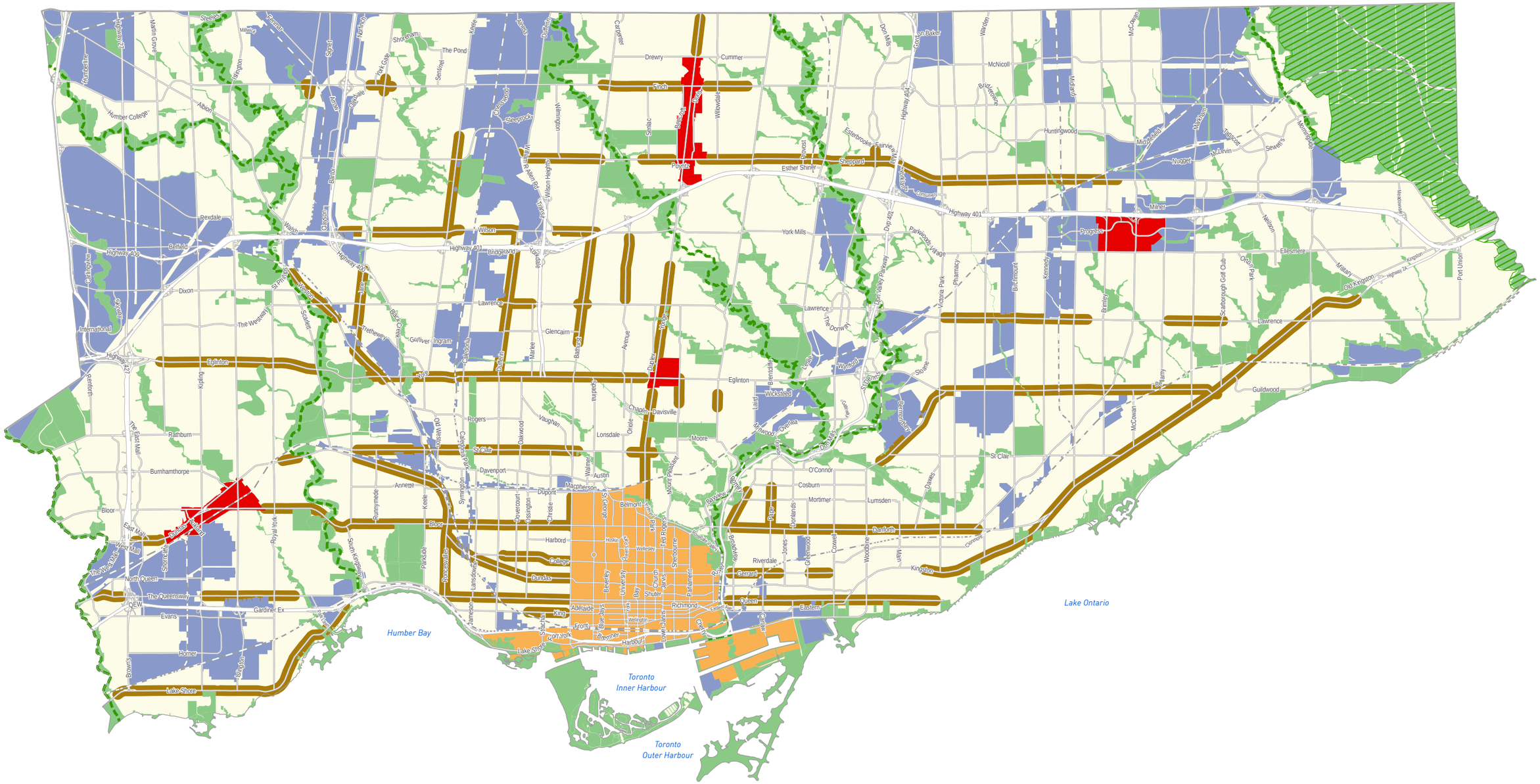
* Ontario Regulation 59/05, as amended.

0 5 10 20 30 40
Kilometers

Schedule 4: Natural Heritage System

CITY OF TORONTO OFFICIAL PLAN, FEBRUARY 2019 OFFICE CONSOLIDATION

The City of Toronto strives to adhere to the accepted guidelines and standards for accessibility and usability. However, it is not always possible to do so with all documents. Should you experience any difficulty reviewing our documents, please email cityplanning@toronto.ca.



TORONTO

- Avenues
- Centres
- Employment Areas
- Downtown and Central Waterfront
- Green Space System
- Greenbelt Protected Countryside
- Greenbelt River Valley Connections

Not to Scale

Toronto Official Plan

Map 2

Urban Structure

February 2019

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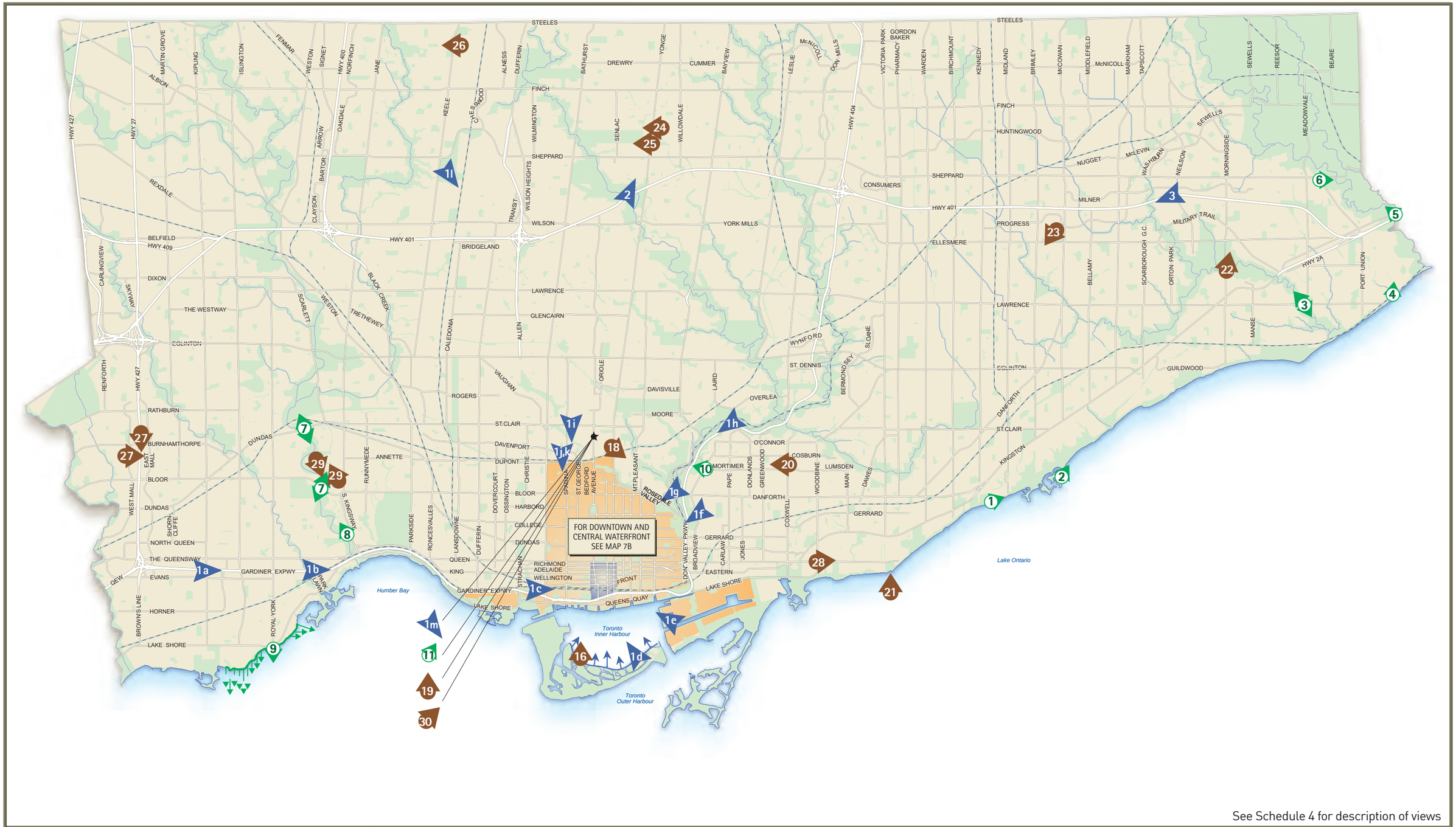

See Schedule 4 for description of views

TORONTO

22 A. Prominent and Heritage Buildings, Structures and Landscapes

1 B. Skylines

9 C. Important Natural Features

Downtown and Central Waterfront

Financial District

Parks and Open Space Areas

Not to Scale

Toronto Official Plan

Map 7A

Identified Views from the Public Realm February 2019

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Note: For information purposes only
Boundaries are schematic

TORONTO City Planning Division

City Parkland

Not to Scale

TORONTO OFFICIAL PLAN City Parkland

MAP 8A

June 2006

Note: For Information purposes only
Boundaries are schematic

TORONTO

Natural Heritage System

N
Not to Scale

Toronto Official Plan

Map 9

Natural Heritage System

February 2019

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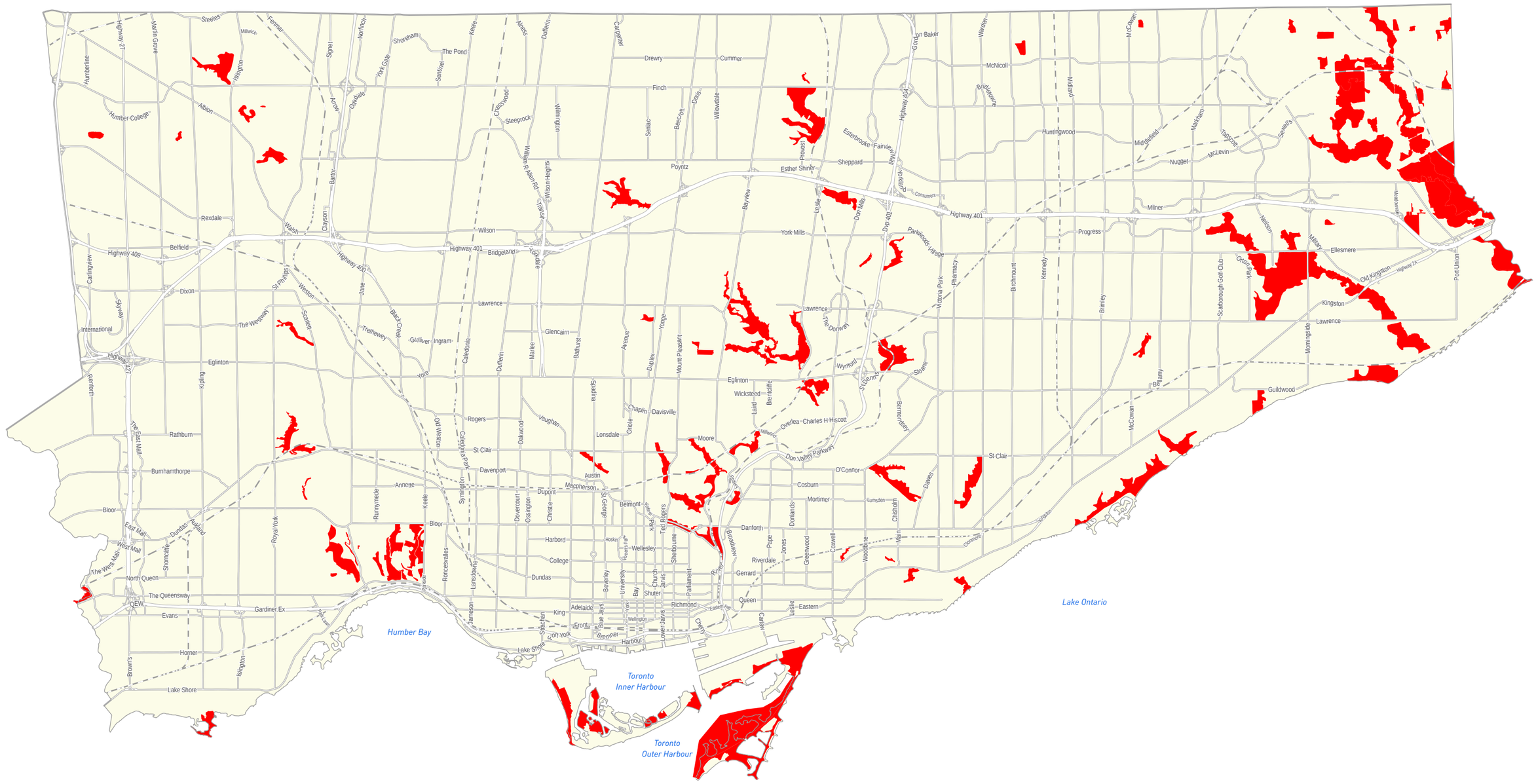


TORONTO

Environmentally Significant Areas

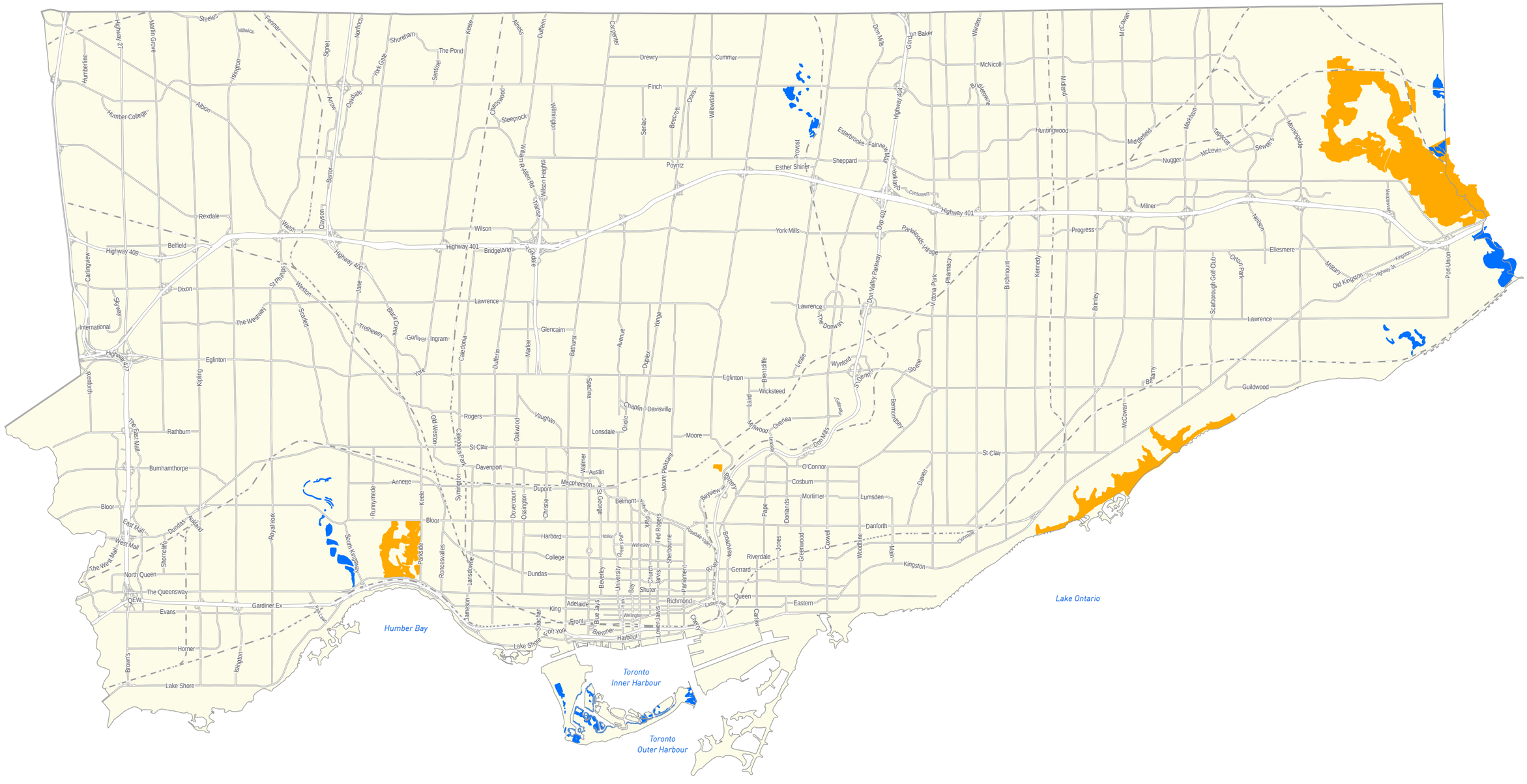
Toronto Official Plan

Map 12A

Environmentally Significant Areas

February 2019

Not to Scale



TORONTO

Wetlands

Areas of Natural and Scientific Interest

Not to Scale

Toronto Official Plan

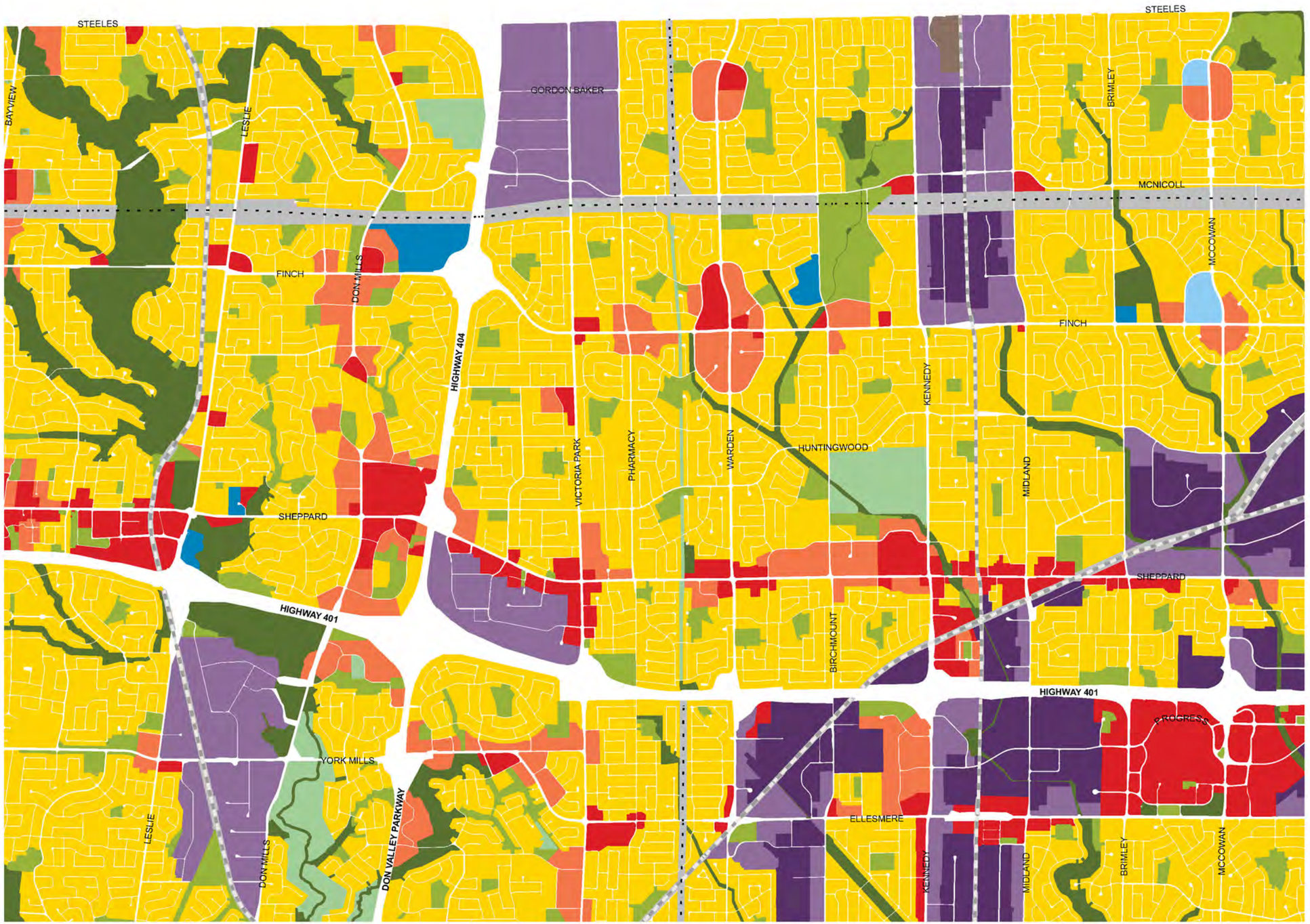
Map 12B

Provincially Significant Wetlands and Areas of Natural and Scientific Interest February 2019

Toronto Official Plan

Map 19
Land Use Plan

February 2019



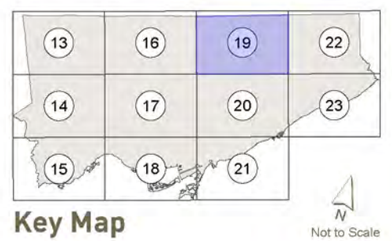
Land Use Designations

- Neighbourhoods
- Apartment Neighbourhoods
- Mixed Use Areas
- Natural Areas
- Parks
- Other Open Space Areas (Including Golf Courses, Cemetaries, Public Utilities)
- Institutional Areas
- Regeneration Areas
- General Employment Areas
- Core Employment Areas
- Utility Corridors
- Special Policy Area (See Chapter 7, Site and Area Specific Policies 235, 236)

Streets and Highways
Railway Lines
Hydro Corridors

0 500 1000 1500 m

TORONTO



Key Map

Not to Scale

Toronto Official Plan

Map 22
Land Use Plan

February 2019

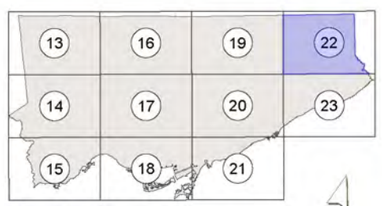
Land Use Designations

- Neighbourhoods
- Apartment Neighbourhoods
- Mixed Use Areas
- Natural Areas
- Parks
- Other Open Space Areas (Including Golf Courses, Cemetaries, Public Utilities)
- Institutional Areas
- General Employment Areas
- Core Employment Areas
- Utility Corridors

- Streets and Highways
- Railway Lines
- Hydro Corridors

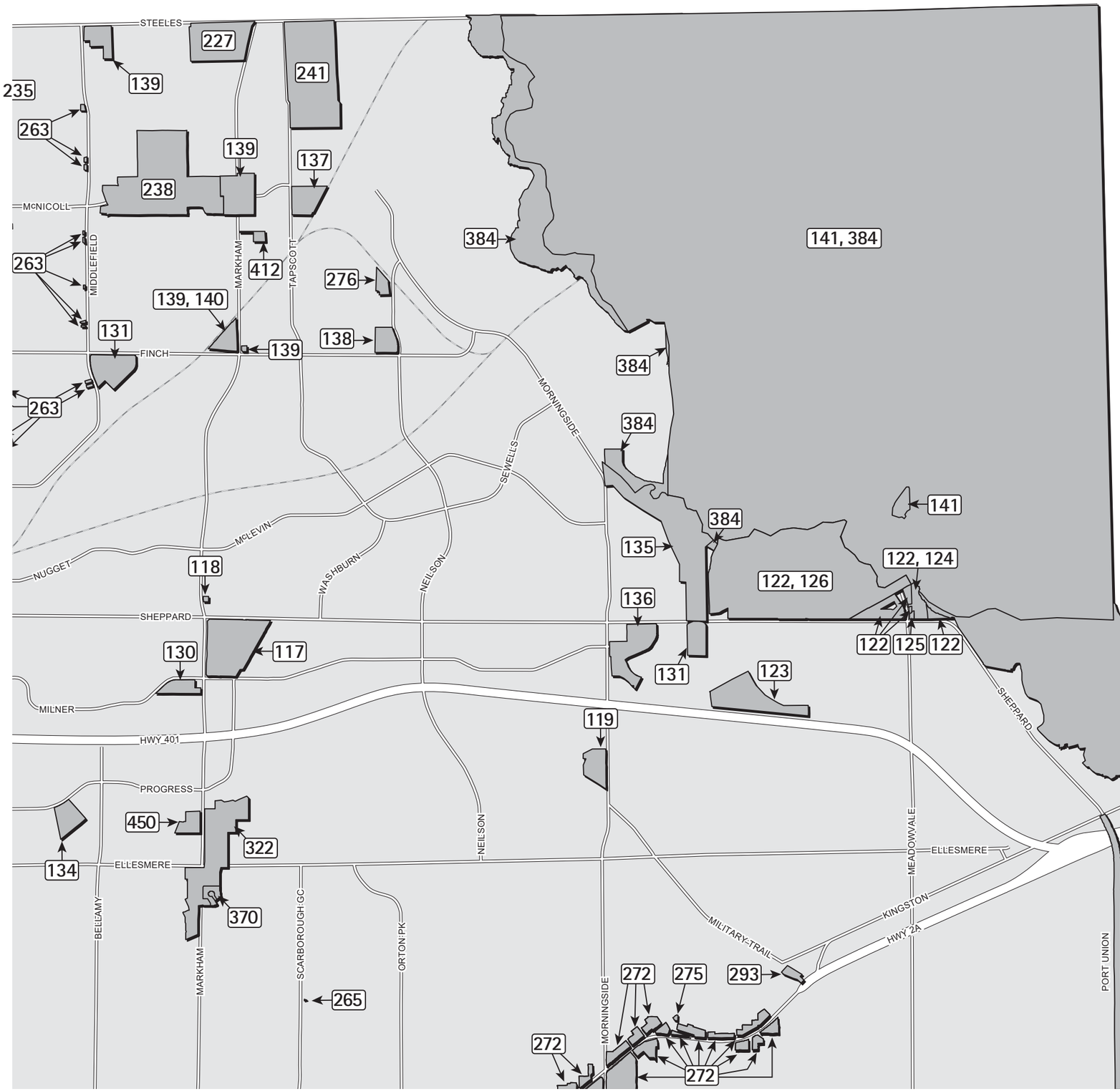
0 500 1000 1500 m

TORONTO



Key Map

N
Not to Scale



TORONTO OFFICIAL PLAN

MAP 33
Site and Area Specific Policies

October 2016

Areas affected by the Site and Area Specific Policies

Note:

Site and Area Specific Policies that are located within a Secondary Plan Area are located in the relevant Secondary Plan in Chapter 6.

Site and Area Specific Policy 228 - Below Grade Parking Lots in the '*Parks and Open Space Areas*' designation applies City-wide.

See Site and Area Specific Policy 265 for those lands where the provisions of this Plan prohibiting the disposal of City-owned land in the Green Space System or Parks and Open Space Areas do not apply.

For information purposes only. Boundaries are schematic.

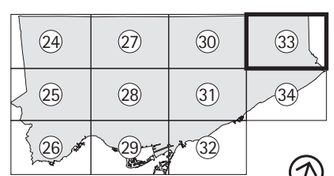
For a detailed description of the areas affected by the Site and Area Specific Policies see Chapter 7.

Major Streets and Highways

Railway Lines

0 500 1000 1500m

TORONTO City Planning Division



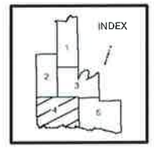
Key Map

Not to Scale

DURHAM REGION OFFICIAL PLAN CONSOLIDATION, MAY 2020

OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM

SCHEDULE 'A' - MAP 'A4' REGIONAL STRUCTURE



LEGEND

URBAN SYSTEM

- URBAN AREA BOUNDARY
- REGIONAL CENTRE
- URBAN GROWTH CENTRE
- REGIONAL CORRIDOR
- LIVING AREAS
- EMPLOYMENT AREAS
- AREAS DEVELOPABLE ON FULL/PARTIAL MUNICIPAL SERVICES
- AREAS DEVELOPABLE ON MUNICIPAL WATER SYSTEMS & PRIVATE WASTE DISPOSAL SYSTEMS
- AREAS DEVELOPABLE ON PRIVATE WELLS & MUNICIPAL SEWER SYSTEMS
- AREAS DEVELOPABLE ON PRIVATE WELLS & PRIVATE WASTE DISPOSAL SYSTEMS
- S MUNICIPAL SERVICE
- BUILT BOUNDARY

RURAL SYSTEM

- PRIME AGRICULTURAL AREAS

RURAL SETTLEMENTS :

- HAMLET
- (12) COUNTRY RESIDENTIAL SUBDIVISION (SEE TABLE E2 FOR DESCRIPTION)
- (3) RURAL EMPLOYMENT AREA (SEE TABLE E3 FOR DESCRIPTION)
- SHORELINE RESIDENTIAL
- (8) REGIONAL NODE (SEE SECTION 9C FOR DESCRIPTION)
- (12) AGGREGATE RESOURCE EXTRACTION AREA (SEE TABLE E1 FOR DESCRIPTION)

GREENLANDS SYSTEM

- MAJOR OPEN SPACE AREAS
- OAK RIDGES MORAINE AREAS
- WATERFRONT AREAS
- OAK RIDGES MORAINE BOUNDARY
- GREENBELT BOUNDARY
- TOURIST ACTIVITY/ RECREATIONAL NODE
- WATERFRONT PLACE
- OPEN SPACE LINKAGE
- WATERFRONT LINKS

TRANSPORTATION SYSTEM

SEE SCHEDULE C FOR DESIGNATIONS

THE FOLLOWING IS SHOWN SELECTIVELY, FOR EASE OF INTERPRETATION OF OTHER DESIGNATIONS ONLY.

EXISTING		FUTURE
	ARTERIAL ROAD	
	FREEWAY	
	INTERCHANGE	
	GO RAIL	
	GO STATION	

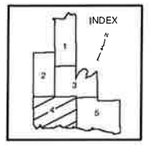
SPECIAL AREAS

- 2 SPECIAL STUDY AREA
- A SPECIFIC POLICY AREA
- D2 DEFERRED BY MINISTER OF MUNICIPAL AFFAIRS
- APPEALED TO O.M.B.
- REFER TO POLICY 7.3.11p)
- LANDS APPEALED TO OMB, REFER TO POLICY 14.13.7

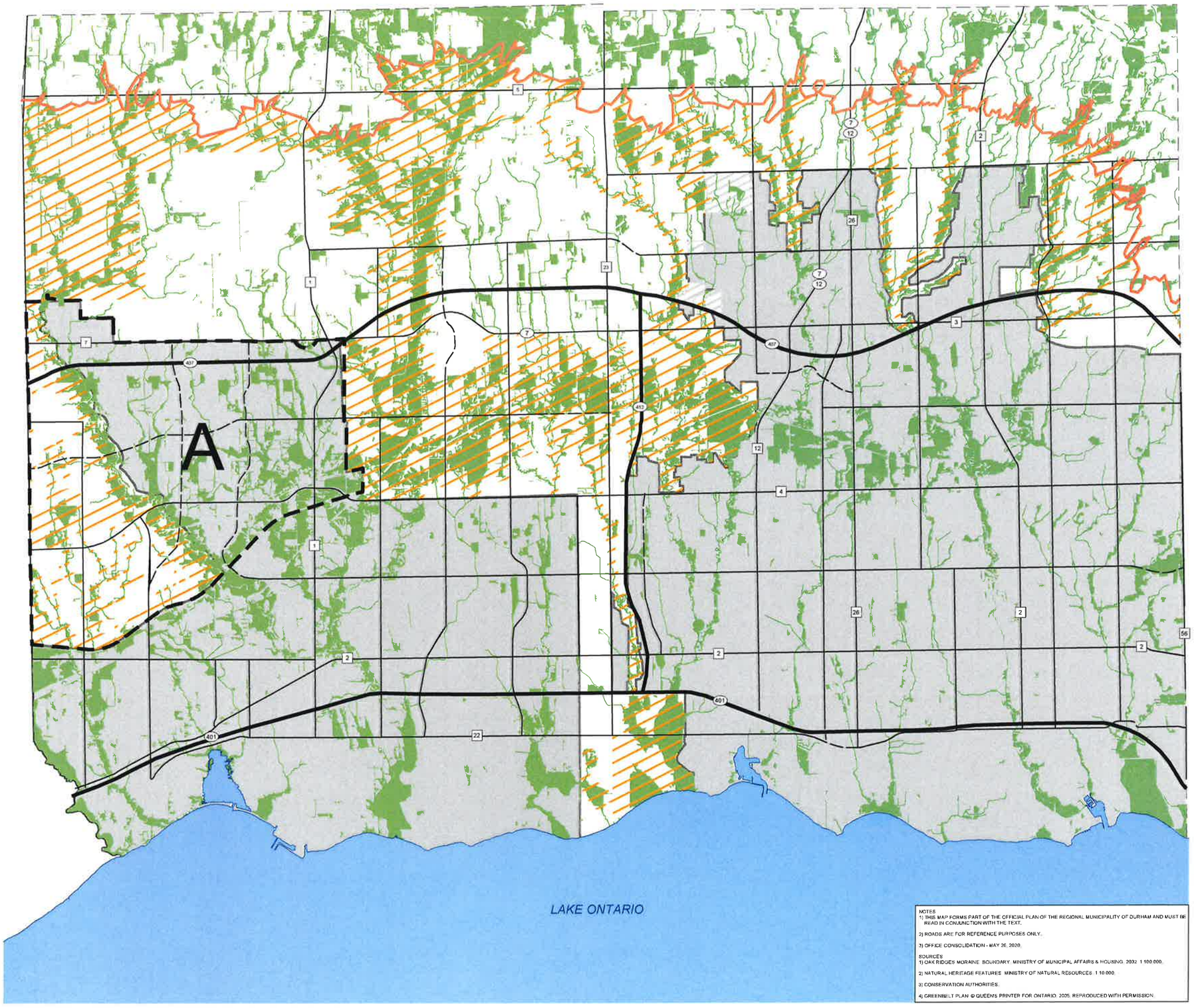
NOTES
1) THIS MAP FORMS PART OF THE OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM AND MUST BE READ IN CONJUNCTION WITH THE TEXT
2) THE DESIGNATIONS FOR THE DEFERRED AREA REFLECT THE POSITION OF REGIONAL COUNCIL, PLEASE REFER TO POLICY 15.13
3) OFFICE CONSOLIDATION - MAY 20, 2020

SOURCES
1) OAK RIDGES MORAINE BOUNDARY, MINISTRY OF MUNICIPAL AFFAIRS & HOUSING, 2002, 1:100,000
2) GREENBELT PLAN, © QUEEN'S PRINTER FOR ONTARIO, 2005, REPRODUCED WITH PERMISSION
3) DELINEATED BUILT BOUNDARY, © QUEEN'S PRINTER FOR ONTARIO, 2005, REPRODUCED WITH PERMISSION

OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM



SCHEDULE 'B' - MAP 'B1d' GREENBELT NATURAL HERITAGE SYSTEM & KEY NATURAL HERITAGE AND HYDROLOGIC FEATURES



LEGEND

- KEY NATURAL HERITAGE AND HYDROLOGIC FEATURES
- GREENBELT NATURAL HERITAGE SYSTEM
- OAK RIDGES MORAINE CONSERVATION PLAN AREA BOUNDARY
- URBAN AREA
- LANDS APPEALED TO OMB, REFER TO POLICY 14.13.7.
- SPECIFIC POLICY AREA

NOTES
1) THIS MAP FORMS PART OF THE OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM AND MUST BE READ IN CONJUNCTION WITH THE TEXT.

2) ROADS ARE FOR REFERENCE PURPOSES ONLY.

3) OFFICE CONSOLIDATION - MAY 26, 2020.

SOURCES
1) OAK RIDGES MORAINE BOUNDARY: MINISTRY OF MUNICIPAL AFFAIRS & HOUSING, 2002, 1:100,000.

2) NATURAL HERITAGE FEATURES: MINISTRY OF NATURAL RESOURCES, 1:10,000.

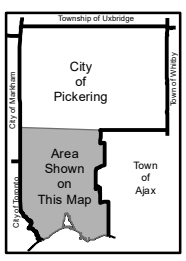
3) CONSERVATION AUTHORITIES.

CITY OF PICKERING OFFICIAL PLAN, EDITION 8, OCTOBER 2018

Schedule I to the

Pickering Official Plan

Edition 8



Sheet 1 of 3

Open Space System

- Seaton Natural Heritage System
- Natural Areas
- Active Recreational Areas
- Marina Areas
- Hamlet Heritage Open Space

Rural Settlements

- Rural Clusters
- Rural Hamlets

Land Use Structure

Urban Residential Areas

- Low Density Areas
- Medium Density Areas
- High Density Areas

Mixed Use Areas

- Local Nodes
- Community Nodes
- Mixed Corridors
- Specialty Retailing Node
- City Centre

Employment Areas

- General Employment
- Prestige Employment
- Mixed Employment

Freeways and Major Utilities

- Controlled Access Areas
- Potential Multi Use Areas

Seaton Symbols

- DP District Park
- CP Community Park
- HS High School

Other Designations

- Prime Agricultural Areas
- D1 Deferrals
- Greenbelt Boundary

Schedule III A to the

Pickering Official Plan

Edition 8

Resource Management:
The Natural Heritage System

Natural Heritage System

Greenbelt Natural Heritage System

Schedule III B to the

Pickering Official Plan

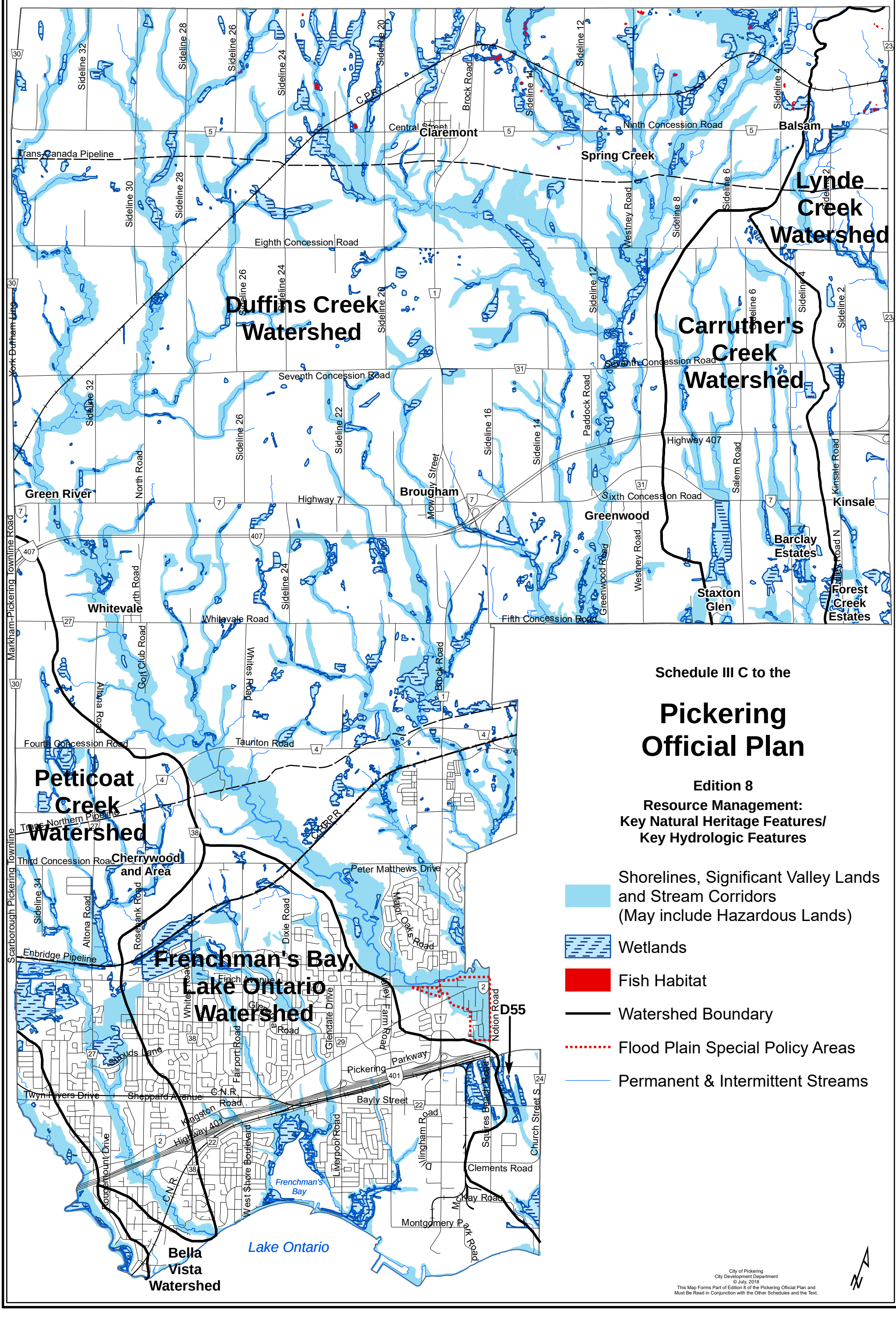
Edition 8

Resource Management:
Key Natural Heritage Features

- Significant Woodlands
- Rouge-Duffins Wildlife Corridor
- Areas of Natural and Scientific Interest
- Former Lake Iroquois Shoreline
- Altona Forest Policy Area

Other Map Elements

- Oak Ridges Moraine Boundary
- Greenbelt Boundary



Schedule III C to the

Pickering Official Plan

Edition 8

Resource Management:
Key Natural Heritage Features/
Key Hydrologic Features

- Shorelines, Significant Valley Lands and Stream Corridors (May include Hazardous Lands)
- Wetlands
- Fish Habitat
- Watershed Boundary
- Flood Plain Special Policy Areas
- Permanent & Intermittent Streams

City of Pickering
City Development Department

This Map Forms Part of Edition 8 of the Pickering Oficial Plan and
Must Be Read in Conjunction with the Other Schedules and the Text.

Schedule III D to the

Pickering Official Plan

Edition 8

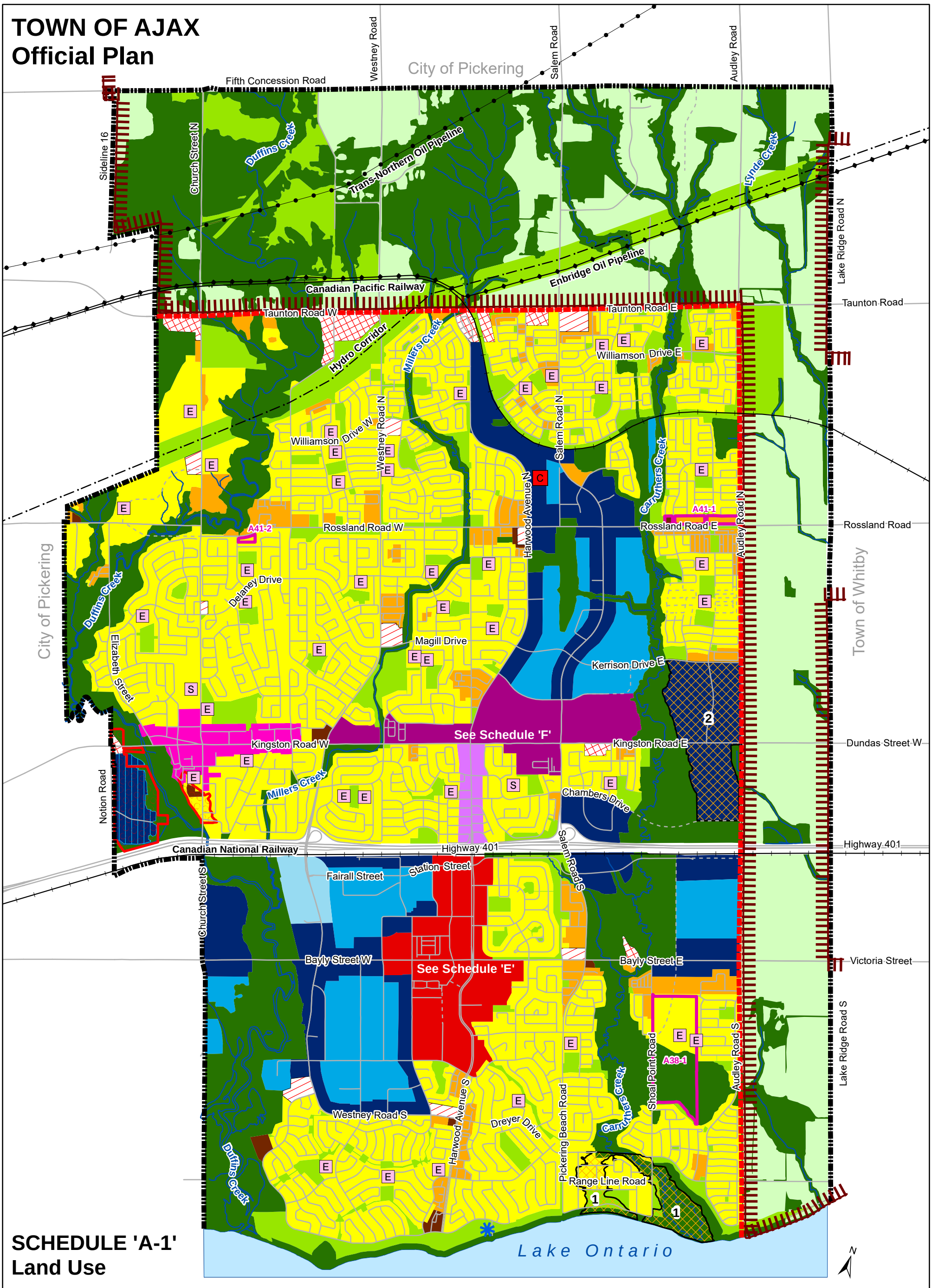
Resource Management:
High Aquifer Vulnerability,
Groundwater Recharge Areas

Groundwater Recharge Areas

High Aquifer Vulnerability Areas

TOWN OF AJAX OFFICIAL PLAN OFFICE CONSOLIDATION, JANUARY 2016

TOWN OF AJAX
Official Plan



SCHEDULE 'A-1'
Land Use

Greenlands System
- Environmental Protection
- Open Space
- Rural Area
- Greenbelt Boundary

Residential Areas
- Low Density Residential
- Medium Density Residential
- High Density Residential
- S — Secondary School
- E — Elementary School
- C — Secondary School Multi-Use Campus

Mixed Use Areas
- Downtown Regional Centre
- Midtown Corridor
- Uptown Regional Centre
- Village Centre
- Neighbourhood Centre
- Mixed Commercial Corridor

Employment Areas
- General Employment
- Prestige Employment
- GO Transit Station Mixed Use Area
- Employment Policy Area 1

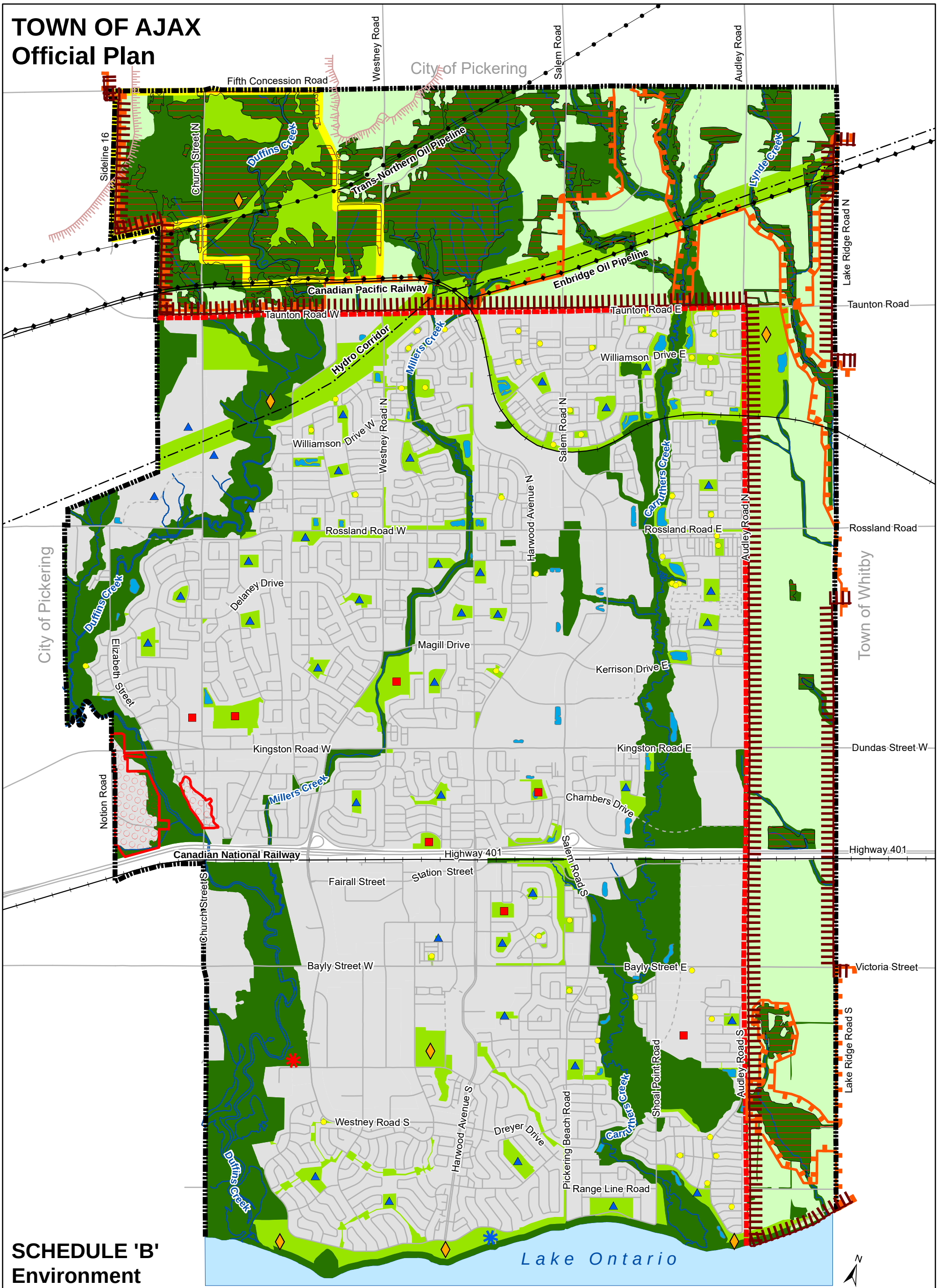
- Water Supply Plant
- Watercourses
- Town Boundary
- Urban Area Boundary
- Special Policy Area
- Special Study Area
- Appeal

500 250 0 500 Metres

Sources: Region of Durham, 2015; Town of Ajax, 2015.

Date of Consolidation: January 15, 2016

TOWN OF AJAX
Official Plan



SCHEDULE 'B'
Environment

Greenlands System

- Environmental Protection
- Open Space
- Rural Area
- Lake Iroquois Shoreline
- Greenbelt Boundary
- Greenbelt Natural Heritage System Boundary
- Greenbelt Key Natural Heritage Features
- Greenwood Conservation Area
- Town-Wide Park
- Community Park
- Neighbourhood Park
- Parkette

Built Environment

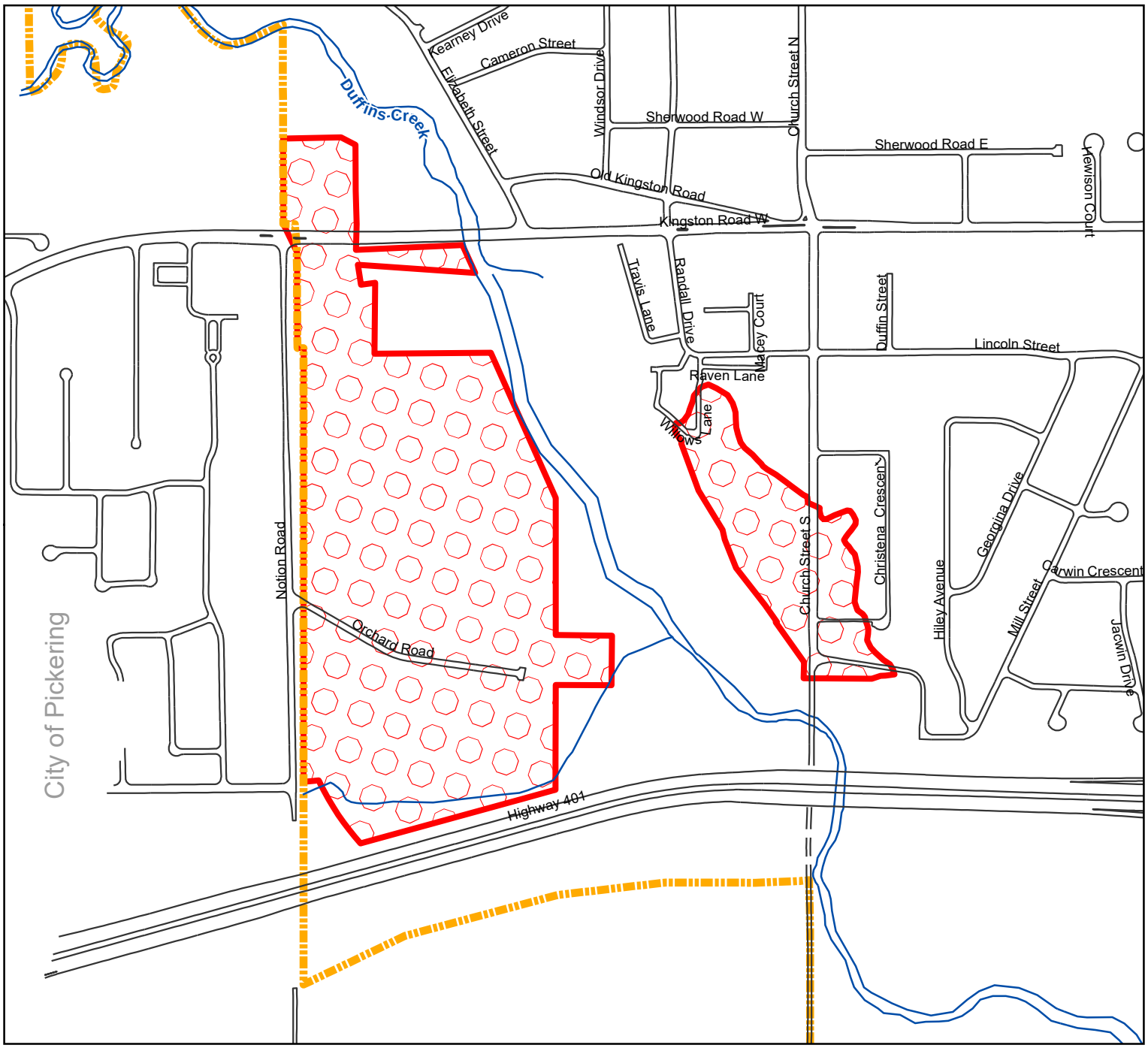
- Built Environment (See Section 2.5)
- Municipal Storm Water Management Pond
- Special Policy Area
- Former Landfill Site
- Water Supply Plant
- Watercourses
- Town Boundary
- Urban Area Boundary

500 250 0 500 Metres

Sources: Region of Durham, 2015; Town of Ajax, 2015.

Date of Consolidation: January 15, 2016

TOWN OF AJAX
Official Plan



SCHEDULE 'D'
Special Policy Area (See Section 2.5.5)

N

Special Policy Area

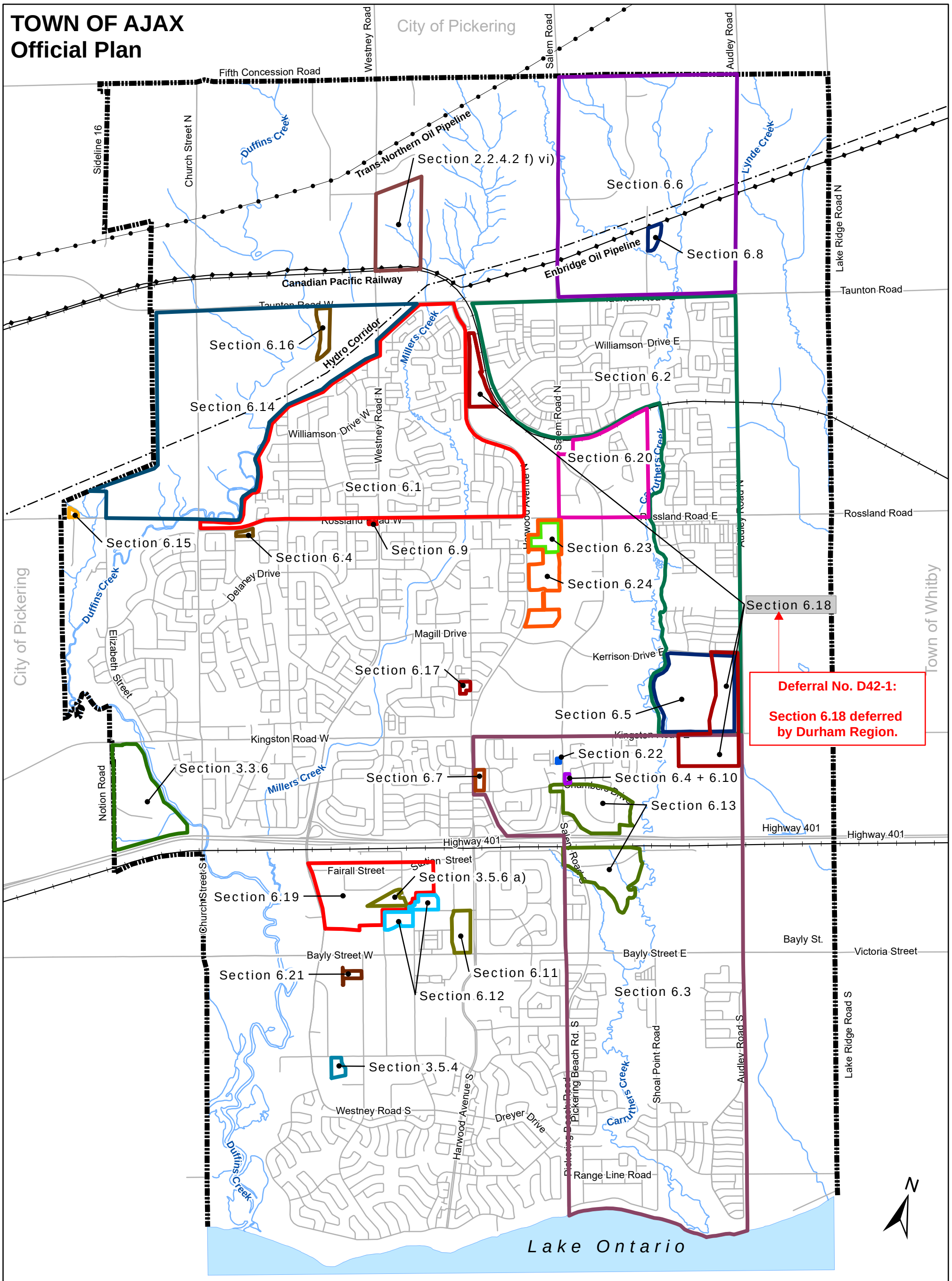
Town Boundary

Sources: Region of Durham, 2014; Town of Ajax, 2014.

100 50 0 100 Metres

Date of Consolidation: January 15, 2016

TOWN OF AJAX
Official Plan



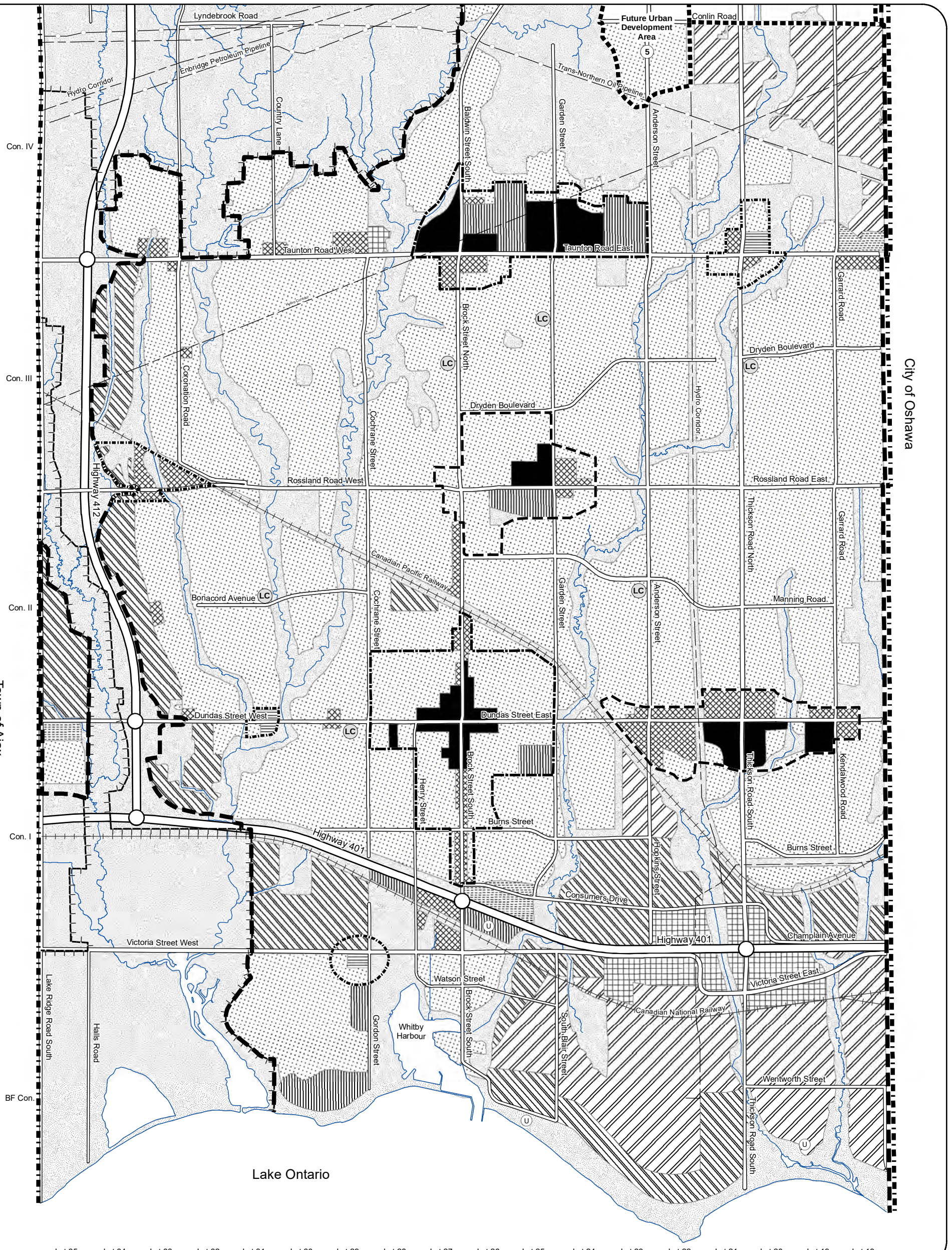
SCHEDULE 'G'
Lands Subject to Area Specific Policies

500 250 0 500 Metres

Sources: Region of Durham, 2015
Town of Ajax, 2015

Date of Consolidation: January 15, 2016

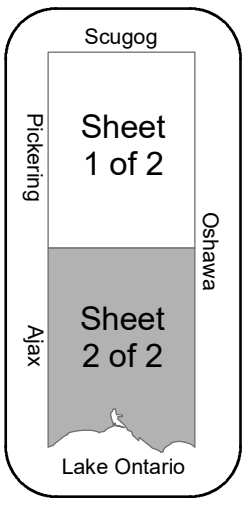
TOWN OF WHITBY OFFICIAL PLAN
OFFICE CONSOLIDATION, JULY 2018



Legend

- Residential
- Major Commercial
- Community Commercial
- Special Purpose Commercial
- Mixed Use
- Prestige Industrial
- General Industrial
- Special Activity Node
- Institutional
- Major Open Space
- Agricultural
- Hamlet
- Estate Residential
- Lands Subject to Durham Regional Official Plan Policy 14.13.7
- D1 Deferred by the Region of Durham
- LC Local Central Area
- Resource Extraction Area (See Section 4.12)
- U Utility
- Major Central Area Boundary
- Urban Central Area Boundary
- Community Central Area Boundary
- Future Urban Development Area Boundary
- Greenbelt Protected Countryside Boundary
- Southern Boundary of Oak Ridges Moraine
- Hamlet Boundary
- 2031 Urban Area Boundary
- Municipal Boundary

Notes: Refer to the applicable Secondary Plan for more detailed land use designations. Secondary Plan boundaries can be found on Schedule 'E', including the Oak Ridges Moraine Secondary Plan. Some legend items may not appear on the displayed figure extent.



Official Plan - Town of Whitby

Schedule **A**

Land Use

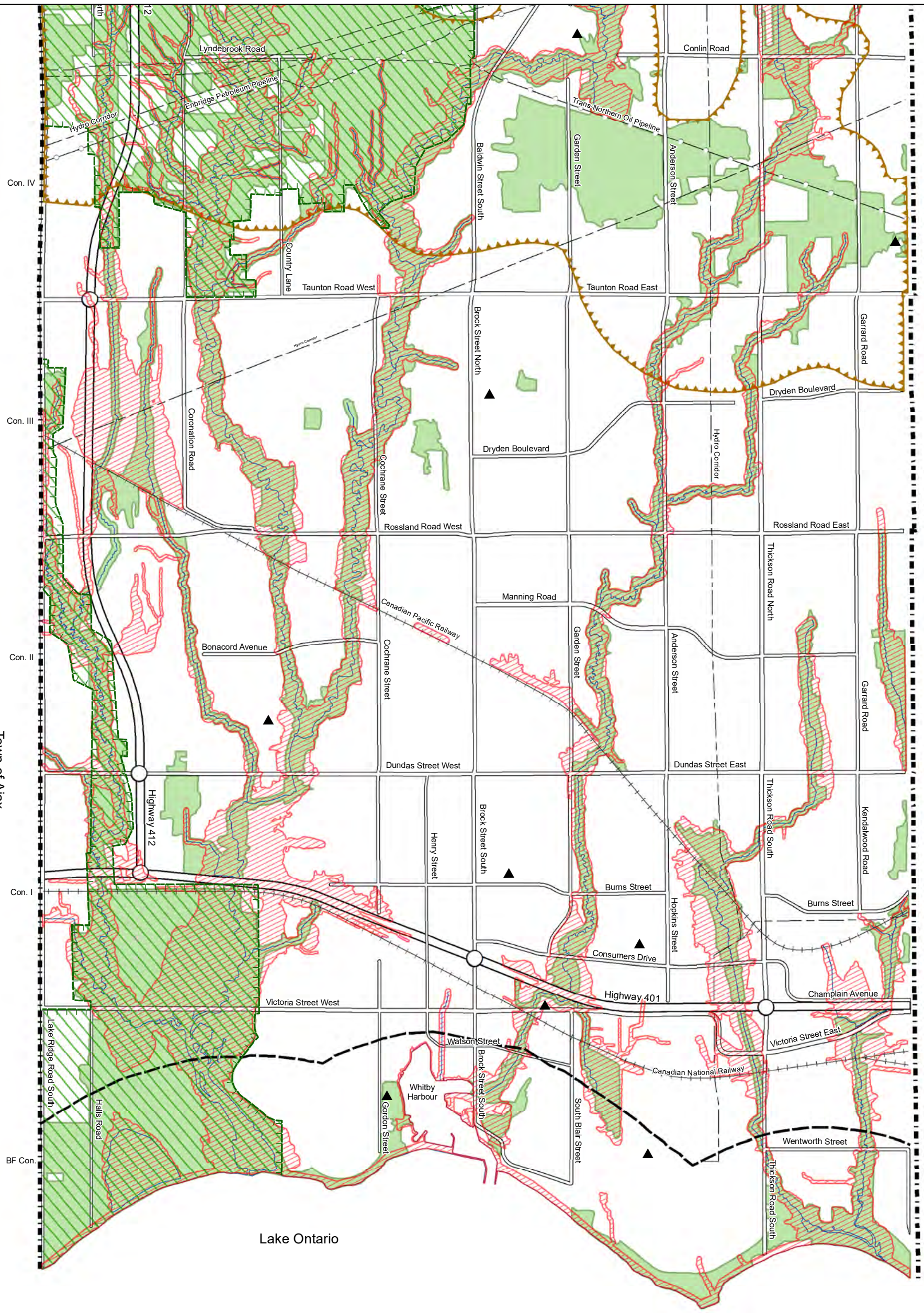
N

0 500 1,000

Metres

Consolidation Date:
July 2018

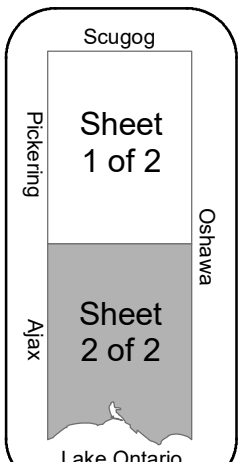
This schedule forms part of the Official Plan of the Town of Whitby and must be read in conjunction with the written text. For all intents and purposes, the elements within this schedule are to be considered conceptual.



Legend

- Natural Heritage System
- Natural Hazards
- Greenbelt Natural Heritage System
- Former Lake Iroquois Beach
- Former Waste Disposal Site ← D12
- 1 km Lake Ontario Shoreline Limit
- Southern Boundary of Oak Ridges Moraine
- Greenbelt Protected Countryside Boundary
- Municipal Boundary

Note: Some legend items may not appear on the displayed figure extent.



Official Plan - Town of Whitby

Environmental Management

Schedule **C**

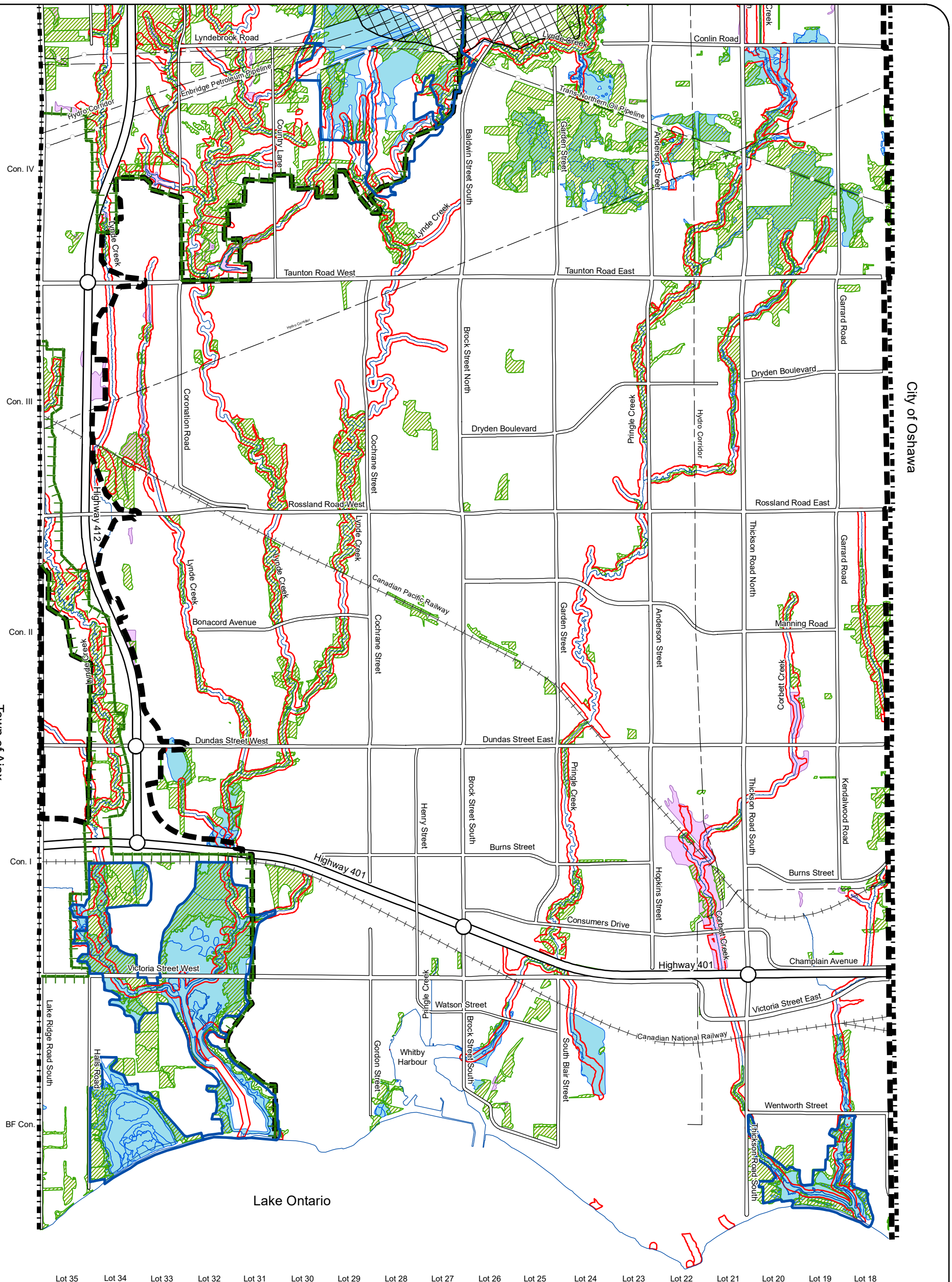
N

0 500 1,000

Metres

Consolidation Date:
July 2018

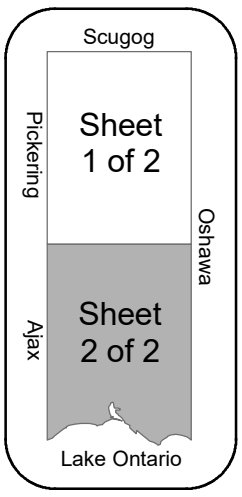
This schedule forms part of the Official Plan of the Town of Whitby and must be read in conjunction with the written text. For all intents and purposes, the elements within this schedule are to be considered conceptual.



Legend

- 2031 Urban Area Boundary
- Greenbelt Protected Countryside Boundary
- Municipal Boundary
- Southern Boundary of Oak Ridges Moraine
- Watercourse
- Riparian Corridors
- Areas of Natural and Scientific Interest (ANSI) (LIO, 2016)
- High Potential Aggregate Resource Area (MNRF, 2015) Sand and Gravel Resources - Secondary Significance
- Lands Subject to Durham Regional Official Plan Policy 14.13.7
- Provincially Significant Wetland (LIO, 2018)
- Wetland (Evaluated as Other / Not Evaluated) (LIO, 2018)
- Woodlands

Note: Some legend items may not appear on the displayed figure extent.



Official Plan - Town of Whitby

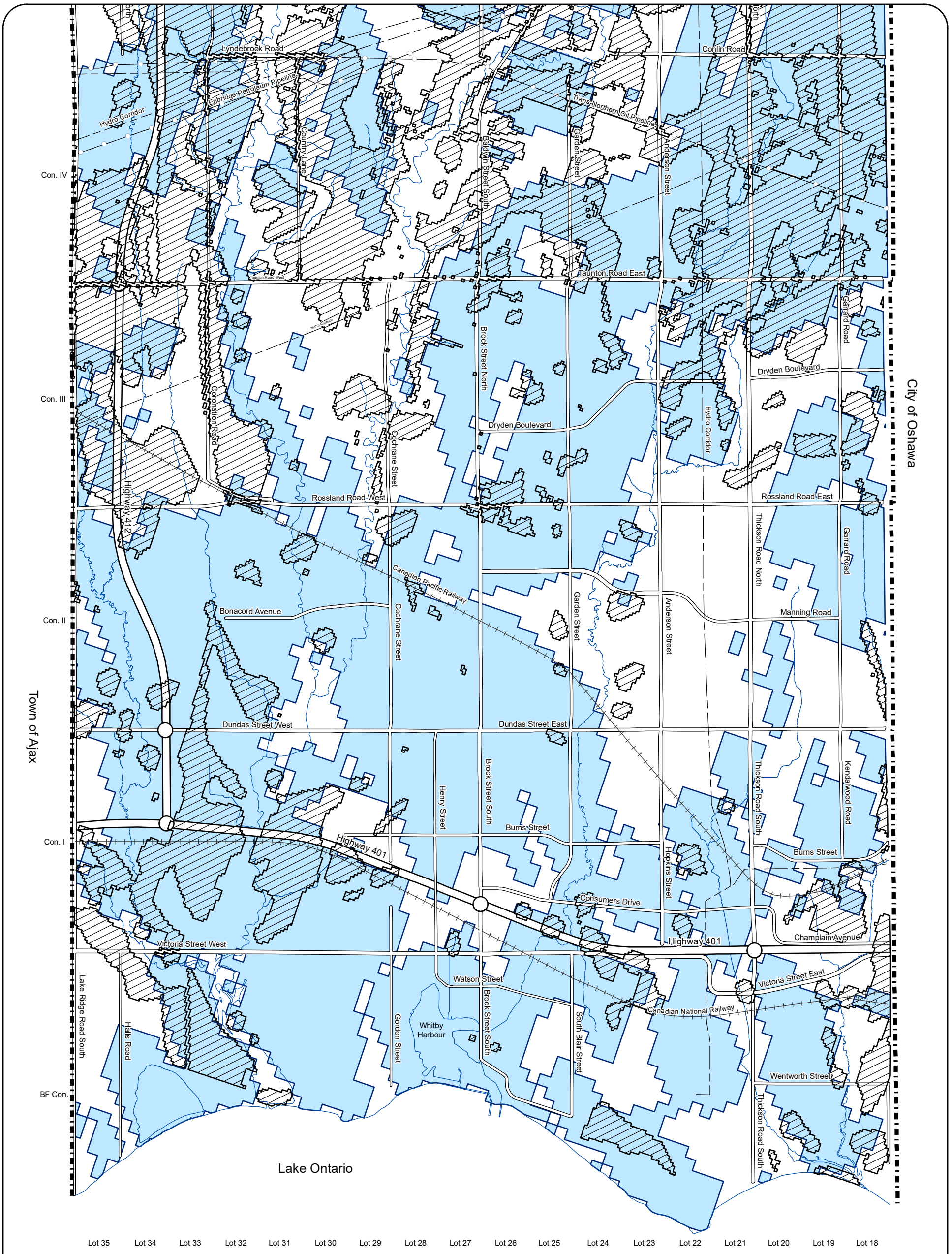
Technical Mapping of Environmental Elements

Appendix **1**

Consolidation Date:
July 2018

0 500 1,000
Metres

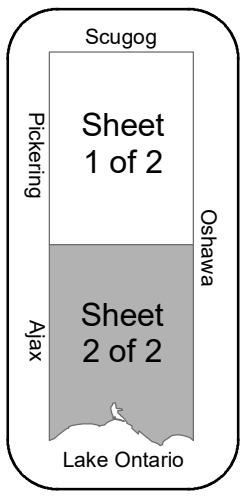
This appendix does not form part of the Statutory Official Plan. The information contained herein may be updated without amendment when new information is available.



Legend

- Municipal Boundary
- Highly Vulnerable Aquifers (CLOCA, 2016)
- Significant Groundwater Recharge Areas (CLOCA, 2016)

Note: Some legend items may not appear on the displayed figure extent.



Official Plan - Town of Whitby

Appendix **2**

Water Resources

Consolidation Date:
July 2018

0 500 1,000
Metres

This appendix does not form part of the Statutory Official Plan. The information contained herein may be updated without amendment when new information is available.

CITY OF OSHAWA OFFICIAL PLAN
OFFICE CONSOLIDATION,
APRIL 2021

See Schedule 'A' Land Use North Half

TOWN OF WHITBY

MUNICIPALITY OF CLARINGTON

Lake Ontario

Schedule 'A' Land Use

City of Oshawa
Official Plan

South Half

December 2020

0 250 500 1,000 1,500 Meters

Development Services Department

Notes:
1. This Schedule should be read in conjuction with the text

Legend

Urban Areas
- Residential
- Downtown Oshawa Urban Growth Centre
- Planned Commercial Centre
- Planned Commercial Strip
- Special Purpose Commercial
- Institutional
- Industrial
- Regeneration Area
- Airport
- Special Waterfront Area
- Utilities
- D Deferred by Regional Council
- Local Central Area
- Boundary of Major Urban Area
- Built Boundary
- Special Development Area
- Main Central Area Boundary
- Sub-Central Area Boundary
- Community Central Area Boundary
- Ⓜ Marina Node
- Ⓡ Recreational Node
- Ⓣ Tourist Node

Rural Areas
- Estate Residential (refer to section 2.7.3.1)
- Prime Agricultural
- Oak Ridges Moraine
- Limits of Approved Highway 407 Corridor
- Greenbelt Protected Countryside Area Boundary

Greenland Areas
- Open Space and Recreation

See Schedule 'D-1' Environmental Management North Half

TOWN OF WHITBY

MUNICIPALITY OF CLARINGTON

Lake Ontario

N

OSHAWA

Schedule 'D-1' Environmental Management

City of Oshawa
Official Plan

South Half

January 2019

0 250 500 1,000 1,500 Meters

Development Services Department

Notes:
1. This Schedule should be read in conjuction with the text

Legend

- Natural Heritage System
- Natural Heritage and/or Hydrologic Features Outside of the Natural Heritage System
- Hazard Lands
- Oak Ridges Moraine Boundary
- Greenbelt Protected Countryside Area Boundary
- ★ Known Waste Disposal Assessment Area - Deferral No. 5
- ✱ Known Waste Disposal Assessment Area - Policy 2.4.5.7(ii)
- Two Zone Floodplain Management Policy Area

See Schedule 'D-2' Environmental Management Network North Half

TOWN OF WHITBY

MUNICIPALITY OF CLARINGTON

Lake Ontario

N

OSHAWA

Schedule 'D-2'
Environmental Management

City of Oshawa
Official Plan

South Half

January 2019

0 250 500 1,000 1,500 Meters

Development Services Department

Notes:
1. This Schedule should be read in conjuction with the text

Legend

- Oak Ridges Moraine Boundary
- Greenbelt Protected Countryside Area
- Greenbelt Natural Heritage System
- Lake Iroquois Beach
- High Volume Recharge Areas
- High Potential Mineral Aggregate Areas
- 1km Shoreline Buffer

See Schedule 'F1-A' Natural Heritage System Components North Half

TOWN OF WHITBY

MUNICIPALITY OF CLARINGTON

Lake Ontario

N

OSHAWA

Schedule 'F1-A'
Natural Heritage System Components (Excluding High Volume Recharge Areas)

City of Oshawa
Official Plan

South Half

January 2019

0 250 500 1,000 1,500 Meters

Development Services Department

Notes:
1. This Schedule should be read in conjuction with the text
*Denotes features evaluated up to the time of production of this Schedule. The delineation of features on this schedule does not imply that all such features within Oshawa have been evaluated.

Legend

- Natural Cover Regeneration/ Restoration Areas
- Key Natural Heritage Features and Key Hydrologic Features - Policy 5.1.2(h) & (i)
- Provincially Significant Wetland*
- Greenbelt Protected Countryside Area Boundary
- Oak Ridges Moraine Boundary
- Areas of Natural and Scientific Interest (Life Science)*
- Riparian Corridors
- Waterbody
- Watercourse

See Schedule 'F-1B' High Volume Recharge Areas and Greenbelt Natural Heritage System North Half

TOWN OF WHITBY

MUNICIPALITY OF CLARINGTON

Lake Ontario

N

OSHAWA

Schedule 'F-1B'
High Volume Recharge Areas and Greenbelt Natural Heritage System

City of Oshawa
Official Plan

South Half

January 2019

0 250 500 1,000 1,500 Meters

Development Services Department

Notes:
1. This Schedule should be read in conjuction with the text

Legend

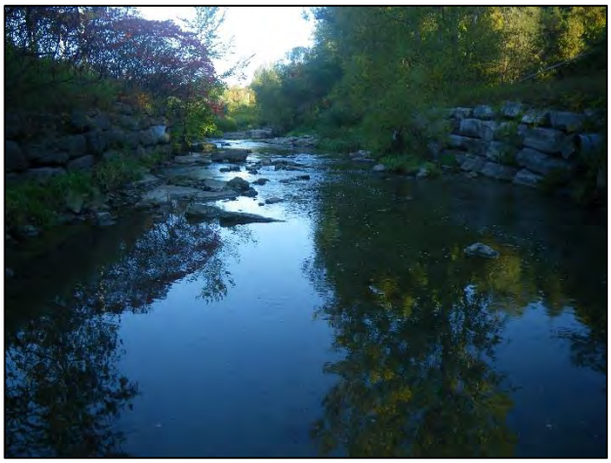
- Oak Ridges Moraine Boundary
- Greenbelt Protected Countryside Area
- Greenbelt Natural Heritage System
- High Volume Recharge Areas
- Waterbody
- Watercourse

APPENDIX B.
PHOTO APPENDIX

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Toronto

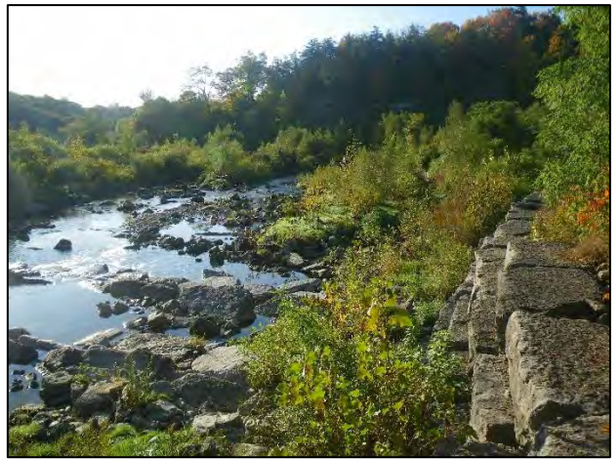
LGL LIMITED
environmental research associates



Crossing 1: Facing north (upstream) from upstream of Ellesmere Road bridge.

Crossing 1: Facing south (downstream) from upstream of Ellsmere Road bridge.

Crossing 1: Facing north (upstream) at downstream side of Ellesmere Road bridge.



Crossing 1: Facing south (downstream) from downstream of Ellesmere Road bridge.

Crossing 2: Facing north (upstream) from upstream end of Ellesmere Road culvert.

Crossing 2: Facing south (downstream) at upstream end of Ellesmere Road culvert. Note flow bypass and new culvert lining.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Toronto

LGL LIMITED
environmental research associates

Crossing 2: Facing south (downstream) at upstream end of Ellesmere Road culvert. Note lack of flow and new lining.

Crossing 2: Facing south (downstream) at downstream end of Ellesmere Road culvert and active construction area where it is being extended.

Crossing 3: Facing north (upstream) from the entrance of Centennial Creek into the SWM system at Ellesmere Road.

Crossing 3: Facing southwest (downstream) at small pipe through concrete wall at entrance to SWM system.

Crossing 4: Facing north (upstream) in Little Rouge Creek upstream of confluence with Rouge River.

Crossing 4: Facing south (downstream) at the confluence with Rouge River and Kingston Road bridge.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Toronto

LGL LIMITED
environmental research associates

Crossing 4: Rouge River facing southeast (downstream) from upstream of the Kingston Road bridge.

Crossing 4: Facing north (upstream) from under the Kingston Road bridge. Note confluence with Little Rouge Creek in upper right.

Crossing 4: Facing east across channel under bridge.

Crossing 4: Facing south (downstream) from downstream of the Kingston Road bridge at Highway 401 bridge.

Crossing 4: Facing north (upstream) from under the Highway 401 bridge at Kingston Road bridge.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Pickering

LGL LIMITED
environmental research associates

Crossing 5: Petticoat Creek facing north (upstream) from upstream end of Kingston Road culvert.

Crossing 5: Facing south (downstream) at upstream end of Kingston Road culvert.

Crossing 5: Facing west (upstream) at tributary of Petticoat Creek across Petticoat Creek channel at upstream end of Kingston Road culvert.

Crossing 5: Facing north (upstream) at downstream end of Kingston Road culvert.

Crossing 5: Facing south (downstream) from downstream of Kingston Road culvert at Highway 401 culvert.

Crossing 6: Tributary of Petticoat Creek facing north (upstream) from the upstream end of Kingston Road culvert.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Pickering

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environmental research associates

Crossing 6: Facing south (downstream) at the upstream end of the Kingston Road culvert.

Crossing 6: Facing north (upstream) at the downstream end of the Kingston Road culvert.

Crossing 6: Facing south at the downstream end of the Kingston Road culvert and tributary of Petticoat Creek.

Crossing 7: Facing north (upstream) at the debris jam and channel upstream of the Kingston Road culvert.

Crossing 7: Facing southeast (downstream) at the Kingston Road culvert.

Crossing 7: Facing southeast (downstream) at the downstream end of the Kingston Road culvert and channel.

PROJECT #TA8893
October 2019
April 2020

PHOTO APPENDIX
Durham-Scarborough BRT
Pickering

LGL LIMITED
environmental research associates

Crossing 8: Facing north (upstream) from the upstream end of the Kingston Road culvert. Note eroded gabions.

Crossing 8: Facing south (downstream) at the upstream end of the Kingston Road culvert.

Crossing 8: Facing south (downstream) at downstream channel and riparian area.

Crossing 8: Facing north (upstream) toward the downstream end of the Kingston Road culvert. Note elevation drop and eroded gabions.

Crossing 9: Facing south (downstream) from upslope of the Kingston Road culvert at entire channel. Note Hwy 401 culvert in background.

Crossing 9: Facing north (upstream) from upslope of the Hwy 401 culvert at entire channel. Note Kingston Road in background.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Pickering

LGL LIMITED
environmental research associates

Crossing 10: Facing north (upstream) from the Kingston Road culvert. Note large CSP that conveys flows under railway in upper right.

Crossing 10: Facing south (downstream) at the Kingston Road culvert. Note gabion basket in foreground and water level drop to concrete floor, then sheet flow.

Crossing 10: Facing north (upstream) at the downstream end of the Kingston Road culvert. Note pool with Creek Chub and drop at lip of culvert.

Crossing 10: Facing east at small pool between Kingston Road culvert (left) and Highway 401 culvert (right). Note active work zone.

Crossing 11: Facing north (upstream) from the upstream end of the Kingston Road culvert.

Crossing 11: Facing south (downstream) at the upstream end of the Kingston Road culvert.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Pickering - Ajax

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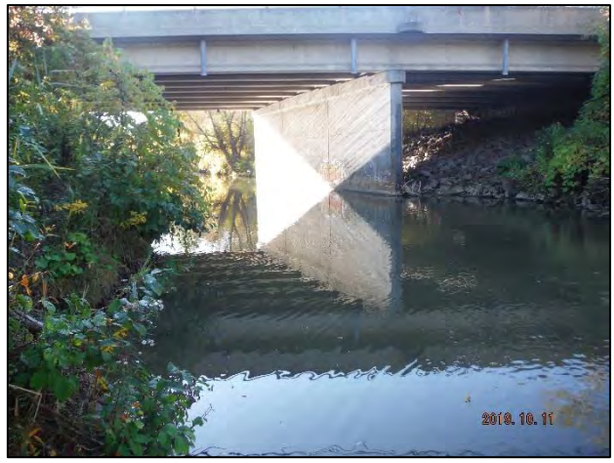
environmental research associates

Crossing 11: Facing north (upstream) at the downstream end of the Kingston Road culvert.

Crossing 11: Facing south (downstream) from the downstream end of the Kingston Road culvert.

Crossing 12: Facing north (upstream) from upstream of the Kingston Road bridge.



Crossing 12: Facing south (downstream) at the Kingston Road bridge.

Crossing 12: Facing south (downstream) through the Kingston Road bridge.

Crossing 12: Facing at the channel under the Kingston Road bridge.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Ajax

LGL LIMITED
environmental research associates

Crossing 13: Facing north (upstream) from the upstream end of the Kingston Road culvert.

Crossing 13: Facing southwest (downstream) at the upstream end of the Kingston Road culvert.

Crossing 13: Facing southwest (downstream) the downstream end of the Kingston Road culvert.

Crossing 13: Facing northeast (upstream) at the downstream end of the Kingston Road culvert.

Crossing 14: Facing north (upstream) from the upstream end of the Kingston Road culvert.

Crossing 14: Facing southeast (downstream) at the upstream end of the Kingston Road culvert.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Ajax - Whitby

LGL LIMITED
environmental research associates

Crossing 14: Facing south (downstream) from the downstream end of the Kingston Road culvert.

Crossing 14: Facing north (upstream) at the downstream end of the Kingston Road culvert.

Crossing 15: Facing north (upstream) from upstream of the Dundas Street crossing.

Crossing 15: Facing southeast (downstream) at the upstream end of the Dundas Street culvert.

Crossing 15: Facing south (downstream) from the downstream end of the Dundas Street culvert.

Crossing 15: Facing south (downstream) at the downstream channel and riparian area.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Whitby

LGL LIMITED
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Crossing 16: Facing north (upstream) from the Dundas Street road slope.

Crossing 16: Facing south (downstream) at the Dundas Street structure.

Crossing 16: Facing south (downstream) from the Dundas Street road slope.

Crossing 16: Facing northeast (upstream) at the downstream end of the Dundas Street structure.

Crossing 17: Facing north (upstream) at the pipe entrance.

Crossing 17: Facing east at the pipe entrance.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Whitby

LGL LIMITED
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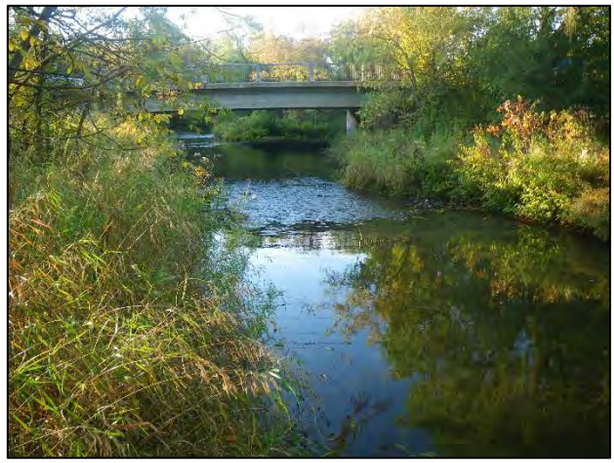
Crossing 18: Facing north (upstream) from the Dundas Street bridge.



Crossing 18: Facing south (downstream) at the Dundas Street bridge.

Crossing 18: Facing south (downstream) from the Dundas Street bridge.

Crossing 18: Facing north (upstream) at the Dundas Street bridge.

Crossing 19: Facing north (upstream) from the top of the Dundas Street culvert.

Crossing 19: Facing south (downstream) at the Dundas Street culvert.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Whitby

LGL LIMITED
environmental research associates

Crossing 19: Facing west at the concrete drop into the west cell of the culvert. Note baffles..

Crossing 19: Facing north (upstream) inside west cell of culvert. Note baffles and trapped sediments.

Crossing 19: Facing south (downstream) from the top of the Dundas Street culvert.

Crossing 19: Facing north (upstream) at the downstream end of the Dundas Street culvert west cell (centre cell to right and east cell out of frame to right).

Crossing 20: Facing north (upstream) from the upstream end of the Dundas Street culvert.

Crossing 20: Upstream end of the Dundas Street culvert showing standing water.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Whitby - Oshawa

LGL LIMITED
environmental research associates

Crossing 20: Facing south (downstream) at the downstream end of the Dundas Street culvert and *Phragmites*-choked channel downstream.

Crossing 20: Facing northeast (upstream) from adjacent to channel showing dense emergent vegetation.

Crossing 21: Facing north (upstream) from the upstream end of the King Street culverts.

Crossing 21: Facing southeast (downstream) at the west culvert that conveys the majority of flows under King Street.

Crossing 21: Facing north (upstream) at the downstream end of the west King Street culvert.

Crossing 21: Facing south (downstream) from downstream of the King Street culverts.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Oshawa

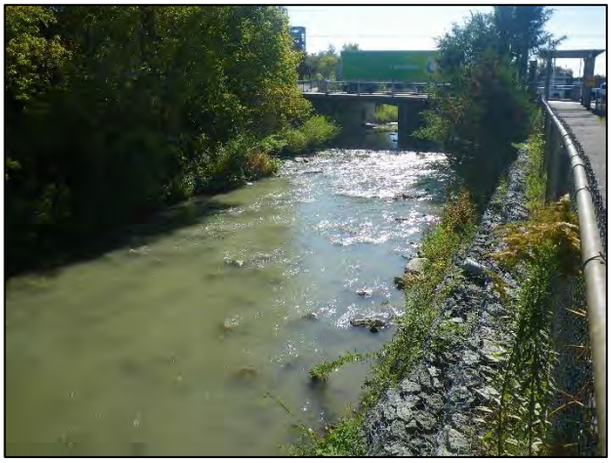
LGL LIMITED
environmental research associates

Crossing 22: Facing north (upstream) from upstream of the King Street culvert.

Crossing 22: Facing south (downstream) from upstream of the King Street culvert.

Crossing 22: Facing east (downstream) from downstream of the King Street culvert.

Crossing 22: Facing west (upstream) from downstream of the King Street culvert.



Crossing 23: Facing south (downstream) upstream of the Bond Street bridge.

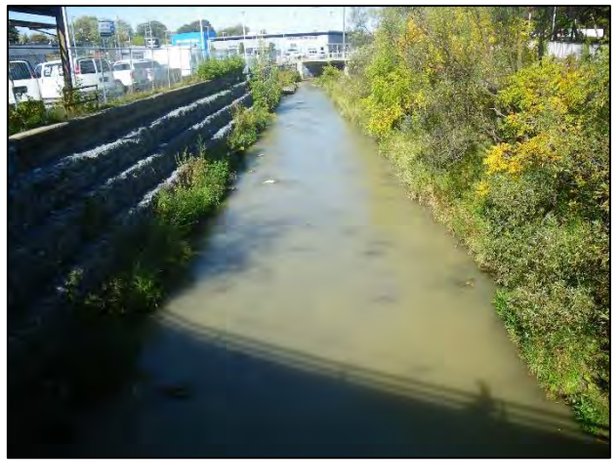
Crossing 23: Facing north (upstream) from the Bond Street bridge.

PROJECT #TA8893
October 2019

PHOTO APPENDIX
Durham-Scarborough BRT
Oshawa

LGL LIMITED
environmental research associates

Crossing 23: Facing southwest (downstream) at the upstream end of the King Street bridge.



Crossing 23: Facing north (upstream) from the King Street bridge at the channel between Bond and King Streets.

Crossing 23: Facing northwest (upstream) at the downstream end of the King Street bridge.

Crossing 23: Facing south (downstream) from the King Street bridge.

APPENDIX C.
AQUATIC SURVEY DATA

October 9, 2019
Sunny 11°C

Constructed channel under large, multi-span bridge. Armourstone banks. Wide valley w/ forest on both sides. Fairly open + well-vegetated floodplain. Substrate: coarse-boulder, cobble, gravel. Morphology – step pools w/ thalwegs in the center of the channel. Channel width (estimate/measure from Google Earth). Depths 15-~~75~~ cm. Armourstone banks ≈ 2 m high

1 y. Chinook Salmon observed - several. Substrate cover - boulders/armourstone. Armourstone walls ext d/s + channel widens + flattens, mostly riffles here. Small side channels around grassy + willow islands convey higher flows. Flows likely @ base flow levels ~ses. Water clear
No instream veg.

October 9, 2019

small, shallow, incised channel (0.5m, 10d) through deciduous forest u/s. Sand + gravel substrates. Evidence of flashy flows. Water clear @ baseflow levels. Riffles + pools. 1st pool u/s 2-2.5m wide + 20cm deep - plunge pool d/s of riffle point. No fish. Likely will be dried if bypassed for so long. No riparian veg. Few instream cover features: willow roots + undercutting in plunge pool.

Line CSP (3 little ads)
Bypass pumping ongoing (has been since @ least June)

Emergency works @ + above culvert d/s proceeding - talked to a guy who said they've been here since March. GSL - They lined the CSP + are still extending it - 1 more section to go. Watercourse dry d/s - flows go into storm system. Some deciduous forest d/s @ upstream. No access to d/s b/c it's an active work site

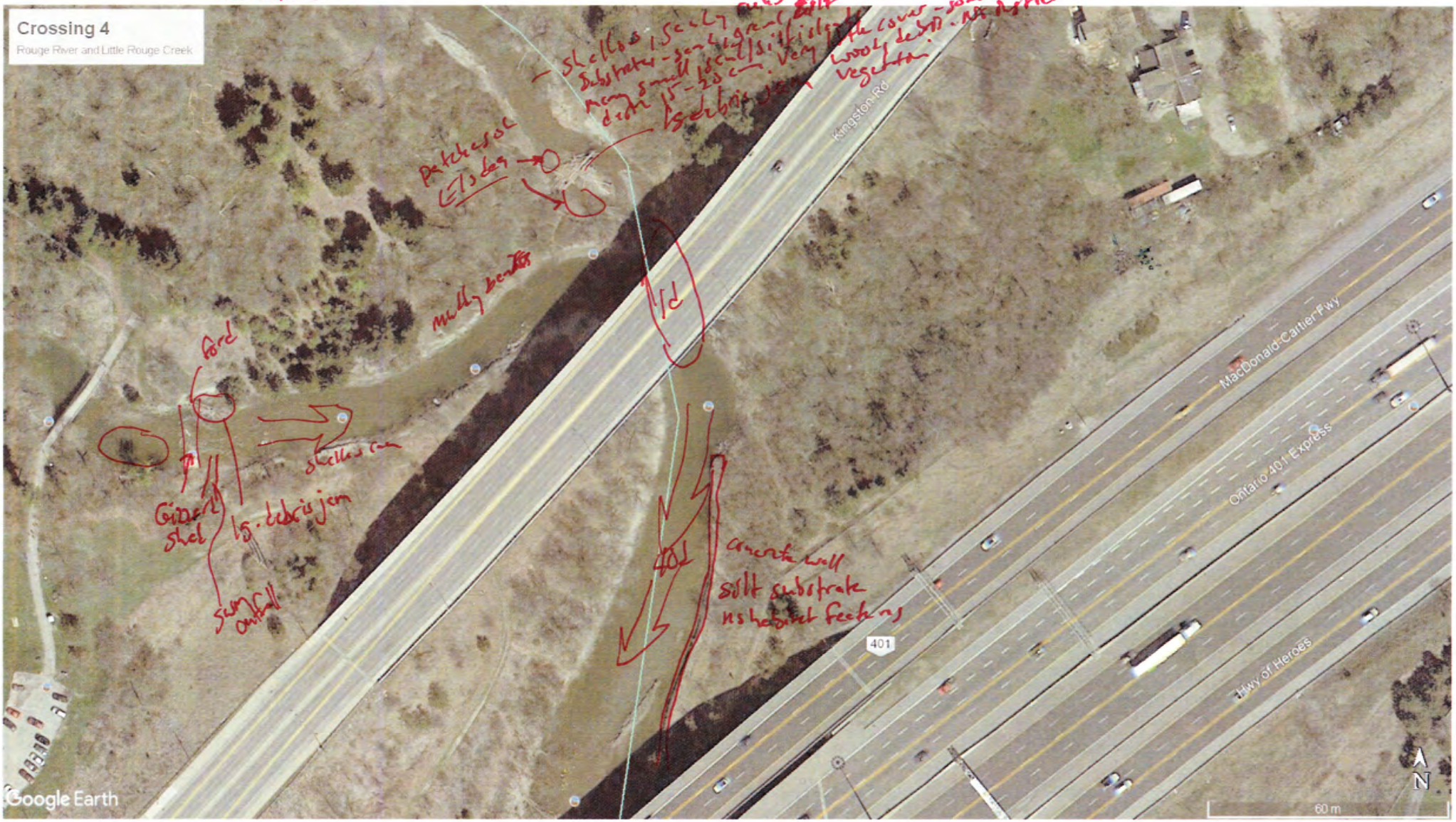
October 9, 2019
concrete frame culvert
culvert/pipe/sediment entrance
piped d/s. No flow.
10cm pipe thru concrete.
Not bedrock
no debris around culv
piped d/s

October 9, 2019

Large, slow moving. Pools + deep runs u/s of bridge. Boulder, cobble + detritus. Old foot bridge d/s of pedestrian bridge. Depth in pools maybe 7 1m. Some eroding banks + lg. woody debris. Fish absent - crayfish, grass shad

Pool then/under bridge then one long, shallow, featureless run to 401 bridges.

No riparian vegetation



deer, red squirrel, gray squirrel

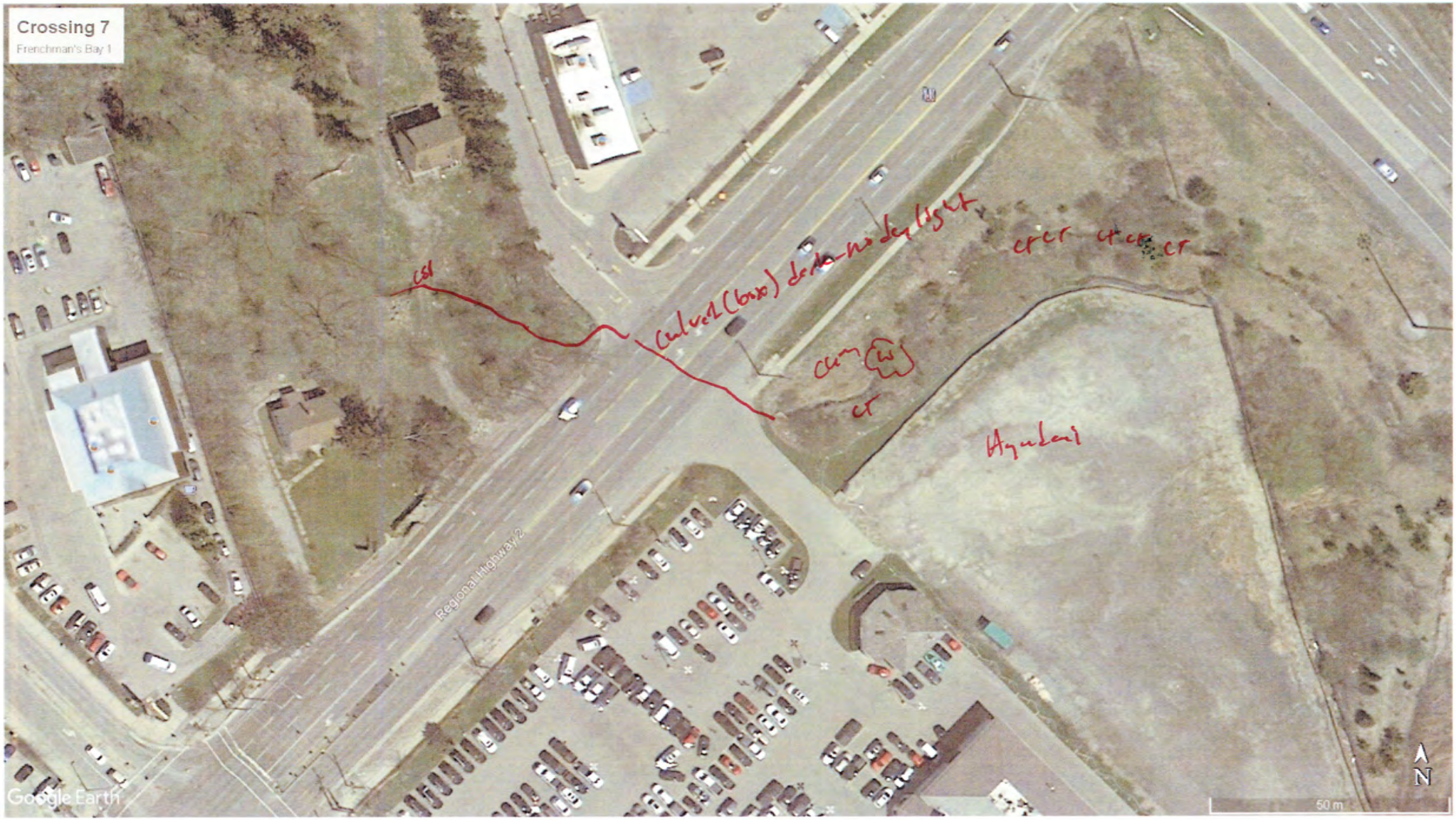
October 9, 2019 3m wide channel u/s of culvert. Shallow flow (15cm). Boulder, cobble, gravel substrate. Smaller channel enters from west
@ west wingwall. Fish observed (white sucker, creek chub, Blacknose dace) - many some exposed clay
Instream cover: boulders, cobbles, instream veg (watercress) overhanging grasses + shrubs/trees
D/s of Kingston Rd: Straight, mostly riffles. Boulder/cobble/gravel substrate. Some Phrag. in channel + grasses. Some woody debris + tree roots to add to instream cover. 2m wide, 10cm deep. Fewer fish. Water clear. Fairly well shaded by trees. Some watercress

smaller channel - coarse substrates (boulder/cobble/gravel). Steeper gradient on private property i.e. it will not meander further.

October 9, 2019 Narrow (1m), shallow (10cm) channel thru CT u/s. Concrete pad @ u/s end of culvert – sheet flow <1cm deep. Riffle/run over boulder, cobble, gravel substrates. Some riparian grasses + channel lined w/ CT. Concrete box w/ sheet flow – not embedded.
Bend in culvert – no light coming thru. Definite barrier during baseflow
D/S – more natural channel w/ some riparian emergents (grasses, shrubs & CT). Steep banks. Enters treed strip b/w Toyota dealership + forested. Boulder, cobble, gravel, sand. Riffle/run. 1.5m, 10cm. No fish observed. Culvert embedded d/s. Some erosion on banks adjacent to culvert & d/s

October 9, 2019 1m wide, 100cm deep channel of cobble, gravel, silt substrate. Very large debris jam ≈ 20m u/s of culvert. Water level u/s of this ≈ 1m higher. Almost a complete blockage. Eroded banks - steep d/s of jam. Some shallow some trees at upstream area. No fish observed - likely more here

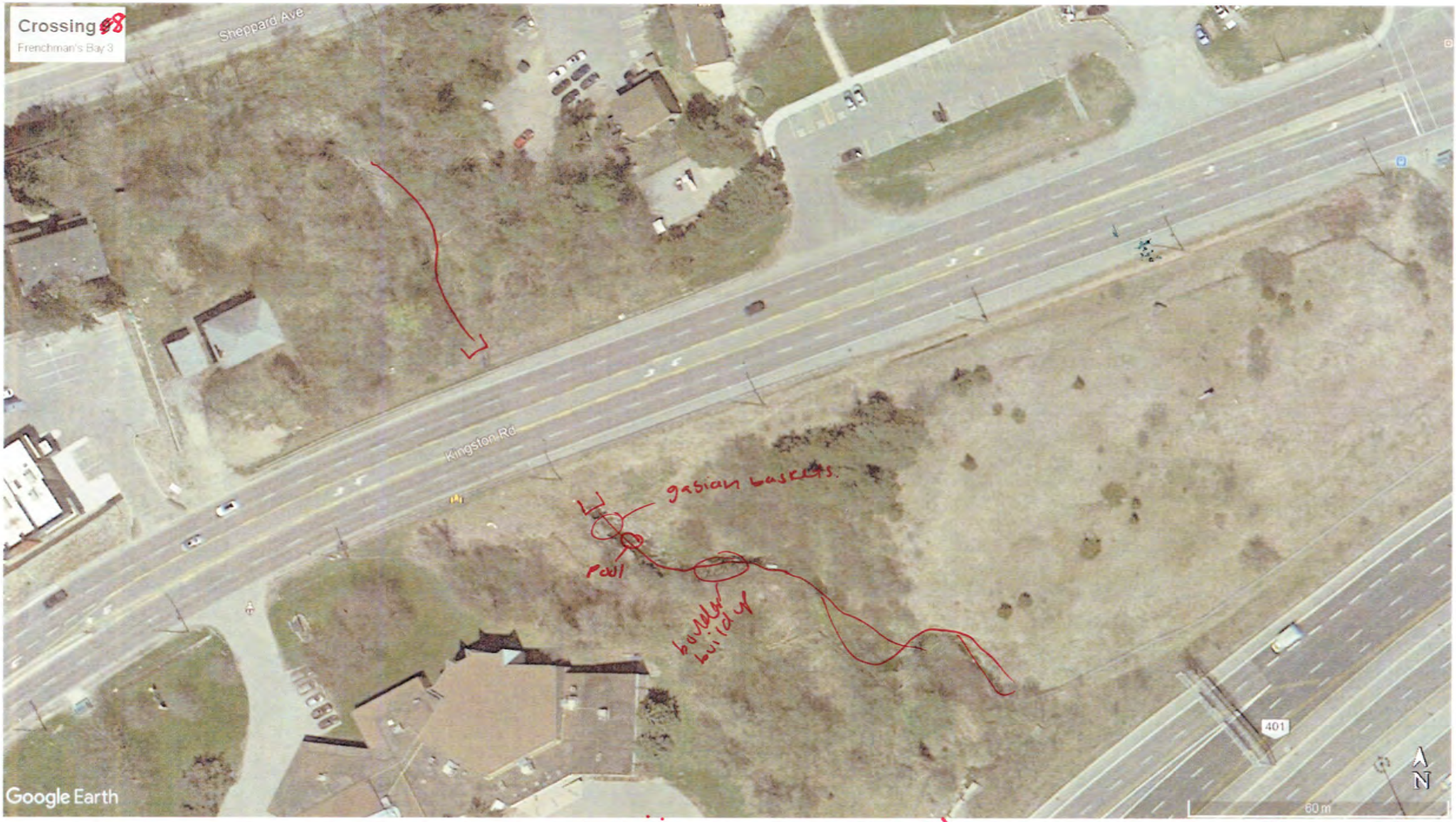
D/s channel less defined (1m, loose) than culvert & CT. Some wetland d/s. Some farmland



D/S

Concrete box culvert w wing walls, Approx. 1m drop from bottom of culvert. Large boulders divert flow. several large gabion baskets dislodged 1m away from edge of culvert. steep slope surrounding banks w several large boulders to channelize stream. Large pool directly after g.baskets ~ 2m w, ~~Send~~ 0.5d. substrate sand, gravel, cobble, boulders. Channel width 4-5m, shallow 15 cm. Small islands formed from rock/boulder build up. Instream veg. sparse (grasses) a little watercress. ~~D/S~~ mainly run/riffle. Riparian veg deciduous trees and shrubs. Overhanging w lots of shade. sheet flow through culvert. ~~D/S~~ Moderate gradient.

likely to fish habitat

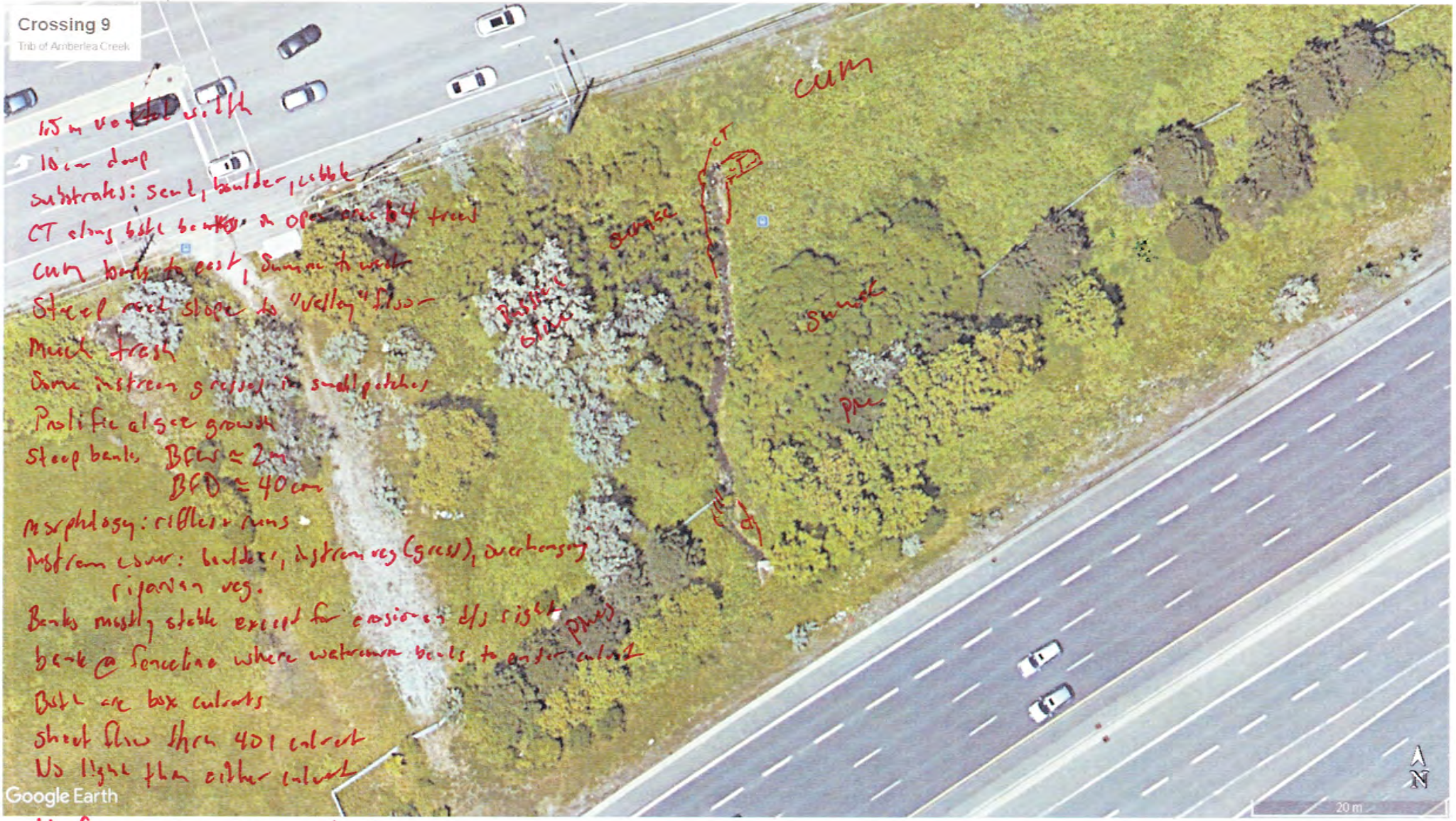


U/S

Sheet flow thru culvert. Gabion baskets lining channel banks (south) but ripped apart on U/S RB. One still in tact but broken @ bottom. U/S LB 1 gabion in tact other ripped @ bottom. ~~Send~~ Channel width 1-1.5m, 20cm deep. Pool just prior to culvert ~ 1m w, .25d. substrate sand, cobble, small boulders. Riffle just U/S of pool. Drop off directly U/S of run. Mod. gradient. Bank erosion on U/S LB. Super trashy watercourse.: erosion / destruction of gabion baskets. Not fish habitat b/c of all elements i.e: g.baskets, substrate, flow. 1 Rip. tree w g.basket wrapped around. Riv veg decid. trees + shrubs. instream veg mostly LWD ~~Send~~

April 24, 2020
8°C overcast with light snow

↑
Fairport Rd

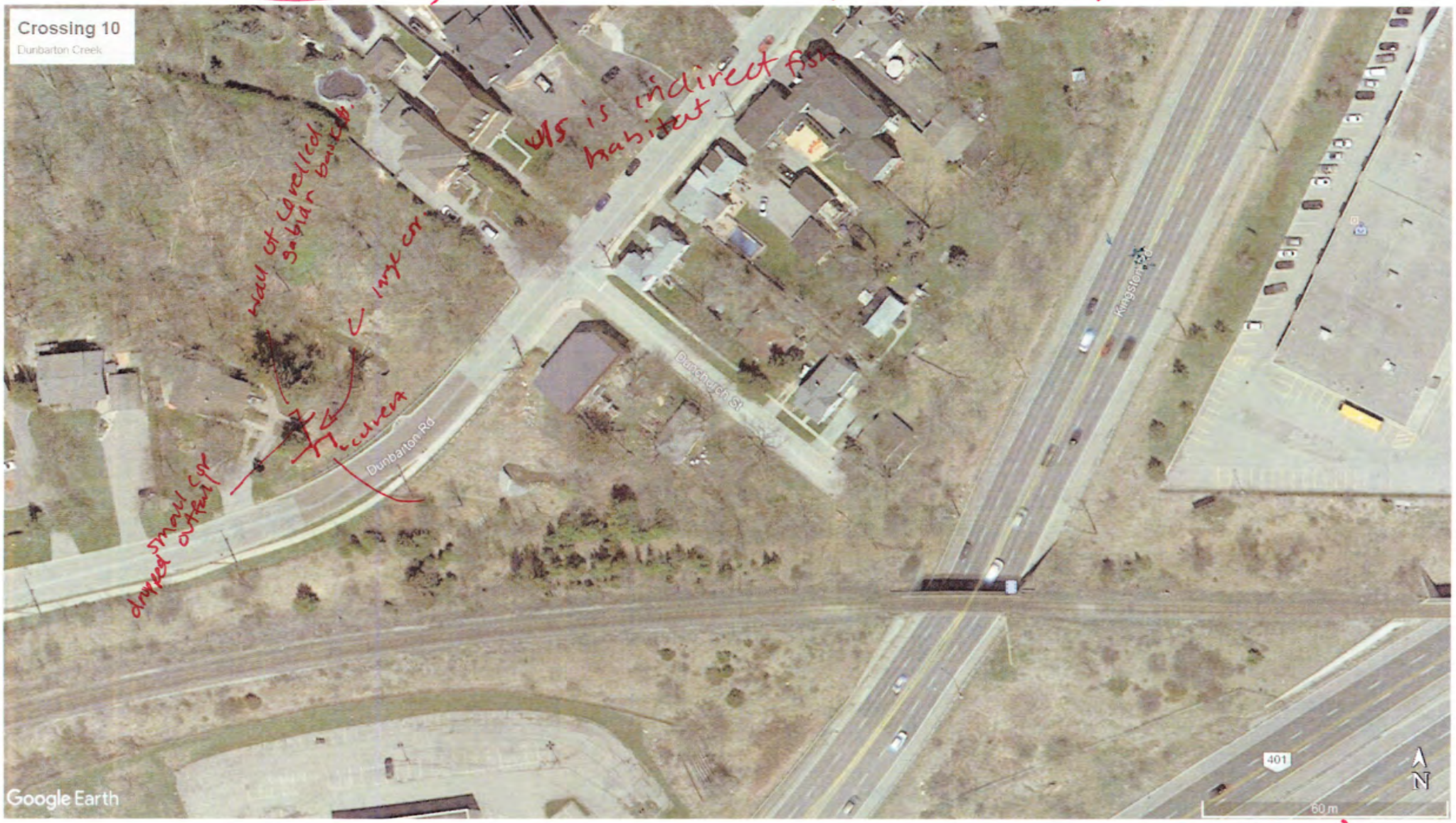


No fish observed - likely indirect only
No evidence of entrance flows

U/S

Large CSP conveys flow through gabion lined channel to concrete box culvert. U/S LB gabion basket lined (stepped) 6 rows). Small CSP outfall hanging from 2nd row injecting flow into channel. Riparian veg dec. trees, shrubs, grasses. Instream veg grasses (little) + watercress. substrate silt, pebbles, rocks. some woody debris. Slight gradient; mostly run with one riffle. Channel width = 2m depth = 10cm. ~~Small~~ Sheet flow thru culvert. ~10cm drop at end of culvert ∴ pool (4m w, 0.3m d). Lots of creek chub observed.

→ 4 D/S .. → drop @ crossing of culvert ~20 cm ; drop ~10cm at large CSP under train tracks.



D/S

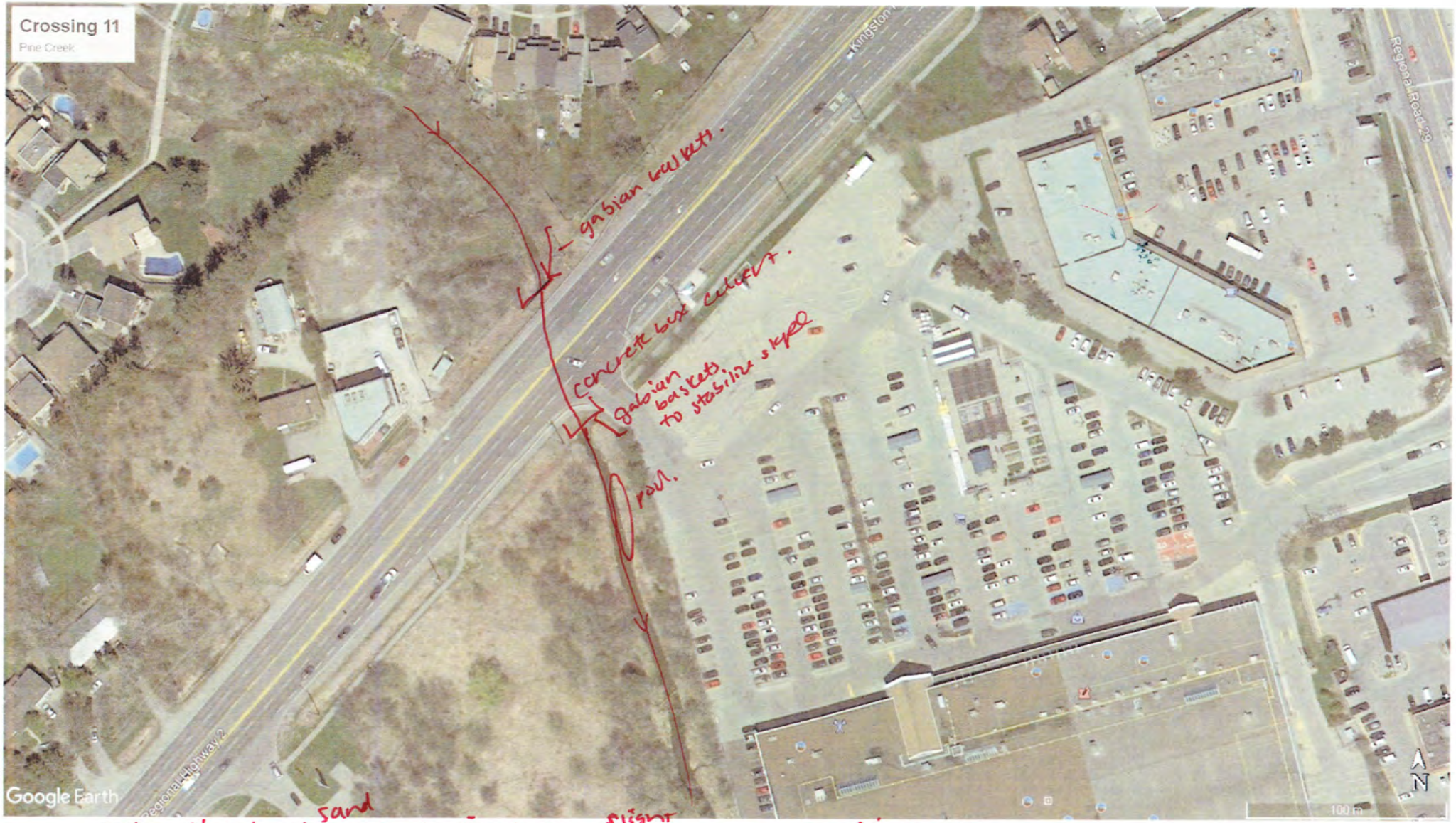
~~Small~~ Creek chub observed and trapped D/S culvert is barrier to fish habitat. (Direct)

Rip rap banks on U/S of culvert. Active worksite. ∴ not in natural state.

crossing culvert and culvert for 401 are very close to one another, seperated by pool described above. (Jud has picture) TWO CSP OUTFALLS INTO POOL. U/S LB not active and filled w debris. U/S RB active flows.

U1S

Riffle at U1S end of culvert to ~10m U1S. Rip rap lined channel. Substrate = rip rap, sand, gravel. gabion fencing over channel. channel W = 2m, depth = 10 cm. At run, channel ~~deepens~~ deepens to 20 cm. Rip rap lined banks. Instream veg sparse. Some woody debris from fallen trees (evidence of fresh beaver activity). Riparian veg is deciduous trees/shrubs/grass.



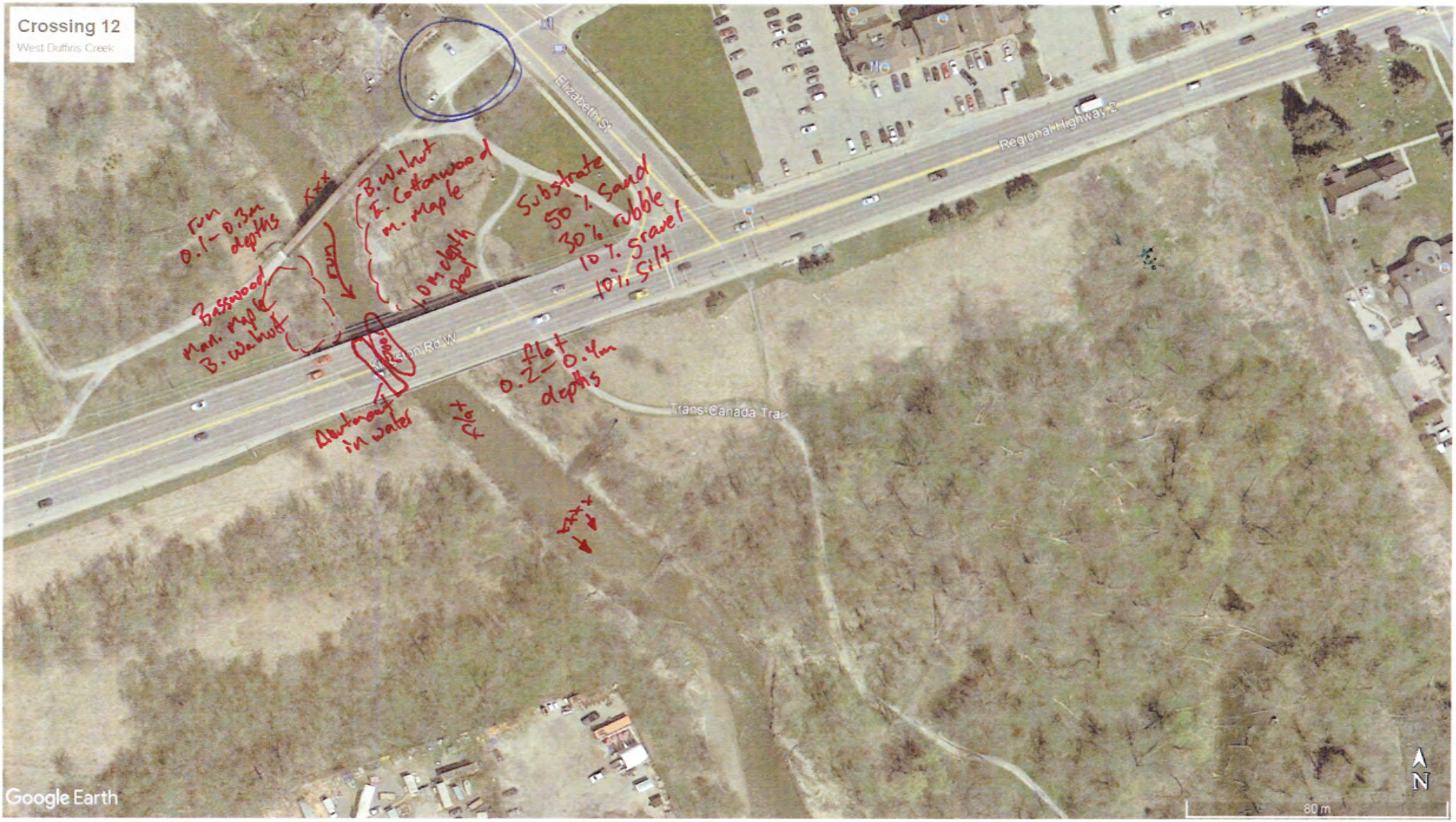
Bottom of culvert sand mod; majority is dry; slight flow along U1S LB. Slight riffle; mostly run. Channel W = 1-1.5m d = 15 cm. Substrate sand, gravel, pebbles, small boulders, detritus. Banks undercut. Riparian veg dec. shrubs, grasses. Approx 15m d/s of culvert large pool along U1S RB (7m length, 0.5m deep) ~~is~~ exposed. clay substrate Many creek chubs observed :. direct fish habitat. Slow gradient.

D1S

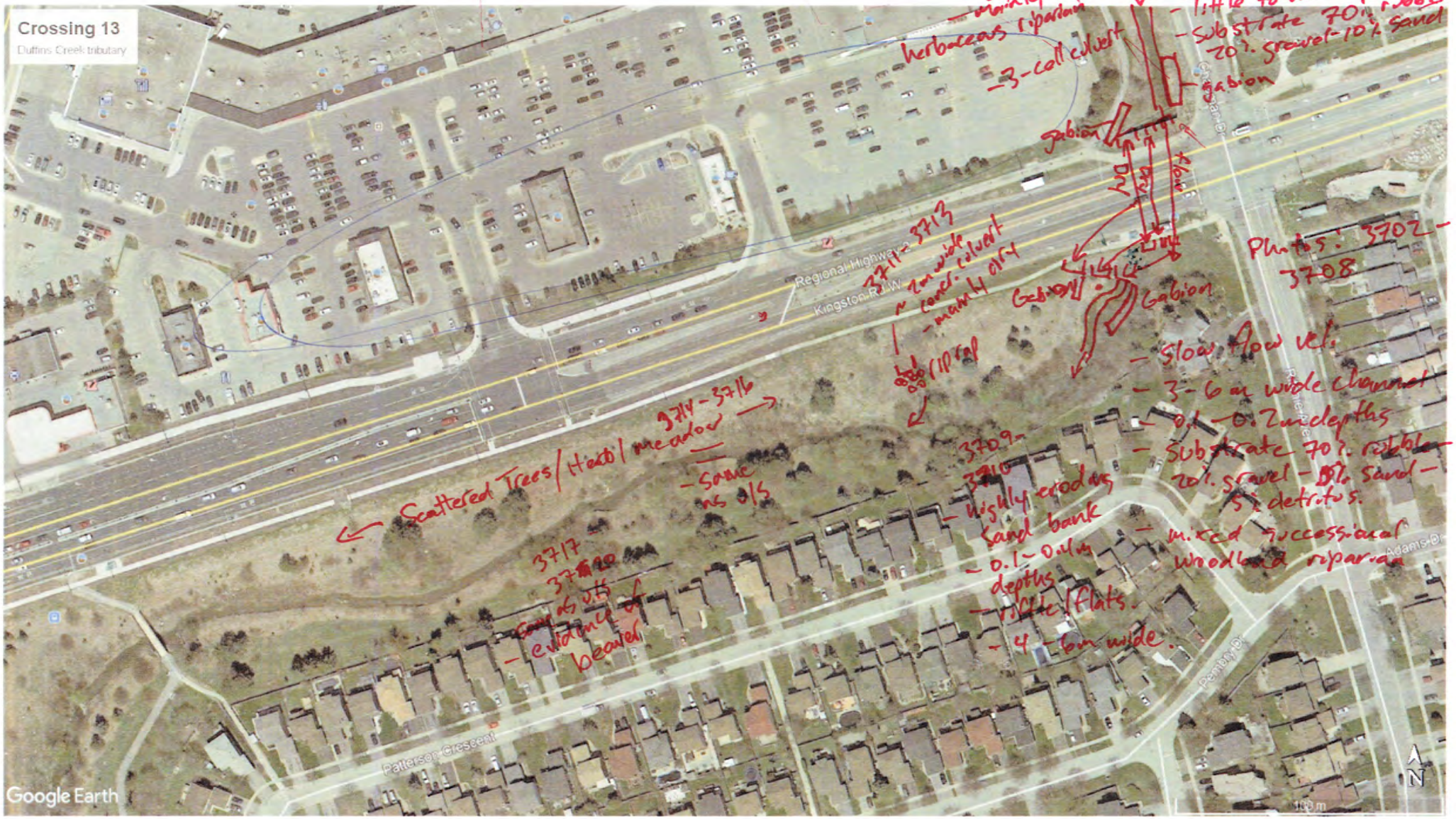
Oct. 11 / 19

Air (9:00 AM): 11°C Sunny

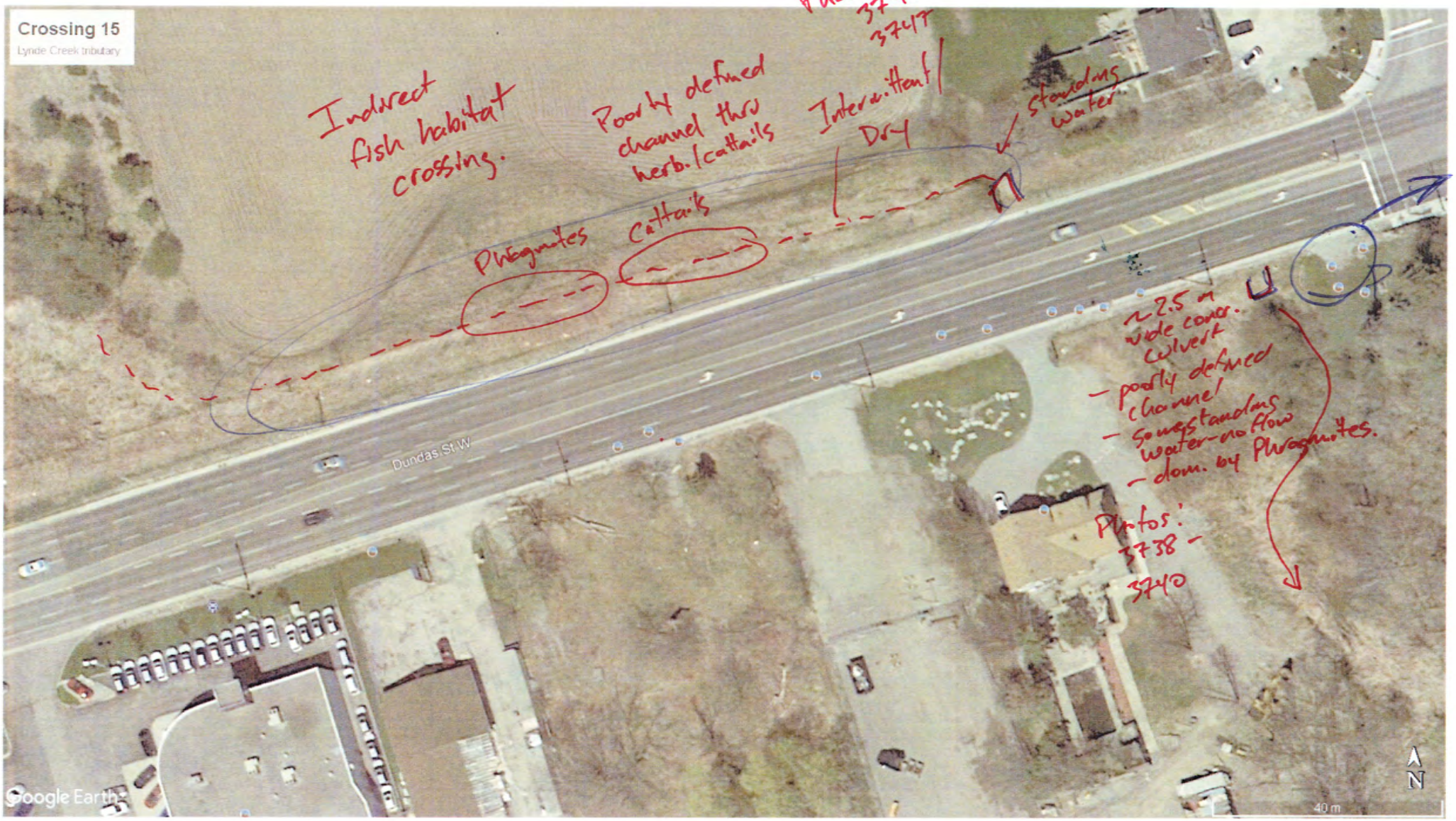
No recent rain - 11 km/hr E

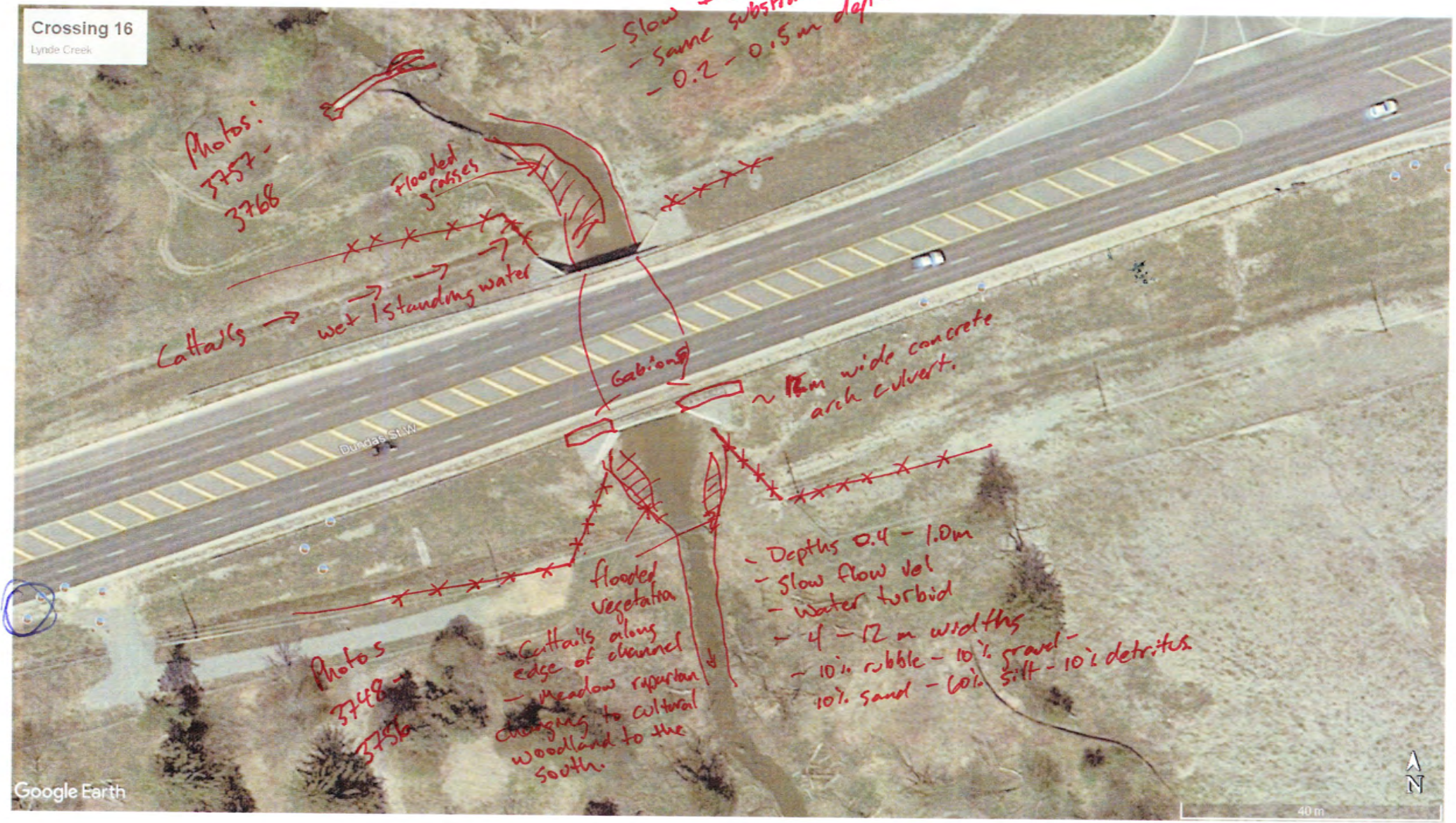


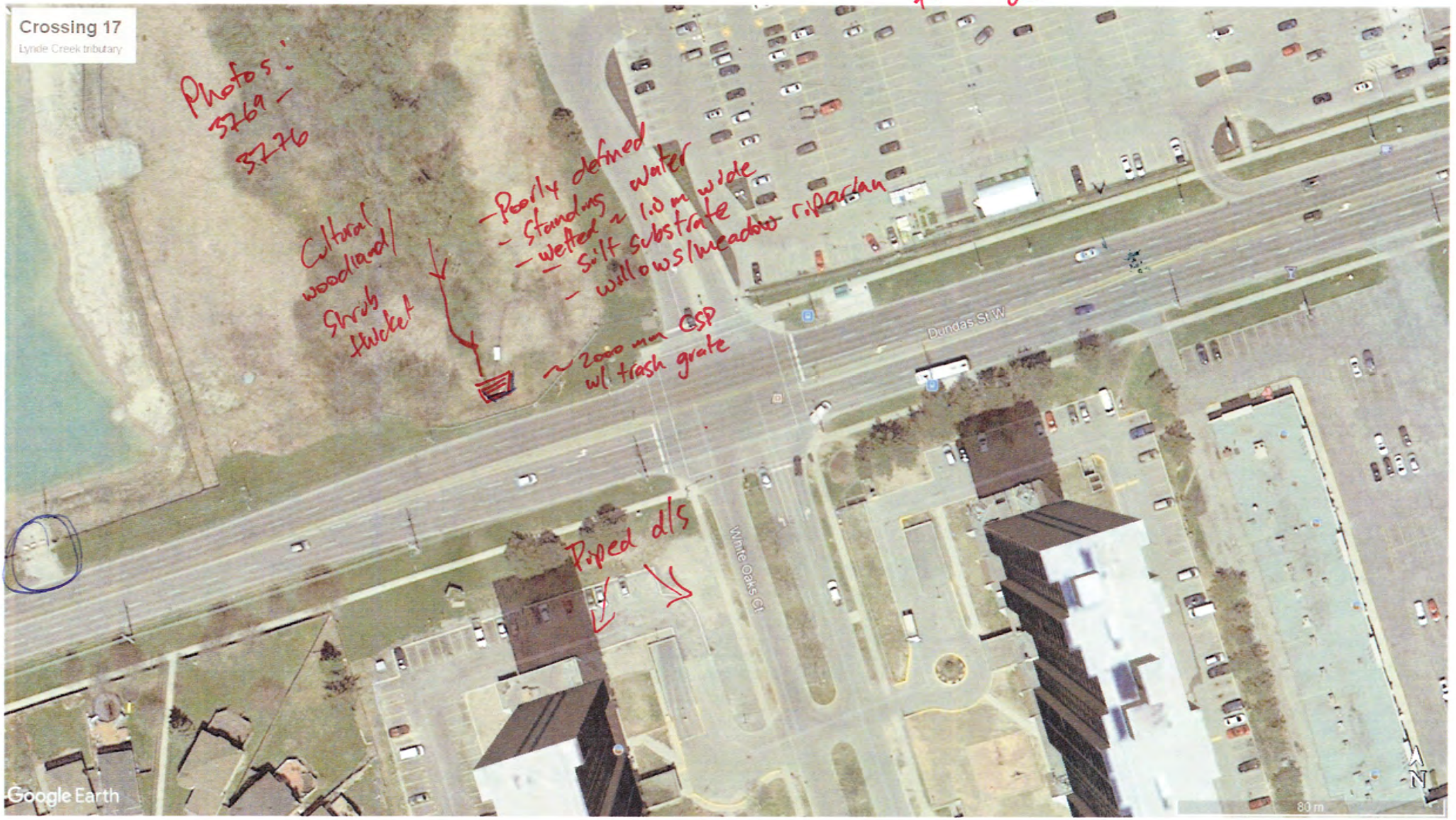
- Many Chinook Salmon obs. Photo 3675 - 3691
- Banks mod. eroding (sand) - some banks > 1.0 m high
- Poor instream cover


Crossing 13
Duffins Creek tributary
Photos: 3692 - 3701
- Some OH cover vegetation mainly herbaceous riparian
- 3-cell culvert
- 0.1-0.3 m depth
- 4-5 m wide channel
- little to no flow vel.
- Substrate 70% rubble 20% gravel 10% sand
- gabion
Gabion
Gabion
Gabion
Flow
Flow
3711-3713
2 cell culvert
- mainly silt
Photos: 3702-3708
- Slow flow vel.
- 3-6 m wide channel
- 0.1-0.2 m depths
- Substrate 70% rubble 20% gravel - 10% sand - 5% detritus
- mixed successional woodland riparian
3709-3710
- highly eroding sand bank
- 0.1-0.4 m depths
- riffle/flats.
- 4-6 m wide.
Scattered Trees/Herb/meadow
3714-3716
- Some OHV
3717
- Some OHV
- evidence of beaver
Regional Highway
Kingston Rd W
Patterson Crescent
Pembury Dr
Adams Dr
Google Earth
N


Crossing 14
Carruthers Creek
Photos
3732 - 3737
- flat morph.
- no flow vel.
- highly eroding banks
Pool (0.7m depth)
- Sparse tree cover
Shrubs along channel
meadow beyond
60% rubble
20% gravel
10% sand
10% silt
Fence line
Regional Highway 2
7-8m wide concr. culvert
-4-8m wide channel
-0.1-0.7m depth
- flat morph.
- willows along west bank
meadow to the east
- Phrag. near ditches/roadway
- highly eroding banks
Photos
3721-
3731
Google Earth
100 m
N


Crossing 15
Lynde Creek tributary
Photos: 3741 - 3747
Indirect fish habitat crossing.
Poorly defined channel thru herb./cattails
Intermittent/ Dry
Standing water
Phragmites
Cattails
Dundas St W
~2.5 m wide conc. culvert
- poorly defined channel
- some standing water - no flow
- dom. by Phragmites.
Photos: 3738 - 3740
Google Earth
40 m
N


Crossing 16
Lynde Creek
- Slow flow vel.
- Same substrate as d/s
- 0.2 - 0.5m depths
Photos: 3757 - 3768
flooded grasses
Cattails
wet / standing water
Gabions
~ 12m wide concrete arch culvert.
Dundas St W
- Depths 0.4 - 1.0m
- Slow flow vel
- water turbid
- 4 - 12 m widths
- 10% rubble - 10% gravel - 10% sand - 60% silt - 10% detritus
flooded vegetation
- Cattails along edge of channel
- meadow riparian changing to cultural woodland to the south.
Photos 3748 - 3754a
Google Earth
N
40 m

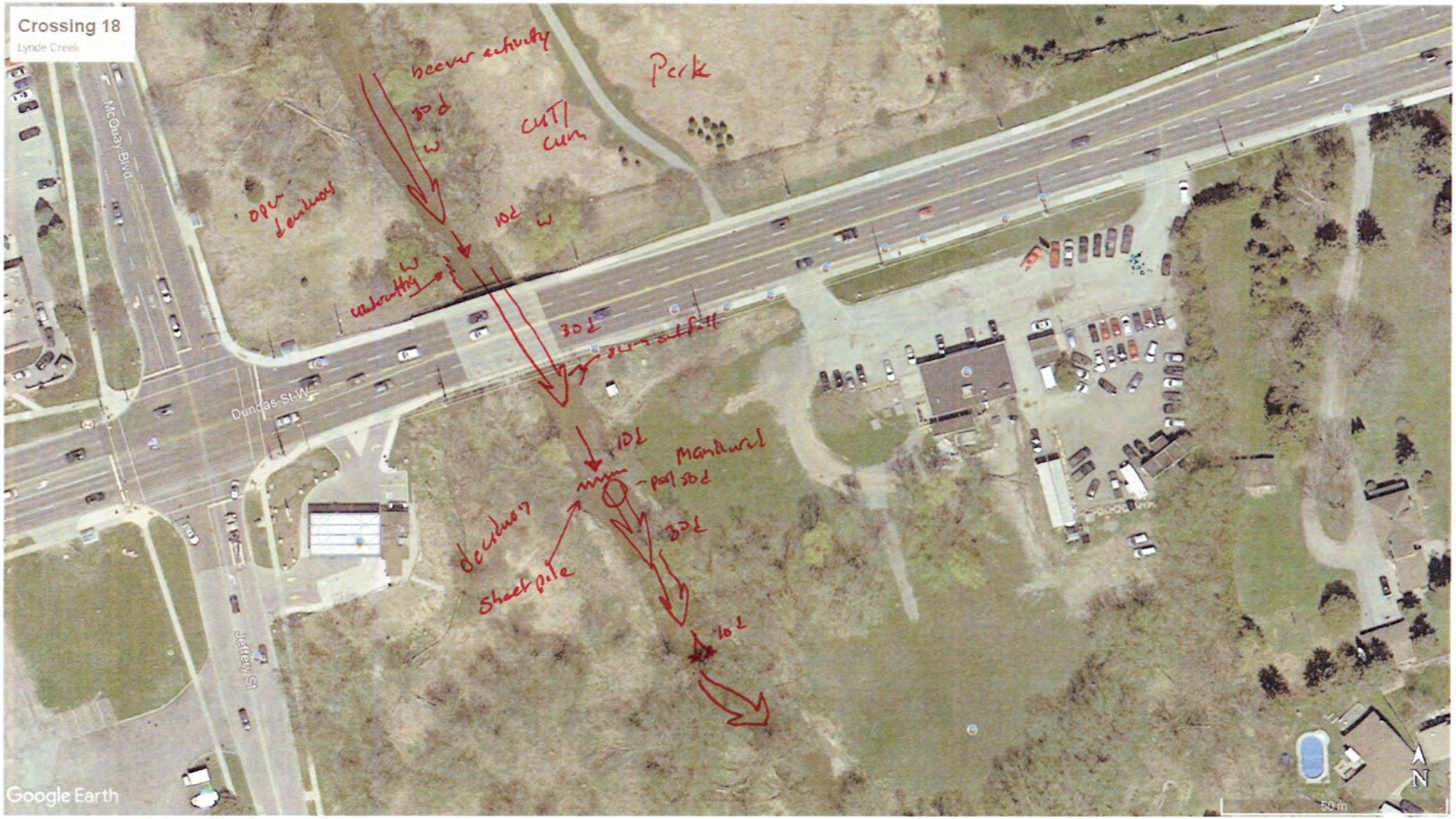

Crossing 17
Lynde Creek tributary
Photos: 3769 - 3776
Cultural woodland/ Shrub thicket
- Poorly defined
- Standing water
- wetted ~ 1.0 m wide
- Silt substrate
- willows/meadow riparian
~ 2000 mm CSP w/ trash grate
Piped d/s
Possibly direct fish habitat - unlikely due to enclosure d/s
Dundas St W
White Oaks Ct
Google Earth
80 m
N

October 11, 2019
Sunny 11°C
wind 15km/h out of E

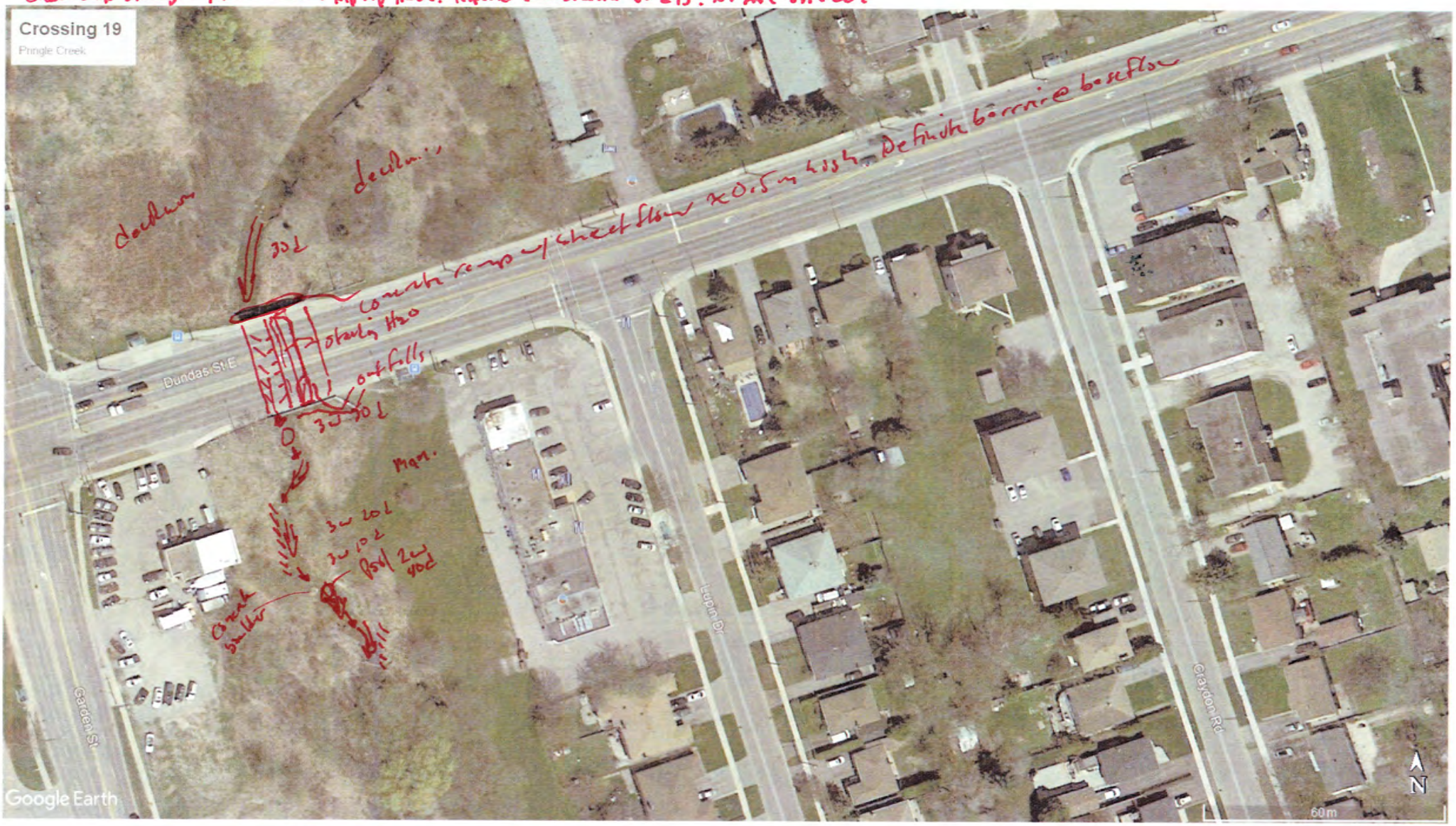
Chinooks observed. D/S riffles + runs. Mix of substrates: cobble, boulder, gravel, sand, silt. No instream vegetation. Instream cover: boulder/cobble, sparse woody debris. Riparian area manicured on east side, deciduous tree on west. Some large overhanging trees. Banks steep, but stable. Channel straight.

Conditions similar u/s.

Many salmon - some appeared to be spawning



October 11, 2019. Watercress present. D/S coarse substrates: cobble, gravel, sand, boulder, silt. Steep banks - some erosion, but still vegetated
Riffles + runs w/ at least one small pool. No instream veg. except for small patches of watercress. Cover provided by boulders, cobble + some debris
Riparian area deciduous trees, shrubs + forbs. Well shaded further d/s. Dead salmon observed - live ones. Banks close to bridge lined w/ riprap
+ filter cloth - reconfigured in past? 3 cell box/concrete culvert - baffles in west cell trapped substrates - not much exposed concrete.
Concrete spillway e u/s out of west cell. Other cells blocked - gravel substantially higher u/s at those cells to prevent most flows from entering
channel u/s straight, flow turbulent. Rip rap lined. Riparian area similar to d/s. No fish observed

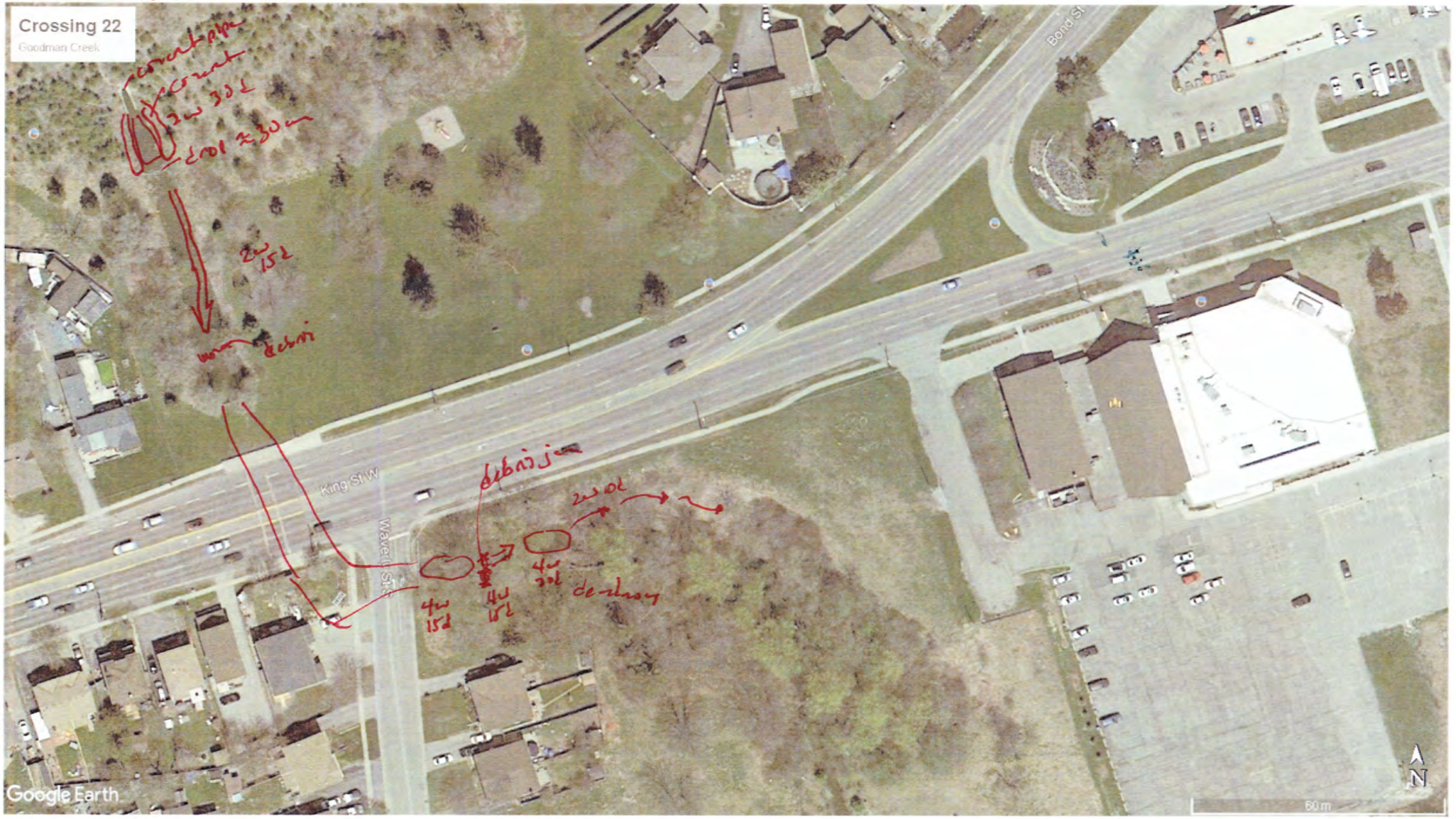


other fish observed: Johnny Darter, Blacknose Dace, Cyprinids, Creek Chub

6 Oct 2019 Watercourse flows through large culvert/measuring u/s channel definition. Much duckweed - likely permanent flows into PS-1 (SWM?) d/s. No fish observed. Leaches but only sheen

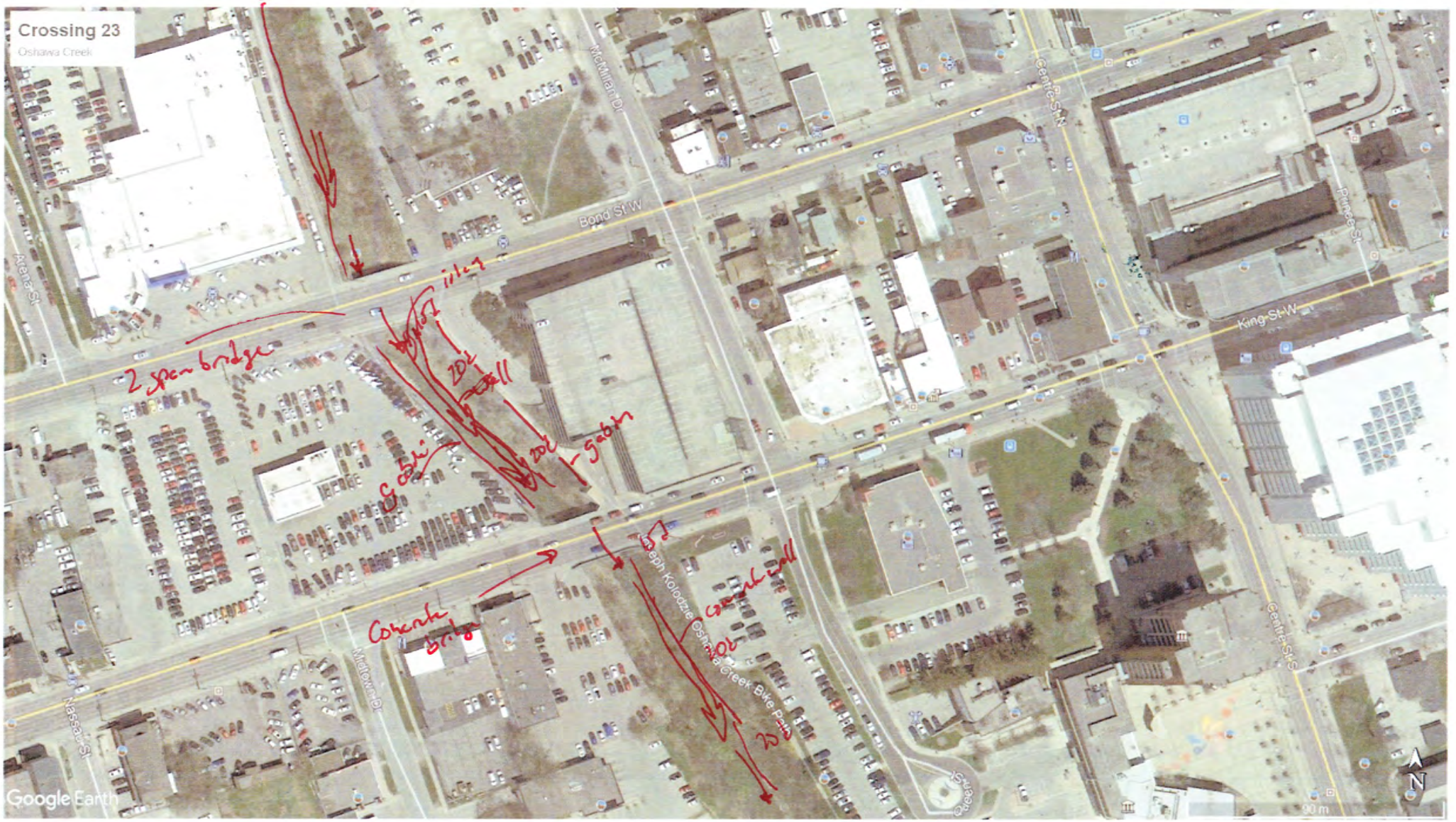
u/s channel open - other coming from lg. CT marsh. No observable current. 5m wide, 10cm deep. No fish observed. Much duckweed steep slopes on both banks. Shrubs, small trees + phrag. Intermittent habitat?

October 11, 2019. Twin CSPs - west lower than east + conveys majority of flow. Steep gradient d/s for 1st 15 m or so - riffle over rip rap. Two channels meet @ CSPs d/s + pool. Sand + silt substrate 2 m wide 30 cm deep. Debris in channel further d/s restricting flows. Remaining 2 m wide, but shallower (15 cm). Banks fairly steep + partially vegetated. some erosion. Deciduous trees on both upstream sides provide some shade. Substrates: sand, silt, gravel, boulder (rip rap). No fish observed. Instream veg lacking. Instream cover - rip rap, woody debris, other debris. U/S - channel flows thru CT mostly. Rip rap d/s of culverts restricts flows, channel still slow even. U-shaped w/ some woody debris + overhanging veg. Silt + detritus substrate. No fish observed



October 11, 2019. Relatively wide bankfull channel (2.6m), but much smaller. Shallow baseflow. Gravel, sand, silt substrate, well vegetated banks & riparian area. Much woody debris. Morphology dominated by riffle w/ a couple of pools < 1 m. Shallow (10-30cm) mostly narrow (2m) & shallow (15cm). No fish observed. Some erosion of bankfull banks.
U/S - straight channel - low habitat. Small debris jam. Channel 2m wide & 15cm deep. Fish (cyprinids) observed - 1 creek chub too. Cover: emergent veg.

Oct. 11, 2019. Ochre Creek Trib. 2



Salmon observed

APPENDIX D.
ECOLOGICAL LAND CLASSIFICATION SHEETS

- numerous tree saplings planted into meadow area

PLANT SPECIES LIST	
	SITE: D-S BRT
	POLYGON: CUM-10
	DATE: June 14
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
BRAUN BLANQUET: + PRESENT 1 = < 1-5% 2 = 5-25% 3 = 25-50% 4 = 50-75% 5 = 75-100%

SPECIES CODE	LAYER 1	2	3	4	COLL.
JUNVIRG			O	O	
MORALBA		R	R		
CELOCCI			O		
ACEXFREE			O		
DIGSAN6				O	
BROINER				O	
TAROFF1				A	
DACGLOM				O	
LOTCORN				O	
TRADUR1				R	
TRIREP				A	
PLAMAJO				A	
PLALANC				OAA	
CYNROSS				A	
TRIPRAT				O	
RANACR1				R	
HIECRAC				O	
HIEMACR				O	
ULMAMER		O			
RUMERIO				O	
LONTATA			O		
MATPERE				O	
PHYPUL			O		
ERIANNU				O	
CONCANA				O	
TRIOCC1		O	O	R	
SOLERIO			R		
SOLCANA				A	

SPECIES CODE	LAYER 1	2	3	4	COLL.
POAPRAT				A	
EQUARVE				O	
POACOMP				O	
CORVAR1				O	
CORSER1			O		
RHURADI				A	
PRUVIRG			O		
DIPSYEU				R	
TYPANGU				O	
PHRAUST				OAA	
ASCSYR1				O	
DAUCARO				O	
TILAMER		R			
TUSFARF				O	
ROBPSEU	O	O	R		
MELALBA				O	
ERIANNU				O	
ULMPUM1	O	O			
DAUCARO				OAA	
EUOALA1			O		
RUBIDE			O		
RUBOCC1			O		
RHACATH			O	O	
CHRLEUC				O	
ARCANN				O	
ACHMIL1				O	
ALLPET1				A	
VIEAURE				O	

→ drawings + photos

STAND CHARACTERISTICS	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE ☐ OPEN WATER ☐ SHALLOW WAT. ☑ SURFICIAL DEP. ☐ BEDROCK			COVER ☒ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

COMMUNITY MATURITY
☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

SOIL ASSESSMENT

	1	2	3	4
TEXTURE				
DEPTH TO MOTTLES	g =	g =	g =	g =
DEPTH TO GLEY	G =	G =	G =	G =
DEPTH OF ORGANICS				
DEPTH TO BEDROCK				
MOISTURE REGIME				

SOIL PROFILE

PLANT SPECIES LIST	SITE:
	POLYGON:
	DATE:
	SURVEYOR(S):

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
BRAUN BLANQUET: + PRESENT 1 = < 1-5% 2 = 5-25% 3 = 25-50% 4 = 50-75% 5 = 75-100%

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
GYMDIO		R									
FESRUBR				O							
ACESACC		O									
CERCANA			R								
QUEMACR		R									
LIRTULI			R								
CICINTY				O							
FRAAMER		O	O	O							
POPTREM		O	O								
ACENEGU		O	O	O							
ELYREPE				O							
ARCMINU				O							
PHARUN				O							
VERTHAP				O							
ECHVULG				R							
RUMCRIS				O							
EGNLORA				O							
PINNIGR		O	R								
RHUTYPH				O							
ERICANA				O							
MALPUMI			R								
AESHIPPO			O								
CIRARVE				O							
PINSYLV			R								
VITRIPA				O							
PICABIES		R									
POPGRAN	R										

DISTURBANCE and STAND CHARACTERISTICS	SITE:
	POLYGON:
	DATE:
	SURVEYOR(S):

MANAGEMENT / DISTURBANCE	LEVEL / EXTENT	MANAGEMENT / DISTURBANCE	LEVEL / EXTENT
SUGAR BUSH OPERATIONS		DUMPING (RUBBISH)	
GAPS IN THE CANOPY		EARTH DISPLACEMENT	
LIVESTOCK (GRAZING)		RECREATIONAL USE	
PLANTING (PLANTATION)		ALIEN SPECIES	
TRACKS AND TRAILS		NOISE	
NATURAL DISTURBANCES	**LEVEL / EXTENT**	**NATURAL DISTURBANCES**	**LEVEL / EXTENT**
DISEASE / PESTS / DEATH		FLOODING (POOLS & PUDDLING)	
WIND(THROW (BLOWDOWN)		FIRE	
BROWSE (e.g., DEER)		SOIL EROSION	
BEAVER ACTIVITY		OTHER	

LEVEL: 0 = NONE 1 = LIGHT 2 = MODERATE 3 = HEAVY
EXTENT: 0 = NONE 1 = LOCAL 2 = WIDESPREAD 3 = EXTENSIVE

TREE TALLY BY SPECIES PRISM FACTOR:

SPECIES CODE	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TALLY 5	TOTAL	REL. AV.
TOTAL							
BASAL AREA (BA)							MEAN
DEAD							

PLANT SPECIES LIST		
	SITE: Scar BBT	Maps 1 – 10
	POLYGON: Manicured	City of Toronto
	DATE: June 6, 14, Sept 17/19	
	SURVEYOR(S): NME	

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	O				
PINRES1	R				
DUACOMP				A	
DIGSONG					
RHUGLAB			O		
TAROFF1				O	
TRIREPE				A	
ACE PLAT	O				
LOTCORN				O	
PODPROT				C	
SONARVE				O	
ROBPSEUD	A				
MORXPEND			R		
QUERUBR	O				
SYRRET1		R	R		
PLAMAJO				A	
JUNISABI			R		
SONARVE				O	
PLAMAJO				O	
UNVULG				R	
ULMPUM1	O				
CYNROSS				O	
ornamental RHUAROM			R		
ornamental PRUVIRG (tree form)			O		
ASCSYR1				D	
LIRTUR			R		
EUP[illegible]		O			

SPECIES CODE	LAYER 1	2	3	4	COLL.
CICINTY				O	
JUNVIRG			R		ornamental
RIBCYNO			R		
HYDRAPAN1				R	
CORALBA			R		
ASCSYR1				R	
COTCOGG			R		
SONARVE				O	
RUMCRIS				O	
PICPUNG	O		R		
AMELAEV			R		
ACESACC	R	R	R		
RUDHIRT				O	
PICABIE	O		R		
PLAOCC1					
GINBILO			R	O	
CRAPED1	R				
PINNIGR	R	O			
JUNVIRG		O	O		
ACERUBR			R		
TRIPRAT				O	
GLEDTR1		R	O		
ULMGLAB			O		
CELOCC1		O			
ACENEGU		O	O		
THUOCC1			A		
RHUTYPH			A		

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL M	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
EUOALAT			O		
VIRTUL I		O			
ASTERIC				O	
SOLCANA				O	
ASTNOAN				O	
QUEMAC R		O			
LONTATA					
CERCANA		R			
THUOCCI		O	O		
VEL AUTU				R	
VITRIPA				O	
AMBARTE				O	
PINSYLV		O			
AMBTRIF				O	
MELALBA				O	
PINSTRO		O	O		
PINRESI		R			
JUGNIGR		O			

SPECIES CODE	LAYER				COLL.
	1	2	3	4	

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER				COLL.
	1	2	3	4	

SPECIES CODE	LAYER				COLL.
	1	2	3	4	

SOIL ASSESSMENT:	1	2	3	4
TEXTURE				
DEPTH TO MOTTLES	g =	g =	g =	g =
DEPTH TO GLEY	G =	G =	G =	G =
DEPTH OF ORGANICS				
DEPTH TO BEDROCK				
MOISTURE REGIME				

SOIL PROFILE

PLANT SPECIES LIST	
SITE:	SCAR BRT (Map 7)
POLYGON:	FOD5a
DATE:	Sept 17/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	D	A		O	
ALLPET				O	
PRUVIRG			O		
CIRLUTE				O	
MAICANA				R	
FRAPENN			R		
RUBIODE			R		
VITRIPA			O	R	
PARINSET				R	
DRISERO		R			
ACEPLAT		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- observed along edges / SE corner

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	5	ACESASA
3	SUB-CANOPY	2	4	ACESASA
4	UNDERSTORY	4	4	ACESASA>>>PRUVIRG
5	GROUND LAYER	5-7	3	ACESASA>> CIRLUTE

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	A	10-24cm	A	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: D-5 BRT (Maps 3 to 4)
	POLYGON: H1
	DATE: June 14, 2019
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
BRAUN BLANQUET: + PRESENT 1 = < 1-5% 2 = 5-25% 3 = 25-50% 4 = 50-75% 5 = 75-100%

SPECIES CODE	LAYER 1	2	3	4	COLL.
PINNIGR	R				
PHYOPUL			O		
CORRACE			O		
RUBIDAE			O		
CYNROSS				D	
ALLPETI				A	
POPTREM		O	R		
SAMCANA			R		
ROBPSEU	O				
ACEPLAT			R		
VICCRAC				O	
JUGNIGR		R	O		
POPGRAN	D	O			
ACESASA		C			
FRAAMER		R	R		
RHACATH			O		
SOLCANA				O	
EURMACR				O	
OSTVIRG			R		
LONTATA			R		
AMEL SP. (HORT)			R		
FRAPENN		R			
PICGLAU		R			
PINSTRO		R			
LARLARI		R			
VITRIPA			R	R	
JUNNIG					
		R		R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
QUEMACR			R		
PARINSE			R	R	
SYMNOAN				R	
QUERURR		R			
CRATCOCC		R			
CRAPED1			O		

STAND CHARACTERISTICS	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE ☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			**COVER** ☐ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

COMMUNITY MATURITY

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

SOIL ASSESSMENT

	1	2	3	4
TEXTURE				
DEPTH TO MOTTLES	g =	g =	g =	g =
DEPTH TO GLEY	G =	G =	G =	G =
DEPTH OF ORGANICS				
DEPTH TO BEDROCK				
MOISTURE REGIME				

SOIL PROFILE

PLANT SPECIES LIST	
	SITE: D-5 BRT (Map 4)
	POLYGON: FOD6-5
	DATE: June 14/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	D	A	O	O	
TILAMER		R	R		
CYNROSS				A	
RHACATH			R	O	
LONMORR			R		
TUSFARF				R	
ERYAMER				R	
FAGGRAN			R		
BETPAPY	O				
FRAPENN			O		
VIBOPUL			R	R	
RIBAMER			O	R	
TRILGRA				R	
EUONALAT			R		
PRUSERO	R				
BETALLE	R				
EQUARVE				R	
PRUVIRG			R		
SYMFOET at NE corner seepage				R	
THUOCCI			R		
CORALTE			R		
EQUARVE				O	
CONMAJA				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- northern portion of community observed

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	5	ACESASA >> BETPAPY > BETALLE
3	SUB-CANOPY	2	4	ACESASA >> BETPAP
4	UNDERSTORY	3	3	ACESASA > FRAPENN
5	GROUND LAYER	5-7	4	CYNROSS >> LILY

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	A	25-50cm	R	> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm	\	25-50cm	\	> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	O	10-24cm	R	25-50cm	\	> 50cm
	DECAYED	\	< 10cm	\	10-24cm	\	25-50cm	\	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	D-5 BRT
POLYGON:	FOD5-1a
DATE:	May 6 & June 14/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	D	O	O		
FAGGRAN	R		R		
CHNROSS				O	
ALLPETI				O	
BERTHUN			R		
PRUVIRG			R	R	
several dying/dead FRAPENN		R	R		
CARPENS				R	
CRAPUNC			R		
VITRIPA			R	R	
LONTATA					
ROBPSEU	R		O		
RHACATH			O		
TILAMER					
OSTVIRG	R	R	R		
RIRDMER			O		
PRUSERO	R				
RHURADI				R	
BETPAPY		R			
TAROFFI				R	
TSUCANA		R			
MATTSTRU				R	
EQUARVE				R	
MESMATR				R	
TRILGRAN				R	
CORALTE			R		
ACENERU			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.
PARTINSE				R	
CONMAJO				R	PIC
ERYAMER				R	
ERYAMER				R	

>80% bareground

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☒ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☒ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MATERIAL	☐ BOTTOMLAND		☐ FLOATING LVD	☐ RIVER
	☐ ACIDIC BEDROCK	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDROCK	☒ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDROCK	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLLING UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☒ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☒ FOREST
					☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER	☐ OPEN	☐ INCLUSION	☐ HEDGEROW
☐ SHALLOW WAT.	☐ SHRUB	☐ COMPLEX	
☒ SURFICIAL DEP.	☐ TREED		
☐ BEDROCK			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	6	ACESASA >>> PRUSERO = FAGGRAN
3	SUB-CANOPY	2	4	ACESASA >> OSTVIRG
4	UNDERSTORY	4	3	ACESASA >> RHACATH
5	GROUND LAYER	5	2	CHNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	O	25-50cm	R	> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm	\	25-50cm	\	> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	R	10-24cm	\	25-50cm	\	> 50cm
	DECAYED	\	< 10cm	\	10-24cm	\	25-50cm	\	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☒ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT
	POLYGON: MAS2-1a (Map 4)
	DATE: June 14/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPANGU				D	
SALEXIG			O		
SALDISC			R		
EQUARVE				O/A	
VERHAST				O	
RANACRI				R	
RHURADI				O	
SALBEBI		R			
CORSERI			R		
CARLACU				R	
SCIMICR				R	
ONOSENS				R	
VITRIPA		R	R	O	
VICCRAC				R	
SYMPUNI				R	
SYMLANC				R	
POPTREM	R	R	O		
IMPCAPE				R	
RIBDMER			R		
THUOCCI		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☑ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	2	1	POPTREM
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY	4	1	SALEXIG ≥ POPTREM
5	GROUND LAYER	4/5	5	TYPANGU

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☑ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: Scarborough-Durham BRT (Map 4)
	POLYGON: FOM3-2
	DATE: June 6/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TILAMER	R	R	R		
PINSTRS	R				
FAGGRAN	R		R		
FRDPENN		R			
CYNROSS				O	
EQUPRT				O	
RHACATH			R	O	
ACENEGU				R	
POPTREM	R				
THUOCCI	R	A	O		
EUOALAT			O		
IMPACAP				R	
ACESASA	O	O	R		
TSUCANA	R	O			
QUERUBR	O				
SYMFOET				R	
BIDFRON				R	
RANRECU				R	
CARVULP				R	
RUBDRUN				O	
GEUCANA				R	
VIBOPU			R		
IMPCAPE				O	
CYNROSS				O	
SYMPUNI				R	
SOLDULC				R	

seepage at base of slope

SPECIES CODE	LAYER 1	2	3	4	COLL.
ROSMULTI			R		
ACERUBR	O	R			
ULMAMER	O	O	O		
RIBAMER			R		
CARPENS				R	
ALLPETIO				R	
EUONOBO				R	

~80% bareground

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- observed southern portion of community

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	5	ACESASA > QUERUBR > TSUCANA
3	SUB-CANOPY	3	4	THUOCCI > ACESASA
4	UNDERSTORY	3	1	THUOCCI = FAGGRAN = TILAMER
5	GROUND LAYER	5-7	1	CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: Scarborough - Durham (Map 4)
	POLYGON: FOD5-1b
	DATE: June 6/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
EUOALAT			D	O	
TILAMER					
ALLPETI				D	
ROBPSEU	R				
CYNROSS				O	
QUERUBR	O				
ACENEGU		R			
ACESASA	O	D	O	O	
FRAAMER		O	O	O	
VITRIPAR			R	R	
LONTATA(MAN)			R		
RHUTYP			R		
CRATPED1			R		LEAF
RHACATH		R	R	R	
PRUSERO	O	O			
TRIGRAN				R	
ARITRITE1				R	
ATHFIF1				R	
TSUCAN	R	R			
PINSTRO	O	R			
CORALTE			R		
THUOCC1			R		
DRUVIS				O	
CARPENU				R	
GERRORE				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
BETHUN			R		
BETPAP		O	R		
MALRACE				R	
FAGGRAN			R		
ACERUBR	R	R			
MENARVE				R	

POLYGON	SITE:	POLYGON:
	SURVEYOR(S):	DATE:
	UTMZ: UTME:	UTMN:

- viewed along northern edge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☑ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☑ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☑ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	1	PINSTRO > QUERUBR = ACESASA
3	SUB-CANOPY	2	4	ACESASA >> PRUSERO = BETPAP
4	UNDERSTORY	3	3	ACESASA > RHACATH
5	GROUND LAYER	5-7	3	ALLPETI > CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		A	< 10cm	A	10-24cm	O	25-50cm	R	> 50cm
STANDING SNAGS			< 10cm	R	10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM	A	< 10cm	O	10-24cm	R	25-50cm		> 50cm
	DECAYED		< 10cm	R	10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD – BRT (Map 3)
	POLYGON: EOC4-1a
	DATE: June 14 19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
THUOCC1	O	A			
CYNROSS				A	
PRUVIRG			R		
ACESPSP				R	
CORALTE			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- viewed from southern edge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	THUOCC1
3	SUB-CANOPY	3	3	THUOCC1
4	UNDERSTORY	3	1	CORALTE
5	GROUND LAYER	5	2	CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm		25-50cm		> 50cm
STANDING SNAGS		R	< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM	R	< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 3)
	POLYGON: FOD5-7 (north of Ellison)
	DATE: June 14/19
	SURVEYOR(S):

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

Note	SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
edge	POPTREM		O			
	VITRIPA		R	O	O	
	RHUTYPH		R	O		
	CYNROSS				A	
several dead or dying	FRAPENN	R	O	O	O	
	PRUSERO	O				
	ACESASA	O	A	O	O	
	LONTATA			O	R	
	CORALTE			O		
	MATSTRU				R	
	THUOCCI	O	R			
	RHURANE				O	
	CIRLUTE				O	
	THADIOI				R	
	CRAPUNC			R		
	POPBALS				R	
	ALLPETI				R	
	TRIGRAN				R	
	PRUVIRG			O		
	ATHFIFI				R	
	VIBOPUL				R	
one lg is dead	BETALLE	R		R		
	PARTINSE				O	
	TSUCANA	R				
	RHACATH			O	O	

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.

POLYGON		
SITE:		POLYGON:
SURVEYOR(S):		DATE:
UTMZ:	UTME:	UTMN:

- viewed along southern edge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	2	ACESASA > PRUSERO
3	SUB-CANOPY	2	4	ACESASA > POPTREM
4	UNDERSTORY	3	4	CORALTE >> LONTATA
5	GROUND LAYER	5	4	CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm	R	> 50cm
STANDING SNAGS			< 10cm	R	10-24cm	R	25-50cm		> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	R	10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: D-5 BRT (Map 314)
	POLYGON: CUP3-2a
	DATE: June 14/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PINSTRO	O				
PICABIES	R		O		
JUGNIGR		O	R		
AMELAEV			R		
OSTVIRG			R		
QUERUBR (dying)			R		
FRAAMER (second dying)		R			
PHYOPUL			R		
BRONER				R	
CUNROSS				O	
PRUSERO			R		
DACGLOM				O	
QUEMACR			R		
THUOCCI		R			
POPTREM			O		
LONTATA			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☒ MINERAL SOIL	☐ RIVERINE	☒ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☒ PARENT MATERIAL	☐ BOTTOMLAND		☐ FLOATING LVD	☐ RIVER
	☐ ACIDIC BEDROCK	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDROCK	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDROCK	☒ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLLING UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☒ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☒ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER	☐ OPEN	☐ INCLUSION	☐ HEDGEROW
☐ SHALLOW WAT.	☐ SHRUB	☐ COMPLEX	
☒ SURFICIAL DEP.	☐ TREED		
☐ BEDROCK			

STAND DESCRIPTION: CUP3-2b

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	3	4	PINSTRO>>PICABIES
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM	R	< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Fold Maps 3.4)
	POLYGON: CUT 1-1a (Cuvula
	DATE: Sept 17/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
JUNVIRG		R	O								
ACEPLAT	O	O									
ULMPUM		R									
LONMORR			O								
IRISEU				R							
TILAMER	R	R									
RHUTYPH			D								
POAPRAT				A							
DACGLOM				O							
ALLPETI				A							
TAROFFI				O							
GLEHEDE				R							
SURVUIG			R								
ULMAMER		R									
VICCRAC				O							
FRAMER		R	R								
EUOBLA	R	O	O								
ALLSCLO				R							
THUOCCI		O									
LONTATA			R								
PHEARUN				R							
RANVULG				R							
CYNROSS				D							

LGL

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☒ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☑ OPEN ☐ SHRUB ☑ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	ACEPLAT >> TILAMER
3	SUB-CANOPY	3	2	ACEPLAT = THUOCCI
4	UNDERSTORY	4	4	RHUTYPH >> LONSP
5	GROUND LAYER	5-7	5	CYNROSS >> POAPRAT

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: Scarborough - Durham RAT (Map 4)
	POLYGON: CUM1-1a/CUW1a (south side of Ellesmere - hardest slope)
	DATE: June 6 19
	SURVEYOR(S): NJME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
CYNROSS				D	
VITRIPA				O	
POAPRAT				A	
PRUGLAN			R		PICG
MALPUMI			O		
EUOEURO			O		
HESMATR				R	
RHURANE				A	
EQUARVE				O	
SOLCANA				A	
JUNVIRG			R	R	
EURMACR				O	
ANTNEGL				O	
ACESASA		R			
ULMAMER		R			
MATPERF				R	
RHUTYPH			O		
MELALBA				R	
BROINER				O	
ROBPSEU	D	O			
FRAAMER		R	R	R	
EIRANGU			O		
VICCRAC				O	
CIRARVE				R	
ALLPETI				A	

SPECIES CODE	LAYER 1	2	3	4	COLL.
RHACATH			R		
LONTATA			O		
ACHMILL				R	
PICGLAU			R		
DAUCARO				R	
GLENERE				O	
LAMPURP				O	
CAREX sp.				R	
ACENEGU			R	R	
URTDIOC				R	

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☑ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	ROBPSEU
3	SUB-CANOPY	3	2	ACESASA=FRAAMER
4	UNDERSTORY	3	2	EUOEURO>RHACATH
5	GROUND LAYER	5-7	5	CYNROSS>>ALLPETI

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			O	< 10cm		O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS				< 10cm			10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM			< 10cm			10-24cm		25-50cm		> 50cm
	DECAYED			< 10cm			10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: DS-BRT (Map 4)
	POLYGON: CUP 1
	DATE: June 14/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ROBPSEU	A	O	R		
HESMATR				O	
SOLCANA				O	
FRAPENN		O	O		
ALLPETI				O	
BOECYLI				R	PIC
GLEHEDE				O	
TUSFARF				O	
LONMORR			R		
JUNVIRG		R	O		
MALPUMI			R		
EUO ALAT			O		
PRUVIRG				R	
RHACATH			O		
GEUMLEP				O	
RANACRI				O	
CUNROSS				O	
ROSMULT			R		
THUOCCI			R		
ACEGINN			R		
TILAMER			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF Road bed slope	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☒ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	ROBPSEU
3	SUB-CANOPY	3	2	ROBPSEU > JUNVIRG
4	UNDERSTORY	3	2	FRAPENN > JUNVIRG
5	GROUND LAYER	5	5	CUNROSS >> SOLCANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES		O		O					
STANDING SNAGS									
DEADFALL/LOGS	FIRM	R							
	DECAYED								

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: DS-BRT (Map 4)
	POLYGON: CUT1-1a
	DATE: JUNE 14/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
POPDELT		R	R		
ULMPUMI		R	R		
ROBPSEU	O		R		
RHUTYPH			D		
TILAMER			O		
CORARI				A	
CYNROSS				D	
PORCOMP				O	
TRADUBI				R	
PLAMAJO				O	
TDROFFI				O	
SOLCANA				O	
RANACRI				O	
DAUCARO				O	
POAPRAT				O	
LONMORR			R		
EURMACR				R	
LOTCORN				O	
SALEXIG			R		
ACESACC		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☒ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☒ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	3	1	ROBPSEU
2	CANOPY			
3	SUB-CANOPY	4	3/4	RHUTYPH
4	UNDERSTORY	4	3	RHUTYPH
5	GROUND LAYER	5	4	CYNROSS >> SOLCANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: Scarborough - Durham BRT
	POLYGON: CWW 4 (north of E Rouge)
	DATE: June 6/11
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ROBPSEU	O	O			
PICABIES		O			
PICGLAU		O			
RHACATH		O	O		
CYNROSS				D	
POPBALS	O		R		
FRAPENN		R	R		
PHAARU				R	
ACENEGU		R		R	
PRUVIRG			O		
EUONALAT			O		
FRAAMER			R		
JUNVIRG			R		
RHUSTYP			O		
LONTATA			O		
ALLPETIO				O	
SOLGIGA				O	
VITRIPA			R	O	
EURMACR				R	
SOLCAND				O	
GEUALLE				R	
RANREPE				R	
ROSAMULT			R		
GEUCANA				R	
SOLFRAG			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	ROBPSEU
3	SUB-CANOPY	3	3	PIC SPP. > ROBPSEU
4	UNDERSTORY	4	1	RHACATH > EUONEURO
5	GROUND LAYER	5-7	5	CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM	R	< 10cm	R	10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 5)
	POLYGON: CUP3-26
	DATE: JULY 5/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PINSTRO	A	O			
LONTATA			R		
RHACATH			O		
CYNROSS				D	
PRUSERO	R	R	R		
RIBAMER					
ACESASA		A			
EROPENN		O	O		
CORALTE			O	R	
QUERUBR		R	R		
ARITRITRI				R	
FRAAMER			O		
CRATPEDI			R		
BETPAPY		R			
VITRIPA			R	R	
MAICANA				R	
RHUTYPH			O		
PINRESI	R				

SPECIES CODE	LAYER 1	2	3	4	COLL.

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POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☒ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☒ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	4	PINSTRO
3	SUB-CANOPY	2	4	ACESASA >> PRUSERO
4	UNDERSTORY	3	3	ACESASA > CORALTE
5	GROUND LAYER	5-7	5	CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	A	25-50cm	R	> 50cm
STANDING SNAGS		\	< 10cm	R	10-24cm	R	25-50cm	R	> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	O	10-24cm	\	25-50cm	\	> 50cm
	DECAYED	\	< 10cm	\	10-24cm	\	25-50cm	\	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 5)
	POLYGON: FOM2a
	DATE: July 5/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
VITRIPA			A	O	
TAROFFI				O	
CYNROSS				D	
ALLPETI				R	
GEUALLE				R	
MALSP	R	O			
PINSTR	A	O			
FRAAMER		R			
SALFRAG	R				
ARCMINU				R	
RHATYPH			O		
PYRCOMM			R		
ACESASA	O		R		
RHACATH			O		
QUERUBR	R		R		
FRAAMER		R			
THUOCCI	O	O	O		
INUHELE				R	
ACERUBR		R			
AMELLAEV		R			
TILAMER		R			
PRUN SP.	R	R			
POPTREM	R				

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ULMPUMI	R				
JUGNIGR		R			
BETPEND		R			

POLYGON			
SITE:			POLYGON:
SURVEYOR(S):			DATE:
UTMZ:	UTME:		UTMN:

- observations ~ 10 m along slope north side of Ellesmere
~ 30% bare soil

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☒ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☒ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MATERIAL	☒ BOTTOMLAND		☐ FLOATING LVD	☐ RIVER
	☐ ACIDIC BEDROCK	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDROCK	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDROCK	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLLING UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☒ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☒ FOREST
					☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER			☐ OPEN	☐ INCLUSION	☐ HEDGEROW
☐ SHALLOW WAT.			☐ SHRUB	☐ COMPLEX	
☒ SURFICIAL DEP.			☒ TREED		
☐ BEDROCK					

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 5)
	POLYGON: MAS2-1b
	DATE: JUNE 6 and AUG 12019
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPLATE				D	
IMPGLAN				R	
ASTLATE				R	
IMPCAPE				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

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POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

< 0.1 ha
- on slope
- perched conditions on seep

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☑ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☑ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☑ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☑ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☑ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4-5	5	TYPLATE

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES									
STANDING SNAGS									
DEADFALL/LOGS	FIRM								
	DECAYED								

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D ART
	POLYGON: SUP2 (manure strip at top of slope)
	DATE: July 5/19 (Map 5)
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	R	R	R	O	
QUERUBR			R	R	
BETPAPY	O				
CMUROSS				A	
PINSTRO			R		
CORRUGO			O	R	
SOLCAES				R	
FRAPENS			R	O	
RUBCAN			O	O	
MBOPUL			R		
SOLFLEX				O	
EURMACRO				R	
RUBODOR				R	
AMELAEV			R		KAT
ARANUDI				R	
PRUVIRG			O	R	
VITRIPA			R	R	
PINNIGR	O				
EQUSYLV				R	
ELIOLAT ?				R	
LONTATA			R		
POAPRAT				O	
RUBRADI				R	
PTEAQUI				R	
TILAMER			R		
SOLCANA				R	
VICCRAC				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
VITRIPA			R	R	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☒ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☒ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	PINNIGRA > ACESASA
3	SUB-CANOPY	3	3	BETPAPY > ACESASA = QUERUBR
4	UNDERSTORY	4	2	PRUVIRG > CORCORN
5	GROUND LAYER	5?	4	CMUROSS >> SOLFLEX

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES		O		O		O		—	
STANDING SNAGS		—		R		—		—	
DEADFALL/LOGS	FIRM	O		R		—		—	
	DECAYED	—		—		—		—	

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT
	POLYGON: EOM6-1 (SDMP) (Map 5)
	DATE: JULY 5/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	D	A	O	O	
TSUCAN	R	O			
QUERUBR	R		R		
CUNROSS				O	
TRIEREC					
GERROBE				R	
CARPENS				O	
CIMLUTE				R	
PRUVIRG			R		
PRUSERO			R		
CORALTE			O	O	
SOLFLEX				O	
ACTRUBR				R	
CAUTHAL				R	
PHACAT				O	
FRAPENS				O	
MAICANA				R	
CORRUGO			O	R	
SOLCAES				R	
OSTVIRG		R			
GEUALE				R	
VIOSORO				R	
KRITRIF				R	
ERYAMER				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

— border of 2 communities

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- surveyed along northern boundary

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	4	ACESASA >> TSUCACANA
3	SUB-CANOPY	2	5	ACESASA >> TSUCANA >> FAGGRAN
4	UNDERSTORY	3 2	2	ACESASA > FAGGRAN
5	GROUND LAYER	6 7	2	CARPENS >>

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT
	POLYGON: FODS-36 (Maps)
	DATE: July 5 19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	A	D	O	O	
FAGGRAN		O	O	O	
CARROSE				O	bA
SOLFLEX				O	
BETALLE	R		R		
CHNROSS				O	
PREALTI				R	
CORALTE			R	R	
FRAPENS			R	O	
QUERUBR	O	R	R	R	
CALTHAL				R	
ARITRI				R	
THADIOI				R	
SOLCAES				R	
GEUMCAN				R	
EURYDCR				R	
DORPELT				A	— lg
ACTRUBR				R	
TILAMER		R			
PRUNIRG			R		
BETPAPU		R			
RHACATH			R	O	bA
VITRIP				R	
PTEAQUI				R	
CORRUGO			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.
TSUCANA		R			
OSTVIRG			R		
MALCANA				R	
MAISTEL				R	
TRILEREC				R	
ATHFIFI				R	
GEUMCANA				R	
HYDVIRG				R	
POLACRO				R	
potch CARROS				A	

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

surveyed along mitton boundary

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☑ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☑ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☑ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☑ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☑ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	4	ACESASA >> QUERUBR
3	SUB-CANOPY	2	4	ACESASA >> FAGGRAN
4	UNDERSTORY	3	3	FAGGRAN = ACESASA > RHACATH
5	GROUND LAYER	6/7	4	CARROSE > DORPELT = RHACATH

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		A	< 10cm	A	10-24cm	O	25-50cm	O	> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm	/	25-50cm	/	> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	O	10-24cm	R	25-50cm	/	> 50cm
	DECAYED	/	< 10cm	R	10-24cm	/	25-50cm	/	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☑ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-RRT (Map 5)
	POLYGON: FOD2-1
	DATE: AUG 12/19
	SURVEYOR(S): MMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	R	A		O	
ACERUBR	R	O	O	O	
FAGGRAN		O			
RHACATH			O	O	
QUERUBR	O				
FRAAMER			O	O	
CUNROSS				A	
CIRUTIC				O	
SOLCANA				R	
CARPENS				A	
LONTATA			R		
MAICANA				O	
CORALTE			R		
RUBIRG			R	R	
VITRIPA				R	
ANSTRO	R				
THUOCCI	R	R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- surveyed within northern edge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	3	QUERUBR > ACERUBR
3	SUB-CANOPY	2	4	ACE SP > FAGGRAN
4	UNDERSTORY	3	3	ACESASA = FRAAMER > RHACATH
5	GROUND LAYER	5-7	3	CUNROSS > CARPENS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	A	25-50cm	O	> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☑ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 5)
	POLYGON: FOM2b
	DATE: AUG 12/19
	SURVEYOR(S): KMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
QUERUBR	O	R		O	
ULMAMER		R			
TILAMER		R	R		
POPTREM (edge)	O	R			
PINSTRO	R	R			
LONTATA					
RHACATH			O	O	
ACESASA	O	O	O		
ACENEGU		R	O		
ACEPLAT		O			
CONMASA				O	
FRAAMER (by creek)	R	O	R	O	
RHUTYPA			R		
JUGLOCCI	R	O	R	R	
CRAT SP				R	
FRAPENN			R	O	
VITRIPA		R	R	R	
ATHFIFI				O	
SOLCANA				O	
CUNROSS				OFR	
CORALTE			O		
PTEAQUI				O	
BETALLE	O				
TSUCANA		O			
POPBALS (edge)	R				

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACERUBR	R	R			
ONOSENS				R	
VIBOPUL				R	
CIRLUTE				O	
FAGGRAN	R		R		
CAREPS				O	
PARINSE				O	
CYSTOPTERBULB				R	
BETPEND	R				
EUPRUGO				R	
ALLPETI				R	
LONTATA			R		

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- moved from northern boundary

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	2	PINSTR(1) > ACERUBR
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	5-7		CUNROSS > > CIRLUTE

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm	○	10-24cm	A	25-50cm	○	> 50cm
STANDING SNAGS		○	< 10cm	○	10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM	○	< 10cm	○	10-24cm	R	25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Map 5)
	POLYGON: FOCU-1b
	DATE: AUG 12/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
THUOCCI		D			
POPTREM	R				
ULMAMER	R		R		
POPBALS	R		O		
ONOSENS				O	
PTEAQUI				R	
ARANUDI				O	
SOLCANA				R	
TILAMER				R	
VIBOPUL				R	
RHACATH			R	O	
LONTATA				R	
ATHFILI				R	
FRAPENN	R	R	R	O	
ACEXFREE				R	
RHURADI				O	
CHNROSS				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☒ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	2	ULMAMER = POPBALS
3	SUB-CANOPY	3	4	THUOCCI > POPTREM
4	UNDERSTORY	4	1	FRAPENN > POPBALS
5	GROUND LAYER	6/7	3	ARANUDI > RHACATH

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES		O		O		O			
STANDING SNAGS		O		R					
DEADFALL/LOGS	FIRM	O		O					
	DECAYED								

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Map 3)
	POLYGON: SWM 3
	DATE: AUG 12/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SAMCANA			O		
TUSFARF				A	
CORSERI			O		
CORRUGO			O		
ACEPLAT		R			
TILCORD		R			
POPTREM	O				
LONMORR			R		
RHACATH			R		
IMPCAPE				R	
ONOSENS				O	
SOL (ROUGHOCAL)	A			O	
TYPANGU				O	
VITRIPA				R	
RHURADI				O	
POPBALS			R		
THUOCCI		O			
ULMAMER	R				
FRAXPENN		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- survey along northern edge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☒ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☒ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	3	4	POPTREM
3	SUB-CANOPY	3	2	THUOCCI ≥ RHACATH
4	UNDERSTORY	4	2	CORSERC > SAMCANA
5	GROUND LAYER	4-6	4	TUSFARF > TYPANGU

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm		25-50cm		> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	R	10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (MAD 5) (Mowed side)
	POLYGON: CUMI-1b / CUTI-1b
	DATE: AUG 1 / 2019
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PLAGEN				A	
FORSP				D	
TROFE				O	
ACENEGU					
THUOCCI			A		
CELOCCI			O		
TSUGA (dead) SPECIES			dotbar		
ROBPSEU	O	O			
ACERUB	A	R			
TRIREPE				A	
RHUTYPH					
CIRINT				R	
CYNROSS				O	
LINVULG				R	
ASCSYR				R	
SOLCANA					
AMBARTE					
DAUCARO				C	
ULMPUMI				C	
LOTCORN				C	
TRIPRAT					
ASTLAT1				R	
MORSTOL			R		
ULMAMER			R		
CELOCCI			R		
CERCANA			R		
ACEXFREE			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.
CUMI-1 (mel)					
SOLRUGO				R	
RHUTYPH			O	O	
CYNROSS				D	
VITRIP				R	
LONTAT			R		
FRAAMER			R		
VICCRAC				O	
EUOALAT			R		
SOLNIG				O	
SOLCANA				C	
SAMNIGRA				R	
ASCSYR1				R	
ASTERIO				R	
POAPRAT				A*	
*LIRTUL1	R				
QUEMACR	R				
CUTI					
RHUTYPH			D		
CYNROSS				D	
VITRIPA				O	
CICINT				R	

hedgerow - running on edge private property

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- inclusion too small to delineate
- manicured, no planted or mown

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF - slope, berm	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☒ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT
	POLYGON: CUT 1a (Map 5)
	DATE: AUG 1 2019
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PICGLAU	R	R			
JUNVIRG			R		
THUOCCI			R		
ULMPUMI		R	O		
ROBPSEU	R	R	R		
SAPSPEC				O	
POAPRAT				A	
BROINER				O	
CORSERI			O		
RHUTYPH			O/A		
POPTREM		O	R		
CORNARI				O	
MELALBA				O	
TRIREPE				O	
TRIPRAT				O	
VICCRAC				A	
VITRIPA			O	O	
DAUCARO				O	
CYNROSS				A	
LONTATA			O		
CIRARVE				O	
SOLCANA				O	
ASTNOAN				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- from south side

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☒ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	3	1	POPTREM > ROBPSEU
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY	3/4	4	RHUTYPH >> LONTATA
5	GROUND LAYER	6/7	5	CYNROSS = POAPRAT

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (map 5
	POLYGON: CUM1-1a / CUT1-1a (north side)
	DATE: AUG 1/2019
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
CYNROSS				D	
RHUTYPI			A		
ASCSYRI				R	
VITRIP			O	O	
SOLRUGO				R	
SOLCANA				O	
PARTINSER				R	
JUNVIRG			K		
JUGNIGR			R		
POPPRAT				A	
LOTCORN				O	
TAROFFI				O	
RUBSPP1				O	
SYMNOAN				R	
COTCOGG			R		
ECHVULG				O	
POPGRAN			O		
SYMERIC				R	
SYMNOANG				R	
POPTREM		R	O		
QUERUBR		R			
POAPRAT				O to A	
DACGLOM				R	
PHLPRAT				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☒ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☒ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☒ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	3	1	POPTREM
3	SUB-CANOPY			
4	UNDERSTORY	3/2	4	RHUTYPI >
5	GROUND LAYER	6/7	5	CYNROSS > POAPRAT

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 5)
	POLYGON: FOD7-3
	DATE: June 6, Aug 12/2019
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SALFRAG	O	O			
SALALBA	R				
POPTREM		O			
ACENEGU		O	O	O	
QUEALBA			R		
VITRIPA			O	O	
CORSERI			R		
SOLALTI				O	
LEERSIORY				O	
GEUALLE				R	
ALLPETI				O	
SALSP		O	O		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	SALFRAG > SALALBA
3	SUB-CANOPY	3	4	SALFRAG = ACENEGU
4	UNDERSTORY	4	2	ACENEGU > CORSERI
5	GROUND LAYER	1/7	4	VITRIPA = ALLPETI

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES		O		O		R			
STANDING SNAGS		R							
DEADFALL/LOGS	FIRM	R							
	DECAYED								

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 5)
	POLYGON: SWD3-Ha
	DATE: AUG 1/19
	SURVEYOR(S): NJME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACENEGU		D	O	O	
POPTREM	O				
FRAPENS		O			
PRU SP	R				
POPBALS		R			
SAL SP	R		O		
CYNROSS				O	
RHAARUN				A	
TYP SP				R	
THUOCCI			R		
RHUTYPH			O		
SOLCAN				O	– edge of mown area
VITRIP			O	O	
RHACATH			O		
CIRLUTE				O	
SOL SP				O	
ULMPUMI	R				

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	POPTREM >> ULMPUMI
3	SUB-CANOPY	3	5	ACENEGUN
4	UNDERSTORY	4	3	RHACATH = ACENEGUN = SAL SP.
5	GROUND LAYER	5-7	5	CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	O	25-50cm		> 50cm
STANDING SNAGS		R	< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 5)
	POLYGON: FOD3-1a
	DATE: SEPT 17/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PINSTR	R				
ACESASA	O				
ACENEGU		O	O		
THUOCCI		R			
QUERUBR	O				
TILAMER	O	O			
BETPAPY		R			
ULMAMER		O	O		
RHACATH			O		
LONTATA			R		
CYNROSS				25	
SOLCANA				O	
POPGRAN	R				
POPTREM		R	O		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- viewed only from roadside

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 5)
	POLYGON: CUP 1-8a
	DATE: June 6/19
	SURVEYOR(S): NME

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

- patch to transformer divide # portion

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
MORALBA			R	R							
THUOCCI	O										
QUERUBR	A	O	R	O							
PINSTRO	R	O									
RHACATH			O								
CYNROSS				A							
POAPRAT				A							
LONTATA			A								
OSTVIRG			O								
SOLCAND				R							
MAISTEL				R							
PLATMAJO			R								
PINSYLV		R	R								
RANNIGR		R									
BETPAPY		R									
ROBPSEU			O								
PRUSERO		R									
CONMAJA				O							
FRAAMER			O	R							
VIBRIPA			R	R							
ACESACA		R		R							
MELLAEV			R								
PRUVIRG			R								
CARPENS				O							

poor condition

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☒ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	2	1	PINSTRO
2	CANOPY	3	4	QUERUBR >> THUOCCI
3	SUB-CANOPY	3	1	PINSTRO >
4	UNDERSTORY	4	3	LONTATA >> RHACATH
5	GROUND LAYER	3-4	3	CYNROSS >> POAPRAT

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Pop 5)
	POLYGON: CUP1-8b
	DATE: June 6/10
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PINSTRO	R	O			
PINSYLV		O	R		
QUERUBR	A	O	R		
OSTVIRG	R	R			
SILVULG				R	
RUBCRIS				R	
ALLPETI				O	
LEPCAMP				R	
PRUSERO		R	O		
RHACATH			O	O	
VITRIPA			R	O	
ACENEGU			O	R	
ACESASA	R	R	O	R	
RHUTYPH			R	R	
RHURADI				O	
DAUCARO				R	
CHNROSS				PA	
ERIAMER			O	O	
LONTATA			O		
RUBHIRT				R	
SOLCANA				O	
PARPARV				R	
POAPRAT				O	
CIRUTE				O	
MAICANA				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

~50% bare soil

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☒ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	QUERUBR >> PINSTRO
3	SUB-CANOPY	3	4	ACESASA ≥ QUERUBR > OSTVIRG
4	UNDERSTORY	4/5	3	RHACATH > LONTATA
5	GROUND LAYER	6/7	4	CHNROSS > ALLPETI

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm		○	10-24cm		○	25-50cm		> 50cm
STANDING SNAGS			< 10cm			10-24cm			25-50cm		> 50cm
DEADFALL/LOGS	FIRM	○	< 10cm		R	10-24cm			25-50cm		> 50cm
	DECAYED		< 10cm			10-24cm			25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	S-D BRT. (Map 5).
POLYGON:	FOD5-3a
DATE:	July 5/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
QUERUBR	O		O	O	
FRAAMER			O	O	
ACERUBR				R	
CYNROSS				A	
LONTATA			O		
PTEAQUI				R	
GLEHEDE				O	
CARPENS				O	
CORALTE					
SOLFLEX				O	
BETPAPY			R		
PINSTRO			R		
RHACATH			R		
ECHLOBA			R	R	
OSTVIRG		R			
ACESASA	D	A	O	O	
TILAMER		R	R		
SOLCAES				R	
HYRIPA				R	
QUPRAT				R	
→ inclusion of FOD0 - samples					
SOLAMBI		R	R		PIC

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ONOSENS				O	
SKUNKCAB				R	
IMPCAPE				O	
GERRORE				O	

(margin note, bracketing ONOSENS–GERRORE:) seeps along & at base of slope on the west side of [illegible] [illegible] NCL

POLYGON			
SITE:		POLYGON:	
SURVEYOR(S):		DATE:	
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☒ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	4	ACESASA >> QUERUBR
3	SUB-CANOPY	2	5	ACESASA > OSTVIRG > BETPAPY
4	UNDERSTORY	3/2	2	ACESASA > QUERUBR
5	GROUND LAYER	5-7	4	CYNROSS >> CARPENN

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Map 6)
	POLYGON: CUM-1c/D
	DATE: Aug 1/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
POAPRAT				A	
DAUCARO				O	
CHEALBU				R	
AMBARTE				A	
THUOCC	R				
PINSTR	R				
ACEPLAT	R				
BROINER				A	
CYNROSS				A	
SOLCANA				A	
LEPCAMP				O	
POLPERS				R	
SETFABI				O	
TAROFFI				O	
QUERUBR	R				
PICABIES	R				
RHUTYPH			R		
TANVULG				R	
MEDLUPI				R	
ROBPSEU			R		
ARTBIEN				O	
SURVULG			R		
MELALBA				O	
CICINT				O	
ELYREPE					
ACTPLAT		K			
MORALBA			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.
ULMPUMI	O	O	R		
ASTNOVAN				C	
JUGNIGR			R		
LONTATA			R		
ACENEGU		R	R		
VERTHAP				R	
RHACATH			R		
POPTREM		R	O		

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- surveyed along southern edge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	5-7	5	CYNROSS = POASP = SOLCANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE: S-D Bog (Map 7)	
POLYGON: COWIC	
DATE: Sept 26/19	
SURVEYOR(S): HMP	

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
CHAMJ				R	
VITRIPA				R	
PICGLA				R	
THUOCC				R	
CYNROS				O	
SYMNOP				R	
ABIBAL				O	
PICGLA				O	
LARLAR				R	
TSUCAN				O	
ERIANG				O	
SMIRUN				O	
[illegible]				O	
ALNRUG				O	
[illegible]				R	
[illegible]				A	
[illegible]				O	
[illegible]				R	
SYMPIC				R	
[illegible]				R	
[illegible]				R	
[illegible]				R	
[illegible]				R	
[illegible]				R	
LYCSPI				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACENEGU		A			
RHUTYPH			A		
ACEPLAT		O			
RHACATH			O		
FRAPEN		O			
ROSNUT			O		
POPTREM		O			
PINSTR		R			
JUGNIGRA					
ACESAC		R			
ULMAME		R			
THUOCC		R			
SALFRA		O			
[illegible]		R			

- ↳ small pockets of thick, young creek bed. Creek dry @ time of survey

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☑ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☑ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☑ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☑ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	2	JUG NIGRA
3	SUB-CANOPY	3	4	POPTREM > ACENEGU
4	UNDERSTORY	3	4	RHACATH > RHUTYPH > ROSNUT
5	GROUND LAYER	6	4	CYNROS > VITRIPA = PARQUIN

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		H	< 10cm	A	10-24cm	R	25-50cm	N	> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm	N	25-50cm	N	> 50cm
DEADFALL/LOGS	FIRM	R	< 10cm	R	10-24cm	N	25-50cm	N	> 50cm
	DECAYED	R	< 10cm	R	10-24cm	N	25-50cm	N	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☑ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST		
	SITE: S-D ERT	MAP 8
	POLYGON: CUM-16/CUW16	
	DATE: 26SEP19	
	SURVEYOR(S): HP	

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
CYNROSS				D	
CICINTY				R	
DRACARO				O	
VITRIPA				O	
DIPFULL				O	
BRAINER				R	
VICCRAC				O	
PRIVULG				R	
LOTCORN				A	
SOLCANA				A	
PHARUN				R	
SOLDULC				R	
PERMACU				R	
BIDFRON				R	
ECHCRUS				R	
[illegible]				R	
SYMNOVA				R	
CIRARV				O	
AMBTRIF				O	
[illegible]				R	
TR.PRAT				O	
[illegible]				R	
[illegible]				R	
[illegible]				O	
SYMPIC				R	
[illegible]				R	
HESVETR				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACTSPAT		O			
THUOCC		O	O		
FLAANGU	R	O			
RHACATH			A		
PINNIGR		O	O		
DICPUNC		O	O		
ACESPCC	R	O			
ROBPSEU	R	O			
RHUTYPH			O	O	
DACGLOM				R	
POAPRAT				O	
TOXIRADI				O	
CIRVULG				O	
RANQUIN				O	
HYPPUNC				R	
VERTHAP				R	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☑ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☑ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☑ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	1	ACTSPCC > [illegible]
3	SUB-CANOPY	3	3	[illegible]
4	UNDERSTORY	4	3	RHACATH > RHUTYPH
5	GROUND LAYER	6	5	CYNROSS > SOLCANA? LOTCORN

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm	N	> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm	N	25-50cm	N	> 50cm
DEADFALL/LOGS	FIRM	R	< 10cm	R	10-24cm	N	25-50cm	N	> 50cm
	DECAYED	R	< 10cm	N	10-24cm	N	25-50cm	N	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☑ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	S-D BRT MAP 8
POLYGON:	CUT 16
DATE:	26 SEP 19
SURVEYOR(S):	HP

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SOLCANA				A	
DAUCARO				O	
PHAARUN				R	
LATCARN				O	
CYNROSS				A	
[illegible]				O	
MALLANC				O	
SYMERIC				O	
SYMNOVA				O	
VIOSIRA				R	
ICHVULG				O	
VERTHAS				O	
DACGLOM				O	
LINVULG				O	
ECHCRUS				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.
RHACATH			D	A	
ELAANGU			A	A	
PINRESI				R	
PICPUNG		A	A		
RHUTYPH			A	O	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☑ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☑ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☑ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY	3	1	PICPUNG
4	UNDERSTORY	4	3	RHACATH > RHUTYPH
5	GROUND LAYER	6	5	CYNROSS > SOLCANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	R	10-24cm	N	25-50cm	N	> 50cm
STANDING SNAGS		R	< 10cm	N	10-24cm	N	25-50cm	N	> 50cm
DEADFALL/LOGS	FIRM	R	< 10cm	N	10-24cm	N	25-50cm	N	> 50cm
	DECAYED	R	< 10cm	N	10-24cm	N	25-50cm	N	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☑ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	S-D BOG
POLYGON:	CUM1c/CUW1c
DATE:	26SEP19
SURVEYOR(S):	MP

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
VICRIPA				D	
CYNROS				A	
PARQUIN				O	
PTEAQU				O	
SIBTRIDEN				O	
SOLCANA				O	
EQUARV				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
RHACATH			D		
ACE PLAT	R	O			
ULMAMER		R			
POPTRIM		D			
ACENEGU	R	R			
RHUTYPH			R		
ALNRUB		R			
ELAANG		O			
POPDEL		R			

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☑ MINERAL SOIL	☐ RIVERINE	☑ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MATERIAL	☐ BOTTOMLAND		☐ FLOATING LVD	☐ RIVER
	☐ ACIDIC BEDROCK	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDROCK	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDROCK	☑ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLLING UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☑ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☑ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☑ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER	☑ OPEN	☐ INCLUSION	☐ HEDGEROW
☐ SHALLOW WAT.	☐ SHRUB	☐ COMPLEX	
☐ SURFICIAL DEP.	☑ TREED		
☐ BEDROCK			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	1	ACENEGU = ACEPLAT
3	SUB-CANOPY	2	3	POPTRE/M > ACE PLAT > ELAANG
4	UNDERSTORY	4	3	RHACATH > RHUTYPH
5	GROUND LAYER	6	5	CYNROS > VITRIPA > SOLCANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm	N	> 50cm	
STANDING SNAGS		R	< 10cm	R	10-24cm	N	25-50cm	N	> 50cm	
DEADFALL/LOGS	FIRM	R	< 10cm	R	10-24cm	N	25-50cm	N	> 50cm	
	DECAYED	R	< 10cm	N	10-24cm	N	25-50cm	N	> 50cm	

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☑ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 1)
	POLYGON: CUM1-1d
	DATE: SEPT 26/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
CUNROSS				A	
ACENEGU	R	R			
BROINER				A	
POAPRAT				A	
SOLCANA				A	
RHACATH			R		
ELYANGU			R		
VIBRPA			O	R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☑ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☑ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☑ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☑ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	2	1	ACENEGU N
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	6/7	5	CUNROSS = BROINE = SOL CANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Mod 10)
	POLYGON: CUMI-1d / CUWI-d
	DATE: SEPT 26/19
	SURVEYOR(S): NM=

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ROBPSEU	O	O	O		
PINNIGR	O				
ASTERIC				O	
PHRAUST				O	
CICINTY				R	
DAUCARO				O	
LOTCORN				O	
SO-CANA				O	
SUMNOAN				O	
ACENEGU	O	A	O		
AMELAEV			R		
THUOCCI		R	R		
POPDELT	R				
CYNROSS				A	
POA PRAT				A	
BROINER				O	
SALALBA	R				
RHACATH			O		
FRAPENN			R		
CARARBO			R		
VITRIPA			O	O	
RHURADI				O	
RHUTYPH			O		
JUNVIRG		D			
ULMPUMIL		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.
LONTATA			O		
VERNAST				O	
POPTREM		R			
BETPAPY			R		
POPBALS			O		
SALFRAG	R				
UMIAMER	R	R			
MELOFFI				R	
ELYREPE				O	
LOTCORN				A	
CICINTY				O	
MALPUMI		R			
MORALBA			R		
SALERIO			R		

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- powers installed along access & bridge
- edge paths
- includes powerline & trailheads

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☒ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	PINNIGR > ROBPSEU = ACENEGU
3	SUB-CANOPY	3	3	ACENEGU >> ROBPSEU
4	UNDERSTORY	3	1	ACENEGU > AMELAEV
5	GROUND LAYER	5-7	5	POA PRAT = CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 10)
	POLYGON: CUM1-1e
	DATE: Oct 4/19
	SURVEYOR(S): NJM=

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
POAPRE				D	
SYMRUGO				D	
SOLCANA				A	
ASTNOVAE				A	
RUBIDA			2A		
FRARVE				R	
SONARVE				R	
PRUPENN				R	
SALDULC				R	
SCIVAL				R	
TYPHA SP				R	
VERLAST				R	
DAUCARO				O	
ASTLAT				O	
EUTNGRAM				O	
VICCRAC				O	
RUBOCCI			R		
PINSTRO	R	R	R		
SUMERIO				O	
TNUOCCI			R		
PROINER				O	
PRUPENN			O		
CORURA				O	
ELAANGU	R		O		
PRUNST			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.
PINNIGR	R				
VERTHAP				R	
ACENEG	R				
POPGRAN		R			
TSUNIRG			R		
ASTERIC				O	
RHURADI				O	
DORCOMP				O	
PLALANC				O	
POPDELT		R			
ULMPUM1	R				
POPTREM	O	O	O		
RHACATH			O		
QUERUBR	60				

at base of slope

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

NOTE - woody species present in community

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: S-2 BRT (Map 10)
	POLYGON: CUWld
	DATE: OCT 4/19
	SURVEYOR(S): [illegible]

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ROBSTR	A		A		
CUNROSS				D	
CORIAR				O	
[illegible]				O	
VITRIPA		R	O	O	
PINNIGR	O				
MYRIPA			R		
ALNPET				O	
BRONER				A	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- observation from station sign → [illegible]

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☒ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☒ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	3	4	ROBSTR >> PINNIGR
3	SUB-CANOPY	3	4	ROBSTR
4	UNDERSTORY			
5	GROUND LAYER	5-1	5	PORPRA > CUNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm	○	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: S-D BRT
	POLYGON: CUWIe
	DATE: SEPT 26/19
	SURVEYOR(S): MME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SOLCANA				O	
TUSFARF				R	
CUNJOSS				O	
PINSTRO		O			
PICGLAU		O			
ACENEGU		A			
THUOCCI					
VITRIPA			O	O	
PARINSE			R	R	
RHACATH			O		
PHRAUST				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- viewed from community edge where access was available / bridge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT
	POLYGON: MAS2-6
	DATE: SEPT 26 19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.	SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
PHRAUST				D							

LSL

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM
- ☐ TERRESTRIAL
- ☒ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☒ SHALLOW WAT.
- ☐ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☐ MINERAL SOIL
- ☐ PARENT MATERIAL
- ☐ ACIDIC BEDROCK
- ☐ BASIC BEDROCK
- ☐ CARB. BEDROCK

TOPO. FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☐ TABLELAND
- ☐ ROLLING UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE/CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH/BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☒ CULTURAL

COVER
- ☒ OPEN
- ☐ SHRUB
- ☐ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING LVD
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMM. TYPE
- ☐ INCLUSION
- ☐ COMPLEX

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☒ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

OTHER
- ☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4	5	PHRAUST

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT
	POLYGON: MAS26
	DATE: SEPT 26/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PHRAUST				D	
POPTREM	O				
ONOSENS				O	
CUNROSS				A	
MATTSTR				R	
SOL SP				O	
SALFREG	R				
POPDELT		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	3		POPTREM
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			PHRAUST >>> ONOSENS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST

SITE:	S-D BRT
POLYGON:	FOM2C
DATE:	SEPT 26/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PINSTRO	A				
LONTATA			R		
QUERUBR	O				
RHACATH			R		
PRUSERO		R			
CYNROSS				A	
BETPAPY		R			
SOLCANA				R	
CARPENS				R	
ONOSENS				R	
THUOCCI			R		
MATTSTRU				R	
POPALBA		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

LSL

POLYGON

SITE:		POLYGON:
SURVEYOR(S):		DATE:
UTMZ:	UTME:	UTMN:

- surveyed only along southern edge

POLYGON DESCRIPTION:

SYSTEM
- [x] TERRESTRIAL
- [ ] WETLAND
- [ ] AQUATIC

SUBSTRATE
- [ ] ORGANIC
- [x] MINERAL SOIL
- [ ] PARENT MATERIAL
- [ ] ACIDIC BEDROCK
- [ ] BASIC BEDROCK
- [ ] CARB. BEDROCK

TOPO. FEATURE
- [ ] LACUSTRINE
- [ ] RIVERINE
- [ ] BOTTOMLAND
- [ ] TERRACE
- [x] VALLEY SLOPE
- [ ] TABLELAND
- [ ] ROLLING UPLAND
- [ ] CLIFF
- [ ] TALUS
- [ ] CREVICE/CAVE
- [ ] ALVAR
- [ ] ROCKLAND
- [ ] BEACH/BAR
- [ ] SAND DUNE
- [ ] BLUFF

HISTORY
- [x] NATURAL
- [ ] CULTURAL

PLANT FORM
- [ ] PLANKTON
- [ ] SUBMERGED
- [ ] FLOATING LVD
- [ ] GRAMINOID
- [ ] FORB
- [ ] LICHEN
- [ ] BRYOPHYTE
- [ ] DECIDUOUS
- [ ] CONIFEROUS
- [x] MIXED

COMMUNITY
- [ ] LAKE
- [ ] POND
- [ ] RIVER
- [ ] STREAM
- [ ] MARSH
- [ ] SWAMP
- [ ] FEN
- [ ] BOG
- [ ] BARREN
- [ ] MEADOW
- [ ] PRAIRIE
- [ ] THICKET
- [ ] SAVANNAH
- [ ] WOODLAND
- [x] FOREST
- [ ] PLANTATION

SITE
- [ ] OPEN WATER
- [ ] SHALLOW WAT.
- [x] SURFICIAL DEP.
- [ ] BEDROCK

COVER
- [ ] OPEN
- [ ] SHRUB
- [ ] TREED

COMM. TYPE
- [ ] INCLUSION
- [ ] COMPLEX

OTHER
- [ ] HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO):
1	EMERGENT			
2	CANOPY	1	4	PINSTRO > QUERUBRA
3	SUB-CANOPY	3	1	POPALBA = BETPAPY
4	UNDERSTORY	4	1	RHACATH
5	GROUND LAYER	6/7	5	CYNROSS >>> CARPENS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	O	10-24cm	A	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

- [ ] PIONEER
- [ ] YOUNG
- [x] MID-AGE
- [ ] MATURE
- [ ] OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D RT (Map 10)
	POLYGON: FOD3-1b
	DATE: AUG 12/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
POPGRAN	D		R		
PINSTRO	R	O	O		
CUNROSS				D	
ALNINCAN			R		
POPBAL				A	
SOLCAN				O	
PRUSERO		R	R		
QUERUBR	R	R			
ACERUBR	R				
BETPAPP	R				
ACENEGU		R	R		
RHACATH			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- surveyed along southern edge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	POPGRAN >> QUERUBR > PINSTRO
3	SUB-CANOPY	3	3	POPGRAN >> PINSTRO
4	UNDERSTORY	4	2	POPGRAN > >> PINSTRO
5	GROUND LAYER	6/7	4	CUNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Map 11)
	POLYGON: CUP1-3 (north side)
	DATE: OCT 10/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
JUGNIGR	A	O			
SALSP	R	R			
QUEMACR	R				
ACERUBR	R				
SYRVULG			R		
VITRIPA			O	A	
SOLCANA				A	
FRAPENN (several by road)	R	R	R		
ACENEGU		R	R		
MALSP.			R		
EURRUGO				O	
RUBOCCI			O		
PRUVIRG			O	O	
PRU SP			R	R	
ULMAMER		R			
TILAMER			R		
ACERAT		R			
PICGLAU			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- surveyed along south edge from within ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☒ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	1	1	QUEMACR = ACERUBR
2	CANOPY	2	4	JUGNIGR
3	SUB-CANOPY	3	3	JUGNIGR
4	UNDERSTORY	4	3	PRUVIRG ≥ VITRIPA
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		C	< 10cm	C	10-24cm	O	25-50cm	O	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-PRT (Map 11)
	POLYGON: CUWtf
	DATE: OCT 10 12
	SURVEYOR(S): VMC

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
THUOCC				O	
VITRIPA			O	O	
SAL SP	R				
ACENEGU	D	O	D		
JUGNIGR		R			
RHACATH			A	A	
VIBLANT			R		
FRAPENN					
AIL ALTI			R		
CORSER			R		
CHAMAED				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
MAS2-1 Under					
TYPANGU				D	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☑ RIVERINE ☑ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☑ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☑ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☑ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☒ INCLUSION ☐ COMPLEX <0.01 ha	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	ACENEGU > JUGNIGR
3	SUB-CANOPY	3	1	ACENEGU
4	UNDERSTORY	4	4	RHACATH > VITRIPA
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☑ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 11)
	POLYGON: MDS2-1a /SWT2-2a
	DATE: JUNE 6/19 and AUG 12/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPANGU				D	
TYPLATE				O	
LYTSALI				O	
CARVULI				O	
SOLDULC				R	
ASTLANC				R	
PHAARUN				R	
RHACATH			R		
EUPTACU				O	
VITRIPA				R	
CORSERI			R		
VERHAST				O	
CIRARVE				O	
SOLCANA				O	
EPILIPS				R	
SOLDULC				R	
EQUARVE				O	

SPECIES CODE SWT 2-2	LAYER 1	2	3	4	COLL.
SALEXIG			A		
SALALBA		R			
SOLDULC				R	
VERHAST				R	
PHAARUN				R	
JUGNIGR		R			
TYPANGU				O	
ACESACC			R		
VIROPUL			R		
GALMOLL				O	
ASTLANC				R	
SALSP		R			
EPILIPS				R	
EQUARVE				R	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- survey at from south and west edges

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☒ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☒ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO):
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY	3H	4	SALSP
5	GROUND LAYER	4	5	TYPANGU

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Map 11)
	POLYGON: SWD3-4b (south side)
	DATE: [illegible]
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SALSP.	R	O			
JUGNIGR		O			
RUPRUG				R	
ACENEGU	O	O	R		
EURMACR				R	
ACEXFREE	R				
ILOSP				O	
ALLPET				R	
RUBCET			O		
MALSP			R		
VITRIP		R	O	O	
MAISTEL				R	RIC
VERHLST				R	
SOLCANA				O	
FRAPENN		O	O	R	
IMPACAPE				R	
TYPLANGU				O	
PUBDUST				R	
TYPLAT				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- treed fence within road ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☒ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☒ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			ACEXFREE
2	CANOPY	2	2	SALIX SP > JUGNIGR ≥ ACENEGU
3	SUB-CANOPY	3	2	JUGNIGR = ACENEGU > SALSP
4	UNDERSTORY	4	3	RUBCETN > LONTATA
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm	P	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Mud!!)
	POLYGON: CUM1-Ha/CUT1a (South side)
	DATE: OCT 10/11a
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
RHUTYPH			A		
NITRIB			O	O	
CYNROSS				A	
RHACATH			A		
DAUCAR				O	
ASTERIC				O	
ASTNOVA				O	
SOLCANA				O	
BROINER				A	
JUNVIRG			R		
ACEPLAT		R			
LONTATA			R		
ROSAMULT			R		
CICINTY					
ASTLAE				O	
LINVULG					
COTCOGG			R		
MOLPUN		R			
PRUNSE				R	
JUGNIGR		R			
CONCANA				R	
SONARVE				O	
ORRVIR				O	
LEOCARD				R	
LYMPUN			D		
PICABIES		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

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POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☒ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK		Road berm	☒ OPEN ☒ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			RHUTYPH = RHACATH
4	UNDERSTORY			
5	GROUND LAYER	6/7	5	CYNROSS = BROINER

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Maps 11-17)
	POLYGON: CUM1-1f
	DATE: Sep- 26 and Oct 8, 9/19
	SURVEYOR(S): VMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SOLCANA				A	
CUNROSS				D	
HELTUBE				C	
HACVIRG				O	
RUBOCC!			R		
ASTERIU				O	
ASTNOAN				O	
LONTATA			R		
MALSP		R	R		
SOLGGA				O	
TANOCC!			R		
VITRIPA			R	O	
PODPRET				A	
ASTLATE				R	
ACENEGU		R			
QUEMACR			R		
RHACATH			O		
VIBLANT			R		
PRUSP			R		
ACEGINN			R		
SONARVE				O	
PRUVIRG			R		
DIPSYFU				R	
SETVIR!				O	
AMBARTE				O	
JUNVIRG			R		
SETVIR!				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.	
CONCANA				O		
PLERUST				O/A		- ditches
TARAOFF!				O		
DAUCARO				O		
PLAMAJO				O		
VICCRAC				O		
INULEL!				O		- ditches
MELALBA				O		
CICINTY				R		
LYTSALI				R		- ditches
ELAANGU			O			
TYPANGU				O/A		- ditch 20
BROINER				A		
AGRSTOL				O		
VERHAST				R		- ditches
DANCAPI				A		
CIRARVE				O		
DIPSYFU				R		
SURVULG			R			
ELYREPE				O		
ASTLANC				O		
ERAAMER			O			
JUGNIGR	R	O	O			
GALMOLL				O		
AMELAEV			R			
PINNIGR		R				

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☒ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS		< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM	< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED	< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
CORSTO			O		
PHAARU				O	
EUPMACU				R	
EUTGRAM				O	
TUSFARF				O	
CIRARVE				O	
ECHLOBA			O		
ARCLAPP				R	
IMPCAPE				R	
TANVULG				O	
LINVULG				O	
ACESAS			R		
FRAPENN			O		
ULMPUMI			O		
AMBARTE				O	
POTSIMP				R	
PARINSE				O	
DACGLOM				O	
ASCSYRI				O	
ELYREPE				R	
JUNTENU				R	
ALLPETI				R	
POPALBA		O	R		

SPECIES CODE	LAYER				COLL.
	1	2	3	4	

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER				COLL.
	1	2	3	4	

SPECIES CODE	LAYER				COLL.
	1	2	3	4	

SOIL ASSESSMENT:	1	2	3	4
TEXTURE				
DEPTH TO MOTTLES	g =	g =	g =	g =
DEPTH TO GLEY	G =	G =	G =	G =
DEPTH OF ORGANICS				
DEPTH TO BEDROCK				
MOISTURE REGIME				

SOIL PROFILE

PLANT SPECIES LIST	
SITE:	SD-BRT (Map 13)
POLYGON:	SWT2-2
DATE:	June 6/19 and Sept 26/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPANGU				O	
SALFRAG		R	O		
VERHAST				R	
CARSTI				R	
LYTSALI				O	
IMPCAPE				R	
VIBOPUL			R		
CORSERI			O		
TYPLATE				R	
POPBAL				O	
RHACATH			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- very narrow riparian

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☒ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☒ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO):
1	EMERGENT	3	1	SALFRAG
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY	4	4	SALFRAG ≥ CORSERI
5	GROUND LAYER	4-6	5	TYPSP > LYTSALI

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Map 13)
	POLYGON: CUW1g
	DATE: Oct 9/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ELANGU		O	O		
ACENEGU		O	O		
VITRIRA			O	O	
RHUSTYPH			O		
ULMPUMI		R	O		
ULMAMER		R	R		
FRAPENN			R		
CORNROSS				A	
RHACATH			O		
ROSAMULT			R		
JUNVIRG		O	O		
RUBPUBU		R			
SOLDULC				O	
DIPSYLV				O	
SOLCANA				O	
POPTREM		R			
GEUMALE				R	
ALLPETI					
SALSP.		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☑ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☑ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☑ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☑ SHRUB ☑ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	3	2	POPTREM = ELMANGU = SALSP
3	SUB-CANOPY	3	3	ULMPUMI ≥ ACENEGU
4	UNDERSTORY	4/5	3	RHACATH ≥ RHUTYPH
5	GROUND LAYER	6/7	4	CORNROSS > ALLPETI

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm	○	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☑ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE: SD-BRT (Map 13)	
POLYGON: CUW1h	
DATE: Oct 9/19	
SURVEYOR(S): NMF	

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

	SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
	JUGNIGR	R	R	O		
several dy dead →	PINSYLV	O	O			
	LONTATA			O-R		
	ULMAMER	R	O			
	LEOCARD				R	
	ACENEGU	O	O	O	O	
	AESHIPP			R		
	VITRIRA		O	O	O	
	RHUTYPH			R		
	TUSFARF				R	
	ALLPETI				O	
many in canopy dead →	FRAPENN			O		
	ROBPSEU	R				
	PARTINSE			O	O	
	VITRIRA				O	
	PRUVIRG			O-A		
	GEUALLE				O	
	ACEPLAT		R	R		
	RHACATH			O		
	CRAT SP			R		
	RIBAMER			R		
	ULMPUMI	O	R	R		
	SOL SP				O	
	PULOFFI				+A	
	CYNRUSS				O	
	PICGLAU			R		

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
SALALBA	R				
ELAANGU		R			
TILAMER		R			

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POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM: ☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC

SUBSTRATE: ☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK

TOPO. FEATURE: ☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF

HISTORY: ☐ NATURAL ☒ CULTURAL

PLANT FORM: ☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED

COMMUNITY: ☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION

SITE: ☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK

COVER: ☐ OPEN ☐ SHRUB ☒ TREED

COMM. TYPE: ☐ INCLUSION ☐ COMPLEX

OTHER: ☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	1	2	PINSYLV > ULMPUMI = ULMAMER
2	CANOPY	3	3	ACENEGU >> FRAPENN
3	SUB-CANOPY	3/4	3	ACENEGU >> FRAPENN
4	UNDERSTORY	4	4	PRUVIRG ≥ RHACATH > LONTATA
5	GROUND LAYER		4	UNKN SPOTTED PLANT

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	O	25-50cm	O	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:
☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 13)
	POLYGON: CUM1-19
	DATE: OCT 9/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
BROINER				A	
JUNVIRG			O		
GALAPAR				O	
CYNROSS				D	
ELAANGU		R	O		
VITRIPA		O	O	O	
ULMPUM		R	R		
ACENEG		R			
RHUSTYPA			R		
SOLCANA				O	
PICGLAU		R			
PICDUNG	R				
PINSILV	R				
CENMACU				O	
POLCUSP			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

1 plot

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			CYNROSS>BROINER

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT
	POLYGON: #12 (by plaza)
	DATE: Oct 9/14
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
LONTATP			O		
SOLCANA				O	
EUPESUL				R	
PICABIES	R				
ULMAME	O	R	O		
RHACATH			A		
MORALBA			R		
VITRIPA			O	O	
RHUTYPH			R		
ACEPLAT		R			
DAUCARO				O	
CERCANA		R			
INUHELE				R	
SOLSP	R	R			
TUSFARF				O	
ACENEGU			O		
PSTERIO				R	
CHEALBU				R	
CUNROSS				O	
ROBPSEU	O				

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- associated with what appears to be an intermittent watercourse
- very disturbed

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☒ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		◯	< 10cm	◯	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BCT (Map 13)
	POLYGON: H3
	DATE: Oct 9/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
JUGNIGR	O	O	R		
BROINER				A	
POAPRAT				A	
VITRIPA			O	O	A
ULMPUMI	O	R	O		
RHACATH				O	
ACESACC	R	R			
ACENEGU	R	O	R		
PINNIGR	O	R			
ACEPLAT	R				
SOLCANA				O	
RUDHIRT				O	
ALLPETI				A	
DCERUBR			R		
THUOCCI		R			
JUNNIRG		R	R		
RHUTYPH			O		
CYNROSS				A	
FRAAMER			O		
PICPUNG		O			
RUBOCCI			R		
ULMAMER	R				
PICABIES	R				

SPECIES CODE	LAYER 1	2	3	4	COLL.
C					

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☑ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☒ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	O	25-50cm		> 50cm	
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm	
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm	
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm	

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD - BRT (Map 13)
	POLYGON: CUMI-6/CUTI-1c
	DATE: Oct 9/19
	SURVEYOR(S): MNE

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ELAANGU			O		
RHUTYPH			A		
ACENEGU		R			
SOLCANA				A	
PURAUST				O	
VITRIA			O	O	
CYNRUBI				A	
JUGNIGR			R		
POAPRAT				A	
BROINER				A	
ASTNOVAN				R	
ASTERIO				O	
LONTATA			R		
RUMCRIS				R	
VICCRA				O	
ROSACATH			O		
PHOARUN				O	
PRUPENN			R		
ULMPUMI	R	R			
ACESACC		R			
JUNVIRG			R		

- 1g overlooked

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	3		ULMPUMIL > ACESACC
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY	4	2	RHUTYPH >> ELAANGU
5	GROUND LAYER			GRAMINOID > SOLCANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	R	10-24cm		25-50cm		> 50cm	
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm	
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm	
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm	

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 13)
	POLYGON: CUM-12/CUW12
	DATE: Oct 9/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
EUTGRAM				O	
ACENEGU	R	R	O		
JUGNIGR	R	O	O		
DIGLAUC	R				
FRAAMER		R			
ACEPLAT		R			
PHOARUN				R	
INUNELE				O	
PUTSIMP				O	
POAPRAT				A	
CIRARVE				O	
TARUFFI				O	
BRUNER				O	
ULMAMER		R			
ACESASA	R				
RHACATH			O		
JUNVIRG		R	O		
IMPCAPE				R	
EUPPERE				R	
CARSTIP				R	
CYNROSS				A	
PRUNUST				A	
SONARVE				O	
LYTSALI				R	
ASTNOAN				R	
ASTLATE				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
ELAUMBE			R		
MALPUMI			R		
SOLNEMA				R	
VITRIPA				O	
DAUCAR				O	
ULMAMER		R			
CENMACU				2*	
SOLGIGA				R	
RHACATH			O		
PRUVIRG			R		
PRUSP			R		
DACGLOM				A	
ACEGINN			R		
VITRIPA				O	
MELALBA				O	
CORVARI				O	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER FOD		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	3	4	JUGNG = ACENEGU
3	SUB-CANOPY	3	3	JUGNIG ≥ ACENEG > ACESASA
4	UNDERSTORY	4	3	ACENEGU > RHACATH
5	GROUND LAYER	5-7	5	VARIOUS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm	○	10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-PRT (Map 14)
	POLYGON: CUMI-1f / CUWtf
	DATE: OCT 7/14
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
BROINER				D	
TAXVULG				A	
ACENEGU		R	R		
VITRIPA			O	O	
POAPRAT				A	
LINVULG				O	
CIRARVE				O	
PHADRUN				O	
SALXPEN	R				
ASCSYRI				R	
DAUCARO				O	
TROPEI				R	
GALAPAR				O	
AMBTRIF				R	
LIMBARTE				R	
LYCCORN				O	
SOLDUL				R	
RUMCRIP				R	
TMPHANGU				O	
PHRAUST				O	
VITRIPA				O	
ULMAMER			R		

ditch

SPECIES CODE	LAYER 1	2	3	4	COLL.
ELAANGU		O	O		
ACENEGU	O	O	O		
VITRIPA		O	A	O	
RHACATH			O		
ULMPUMI	O				
ULMAMER	R	R			
CYNROSS				A	
ALLPETI				O	
BROINER				R	
ASTERIO				R	
LITOFFI				R	
GEUALLE				R	
CIRUTE				R	
TUSFARF				O	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- assessed from roadside
- very disturbed

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	1	ULMPUMI
3	SUB-CANOPY	3	4	ACENEG >> ELAANGU
4	UNDERSTORY	4	4	ELAANGU > RHACATH
5	GROUND LAYER	6/7	4	CYNROSS >> ALLPETI

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-RRT (Map 14)
	POLYGON: CUN 11 (north side of Kingston)
	DATE: OCT 8/14
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
JUGNIGR		O			
RHACATH			O		
ACENEGU		D/O A	O		
VITRIPA		O	O	O	
POPALBA	O	R	O		
FRAPENN		R	O	O	
ACESACC	R				
POPGRAN	R				
CORSERI			R		
SOLCANA				O	
PHRAUST				R	
ELAUMBE			R		
LEOCARD				R	
CUNROSS				A	
HYPPERF				R	
HACVIRG				R	
PARINSE			R	R	
ACEXFREE		R			
ECHLORA				R	
ACEPLAT		R			
ALLPET1				O	
LITHOFF1				R	
ELYREPE				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	2	POPALBA >> POPGRAN
3	SUB-CANOPY	2	4	ACENEGUN > JUGNIGR
4	UNDERSTORY	4	3	RHACATH > POPALBA
5	GROUND LAYER	5-7	5	CUNROSS > SOLCANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm	○	10-24cm	○	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD - BRT (Map 16)
	POLYGON: N4
	DATE: OCT 7/14
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PLAMAJOR				O	
POAPRAT				A	
SETVIRI				A	
TRIREPE				O	
PINNIGR	O				
VITRIPA			O	O	
PYRPRIE	R				
ACENEGU		O	O		
SOLCANA				O	
CYNOSS				O	
THUOCCI		R			
SONARVE				R	
LOTCORN				A	
TAROFFI				O	
FESARUN				O	
TRIPRAT				O	
LINVULG				O	
DAUCARO				O	
PICPUNG	O	R			
RHACATH			O		
ACEPLAT	R	O			
ACEGRUN		R			
ULMPUMI	R				
JUGNIGR	R				
GYMDRYO	R				
ACESOSA	O				

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 17)
	POLYGON: CUWj
	DATE: OCT 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
RUBDSEU					
POPDELT	R				
ACESACC	O				
ACENEGU		A			
ACERUBR	R				
PINSYLV	R				
VITRIPA		O	A	O	
ACEPLAT			R		
CERCANA	R				
ULMPUMI	R				
ROSMULT			R		
RHACATH			O		
JUGNIGR		R	R		
ULMAMER		O	R		
ACEXFREE	O				

SPECIES CODE	LAYER 1	2	3	4	COLL.

planted on private property in manicured area

naturalized

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- observed from within the ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	4	ACER SP >>
3	SUB-CANOPY	2	4	ULM SP >> PINSYLV
4	UNDERSTORY	2	4	ACENE GUN >> ACEPLAT
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	A	25-50cm	R	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	SD - BRT (Maps 11 to 17)
POLYGON:	M - PICKERING
DATE:	OCT 10/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
POACOMP				A	
POAPRAT				A	
ACEPLAT	A	O			
TAROFFI				A	
LOTCORN				A	
PLAMAJO				A	
TILAMER	R	R			
JUGNIGR		R	O		
GINBILO					
QUERUBR		O			
PICGLAU	R	R			
PRUNIGR		O			
ULMPUMI	O	R			
ELAANGU			R		
PICPUNG	O				
ACESASD		O	O		
QUEMACR			R		
ACESASA	O	O	O		
TILCORD	O	O	R		
GYMDIOI		O	O		
POPALBA			R		
THUOCCI			O		
ACENEGU		O	R		
PICABIES	O	O			
PHAARUN				R	
JUNVIRG			O		

SPECIES CODE	LAYER 1	2	3	4	COLL.
RHUAROM			O		
TRIREPE				O	
PLALANC				A	
PHRAUST				O/A	
TYPANGU				O/A	
VITRIPA		R			
INULELE				O	
DAUCARO				O	
POPDELT		R	R		
ASTLANC				D	
SOLCANA				O	
BIDFRON				R	
POLPERS				R	
SURRETI			O		
PICABIE	O				
RHACATH			O		
RHUTYPH		R			
JUNAMER		R			
GLETRIA		O	O		
FRAAMER		R			
MALSP.		O			
ROBPSEU	O				

horticultural

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-PRT (Map 18)
	POLYGON: CUW1k
	DATE: Oct 4/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ULMPUMI		R			
FRAPENN		O			
VITRIPA		R	O to A	R	
ACENEGU		O	O		
POPTREM	R	R			
ASCSYRI				R	
SOLCANA				O	
CUEMACR			R		
TILAMER	O				
JUGNIGR	O	A	O		
DIPSYLV				R	
SYMLATE				O	
ELAUMBE			R		
RHACATH			O		
AESHIPP		R			
TAROFFI				O	
ARCMINU				R	
CYNROSS				O	
LONTATA			R		
COTCOGG			R		
PRUVIRG			R		
ALLPETE				A	
CARPENS				R	
ARCMINU				R	
GEUCANA				R	
ACESASA		O			

SPECIES CODE	LAYER 1	2	3	4	COLL.
POPALBA			R		
ULMAMER		O			
ROBPSEU		R			
SCIVAL				R	
XANSTRU				R	
HELTUBE				O	
JUSFARF				R	
PHAARUN				R	
MATSTRU				R	
HACKVIRG				R	
POPDELT		R			
RHUTYPH			R		
ULMPUMI			R		

LGL LIMITED

POLYGON		
SITE:		POLYGON:
SURVEYOR(S):		DATE:
UTMZ:	UTME:	UTMN:

- surveyed from access
- several gaps in community
- high proportion of non-mature / invasive species
- disturbed

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	2	1	SALSP > POPTREM
2	CANOPY	2	4	JUGNIGR >> ACENEGUN > ULMAMER
3	SUB-CANOPY	3	3	JUGNIGR = ACENEGU
4	UNDERSTORY	4	2	RHACATH > LONTATA
5	GROUND LAYER	5-7	4	ALLPETI > SOLCANA = CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	O	25-50cm		> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 18)
	POLYGON: CUM1
	DATE: OCT 7/19
	SURVEYOR(S): JME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ULMAMER	O	O	O		
POPTREM	O				
ACENEGU	O	O	O	R	
RHUSTYPH			R		
FRAPENN		O			
VITRIPAR			O R A	O	
JUGNIGR	O	O	O		
POPDELT	O				
SOLCANA				A	
LYTSALI				R	
POAPRAT				O	
PHRAUST				R	
SONARVE				O	
TILAMER	R				
SALFRAG	O				
RUBOCCI			O		
LONTATA			R		
IMPCAPE				R	
MATTSTRU				R	
RIBAMER			R		
AEGPODA				A	P/C
CIRROSS				A	
GEUCANA				R	
EUPRUGO				R	
CIRLUTE				O	
RHACATH			O		

SPECIES CODE	LAYER 1	2	3	4	COLL.
TRADUB				R	
ALLPET				A	
ACESACC	O	O	R		
ROBPSEU		R			
SALALBA	O		R		
ACEPLAT		R			
ULMPUMI		O	R		
DICCANA				R	
TAROFFI				O	
GLEHEDE				O	
SALERAG	R				
DAUCARO				O	
VITRIPA		R	O	O	
QUERUBR	R				
ULMAMER	R				
ASTNORN				R	
VERLANA				R	

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- erosion unassessed, very disturbed
- observations only from bottom edge of community
- Dufferin Trail system

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☑ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	POPDELT ≥ POPTREM > JUGNIGR
3	SUB-CANOPY	3	4	ACENEGU > ULMAMER SACESACC
4	UNDERSTORY	4	3	ACENEGU > ULMAMER
5	GROUND LAYER	6/7	4	UNKNOWN > ALLPET

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	O	25-50cm		> 50cm
STANDING SNAGS		R	< 10cm	O	10-24cm	R	25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D RRT (Map 18)
	POLYGON: CUM-1h
	DATE: OCT 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
POAPRAT				D	
SOLCANA				O	
ASTNOAN				O	
CYNROSS				A	
RHUTYPH			O		
PICABIE		R			
VICCRAC				O	
FESRUBN				O	
PRAPENN				O	
ULMPUMI		R			
ACENEGU	O	R			
ACESACC	R				
JUGNIGR		R	R		
PICPUNG	R				
BROINER				O	
CICINTY				R	
DAUCARO				O	
ASCSYRI				R	
ASTERIO				O	
EUTGRAM			O		
FRAPENN	R				
POPTREM	R				
VITRIPA			R	R	
TAROFF				O	
PLAMAJO				O	
SONARVE				O	
ASTLATE				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.
MALPUMI			R		
ROBPSEU			R		
CIRARVE			O		

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☒ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	5-7	5	POAPRAT > CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

* = Planted

PLANT SPECIES LIST

SITE:	SD-BRT (Map 19)
POLYGON:	CUM1-11
DATE:	Oct 4/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
* ACEPLAT	R				
* QUERUBR		R			
* ACESASA		O	O		
* ACESACC			R		
LUTCORN				A	
CIRARVE				A	
BROINER				A	
ELYREPE				A	
VICCRAC				O	
FESARUN				O	
* THUOCCI			R		
SYMNOAN				O	
SOLCANA				O	
SYMERIO				O	
RUMCRIS				R	
POAPRAT				A	
TAROFFI				O	
SONARVE				O	
VERTHAP				R	
LARLARI			R		
OENBIEN				R	
QUEMACR		O			
ACERUBR		R			
POPTREM			R		
CRAT SP		R			
CIRVULG				R	
HELIANTH SP				R	

↳ horn + dd
↳ rosette leaves only
↓ tube

SPECIES CODE	LAYER 1	2	3	4	COLL.
PICGLAU			R		
LINVULG				O	

LGL LIMITED

POLYGON

SITE:		POLYGON:
SURVEYOR(S):		DATE:
UTMZ:	UTME:	UTMN:

- numerous tree/shrub seedlings planted

POLYGON DESCRIPTION:

SYSTEM: ☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC

SUBSTRATE: ☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK

TOPO. FEATURE: ☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF

HISTORY: ☐ NATURAL ☐ CULTURAL

PLANT FORM: ☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED

COMMUNITY: ☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE: ☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK

COVER: ☐ OPEN ☐ SHRUB ☐ TREED

COMM. TYPE: ☐ INCLUSION ☐ COMPLEX

OTHER: ☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	2	1	ACER SP > CRAT SP
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	5-7	5	GRAMINOID dominated

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:
☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 19)
	POLYGON: CUT1b/CUW1b
	DATE: OCT 4/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SOLCANA				A	
RHUTYPH			O		
SETPUMI				R	
POAPRAT				A	
TILCORD		R			
GAL APAR				A	
TWOCCI		R			
PINSTRO		R			
SYMERIO				O	
SYMNOAN				O	
ULMAMER	R	R			
CIRARV				O	
TUSFARF				R	
ACESASA		R			
ACEPLAT		R			
BROINER				O	
ACENEGU					
TILAMER			R		
PHRAUST				R	
CORSERI			A		
POPTREM			R		
SALXPEN	O	O			
ELAANGU	O	O			
RHACATH			O	O	
FRAPENN	R	O			
CHNROSS				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.
SALEXIG			O		
JUGNIGR		R			
ACESACC	R	O			
PINNIGR		O			
VITRIPA		R	O	O	
VIBOPUL			R		
INUHELE				O	
SONARVE				O	
DACGLOM				R	
PARINSER			R	R	
CORVARI				O	
SYMLATE				O	
SALERIO			R		
PICGLAU		R			
LARSERR				R	
LONTATA			R		
JUNVIRG		R			
PINSYLV		R			

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☒ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☒ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☒ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	SALALBA(WEEP) > ELAANGU
3	SUB-CANOPY	3	3	ACENEGU ≥ PINNIGR
4	UNDERSTORY	4	4	CORSERI ≥ SAL SP
5	GROUND LAYER	5-7	5	SOLCANA > > > PHRAUST

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT
	POLYGON: CUMI-1
	DATE: OCT 9/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
INUHELI				R	
ASTNOAN				O	
SOLCANA				D	
CIRARVE				A	
SONARVE				O	
POAPRAT				A	
PHAARUN				O	
ASTERIC				O	
ASTLATE				O	
ARCMINU				R	
TAROFFI				R	
DAUCARO				O	
LOTCORN				O	
SOLRUGO				R	
VITRIPA			O	O	
TILAMEM		R	R		
FRAPENN			R		
MAL SP.			R		
CYNROSS				A	
SALERIO			R		
POLCUSP			O		
ULMPUMI		R			
LEOCARD				R	
CORSERI			R		
TILCORD		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPANGU				R	
RUMCRIS				R	
VICCRA				O	
RIDFRON				R	

LSL

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Maps 17+23)
	POLYGON: M Alar
	DATE: Oct 4/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TILCORD	O	O	O		
POAPRAT				D	
PHAARUN				R	
PICPUNG (YOUNG)	D				
ELAANGU		O	O		
RHUAROM (hedge)			O		
ACEPLAT	O	O			
PRUVIRG (REDLEAVES)			R		
GYMDIOI		O			
RHACATH		O	O		
PRUNUST				O	
MORALBA			R		
JUNVIRG			R		
VITRIPA			O	O	
ACENEGU			R		
FRAAMER (native)			R		
CORSERI			R		
RORPSEU		O			
TAROFF				O	
MAL SP.		O			
SURRETI			O		
PANSP. (planting bed)				R	
GINBILO			R		
GLEHEDE				G	
QUERUBR		O			
LARDECI		R			
QUEMACR		O			

SPECIES CODE	LAYER 1	2	3	4	COLL.
GLETRIA		R			
DICABIE	O	O			
PICPUNG (shrub)	O	O	O		
PINNIGR	O	O			
LOTCORN				A	
PLAMAJO				A	
ACESASA	O	O			
ACECAMP		O			
EUOALAT			O		
SURNULG			O		
CORALBA (CORSP.)			O		
CYNOSS				O	
PINSYLV	R	R			
ACEXFRE (host)		R	O		
AMELAEV			O		
CELOCCI			R		
DIGSANG				O	
LONTATA			R		
RHUAROM (host)			O		
PRUNIGR (host)			R		
POACOMP				O	
TRIREPE				O	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 21)
	POLYGON: CUWIm
	DATE: OCT 4/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
RHACATH			D	O	
ULMAMER	O		R		
LONTATA			R		
FRAPENN		O	O		
PRUVIRG			R	R	
ACENEGU		O	O		
RHUTYPH			R		
ACESACC	R				
SOLCANA				O	
SYMOOLE				O	
POAPRAT				O	
MAL SP			R		
PHRAUST				O	
ITRIPA			R	R	
SOLDULC				R	
ALLPETI				R	
TSUCANA			O		

SPECIES CODE	LAYER 1	2	3	4	COLL.

stony mottom — + western edges in study area

herbaceous/woody shrub

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

1-2 tree canopy under wide, south of Dundas, path under garden soils

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	ACESACC = ULMAMER
3	SUB-CANOPY	3	3	ACENEGU
4	UNDERSTORY	3/4	4	RHACATH > LONTATA
5	GROUND LAYER	5-7	3	SOLCANA > RHACATH

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (maps 32 & 33)
	POLYGON: CUM1-1K
	DATE: June 7/19 & Oct 4/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
CICINT4				R	
VICCRAC				C	
LONTATA			R		
SYMLATE				A	
SOLCAN A				A	
DAUCARO				A	
PANDICH				R	
POPDELT	R				
FRAPENN	R	O			
TINOCCI		R			
SYMNOAN				O	
GALMOLL				D	
CORSERI			R		
CENBIEN				R	
POAPRAT				A	
LARDECI	R				
CIRARVE				O	
LYTSALI					
SYMERIO					
LYTGRAM					
ELAUMBEL			R		
ACESASA	O				
AMELAEV			R		
SOLNIG			R		
RANTYP			O		
PLAMAJ					
VIBLANT			R		
POLPERS			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.
LUTCORN				O	
TARUFF				R	
RIBACAN			O		
RUMCRIS				R	
PICGLAU C	O				
CORVARI				O	
POPTREM	R				
VITRIPA			O	O	
AGRSTOL				C	
LINVULG				O	
RHOINER				A	
ASCSYRI				O	
MALPUMI			R		
ACESACC	R				
RUBOCCI			O		
TAROFFI				O	
SONARVE				A	
ECHCRUS			R	R	
ASRCOMM				R	
POTSIMP				O	
XANSTRU				R	
SETVIRI				O	
PANCAPI				O	
RHRAUST				O/R	
POR INSER				R	
ACENEGU			O		
ROBPSEU	R				
CYNROSS				O	

→ delete as this sp is dominant

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
POLPERS				R							
CYNPOSS				O							
RATPINN				R	PIC						
VERTNAP				R							
RAPRAT				A							
ACEXFREE	R										
ROBPSEU	R										
SOLFRAG	R										

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	

SOIL ASSESSMENT:	1	2	3	4
TEXTURE				
DEPTH TO MOTTLES	g =	g =	g =	g =
DEPTH TO GLEY	G =	G =	G =	G =
DEPTH OF ORGANICS				
DEPTH TO BEDROCK				
MOISTURE REGIME				

SOIL PROFILE

PLANT SPECIES LIST	SITE: SD-BRT	May 22
	POLYGON: MAS 2-1C	
	DATE: JUNE 14/19 & OCT 4/19	
	SURVEYOR(S): NMF	

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPANGU				A	
SALERIO			R		
PHRAUST				R	
SALDURP			R		
JUNARTI				R	
POLPERS				R	
ECACRUS				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4to6	5	TYPANGU >> PHRAUST

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT Map 221
	POLYGON: MAM2-2
	DATE: JUNE 14 / OCT 4/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PHAARUN				R	
CORSER			C		
SOLCANA				R	
SYMLANC				R	
ACESACC	R				
SALALBA	R				
ACERUBR	R				

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	3	1	SALALBA
2	CANOPY	3	1	ACESACC
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	6/7	5	PHAARUN>>

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☑ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD - PBT (Map 22)
	POLYGON: CUWIn.
	DATE: JUNE 6/19 / OCT 4/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SALALBD	O				
ACENEGU	R	O			
BRUNER				D	
SOLCANA				O	
ECHLORO			R	R	
CUNROSS				R	
SYMLATE				O	
TUSFARF				R	
VANSTRU				R	
ARCMINU				R	
AGLPET				O	
LONMORR			R		
VITRIPA			R	R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2b	4	SALERAG >> ACENEGU
3	SUB-CANOPY	3	4	ACENEGU > SALSP
4	UNDERSTORY	4	1	LONMORR
5	GROUND LAYER	6/7	5	BRUNER >> SOLSP

HT CODES: 1 = > 25m 2 = >10-25m 3 = >2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	O	10-24cm	O	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 22)
	POLYGON: MAS2.C
	DATE: June 7, 2019
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
PHRAUST				D							

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- also dominates surrounding fetches
- associated with drainage

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☑ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4	5	PHRAUST

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☑ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	SD-BRT (Map 22)
POLYGON:	FODSD
DATE:	OCT 4/19
SURVEYOR(S):	NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACERUBR		R			
ACESACC	A				
ACENEGU (especially along edges)		O	O		
RHACATH			D	O	
VITRIP			O	O	
FRAPENN	R	R	O		
RHUTYPH			R		
ULMAMER		R			
ECHLOBO			O	O	
ALLPETI				O	
RHUGLAB			O		
CYNROSS				R	
LONTATA			R		
RIBAMER			R		
GEUALLE				R	
CIRLUTE				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- covered by dead trees in this community
- surveyed from edge of ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	ACESACC
3	SUB-CANOPY	3	4	ACENEGU > ACESP
4	UNDERSTORY	3/4	4	RHACATH >> SORAMER = VITRIP
5	GROUND LAYER	6/7	2	CYNROSS > ALLPETI

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	O	25-50cm		> 50cm
STANDING SNAGS		R	< 10cm	R	10-24cm	O	25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

No one to ask permission - signs posted -

PLANT SPECIES LIST	
	SITE: S-D ART Map 23
	POLYGON: SWD4 (assoc. with a drain)
	DATE: JUNE 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ULMAMER	R	O	O		
SALFRAG	R	R			
RHACATH			A	O	
FRAPENN		R	O	O	
ACERUBR	R				
LONTATA			O		
ACESACC	R				
EQUARVE				O	
RIBAMER			O		
PARTINC				O	
VITRIPA		R	R	R	
EQUPRAT				O	
ACENEGU		R			
SOLCANA				O	
GEUALE				R	
CORRUGO			R		
VIBOPUL			R		
SONARVE				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF Drain	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☒ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	2	SAL SP = ULMAMER
3	SUB-CANOPY	3	4	ULMAMER
4	UNDERSTORY	3/4	4	RHACATH >> ULMAMER
5	GROUND LAYER	6/7	3	RHACATH ≥ SOL CANA > GEUALE

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		A	< 10cm	O	10-24cm	R	25-50cm	R	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: S-D BRT Map 23
	POLYGON: H4
	DATE: June 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
RHACATH			D	O	
ACESACC	R				
JUGNIGR	R				
PRUVIRG			R		
VIBLANT			O		
VITRIPA			R	O	
GALMULL				O	
POPBAT				O	
BROINER				O	
LONTATA			O		
TAROFFI				O	
ACENEGU		R			
PICABIES	O				
BETPEDU	R				
ACESASA	O				
ACEPLAT	O				

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

surveyed from within ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM.-TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Maps 24/25)
	POLYGON: CUM-11
	DATE: OCT 4/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SOLCANA				A	
SUMNUAN				O	
RHACATH			O		
ACENEGU	O	O	O		
EUTGRAM				O	
BROINER				A	
POAPRAT				A	
MAL SP.			O		
LONTATA			R		
VITRIPA				O	
RUMCRIS				R	
SONARVE				R	
CIRARVE				O	
ASCSURI				O	
* PHAARUN				O	
CORSERI			R		
DAUCARO				O	
SYMERIC					
* POLCUSP			R		
* JUNVIRG			R		
SYMLAEVE				O	
* AMBARTE				O	
LOTCORN				O	
VICCRAC				O	
ELAANGU		O			
RUDTRIF	R				
CICINTY				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
* SAL SP.			O		
* PINSYLV	O				
* PLALANC				O	
PLAMAJ				O	
TRIPRAT				O	
LINVULG				O	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	1	1	PICSYL > POPDELT
2	CANOPY	3	2	ACENEGU > BETLEAN6
3	SUB-CANOPY			
4	UNDERSTORY	1	1	RHACATH > LONTAT
5	GROUND LAYER	5-7	5	BROINE = SYM SP

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm		R	10-24cm		R	25-50cm		> 50cm
STANDING SNAGS			< 10cm			10-24cm			25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm			10-24cm			25-50cm		> 50cm
	DECAYED		< 10cm			10-24cm			25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

- disturbed
- area in ~~transition~~ with areas with higher density or diversity and areas with higher ~~dominance~~ of trees

PLANT SPECIES LIST	
	SITE: SD - BRT (Map 23/24)
	POLYGON: MAS2-1d
	DATE: JUNE 7/19 & OCT 4/2019
	SURVEYOR(S):

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPLATE				A	
TYPANGU				O	
PHRAUST				O	
EUPMACU				R	
MENARUC				R	
CORSTOL			R		
PYRARUN				O	
ACENEGU	R	R			
ECHLORA			O		
SOLALBA	R				
SCIATRO				R	
CARSTIP				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☒ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			SOL SP < ACENEGU
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			TYPH SP > PHRAUST

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	K	10-24cm		25-50cm		> 50cm	
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm	
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm	
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm	

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	SD-BRT (Map 24)
POLYGON:	MAS2d
DATE:	JUNE 7 /19
SURVEYOR(S):	NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PHRAUST				D	
ACENEGU			R		
ASTNOAN				R	
SOLCANA				R	
ECHLORO			R		
SALVPEND			R		
SALERIO			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
SITE:			POLYGON:
SURVEYOR(S):			DATE:
UTMZ:	UTME:		UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4-6	5	PHRAUST>>>ASTNOAN

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm	R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 24)
	POLYGON: CUN10
	DATE: OCT 8/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PICABIE	O				
ACEPLAT		R			
CORSERI			R		
SOLCANA				A	
ACENEGU	R	O	A		
AESSPP	R	R			
JUGNIGR	R	R	O		
SOLDULC				R	
POA SP				O	
FRAPENN		O	O		
HAL SP		O			
CYNRIS				O	
RHACATH			O	O	
PICPUNG		R			
LARMORR			O		
SOLCANA				R	
CIRUTE				R	
GLENEDE				R	
ALLPETI				D	
GEUALL				A	
PODCOMP				O	
VIBOPUL			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- dominant plantings from former residences
- cleared from edge of ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☒ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	2	PICABIE > JUGNIG > ACENEGU
3	SUB-CANOPY	3	3	FRAPENN ≥ ACENEGUN
4	UNDERSTORY	3/4	4	RHACATH > FRAPENN
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm	○	10-24cm	○	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 24)
	POLYGON: CUWLP (water side of road)
	DATE: OCT 8/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACENEGU		A	A		
RHACATH			O		
PARTINS			O		
SALXPEN	O				
SYRVULG			O		
ULMPUMI	R				
VITRIPA			O	O	
ROBPSEU			R		
POLYCUSP			O		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- observed only from roadside

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	SAL WEEP >> ULMPUMI
3	SUB-CANOPY	3	4	ACENEGU
4	UNDERSTORY	4	3	ACENEGU > FRAPENN = RHACATH
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 24)
	POLYGON: MAM2-2 MAS2
	DATE: June 7/19 OCT 8/19
	SURVEYOR(S): NM=

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PHAARUN				A	
PHRAUST				D	
ACENEGU			R		
VITRIP				R	
DSTNOLNG				R	
DSTEANC				R	
BIDFERON				R	
LEERZIA				O	
SAGLATI				R	
TYPLATE				O	
POLYPERS				R	
EQUTUBE				R	
SCINALI				R	
CARLACU				R	
CARJULI				R	
MENARVE				R	
GLY STRATA				R	
TYPANGU				O	
EUPMACU				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☒ INCLUSION ☐ COMPLEX Riparian Community dominated by PICKERAL WEED	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4-6	5	PHAARUN > PHRAUST

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT
	POLYGON: CUM1-1m
	DATE: JUNE 7 / JULY 6 & OCT 8 / 19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
DAUCARO				A	
CIRARVE				A	
SYMNOAN				O	
SOLCANA				O	
TRIPRAT				O	
EUPMACU				R	
TAROFFI				O	
PHAARUN				O	
VICCRAC				O	
LOTCORN				O	
VERTHAP				R	
ACESACC	O				
AESHIPP		R			
ACENEGU		O	R		
AMBARTE				A	
BARVULG				O	
ACEPLAT	R				
BETPAPY		R			
ASCSYRI				O	
BETPEND	R	R			
ANECANA				R	
CHEALBU				O	
BERTHUN			R		
ARCMINU				O	
CRAMONO			R		
CIRVULG				R	
ASPOFFI				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
CEN MACU				O	
ASTLATE				O	
BROINER				A	
CIRLUTE				R	
CYNROSS				A	
DIGSANG				O	
CICINTY				O	
DIPSYFU				R	
POAPRAT				A	
EUTGRAM				O	
FRAPENN		R	R		
ELYREPE				O	
JUGNIGR		R	O		
GLEHEDE				O	
LINVULG				O	
GALMULL				A	
LIRTULI			R		
MALUS SP.			O		
MELALBA				O	
LYTSALI				R	
IRIPSEU				R	
HESMATR				R	
LACSERR				R	
JUNVIRG			O		
LARLARI			R		
MATPERF				O	
OENBIEN				R	

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- numerous trees / shrubs planted

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☑ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
PHRAUST				O							
SYRVULG			R								
PINSTRO		R	R								
PINSYLV	R	R									
SONARVE				O							
PLAMAJA				O							
RUMCRIS				O							
RUBOCCI			O								
PRUSP			R								
POAPRAT				A							
SALFRAG	R	R									
RHONIRT				O							
SALXPEN	O										
SALERIO			R								
POPGRAN	R	R									
POLPERS				R							
RHACATH			O								
QUEMACR			R								
XANSTRU				R							
THUOCCI		R	R								
TYPANGU				O							
VIBOPUL			R								
VITRIPA			R	O							
VIOCONS				R							
TYPHSP				O							
TYPLATI				R							
TUSFARF				O							
TRIREPE				O							
UMBAMER		R	O								

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.

SOIL ASSESSMENT:	1	2	3	4
TEXTURE				
DEPTH TO MOTTLES	g =	g =	g =	g =
DEPTH TO GLEY	G =	G =	G =	G =
DEPTH OF ORGANICS				
DEPTH TO BEDROCK				
MOISTURE REGIME				

SOIL PROFILE

PLANT SPECIES LIST	SITE: Scarborough – Durham BFT (Map 25)
	POLYGON: MAS2-1e; Lynde Creek Coastal Wetland Complex
	DATE: June 7/19 (south of Dundas)
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPANGU				A	
FRAPENN		R		R	
VERNAST				O	
EQUPRAT				R	
CORSERI			R		
ASTLANC				O	
LYTAMER			R		
PHAARUN				O	
SALFRAG	R				
URTDIO				R	
RUACRIH				R	
IMPCAPE				R	
RUBUS SP.			R		
TYPXGLAU				A	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4/5	5	TYPSP

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 25)
	POLYGON: MAS2-1f
	DATE: JUNE 19 19 + OCT 8 19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPANGU				D	
SP_ALBA			R		
LYTSALI				R	
ASTLATE				O	
CYNROSS				R	
IMPCAPE				R	
PHAARUN1				O	
FRAPENN			R		
PHRAUST				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4/5	5	TYPANGU

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT (Map 25)
	POLYGON: MAS2-19 Dundas Hwy 412
	DATE: JULY 6 / 2019
	SURVEYOR(S): JM-F

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PHAARUN				O	
TYPANGU				A	
ACENEG	O	O	R		
IMPCAPE				O	
CARMYST				R	
CARSTIP				O	
SOLGIGA				O	
FRAPENS	O	R	R		
VITRIPA			O	O	
CORSTOL			O		
LYTSALI				O	
PHRAUST				O	
ASTNOAG				O	
SALERIO			O		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☑ WETLAND ☐ AQUATIC	☐ ORGANIC ☑ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☑ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☑ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	4	5	TYPANGU > PHAARUN

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 25)
	POLYGON: CUM1-1n (Lynde Creek)
	DATE: SEPT 27/19 & Oct 9/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
BROINER				D*	
CUNROSS				A	
RUMCRIS				R	
PHRAUST				O	
JUNVIRG			R		
SOLCANA				A	
SYMNOAN				R	
VERTHAP				R	
ASTLATE				O	
PHODRAT				A	
EUPMACU				O	
VICCRAC				O	
DAUCARO				O	
CIRARV				O	
ACENEGU		R	R		
JUGNIGR	R		O		
FRAPENN			R		
ASCSYRI				R	
CICINT				R	
MAL SP			R		
SALVPEND	R				
ACEPLAT	R				
QUEMACR					
PINSTRO			R		
TYPHANGU				R	
PHAARUN				R	
ZIRTUL					

Planted by Parks

SPECIES CODE	LAYER 1	2	3	4	COLL.
THUOCCI			O		
ASCSYRI				O	
VIBOPUL			R		PIC
CRAMONO			R		PIC
AMECANA				R	
LARLAR			R		
POPGRAN			R		

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	5-7	5	CUNROSS = SOLCANA > BROINER

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 25)
	POLYGON: SWD32 (South side)
	DATE: June 7 19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACEXFREE	O	O			
RHACATH			O		
FRAPENN		R	O	R	
ACESASA		R	R		
POAPRAT				O	
CIRLUTE				O	
SOLGIGA				R	
PHARAUN				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- no permission
- surveyed from western ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT (Map 24)
	POLYGON: SWD35
	DATE: June 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
JUGNIGR	R	O	R		
ACENEGU	O	O	O		
FRAPENS	O	O	O		
GALMOLL				O	
IMPCAPE				D	
HESMATR				O	
ARITRTRI				R	
ASTNOAN				R	
ASTPUN1				R	
PRUVIRG			O		
CIRLUTE				A	
VITRIPA			O	O	
ECHLORA				R	
ACESPSA	O				
SALALBA	O	R	R		
RHACATH			O		
CARPENS				O	
PARTINSE				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- several dead ash in canopy

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☒ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	2	2	JUGNIGR
2	CANOPY	2	4	ACENEGU > FRAPENS
3	SUB-CANOPY	3	3	ACENEGU > FRAPENS > JUGNIGR
4	UNDERSTORY	3	3	RHACAT > PRUVIRG
5	GROUND LAYER	5/6	5	IMPCAPE > CIRLUTE

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	O	25-50cm	R	> 50cm
STANDING SNAGS		R	< 10cm	O	10-24cm	R	25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 25)
	POLYGON: FOD5c (south of Dundas)
	DATE: June 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
POPTREM	R		R		
FRAMER		R	O	R	
RHACATH			O	O	
LONTATA			R		
PINSYLV	R				
ACESASA	O	O	O	O	
JUGNIGR		O	O		
TILAMER					
ACTRUBR			O		
ARITRTR1				O	
PICGLAUC	O				
ULMAMER			R		
SOLGIGA				R	
PARTINSER				O	
PRUVIRG			O		
CIRLUTE				O	
GEUALLE				O	
GEUCANA				O	
FRANIGR		R	O	R	
SYMLAT1				R	
ACESACC	O				
VITRIPA			R	R	
ERYAMER				O	
ACEXFREE	R	R			
POAPRA1				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

very marked drop PIC

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- no permission
- surveyed from within ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☒ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☒ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MATERIAL	☐ BOTTOMLAND		☐ FLOATING LVD	☐ RIVER
	☐ ACIDIC BEDROCK	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDROCK	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDROCK	☒ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLLING UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☒ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☒ FOREST
					☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER			☐ OPEN	☐ INCLUSION	☐ HEDGEROW
☐ SHALLOW WAT.			☐ SHRUB	☐ COMPLEX	
☒ SURFICIAL DEP.			☐ TREED		
☐ BEDROCK					

STAND DESCRIPTION:

only along edge

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	3	ACESACC > PICGLAU
3	SUB-CANOPY	2	4	ACESASA > JUGNIGR > FRANIGR
4	UNDERSTORY	3/4	4	PRUVIRG ≤ RHACATH
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm	○	10-24cm	○	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD - BRT (Map 25)
	POLYGON: CuWlr
	DATE: JULY 6/19 & Sept 27/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
VITRIPA		R	O	O	
ACENEGU	O	O	O		
FRAPENN		O	O	O	
ULMAMER	R				
RHACATH			O		
SALERIC			R		
SALSP	O				
RUBOCCI			O		
SOLCANA				O	
ASTOOLE				R	
ASTERIO				O	
ASTNOAN				O	
IMPCAPE				R	
PHAARUN				O	
ASCSYRI				R	
SOLGIGA	R				
EPICILIOBIUM			R		
ROSMULT			R		
CIRLUTE				R	
VIBOPUL			R		
PHRAUST				R	
JUNVIRG			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	SALSP > ACENEGU
3	SUB-CANOPY	3	4	ACENEGU > FRAPENN
4	UNDERSTORY	4	3	FRAPENN > RHACATH
5	GROUND LAYER	5.7	5	SOLCANA > PHAARUN = ASTE SP

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	S-D BRT (Map 28)
POLYGON:	CUW1a
DATE:	JULY 6a SEPT 27/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACENEGU		O	O		
ECHLORA			O		
JUGNIGR	O	R	O		
RHACATH			C		
VITRIPA			A	O	
SOLCANA				O	
CORSERI			C		
ARCMINU				O	
ALLPETI				O	
POTSIMP				R	
SOLSP		R			
RPOINER				O	
CIRARVE				O	
PHAARUN				R	
DAUCARO				R	
DOPTREM			R		
ACESPSA			R		
ASTNOAN				R	
TUSFARF				O	
PARTQUIN			R	R	
IMPGLAN				R	
EUPMACU				R	
ALNCLIT			R		
POPDELT	R				

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
SITE:			POLYGON:
SURVEYOR(S):			DATE:
UTMZ:	UTME:		UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☒ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☐ SHRUB ☒ TREED	☒ INCLUSION ☐ COMPLEX CUM1-1	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	2	1	POPDELT
2	CANOPY	2	1	JUGNIGR
3	SUB-CANOPY	3	3	ACENEGU >> SOLSP
4	UNDERSTORY	3	4	RHACATH ≥ JUGNIGR ≥ VITRIPA
5	GROUND LAYER			SOLCANA > ECHLORA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: SD-BRT
	POLYGON: CUMI-10/D
	DATE: Oct 31/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ROBPSEU			O		
ARCMINU				R	
RHACATH			O		
SOLCANA				A	
DACGLOM				A	
POAPRAT				A	
JUGNIGR			R		
SYMERIO				O	
CIRARVE				A	
VITRIPA				O	
LEOCARD				O	
MENTARVE				R	
VERHAST				R	
RUBIDAE			O		

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- Trees from ~~the~~ property have been cut
- surveyed from bottom ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

			< 10cm		10-24cm		25-50cm		> 50cm
TREES									
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (North) (Map 28)
	POLYGON: CUM1-1g / CUW1g
	DATE: JUNE 6/19 ~ SEPT 27/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACENEGU		O			
VICCRAC				R	
ULMAMER	O	A	O		
SOLCANA				D	
VITRIPA		O	O	O	
ALLPETI				A	
CYNROSS				O	
RHACATH			A	O	
RUBOCCI			R		
THUOCCI			R		
LONTATA			O		
GALAPAR				O	
JUGNIGR		R	O		
JUNVIRG		R			
FRAPENN	O	O	R		
ACESACC	R				
SALSP					

SPECIES CODE	LAYER 1	2	3	4	COLL.
SOLCANA				A	
EUPMACU				O	
CIRARVE				O	
CIRVULG				R	
SYMLANGU				R	
CORSERI			R		
CARLACU				R	
APOCANN				O	
VITRIPA				O	
GALMOLL				SOA	
PASSATI				O	
SALDISC			R		
PRUNUS				O	
ASTLANC				R	
ASTLATE				O	
ASTNOAU				R	
RUBECANA				R	
POAPALS				O	
POAPRAT				A	
DAUCARO				O	
POLPERS				O	
SONARVE				R	
TAROFFI				R	
ERITRANT				R	
BIDFRON				R	
RUMCRIS				R	
IMPCAPE				R	

ECLLOBO R
ARCMINU R
PLAMAJO R
MENARVE R

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- tent
- surveyed along southern edge

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☒ INCLUSION ☐ COMPLEX CUM1-1	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	2	ULMAMER >> FRAPENN
3	SUB-CANOPY	3	4	ULMAMER > ACENEGUN
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		C	< 10cm	C	10-24cm	R	25-50cm		> 50cm	
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm	
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm	
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm	

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST

SITE:	S-D BRT South (Map 28)
POLYGON:	CUW1S
DATE:	Sept 27/19
SURVEYOR(S):	NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

~20% baregrd.
- northern edge

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
JUGNIGR	R				
ACENEGU		A	O		
APOCANN				O	
ALLPETIO				A	
SOLCANA				O	
RHACATH			O		
EUOALAT		R	R		
MPGLAN				O	
GEUALLE				R	
ECHLOBA			R		
ULMAMER		R			
CYNROSS				O	
VITRIPA			O	O	
URTDIOI				R	
CORRUGO			R		
IMPCAPE				R	
PARAUST				O	
HACVIRG				R	
VIOSORI				R	
SOLCAEI				R	
OXASTRI				O	
TMD SP				R	
ASTLATE				O	
GEUCANA				R	
SAL EXIG			R		
LYTSALI				R	
BIDFRON				R	

POLYGON

SITE:		POLYGON:
SURVEYOR(S):		DATE:
UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MATERIAL
- ☐ ACIDIC BEDROCK
- ☐ BASIC BEDROCK
- ☐ CARB. BEDROCK

TOPO. FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☒ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☐ TABLELAND
- ☐ ROLLING UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE/CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH/BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☒ CULTURAL

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING LVD
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☒ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☒ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WAT.
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

COMM. TYPE
- ☐ INCLUSION
- ☐ COMPLEX

OTHER
- ☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	3	1	JUGNIGR
2	CANOPY	3	4	ACENEGU >> ULMAMER
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 28)
	POLYGON: MAS2e
	DATE: JUNE 6/19 & SEPT 26/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PUROUST				D	
ECHLORA			R	R	
SALDISC			R		
FRDPENN			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☐ TREED	☒ INCLUSION ☐ COMPLEX CuWla	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO):
1	EMERGENT	3	1	FRDPENN = SALDISC
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	3	5	PUROUST

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		R	< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 28)
	POLYGON: H5
	DATE: SEPT 27 14
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
JUGNIGR		O	R		
ACENEGU		O	R		
RHACATH			O		
ORCMINU				O	
POAPRAT				O	
CIRARV				O	
TROFFI				O	
DIGSANG				O	
ULMAMER	R				
VITRIPAR					
IMPGLAN				R	
LOTCORN				O	
CHNROSS				O	
POPGRAN	R	R			

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☒ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	SD-BRT (Map 28)
POLYGON:	46
DATE:	OCT 8/19
SURVEYOR(S):	NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
CYNROSS				A	
ACENEGU	R	A	O	C	
RHUTYPH			O		
RHACATH			A		
JUGNIGR	O	R	R		
SOLCANA				O	
POAPRAT				O	
ACEPLAT					
SALXPEN	R				
POPDELT	R				
DAUCARO				O	
RUMCRIS				R	
ASTERIC				R	
FRAAMER	R	R	O		
ALLPETI				O	
CIRARVE				O	
ASTNOAN				O	
RUBIDAE			O		
RIBOCCI			O		

dying

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- numerous dead ash trees

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☒ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	JUGNIGR > POPDELT
3	SUB-CANOPY	3	4	ACENEGU > JUGNIGR
4	UNDERSTORY	4	3	RHACATH > FRAAMER
5	GROUND LAYER	5-7	4	CYNROSS > SOLCANA

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		○	< 10cm	○	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST

SITE: 5-D BRT
POLYGON: CUW1+ (Map 30)
DATE: June 7/19 + Oct 9/19
SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ACENEGUN	D	A			
RHACATH			A	A	
LONTATA			O		
PRUVIRG			O	O	
HESMATR				O	
ULMAMER		R			
ULMPUMI	R	O	R		
RHUTYPH			R		
JUGNIGR	R		R		
ROBPSEU (on western half east of opening)	O to A	O			
FRAPENN			R	O	
ARCMINU				R	
SOLCANA				A	
IMPCAPE (along margins adj to cattail marsh)				O	
VITRIPA			O	O	
JUSFARF				O	
PHAARUN				O	
RUBOCCI			G		
LYSNUMM				R	
GALMULL				R	
RUMCRIS				R	
TAROFF				O	
ACESASA		R			
TILAMER		R			

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
SALALBA	R				

LSL

POLYGON

SITE:		POLYGON:
SURVEYOR(S):		DATE:
UTMZ:	UTME:	UTMN:

- surveyed along southern edge

POLYGON DESCRIPTION:

SYSTEM: ☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC

SUBSTRATE: ☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK

TOPO. FEATURE: ☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF

HISTORY: ☐ NATURAL ☒ CULTURAL

PLANT FORM: ☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED

COMMUNITY: ☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION

SITE: ☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK

COVER: ☐ OPEN ☐ SHRUB ☒ TREED

COMM. TYPE: ☐ INCLUSION ☐ COMPLEX

OTHER: ☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	1	3	ROBPSEU
3	SUB-CANOPY	2	4	ACENEGUN >>ROBPSEU
4	UNDERSTORY	3	4	RHACATH > ACENEGU > LONTATA
5	GROUND LAYER	5-7	2/3	SOLCANA = RHACATH

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		A	< 10cm	A	10-24cm	R	25-50cm	\	> 50cm
STANDING SNAGS		\	< 10cm	\	10-24cm	\	25-50cm	\	> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	R	10-24cm	—	25-50cm	\	> 50cm
	DECAYED	\	< 10cm	\	10-24cm	—	25-50cm	\	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD-BRT
	POLYGON: MAS2E
	DATE: June 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PHRAUST				D	
VITRIPA				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

LGL LIMITED

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK	☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	2	5	PHRAUST

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: SD - BRT (Map 30)
	POLYGON: SWD3c
	DATE: June 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACENEGU	O	O	O		
SOLCANA				A	
PRUNSE				O	
RHACATH			O	O	
PRUNRG			R		
GEUCANA				R	
TAROFFI				R	
ASTNOAN				R	
IMPACAPE				R	
ARCMINU				R	
LONTATA			R		
SALALBA	R				
FRAPENN		R			
ULMPUMI	R				
GALMOLL				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- assc'd ε drain
- surveyed from within ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT
	POLYGON: CUW14 (Map 30)
	DATE: Oct 10/19 Oshawa
	SURVEYOR(S): NMF

POLYGON			
	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

- lots of debris dumped in this community

SPECIES CODE	LAYER 1	2	3	4	COLL.
CYNROSS				A	
ACENEGU		O	O		
PICABIES	P				
RHACATH			D	O	
SOLCAN				O	
GALMOLL				O	
ALLPETI				R	
THUOCCI	R	A			
PINNIGR	D	R			
EUCALAT			R		
VITRIP		O		R	
PINSYLV	R				
JUGNIGR		R			
ULMAMER		R			
CIRVULG				R	
CIRLUTE				R	
GEUALLE				R	
GEUCANA				R	
POAPRAT				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☒ MINERAL SOIL	☐ RIVERINE	☒ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MATERIAL	☐ BOTTOMLAND		☐ FLOATING LVD	☐ RIVER
	☐ ACIDIC BEDROCK	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDROCK	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDROCK	☒ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLLING UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☒ MIXED	☐ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☒ WOODLAND
		☐ BLUFF			☐ FOREST
					☒ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER	☐ OPEN	☐ INCLUSION	☐ HEDGEROW
☐ SHALLOW WAT.	☐ SHRUB	☐ COMPLEX	
☒ SURFICIAL DEP.	☒ TREED		
☐ BEDROCK			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	3	PINNIGR > THUOCCI = PINSYLV
3	SUB-CANOPY	3	4	THUOCCI > ACENEGU
4	UNDERSTORY	2/3	2/3	RHACATH >> ACENEGU
5	GROUND LAYER	5-7	2	CYNROSS = SOLCAN

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS			< 10cm	R	10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM	O	< 10cm	R	10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☒ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITES-D BRT
	POLYGON: MAS2-1/SWD4 (Map 30)
	DATE: June 7/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE MA32-1	LAYER 1	2	3	4	COLL.
ACENEGU		O			
TYPANGU				A	
GALMOLL				A	
SALALBA	O				
RUMCRIS				R	
RANACRI				R	
EQUARVE				O	
IMPCAPE				R	
PHAARU				A	
TAROFF				R	
SYMNOAN				R	
BIDFRON				R	
VERHAST				R	
VIBOPUL			R		
CORSERI			R		
RHACATH			R		

SPECIES CODE SWD4	LAYER 1	2	3	4	COLL.
SALALBA	A				
ACENEGU		A	O		
GALMOLL				O	
PHAARUN				O	
FRAPENN			O	O	
TILAME		R			

– too small to map

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- surveyed from within ROW

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☒ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	2	SAL ALBA
3	SUB-CANOPY	3	4	ACENEGU
4	UNDERSTORY	3|4	3	ACENEGU > FRAPENN
5	GROUND LAYER	4|5	5	TYPANGU > PHAARUN

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	O	10-24cm	R	25-50cm		> 50cm
STANDING SNAGS		O	< 10cm	R	10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

No BASW nests in culvert

PLANT SPECIES LIST	
	SITE: S-D BRT
	POLYGON: CUM1-1p Map 30
	DATE: Oct 9/19
	SURVEYOR(S): NTF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
HESMATR				O	
ACENEGU	O		O		
GALMULL				A	
CIRARV				O	
PINNIGR		O	O		
SOLCANA				A	
ASCSYRI				R	
POAPRAT				A	
PUDARUN				O	
DAUCARO				R	
RHACATH			R	R	
RHATYPH			R		
SOLIXDISC			R		
CRAMON O			R		
ARTMINU				R	
FRAPENN				R	
MALPUMI			R		
AMELLAEV			R		
PRUVIRG			R		
BROINER				O	
VIOCONS				R	
VICCRAC				O	
LONTATA			R		
ALLPETIO				R	
SONARVE				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.
THUOCCI			R		
PINSYLV			O		
FRAPENN			O	O	
VITRIPA				O	
TRIREPE				O	
ROBPSEU			R		
ROSMULT			R		
SALALBA			R		
PHRAUST				O	
CYNROSS				A	
BROCLOM				O	
SYRVULG			R		
ELAANGU			R		
HERMAXI				O	
JUNUIRG		R			
PLAMAJO				O	
TAROFF				O	
ROSMULT			R		
TUSFARF				O	
ULMPUMI		R			
CORVARI				O	
SALEXIG			R		
IMPGLAN				R	

Phrag along ditches

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☒ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☒ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	6/7	5	CYNROSS=SOLCANA=POAPRAT

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		R	10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm			10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm			10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm			10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: S-D BRT (Map 30)
	POLYGON: SWD3-4C
	DATE: June 7/19
	SURVEYOR(S): NMF

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACENEGU	A	A	O	O	
RHACATH			A	O	
MALPUMI			R		
SALFRAG	O				
CYNROSS				O	
FRAPENN			O	O	
TAROFFI				R	
HESMATR				O	
ARCMINU				R	
MAISTEL				A	PIC
GEUMALE				R	
LONTATA			O		
ALLPETI				A	
PRUNVIR			O		
ACESASA				R	
CIRLUTE				O	
BIDFRO				R	
SOLGIGA				O	
SOLALBO	R				
TUSFARF				R	
EQUARVE				R	
IMPCAPE				A	
GEUMCANA				R	
MATSTRU				R	PIC

along stream bank + west of creek

SPECIES CODE	LAYER 1	2	3	4	COLL.

– several lg. dead std ash trees – EAB

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☒ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE	COVER	COMM. TYPE	OTHER
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK	☐ OPEN ☐ SHRUB ☒ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT	2	2	SALSP
2	CANOPY	3	4	ACENEGU
3	SUB-CANOPY	3	3	ACENEGU
4	UNDERSTORY	4	3	RHACATH
5	GROUND LAYER	5-7	5	IMPCAPE=MAISTEL

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT
	POLYGON: CUT IC (Map 30) Osnowa
	DATE: OCT 9/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
CYNROSS				O	
RHACATH			D	O	
POAPRAT				A	
TILCORD	R				
ACENEGU	O		R		
TARAOFFI				O	
FRAAMER			R		
PRUNSP.			R		
GALTOLL				O	
JUNVIRG			R		
VITRIPA			R		
CRATMONO					

SPECIES CODE	LAYER 1	2	3	4	COLL.

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☒ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☒ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY	4	4	RHACATH > ACENEGU
5	GROUND LAYER	5-7	5	POAPRAT > CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		D	< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	SITE: S-D BRT Maps 24 to 33
	POLYGON: M
	DATE: SEPT 27/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
SALXPEN	R				
ROBPSEU	O				
ACEPLAT	A				
PICABIES	R	R			
SHRVULG			O		
POAPRAT				A	
LOTCORN				A	
PLANATO				A	
TRIREPE				A	
TAROFFI				O	
LRCMINU				R	
JUGNIGR					
VITRIPA			R	R	
ASTLATE				O	
U_MAMER			R		
ALLPETI				A	
GLEHEDE				O	
ACENEGU	R	O	R		
RHACATH			R		
DIGSANG				O	
POACOMP				O	
BROINER				O	
FESARUN				O	
GLETRIA		O			
MALUS SP					
PINSYLV					
SYRRETI		R			

SPECIES CODE	LAYER 1	2	3	4	COLL.
CELOCCI		R			
ARCMINU				R	
PINNIGR	R	O			
TILCORD		R	O		
ACEGINN			R		
ACESACC	R				
ACESASA	R				
ACEXFREE			R		
AMELAEV			R		
BERTHUN				O	
THUOCCI			R		
TILAMER	R	R			
VIBLANT			R		
VICCRAC				O	
MORALBA			R		
VIOL SP				R	
CONARVE				O	
DAUCARO				O	
COTCOGN				R	
FRAAMER			R		
GINBILO			O		
GYCMAXI				R	
JUNTENU				R	
PHRAUST				O	
JUNVIRG			R		
PICABIES	R	R			
PICPUNG	R	R	O		

shrub

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm	> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm	> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm	> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm	> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PLALANC				O	
QUERUBR	R		R		
RHACATH			O		
RHUGLAB			O		
RHU TYPH			O		
SALALBA	R	R			
SONARVE				O	

SPECIES CODE	LAYER 1	2	3	4	COLL.

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.

SPECIES CODE	LAYER 1	2	3	4	COLL.

SOIL ASSESSMENT:	1	2	3	4
TEXTURE				
DEPTH TO MOTTLES	g =	g =	g =	g =
DEPTH TO GLEY	G =	G =	G =	G =
DEPTH OF ORGANICS				
DEPTH TO BEDROCK				
MOISTURE REGIME				

SOIL PROFILE

PLANT SPECIES LIST	
	SITE: 5-D BRT
	POLYGON: CUW1V
	DATE: SEPT 27/19 + OCT 8/19
	SURVEYOR(S): NMF

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
PICGLAUC		R			
RHACATH			O	A	
SOLCANA				O	
SYMLANC				O	
SYMNOAN				O	
ANECANA				R	
ACENEGU		A	A		
ULMPUMI	O				
POLCUSP			O		
GLENEDE					
RICARIES		R			
CORSERI			R		
DAUCARO				O	
CYNROSS				O	
POAPRAT				O	
VITRIPA			O	O	
GALMULL				A	
ULMAMER	R				
SALALBA	R				
SYSNIGR	R	R	R		
CRASTRI				O	
ANECANA				R	
PRUVIRG				R	
FRAPENN			O		
SALFRAG	R				
RUBIDAE			R		

SPECIES CODE	LAYER 1	2	3	4	COLL.
RUBOCC			R		
SAL SP.	R				
ACEXFREE		R			

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- surveyed from southern/northern edges

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER			

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
	SITE: S-D BRT (Map 31)
	POLYGON: MAS2-1h
	DATE: JUN 6/19 & SEPT 29/19
	SURVEYOR(S): NME

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
TYPLAT1				O							
TYPXGLAU				O							
BIDFRON				O							
PHALARUN				O							
VERHAST				R							
IMPCAPE				O							
RANRECU				O							
AMPBRAC				O							
TYPANGU				R							
PILPAM1				R							
NESMATR				R							
TUSFARF				O							
FRAPENU			R								
POLPERS				A							
CARSTIP				R							
DAUCARO				R							
EUPMACU	D/m			O							
SALIX SP.	R	R									
GLYSTR1				O							
CORSERI			R								
SYMPUN1				R							
GALMOL1				A							
VICCRAC				R							
ANECAN A				R							
JUGNIGR			R								
POLCUSP			R								
LEEORYZ				O/A							

LGL LIMITED

POLYGON	SITE:		POLYGON:
	SURVEYOR(S):		DATE:
	UTMZ:	UTME:	UTMN:

- viewed only southern portion of community

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☒ SHALLOW WAT. ☐ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY			
3	SUB-CANOPY			
4	UNDERSTORY			
5	GROUND LAYER	5	5	LEERZIA >> TYPLAT

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES			< 10cm		10-24cm		25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☐ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

PLANT SPECIES LIST	
SITE:	SD - BRT (Map 33)
POLYGON:	CUWlW & CUM1-1 inclusions of marrow
DATE:	Oct 8/19 CUWlW strip along bank of waterway
SURVEYOR(S):	NMC

POLYGON			
SITE:			POLYGON:
SURVEYOR(S):			DATE:
UTMZ:	UTME:		UTMN:

LAYERS: 1 = CANOPY TREES > 10m 2 = SUB-CANOPY 3 = SAPLINGS & SHRUBS 4 = GROUND LAYER
VALUE CODES: D = DOMINANT A = ABUNDANT O = OCCASIONAL R = RARE

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACENEGU		O	O	O	
JUGNIGR		√O	O		
SOLCANA				O	
ROSMULT			R		
DAUCARO				O	
VITRIPA		O	A	O	
URTDIO				R	
PRUSERO			R		
SOLVPEND	O				
CYNROSS				A	
DACGLOM				A	
THUOCCI		R			
RHACATH			O		
TUSFARF				O	
ASTLATE				O	
ELAANGU		O			
RHUTYPH			O		
HAPDACH				R	
AMPBRAC				R	
SALALBA	R			R	
FRAPENN			O	O	
HELTUBE				P	
CORSERI			R		
FRAVIRG				O	
ALLPETI				O	
SOLFRAG	R		R		
SOLERIO			O		

SPECIES CODE	LAYER 1	2	3	4	COLL.
GEUCANA				O	
IMPGLAN				R	
IMPCAPE				R	
LEOCARD				R	
ULMAMER		R			
BETPAPY	R				
POPTREM	R				
RHAFRUN				O	
RIBFRON				R	
CHENUBU				R	
SOLDULC				O	
ULMPUMI	R	R			
DISTOOLE				R	
XANSTRU				R	
TYPANGU				R	
CONARVE			R		
SALEXIG			R		

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPO. FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MATERIAL ☐ ACIDIC BEDROCK ☐ BASIC BEDROCK ☐ CARB. BEDROCK	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLLING UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE/CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH/BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING LVD ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**	**COMM. TYPE**	**OTHER**
☐ OPEN WATER ☐ SHALLOW WAT. ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED	☐ INCLUSION ☐ COMPLEX	☐ HEDGEROW

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	EMERGENT			
2	CANOPY	2	4	SAL SP > POPTREM = BETALLE
3	SUB-CANOPY	3	4	SAL SP ≥ ACENEGU
4	UNDERSTORY	4	3	SAL SP > RHA CATH
5	GROUND LAYER	5-7	4	SOLCANA > CYNROSS

HT CODES: 1 = > 25m 2 = >10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-0.5m 7 = <0.2m
CVR CODES: 0 = NONE 1 = 1-10% 2 = >10-25% 3 = >25-35% 4 = >35-60% 5 = >60%

SIZE CLASS ANALYSIS:

TREES		O	< 10cm	A	10-24cm	O	25-50cm		> 50cm
STANDING SNAGS			< 10cm		10-24cm		25-50cm		> 50cm
DEADFALL/LOGS	FIRM		< 10cm		10-24cm		25-50cm		> 50cm
	DECAYED		< 10cm		10-24cm		25-50cm		> 50cm

ABUNDANCE CODES: A = ABUNDANT O = OCCASIONAL R = RARE N = NONE

COMMUNITY MATURITY:

☐ PIONEER ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD-GROWTH

APPENDIX E.
WELL RECORDS AND LOCATIONS

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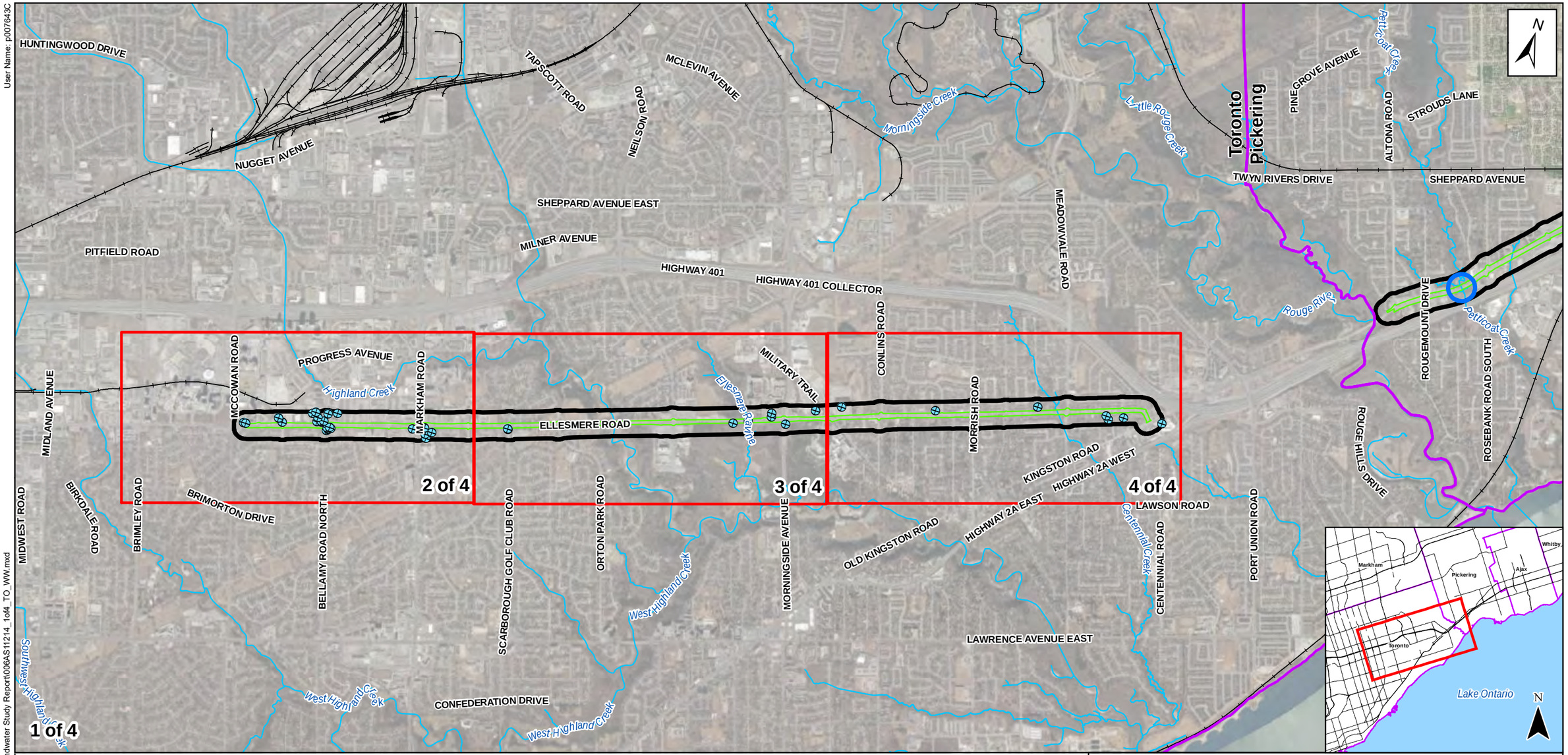

Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
- MECP Water Well Record
- Locations Proposed for Deeper Construction

DATA SOURCES:

Roads and Railways - Ontario Open Data Catalogue
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Water Wells - Ministry of Environment, Conservation and Parks
Project Boundary - Parsons

0 500 1,000 1,500 2,000 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By:	PARSONS
Date:	**January 26 2021**
Version: 1-1	**Review:**
Figure:	**6A**
Page:	**1 of 4**

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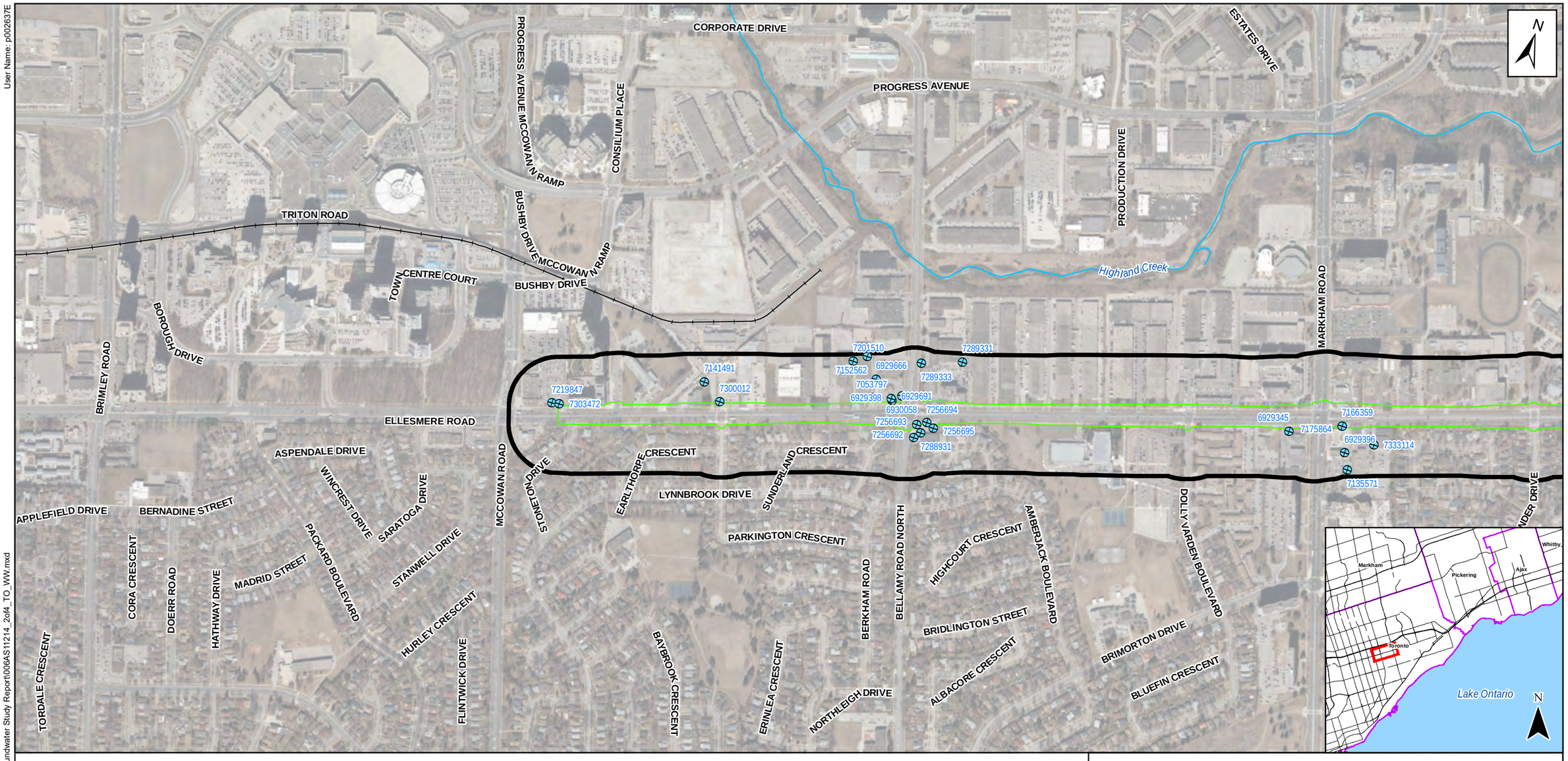

Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
- MECP Water Well Record

DATA SOURCES:

Roads and Railways - Ontario Open Data Catalogue
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Water Wells - Ministry of Environment, Conservation and Parks
Project Boundary - Parsons

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**		
Figure Title:	**Groundwater Study Water Well Locations**		
Prepared By: PARSONS		**Date:** December 08 2020	
Version: 1-1	**Review:**	**Figure:** 6A	**Page:** 2 of 4

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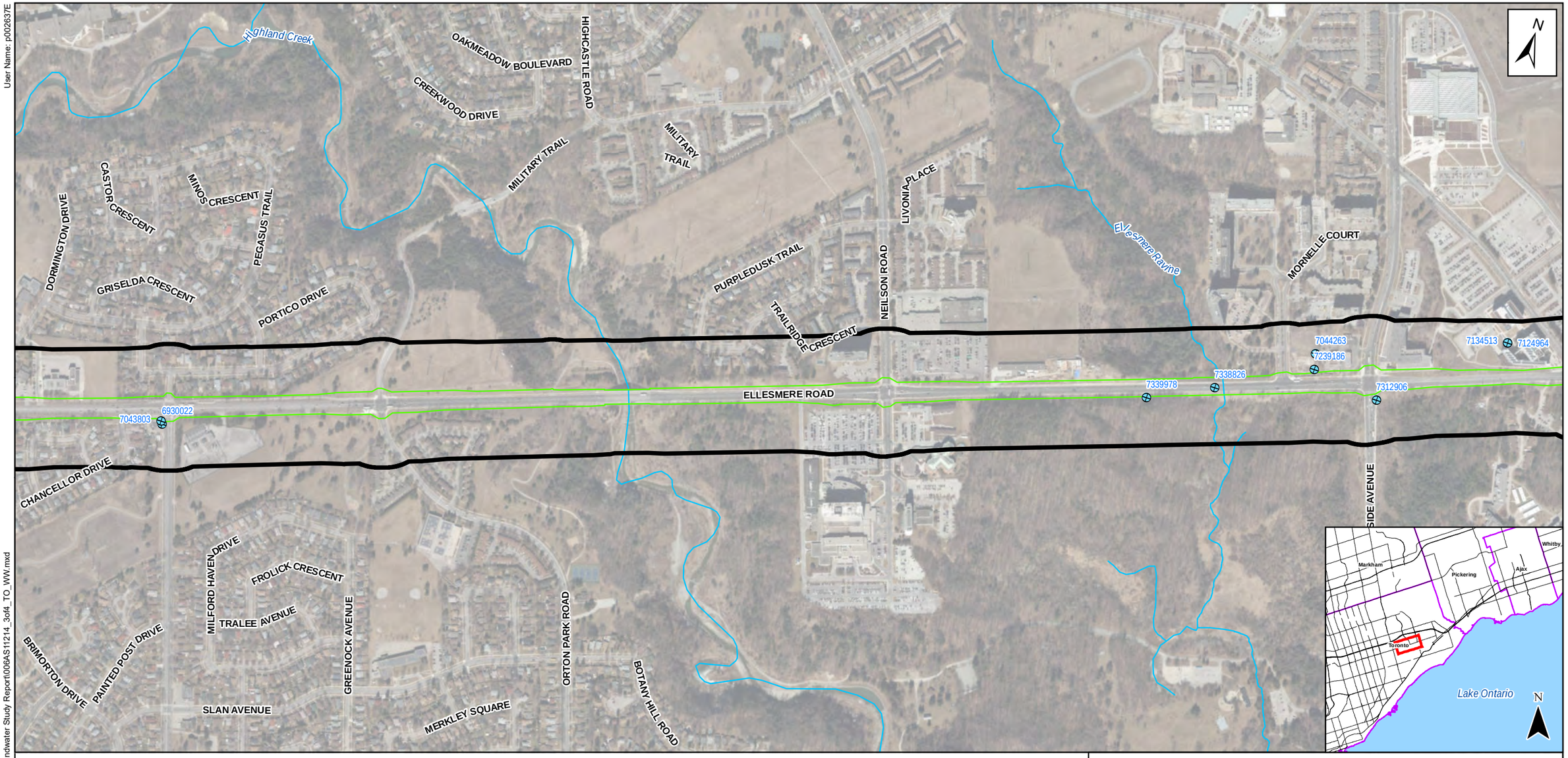

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Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
- MECP Water Well Record

DATA SOURCES:

Roads and Railways - Ontario Open Data Catalogue
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Water Wells - Ministry of Environment, Conservation and Parks
Project Boundary - Parsons

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
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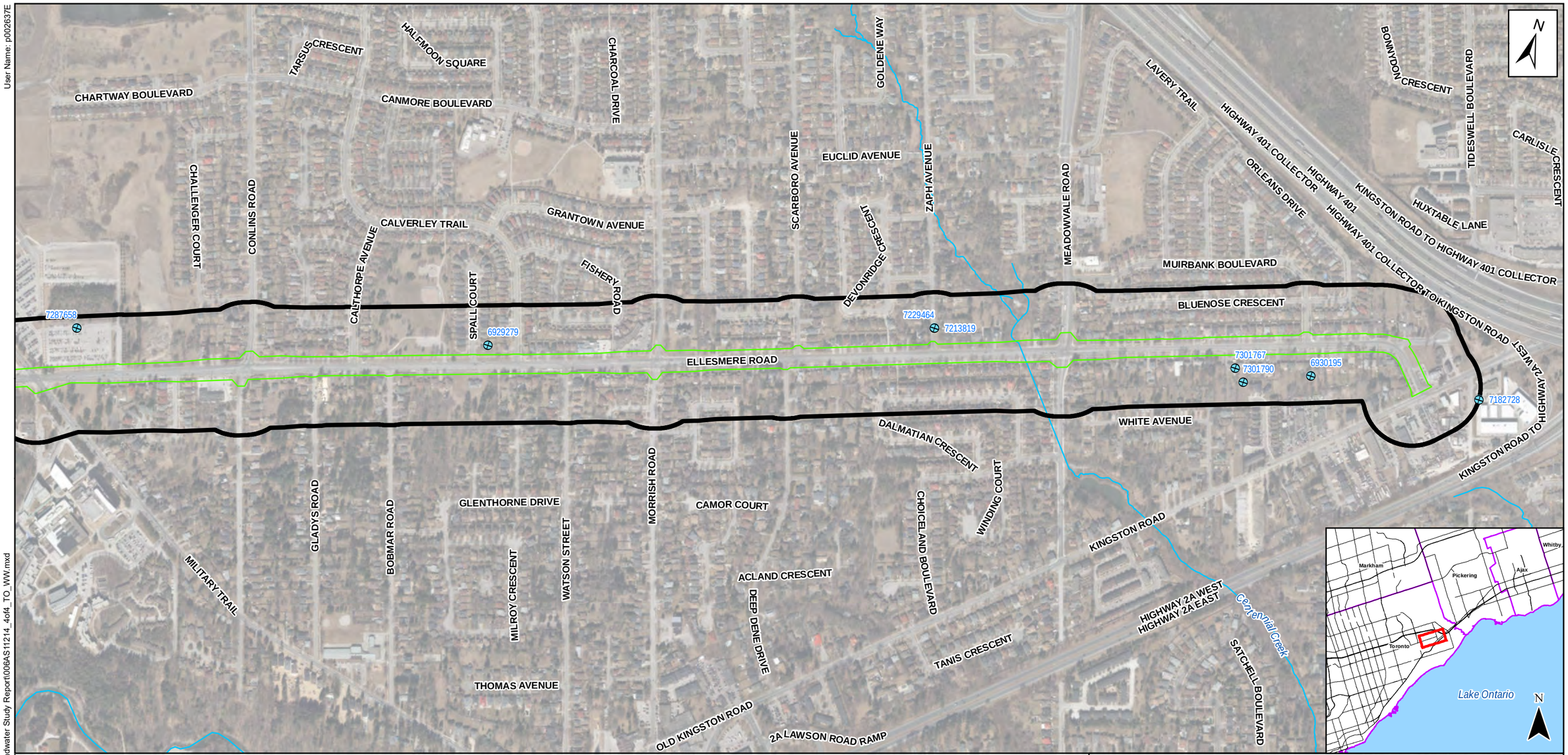
Prepared By:	PARSONS
Date:	December 08 2020
Version: 1-1	**Review:**
Figure:	6A
Page:	3 of 4

User Name: p002637E



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Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
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- Watercourse
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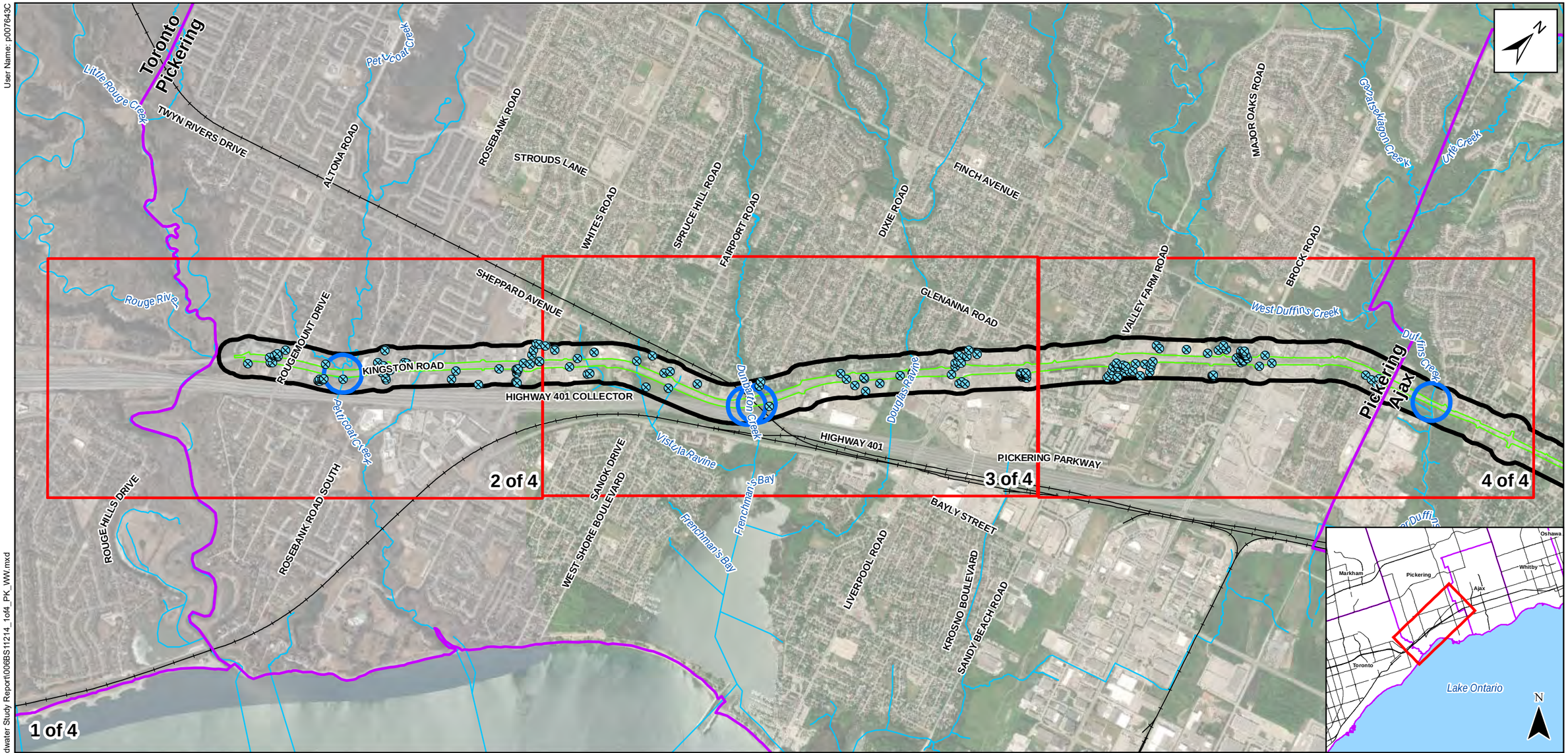
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Water Wells - Ministry of Environment, Conservation and Parks
Project Boundary - Parsons

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By: PARSONS	**Date:** December 08 2020
Version: 1-1	**Review:**
Figure: 6A	**Page:** 4 of 4



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Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
- MECP Water Well Record
- Locations Proposed for Deeper Construction

DATA SOURCES:

Roads and Railways - Ontario Open Data Catalogue
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 500 1,000 1,500 2,000 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By:	PARSONS
Date:	**January 27 2021**
Version: 1-1	**Review:**
Figure:	**6B**
Page:	**1 of 4**

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Rouge River
Little Rouge Creek
Petticoat Creek
ROYAL ROUGE TRAIL
RIVERVIEW CRESCENT
ROUGE VALLEY DRIVE
FAWNDALE ROAD
ALTONA ROAD
DALEWOOD DRIVE
FIDDLERS COURT
HIGHBUSH TRAIL
OLD FOREST ROAD
ROSEBANK ROAD
LIGHTFOOT PLACE
BARRY DRIVE
EDMUND DRIVE
SHEPPARD AVENUE
STEEPLE HILL
HIGHWAY 401 COLLECTOR TO KINGSTON ROAD
HIGHWAY 401 TO HIGHWAY 401 COLLECTOR
KINGSTON ROAD
HIGHWAY 401 COLLECTOR
HIGHWAY 401 COLLECTOR TO HIGHWAY 401
HIGHWAY 401
WHITES ROAD TO HIGHWAY 401 COLLECTOR
HIGHWAY 401 COLLECTOR TO WHITES ROAD
ROUGEMOUNT DRIVE
TOYNEVALE ROAD
PINE RIDGE ROAD
MOUNTAIN ASH DRIVE
OAKWOOD DRIVE
MCLEOD CRESCENT
DAHLIA CRESCENT
ROSEBANK ROAD SOUTH
SANDSTONE MANOR
GRANITE COURT
Toronto
Pickering
EAST AVENUE
ROUGE HILLS DRIVE
ISLAND ROAD
SUNNY SLOPE
FRIENDSHIP AVENUE
BROWNFIELD GARDENS

Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
- MECP Water Well Record
- Locations Proposed for Deeper Construction

DATA SOURCES:

Roads and Railways - Ontario Open Data Catalogue
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By:	PARSONS
Date:	December 08 2020
Version: 1-1	**Review:**
Figure:	6B
Page:	2 of 4

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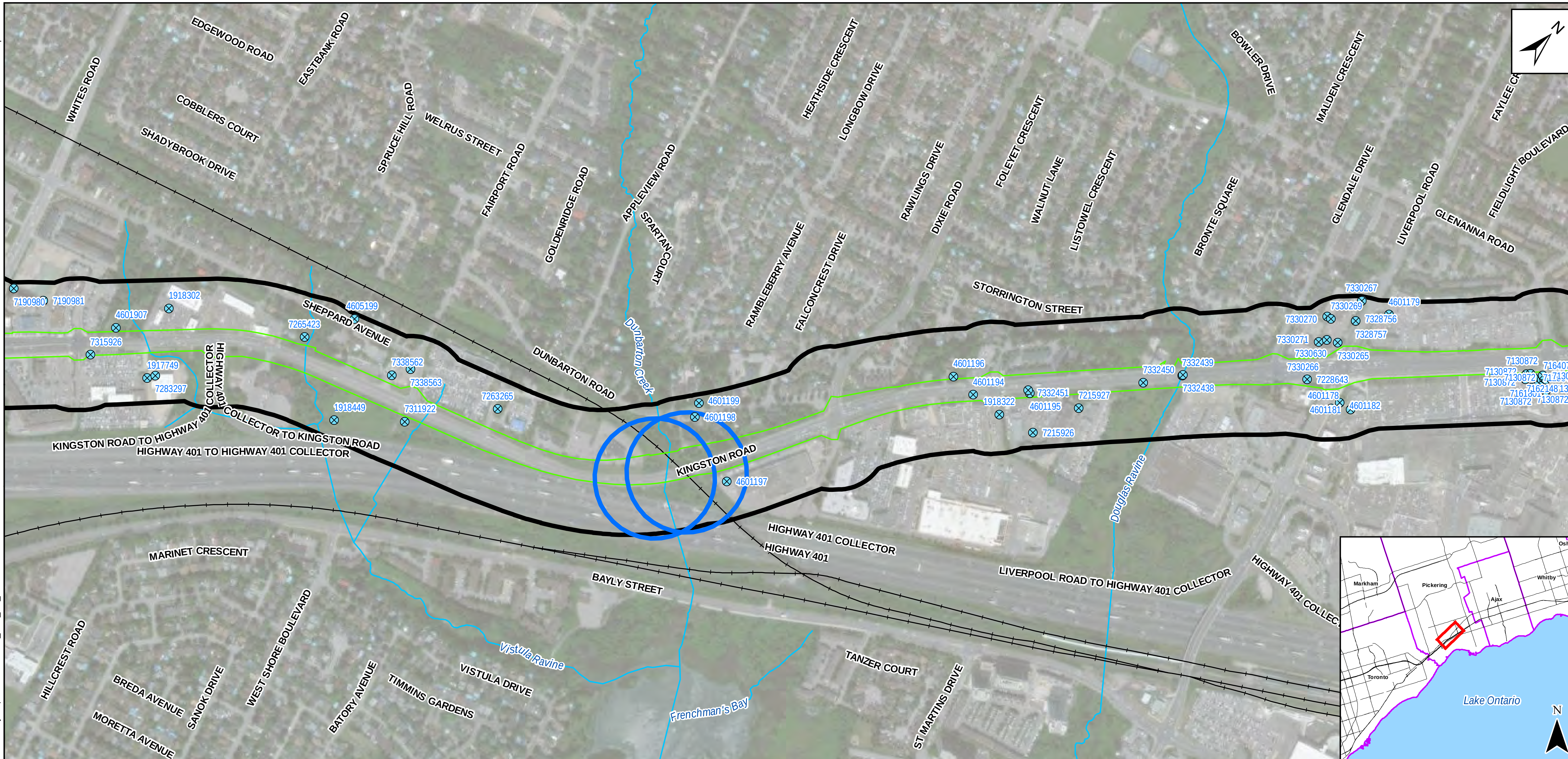

Legend

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Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By: PARSONS	**Date:** December 08 2020
Version: 1-1 / **Review:**	**Figure:** 6B / **Page:** 3 of 4

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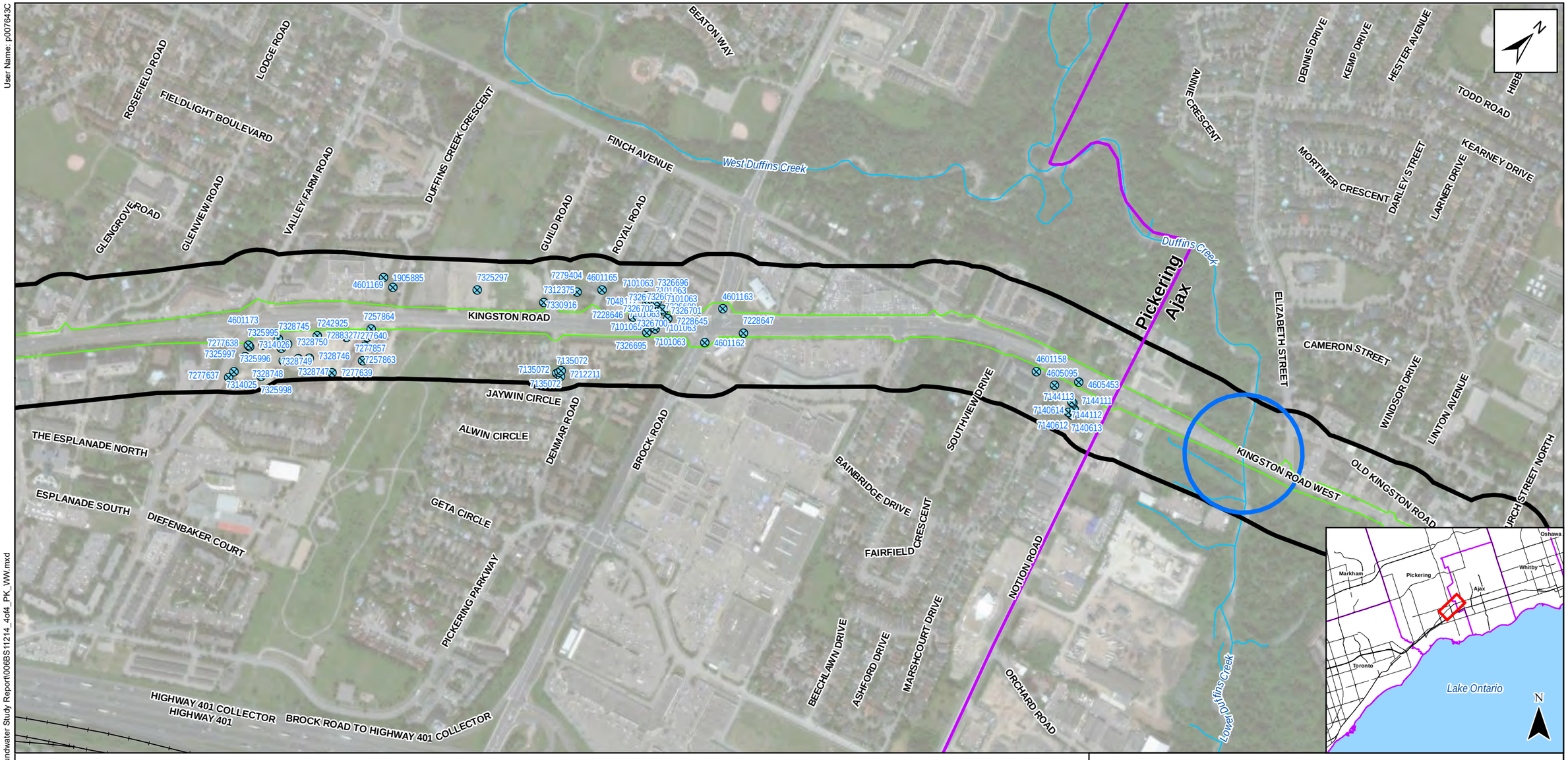

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Legend

- Study Area - 100 metres
- Project Extent
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- Watercourse
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DATA SOURCES:

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Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By:	PARSONS
Date:	**January 26 2021**
Version: 1-1	**Review:**
Figure:	**6B**
Page:	**4 of 4**

User Name: p0076643C

CONCESSION ROAD 3
ROSSLAND ROAD WEST
ROSSLAND ROAD
VALLEY FARM ROAD
MAJOR OAKS ROAD
BROCK ROAD
Carruthers Creek
Urfe Creek
DELANEY DRIVE
RAVENSCROFT ROAD
Miller's Creek
OLD HARWOOD AVENUE
HARWOOD AVENUE NORTH
SALEM ROAD
Carruthers Creek
AUDLEY ROAD
LAKE RIDGE ROAD
Ajax
Whitby
HALLS ROAD NORTH
West Duffins Creek
Duffin's Creek
Duffins Creek Trail
FINCH AVENUE
KINGSTON ROAD WEST
KINGSTON ROAD EAST
2 of 4
3 of 4
4 of 4
KINGSTON ROAD
PICKERING PARKWAY
HIGHWAY 401 TO PICKERING BEACH ROAD
HIGHWAY 401
HARWOOD AVENUE SOUTH
Lower Duffins Creek
Carruthers Creek
Pickering
Ajax
BAYLY STREET
BAYLY STREET WEST
BAYLY STREET EAST
1 of 4
Markham
Pickering
Ajax
Whitby
Oshawa
Toronto
Lake Ontario
N

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Legend

- Study Area - 100 metres
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DATA SOURCES:

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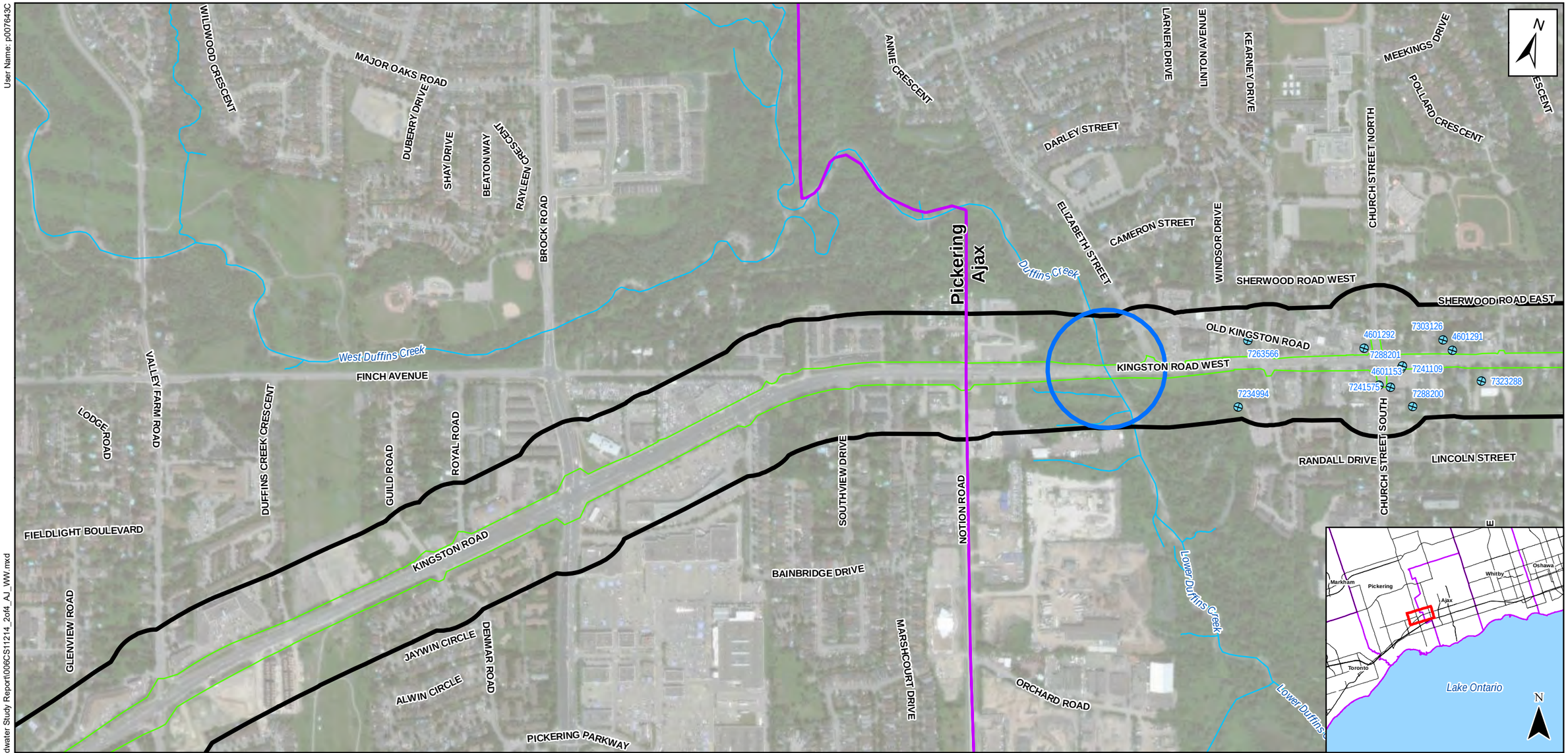
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 500 1,000 1,500 2,000 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By:	PARSONS
Date:	**January 26 2021**
Version: 1-1	**Review:**
Figure:	**6C**
Page:	**1 of 4**

User Name: p0076643C



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Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
- MECP Water Well Record
- Locations Proposed for Deeper Construction

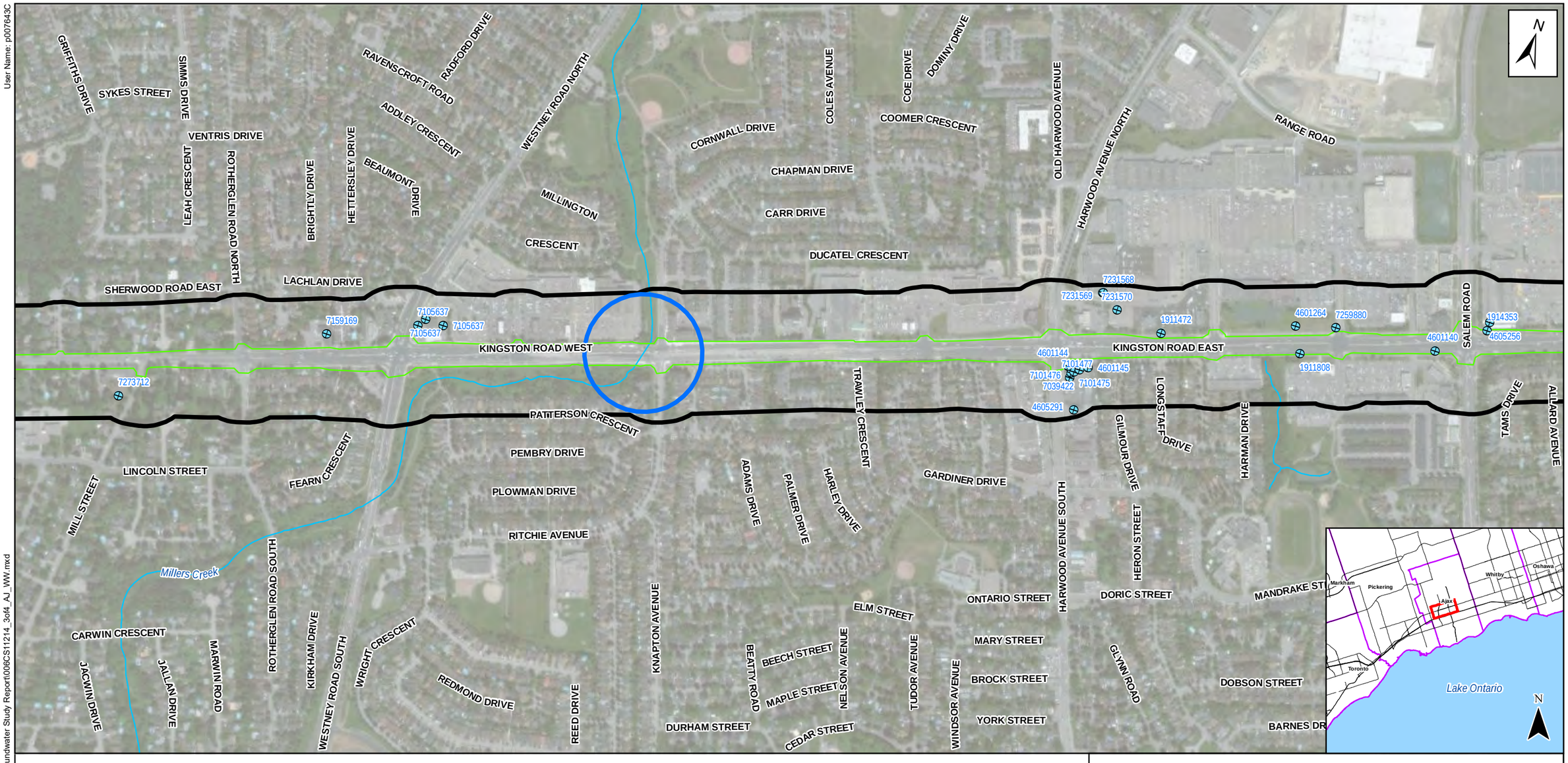
DATA SOURCES:

Roads and Railways - Ontario Open Data Catalogue
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 100 200 300 400 Metres

Project: Durham-Scarborough Bus Rapid Transit			
Figure Title: Groundwater Study Water Well Locations			
Prepared By: PARSONS		**Date:** January 26 2021	
Version: 1-1	**Review:**	**Figure:** 6C	**Page:** 2 of 4

User Name: p0076643C



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Legend

- Study Area - 100 metres
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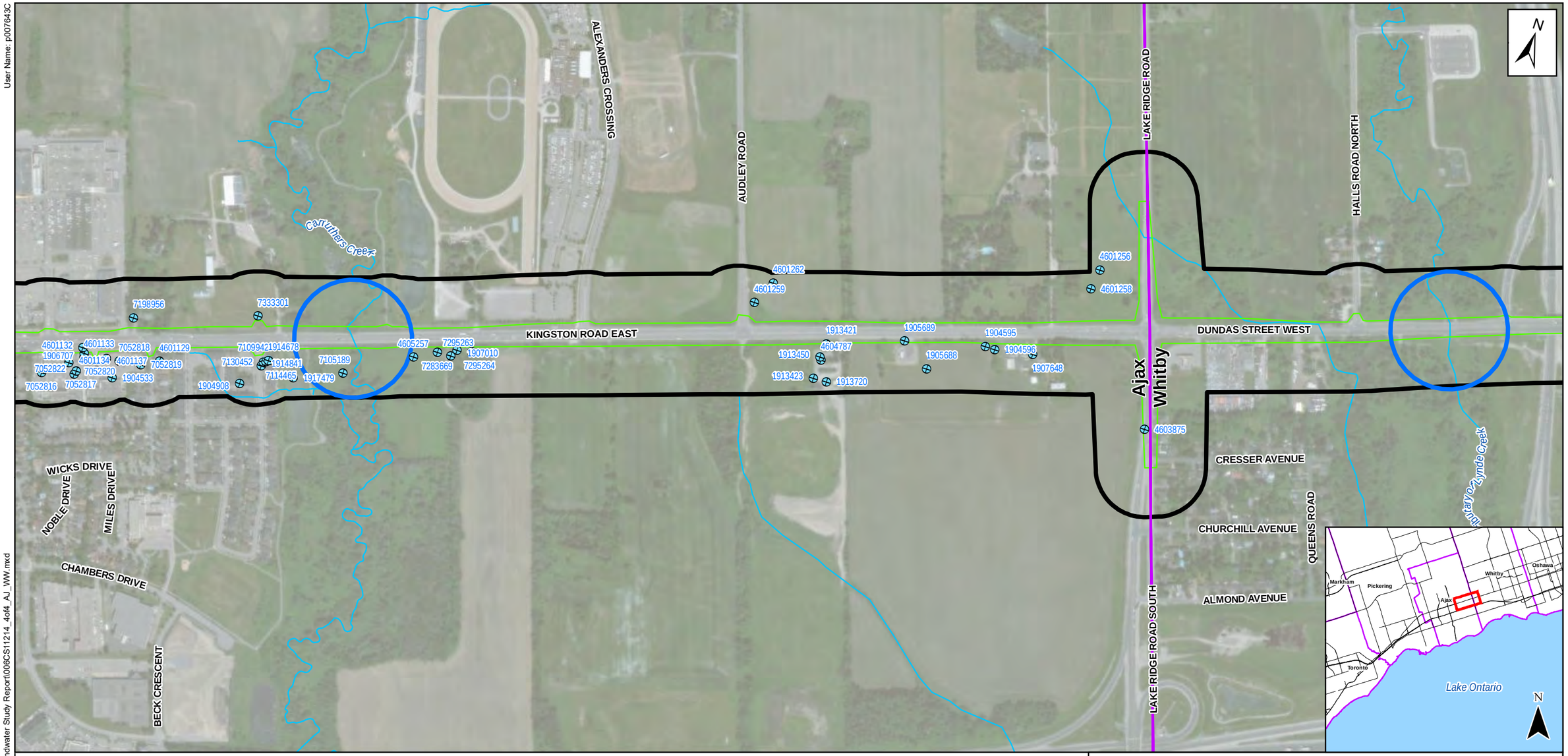
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By: PARSONS	**Date:** January 26 2021
Version: 1-1	**Review:**
Figure: 6C	**Page:** 3 of 4

User Name: p0076643C



Legend

- Study Area - 100 metres
- Project Extent
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- Railway
- Watercourse
- MECP Water Well Record
- Locations Proposed for Deeper Construction

DATA SOURCES:

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Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**		
Figure Title:	**Groundwater Study Water Well Locations**		
Prepared By: PARSONS		**Date:** December 08 2020	
Version: 1-1	**Review:**	**Figure:** 6C	**Page:** 4 of 4

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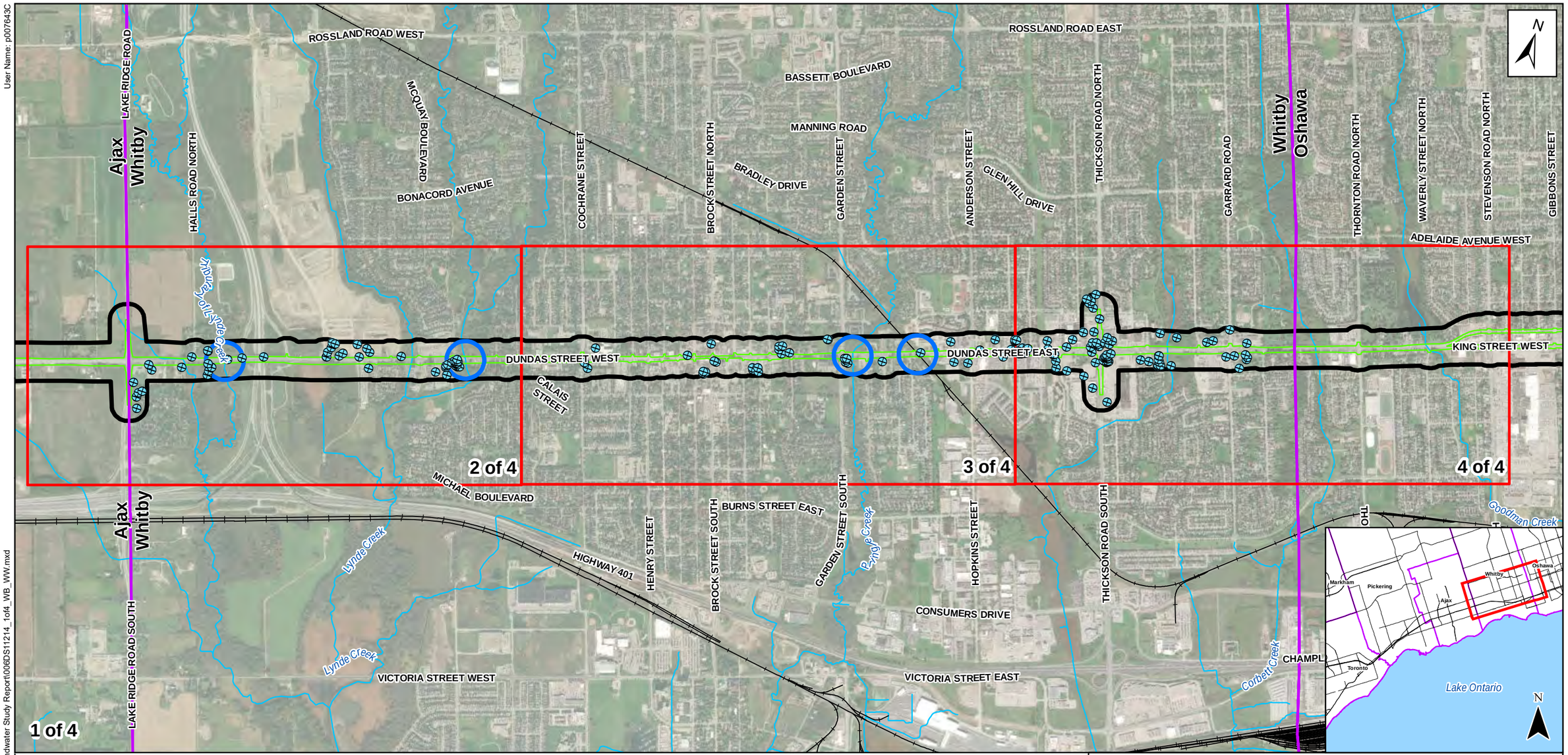

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Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
- MECP Water Well Record
- Locations Proposed for Deeper Construction

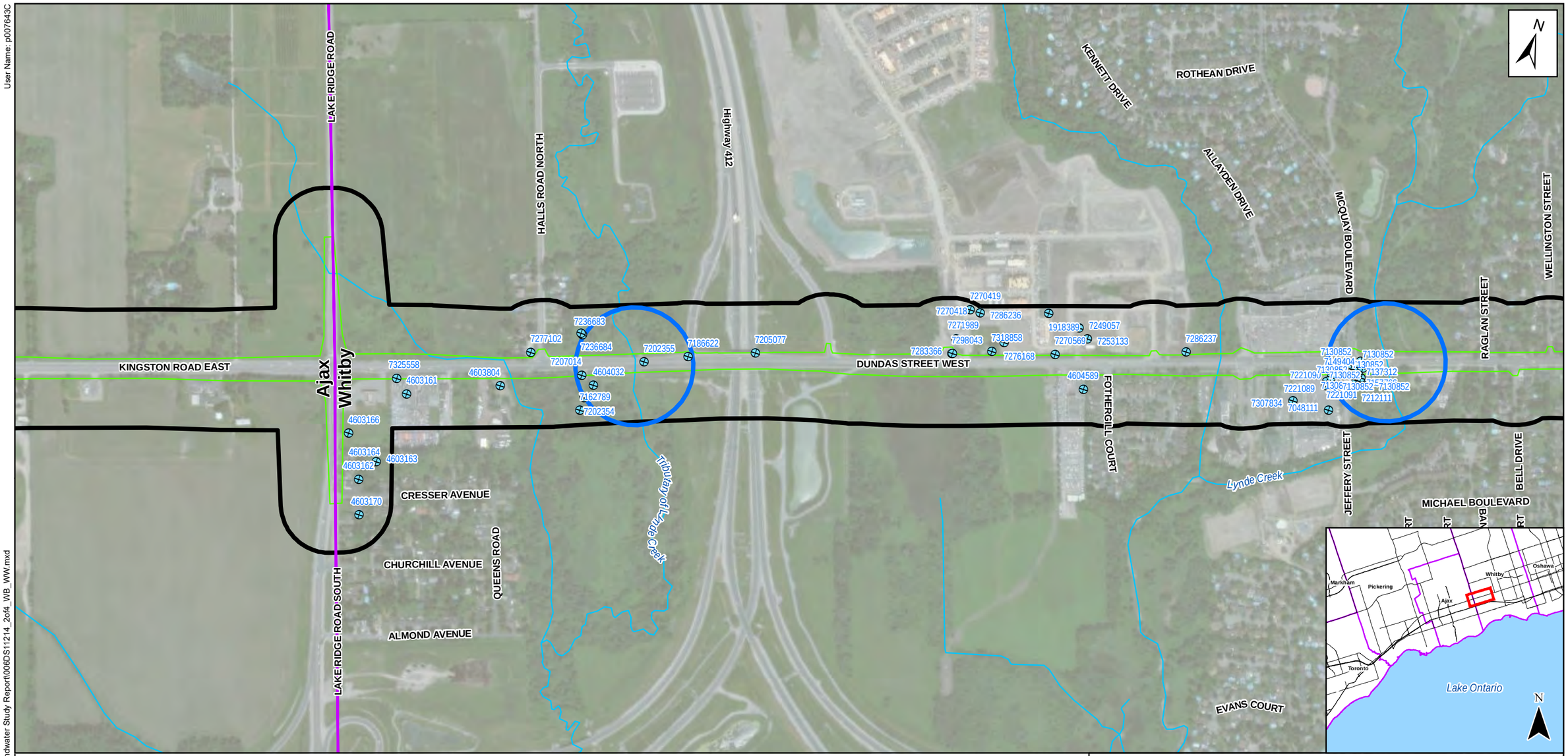
DATA SOURCES:

Roads and Railways - Ontario Open Data Catalogue
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 500 1,000 1,500 2,000 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By:	PARSONS
Date:	**January 27 2021**
Version: 1-1	**Review:**
Figure:	**6D**
Page:	**1 of 4**

User Name: p0076643C



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Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
- MECP Water Well Record
- Locations Proposed for Deeper Construction

DATA SOURCES:

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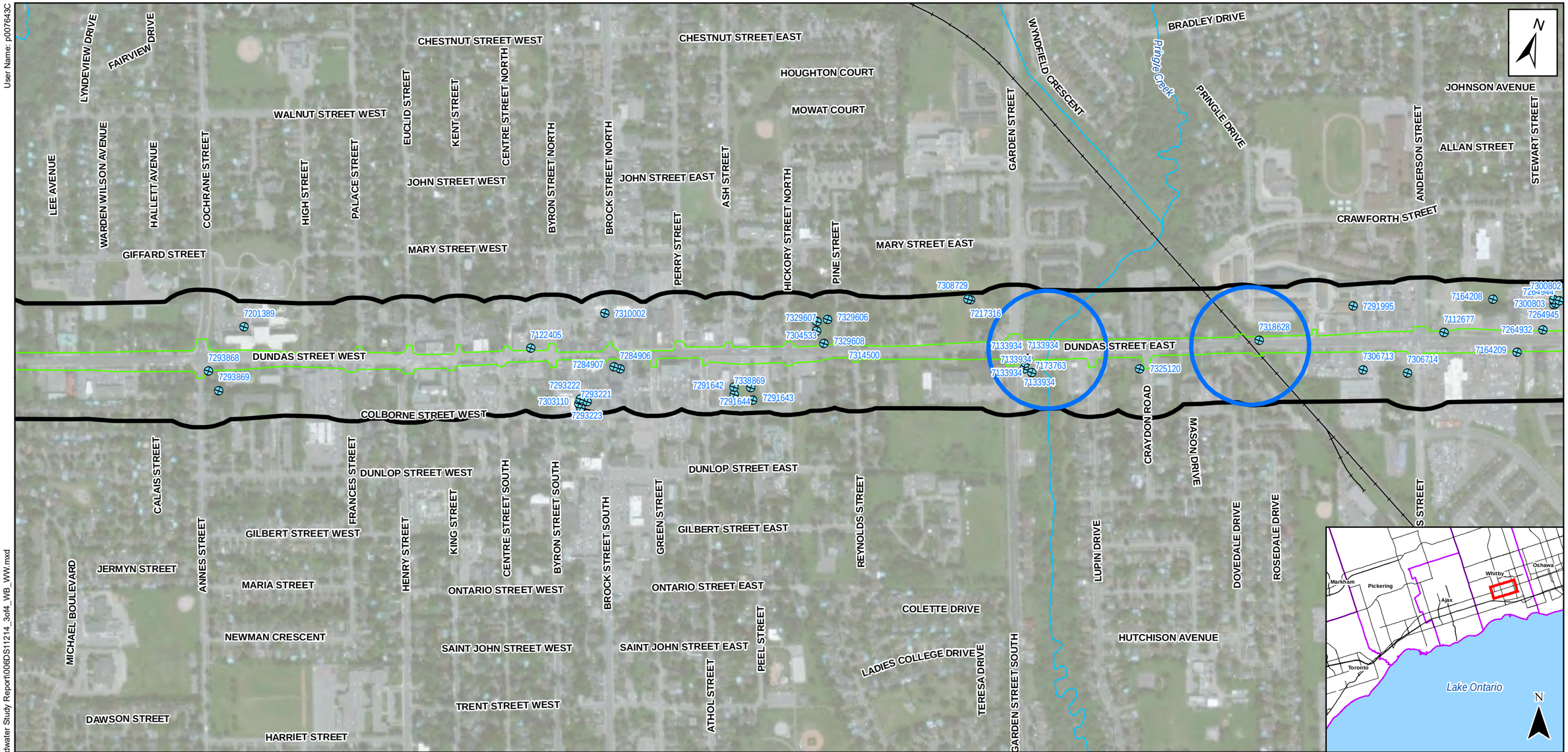
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**		
Figure Title:	**Groundwater Study Water Well Locations**		
Prepared By: PARSONS		**Date:** January 27 2021	
Version: 1-1	**Review:**	**Figure:** 6D	**Page:** 2 of 4

User Name: p0076643C



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Legend

- Study Area - 100 metres
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Watercourses and Municipal Boundaries - Land Information Ontario
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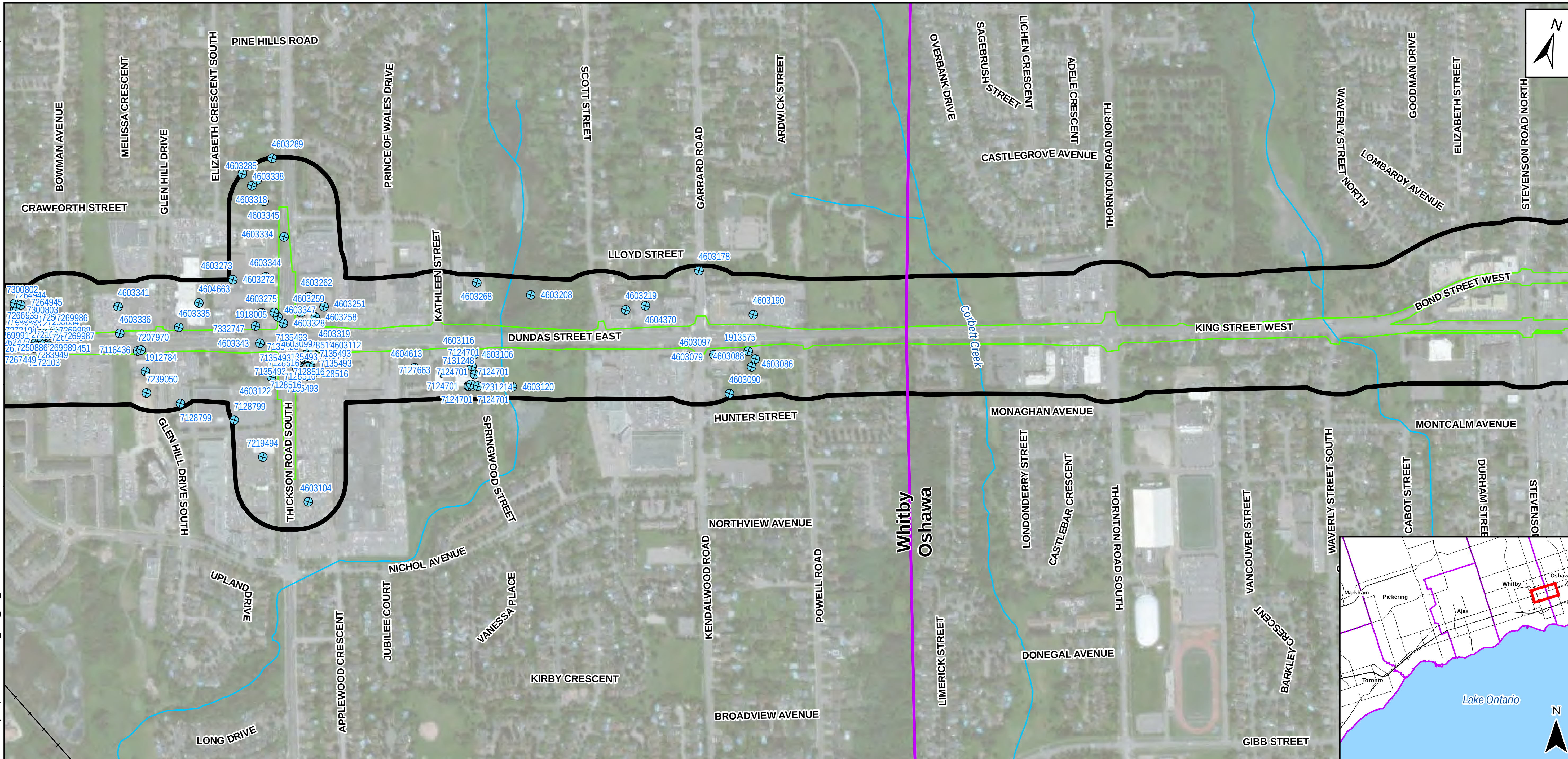
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**		
Figure Title:	**Groundwater Study Water Well Locations**		
Prepared By: PARSONS		**Date:** January 27 2021	
Version: 1-1	**Review:**	**Figure:** 6D	**Page:** 3 of 4

User Name: p007643C



Legend

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0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By: PARSONS	**Date:** January 26 2021
Version: 1-1	**Review:**
Figure: 6D	**Page:** 4 of 4

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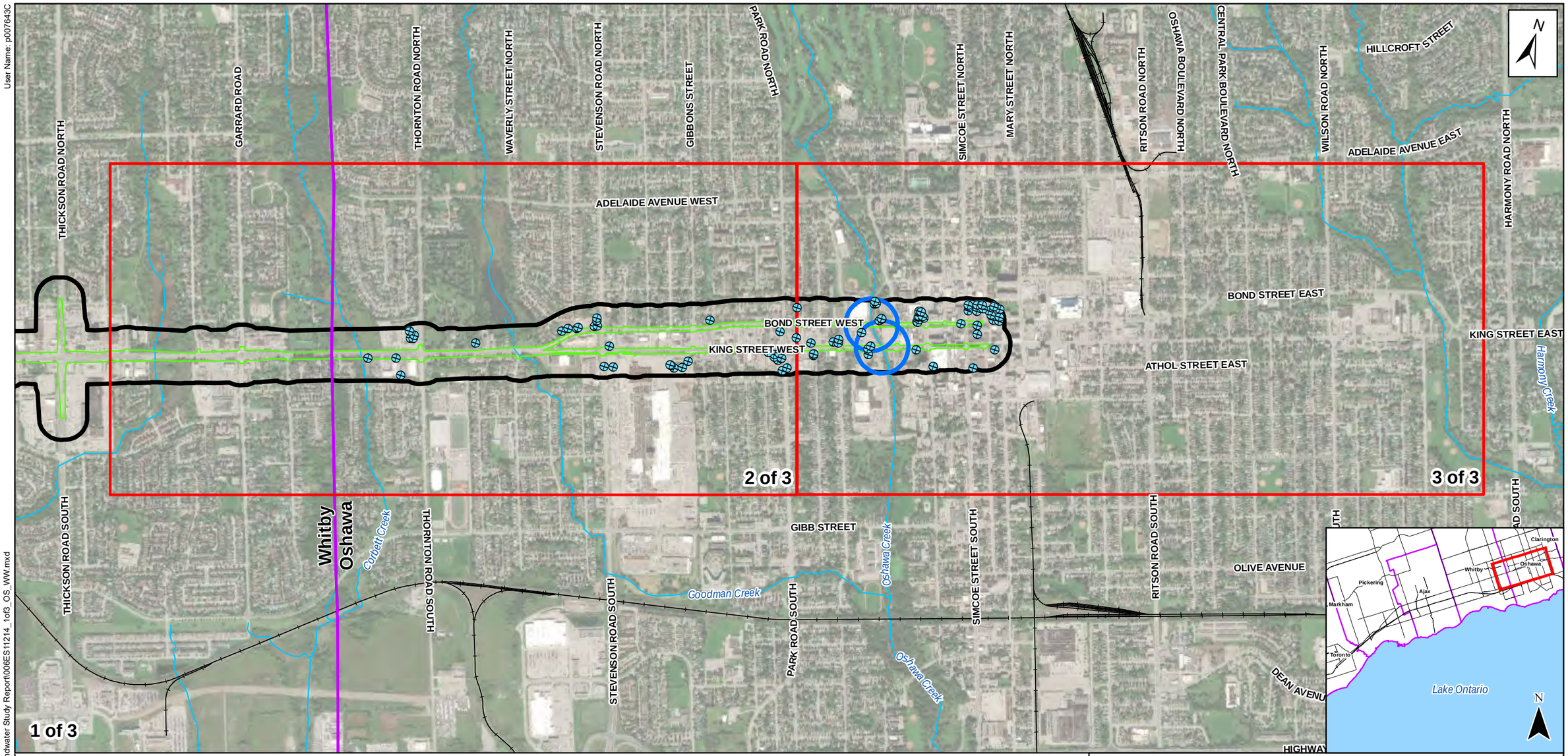

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Legend

- Study Area - 100 metres
- Project Extent
- Municipal Boundary
- Railway
- Watercourse
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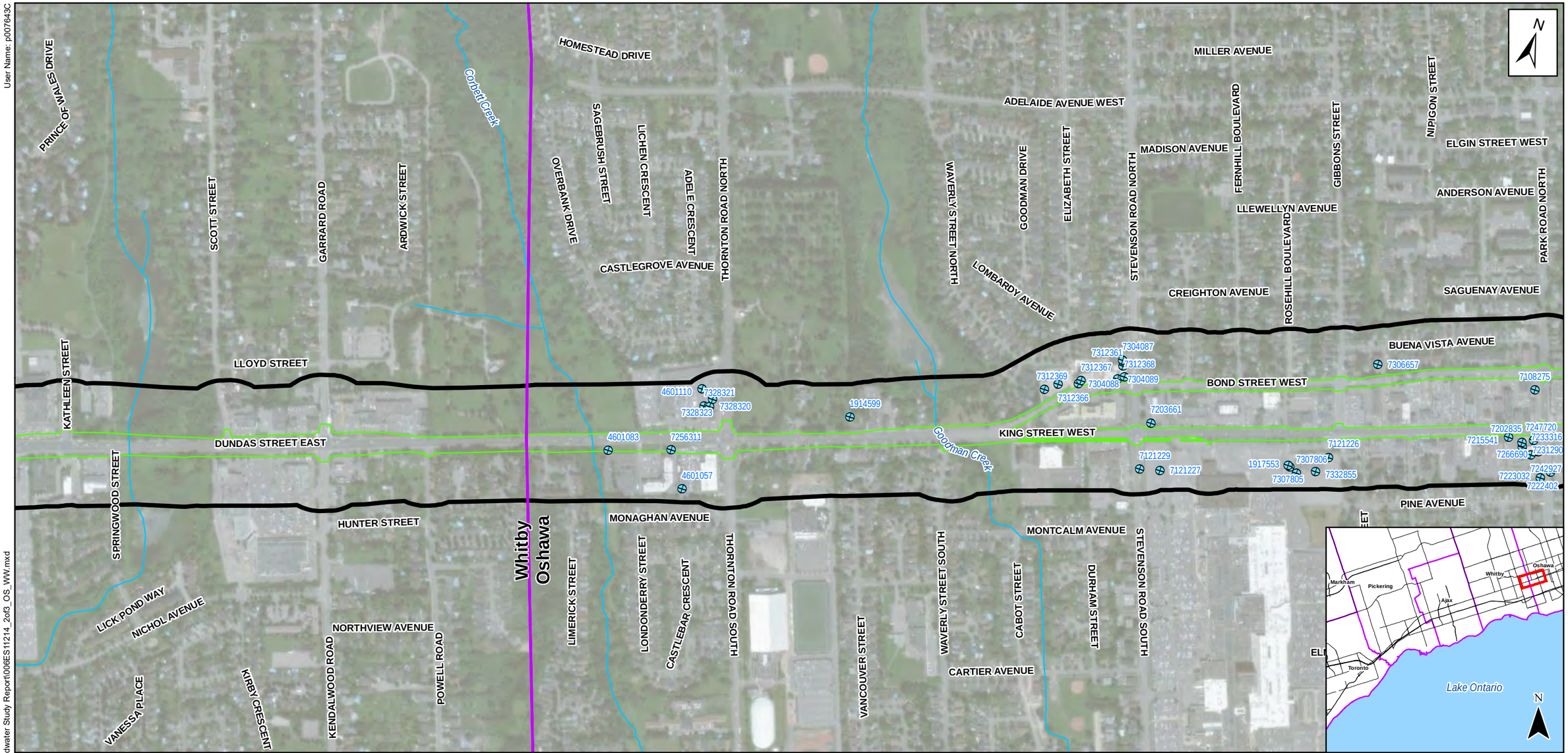
Roads and Railways - Ontario Open Data Catalogue
Watercourses and Municipal Boundaries - Land Information Ontario
Basemap - ESRI
Project Boundary - Parsons
Water Wells - Ministry of Environmental and Climate Change

0 250 500 750 1,000 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**		
Figure Title:	**Groundwater Study Water Well Locations**		
Prepared By: PARSONS		**Date:** January 27 2021	
Version: 1-1	**Review:**	**Figure:** 6E	**Page:** 1 of 3

User Name: p0076643C



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Legend

- Study Area - 100 metres
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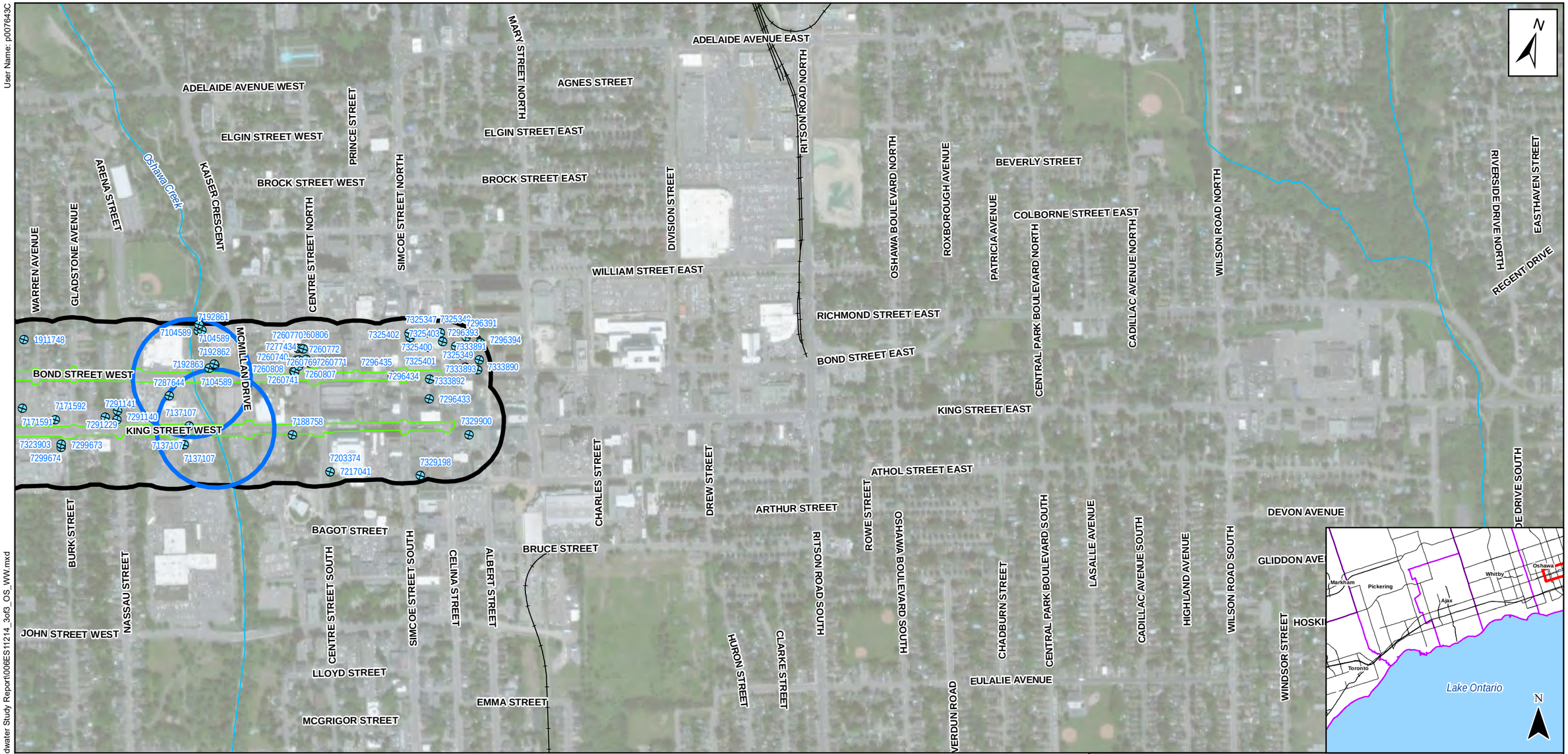
0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**
Figure Title:	**Groundwater Study Water Well Locations**
Prepared By: PARSONS	**Date:** January 27 2021
Version: 1-1	**Review:**
Figure: 6E	**Page:** 2 of 3

User Name: p0076643C



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0 100 200 300 400 Metres

Project:	**Durham-Scarborough Bus Rapid Transit**		
Figure Title:	**Groundwater Study Water Well Locations**		
Prepared By: PARSONS		**Date:** January 27 2021	
Version: 1-1	**Review:**	**Figure:** 6E	**Page:** 3 of 3

Well ID	Date Completed	Depth(m)	Depth to WL(m)	Depth to Bedrock(m)	Municipality	Coordinates
7256694	12/3/2015	4.6	N/A	N/A	Toronto	17 641544 4848305 W
7166359	6/23/2011	N/A	N/A	N/A	Toronto	17 642350 4848560 W
7175864	11/18/2011	N/A	N/A	N/A	Toronto	17 642350 4848560 W
7338826	7/4/2019	18.3	N/A	N/A	Toronto	17 645074 4849510 W
7166744	7/13/2011	6.1	N/A	N/A	Pickering	17 650368 4852327 W
7166743	7/13/2011	6.1	N/A	N/A	Pickering	17 650380 4852334 W
7044722	2/16/2007	5.5	N/A	N/A	Pickering	17 650342 4852346 W
4601916	9/9/1967	31.1	27.4	N/A	Pickering	17 650915 4852783 W
7245784	7/21/2015	N/A	N/A	N/A	Pickering	17 650891 4852820 W
7166731	7/21/2011	4.6	N/A	N/A	Pickering	17 650945 4852828 W
7331991	3/20/2019	6.1	N/A	N/A	Pickering	17 651510 4853412 W
7329547	1/25/2019	N/A	N/A	N/A	Pickering	17 651508 4853461 W
7122456	3/25/2009	5.5	N/A	N/A	Pickering	17 651543 4853487 W
1912208	11/14/1994	11.6	3.7	11.6	Pickering	17 651571 4853540 W
1912207	11/16/1994	11.3	3.7	11.3	Pickering	17 651573 4853540 W
1912210	11/15/1994	11.3	N/A	11.3	Pickering	17 651572 4853540 W
1912209	11/15/1994	11.3	6.1	11.3	Pickering	17 651574 4853540 W
7315926	<Null>	4.6	N/A	N/A	Pickering	17 651733 4853650 W
4601194	8/7/1964	21.3	3.7	N/A	Pickering	17 653035 4854839 W
4601195	12/11/1964	7.3	3	N/A	Pickering	17 653113 4854921 W
7332451	10/11/2018	7.6	N/A	N/A	Pickering	17 653106 4854923 W
7332450	10/11/2018	9.1	N/A	N/A	Pickering	17 653258 4855096 W
7332439	6/13/2018	10.7	N/A	N/A	Pickering	17 653303 4855161 W
7332438	6/14/2018	10.7	N/A	N/A	Pickering	17 653303 4855163 W
7228643	8/19/2014	6.7	N/A	N/A	Pickering	17 653485 4855332 W
4601173	8/16/1967	5.5	1.8	N/A	Pickering	17 654174 4856124 W
7257864	1/13/2016	3.7	N/A	N/A	Pickering	17 654331 4856292 W
7326695	10/30/2018	5.2	N/A	N/A	Pickering	17 654732 4856683 W
7228646	8/19/2014	6.1	N/A	N/A	Pickering	17 654690 4856685 W
7101063	11/21/2007	N/A	N/A	N/A	Pickering	17 654727 4856702 W
7101063	11/20/2007	7.6	N/A	N/A	Pickering	17 654727 4856702 W
7101063	11/20/2007	N/A	N/A	N/A	Pickering	17 654727 4856702 W
7228645	8/19/2014	5.9	N/A	N/A	Pickering	17 654742 4856733 W
4601162	5/11/1967	10.7	2.4	N/A	Pickering	17 654830 4856752 W
7228647	8/19/2014	6.1	N/A	N/A	Pickering	17 654872 4856821 W
4601163	8/17/1965	6.1	1.5	N/A	Pickering	17 654808 4856826 W
4605453	1/13/1973	13.7	4.6	11.3	Pickering	17 655425 4857233 W
4601153	12/5/1946	33.2	6.1	6.1	Ajax	17 656302 4857507 W
7288201	<Null>	N/A	N/A	N/A	Ajax	17 656334 4857553 W
7241109	3/10/2015	N/A	N/A	N/A	Ajax	17 656335 4857558 W
1911808	10/30/1993	4.9	N/A	N/A	Ajax	17 659117 4858494 W
4601140	9/25/1962	50.6	N/A	18.9	Ajax	17 659377 4858584 W
1914353	11/19/1999	N/A	N/A	N/A	Ajax	17 659465 4858656 W
4601132	5/18/1967	20.1	9.1	16.1	Ajax	17 659749 4858713 W
4603875	8/1/1968	5.5	N/A	N/A	Ajax	17 661855 4859223 W
1905689	4/7/1980	34.4	N/A	9.4	Ajax	17 661335 4859243 W
7325558	3/5/2018	N/A	N/A	N/A	Whitby	17 661930 4859433 W
7207014	6/10/2013	N/A	1.8	N/A	Whitby	17 662286 4859555 W
7202355	4/29/2013	N/A	0.9	N/A	Whitby	17 662398 4859620 W
7186622	<Null>	N/A	N/A	N/A	Whitby	17 662480 4859658 W
7205077	4/5/2013	N/A	N/A	N/A	Whitby	17 662608 4859707 W
7298043	<Null>	N/A	N/A	N/A	Whitby	17 662988 4859829 W
7283366	11/22/2016	17.1	N/A	N/A	Whitby	17 662989 4859830 W
7130852	<Null>	N/A	N/A	N/A	Whitby	17 663813 4860032 W
7137312	12/11/2009	N/A	N/A	N/A	Whitby	17 663783 4860044 W
7130852	<Null>	N/A	N/A	N/A	Whitby	17 663813 4860032 W
7130852	<Null>	N/A	N/A	N/A	Whitby	17 663813 4860032 W
7130852	<Null>	N/A	N/A	N/A	Whitby	17 663813 4860032 W
7130852	<Null>	N/A	N/A	N/A	Whitby	17 663813 4860032 W
7130852	<Null>	N/A	N/A	N/A	Whitby	17 663813 4860032 W

Well ID	Date Completed	Depth(m)	Depth to WL(m)	Depth to Bedrock(m)	Municipality	Coordinates
7133934	10/19/2009	N/A	N/A	N/A	Whitby	17 666126 4860839 W
7133934	10/19/2009	4.5	N/A	N/A	Whitby	17 666126 4860839 W
7133934	10/19/2009	N/A	N/A	N/A	Whitby	17 666126 4860839 W
7318628	6/8/2018	N/A	N/A	N/A	Whitby	17 666572 4861024 W
7112677	6/11/2008	3.7	N/A	N/A	Whitby	17 666925 4861155 W
7272103	8/25/2016	4.6	N/A	N/A	Whitby	17 667171 4861211 W
7272102	8/24/2016	3.8	N/A	N/A	Whitby	17 667182 4861215 W
7272104	8/25/2016	4.6	N/A	N/A	Whitby	17 667169 4861220 W
7267449	6/2/2016	4.3	N/A	N/A	Whitby	17 667184 4861221 W
7267450	6/2/2016	4.6	N/A	N/A	Whitby	17 667196 4861225 W
7267451	6/2/2016	4.6	N/A	N/A	Whitby	17 667207 4861229 W
7283949	10/7/2016	N/A	N/A	N/A	Whitby	17 667181 4861231 W
7272101	8/24/2016	4.6	N/A	N/A	Whitby	17 667171 4861233 W
7264946	5/10/2016	3	N/A	N/A	Whitby	17 667166 4861236 W
7262477	9/14/2015	4.6	N/A	N/A	Whitby	17 667189 4861236 W
7262478	9/14/2015	N/A	N/A	N/A	Whitby	17 667189 4861236 W
7250883	10/8/2015	4.6	N/A	N/A	Whitby	17 667182 4861239 W
7250884	10/8/2015	4.6	N/A	N/A	Whitby	17 667199 4861247 W
7207970	4/3/2013	N/A	N/A	N/A	Whitby	17 667379 4861274 W
7116436	10/23/2008	10.7	N/A	N/A	Whitby	17 667385 4861278 W
4603336	3/31/1965	9.4	7.6	N/A	Whitby	17 667334 4861296 W
7135493	11/12/2009	N/A	N/A	N/A	Whitby	17 667722 4861336 W
4603343	6/10/1966	9.1	3.4	N/A	Whitby	17 667606 4861364 W
7135493	11/12/2009	N/A	N/A	N/A	Whitby	17 667722 4861336 W
4603319	11/5/1963	7.6	1.8	N/A	Whitby	17 667721 4861392 W
4603112	7/3/1964	8.8	8.5	N/A	Whitby	17 667723 4861392 W
4603328	11/2/1964	11.9	2.4	N/A	Whitby	17 667638 4861416 W
4603334	3/30/1965	9.1	2.4	N/A	Whitby	17 667586 4861581 W
4601083	5/5/1958	3	N/A	N/A	Oshawa	17 668991 4861815 W
7256311	1/16/2015	N/A	N/A	N/A	Oshawa	17 669113 4861855 W
7137107	12/1/2009	N/A	2.1	N/A	Oshawa	17 671163 4862540 W
7137107	12/1/2009	N/A	2.1	N/A	Oshawa	17 671163 4862540 W
7296435	9/11/2017	1.8	N/A	N/A	Oshawa	17 671522 4862804 W
7296434	9/12/2017	6.1	N/A	N/A	Oshawa	17 671596 4862821 W

APPENDIX F.
VASCULAR PLANT LIST

Appendix F. Vascular Plant List

	Scientific Name	Common Name	GRank	SRank	MNRF	TRCA	Toronto - Varga	Durham - Varga	H1 - H6	M	CUM1-1a to CUM1-1p	CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	CUM1-1/CUT1	CUM1-1a/CUW1a to CUM1-1g/CUW1g	CUT1a to CUT1c	CUT1-1a to CUT1-1c	CUT1/CUW1	CUT1-1/CUW1	CUP1	CUP1-3	CUP1-8a and CUP1-8b	CUP2	CUP3-2a and b	CUW1a to CUW1w	FOC4-1a and FOC4-1b	FOD2-1	FOD3-1a and FOD3-1b	FOD5-1a and FOD5-1b	FOD5-3a and FOD5-3b	FOD5-7	FOD5a - FOD5c	FOD6-5	FOD7-3	FOM2a to FOM2c	FOM3-2	FOM6-1	MAM2-2	MAM2-2/MAS2	MAS2a to MAS2f	MAS2-1a to MAS2-1h	MAS2-1/SWD4	MAS2-1/SWT2-2	SWT2-2	SWD3-4a to SWD3-4c	SWD3a to SWD3c	SWD4	SWM3
	EQUISETACEAE	**HORSETAIL FAMILY**																																												
	Equisetum arvense	field horsetail	G5	S5		L5	X	X			X			X										X				X											X	X	X		X			
	Equisetum pratense	meadow horsetail	G5	S5		L3	R1	U																				X						X					X					X		
	DENNSTAEDTIACEAE	**BRACKEN FERN FAMILY**																																												
	Pteridium aquilinum var. *latiusculum*	eastern bracken-fern	G5T	S5		L4	X	X			X			X								X			X				X					X												
	Onoclea sensibilis	sensitive fern	G5	S5		L5	X	X																	X				X					X					X	X						X
	Athyrium filix-femina var. *angustum*	northern lady fern	G5T5	S5		L5	X	X																	X			X	X	X				X												
	Cystopteris bulbifera	bulbet bladder fern	G5	S5		L4	U	X																										X													
	Matteuccia struthiopteris var. *pensylvanica*	ostrich fern	G5	S5		L5	X	X																	X				X		X			X					X				X			
	Polystichum acrostichoides	Christmas fern	G5	S5		L4	U	X																					X																	
	GINKGOACEAE	**GINKGO FAMILY**																																													
*	*Ginkgo biloba*	maiden-hair tree								X																																					
*	*Larix decidua*	European larch	G?	SE2		L+	X	X		X	X																																				
	Tsuga canadensis	eastern hemlock	G5	S5		L4	X	X																	X				X		X			X	X	X				X						
*	*Picea abies*	Norway spruce	G?	SE3		L+	X	X	X	X	X		X										X	X																							
	Picea glauca	white spruce	G5	S5		L3	X+	X	X	X	X			X	X		X			X				X							X															
*	*Picea pungens*	Colorado spruce	G5	SE1		L+		X		X	X			X	X									X																							
	Larix laricina	tamarack	G5	S5		L3	R3	X	X		X																																				
*	*Pinus nigra*	Austrian pine	G?	SE2		L+		X	X	X	X			X			X				X	X		X																							
*	*Pinus sylvestris*	scotch pine	G?	SE5		L+	X	X	X	X	X						X				X			X							X																
	Pinus strobus	eastern white pine	G5	S5		L4	X	X	X	X	X						X				X	X	X	X		X	X	X	X					X	X											
	Pinus resinosa	red pine	G5	S5		L2	R3	X+		X					X								X																							
	CUPRESSACEAE	**CEDAR FAMILY**																																													
	Juniperus virginiana	eastern red cedar	G5	S5		L5			X	X	X	X	X	X	X		X	X	X						X																						
	Thuja occidentalis	eastern white cedar	G5	S5		L4	X	X	X	X	X			X	X		X	X	X		X		X	X	X	X	X	X		X		X		X	X				X				X		X
*	*Juniperus sabina*	savin juniper	G5							X																																					
	MAGNOLIACEAE	**MAGNOLIA FAMILY**																																													
	Liriodendron tulipifera	tulip tree	G5	S4						X	X	X																																			
	RANUNCULACEAE	**BUTTERCUP FAMILY**																																													
	Anemone virginiana var. *virginiana*	thimbleweed	G5T	S5		L5	X	X																	X																						
	Thalictrum dioicum	early meadow-rue	G5	S5		L5	X	X																						X	X															
	Ranunculus recurvatus var. *recurvatus*	hooked buttercup	G5	S5		L5	U	X																	X										X						X					
	Actaea rubra	red baneberry	G5	S5		L5	X	X																						X		X				X										
*	*Ranunculus acris*	tall buttercup	G5	SE5		L+	X	X			X					X			X																					X	X						
	Anemone canadensis	Canada anemone	G5	S5		L5	X	X			X			X											X																X						
	BERBERIDACEAE	**BARBERRY FAMILY**																																													
	Caulophyllum thalictroides	blue cohosh	G	S5		L3	X	X																						X						X										
*	*Berberis thunbergii*	Japanese barberry	G?	SE5		L+	X	X		X	X																		X																	
	FUMARIACEAE	**FUMITORY FAMILY**																																													
	Dicentra canadensis	squirrel-corn	G5	S5		L3	R5	U																	X																						
	PLATANACEAE	**PLANE-TREE FAMILY**																																													
*	*Platanus X acerifolia*	London plane-tree	GU	SE1		L+	X	X		X																																				
	ULMACEAE	**ELM FAMILY**																																													
	Ulmus americana	white elm	G5?	S5		L5	X	X	X	X	X			X			X	X		X				X	X		X				X			X	X					X			X	X
*	*Ulmus glabra*	Scotch elm	G?	SE1		L+				X																																				
	Celtis occidentalis	common hackberry	G5	S4				E		X																																					
*	*Ulmus pumila*	Siberian elm	G?	SE3		L+	X	X	X	X	X	X	X	X	X	X		X							X										X	X					X	X				
	MORACEAE	**MULBERRY FAMILY**																																													
*	*Morus alba*	white mulberry	G?	SE5		L+	X	X	X	X	X			X							X			X																							
	URTICACEAE	**NETTLE FAMILY**																																													
	Boehmeria cylindrica	false nettle	G5	S5		L4	R5	X												X																										
	Pilea pumila	dwarf clearweed	G5	S5		L5	U	X																																	X						
*	*Urtica dioica* ssp. *dioica*	European stinging nettle	G5T?	SE2		L+	X	X						X											X																X						

Appendix F. Vascular Plant List

	Scientific Name	Common Name	GRank	SRank	MNRF	TRCA	Toronto - Varga	Durham - Varga	H1 - H6	M	CUM1-1a to CUM1-1p	CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	CUM1-1/CUT1	CUM1-1a/CUW1a to CUM1-1g/CUW1g	CUT1a to CUT1c	CUT1-1a to CUT1-1c	CUT1/CUW1	CUT1-1/CUW1	CUP1	CUP1-3	CUP1-8a and CUP1-8b	CUP2	CUP3-2a and b	CUW1a to CUW1w	FOC4-1a and FOC4-1b	FOD2-1	FOD3-1a and FOD3-1b	FOD5-1a and FOD5-1b	FOD5-3a and FOD5-3b	FOD5-7	FOD5a - FOD5c	FOD6-5	FOD7-3	FOM2a to FOM2c	FOM3-2	FOM6-1	MAM2-2	MAM2-2/MAS2	MAS2a to MAS2f	MAS2-1a to MAS2-1h	MAS2-1/SWD4	MAS2-1/SWT2-2	SWT2-2	SWD3-4a to SWD3-4c	SWD3a to SWD3c	SWD4	SWM3
	JUGLANDACEAE	**WALNUT FAMILY**																																											
	Juglans cinerea	butternut	G3G4	S3?	END	L3	X	X																																					
	Juglans nigra	black walnut	G5	S4		L5	X	U	X	X	X	X	X	X			X			X			X	X						X			X					X		X		X	X		
	FAGACEAE	**BEECH FAMILY**																																											
	Fagus grandifolia	American beech	G5	S5		L4	X	X																	X		X	X			X		X												
	Quercus alba	white oak	G5	S5		L3	X	R4		X																						X													
	Quercus macrocarpa	bur oak	G5	S5		L4	X	U		X	X	X									X			X	X																				
	Quercus rubra	red oak	G5	S5		L4	X	X	X	X	X	X										X	X	X	X		X	X	X	X				X	X	X									
	BETULACEAE	**BIRCH FAMILY**																																											
	Betula papyrifera	white birch	G5	S5		L4	X	X			X			X								X	X	X				X	X	X			X		X									
*	*Betula pendula*	European weeping birch	G?	SE4		L+	X	X	X		X																								X										
	Betula alleghaniensis	yellow birch	G5	S5		L4	X	X																					X	X		X		X										
*	*Alnus glutinosa*	European black alder	G?	SE4		L+	X	X																	X																				
	Alnus incana ssp. *rugosa*	speckled alder	G5T5	S5		L3	R4	X																			X																			
	Ostrya virginiana	ironwood	G5	S5		L5	X	X	X		X											X		X				X	X							X									
	CHENOPODIACEAE	**GOOSEFOOT FAMILY**																																											
*	*Chenopodium album* var. *album*	lamb's quarters	G5T5	SE5		L+			X		X													X																						
	CARYOPHYLLACEAE	**PINK FAMILY**																																												
*	*Silene vulgaris*	catchfly	G?	SE5		L+	X	X			X											X																								
*	*Saponaria officinalis*	bouncing-bet	G?	SE5		L+	X	X			X				X																														
	POLYGONACEAE	**SMARTWEED FAMILY**																																												
*	*Polygonum cuspidatum*	Japanese knotweed	G?	SE4		L+	X	X			X													X																		X				
*	*Rumex crispus*	curly-leaf dock	G?	SE5		L+	X	X	X	X	X	X		X								X		X																			X			
*	*Polygonum persicaria*	lady's-thumb	G?	SE5		L+	X	X		X	X			X																											X		X			
	GUTTIFERAE	**ST. JOHN'S-WORT FAMILY**																																											
*	*Hypericum perforatum*	common St. John's-wort	G?	SE5		L+	X	X						X											X																				
	TILIACEAE	**LINDEN FAMILY**																																											
	Tilia americana	basswood	G5	S5		L5	X	X		X	X					X	X	X	X	X	X	X		X	X		X	X	X		X	X		X	X					X				
*	*Tilia cordata*	small leaf linden	G?	SE1		L+		X	X	X	X				X		X																												X
	MALVACEAE	**MALLOW FAMILY**																																											
	Hibiscus laevis	halberd-leaved rose-mallow	G3G5	SX						X																																		
	VIOLACEAE	**VIOLET FAMILY**																																											
	Viola sp.	violet								X																																X			
	Viola sororia	woolly blue violet	G5	S5		L5	X	X																	X											X								
	Viola conspersa	American dog violet	G5	S5		L5	X	X			X																																		
	CUCURBITACEAE	**GOURD FAMILY**																																												
	Echinocystis lobata	prickly cucumber	G5	S5		L5	X	X			X			X											X				X		X										X	X			
	SALICACEAE	**WILLOW FAMILY**																																												
	Salix eriocephala	Missouri willow	G5	S5		L5	X	X			X			X											X																	X	X			
	Populus tremuloides	trembling aspen	G5	S5		L5	X	X	X		X	X		X	X		X						X	X	X				X	X		X	X	X						X	X			X
	Salix sp.	willow		?					X		X			X							X			X									X							X		X		X			
*	*Salix purpurea*	basket willow	G5	SE4		L+	X	X																																	X						
*	*Salix X pendulina*	hybrid willow	HYB	SE1					X	X	X			X			X								X															X						
	Salix petiolaris	slender willow	G4	S5		L4	R2	X			X																																			
*	*Salix alba*	white willow	G5	SE4		L+	X	X		X	X			X											X									X					X		X	X	X		X	X		
	Populus deltoides ssp. *deltoides*	eastern cottonwood	G5T?	SU		L5	X	U	X	X	X			X		X									X														X							
*	*Salix fragilis*	crack willow	G?	SE5		L+	X	X			X			X											X								X	X					X	X			X	X		X	
*	*Populus alba*	silver poplar	G5	SE5		L+	X	X		X	X														X									X												
	Populus grandidentata	large-tooth aspen	G5	S5		L4	X	X	X		X	X															X	X																		
	Salix exigua	sandbar willow	G5	S5		L5	X	X			X					X	X								X																X		X				
	Salix amygdaloides	peach-leaved willow	G5	S5		L4	U	X																				X																		
	Salix bebbiana	long-beaked willow	G5	S5		L4	X	X																																	X						
	Salix discolor	pussy willow	G5	S5		L4	X	X			X			X																											X	X					

Appendix F. Vascular Plant List

	Scientific Name	Common Name	GRank	SRank	MNRF	TRCA	Toronto - Varga	Durham - Varga	H1 - H6	M	CUM1-1a to CUM1-1p	CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	CUM1-1/CUT1	CUM1-1a/CUW1a to CUM1-1g/CUW1g	CUT1a to CUT1c	CUT1-1a to CUT1-1c	CUT1/CUW1	CUT1-1/CUW1	CUP1	CUP1-3	CUP1-8a and CUP1-8b	CUP2	CUP3-2a and b	CUW1a to CUW1w	FOC4-1a and FOC4-1b	FOD2-1	FOD3-1a and FOD3-1b	FOD5-1a and FOD5-1b	FOD5-3a and FOD5-3b	FOD5-7	FOD5a - FOD5c	FOD6-5	FOD7-3	FOM2a to FOM2c	FOM3-2	FOM6-1	MAM2-2	MAM2-2/MAS2	MAS2a to MAS2f	MAS2-1a to MAS2-1h	MAS2-1/SWD4	MAS2-1/SWT2-2	SWT2-2	SWD3-4a to SWD3-4c	SWD3a to SWD3c	SWD4	SWM3
	Populus balsamifera ssp. *balsamifera*	balsam poplar	G5T?	S5		L5	X	X						X										X	X					X			X									X			X
	BRASSICACEAE	**MUSTARD FAMILY**																																												
*	*Hesperis matronalis*	dame's rocket	G4G5	SE5		L+	X	X			X			X					X					X				X												X			X	X		
*	*Barbarea vulgaris*	yellow rocket	G?	SE5		L+	X	X			X							X																												
*	*Alliaria petiolata*	garlic mustard	G5	SE5		L+	X	X	X	X	X			X				X	X		X			X				X		X	X		X	X	X							X			
*	*Lepidium campestre*	field cress	G?	SE5		L+	X	X			X										X																									
	PRIMULACEAE	**PRIMROSE FAMILY**																																												
*	*Lysimachia nummularia*	moneywort	G?	SE5		L+	X	X																X																					
	HYDRANGEACEAE	**HYDRANGEA FAMILY**																																												
*	*Hydrangea paniculata*	paniculate hydrangea	G?	SE1						X																																			
	GROSSULARIACEAE	**GOOSEBERRY FAMILY**																																												
	Ribes americanum	wild black currant	G5	S5		L5	X	X															X	X				X	X		X	X			X							X		
	Ribes cynosbati	prickly gooseberry	G5	S5		L5	X	X		X																																			
	ROSACEAE	**ROSE FAMILY**																																												
	Amelanchier laevis	smooth juneberry	G4G5Q	S5		L4	U	U		X	X			X								X	X	X											X										
	Potentilla recta	rough-fruited cinquefoil	G?	SE5		L+	X	X			X			X																															
	Amelanchier sp.	juneberry							X																																				
	Prunus nigra	canada plum	G4G5	S4		L3	R6	U		X																																			
	Rubus sp.	raspberry																																												
	Rubus odoratus	purple flowering raspberry	G5	S5		L5	X	X														X																							
	Rubus occidentalis	thimble-berry	G5	S5		L5	X	X	X		X			X						X				X																					
*	*Rubus idaeus ssp. idaeus*	red raspberry	G5T5	SE1					X		X													X							X														
*	*Rosa multiflora*	multiflora rose	G?	SE4		L+	X	X			X		X							X				X											X										
*	*Pyrus communis*	common pear	G5	SE4		L+	X	X																											X											
	Prunus virginiana ssp. *virginiana*	choke cherry	G5T?	S5		L5	X	X	X	X	X			X						X	X	X	X		X	X	X		X	X	X	X	X			X							X	X		
	Prunus sp.	cherry									X			X	X						X														X									X			
	Fragaria virginiana ssp. *virginiana*	scarlet strawberry	G5T?	SU		L5	X	X																X																					
	Prunus serotina	black cherry	G5	S5		L5	X	X		X	X											X		X	X			X	X		X	X	X		X		X								
*	*Crataegus monogyna*	English hawthorn	G5	SE5		L+	X	X			X				X																														
*	*Prunus glandulosa*	ornamental cherry	G?	SE1		L+	X							X																															
	Geum macrophyllum	large-leaved avens	G5	S5							X																																			
	Malus sp.	apple							X	X	X										X			X											X								X			
*	*Malus pumila*	common apple	G5	SE5		L+	X	X			X		X	X						X				X											X								X			
	Geum aleppicum	yellow avens	G5	S5		L5	X	X			X			X						X				X					X		X		X	X		X							X		X
	Crataegus pedicellata	scarlet hawthorn	G5	S4		L5	X	X		X													X					X																		
	Geum canadense	white avens	G5	S5		L5	X	X																X						X		X				X								X	X		
	Physocarpus opulifolius	ninebark	G5	S5		L3	R6	R2	X														X																							
	Crataegus punctata	large-fruited thorn	G5	S5		L5	X	X																X					X		X														
	Crataegus sp.	hawthorn									X													X											X											
	FABACEAE	**PEA FAMILY**																																												
	Amphicarpaea bracteata	hog peanut	G5	S5		L5	X	X																X																	X				
*	*Melilotus alba*	white sweet-clover	G?	SE5		L+	X	X		X	X			X	X																														
*	*Medicago lupulina*	black medick	G?	SE5		L+	X	X																																						
*	*Trifolium repens*	white clover	G?	SE5		L+	X	X	X	X	X			X	X																												X			
*	*Lotus corniculatus*	bird's-foot trefoil	G?	SE5		L+	X	X	X	X	X	X		X	X	X								X																		X				
*	*Vicia cracca*	tufted vetch	G?	SE5		L+	X	X	X	X	X	X		X	X			X				X		X																		X				
*	*Trifolium pratense*	red clover	G?	SE5		L+	X	X	X	X	X				X																												X				
*	*Coronilla varia*	variable crown-vetch	G?	SE5		L+	X	X			X			X	X	X	X								X																		X				
*	*Robinia pseudo-acacia*	black locust	G5	SE5		L+	X	X	X	X	X			X	X	X			X		X				X			X	X															X				
	Cercis canadensis	Canadian redbud	G5	SX					X	X	X														X																		X				
*	*Caragana arborescens*	Siberian pea tree	G?	SE1		L+	X	X						X																																
	Gymnocladus dioicus	Kentucky coffee-tree	G5	S2	THR				X	X	X																																			
	Gleditsia triacanthos	honey locust	G5	S2		L+	X	X	X	X																																				

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	Scientific Name	Common Name	GRank	SRank	MNRF	TRCA	Toronto - Varga	Durham - Varga	H1 - H6	M	CUM1-1a to CUM1-1p	CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	CUM1-1/CUT1	CUM1-1a/CUW1a to CUM1-1g/CUW1g	CUT1a to CUT1c	CUT1-1a to CUT1-1c	CUT1/CUW1	CUT1-1/CUW1	CUP1	CUP1-3	CUP1-8a and CUP1-8b	CUP2	CUP3-2a and b	CUW1a to CUW1w	FOC4-1a and FOC4-1b	FOD2-1	FOD3-1a and FOD3-1b	FOD5-1a and FOD5-1b	FOD5-3a and FOD5-3b	FOD5-7	FOD5a - FOD5c	FOD6-5	FOD7-3	FOM2a to FOM2c	FOM3-2	FOM6-1	MAM2-2	MAM2-2/MAS2	MAS2a to MAS2f	MAS2-1a to MAS2-1h	MAS2-1/SWD4	MAS2-1/SWT2-2	SWT2-2	SWD3-4a to SWD3-4c	SWD3a to SWD3c	SWD4	SWM3
	ELAEAGNACEAE	**OLEASTER FAMILY**																																											
*	*Elaeagnus angustifolia*	Russian olive	G?	SE3		L+	X	X		X	X	X		X	X		X							X																						
*	*Elaeagnus umbellata*	Autumn olive	G?	SE3		L+	X	X						X										X																						
	LYTHRACEAE	**LOOSESTRIFE FAMILY**																																											
*	*Lythrum salicaria*	purple loosestrife	G5	SE5		L+	X	X			X			X										X																	X		X	X				
	ONAGRACEAE	**EVENING-PRIMROSE FAMILY**																																												
	Oenothera biennis	common evening-primrose	G5	S5		L5	U	X			X																																			
*	*Epilobium hirsutum*	great hairy willow-herb	G?	SE5		L+	X	X																																			X				
	Circaea lutetiana ssp. canadensis	yellowish enchanter's nightshade	G5T5	S5		L5	X	X			X			X								X			X		X				X	X		X		X						X	X			
	CORNACEAE	**DOGWOOD FAMILY**																																												
	Cornus sp.	dogwood								X																																				
	Cornus rugosa	round-leaved dogwood	G5	S5		L4	X	X															X		X					X						X								X	X
	Cornus foemina ssp. racemosa	red panicled dogwood	G5?	S5		L4	X	R2	X																					X						X									
	Cornus alternifolia	alternate-leaved dogwood	G5	S5		L5	X	X																X		X	X		X	X	X		X		X		X								
	Cornus sericea	red-osier dogwood	G5	S5		L5	X	X		X	X			X	X		X								X								X				X		X	X	X	X				X
	CELASTRACEAE	**STAFF-TREE FAMILY**																																												
	Euonymus obovatus	running strawberry-bush	G5	S5		L3	R5																													X									
*	*Euonymus alata*	winged spindle tree	G?	SE2		L+	X			X	X	X		X				X	X			X		X				X			X			X										
	EUPHORBIACEAE	**SPURGE FAMILY**																																												
*	*Euphorbia esula*	leafy spurge	G5	SE5		L+	X		X																																					
	RHAMNACEAE	BUCKTHORN FAMILY																																												
*	*Rhamnus cathartica*	common buckthorn	G?	SE5		L+	X	X	X	X	X	X	X	X	X		X		X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X				X	X	X	X	X	X	X
	VITACEAE	**GRAPE FAMILY**																																												
	Parthenocissus inserta	inserted Virginia-creeper	G5	S5		L5	X	X			X	X	X	X			X							X						X	X			X									X	X	
	Vitis riparia	riverbank grape	G5	S5		L5	X	X	X	X	X	X	X	X	X		X			X	X	X	X	X		X		X	X	X	X		X	X				X	X	X		X		X	X	X
	HIPPOCASTANACEAE	**BUCKEYE FAMILY**																																												
*	*Aesculus hippocastanum*	horse chestnut	G?	SE2		L+	X	X		X	X													X																						
	ACERACEAE	**MAPLE FAMILY**																																												
*	*Acer campestre*	hedge maple	G?	SE1		L+				X																																				
	Acer X freemanii	freeman's maple				LH	X	X		X	X													X	X						X									X			X	X		
*	*Acer ginnala*	amur maple	G?	SE1		L+	X	X	X	X	X			X					X																											
	Acer negundo	manitoba maple	G5	S5		L+?	X	X	X	X	X	X		X	X		X			X	X			X			X	X			X		X	X	X			X	X	X	X		X	X	X	
	Acer saccharinum	silver maple	G5	S5		L4	X	X	X	X	X	X		X		X	X							X							X					X								X		
*	*Acer platanoides*	norway maple	G?	SE5		L+	X	X	X	X	X		X	X			X	X		X				X							X			X					X							X
	Acer rubrum	red maple	G5	S5		L4	X	X	X	X	X									X					X		X	X		X			X	X		X							X		
	Acer saccharum ssp. *saccharum*	sugar maple	G5T?	S5		L5	X	X	X	X	X			X			X				X	X	X	X	X	X	X	X	X	X	X	X		X	X	X						X	X			
	ANACARDIACEAE	**SUMAC FAMILY**																																												
	Rhus aromatica	fragrant sumac	G5	S5				R1		X																																				
	Rhus radicans ssp. *negundo*	poison-ivy	G5T	S5		L4	R5	U		X	X	X		X								X			X		X		X									X								X
	Rhus glabra	smooth sumac	G5	S5				R1		X																					X															
*	*Cotinus coggygria*	smoke-tree	G?	SE1						X		X	X											X																						
	Rhus typhina	staghorn sumac	G5	S5		L5	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X			X		X	X			X							X			X			
	SIMAROUBACEAE	**AILANTHUS FAMILY**																																												
*	*Ailanthus altissima*	tree-of-heaven	G?	SE5		L+	X	X																X																						
	OXALIDACEAE	**WOOD SORREL FAMILY**																																												
	Oxalis stricta	upright yellow wood-sorrel	G5	S5		L+?	X	X																X																						
	GERANIACEAE	**GERANIUM FAMILY**																																												
*	*Geranium robertianum*	herb-robert	G5	SE5		L+?	X	X																			X	X							X										
	BALSAMINACEAE	**TOUCH-ME-NOT FAMILY**																																												
	Impatiens capensis	spotted touch-me-not	G5	S5		L5	X	X			X			X										X						X					X				X	X		X	X	X		X
*	*Impatiens glandulifera*	glandular touch-me-not	G?	SE4		L+	X	X	X		X													X																X							
	ARALIACEAE	**GINSENG FAMILY**																																												

Appendix F. Vascular Plant List

	Scientific Name	Common Name	GRank	SRank	MNRF	TRCA	Toronto - Varga	Durham - Varga	H1 - H6	M	CUM1-1a to CUM1-1p	CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	CUM1-1/CUT1	CUM1-1a/CUW1a to CUM1-1g/CUW1g	CUT1a to CUT1c	CUT1-1a to CUT1-1c	CUT1/CUW1	CUT1-1/CUW1	CUP1	CUP1-3	CUP1-8a and CUP1-8b	CUP2	CUP3-2a and b	CUW1a to CUW1w	FOC4-1a and FOC4-1b	FOD2-1	FOD3-1a and FOD3-1b	FOD5-1a and FOD5-1b	FOD5-3a and FOD5-3b	FOD5-7	FOD5a - FOD5c	FOD6-5	FOD7-3	FOM2a to FOM2c	FOM3-2	FOM6-1	MAM2-2	MAM2-2/MAS2	MAS2a to MAS2f	MAS2-1a to MAS2-1h	MAS2-1/SWD4	MAS2-1/SWT2-2	SWT2-2	SWD3-4a to SWD3-4c	SWD3a to SWD3c	SWD4	SWM3
	Aralia nudicaulis	wild sarsaparilla	G5	S5		L5	X	X														X			X																			
*	*Pastinaca sativa*	wild parsnip	G?	SE5		L+	X	X																																					
	Heracleum lanatum	cow-parsnip	G5	S5		L4	U	R4			X													X																				
*	*Daucus carota*	wild carrot	G?	SE5		L+	X	X	X	X	X		X	X	X	X						X			X															X					
*	*Aegopodium podagraria*	goutweed	G?	SE5		L+	X	X																	X																				
	APOCYNACEAE	**DOGBANE FAMILY**																																												
	Apocynum cannabinum var. *cannabinum*	Indian hemp	G5T	S5		L5	X	X			X			X										X																					
	ASCLEPIADACEAE	**MILKWEED FAMILY**																																												
*	*Cynanchum rossicum*	swallow-wort	G?	SE5		L+	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X		X	X	X			X	X			X			
	Asclepias syriaca	common milkweed	G5	S5		L5	X	X		X	X	X		X										X																X						
	SOLANACEAE	**POTATO FAMILY**																																												
*	*Solanum dulcamara*	bitter nightshade	G?	SE5		L+	X	X			X			X										X											X							X			
	CONVOLVULACEAE	**MORNING-GLORY FAMILY**																																												
*	*Convolvulus arvensis*	field bindweed	G?	SE5		L+	X	X		X														X																					
	HYDROPHYLLACEAE	**WATER-LEAF FAMILY**																																												
	Hydrophyllum virginianum	Virginia water-leaf	G5	S5		L5	X	X																						X															
	BORAGINACEAE	**BORAGE FAMILY**																																												
	Hackelia virginiana	Virginia stickweed	G5	S5		L5	U	R4			X													X																				
*	*Pulmonaria officinalis*	lungwort		SE1		L+	X																	X																				
*	*Lithospermum officinale*	common gromwell	G?	SE5		L+	X	X						X										X																				
*	*Echium vulgare*	blueweed	G?	SE5		L+	X	X			X	X			X																														
	VERBENACEAE	**VERVAIN FAMILY**																																												
	Verbena hastata	blue vervain	G5	S5		L5	X	X			X																														X	X	X	X	X			
	LAMIACEAE	**MINT FAMILY**																																												
*	*Lamium purpureum*	purple dead-nettle	G?	SE3		L+	X	X						X																														
*	*Leonurus cardiaca* ssp. *cardiaca*	common motherwort	G?T?	SE5		L+	X	X			X		X											X																				
*	*Glechoma hederacea*	creeping Charlie	G?	SE5		L+	X	X		X	X			X				X	X					X					X															
*	*Prunella vulgaris* ssp. *vulgaris*	common heal-all	G5T?	SE3		L+?	X	X						X																														
	Mentha arvensis ssp. *borealis*	American wild mint	G5T5	S5		L5	X	X			X			X																X									X		X				
	PLANTAGINACEAE	**PLANTAIN FAMILY**																																												
*	*Plantago lanceolata*	ribgrass	G5	SE5		L+	X	X		X	X				X																														
*	*Plantago major*	common plantain	G5	SE5		L+	X	X	X	X	X			X		X						X			X																				
	OLEACEAE	**OLIVE FAMILY**																																												
	Fraxinus sp.	ash								X																																			
*	*Syringa vulgaris*	common lilac	G?	SE5		L+	X	X		X	X							X		X				X																				
	Fraxinus nigra	black ash	G5	S5		L4	R2	X																							X													
*	*Syringa reticulata*	japanese tree lilac							X	X																																		
	Fraxinus americana	white ash	G5	S5		L5	X	X	X	X	X	X		X	X			X			X		X	X		X		X	X					X									
	Fraxinus pennsylvanica	red ash	G5	S5		L5	X	X	X		X	X		X			X		X	X		X	X	X	X			X	X	X	X	X		X	X	X			X	X	X	X	X	X
	SCROPHULARIACEAE	**FIGWORT FAMILY**																																												
*	*Linaria vulgaris*	butter-and-eggs	G?	SE5		L+	X	X	X	X	X		X	X	X																														
*	*Verbascum thapsus*	common mullein	G?	SE5		L+	X	X			X			X	X																														
	RUBIACEAE	**MADDER FAMILY**																																												
	Galium aparine	cleavers	G5	S5		L4	U	U			X			X			X																												
*	*Galium mollugo*	white bedstraw	G?	SE5		L+	X	X	X		X			X	X										X																	X	X	X			X		
	CAPRIFOLIACEAE	**HONEYSUCKLE FAMILY**																																												
*	*Viburnum opulus*	guelder rose	G5	SE4		L+	X	X			X						X					X		X	X					X		X		X	X						X	X	X			X		
*	*Lonicera tatarica*	tartarian honeysuckle	G?	SE5		L+	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X	X	X			X									X	X	X		
*	*Lonicera morrowii*	morrow's honeysuckle	G?	SE3		L+	X	X			X					X		X	X					X							X														X
*	*Viburnum lantana*	bending wayfaring-tree	G?	SE2		L+	X	X	X	X	X													X																						
	Sambucus canadensis	common elderberry	G5	S5		L5	U	X	X																																					X
	DIPSACACEAE	**TEASEL FAMILY**																																												
*	*Dipsacus fullonum* ssp. *sylvestris*	wild teasel	G?T?	SE5		L+	X	X		X	X			X											X																				

Appendix F. Vascular Plant List

	Scientific Name	Common Name	GRank	SRank	MNRF	TRCA	Toronto - Varga	Durham - Varga	H1 - H6	M	CUM1-1a to CUM1-1p	CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	CUM1-1/CUT1	CUM1-1a/CUW1a to CUM1-1g/CUW1g	CUT1a to CUT1c	CUT1-1a to CUT1-1c	CUT1/CUW1	CUT1-1/CUW1	CUP1	CUP1-3	CUP1-8a and CUP1-8b	CUP2	CUP3-2a and b	CUW1a to CUW1w	FOC4-1a and FOC4-1b	FOD2-1	FOD3-1a and FOD3-1b	FOD5-1a and FOD5-1b	FOD5-3a and FOD5-3b	FOD5-7	FOD5a - FOD5c	FOD6-5	FOD7-3	FOM2a to FOM2c	FOM3-2	FOM6-1	MAM2-2	MAM2-2/MAS2	MAS2a to MAS2f	MAS2-1a to MAS2-1h	MAS2-1/SWD4	MAS2-1/SWT2-2	SWT2-2	SWD3-4a to SWD3-4c	SWD3a to SWD3c	SWD4	SWM3
	ASTERACEAE	**ASTER FAMILY**																																											
	Erigeron annuus	daisy fleabane	G5	S5		L5	X	X			X																																		
	Eutrochium maculatum	spotted joe-pye-weed	G5T5	S5		L5	X	X			X			X										X													X		X		X				
	Conyza canadensis	horseweed	G5	S5		L5	X	X			X		X																																
	Eurybia macrophyllus	large-leaved aster	G5	S5		L5	X	X	X		X			X		X						X		X					X														X		
*	*Achillea millefolium* ssp. *millefolium*	common yarrow	G5T?	SE?		L+	X	X			X			X																															
	Ambrosia artemisiifolia	common ragweed	G5	S5		L5	X	X		X	X			X																											X				
	Ambrosia trifida	giant ragweed	G5	S5		L5	X	X		X				X																															
	Antennaria neglecta	field pussytoes	G5	S5		LU	X	X						X																															
*	*Arctium lappa*	great burdock	G?	SE5		L+	X	X			X																																		
*	*Arctium minus* ssp. *minus*	common burdock	G?T?	SE5		L+	X	X	X	X	X			X											X											X								X	X		
*	*Artemisia biennis*	biennial wormwood	G5	SE5		L+	X	X			X																																		
	Symphyotrichum ericoides ssp. *ericoides*	white heath aster	G5T?	S5		L5			X	X	X	X	X	X	X		X								X																				
*	*Centaurea maculosa*	spotted knapweed	G?	SE5		L+	X	X			X			X																															
	Symphyotrichum lanceolatus ssp. *hesperius*	panicled aster	G5T5?	S5						X	X			X											X													X	X		X		X			
*	*Cirsium vulgare*	bull thistle	G5	SE5		L+	X	X			X			X											X																				
	Symphyotrichum novae-angliae	New England aster	G5	S5		L5	X	X	X	X	X	X		X	X		X								X														X	X		X			X		
	Symphyotrichum oolentangiense	sky blue aster	G5	S4		L4	R6	R2																	X																				
	Symphyotrichum puniceus var. *puniceus*	purple-stemmed aster	G5T?	S5		L5																													X					X			X		
	Euthamia graminifolia	flat-topped bushy goldenrod	G5	S5			X	X			X			X																															
	Bidens frondosa	devil's beggar-ticks	G5	S5		L5	X	X		X	X			X										X											X			X		X	X		X		
*	*Inula helenium*	elecampane	G?	SE5		L+	X	X	X	X	X			X			X							X										X										
*	*Chrysanthemum leucanthemum*	ox-eye daisy	G?	SE5		L+	X	X			X																																		
*	*Cichorium intybus*	chicory	G?	SE5		L+	X	X		X	X	X	X	X																											X				
*	*Cirsium arvense*	Canada thistle	G?	SE5		L+	X	X	X		X		X	X	X		X								X																	X			
	Symphyotrichum lateriflorus var. *lateriflorus*	calico aster	G5T5	S5						X	X		X	X			X								X							X									X			
*	*Hieracium aurantiacum*	devil's paintbrush	G?	SE5		L+	X	X			X																																		
*	*Matricaria perforata*	scentless chamomile	G?	SE?		L+	X	X			X			X																															
	Ageratina altissima	white snakeroot	G5	S5		L5	X	X													X				X										X							X		
	Solidago nemoralis ssp. *nemoralis*	gray goldenrod	G5T?	S5		L5								X																														
	Solidago caesia	blue-stem goldenrod	G5	S5		L5	X	U															X		X					X						X								
*	*Tussilago farfara*	coltsfoot	G?	SE5		L+	X	X	X		X			X			X		X						X							X							X			X			X
	Eupatorium perfoliatum	perfoliate thoroughwort	G5	S5		L4	X	X						X																															
	Solidago altissima var. *altissima*	tall goldenrod		S5		L5	X	X				X																						X										
	Solidago gigantea	giant goldenrod	G5	S5		L5	U	X			X			X											X							X									X	X		
*	*Lactuca serriola*	prickly lettuce	G?	SE5		L+	X	X			X						X																											
*	*Tragopogon dubius*	doubtful goat's-beard	G?	SE5		L+	X	X		X	X					X									X																				
*	*Taraxacum officinale*	common dandelion	G5	SE5		L+	X	X	X	X	X	X		X	X	X		X							X				X							X				X	X		X	X		
	Solidago canadensis	Canada goldenrod	G5	S5		L5	X	U	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X							X			X		X		X		X	X	X	
*	*Tanacetum vulgare*	common tansy	G?	SE5		L+	X	X			X			X																															
	Prenanthes altissima	tall white rattlesnake-root	G5?	S5		L5	X	X																						X														
*	*Helianthus tuberosus*	Jerusalem artichoke	G5	SE5		L5	X	X			X														X													X								
	Helenium autumnale	common sneezeweed	G5	S5						X																																			
*	*Sonchus arvensis* ssp. *arvensis*	field sow-thistle	G?T?	SE5		L+	X	X	X	X	X		X	X											X																				X	
	Xanthium strumarium	tumor-curing cocklebur	G?	S5		L5	X	X			X														X																				
	Solidago sp.	goldenrod																							X																			X		
	Ratibida pinnata	gray-headed coneflower	G5	S2S3							X																																		
	Rudbeckia hirta	black-eyed Susan	G5	S5		L4	X	X	X	X	X										X																								
	Solidago rugosa ssp. *rugosa*	rough goldenrod	G5T?	S5		L5	R2	X			X	X																																	X
	Solidago flexicaulis	zig-zag goldenrod	G5	S5		L5	X	X															X		X											X								
	ARACEAE	**ARUM FAMILY**																																											

Appendix F. Vascular Plant List

	Scientific Name	Common Name	GRank	SRank	MNRF	TRCA	Toronto - Varga	Durham - Varga	H1 - H6	M	CUM1-1a to CUM1-1p	CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	CUM1-1/CUT1	CUM1-1a/CUW1a to CUM1-1g/CUW1g	CUT1a to CUT1c	CUT1-1a to CUT1-1c	CUT1/CUW1	CUT1-1/CUW1	CUP1	CUP1-3	CUP1-8a and CUP1-8b	CUP2	CUP3-2a and b	CUW1a to CUW1w	FOC4-1a and FOC4-1b	FOD2-1	FOD3-1a and FOD3-1b	FOD5-1a and FOD5-1b	FOD5-3a and FOD5-3b	FOD5-7	FOD5a - FOD5c	FOD6-5	FOD7-3	FOM2a to FOM2c	FOM3-2	FOM6-1	MAM2-2	MAM2-2/MAS2	MAS2a to MAS2f	MAS2-1a to MAS2-1h	MAS2-1/SWD4	MAS2-1/SWT2-2	SWT2-2	SWD3-4a to SWD3-4c	SWD3a to SWD3c	SWD4	SWM3
	Arisaema triphyllum ssp. *triphyllum*	small jack-in-the-pulpit	G5T5	S5		L4	X	X															X					X	X		X				X							X		
	Symplocarpus foetidus	skunk-cabbage	G5	S5		L4	R6	R4																					X			X				X									
	JUNCACEAE	**RUSH FAMILY**																																												
	Juncus articulatus	jointed rush	G5	S5		L5	U	X																																X						
	Juncus tenuis	path rush	G5	S5		L5	X	X		X	X																																			
	CYPERACEAE	**SEDGE FAMILY**																																												
	Carex sp.	sedge												X																																
	Carex vulpinoidea	fox sedge	G5	S5		L5	X	X																												X			X				X			
	Scirpus atrovirens	dark-green bulrush	G5?	S5		L5	X	X																																X						
	Carex stipata	awl-fruited sedge	G5	S5		L5	U	X						X																										X			X			
	Carex rosea	stellate sedge	G5	S5		L5	U	U																					X																	
	Scirpus microcarpus	small-fruited bulrush	G5	S5		L4	U	U																																X						
	Scirpus validus	American great bulrush	G?	S5		L4	X	X			X													X													X									
	Carex pensylvanica	Pennsylvania sedge	G5	S5		L4	X	X														X		X		X			X	X					X	X	X					X			
	Carex hystericina	porcupine sedge	G5	S5		L4	R1																																	X						
	Carex lacustris	lake-bank sedge	G5	S5		L4	R5	X						X																										X		X				
	POACEAE	**GRASS FAMILY**																																												
*	*Phleum pratense*	timothy	G?	SE5		L+	X	X				X																																		
	Phragmites australis	common reed	G5	S5		L+?	X	X		X	X	X		X			X							X														X	X	X		X			
*	*Setaria faberi*	giant foxtail	G?	SE4		L+	X				X																																			
	Poa compressa	Canada blue grass	G?	S5		L+	X	X		X	X					X		X						X																					
*	*Setaria viridis*	green foxtail	G?	SE5		L+	X	X	X		X																																			
	Poa palustris	fowl meadow grass	G5	S5		L5	U	X						X																																
	Poa pratensis ssp. *pratensis*	Kentucky bluegrass	G5T	S5		L+	X	X	X	X	X	X		X	X	X	X				X	X		X			X				X										X		X		
	Poa sp.	blue grass																						X																						
*	*Setaria pumila*	yellow foxtail	G?	SE5		L+	X	X									X																													
	Glyceria striata	fowl meadow grass	G5	S5		L5	X	X																														X		X						
	Panicum sp.	panic grass								X																																				
*	*Glyceria maxima*	sweet manna grass	G?	SE5		L+	X			X																																				
*	*Agrostis stolonifera*	redtop	G5	S5		L+?	X	X			X																																			
	Leersia oryzoides	rice cut grass	G5	S5		L5	X	X																										X			X		X						
*	*Dactylis glomerata*	orchard grass	G?	SE5		L+	X	X			X	X		X	X		X	X						X	X																					
*	*Digitaria sanguinalis*	large crabgrass	G5	SE5		L+	X	X	X	X	X																																			
*	*Echinochloa crusgalli*	common barnyard grass	G?	SE5		L+	X	X						X	X																										X					
*	*Panicum dichotomiflorum*	fall panicum	G5	SE5		L+	X	X			X																																			
	Phalaris arundinacea	reed canary grass	G5	S5		L+?	X	X		X	X	X		X	X			X			X			X												X		X	X		X		X		
*	*Elymus repens*	quack grass	G?	SE5		L+	X	X			X			X										X																						
	Panicum capillare	witch grass	G5	S5		L5	X	X			X																																			
	Festuca rubra ssp. *rubra*	red fescue	G5T4	S5		L+	X	X			X																																			
*	*Festuca arundinacea*	tall fescue	G?	SE5		L+	X	X	X		X																																			
*	*Bromus inermis* ssp. *inermis*	awnless brome	G4G5T?	SE5		L+	X	X	X	X	X	X	X	X	X		X							X	X																					
	TYPHACEAE	**CATTAIL FAMILY**																																													
	Typha latifolia	broad-leaved cattail	G5	S5		L4	X	X			X																											X		X		X	X	X		
	Typha X glauca	glaucous cattail	HYB	S5		L+	X	X																																X						
	Typha sp.	cattail									X													X																			X			
	Typha angustifolia	narrow-leaved cattail	G5	S5		L+	X	X		X	X			X										X															X		X	X	X	X	X			X
	ALISMATACEAE	**WATER-PLANTAIN FAMILY**																																													
	Sagittaria latifolia	broad-leaved arrowhead	G5	S5		L4	U	X																														X								
	LILIACEAE	**LILY FAMILY**																																													
*	*Allium schoenoprasum* var. *schoenoprasum*	chives	G5T5	SE2		L+	X	X											X																												
*	*Asparagus officinalis*	garden asparagus	G5?	SE5		L+	X	X			X																																			

Appendix F. Vascular Plant List

	Scientific Name	Common Name	GRank	SRank	MNRF	TRCA	Toronto - Varga	Durham - Varga	H1 - H6	M	CUM1-1a to CUM1-1p	CUM1-1a/CUT1-1a to CUM1-1c/CUT1-1c	CUM1-1/CUT1	CUM1-1a/CUW1a to CUM1-1g/CUW1g	CUT1a to CUT1c	CUT1-1a to CUT1-1c	CUT1/CUW1	CUT1-1/CUW1	CUP1	CUP1-3	CUP1-8a and CUP1-8b	CUP2	CUP3-2a and b	CUW1a to CUW1w	FOC4-1a and FOC4-1b	FOD2-1	FOD3-1a and FOD3-1b	FOD5-1a and FOD5-1b	FOD5-3a and FOD5-3b	FOD5-7	FOD5a - FOD5c	FOD6-5	FOD7-3	FOM2a to FOM2c	FOM3-2	FOM6-1	MAM2-2	MAM2-2/MAS2	MAS2a to MAS2f	MAS2-1a to MAS2-1h	MAS2-1/SWD4	MAS2-1/SWT2-2	SWT2-2	SWD3-4a to SWD3-4c	SWD3a to SWD3c	SWD4	SWM3
*	*Convallaria majalis*	lily-of-the-valley	G5	SE5		L+	X	X			X										X							X						X											
	Erythronium americanum ssp. *americanum*	yellow dog's-tooth violet	G5T5	S5		L5	X	X																				X			X														
	Maianthemum canadense	wild lily-of-the-valley	G5	S5		L4	X	X													X		X			X			X		X				X									
	Maianthemum racemosum ssp. *racemosum*	false Solomon's seal	G5T	S5		L5	X	X																				X														X			
	Maianthemum stellatum	star-flowered Solomon's seal	G5	S5		L5	X	X													X								X														X			
	Trillium grandiflorum	white trillium	G5	S5		L4	X	X																				X		X		X													
	Trillium erectum	purple trillium	G5	S5		L4	X	X																					X							X									
	IRIDACEAE	**IRIS FAMILY**																																												
*	*Iris pseudacorus*	yellow iris	G?	SE3		L+	X	X			X								X																											

APPENDIX G.
ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

G-Rank **Global Rank**

Global ranks are assigned by a consensus of the network of Conservation Data Centres, scientific experts, and the Nature Conservatory to designate a rarity rank based on the range-wide status of a species, subspecies or variety.

The most important factors considered in assigning global ranks are the total number of known, extant sites world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at its known sites. The taxonomic distinctness of each taxon has also been considered. Hybrids, introduced species, and taxonomically dubious species, subspecies and varieties have not been included.

G1=	Extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2 =	Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3 =	Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4 =	Common; usually more than 100 occurrences; usually not susceptible to immediate threats.
G5 =	Very common; demonstrably secure under present conditions.
GH =	Historic, no records in the past 20 years.
GU =	Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.
GX =	Globally extinct. No recent records despite specific searches.
? =	Denotes inexact numeric rank (i.e. G4?).
G" " =	A "G" (or "T") followed by a blank space means that the NHIC has not yet obtained the Global Rank from The Nature Conservancy.
G? =	Unranked, or, if following a ranking, rank tentatively assigned (e.g. G3?).
Q =	Denotes that the taxonomic status of the species, subspecies, or variety is questionable.
T =	Denotes that the rank applies to a subspecies or variety.

S-Rank **Provincial Rank**

Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources and Forestry Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for the global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated list at least annually.

S1 =	Critically imperiled in Ontario because of extreme rarity (often 5 or fewer occurrences) or because of some factor (s) such as very steep declines making it especially vulnerable to extirpation.
S2 =	Imperiled in Ontario because of rarity due to very restricted range, very few populations (often 20 or fewer occurrences) steep declines or other factors making it very vulnerable to extirpation.
S3 =	Vulnerable in Ontario 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 Ontario.
SX =	Presumed Extirpated - specie or community is believed to be extirpated from Ontario.
SNR =	Unranked - conservation status in Ontario 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).

COSEWIC **Committee On The Status Of Endangered Wildlife in Canada**

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species that are considered to be at risk in Canada.

Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
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.
Not at Risk (NAR)	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)	A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

COSSARO/OMNRF Committee On The Status Of Species At Risk In Ontario/Ontario Ministry Of Natural Resources and Forestry

The Committee on the Status of Species at Risk in Ontario (COSSARO)/Ontario Ministry of Natural Resources and Forestry (OMNRF) assess the provincial status of wild species that are considered to be at risk in Ontario.

Extinct (EXT)	A species that no longer exists anywhere.
Extirpated (EXP)	A species that no longer exist in the wild in Ontario but still occurs elsewhere.
Endangered (Regulated) (END-R)	A species facing imminent extinction or extirpation in Ontario which has been regulated under Ontario's *Endangered Species Act*.
Endangered (END)	A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act.
Threatened (THR)	A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
Special Concern (SC)	A species with characteristics that make it sensitive to human activities or natural events.
Not at Risk (NAR)	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)	A species for which there is insufficient information for a provincial status recommendations.

Local Status City of Toronto and Durham Region

Species status within these areas was used to determine local vascular plant status for the study area. Plant rarity is based on the number of occurrences within the physiographic region. The species status was taken from Varga 2000.

RANK	LEVEL OF CONSERVATION CONCERN OF FLORA AND FAUNA IN TRCA REGION (TRCA 2003)
L5	Able to withstand high levels of disturbance; generally secure throughout the jurisdiction, including the urban matrix. May be of very localized concern in highly degraded areas.
L4	Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.
L3	Able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern.
L2	Unable to withstand disturbance; some criteria are very limiting factors; generally occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally.
L1	Unable to withstand disturbance; many criteria are limiting factors; generally occur in high-quality natural areas in natural matrix; almost certainly rare in the TRCA jurisdiction; of concern regionally.
LX	Extirpated from our region with remote chance of rediscovery. Presumably highly sensitive.
LH	Hybrid between two native species. Usually not scored unless highly stable and behaves like a species (e.g. *Equisetum* x *nelsonii*)
L+	Exotic. Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic
L+?	Origin uncertain or disputed, i.e. may or may not be native.

APPENDIX H.
AMPHIBIAN SURVEY DATA

APPENDIX H:
AMPHIBIAN SURVEY DATA - STUDY AREA AND ADJACENT LANDS BY LGL LIMITED

Station	Scientific Name	Common Name	SARA	ESA	Local	Legal Status	Call Level Code	Habitat Type
1	*Anaxyrus americanus*	American Toad	-	-	L4	-	2	Cultural meadow and forested area adjacent to Highland Creek
2	*Anaxyrus americanus*	American Toad	-	-	L4	-	1	Isolated marsh areas within Highland Creek Swamp ANSI
	Lithobates clamitans	Green Frog	-	-	L4	-	1	
	Pseudacris crucifer	Spring Peeper	-	-	L2	-	1	
3	*Anaxyrus americanus*	American Toad	-	-	L4	-	2	Ponds adjacent to Carruthers Creek
	Hyla versicolor	Gray Tree Frog	-	-	L2	-	1	
4	*Lithobates clamitans*	Green Frog	-	-	L4	-	1	Meadow marsh habitat associated with Bluegrass Meadows Park
	Pseudacris crucifer	Spring Peeper	-	-	L2	-	1	
*5**	-	-	-	-	-	-	-	Marsh adjacent to Corbett Creek
6	*Lithobates clamitans*	Green Frog	-	-	L4	-	1	PSW – Lynde Creek Coastal Wetland Complex

* No anuran species/individuals identified
Call Level Codes – Abundance Count (according to Bird Studies Canada):
Call Level One (1) – Individual males can be counted accurately.
Call Level Two (2) - Frogs can be generally counted but calls overlap thus no exact number can be obtained.
Call Level Three (3) - Calls continuous and overlapping, no reasonable estimate of numbers.
For definitions of species ranks, refer to **Appendix G.**

APPENDIX I.
BREEDING BIRD SURVEY DATA AND ADDITIONAL WILDLIFE OBSERVATIONS DETAILS

APPENDIX I: BREEDING BIRD SURVEY DATA AND ADDITIONAL INCIDENTAL WILDLIFE OBSERVATION DETAILS

Type	Scientific Name	Common Name	June 11 & 12, 2019	June 24 & 26, 2019	OBBA Code	Breeding Evidence	G Rank	S Rank	SARA	SARO	FWCA	MBCA	TRCA	SWH-TG Area Sensitive Species	Priority Species Durham	Priority Species Toronto	Station Number (1st visit)	Station Number (2nd visit)
Bird	*Corvus brachyhrynchos*	American Crow	x	x	H	Possible	G5	S5B					L5				31	32,31,22,14,9,6,4
Bird	*Carduelis tristis*	American Goldfinch	x	x	T	Probable	G5	S5B				X	L5		level 3	level 3	32,28,17,16,10,9,8,7,5,3,2,1	32,30,26,25,24,22,17,16,13,11,10,7,5,
Bird	*Setophaga ruticilla*	American Redstart	x	x	S	Possible	G5	S5B				X	L3	X (>100ha forest)	level 2	level 2	25,17	19
Bird	*Turdus migratorius*	American Robin	x	x	NY	Confirmed	G5	S5B				X	L5				32,30,29,28,27,26,24,22,21,20,19,17,16,15,13,12,11,10,9,8,7,5,3,2,1	32,29,27,26,24,22,21,16,15,14,13,11,10,9,8,7,5,4,2,1
Bird	*Icterus galbula*	Baltimore Oriole	x	x	T	Probable	G5	S4B				X	L5				28,22,16,8	10,3
Bird	*Hirundo rustica*	Barn Swallow	x		H	Possible	G5	S4B		THR		X	L4		level 3	level 3	12	
Bird	*Ceryle alcyon*	Belted Kingfisher	x	x	T	Probable	G5	S4B			P		L4				32,11	21
Bird	*Poecile atricapillus*	Black-capped Chickadee	x	x	T	Probable	G5	S5				X	L5		level 4	level 4	22,17,7,5,3	25,9,5,3,2
Bird	*Polioptila caerulea*	Blue-gray Gnatcatcher	x		H	Possible	G5	S5				X	L4	X (30ha forest)	level 4	level 4	22	
Bird	*Cyanocitta cristata*	Blue Jay	x	x	T	Probable	G5	S5			P		L5				31,25,3,2	27,7,6,5
Bird	*Molothrus ater*	Brown-headed Cowbird	x	x	H	Possible	G5	S4B					L5				32,28,26,25,24,21,20,17,14,11,10,8,7,6,5,3,2	32,26,25,24,19,17,11,10,6,5,2,1
Bird	*Branta canadensis*	Canada Goose	x		NY	Confirmed	G5	S5				X	L5				20	
Bird	*Bombycilla cedrorum*	Cedar Waxwing	x	x	H	Possible	G5	S5B				X	L5				25,24,21,17,14,9,8,2	31,26,21,19,12,9
Bird	*Dendroica pensylvanica*	Chestnut-sided Warbler	x		S	Possible	G5	S5B				X	L3		level 1	level 1	25,10	
Bird	*Spizella passerina*	Chipping Sparrow	x	x	T	Probable	G5	S5B				X	L5				30,14,11	21,11,7,4,3
Bird	*Petrochelidon pyrrhonota*	Cliff Swallow		x	NY	Confirmed	G5	S4B				X	L5		level 3	level 4	10	10
Bird	*Quiscalus quiscula*	Common Grackle	x	x	H	Possible	G5	S5B					L5				32,31,30,29,24,21,16,15,14,7	30,25,21,20,19,12
Bird	*Picoides pubescens*	Downy Woodpecker	x	x	T	Probable	G5	S5				X	L5				21,17,9	25
Bird	*Tyrannus tyrannus*	Eastern Kingbird	x	x	T	Probable	G5	S4B				X	L4		level 3	level 3	26,8,2	26
Bird	*Sayornis phoebe*	Eastern Phoebe	x		S	Possible	G5	S5B				X	L5		level 3	level 3	17	17
Bird	*Sturnus vulgaris*	European Starling	x	x	H	Possible	G5	SNA					L+				32,31,30,29,28,27,22,21,20,19,16,15,14,13,9,7,3,2	32,30,29,27,25,21,20,19,16,15,14,13,10,8,6,2,1
Bird	*Dumetella carolinensis*	Gray Catbird	x	x	T	Probable	G5	S4B				X	L4		level 4		28,17,16,10,8,6	25,22,21,11,10,9,6
Bird	*Ardea herodias*	Great Blue Heron		x	X	Observed	G5	S4				X	L3					26,21
Bird	*Butorides virescens*	Green Heron	x	x	X	Observed	G5	S4B					L4		level 4	level 4	21	21
Bird	*Picoides villosus*	Hairy Woodpecker	x		H	Possible	G5	S5				X	L4	X (forests with tall trees/snags >25cm)			10,9	
Bird	*Carpodacus mexicanus*	House Finch	x	x	T	Probable	G5	SNA				X	L+				29,1	21
Bird	*Passer domesticus*	House Sparrow	x	x	T	Probable	G5	SNA					L+				31,28,27,17,14,7,6,3	29,27,20,19,17,16,12,11,6,4,1
Bird	*Troglodytes aedon*	House Wren	x	x	T	Probable	G5	S5B				X	L5				28,26,25,22,21,9	25,9,5,3
Bird	*Passerina cyanea*	Indigo Bunting		x	S	Possible	G5	S4B				X	L4				19	17,4,2
Bird	*Zenaida macroura*	Mourning Dove	x	x	H	Probable	G5	S5				X	L5				30,29,27,20,19,15	32,30,29,21,10
Bird	*Oporornis philadelphia*	Mourning Warbler	x		S	Possible	G5	S4B				X	L3		level 2	level 2	28	
Bird	*Vermivora ruficapilla*	Nashville Warbler	x		S	Possible	G5	S5B				X	L3		level 1	level 2	2	
Bird	*Cardinalis cardinalis*	Northern Cardinal	x	x	T	Probable	G5	S5				X	L5				31,29,28,21,17,16,14,13,11,10,7,5,2	31,29,24,22,11,7,5,3,2
Bird	*Vireo olivaceus*	Red-eyed Vireo	x	x	P	Probable	G5	S5B				X	L4				19,16,10	9
Bird	*Buteo jamaicensis*	Red-tailed Hawk		x	X	Observed	G5	S5			P		L5					29
Bird	*Agelaius phoeniceus*	Red-winged Blackbird	x	x	NY	Confirmed	G5	S4					L5				32,31,30,29,28,27,26,25,24,22,21,20,19,16,15,14,13,12,11,10,9,8,7,6,2	32,31,30,29,27,26,24,22,21,20,19,16,15,14,13,12,10,9,8,7,6,3,2
Bird	*Columba livia*	Rock Dove (Pigeon)	x	x	H	Possible	G5	SNA					L+				29,24,17,15	29,24,20,17
Bird	*Pheucticus ludovicianus*	Rose-breasted Grosbeak	x		S	Possible	G5	S4B				X	L4				8	
Bird	*Passerculus sandwichensis*	Savannah Sparrow		x	S	Possible	G5	S4B				X	L4	X (>50ha grassland)	level 1	level 1		22
Bird	*Melospiza melodia*	Song Sparrow	x	x	P	Probable	G5	S5B				X	L5				32,31,30,29,28,27,26,25,24,22,21,20,19,16,14,13,12,11,10,9,8,6,2	32,31,30,29,27,26,25,24,22,21,20,19,17,16,15,14,13,12,11,10,9,8,2
Bird	*Actitis macularius*	Spotted Sandpiper	x	x	H	Possible	G5	S5				X	L4		level 3	level 3	25	26
Bird	*Melospiza georgiana*	Swamp Sparrow	x	x	H	Possible	G5	S5B				X	L4		level 2	level 2	26,24	30
Bird	*Cygnus buccinator*	Trumpeter Swan		x	X	Observed	G4	S4				X	L+					21
Bird	*Vireo gilvus*	Warbling Vireo	x	x	T	Probable	G5	S5B				X	L5				30,29,26,21,8,2	30,29,21,8,2
Bird	*Empidonax traillii*	Willow Flycatcher	x	x	T	Probable	G5	S5B				X	L4				24,21	26,22,21
Bird	*Aix sponsa*	Wood Duck	x		X	Observed	G5	S5				X	L4		level 4	level 4	25	
Bird	*Dendroica petechia*	Yellow Warbler	x	x	T	Probable	G5	S5B				X	L5				30,29,26,25,22,21,17,16,10,8,6,2	30,26,24,22,21,20,17,16,15,13,10,8,5,
Mammals	*Mustela vison*	American Mink	x				G5	S4			F		L4					29
Mammals	*Castor canadensis*	Beaver	x	x			G5	S5			F		L3				Pine and Lynde Creek	
Mammals	*Sylvilagus floridanus*	Eastern Cottontail	x				G5	S5			G		L4				29,19,10	
Mammals	*Sciurus carolinensis*	Eastern Gray Squirrel	x	x			G5	S5			G		L5				17,3	
Mammals	*Ondatra zibethica*	Muskrat	x				G5	S5			F		L4				21	
Mammals	*Procyon lotor*	Northern Raccoon	x				G5	S5			F		L5				Kingston Road (Pickering)	
Mammals	*Tamiasciurus hudsonicus*	Red Squirrel	x	x			G5	S5			F		L4				3	
Mammals	*Odocoileus virginianus*	White-tailed Deer	x	x			G5	S5			G		L4				8,9,10,11	

APPENDIX J.
SPECIES AT RISK DATA

APPENDIX J.
SPECIES AT RISK DATA

Wildlife Species at Risk Summary -
MNRF Municipal-Wide Data (February 2019d)

Scientific Name	Common Name	Location(s)	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Asio flammeus	Short-eared Owl	City of Toronto Town of Whitby City of Oshawa	SC	SC	2018	Lives in open areas such as grasslands, marshes and tundra.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Caprimulgus vociferus	Eastern Whip-poor-will	City of Toronto City of Pickering Town of Ajax Town of Whitby City of Oshawa	THR	THR	2013	This species is typically associated with a mix of open and forested areas, such as savannahs, open woodlands or openings in deciduous, coniferous and mixed forests.	Habitat suitable to support this species may be found where forested communities are present within the study area but based on field investigations, forested areas are limited.
Charadrius melodus	Piping Plover	City of Toronto City of Pickering Town of Whitby City of Oshawa	END	END	2018	Piping Plovers nest exclusively on dry sandy or gravelly beaches just above the reach of high water and waves. In Ontario, although never common, they breed along the shores of the Great Lakes, and at Lake of the Woods in northwestern Ontario.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.

Wildlife Species at Risk Summary -
MNRF Municipal-Wide Data (February 2019d)

Scientific Name	Common Name	Location(s)	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Chlidonias niger	Black Tern	City of Pickering Town of Ajax Town of Whitby City of Oshawa	SC		2009	Breeds in freshwater marshlands where it forms small colonies. It prefers marshes or marsh complexes greater than 20 ha in area and which are not surrounded by wooded areas.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Contopus cooperi	Olive-sided Flycatcher	City of Toronto	SC	THR	2001	Breeding habitat usually consists of coniferous or mixed forest communities adjacent to rivers or wetlands. In Ontario, Olive-sided flycatchers commonly nest in conifers such as White and Black Spruce, Jack Pine and Balsam Fir.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Contopus virens	Eastern Wood Pewee	City of Toronto City of Pickering Town of Ajax Town of Whitby City of Oshawa	SC		2017	Forest species, typically associated with forest openings, clearing or edges.	Forest and forest edges were identified as habitat for this species.
Coturnicops noveboracensis	Yellow Rail	Town of Whitby	SC	SC	2005	The Yellow Rail is a secretive bird that lives deep in the reeds, sedges, and marshes of shallow wetlands, where they nest on the ground.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Dendroica cerulea	Cerulean Warbler	City of Toronto Town of Whitby	THR	END	2013	Cerulean Warblers spend the breeding season in mature, deciduous forests with large, tall trees and an open under story.	Field investigations in spring/early summer of 2019 identified only marginally suitable habitat for this species.

Wildlife Species at Risk Summary -
MNRF Municipal-Wide Data (February 2019d)

Scientific Name	Common Name	Location(s)	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Empidonax virescens	Acadian Flycatcher	City of Pickering Town of Whitby City of Oshawa	END	END	2016	Typically found in mature, shady forests with ravines, or in forested swamps with abundant maple and beech trees.	Field investigations in spring/early summer of 2019 identified marginally suitable habitat for this species, including several wooded areas identified across the study area; however, these wooded areas are likely too small and disturbed to support this species.
Hylocichla mustelina	Wood Thrush	City of Toronto City of Pickering Town of Ajax Town of Whitby City of Oshawa	SC		2017	Deciduous and mixed forests with large trees, shade, and leaf litter for foraging.	Deciduous and mixed forest communities within the study area have the potential to function as suitable habitat for this species.
Icteria virens virens	Yellow-breasted Chat	City of Toronto City of Pickering Town of Whitby City of Oshawa	END	END	2012	The Yellow-breasted Chat lives in thickets and scrub, especially locations where clearings have become overgrown.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Lanius ludovicianus Eastern subspecies	Loggerhead Shrike	City of Toronto City of Pickering Town of Whitby City of Oshawa	END	END	2010	Prefers pasture or other grasslands with scattered low trees and shrubs.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Melanerpes erythrocephalus	Red-headed Woodpecker	City of Toronto City of Pickering Town of Ajax Town of Whitby	SC	THR	2018	Lives in open woodland and woodland edges, and is often found in parks, golf courses and cemeteries.	Habitats which could be suitable to support the Red-headed Woodpecker were generally absent from the study area.

Wildlife Species at Risk Summary -
MNRF Municipal-Wide Data (February 2019d)

Scientific Name	Common Name	Location(s)	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Pelecanus erythrorhynchos	American White Pelican	City of Toronto Town of Whitby City of Oshawa	THR		2015	The American White Pelican nests in groups on remote islands that are barren or sparsely treed located in lakes, reservoirs, or on large rivers.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Podiceps auritus	Horned Grebe	City of Toronto City of Pickering Town of Ajax Town of Whitby City of Oshawa	SC	SC	2018	The Horned Grebe usually nests in small ponds, marshes and shallow bays that contain areas of open water and emergent vegetation.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Protonotaria citrea	Prothonotary Warbler	City of Toronto Town of Whitby City of Oshawa	END	END	2014	Nests in small, shallow holes, found low in the trunks of dead or dying trees standing in or near flooded woodlands or swamps.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Rallus elegans	King Rail	City of Toronto City of Oshawa	END	END	2015	Found in densely vegetated freshwater marshes with open shallow water that merges with shrubby areas. King Rail is sometimes found in smaller isolated marshes but most seem to prefer larger, coastal wetlands.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Seiurus motacilla	Louisiana Waterthrush	City of Pickering Town of Whitby	THR	THR	2013	Inhabits mature forests along steeply sloped ravines adjacent to running water. This species prefers clear, cold streams and densely wooded swamps.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.

Wildlife Species at Risk Summary -
MNRF Municipal-Wide Data (February 2019d)

Scientific Name	Common Name	Location(s)	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Tyto alba	Barn Owl (Eastern)	City of Toronto	END	END	2017	In Canada, this species breeds only in extreme southern Ontario and British Columbia. Observations of this species in Ontario are exceedingly rare.	Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species.
Vermivora chrysoptera	Golden-winged Warbler	City of Pickering	SC	THR	2009	Nests in areas with young shrub growth surrounded by mature forest communities, and locations that have experienced disturbance, such as field edges, hydro or utility corridors.	Field investigations in spring/early summer of 2019 identified only marginally suitable habitat for this species.
Wilsonia canadensis	Canada Warbler	City of Toronto City of Pickering Town of Ajax Town of Whitby City of Oshawa	SC	THR	2018	Breeds in a variety of deciduous and coniferous wooded habitats, particularly those that contain a dense understory of shrubs or other vegetation.	Field investigations undertaken by LGL in 2019 identified marginally suitable nesting habitat for this species, including various wooded habitats that were identified across the study area.
Bombus affinis	Rusty-patched Bumble Bee	City of Toronto	END	END	1999	Habitat generalist, but it is typically found in open habitats, such as mixed farmland, savannah, marshes, sand dunes, urban and lightly wooded areas. Most recent sightings in Ontario have been in oak savannah habitat with well-drained, sandy soils and moderately open canopy.	Open country, agricultural and urban habitat types have the potential to function as suitable habitat for this species.

Wildlife Species at Risk Summary -
MNRF Municipal-Wide Data (February 2019d)

Scientific Name	Common Name	Location(s)	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Bombus bohemicus	Gypsy Cuckoo Bumble Bee	City of Toronto	END	END	1999	Gypsy Cuckoo Bumble Bee occurs in diverse habitats, including open meadows, mixed farmlands, urban areas and boreal forest.	Open country, agricultural and open meadows types within the study area have the potential to function as suitable habitat for this species.
Danaus plexippus	Monarch	City of Toronto City of Pickering Town of Whitby City of Oshawa	SC	SC	2018	Open country/grasslands and agricultural.	Open country, meadow (including roadside vegetation) and agricultural habitat have the potential to provide habitat suitable to support Monarch.
Myotis leibii	Eastern Small-footed Myotis	City of Toronto City of Pickering Town of Ajax Town of Whitby City of Oshawa	END		Unknown	This species is not known to roost within trees, but there is very little known about its roosting habits. The species generally roosts on the ground under rocks, in rock crevices, talus slopes and rock piles. It occasionally inhabits buildings.	No suitable habitat for this species identified.
Myotis lucifugus	Little Brown Myotis	City of Toronto City of Pickering Town of Whitby City of Oshawa	END	END	Unknown	Trees and buildings. Often select attics, abandoned buildings and barns for summer colonies where they raise their offspring.	Open country, agricultural and forested habitat types have the potential to function as suitable habitat for this species.

Wildlife Species at Risk Summary -
MNRF Municipal-Wide Data (February 2019d)

Scientific Name	Common Name	Location(s)	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Myotis septentrionalis	Northern Myotis	City of Toronto City of Pickering Town of Ajax Town of Whitby City of Oshawa	END	END	Unknown	Forests, roost under loose bark and in the cavities of trees.	Deciduous and mixed forest communities within the study area have the potential to function as suitable habitat for this species.
Perimyotis subflavus	Tri-Coloured Bat	City of Toronto City of Pickering Town of Ajax Town of Whitby City of Oshawa	END	END	Unknown	May roost in foliage, in clumps of old leaves, hanging moss or squirrel nests. They typically feed over aquatic areas with an affinity to large-bodied water and will likely roost near these. Hibernation sites are found deep within caves or mines in areas of relatively warm temperatures.	Deciduous and mixed forest communities within the study area have the potential to function as suitable habitat for this species.
Urocyon cinereoargenteus	Grey Fox	City of Toronto City of Pickering	THR	THR	2017	This species inhabits deciduous forests and marshes and will den in a variety of features including rock outcroppings, hollow trees, burrows or brush piles, usually where dense brush provides cover and in close proximity to water.	Deciduous and marsh communities within the study area have the potential to function as suitable habitat for this species.
Emdoidea blandingii	Blanding's Turtle	City of Toronto Town of Whitby City of Oshawa	THR	THR	2018	Aquatic habitats consisting of shallow water, usually in large wetlands and shallow lakes with lots of water plants.	No suitable habitat for this species identified.

Wildlife Species at Risk Summary -
MNRF Municipal-Wide Data (February 2019d)

Scientific Name	Common Name	Location(s)	ESA	SARA	Last Observed Date	Preferred Habitat	Potential Habitat in Study Area
Graptemys geographica	Northern Map Turtle	City of Toronto	SC	SC	2015	Prefers large waterbodies with slow-moving currents, soft substrates, and abundant aquatic vegetation.	No suitable habitat for this species identified.
Sternotherus odoratu	Stinkpot (Eastern Musk Turtle)	City of Toronto	SC	THR	2011	Prefers permanent bodies of water that are shallow and clear, with little or no current and soft substrates with abundant organic materials.	No suitable habitat for this species identified.

Short-eared Owl

Natural heritage data provided by MNRF revealed 206 records of Short-eared Owl, with the most recent occurrence dates ranging from 2012 to 2018. Short-eared Owl were documented within the City of Toronto, Town of Whitby and City of Oshawa, and Short-eared Owl is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not afforded any legal protection under either act. The Short-eared Owl lives in open areas such as grasslands, marshes and tundra. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Short-eared Owl were identified during LGL's 2019 breeding bird field investigations.

Eastern Whip-poor-will

Natural heritage data provided by MNRF revealed 28 records of Eastern Whip-poor-will with the most recent occurrence dates ranging from 2008 to 2013. Eastern Whip-poor-will were documented within the City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. The Eastern Whip-poor-will is regulated as 'Threatened' under the Ontario ESA and Canada SARA. This species is typically associated with a mix of open and forested areas, such as savannahs, open woodlands or openings in deciduous, coniferous and mixed forests. Habitat suitable to support this species may be found where forested communities are present within the study area. Breeding bird surveys conducted in 2019 did not identify this species.

Piping Plover

Natural heritage data provided by MNRF revealed 298 records of Piping Plover, with the most recent occurrence dates ranging from 2017 to 2018. Piping Plover were documented within the City of Toronto, City of Pickering, Town of Whitby and City of Oshawa. Over 200 of the records occurred within the City of Toronto. Piping Plover is regulated as 'Endangered' under the Ontario ESA and Canada SARA. Piping Plovers nest exclusively on dry sandy or gravelly beaches just above the reach of high water and waves. In Ontario, although never common, they breed along the shores of the Great Lakes, and at Lake of the Woods in northwestern Ontario. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Piping Plover were identified during LGL's 2019 breeding bird field investigations.

Black Tern

Natural heritage data provided by MNRF revealed 102 records of Black Tern, with the most recent occurrence dates ranging from 2005 to 2009. Black Tern were documented within the City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. Black Tern is listed as 'Special Concern' under the Ontario ESA (but is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA and has no status under the Canada SARA. In Canada, this species breeds only in extreme southern Ontario and British Columbia in freshwater marshlands where it forms small colonies. Observations of this species in Ontario are exceedingly rare. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Black Tern were identified during LGL's 2019 breeding bird field investigations.

Olive-sided Flycatcher

Natural heritage data provided by MNRF contained a single record of Olive-sided Flycatcher in the City of Toronto, with occurrence dated 2001. Olive-sided Flycatcher is listed as 'Special Concern' under the Ontario ESA and is regulated as 'Threatened' under the Canada SARA; however, this species is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA. Olive-sided Flycatchers' breeding habitat usually consists of coniferous or mixed forest communities adjacent to rivers or wetlands. In Ontario, Olive-sided Flycatchers commonly nest in conifers such as White and Black Spruce, Jack Pine and Balsam Fir. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Olive-sided Flycatcher were identified during LGL's 2019 breeding bird field investigations.

Eastern Wood-pewee

Natural heritage data provided by MNRF revealed 646 records of Eastern Wood-pewee, with occurrences most recently documented in 2017. Eastern Wood-pewee were documented within the City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. Eastern Wood Pewee is listed as 'Special Concern' under the Ontario ESA; however, this species is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA. The Eastern Wood-pewee is listed as 'Special Concern' by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but has no status under the Canada SARA. The Eastern Wood-pewee is found in deciduous and mixed forests and in forest openings/clearings/edges. Habitats which have the potential to support Eastern Wood-pewee were found where deciduous and mixed forest habitat communities and forest edges were identified within the study area; however, breeding bird surveys undertaken by LGL in 2019 did not identify Eastern Wood-pewee.

Yellow Rail

Natural heritage data provided by MNRF contained 11 records of Yellow Rail in the Town of Whitby, with occurrence dated 2005. Yellow Rail is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not afforded any legal protection under either act. The Yellow Rail is a secretive bird that lives deep in the reeds, sedges, and marshes of shallow wetlands, where they nest on the ground. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Yellow Rail were identified during LGL's 2019 breeding bird field investigations.

Cerulean Warbler

Natural heritage data provided by MNRF revealed 13 records of Cerulean Warbler, with the most recent occurrence dates ranging from 2005 to 2013. Cerulean Warbler were documented four times within the City of Toronto and the remaining nine occurrences were within the Town of Whitby. Cerulean Warbler is regulated 'Threatened' under the Ontario ESA and 'Endangered' under the Canada SARA. Cerulean Warblers spend the breeding season in mature, deciduous forests with large, tall trees and an open under story. Field investigations in spring/early summer of 2019 identified only marginally suitable habitat for this species. No Cerulean Warbler were identified during LGL's 2019 breeding bird field investigations.

Acadian Flycatcher

Natural heritage data provided by MNRF revealed 23 records of Acadian Flycatcher, with occurrence dates as recent as 2016. Acadian Flycatcher was documented within the City of Pickering, Town of Whitby and City of Oshawa. Acadian Flycatcher is regulated as 'Endangered' under the Ontario ESA and Canada SARA. The Acadian Flycatcher is typically found in mature, shady forests with ravines, or in forested swamps with abundant maple and beech trees. In Canada, the Acadian Flycatcher nests only in southwestern Ontario, mostly in large forests and forested ravines near the shore of Lake Erie. Field investigations in spring/early summer of 2019 identified marginally suitable habitat for this species, including several wooded areas identified across the study area; however, these wooded areas are likely too small and disturbed to support this species. No Acadian Flycatcher were identified during LGL's 2019 breeding bird field investigations.

Wood Thrush

Natural heritage data provided by MNRF revealed over 1300 records of Wood Thrush, with the most recent occurrence dates ranging from 2011 to 2017. Wood Thrush were documented within the City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. Notably, Wood Thrush were documented over 500 times in both the City of Toronto and City of Pickering. Wood Thrush is listed as 'Special Concern' under the Ontario ESA; however, this species is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA. Wood Thrush is not a regulated species under the Canada SARA. The Wood Thrush is found in mature deciduous and mixed forests with large trees, shade and leaf litter for foraging. Habitats which have the potential to support Wood Thrush were found where mature deciduous and mixed forest habitat communities were identified within the study area. However, no Wood Thrush were identified during LGL's 2019 field investigations.

Yellow-breasted Chat

Natural heritage data provided by MNRF revealed 16 records of Yellow-breasted Chat, with the most recent occurrence dates ranging from 2005 to 2012. Yellow-breasted Chat were documented within the City of Toronto, City of Pickering, Town of Whitby and City of Oshawa. Yellow-breasted Chat is regulated as 'Endangered' under the Ontario ESA and Canada SARA. The Yellow-breasted Chat lives in thickets and scrub, especially locations where clearings have become overgrown. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Yellow-breasted Chat were identified during LGL's 2019 breeding bird field investigations.

Loggerhead Shrike

Natural heritage data provided by MNRF revealed 36 records of Loggerhead Shrike, with the most recent occurrence dates ranging from 1999 to 2016. Loggerhead Shrike were documented within the City of Toronto, City of Pickering, Town of Whitby and City of Oshawa. Loggerhead Shrike is regulated as 'Endangered' under the Ontario ESA and Canada SARA. The Loggerhead Shrike prefers pasture or other grasslands with scattered low trees and shrubs. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Loggerhead Shrike were identified during LGL's 2019 breeding bird field investigations.

Red-headed Woodpecker

Natural heritage data provided by MNRF revealed 69 records of Red-headed Woodpecker with the most recent occurrence dates ranging from 2016 to 2018. There were 34 observations in the City of Toronto, six observations in the Town of Ajax, three in the City of Pickering, and 19 in Town of Whitby. Red-headed Woodpecker is listed as 'Special Concern' under the Species at Risk in Ontario List; however, this species is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA. This species is regulated as 'Threatened' under the Canada SARA. The Red-headed Woodpecker lives in open woodland and woodland edges, and is often found in parks, golf courses and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching. Habitats which could be suitable to support the Red-headed Woodpecker were generally absent from the study area. Breeding bird surveys conducted in 2019 did not identify this species.

American White Pelican

Natural heritage data provided by MNRF contained 21 records of American White Pelican, with occurrence dates as recent as 2015. American White Pelican were documented within the City of Toronto, Town of Whitby, and City of Oshawa. American White Pelican is regulated as 'Threatened' under the Ontario ESA but has no status under the Canada SARA. The American White Pelican nests in groups on remote islands that are barren or sparsely treed located in lakes, reservoirs, or on large rivers. In Canada, they are found from the interior of British Columbia, east to northwestern Ontario. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No American White Pelican were identified during LGL's 2019 breeding bird field investigations.

Horned Grebe

Natural heritage data provided by MNRF revealed 285 records of Horned Grebe, with the most recent occurrence dates ranging from 2011 to 2018. Horned Grebe were documented within the City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. Horned Grebe is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not afforded any legal protection under either act. The Horned Grebe usually nests in small ponds, marshes and shallow bays that contain areas of open water and emergent vegetation. The Horned Grebe is a rare breeder in Ontario. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Horned Grebe were identified during LGL's 2019 breeding bird field investigations.

Prothonotary Warbler

Natural heritage data provided by MNRF contained 30 records of Prothonotary Warbler, with occurrence dates as recent as 2014. Prothonotary Warbler were documented within the City of Toronto, Town of Whitby and City of Oshawa. Prothonotary Warbler is regulated as 'Endangered' under the Ontario ESA and Canada SARA. The Prothonotary Warbler nests in small, shallow holes, found low in the trunks of dead or dying trees standing in or near flooded woodlands or swamps. In Canada, the Prothonotary Warbler is only known to nest in southwestern Ontario, primarily along the north shore of Lake Erie. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Prothonotary Warbler were identified during LGL's 2019 breeding bird field investigations.

King Rail

Natural heritage data provided by MNRF revealed 12 records of King Rail, with the most recent occurrence dates ranging from 2011 to 2015. King Rail were documented once within the City of Oshawa and the remaining 11 occurrences were within the City of Toronto. King Rail is regulated as 'Endangered' under the Ontario ESA and Canada SARA. The King Rail is found in densely vegetated freshwater marshes with open shallow water that merges with shrubby areas. King Rail is sometimes found in smaller isolated marshes, but most seem to prefer larger, coastal wetlands. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No King Rail were identified during LGL's 2019 breeding bird field investigations.

Louisiana Waterthrush

Natural heritage data provided by MNRF revealed six records of Louisiana Waterthrush, with the most recent occurrences in 2005 and 2013. Louisiana Waterthrush were documented within the City of Pickering and the Town of Whitby. The Louisiana Waterthrush is regulated as 'Threatened' under the Ontario ESA and Canada SARA. The Louisiana Waterthrush inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Louisiana Waterthrush were identified during LGL's 2019 breeding bird field investigations.

Barn Owl

Natural heritage data provided by MNRF contained a single record of Barn Owl in the City of Toronto, with occurrence dated 2017. Barn Owl is regulated 'Endangered' under the Ontario ESA and Canada SARA. In Canada, this species breeds only in extreme southern Ontario and British Columbia. Observations of this species in Ontario are exceedingly rare. Field investigations in spring/early summer of 2019 did not identify suitable habitat for this species. No Barn Owl were identified during LGL's 2019 breeding bird field investigations.

Golden-winged Warbler

Natural heritage data provided by MNRF revealed 10 records of Golden-winged Warbler, with occurrences most recently documented in 2009. Occurrences were only documented in the City of Pickering. The Golden-winged Warbler is listed as 'Special Concern' under the Ontario ESA; however, this species is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA. The Golden-winged Warbler is regulated as 'Threatened' under the Canada SARA. The Golden-winged Warbler nests in areas with young shrub growth surrounded by mature forest communities, and locations that have experienced disturbance, such as field edges, hydro or utility corridors. Field investigations in spring/early summer of 2019 identified only marginally suitable habitat for this species. Breeding bird surveys conducted in 2019 did not identify this species.

Canada Warbler

Natural heritage data provided by MNRF revealed records of Canada Warbler with the most recently documented record in 2018. Occurrences were documented in the City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. The Canada Warbler is listed as 'Special Concern' under the Ontario ESA; however, this species is not a regulated species ('Endangered' or 'Threatened') under the

Ontario ESA. The Canada Warbler is listed as 'Threatened' under the Canada SARA. The Canada Warbler breeds in a variety of deciduous and coniferous wooded habitats, particularly those that contain a dense understory of shrubs or other vegetation. Field investigations undertaken by LGL in 2019 identified marginally suitable nesting habitat for this species, including various wooded habitats that were identified across the study area. Breeding bird surveys conducted in 2019 did not identify this species.

Rusty-patched Bumble Bee

Natural heritage data provided by MNRF revealed 19 records of Rusty-patched Bumble Bee from the City of Toronto, with the most recent occurrence in 1999. Rusty-patched Bumble Bee is regulated 'Endangered' under the Ontario ESA and Canada SARA. In Ontario, rusty-patched Bumble Bee is found in areas from the southern Great Lakes – St. Lawrence forest region southwards into the Carolinian forest. It is a habitat generalist, but it is typically found in open habitats, such as mixed farmland, savannah, marshes, sand dunes, urban and lightly wooded areas. It is cold–tolerant and can be found at high elevations. Most recent sightings in Ontario have been in oak savannah habitat with well-drained, sandy soils and moderately open canopy. Open country, agricultural and urban habitat types within the study area have the potential to function as suitable habitat for the species; however, no Rusty-patched Bumble Bee were documented during LGL's 2019 field investigation.

Gypsy Cuckoo Bumble Bee

Natural heritage data provided by MNRF revealed 18 records of Gypsy Cuckoo Bumble Bee from the City of Toronto, with the most recent occurrence in 1999. Gypsy Cuckoo Bumble Bee is regulated 'Endangered' under the Ontario ESA and Canada SARA. Gypsy Cuckoo Bumble Bee occurs in diverse habitats, including open meadows, mixed farmlands, urban areas and boreal forest. Open country, agricultural and open meadows types within the study area have the potential to function as suitable habitat for the species; however, no Gypsy Cuckoo Bumble Bee were documented during LGL's 2019 field investigation.

Monarch

Natural heritage data provided by MNRF revealed 117 records of Monarch, with the most recent occurrence dates ranging from 2007 to 2018. Monarch were documented within the City of Toronto, City of Pickering, Town of Whitby and City of Oshawa. The Monarch is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not a regulated species ('Endangered' or 'Threatened') under either act. The Monarch can be found in a wide variety of open county/grassland habitats such as meadows and open fields. Open-country, meadow (including roadside vegetation) and agricultural habitat types found across the study area have the potential to provide habitat suitable to support this species. However, no incidental observations of Monarch were recorded during LGL's 2019 field investigations; although no targeted surveys for this species were conducted.

Eastern Small-footed Myotis

Natural heritage data provided by MNRF revealed records of Eastern Small-footed Myotis within the City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. Eastern Small-footed Myotis is regulated as 'Endangered' under the Ontario ESA but is not a regulated species under the Canada SARA. This species is not known to roost within trees, but there is very little known about its roosting habits. The species generally roosts on the ground under rocks, in rock crevices, talus slopes and rock piles. It occasionally inhabits buildings. No habitat for Eastern Small-footed Myotis was identified within

the study area and this species was not documented during LGL's 2019 field investigation; although no targeted surveys for this species were conducted.

Little Brown Myotis

Natural heritage data provided by MNRF revealed records of Little Brown Myotis within the City of Toronto, City of Pickering, Town of Whitby and City of Oshawa. Little Brown Myotis is regulated as 'Endangered' under the Ontario ESA and the Canada SARA. The Little Brown Myotis is a cavity-roosting species and stays wherever it is warm. It roosts in natural cavities under loose bark and in crevices, and in buildings where it can be found in attics, behind shutters or siding, or under shingles (Kurta 1995). Little Brown Myotis emerge from roosts for their nightly hunt around dusk, and forage over water and semi-open areas such as rocky hillsides, lawns, fields and forest edges (Nagorsen and Brigham 1993). Open country, agricultural and forested habitat types within the study area have the potential to function as suitable habitat for the species. However, no incidental observations of little brown myotis were recorded during LGL's 2019 field investigations; although no targeted surveys for this species were conducted.

Northern Myotis

Natural heritage data provided by MNRF revealed records of Northern Myotis within the City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. Northern Myotis is regulated as 'Endangered' under the Ontario ESA and the Canada SARA. The Northern Myotis is found throughout forested areas in southern Ontario, choosing to roost under loose bark and in the cavities of trees. Habitat for this species has the potential to be found where forested/treed habitat exists across the study area. However, no incidental observations of Northern Myotis were recorded during LGL's 2019 field investigations; although no targeted surveys for this species were conducted.

Tri-coloured Bat

Natural heritage data provided by MNRF revealed records of Tri-coloured bat within the City of Toronto, City of Pickering, Town of Ajax, Town of Whitby and City of Oshawa. Tri-coloured bat is regulated as 'Endangered' under the Ontario ESA and the Canada SARA. In Ontario, Tri-coloured bat may roost in foliage, in clumps of old leaves, hanging moss or squirrel nests. They are occasionally found in buildings although there are no records of this in Canada (Poissant et al, 2010). They typically feed over aquatic areas with an affinity to large-bodied water and will likely roost near these. Habitat for this species has the potential to be found where forested/treed habitat exists across the study area. However, no incidental observations of Tri-coloured bat were recorded during LGL's 2019 field investigations; although no targeted surveys for this species were conducted.

Grey Fox

Natural heritage data provided by MNRF revealed four records of Grey Fox, with the most recent occurrence dates from 2017. Grey Fox were documented within the City of Toronto and City of Pickering. Grey Fox is regulated as 'Threatened' under the Ontario ESA and the Canada SARA. While the Ontario range of this species extends across much of southern and southeastern Ontario, the only known population in the province is on Pelee Island, with very rare sightings elsewhere in the province at points close to the border with the United States. This species inhabits deciduous forests and marshes and will den in a variety of features including rock outcroppings, hollow trees, burrows or brush piles, usually where dense brush provides cover and in close proximity to water. Deciduous and marsh communities

within the study area have the potential to function as suitable habitat for the species; however, none were documented during LGL's 2019 field investigation.

Blanding's Turtle

Natural heritage data provided by MNRF revealed over 1100 records of Blanding's Turtle, with the most recent occurrence dates ranging from 2009 to 2018. Blanding's Turtle was documented within the City of Toronto, Town of Whitby and City of Oshawa. Blanding's Turtle is regulated as 'Threatened' under the Ontario ESA and the Canada SARA. Blanding's Turtles live in shallow water, usually in large wetlands and shallow lakes with lots of aquatic vegetation. Blanding's Turtles are also known to make long overland movements to seek egg laying sites or to access new aquatic habiats. No habitat considered suitable to support this species was identified within the study area. No incidental observations of Blanding's Turtle were recorded during LGL's 2019 field investigations; although no targeted surveys for this species were conducted.

Northern Map Turtle

Natural heritage data provided by MNRF revealed 58 records of Northern Map Turtle within the City of Toronto, with the most recent occurrence documented in 2015. The Northern Map Turtle is listed as 'Special Concern' under the Ontario ESA and Canada SARA; however, this species is not a regulated species ('Endangered' or 'Threatened') under either act. In Ontario, the Northern Map Turtle prefers large waterbodies with slow-moving currents, soft substrates, and abundant aquatic vegetation. Ideal stretches of shoreline contain suitable basking sites, such as rocks and logs. Along Lakes Erie and Ontario, this species occurs in marsh habitat and undeveloped shorelines. It is also found in small to large rivers with slow to moderate flow. Hibernation takes place in soft substrates under deep water. No habitat considered suitable to support this species was identified within the study area. No incidental observations of Northern Map Turtle were recorded during LGL's 2019 field investigations; although no targeted surveys for this species were conducted.

Stinkpot (Eastern Musk Turtle)

Natural heritage data provided by MNRF revealed 11 records of Eastern Musk Turtle within the City of Toronto, with the most recent occurrence documented in 2011. Eastern Musk Turtle is listed as 'Special Concern' under the Ontario ESA (but is not a regulated species ('Endangered' or 'Threatened') under the Ontario ESA) and is regulated as 'Threatened' under the Canada SARA. In Ontario, Eastern Musk Turtle is very rarely out of water and prefers permanent bodies of water that are shallow and clear, with little or no current and soft substrates with abundant organic materials. Abundant floating and submerged vegetation is preferred. Eggs are sometimes laid on open ground, or in shallow nests in decaying vegetation, shallow gravel or rock crevices (COSEWIC 2012). No habitat considered suitable to support this species was identified within the study area. No incidental observations of Eastern Musk Turtle were recorded during LGL's 2019 field investigations; although no targeted surveys for this species were conducted.