Appendix D - Terrestrial and Aquatic Ecology Report

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Aldershot Creek Erosion EA – Terrestrial and Aquatic Ecology Report



PECG Project # 140326

Prepared For
Associated Engineering (Ont.) Ltd

September 26, 2019

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1. Introduction

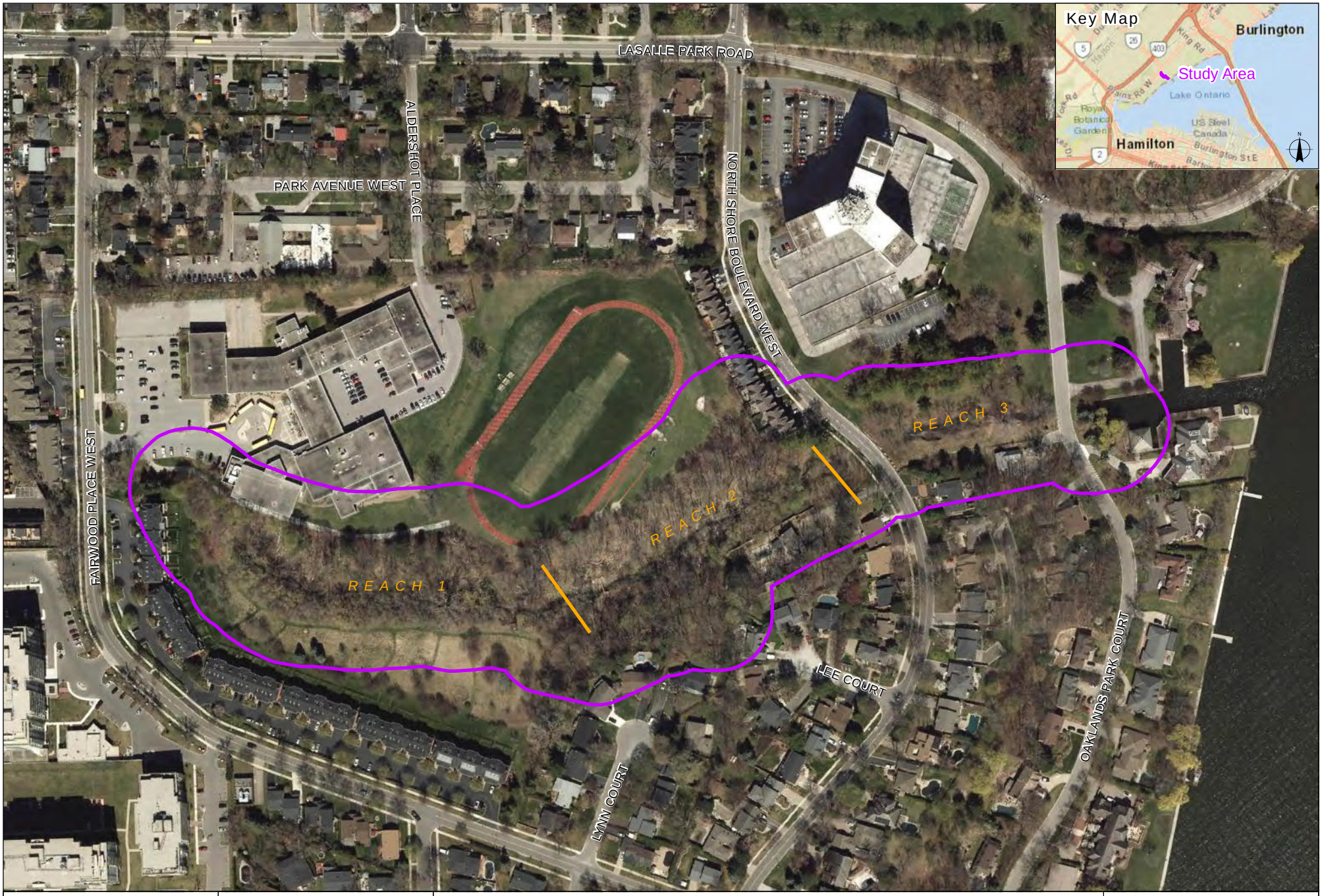
Palmer Environmental Consulting Group Inc. (PECG) is pleased to provide Associated Engineering, on behalf of the City of Burlington (the City), with the results of our integrated terrestrial and aquatic ecology assessment along the West Aldershot Creek valley, in Burlington (**Figure 1**). The baseline terrestrial and aquatic ecology information included in this report informs the development and evaluation of alternatives for erosion control in association with completion of a Schedule B Municipal Class Environmental Assessment (EA).

1.1 Background

West Aldershot Creek exhibits the effects of an urbanized hydrologic regime, largely without the benefit of stormwater management controls throughout the watershed. Its watershed is covered by a high proportion of impervious surfaces, so it is predisposed to rapid routing of surface runoff and floodwater during even modest rainstorms. The unnaturally rapid, or 'flashy,' hydrologic response has accelerated erosion along the bed and banks of the creek. Anomalous accumulations of sediment at the mouth of West Aldershot Creek, which the City had to dredge to maintain boat access, are a testament to the severity of erosion.

Erosion is most severe along the upstream portion of the study corridor, where the channel is confined along the bottom of a nearly V-shaped ravine with little to no floodplain to attenuate flow energy. Significant bed scour and down-cutting has occurred, which in turn has led to undercutting and collapse of the banks. Several small slope failures have occurred recently along the lower valley walls in response to the fluvial erosion. Trees have fallen into the channel once their root masses are sufficiently undermined, which, in turn, has exacerbated erosion by forcing flows over, under and around the woody debris jams that form. Without intervention, the channel will continue to erode through incremental fluvial scour and mass wastage until it re-equilibrates with its new hydrologic regime. The downstream portion of the creek, where the valley bottom is wider and a narrow floodplain is more accessible, exhibits fewer, less severe erosion sites.

The City retained Associated Engineering, which in turn retained PECG, to complete a comprehensive study of observed instability and environmental conditions along the West Aldershot Creek valley as a basis for developing and evaluating erosion control solutions through a Municipal Class EA process. Our team will follow through to complete detailed designs of the preferred alternative selected through the multi-stakeholder evaluation. This report presents the results of a baseline characterization of terrestrial and aquatic ecology along the valley in support of the Municipal Class EA process.



PALMER ENVIRONMENTAL CONSULTING GROUP INC.

CLIENT: Associated Engineering
PROJECT: 5229 Cross Street EA

0 25 50 75
metres

DRAWN: B. Elder
CHECKED: A. Adams
PROJECT: 140328
DATE: Apr 17, 2019

Scale 1:3000
UTM Zone 17N
NAD 1983

Legend

Study Area

Reach Break

Note: Imagery (2017 - Halton Region) provided by Esri basemap service.

Associated Engineering

Site Location

FIGURE 1

Document Path: C:\Egnyte\Shared\Projects\Active\14003 - Associated Engineering\1400326 - Aldershot Creek Erosion EA\Mapping\Terrestrial\Figures\Draft\140326-1_SiteLocation.mxd

2. Policy Review

2.1 Provincial Policy Statement (2014)

The Provincial Policy Statement (PPS) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources (Ontario Ministry of Municipal Affairs and Housing, 2014). The PPS defines eight natural heritage feature (NHF) types and adjacent lands, and provides planning policies for each. Of these NHF, development and site alteration are not permitted in:

- Significant Coastal Wetlands;
- Significant Wetlands in Ecoregions 5E, 6E and 7E;
- Fish Habitat, except in accordance with provincial and federal requirements; or
- Habitat of species designated as Endangered and Threatened, except in accordance with provincial and federal requirements.

Additionally, unless it can be demonstrated that there will be no negative impacts on the natural features or their ecological functions, development and site alteration are also not permitted in:

- Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Wildlife Habitat;
- Significant Areas of Natural and Scientific Interest;
- Other Coastal Wetlands in Ecoregions 5E, 6E and 7E; and
- Lands defined as *Adjacent Lands* to all the above natural heritage features.

Each of these natural heritage features is afforded varying levels of protection, subject to guidelines, and in some cases, regulations. Of these features, provincially significant wetlands are designated by the Ministry of Natural Resources and Forestry (MNRF). Habitat of Endangered or Threatened species is defined through the *Endangered Species Act* (ESA) as determined by MNRF. Fish habitat is regulated by Fisheries and Oceans Canada (DFO). The identification and regulation of the remaining features is the responsibility of the municipality or other planning authority. The study area is located in Ecoregion 7E (Crins, Gray, Uhlig, & Wester, 2009).

2.2 Halton Region Official Plan (2016)

The Halton Region Official Plan classifies the study area as a Regional Natural Heritage System, which aims to protect and enhance natural features and functions. Key Features of Regional Natural Heritage Systems include:

- significant habitat of endangered and threatened species;
- significant wetlands;
- significant coastal wetlands;

- significant woodlands;
- significant valleylands;
- significant wildlife habitat;
- significant areas of natural and scientific interest; and
- fish habitat.

Official Plan Map 1 – Regional Structure demonstrates that a Regional Natural Heritage System class encompasses the study area (**Map A**), as it is a significant woodland.

Significant Woodland means a woodland 0.5 hectares (ha) or larger determined through a Watershed Management Plan, a Subwatershed Study or a site-specific Environmental Impact Assessment to meet one or more of the four following criteria: (1) the Woodland contains forest patches over 99 years old; (2) the patch size of the Woodland is 2 ha or larger if is located in the Urban Area, or 4 ha or larger if it is located outside the Urban Area but below the Escarpment Brow, or 10 ha or larger if it is located outside the Urban Area but above the Escarpment Brow; (3) the Woodland has an interior core area of 4 ha or larger, measured 100 metres (m) from the edge; or (4) the Woodland is wholly or partially within 50 m of a major creek or certain headwater creeks or within 150 m of the Escarpment brow.



Map A: Halton Regional Structure

2.3 City of Burlington

2.3.1 City of Burlington Official Plan (2017)

Schedule C Land Use – Urban Area of the City of Burlington Official Plan includes the study area as a part of the City's Natural Heritage System. The Natural Heritage System is made up of natural features and areas, such as woodlands and wetlands, and the linkages and interrelationships among them and with the surrounding landscape. The study area contains Aldershot Creek, a portion of the Lake Ontario Shoreline and significant valleyland.

The City's Natural Heritage System policies are directed at planning and managing the City's natural heritage features and the interconnections among them as an integrated system that is part of a much larger system extending beyond the City's boundaries. Development or site alteration is generally not permitted within any components of the City's Natural Heritage System unless it has been demonstrated through an Environmental Impact Assessment (EIA) or equivalent study that there will be no negative impacts on the natural heritage features and areas or their ecological functions. However, essential

watershed management and flood and erosion control projects either carried out or supervised by a public authority (e.g. municipality) may be permitted in the Natural Heritage System designation, subject to the other policies of this Plan and to the applicable policies of the Greenbelt Plan.

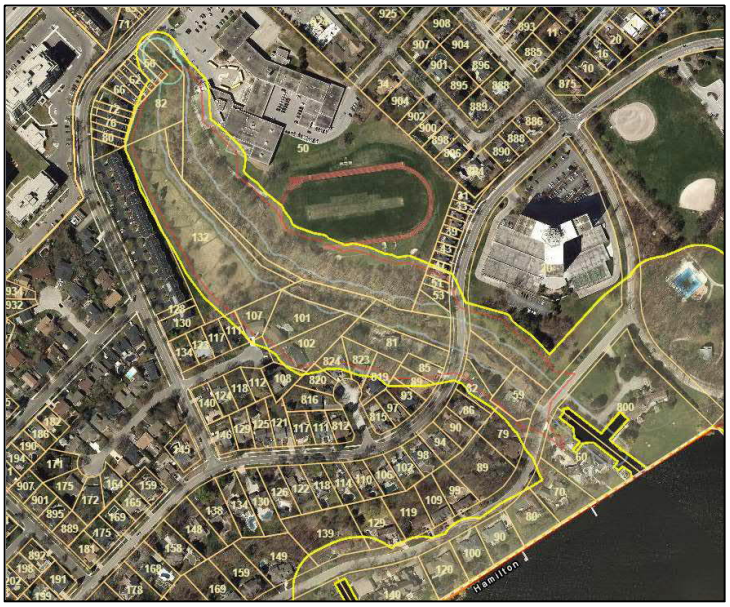
2.3.2 City of Burlington Zoning By-law (2007)

The zoned designation for the study area is Open Space. Permitted uses include municipal parks and public open space, stormwater management and erosion control, public utilities and services, cultural heritage resources, and non-intensive outdoor recreation uses.

2.4 Conservation Authority Regulation (O. Reg. 162/06)

Due to the presence of the watercourse, associated regulated lands are found within the study area (**Map B**). As such, consultation with Conservation Halton is be required, including environmental approvals and permitting pursuant to Conservation Halton's Ontario Regulation 162/06.

West Aldershot Creek represents a 100-year Flood Hazard and a Stable Top of Bank Hazard. According to the Regulation 162/06, no person shall undertake development or permit another person to undertake development in or on the areas that may be affected by flooding, erosion or dynamic beach hazards. For valleylands where the river or stream valley is apparent and has stable slopes, the valley extends from the stable top of bank, plus an allowance not to exceed 15 m, to a similar point on the opposite side. Subject to Authority permission no person shall straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or change or interfere in any way with a wetland.



Map B: Conservation Halton Regulated Area

2.5 Endangered Species Act (2007)

Species listed as Species at Risk in Ontario (SARO), which are designated as Threatened or Endangered, are afforded species and habitat protection under the *Endangered Species Act* (ESA) (Government of

Ontario, 2007). The ESA is administered by the Ministry of Environment, Conservation and Parks (MECP), a recent change (April 1, 2019) from administration by the MNRF. Species designated as Special Concern may also be afforded protection through policy instruments respecting significant wildlife habitat as defined by the Province or other relevant authority, or other protections contained in Official Plan policies.

2.6 Migratory Birds Convention Act (1994)

The *Migratory Birds Convention Act* (MBCA), 1994 and Migratory Birds Regulations (MBR), 2014 protect most species of migratory birds and their nests and eggs anywhere they are found in Canada. General prohibitions under the MBCA and MBR protect migratory birds, their nests and eggs and prohibit the deposition of harmful substances in waters / areas frequented by them. The MBR includes an additional prohibition against incidental take, which is the inadvertent harming or destruction of birds, nests or eggs (Government of Canada, 1994).

3. Methods

3.1 Natural Feature Background Review

Background information pertaining to the natural and physical setting of the study area was gathered and reviewed at the outset of the project. These information sources included:

- Natural Heritage Information Centre (NHIC) database
- Conservation Halton Open Data
- MNRF Correspondence
- Halton Region Official Plan
- City of Burlington Official Plan

Other sources of information, such as aerial photography and topographic maps, were also consulted prior to commencing field assessments. A request for natural heritage information and data pertaining to the study area was made to the Aurora District MNRF and Conservation Halton.

The following sections summarize natural heritage features and ecological elements that have been previously identified within the study area.

3.1.1 Significant Woodlands (Ecoregion 7E)

West Aldershot Creek is defined as a Significant Woodland under the Regional Natural Heritage System of the Halton Region Official Plan (Section 2.2).

3.1.2 Significant Valleylands (Ecoregion 7E)

The PPS refers to significant valleylands as “a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year”. The local municipal planning authority is responsible for identifying and evaluating significant valleylands. The study area was identified as Significant Valleyland in the City of Burlington Official Plan (Section 2.3.1).

3.1.3 Habitats of Endangered and Threatened Species

For the purposes of this report, Species at Risk (SAR) include species listed as Endangered, Threatened or Special Concern under Ontario’s ESA. Based on our experience in potential habitat opportunities and species distribution in the region, a site-specific SAR screening was completed for species with the potential to occur within the study area. Habitats were characterized and screened for evidence of, or potential use by, these species.

MNRF Aurora District’s records of SAR in or near the study area include the following:

- American Eel (*Anguilla rostrata*) – Endangered
- Prothonotary Warbler (*Protonotaria citrea*) – Endangered
- Barn Swallow (*Hirundo rustica*) – Threatened
- Bank Swallow (*Riparia riparia*) – Threatened
- Eastern Meadowlark (*Sturnella magna*) – Threatened
- Eastern Hog-nosed Snake (*Heterodon platirhinos*) – Threatened

- Canada Warbler (*Cardellina canadensis*) – Special Concern
- Eastern Pondmussel (*Ligumia nasuta*) – Special Concern
- Horned Grebe (*Podiceps auritus*) – Special Concern

Additionally, the NHIC database contains records of the following species in the general area:

- Timber Rattlesnake (*Crotalus horridus*) – Extirpated
- American Chestnut (*Castanea dentata*) – Endangered
- American Columbo (*Frasera caroliniensis*) – Endangered
- Butternut (*Juglans cinerea*) – Endangered
- Northern Bobwhite (*Colinus virginianus*) – Endangered
- Spotted Wintergreen (*Chimaphila maculata*) – Endangered
- Yellow-breasted Chat (*Icteria virens*) – Endangered
- Cerulean Warbler (*Setophaga cerulea*) – Threatened
- Eastern Wood-pewee (*Contopus virens*) – Special Concern

3.1.4 Significant Wildlife Habitat

3.1.4.1 Colonial Waterbird Nesting Areas

The NHIC database identifies the Hamilton Harbour Colonial Waterbird Nesting Area within the study area. While the precise location of the nesting area is not mapped, as a harbour nesting area, this NHF is assumed to be on Lake Ontario, adjacent to the study area. However, the presence of Oaklands Park Court effectively cuts connection to Reach 3 within the study area (**Figure 1**).

3.1.5 Other Natural Heritage Features

No additional natural heritage features, including provincially or locally significant wetlands, Area of Natural and Scientific Interest (ANSI) or Environmentally Significant Areas (ESA) have been identified within or immediately adjacent to the study area. Lower Grindstone Creek, a provincially significant wetland (PSW), is roughly 1 km southwest of the study area.

3.2 Field Investigations

PECG ecologists undertook field investigations to inventory the flora and fauna of the study area, assess physical terrain characteristics, and to provide an assessment of the terrestrial and aquatic ecological features and functions within the study area. This information was used to verify and complement the background review, to document current site conditions and inform the development of site-specific erosion control measures. Field investigations were undertaken from July to September 2018 (**Table 1**). The level of field effort was discussed with and approved by Conservation Halton, and is reflective of the potential flora and fauna and potential habitats of the study area. Data sheets are provided as **Appendix A**.

Table 1: Field Investigation Dates and Tasks

Investigations	Dates
Breeding Bird Survey	July 10 and July 19, 2018

Investigations	Dates
Bat Maternity Roost Surveys	July 31,2018
Vegetation Communities and Flora, SAR Screening, SWH assessment	July 31,2018
Vegetation Communities and Flora, SAR Screening, SWH assessment	September 17, 2018
Aquatic Habitat and Communities	August 23, 2018
Supplemental Breeding Bird Survey	June 3 and 21, 2019

3.2.1 Ecological Land Classification

Vegetation communities were mapped and described following the Ecological Land Classification (ELC) System for Southern Ontario (Lee, et al., 1998) and 2008 update tables; and the wetland characterization and limit was determined using the Ontario Wetland Evaluation System (OWES) (Government of Ontario, 2014). Vegetation community boundaries were delineated on field maps through the interpretation of recent aerial photographs and refined in the field. Information collected during the ELC surveys includes dominant species cover, community structure, as well as level of disturbance, presence of indicator species, and other notable observations.

3.2.2 Vegetation Communities and Flora

Botanical surveys were completed by traversing the study area and recording species observed in each vegetation community. Identified plants were compiled and their status at local (i.e. Halton) (Varga, et al., 2000) and provincial levels (i.e. S-Rank) (Ministry of Natural Resource and Forestry, 2018) were verified. Provincial rarity status was based on the SARO list (Ministry of Natural Resources and Forestry, 2018).

3.2.3 Breeding Bird Survey

Breeding bird surveys were conducted following the principles of the *Ontario Breeding Bird Atlas Guide for Participants* (Bird Studies Canada, 2001). A survey of the study area was conducted on July 10 and July 19, 2018, between 05:00 and 10:00. As this period is outside the typical breeding window, supplemental surveys were completed on and June 3 and 21, 2019, also between 05:00 and 10:00. Weather conditions during the surveys were 0-80% overcast, with light air to light breezes, no precipitation, and temperatures of 15-18°C. The survey was carried out by traversing the study area to within 50 m of all points of the area and mapping the presence of all birds detected by sight and sound, except for those birds flying over the study area (birds soaring overhead, however, were recorded).

3.2.4 Bat Maternity Roost Survey

A scoped bat maternity roost survey was undertaken based on assessing tree cavities in accordance with methods outlined the *Bats and Bat Habitats: Guidelines for Wind Power Projects* (Ontario Ministry of Natural Resources, 2011). Given the presence of forest cover in the study area, there are potential habitat opportunities for bats and therefore the objective of the assessment was to identify the extent and quality of potential habitat opportunities for bats. Specifically, the study area was reviewed for defined Species at Risk (SAR) bats that use forested habitats, including Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-Colored Bat (*Perimyotis subflavus*).

A survey for the identification of Suitable Maternity Roost Trees was conducted on July 31, 2018. A total of eight plots was completed, representing a sample of the treed areas (FOD6-5, FOD1-1 and FOD5-3) in the study area (**Figure 2**). The survey included completing a habitat assessment to identify roost tree distribution. The tree species, diameter at breast height (DBH), snag attributes, snag location, height class, and decay class were recorded for each tree within the survey plots. The survey also focused on identifying maternity roost habitat for SAR bats. Based on the timing of project commencement, the field survey was completed during leaf-on conditions.

3.2.5 Wildlife Observations, Species at Risk and Significant Wildlife Habitat

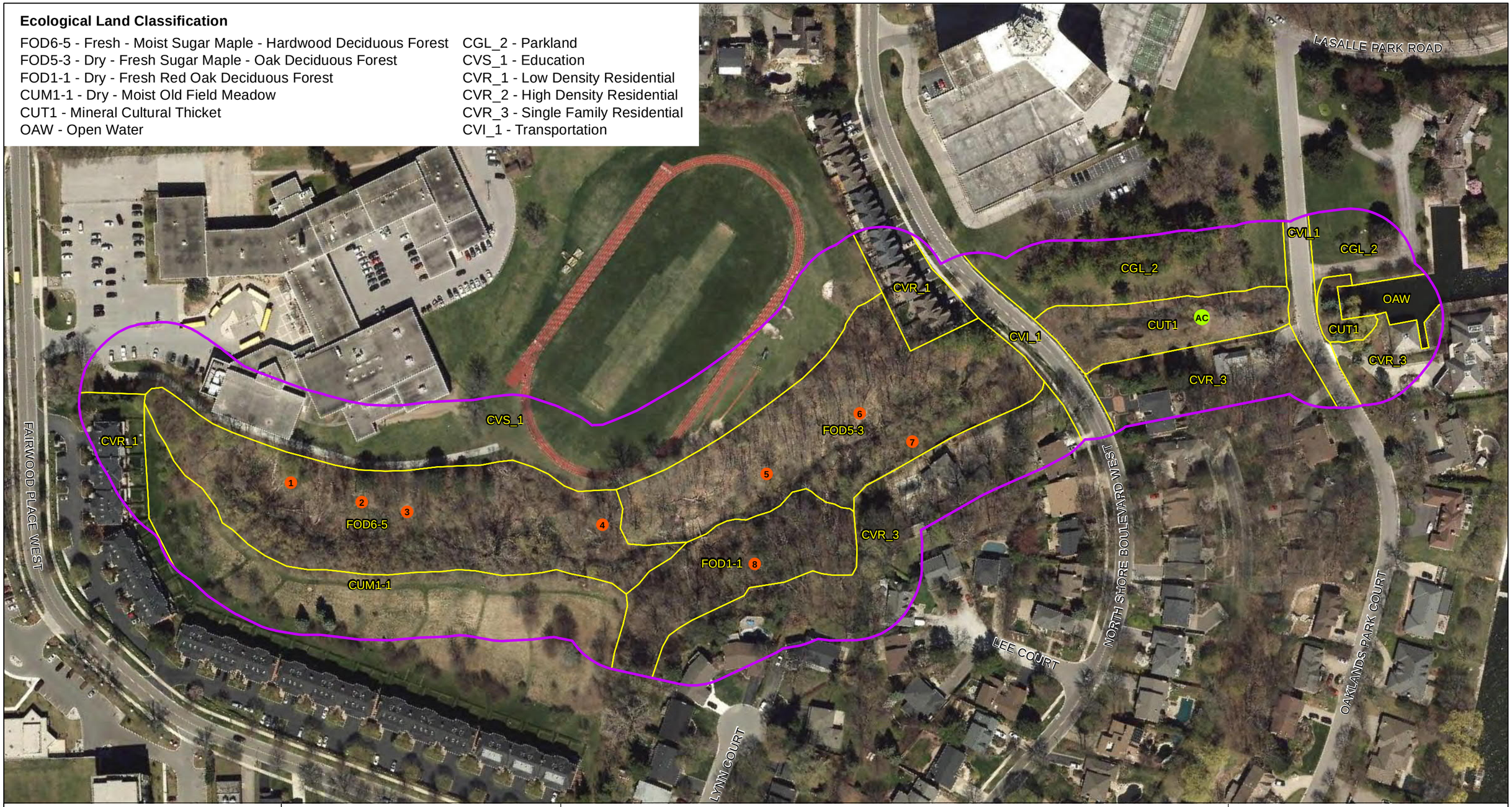
The study area was evaluated for its potential use by wildlife. Incidental observations of wildlife were made during all field investigations. All direct observations or evidence of wildlife, such as nests, tracks, scat observed during the survey were recorded and added to all species lists.

Prior to fieldwork, existing SAR records were queried through correspondence with the MNRF Aurora district office and the NHIC database (Ministry of Natural Resource and Forestry, 2018). Habitat opportunities for SAR in the study area were then assessed by comparing habitat preferences of species deemed to have potential to occur against current site conditions. The SAR identified by background research as being recorded in the vicinity of the study area and others known through professional experience to have potential to occur were considered in the assessment.

Similarly, the study area was reviewed for its potential to contain Significant Wildlife Habitat (SWH) by evaluating the habitat characteristics and wildlife evidence of the area, following the SWH criteria for Ecoregion 7E (Ontario Ministry of Natural Resources and Forestry, 2015).

Ecological Land Classification

FOD6-5 - Fresh - Moist Sugar Maple - Hardwood Deciduous Forest
FOD5-3 - Dry - Fresh Sugar Maple - Oak Deciduous Forest
FOD1-1 - Dry - Fresh Red Oak Deciduous Forest
CUM1-1 - Dry - Moist Old Field Meadow
CUT1 - Mineral Cultural Thicket
OAW - Open Water
CGL_2 - Parkland
CVS_1 - Education
CVR_1 - Low Density Residential
CVR_2 - High Density Residential
CVR_3 - Single Family Residential
CVI_1 - Transportation



Prepared by:

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

CLIENT: Associated Engineering
PROJECT: Aldershot Creel Erosion EA

0 25 50 75
metres

DRAWN: B. Elder
CHECKED: A. Adams
PROJECT: 140326
DATE: Sep 26, 2019

Scale 1:1700
UTM Zone 17N
NAD 1983

Legend

- Study Area
- ELC Community
- AC — American Chesnut
- Bat Maternity Survey

Note: Imagery (2017 - Halton Region) provided by Esri basemap service.

Associated Engineering

Ecological Land Classification and Natural Heritage Features

FIGURE 2

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3.2.6 Aquatic and Fish Habitat

Field reconnaissance and detailed data collection were completed by a PECG's fluvial processes specialist and aquatic biologist during low-flow conditions on August 23, 2018. The purpose of this work was to observe habitat features (riffles, runs, pools, undercut banks and instream features) and document channel conditions (creek slopes, bankfull and flow channel widths) in accordance with MTO's Protocol: Environmental Guide for Fish and Fish habitat. Particular attention was given to the presence, location and form of impediments and barriers to fish passage, and to opportunities for restoration and enhancement of aquatic habitat in association with planned erosion control works. Data sheets are provided as **Appendix A**.

4. Existing Conditions

The study area has been divided into three distinct reaches (**Figure 1**), based on channel and valley characteristics, for descriptive purposes and consistency with other disciplines' reports. References are made to these reaches throughout the sections that follow.

4.1 Vegetation Classification

Field investigations identified 12 vegetation community types within the study area, including forests, meadow, open water and anthropogenic areas, which are described below (**Figure 2**).

4.1.1 Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5)

The slopes of Reach 1 are dominated by this forested community, which is characterized by a forested community of Sugar Maple (*Acer saccharum*), Red Oak (*Quercus rubra*) and White Willow (*Salix alba*). The sub-canopy consists of Manitoba Maple (*Acer negundo*), Basswood (*Tilia americana*) and Black Cherry (*Prunus serotina*). The understorey is composed of European Buckthorn (*Rhamnus cathartica*), Red-osier Dogwood (*Cornus sericea*) and Choke Cherry (*Prunus virginiana*). Ground cover on the slopes includes Goldenrods (*Solidago* sp.), Virginia Creeper (*Parthenocissus quinquefolia*), Poison Ivy (*Toxicodendron radicans* var. *radicans*) and Dame's Rocket (*Hesperis matronalis*).

Where the topography allows water to collect, inclusions of saturated soils are found, with plants tolerant of saturated soils dominating. These areas are typically more open but include the occasional Bebb's Willow (*Salix bebbiana*), and the ground cover is seasonally dominated by Spotted Jewelweed (*Impatiens capensis*) and Skunk Cabbage (*Symplocarpus foetidus*).

4.1.2 Dry - Fresh Sugar Maple - Oak Deciduous Forest (FOD5-3)

This forested community comprises the east side of Reach 2, found adjacent to the Aldershot High School running track and continuing to North Shore Boulevard. An old amphitheatre-like seating area is also found among the large Sugar Maples on the slopes adjacent to the school grounds. The canopy is dominated by Sugar Maple with Red Oak and Green Ash (*Fraxinus pennsylvanica*). The sub-canopy is sparsely composed of Paper Birch (*Betula papyrifera*), Tree-of-heaven (*Ailanthus altissima*) and Ironwood (*Ostrya virginiana*). The understorey contains Choke Cherry, Riverbank Grape (*Vitis riparia*) and European Euonymus (*Euonymus europaeus*). The ground layer consists of a high diversity of exotic plants including Garlic Mustard (*Alliaria petiolata*), Periwinkle (*Vinca minor*), Dame's Rocket (*Hesperis matronalis*) and Motherwort (*Leonurus cardiaca*). In places, the inclusion areas of saturated soils (Section 4.1.1) can also be found within this polygon.

4.1.3 Dry - Fresh Red Oak Deciduous Forest (FOD1-1)

This forested community is found perched on the steep western slopes of Reach 2, and is characterized by a canopy of tall Red Oak, Black Cherry and Sugar Maple. The ground cover at this location is almost entirely English Ivy (*Hedera helix*), an invasive species in Ontario (Ontario Invading Species Awareness Program, 2018).

4.1.4 Mineral Cultural Thicket (CUT1)

Reach 3 is defined by this thicket community with a dense understorey. The vegetation along the channel is characterized by a canopy and sub-canopy of Black Walnut (*Juglans nigra*) and White Willow. The understorey contains Red-osier Dogwood and White Mulberry (*Morus alba*). The south side of this polygon is cleared and open, where the ground cover is composed of Goldenrod species (*Solidago* sp.), Black Medic (*Medicago lupulina*) and Spotted Jewelweed. Due to the canopy of Black Walnut, the community resembles a Moist Black Walnut Lowland Deciduous Forest; however, this area is highly culturally influenced, comprising a narrow strip located between North Shore Boulevard and Oaklands Park Court.

4.1.5 Dry - Moist Old Field Meadow (CUM1-1)

The cultural meadow community covers the south western portion of Reach 1 with a large portion of non-native plant species. Portions of the polygon are mowed and maintained as a walking area. It is characterized by a sparse canopy of Black Walnut, Red Oak and White Spruce (*Picea glauca*). The sub-canopy is composed of European Buckthorn and Staghorn Sumac (*Rhus typhina*). The understorey contains Riverbank Grape and Virginia Creeper. The ground cover is dominated by Goldenrod species and tall grasses including Common Reed (*Phragmites australis*).

4.1.6 Anthropogenic Areas

The remainder of the study area includes several developed anthropogenic ELC types (**Table 2**).

Table 2: Anthropogenic ELC Types within the Study Area

Vegetation Community	Vegetation Community Description
CGL_2 – Parkland	Park with manicured grass and scattered trees (Eastern White Pine and Honey Locust cultivar)
CVS_1 – Education	Aldershot School with manicured grass and running track
CVR_1 – Low Density Residential	Residential homes with manicured lawn and scattered trees in backyard
CVR_2 – High Density Residential	Residential homes with manicured lawn, scattered trees and parking lot
CVR_3 – Single Family Residential	Residential homes with manicured lawn and scattered trees
CVI_1 – Transportation	This includes all roads, shoulders, rights of way, towers, poles, pipelines and sewage treatment.
OAW – Open Water	Boat channel to Lake Ontario

4.2 Flora

A total of 99 species of vascular plants was recorded within the study area, 34 (or 34%) of which are known to be non-native to Ontario. While the ratio of non-native species to native species present within the study area is fairly low, it includes several highly invasive species such as Tartarian Honeysuckle (*Lonicera tatarica*), European Buckthorn, English Ivy, and Garlic Mustard. Their presence is indicative of high levels of disturbance and cultural influence typical of urban areas.

The majority of native species observed have a provincial “S5 - Secure” NHIC ranking, indicating that they are common within Ontario, and the remaining species are “S4 – Apparently Secure”. Honey Locust

(*Gleditsia triacanthos*) is an exception with an "S2?" ranking, meaning imperiled due to very restricted range or very few populations, but this ranking remains to be verified. However, the Honey Locust within the study area are planted cultivars, as evidenced by the lack of thorns found on native varieties and would not be subject to this ranking.

One provincial Species at Risk (Endangered) was recorded – American Chestnut (*Castanea dentata*). A single individual of this tree was observed in Reach 3 (**Figure 2**). A complete list of plant species recorded is provided in **Appendix B**.

4.3 Wildlife

4.3.1 Breeding Birds

The survey documented the birds based on the following habitats and locations: forest and flyovers and adjacent areas. A total of 21 bird species was documented on the property. Two of the species, Canada Goose (*Branta canadensis*) and American Robin (*Turdus migratorius*), are confirmed breeding as fledglings and were observed in suitable nesting habitat. The most frequently observed species found in the study area included birds characteristic of woodlands and open areas, such as Red-eyed Vireo (*Vireo olivaceus*), Northern Cardinal (*Cardinalis cardinalis*) and American Goldfinch (*Spinus tristis*). No SAR or area-sensitive species were observed in the study area. The full survey results are provided in **Appendix C.**

4.3.2 Bat Habitat

According to the *Bats and Bat Habitats: Guidelines for Wind Power Projects* (Ontario Ministry of Natural Resources, 2011), the definition of a snag is *"any standing live or dead tree >10 cm DBH with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark."* Following the Significant Wildlife Criteria for Ecoregion 7E (Ontario Ministry of Natural Resources and Forestry, 2015), maternity colonies can potentially be located in mature deciduous or mixed forest stands with >10 wildlife trees (snags) per hectare that are >25 cm DBH.

A survey for bat maternity roost potential was conducted on July 31, 2018. Within the eight plots established, five trees were observed with maternity roost potential, giving a density of potential roost trees of 12.5/ha; therefore, the study area has the potential to match the SWH criteria for bat maternity roost habitat. The results from the survey identified several trees as potential maternity roost habitat for SAR bat species, as standing snags were scattered within the forested community.

4.3.3 Incidental Wildlife Observations

The presence of West Aldershot Creek itself and adjacent thicket and forest communities provide wildlife habitat opportunities. A Downy Woodpecker (*Picoides pubescens*) and at least 11 Monarch butterflies (*Danaus plexippus*) were observed during the July 31, 2018 field visit. A Green Frog (*Lithobates clamitans*) and Eastern Cottontail (*Sylvilagus floridanus*) were observed during the breeding bird surveys. Ruby-throated Hummingbird (*Archilochus colubris*) and an Eastern Chipmunk (*Tamias striatus*) were observed during the September 17, 2018 site visit.

Amphibian breeding surveys were not carried out due to timing constraints for the survey; however, with the observation of a Green Frog, it is assumed that the creek supports breeding amphibians. Given the small size of the potential habitat features within the creek, as well as the urban context, it is likely only very small numbers of more tolerant amphibians would be supported.

4.4 Species at Risk Habitat Screening

A habitat suitability assessment for SAR as listed in Section 3.1.3 was conducted as part of the pre-field information gathering efforts in order to determine whether SAR habitat is present, potentially present, or absent within the study area. The screening of SAR habitat suitability within the study area was compiled based on background information and existing conditions and observations recorded in the study area.

A brief discussion of the habitat requirements and an assessment of likely presence in the study area for each of these species are provided in **Table 3**. Based on the screening, one SAR (American Chestnut) was observed during field surveys and as many as 11 additional species have suitable habitat or are potentially present within the deciduous forests of study area. No wildlife SAR (e.g. Canada Warbler) or evidence (e.g. nests) of their presence was observed during field surveys.

Table 3: Potential Species at Risk Habitat Screening

Species	Habitat Requirement Overview	Habitat Suitability
Bank Swallow	The Bank Swallow readily breeds in a wide variety of natural and anthropogenic including: lake and ocean bluffs; stream and river banks; sand and gravel pits; roadcuts; and piles of sand, topsoil, sawdust, coal ash, and other materials. Nest burrows are nearly always in a vertical or near-vertical bank (range: 76-105° slope).	Potential
Barn Swallow	Barn Swallows nest in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts.	Absent
Canada Warbler	The Canada Warbler uses a wide range of deciduous, coniferous and mixed forests, with a well-developed shrub layer and a structurally complex forest floor. It is most abundant in moist, mixed forests.	Potential
Cerulean Warbler	During breeding season, the Cerulean Warbler is found in mature deciduous forests that feature large, tall trees and an open understorey. These forests may be in wet bottomland areas or on dry ridges in upland locations. In Ontario, this warbler also nests in older, second-growth deciduous forests.	Absent
Eastern Meadowlark	The Eastern Meadowlark is most common in native grasslands, pastures and savannahs as well as a wide variety of other anthropogenic grassland habitats.	Absent
Eastern Wood-Pewee	The Eastern Wood-pewee is mostly associated with the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in forest stands of intermediate age and in mature stands with little understory vegetation.	Absent
Horned Grebe	The Horned Grebe generally breeds in freshwater but it also uses marshes and shallow bays on lake borders. Breeding areas require open water rich in emerging vegetation, which provides nest materials, concealment and anchorage, and protection for the young.	Absent
Northern Bobwhite	The Northern Bobwhite requires open habitats that provide a mixture of grasslands, croplands and brush. In Ontario, this species is more common to cropland than to natural grasslands.	Absent
Prothonotary Warbler	In Canada, this species breeds only in deciduous swamp forests or riparian floodplain forests. The forests it occupies are typically dominated by silver maple, ash and yellow birch. The species nests in naturally formed tree cavities or cavities excavated by other species, mainly downy woodpeckers and chickadees. It favours small, shallow holes situated at low heights in dead or dying trees, typically situated over standing or slow-moving water.	Potential

Species	Habitat Requirement Overview	Habitat Suitability
Yellow-breasted Chat	In Ontario, Yellow-breasted Chats use regenerating old fields, forest edges, railway and hydro rights-of-way, young coniferous reforestations and, occasionally, wet thickets bordering wetlands. Tangles of grape (*Vitis* sp. and raspberry (*Rubus* sp.) are a frequent feature.	Potential
American Eel	In fresh water, preferred habitat can be found in lakes and rivers including all waters extending from the high-water mark down to at least a 10 m depth.	Potential
Eastern Pondmussel	Eastern Pondmussel prefers sediment composed of clay, silt/organics and/or sand/gravel where macrophytes are absent or at low densities. This species occurs in shelters areas of lakes or in slack-water areas of rivers.	Potential
Eastern Hog-nosed Snake	They prefer sandy well drained habitats such as beaches and dry woods because this is where they lay their eggs in burrows and where they hibernate. But they must have access to wet areas such as swamps to hunt frogs, toads and lizards.	Absent
Timber Rattlesnake	The preferred habitats for Timber Rattlesnakes in the northern parts of their range are forested areas with rocky outcrops for denning and basking. Granitic escarpments and ledges with accumulations of talus (rock debris) are common characteristics of the communal den within which the snakes hibernate.	Absent
American Chestnut	The American Chestnut prefers dryer upland deciduous forests with sandy, acidic to neutral soils.	Present
American Columbo	American Columbo is most commonly associated with open deciduous forested slopes, but it can also be found in thickets and clearings.	Suitable
Butternut	Butternut grows best on rich, moist, well-drained loams often found on stream bank sites but may be found on well-drained gravelly sites, especially those of limestone origin.	Suitable
Spotted Wintergreen	Spotted Wintergreen is a woodland understorey species typically associated with dry-fresh oak and oak-pine mixed forests and woodlands. The plant tends to occur on well-drained sandy soils free of coarse fragments, with low organic content and poor nutrient status.	Absent
Eastern Small-footed Bat	Maternity Roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark.	Potential
Little Brown Myotis	Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm in diameter at breast height [DBH]).	Potential
Northern Myotis	Maternity Roosts: Often associated with cavities of large diameter trees (25-44 cm DBH). Occasionally found in structures (attics, barns etc.)	Potential
Tri-coloured Bat	Maternity Roosts: Can be in trees or dead clusters of leaves or arboreal lichens on trees. May also use barns or similar structures	Potential

4.4.1 Bird Species

Eastern Wood-pewee (*Contopus virens*) and Barn Swallow (*Hirundo rustica*) were the only Species of Concern recorded in the study area. Eastern Wood-pewee is listed as Special Concern, provincially and federally. One individual was heard singing during the early breeding survey in 2019, which indicated possible breeding. However, the forest type in the study area is not ideal habitat, with few clearings and generally heavy understory (**Table 3**). Barn Swallow is listed as Threatened provincially and federally. Two individuals were observed flying overhead during the last survey in 2019; however, suitable breeding habitat is not present within the study area.

For bird species identified in **Table 3**, woodland-habitat SAR birds including Canada Warbler, Prothonotary Warbler and Yellow-breasted Chat were not observed during field surveys. Potential habitat for Bank Swallow, a Special Concern species, is discussed in Section 4.5.3.

4.4.2 Vegetation Species

A single individual of American Chestnut was observed in Reach 3 (**Figure 2**). This tree is relatively young, but well established and healthy. It is found on the western bank of Reach 3, at the top of slope. Mitigation must be considered to protect this tree should erosion control activities be proposed in this area.

American Columbo and Butternut were not observed in the study area. American Columbo has potential habitat in the CUM1-1 area west of Reach 1, and Butternut could find habitat in any wooded area. However, as these species were not observed, there are no potential impacts to these species.

4.4.3 Bat Species

While the study area does not contain sufficient quantities of potential bat maternity trees to be considered Bat Maternity Colony SWH (Section 4.5.2), some trees were observed with features such as cavities or peeling bark that may be attractive as maternity habitats for SAR bats. As such, mitigation must be considered to protect suitable trees should erosion control activities be proposed in this area.

4.4.4 Aquatic Species

The MNRF has records of two aquatic SAR within or near West Aldershot Creek: American Eel (*Anguilla rostrate*) and Eastern Pondmussel (*Ligumia nasuta*). In freshwater streams, American Eel generally does not demonstrate consistent preferences for habitat type, cover, substrate, or water temperature (Government of Canada, 2013). Eastern Pondmussel was reassessed as Special Concern (formerly Endangered) under the ESA in November 2017. The Eastern Pondmussel is typically found in sheltered areas of lakes and in slow-moving areas of rivers and canals with sand or mud bottoms (Ministry of Natural Resources and Forestry, 2018). According to the *Ontario Species at Risk Evaluation Report for Eastern Pondmussel (Ligumia nasuta)* (Committee on the Status of Species at Risk in Ontario, 2017), Eastern Pond Mussel was recently found in the Hamilton area.

Considering habitat preferences, there is potential for these species to be found in West Aldershot Creek. However, there are several debris jams in Reaches 2 and 3 that appear to be impediments, if not barriers, to passage of aquatic species (**Appendix D**).

4.5 Significant Wildlife Habitat

The study area was screened for SWH types as per MNRF criteria schedules for Ecoregion 7E (Ontario Ministry of Natural Resources and Forestry, 2015). The screening summary presented in **Appendix E** considers all SWH types for Ecoregion 7E. A more detailed evaluation of the SWH types with the potential to occur in or adjacent to the study area are presented below.

4.5.1 Shorebird Migratory Stopover Area/Waterfowl Nesting Areas

The Hamilton Harbour Colonial Waterbird Nesting Area would be considered a SWH type for waterfowl. However, as erosion control activities are not likely to overlap with this habitat, no impacts are predicted.

4.5.2 Bat Maternity Roost Colonies

With a density of potential maternity roost trees of 12.5/h, the study area has the potential to match the SWH criteria for bat maternity roost colony habitat. As such, mitigation must be considered to protect suitable roost trees should erosion control activities be proposed in this area.

4.5.3 Colonially-nesting Bird Breeding Habitat (Bank and Cliff)

Steep slopes in the study area contain exposed soils that might be suitable for colonial nesting bird species, such as Bank Swallow. While no Bank Swallows or nests were observed during field surveys, the slopes of the creek walls should be scanned for nest colonies prior to erosion control activities.

4.5.4 Amphibian Breeding Habitat (Woodland)

Amphibian breeding surveys were not carried out due to timing constraints for the survey; however, with the observation of a Green Frog, it is assumed that the creek supports breeding amphibians. Given the small size of potential habitat features within the creek, as well as the urban context, it is likely only very small numbers of more tolerant amphibians would be supported. Regardless, appropriate timing windows should be considered to avoid impacts to these species.

4.5.5 Seeps and Springs

Seepage/spring areas were occasionally observed throughout the Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5). These areas were mainly found on the east valley slope in natural concavities (i.e. benches, gullies) in the topography. As there are more than two features, their presence qualifies the FOD6-5 area as a SWH feature (Ontario Ministry of Natural Resources and Forestry, 2015), and may provide important wildlife habitats related to water.

4.5.6 Habitat of Species of Special Concern

4.5.6.1 Monarch

At least 11 Monarch butterflies were observed during field surveys. However, habitats with sufficient nectar species were not observed during the field surveys and the area would not be considered habitat for this species.

4.6 Fish and Fish Habitat

West Aldershot Creek originates below the Niagara Escarpment and Highway 403 corridor and has a very small drainage area. It flows south through the Iroquois Plain physiographic region before emptying into Lake Ontario (Chapman and Putnam, 2007). The creek is largely fed by two stormwater sewers that drain urbanized catchments. A photo log with representative photos along each reach is provided as **Appendix D**.

4.6.1 Aquatic Habitat

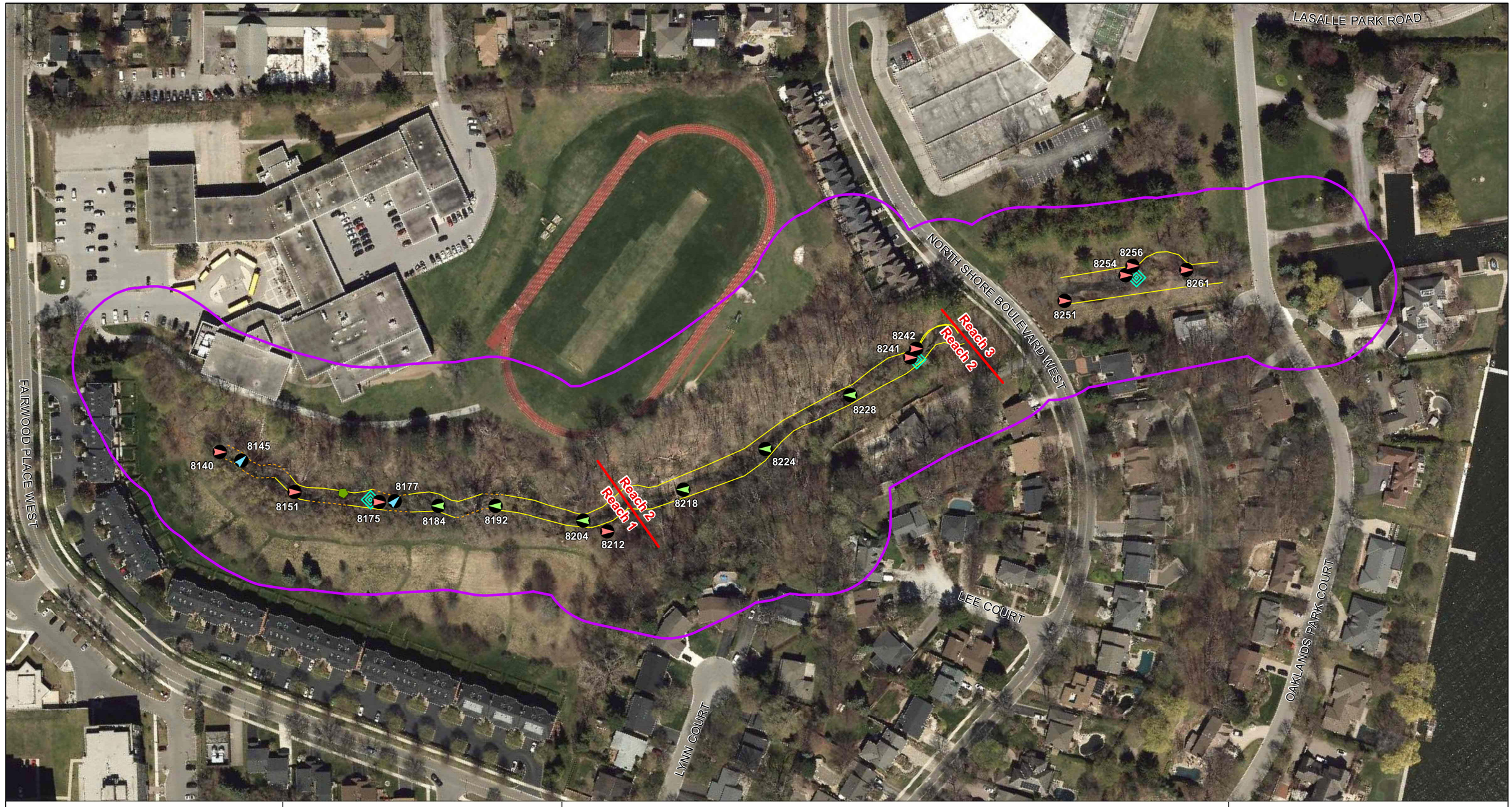
Reach 1 extends from the main stormwater outfall at the head of West Aldershot Creek downstream to where the V-shaped ravine widens into a valley with a floodplain (**Figure 3**). Reach 1 has an average width of approximately 5 m with a low width:depth ratio (3.5) and a narrow wetted-width (0.5 to 3 m) at the time of survey. The bed material consists of gravels and cobbles, some likely released from old gabion baskets,

with exposure of large concrete rubble along the channel bed. Pool-riffle morphology is poorly defined[1] (**Appendix A**). Widening of the channel and failure of its steep to undercut banks have resulted in an abundance of leaning and fallen trees. Several, small corrugated steel pipe (CSP) culverts and outfalls discharge into the channel. Two woody debris jams formed at least partial obstructions to flow, as observed during the field survey (**Figure 3**).

Reach 2 extends from the upstream limit of the floodplain-containing valley downstream to North Shore Boulevard (**Figure 3**). Reach 2 exhibits evidence of historical anthropogenic modification (i.e. straightening). Pool-riffle morphology is generally well developed along the reach. The gravel-cobble bed at the downstream end of Reach 2 has become embedded in sand, primarily sourced from Reach 1, as well as locally from gullying below a private property immediately west of the valley. Anthropogenic influences on channel morphology include numerous CSP culverts and outfalls that discharge into the channel. A large woody debris jam appears to impede fish passage.

Reach 3 extends from North Shore Boulevard to the culvert outlet into Lake Ontario beneath Oaklands Park Court road (**Figure 3**). The channel is straight and entrenched within fill-mantled ground, which is readily eroded. Pool-riffle morphology is poorly defined along its entire length. Bed materials consist of gravels overlain by a think layer (0.2 m) of sand. A large woody debris jam, which impedes fish passage, has created a high step (approximately 1-1.5 m) with a deep plunge pool. Riparian vegetation was historically

[1] *Characteristics of bed material and morphology can found illustrated in Appendix A field sheets. In addition, bed material and morphology are described in more detail within the Fluvial Geomorphological Assessment of West Aldershot Creek.*



Prepared by:

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

CLIENT: Associated Engineering
PROJECT: Aldershot Creek Erosion EA

0 25 50 75
metres

DRAWN: CV
CHECKED: M. Brierley
PROJECT: 140326
DATE: Aug 28, 2019

Scale 1:1750
UTM Zone 17N
NAD 1983

- Debris Jam
- Seep
- Eroded Bank
- Undercut Bank
- Reach Break
- Study Area

Aquatic Photo Locations
(View Direction w/Photo ID)

- Downstream
- Upstream
- West

Note: Imagery (2017 - Halton Region) provided by Esri basemap service.

Associated Engineering

Aquatic Habitat Mapping

FIGURE 3

Document Path: W:\Egnyte\Shared\Projects\Active\14003 - Associated Engineering\1400326 - Aldershot Creek Erosion EA\Mapping\Fluvial\Figures\Draft\mxd\140326-3_Aquatic Habitat Mapping.mxd

cleared along the eastern bank. Riparian vegetation is dense and nearly continuous along a narrow strip along both banks. It is dominated by deciduous stands along the top of banks with the slopes dominated by shrubby and herbaceous meadow species. Further characterization of channel morphology, a key component of fish habitat, is provided in the Aldershot Creek Erosion EA – Geomorphological Assessment (PECG, 2019).

4.6.2 Fish Communities

Three fish species have been captured in the study area and recorded by Conservation Halton: Creek Chub (*Semotilus atromaculatus*), Blacknose Dace (*Rhinichthys obtusus*), and Spottail Shiner (*Notropis hudsonius*). The fish were caught upstream of Northshore Boulevard (Reach 2). Two Creek Chub were caught in 2001 and Blacknose Dace and Spottail Shiner (total 5 fish) were caught in 2009. All three fish species are minnows and are considered common coolwater species, native to Ontario, and of intermediate tolerance to environmental perturbations and/or anthropogenic stresses. Creek Chub are tolerant of pollution and low dissolved oxygen and moderately intolerant of turbidity. Spottail Shiner are tolerant of turbidity and high water temperature.

4.6.3 Benthic Invertebrate Communities

Conservation Halton completed benthic invertebrate monitoring in Burlington in 2016 as part of the Long-term Environmental Monitoring Program (Halton Region Conservation Authority, 2016). While monitoring was not completed in Aldershot Creek, several similar urban creeks draining into Lake Ontario were monitored. The majority of streams were given a 'Poor' ranking, indicating an unhealthy stream for benthic invertebrates, with moderate to severe impairments. Aldershot Creek is expected to be analogous to the monitored creeks.

The proposed works will improve potential benthic invertebrate habitat by controlling erosion and improving the riparian buffers. The shade canopy should be maintained adjacent to the stream.

5. Considerations for Erosion Control

5.1 Tree Removal

Tree root systems play a large role in the stabilization of soils and slopes. The large network of roots provided by trees and shrubs help hold soils and materials together. Tree root death degrades this function and compromises soil stability. As such, erosion control measures and construction access routes within the valley should minimize tree disturbance and injury, and incorporate new, native plantings to the extent possible. Should removals be required, routes that take advantage of the removal of Ash (*Fraxinus*) species should be considered, as these species are already heavily impacted by Emerald Ash Borer (EAB) in southern Ontario.

It is suggested that access to West Aldershot Creek be approached from the southern limit of the CUM1-1 field in the west side of Reach 1 to the break between Reach 1 and Reach 2. This approach is relatively gentle, apparently having been cut historically as a road access, and only a limited number of trees are present between the meadow area and the creek.

5.2 Wildlife and Species at Risk

5.2.1 Bat and Bird Species

To avoid potential conflicts with these species types and to comply with the *Migratory Birds Convention Act* and/or the *Endangered Species Act*, tree clearing activities for erosion control activity should avoid the period of **April 1 to October 31**. This period encompasses both breeding bird activity (generally late April to late July) and bat spring roosting activity through fall swarming and migration (Ontario Ministry of Natural Resources, 2011).

Should vegetation removal be necessary during this period, a pre-construction sweep of the area for bird and bat nesting activities should be conducted, encompassing the project area and areas immediately adjacent. The purpose of these scans would be to identify any wildlife activity that might be present within the project area that would require avoidance.

If potential bat maternity roost trees are identified as requiring removal during the pre-construction sweep, mitigation should be recommended. To minimize or replace bat maternity roosting habitat, bat boxes can be purchased and installed on poles or affixed to trunks of mature trees. These structures should be erected prior to the following maternity roost period.

5.2.2 American Chestnut

To mitigate potential impacts to this species, the area would best be avoided (**Figure 2**). At minimum, a 3.0 m tree protection zone (TPZ) should be established around the tree. Fencing should be erected, and no construction activities should be permitted within the TPZ. Restoration should be prompt in any adjacent areas that require disturbance.

5.2.3 Amphibians

As amphibian surveys have not been conducted for this project, it is appropriate to assume their presence (Green Frog was observed incidentally) and mitigate appropriately. For these erosion control works, appropriate mitigation should include the avoidance of in-water work within the amphibian breeding window. For the Great Lakes Basin, this is generally **mid-March through July 31** of a given year (Bird Studies Canada, 2009).

5.3 Fish Habitat

5.3.1 Timing Windows

Fisheries timing windows are periods of time when work in or near a stream can be conducted to reduce risk to fish and fish habitat. All 'in-water' works should adhere to the timing window for the thermal management regime, as regulated by MNRF. The thermal regime for management of West Aldershot Creek is assumed to be warmwater. Generally, the warmwater timing window **begins July 1 and ends March 31**. Timing windows should always be confirmed with Conservation Halton and MNRF staff.

5.3.2 Eels and Mussels

If eels or mussels are observed during construction, work should be stopped, and the mussels should be identified immediately by a qualified aquatic biologist. Should SAR species be identified, mitigation measures should be discussed with the MECP and Conservation Halton for implementation into project design and schedule.

5.3.3 Work and Work Site Staging

All materials and equipment used for the purpose of the site preparation and project construction will be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum products) from entering the water.

Staging of the project should limit vegetation disturbance and minimize the amount of time disturbed soil is exposed.

Construction impacts should be mitigated with planting of riparian vegetation. This vegetation should be native, non-invasive, and approved by Conservation Halton.

5.3.4 Erosion and Sediment Control

The construction of erosion control measures will require the alteration of creek banks and may create erosion and sedimentation hazards during the process. As such, appropriate temporary erosion and sediment control (ESC) measures should be included in construction design. The ESC measures are recommended to include adequate control measures constructed to Ontario Provincial Standard Drawing (OPSD) standards in accordance with the *Erosion & Sediment Control Guidelines for Urban Construction* (Greater Golden Horseshoe Conservation Authorities, 2006). Conservation Halton requires that the ESC measures be specified on all relevant plans and/or drawings submitted.

Further recommendations for the ESC plan include:

- ESC measures are to be installed prior to beginning work and maintained in working order throughout all stages of construction activities.
- The ESC measures should remain in place and in good working condition for the duration of the project, until restoration has stabilized.
- All work areas are to be effectively isolated to ensure that deleterious substances do not enter the creek at any time.
- ESC fencing/measures are to be erected as near to the construction area as possible.
- No sediment, sediment-laden water or deleterious substances are to be discharged into West Aldershot Creek at any time.
- All ESC measures are to be inspected daily, including after every rainfall, cleaned, maintained and/or adjusted accordingly to ensure sediment does not enter the creek at any time.
- Machinery or equipment will be maintained and refueled within the staging area defined in the ESC Plan, which is to be a minimum of 30 m distant from the creek.
- Any equipment, stockpiled material or construction material will be stored within the staging area, and in a manner that prevents sediment or deleterious substances from entering the creek.
- Any dewatering or sump discharge (if required) is to be filtered to remove sediment prior to discharging to a well vegetated area at least 30 m from the creek.
- All disturbed areas will be appropriately and effectively stabilized and/or restored immediately following completion of the works with native species.

5.4 Restoration

Restoration should commence as soon as feasible after construction. For the best chances of success, planting events should target spring or fall, when trees are focused on growth and establishment activities. Summer periods should be avoided as trees are often focused on maintenance during high-heat periods, which may over-stress newly planted stock. Winter periods should also be avoided as trees are largely dormant during this time and root growth would be delayed, potentially inhibiting establishment.

5.4.1 Species Selection

It is recommended that only species native to southern Ontario be used in erosion control and restoration activities. Native species tend to be adapted to their natural conditions and consequently can develop deeper root systems, which would be beneficial to vegetation establishment and erosion control. Native species would also serve to enhance the natural character of the area. A diversity of the trees and shrubs already found in the study area are recommended, with perhaps the addition of other riparian-adapted willow species (*Salix* sp.). Non-native species including those found in the area, such as Manitoba Maple, should be avoided. The planting of Ash (*Fraxinus*) species should also currently be avoided due to the presence of Emerald Ash Borer (EAB) in southern Ontario.

Ground cover seeding should consider seed mixes appropriate for riparian conditions such as the Conservation Halton Early Succession/Riparian Mix (Conservation Halton, 2018) or the Creek Bank Native Seed Mixture (Wet Meadow Type) 8215 seed mix, both of which are available from the Ontario Seed Company. It is recommended that this be applied in combination with a nurse crop such as the Conservation Halton Temporary Stabilization Mix to provide soil erosion control, limit seed movement and reduce competition from non-native weed species.

6. Next Steps

The following additional measures are recommended as part of the development of detailed design and implementation of the project:

1. **Arborist Report for detailed design** – An arborist report should be completed in conjunction with the completion of detailed design. This report would serve to identify and limit the tree removals necessary, and provide recommendations for avoidance and/or mitigation. The report should include recommendations to avoid impacts to the American Chestnut. Recommendations regarding restoration plantings could also be developed, such as areas to plant, species to use, numbers of plants and specific planting techniques to integrate with the proposed design.
2. **Pre-construction scans for bird and bat activity** – These scans are recommended for any activities to be conducted within the breeding/activity windows identified above. Scans should be conducted as near to planned activity as possible, and only be valid for five (5) subsequent days. If clearance is given, vegetation clearing would have to be completed within that timeframe. Any recorded activity would require time to allow the breeding/rearing activities to be completed in order to comply with the *Migratory Birds Convention Act* and/or the *Endangered Species Act*.

7. Conclusions

The findings of our study are the result of a background review, six field surveys and an analysis of data using the current scientific understanding of the ecology of the area, as well as the current natural heritage policy requirements. Based on the work completed, we have identified the existing environmental and ecological conditions of the study area, which are described in this report and illustrated on **Figure 2**. PECG has identified recommended mitigation and enhancement measures that should be incorporated as part of the detailed design of the proposed erosion control works. Additional steps towards protecting the existing ecology are also outlined.

Based on the above, it is our professional opinion that the proposed erosion control measures can be constructed in an environmentally feasible manner, consistent with the applicable natural heritage policies, and would not result in a negative impact to the identified natural heritage features provided that the recommended mitigation and enhancement measures described in this report are implemented.

8. Certification

This report was prepared and reviewed by the undersigned:

Prepared By:



Carly Van Daele, B.E.S.
Ecologist, Certified Arborist

Prepared and Reviewed By:



Austin Adams, M.Sc., EP
Sr. Ecologist, Certified Arborist

Reviewed By:



Robin McKillop, M.Sc., P.Geo., CAN-CISEC
Principal, Geomorphologist

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CONSULTING
GROUP INC.

Appendix A

Data Sheets

Location West Aldershot Date July 3/18

Project / Client City of Burlington (AE)
(140326)

Project Initiation Mtg. @ CofB

- Intros → Key Contacts: Umar Tariq (Burlington)
  Stan (AE), Robin (PECG)

CH Contact

- PECG to corresp w/ CH directly
  ↳ (CC + invite).
  CH: Sarah M + Cassandra. (Point of Contact?)
  Heather Dearlove
  Maria McKellenan – Principal @ W. Aldershot school
- Condo: locked gate → on board, so can get access if needed.

- Outfall: Replacement of fence initiated project
  (potentially Plant)
  ~~Thorny Bushes~~: Hawthorns? to discourage kids from entering area from school.

GIS → Req. for Data (Stan M.)
R1 – Mix of owners (school on E, Condo to W, CoB in Mid)
R2 – C. of B
R3 – CoB + Halton R
↳ Contours, parcel fabric.

Location West Aldershot -140326 Date July 3/18

Project / Client City of Burlington via AE

- Class EA – Sched B – Alt. M/B discussed.
- Waters – Warm Water Windows
  ↳ Tuck creek was ID'd as cold water, so be aware that spp./Habitats may alter
- Provisional Items: all approved (if needed)
  e.g. Butternut surveys

4. Data + Background Info
   - City has 2002 on.
     ↳ Older? Talk to CH.
   - Ortho – avail from City: Can get from Geomatics
   - Eco Data: None from CoB, check w/ CH
   - Easement layer avail from CoB.

(AE) Input (Eco. data) into where to place temporary & permanent easements.

5. Project Std's: let team know if anything comes up.
   - City can give examples of mapping

Rite in the Rain

Location Aldershot - 140326 Date July 3/18

Project / Client City of Burlington via AE

6. Eco surveys - confirm w/ CK about BBS

- Stage I Arky Req'd

7. - Communication Plan - PIC: Oct/Nov. target

⊛ Need flow data - somehow - GB limited (SWM P?)

- hydrological data may need to be created from scratch.

Design OPTIONS Robin

- "soft" solutions preferred, (C of B)
- but recog. that Armourstone m/b Req.
- presented "hybrid" idea (TRA option)

SITE MEETING

{Maria McK - Principal
Carrie Sacer teacher
↳ Education}

Community
{Mike M - West
Neal - East
Burt - Treasurer}

Engiline
*Sarah Machelle - Ecol. Review *
Heather Dearlove

Community Concerns

- Erosion Issues
- Sewage concerns
  ↳ integrity of systems?

- Naturalizing
- "Playground" by school - avoidance practice.

Location Aldershot - 140326 Date July 3/18

Project / Client City of Burlington via AE

- loss of trees + Mitigation - Native Ontario (S. trees)
  ↳ Climate Change. - Carolinian?

- Quite Manicured behind Condos.

shrubs: CORNSER, RHAMTYP, RUBUIDA, Sambucus sp., Rosa sp.
lots of Jewelweed. ELEGANUS,

Trees: ACER NEG, SALI ALB, FRAX, ULMUS (English?)
PRUNUS, JUGLNIG // Acer Sugar) downstr...
* EAB issue → lots of dead Ash.
↳ skunk Cabbage

GG: lots of ALLIAFET
R2: Ivy

↳ Maybe 60% Cover ~ 30m

**Email Sarah to confirm delayed BBS timing

↳ lots of T. of Heaven @ North Shore Rd.

Butternut: None Obs. in R1, R2 or R3
↳ lots of JUGLNIG @ R3
* W. Mulberry @ Lake backup ~~Point~~ (pics)
↳ Not Red !!

Kitten the Rain

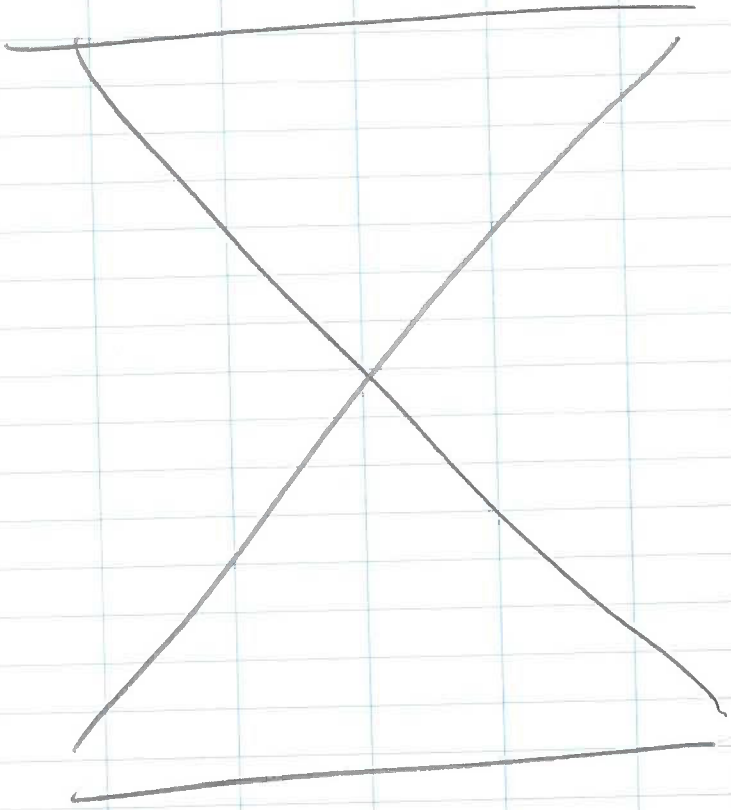
Location Aldershot - 14-326 Date July 3/18

Project / Client City of Burlington / AE

* American Chestnut @ N-side of Rd (Oakland Prk Ct.), before outlet to lake.

↳ Pics, Sample.

Austin Adams



Location _____ Date _____

Project / Client _____

Rite in the Rain

F = Floodplain
B = Both
S = Slopes

ELC
SOILS ONTARIO

SITE:
POLYGON:
DATE:
SURVEYOR(S):

	P/A	PP	Dr	Position	Aspect	Slope %	Type	Class	Z	UTM EASTING	UTM NORTHING
1											
2											
3											
4											
5											

SOIL	1	2	3	4	5
TEXTURE x HORIZON	A - muck organic 19.--19 -40 H2O 999 ↓	slopes: exposed sands (mS)			
A TEXTURE					
COURSE FRAGMENTS					
B TEXTURE					
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE					
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF					
MOTTLES	20 cm				
GLEY					
BEDROCK	999				
WATER TABLE	40				
CARBONATES					
DEPTH OF ORGANICS	10-20				
PORE SIZE DISC #1					
PORE SIZE DISC #2					
MOISTURE REGIME					
SOIL SURVEY MAP					
LEGEND CLASS					

1 = FLOODPLAIN

ELC
PLANT SPECIES LIST

SITE: Aldershot 140326
POLYGON: (1)
DATE: JUL 31/18
SURVEYOR(S): AA

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

	SPECIES CODE	LAYER 1	2	3	4	COL.
F	ACER NEG	A	D			
F	SALI ALB	A				
B	FRAX PEN	O				
S	ACER SACC	A		plus s		
S	QUER RUB	A		R		
F	TILI AME		R			
	Miscellaneous			R		
S	Black Cherry	(B)	R			
	c. Pine	R				
B	W. Birch		+			
S	PRUN VIR	(B)	R	O		
	ROD			D		
	Eglantine			R-O		
S	EUON EUR (pistil)			R-O		
FP	SOLA DUL			R		
FF	SALI BEB			R		
B	RUBUS			O-A		
B	European Buckthorn			O		
S	SH Sumac					
S	LONI TAT					
S	R. Mulberry					

	SPECIES CODE	LAYER 1	2	3	4	COL.
FP	Skunk Cabbage				A	
FF	S. Jewelweed				D	
	Dwarf Ivy				O-A	
B	SOLI SP.				O	
B	V. Creeper				O	
FF	GEUM ALE				R	
	VIOL				R	
	ALLI PET				R	
B	E. N-S (B-L)				R-O	
	Mustard (ERYSCHE?)				R	
	C. Burdock				R	
FF	EPIL CIL				R-O	
	CIRS SP.				R	
FP	MENT ARV				R-O	
S	TAXI RAD				O-A	
S	DAME'S ROCKET				O	
S	MAIA STE				R-O	
S	Hedge nettle				R-O	
S	Grass sp				R	
S	CAREX sp.	'm"			R	
F	ORYZ sp.				R	

2 from on floodplain

Small woodpeckers (no red) using wildlife tree to NE of outlet

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE:		POLYGON:	
SURVEYOR(S):	DATE:	TIME: start / finish	
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
G TERRESTRIAL	G ORGANIC	G LACUSTRINE	G NATURAL	G PLANKTON	G LAKE
G WETLAND	G MINERAL SOIL	G RIVERINE	G CULTURAL	G SUBMERGED	G POND
G AQUATIC	G PARENT MIN.	G BOTTOMLAND		G FLOATING-LVD.	G RIVER
	G ACIDIC BEDRK.	G TERRACE		G GRAMINOID	G STREAM
SITE	G BASIC BEDRK.	G VALLEY SLOPE	**COVER**	G FORB	G MARSH
G OPEN WATER	G CARB. BEDRK.	G TABLELAND	G OPEN	G LICHEN	G SWAMP
G SHALLOW WATER		G ROLL. UPLAND	G SHRUB	G BRYOPHYTE	G FEN
G SURFICIAL DEP.		G CLIFF	G TREED	G DECIDUOUS	G BOG
G BEDROCK		G TALUS		G CONIFEROUS	G BARREN
		G CREVICE / CAVE		G MIXED	G MEADOW
		G ALVAR			G PRAIRIE
		G ROCKLAND			G THICKET
		G BEACH / BAR			G SAVANNAH
		G SAND DUNE			G WOODLAND
		G BLUFF			G FOREST
					G PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1 = >25 m 2 = 10<HT≤25 m 3 = 2<HT≤10 m 4 = 1<HT≤2 m 5 = 0.5<HT≤1 m 6 = 0.2<HT≤0.5 m 7 = HT<0.2 m

CVR CODES 0= NONE 1= 0% < CVR ≤ 10% 2= 10 < CVR ≤ 25% 3= 25 < CVR ≤ 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

SIZE CLASS ANALYSIS:		< 10		10 - 24		25 - 50		> 50
STANDING SNAGS:		< 10		10 - 24		25 - 50		> 50
DEADFALL / LOGS:		< 10		10 - 24		25 - 50		> 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:		
COMMUNITY SERIES:		
ECOSITE:		FOD
VEGETATION TYPE:		FOD 6-5
INCLUSION		
COMPLEX		

Notes:

ELC
STAND CHARACTERISTICS

SITE: Aldershot 140326
POLYGON: (1)
DATE: JUL 31/18
SURVEYOR(S): AA

floodplain

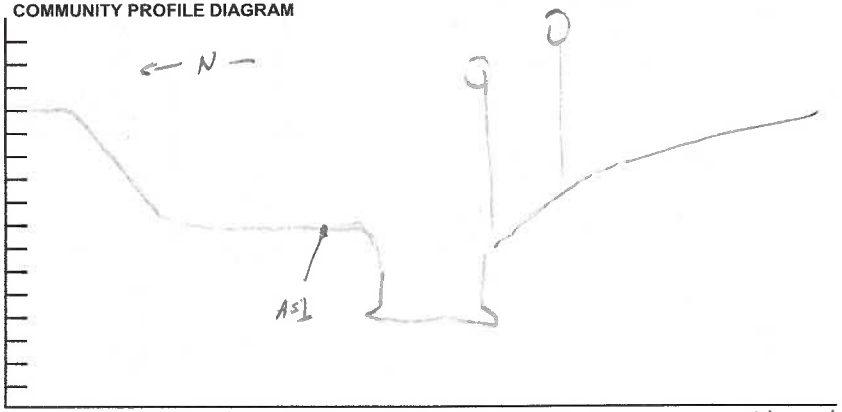
TREE TALLY BY SPECIES:

PRISM FACTOR 2 slope Amphi (EAS2)

SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TALLY 5	TOTAL	REL. AVG
SALI ALBA	5 6					6	21
ACER NEG	:: 4					4	14
TREE of Heaven						0	
ACER Sugar		: 2	X 6			8	29
Birch Elm	' 1					1	4
FRAX PEN	' 1					1	4
Blk. Cherry	' 1		' 1			1	4
TILI AME		' 1	' 1			1	4
Red Oak		:: 3	' 1			4	14
H. Locust		' 2				2	7
						(28)	
TOTAL	12	7	9				100
BASAL AREA (BA)	24	14	18				
DEAD	6	2	' 1				

STAND COMPOSITION: (one is Blk. Cherry)

COMMUNITY PROFILE DIAGRAM



Notes:

Near outlet; Riparian valley w/ floodplain on north side (jewelweed, skunk cabbage). flat. Valley slopes (treed, but less g.cover; open soils.
↳ puddles + springs → FP could be classed as Wood Incl.??
↳ void if none ??

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

SITE:		POLYGON:	
SURVEYOR(S):	DATE:	TIME: start	
		finish	
UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
G TERRESTRIAL	G ORGANIC	G LACUSTRINE	G NATURAL	G PLANKTON	G LAKE
G WETLAND	G MINERAL SOIL	G RIVERINE	G CULTURAL	G SUBMERGED	G POND
G AQUATIC	G PARENT MIN.	G BOTTOMLAND		G FLOATING-LVD.	G RIVER
	G ACIDIC BEDRK.	G TERRACE		G GRAMINOID	G STREAM
SITE	G BASIC BEDRK.	G VALLEY SLOPE		G FORB	G MARSH
G OPEN WATER	G CARB. BEDRK.	G TABLELAND	**COVER**	G LICHEN	G SWAMP
G SHALLOW WATER		G ROLL. UPLAND		G BRYOPHYTE	G FEN
G SURFICIAL DEP.		G CLIFF	G OPEN	G DECIDUOUS	G BOG
G BEDROCK		G TALUS	G SHRUB	G CONIFEROUS	G BARREN
		G CREVICE / CAVE	G TREED	G MIXED	G MEADOW
		G ALVAR			G PRAIRIE
		G ROCKLAND			G THICKET
		G BEACH / BAR			G SAVANNAH
		G SAND DUNE			G WOODLAND
		G BLUFF			G FOREST
					G PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1 = >25 m 2 = 10<HT≤25 m 3 = 2<HT≤10 m 4 = 1<HT≤2 m 5 = 0.5<HT≤1 m 6 = 0.2<HT≤0.5 m 7 = HT<0.2 m

CVR CODES 0= NONE 1= 0% < CVR ≤ 10% 2= 10 < CVR ≤ 25% 3= 25 < CVR ≤ 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

SIZE CLASS ANALYSIS:		< 10		10 - 24		25 - 50		> 50
STANDING SNAGS:		< 10		10 - 24		25 - 50		> 50
DEADFALL / LOGS:		< 10		10 - 24		25 - 50		> 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:		
COMMUNITY SERIES:		
ECOSITE:		
VEGETATION TYPE:		FOD 5-3
INCLUSION		
COMPLEX		

Notes:

wetter FOD6-5 inclusions (seeps?)

ELC
STAND CHARACTERISTICS

SITE: 140326
POLYGON: AS2
DATE: JUL 31/18
SURVEYOR(S): AA

TREE TALLY BY SPECIES:

PRISM FACTOR [ ] see AS1 (Amplh.) 3. side up

SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TALLY 5	TOTAL	REL. AVG
R. Oak		8					
B. Cherry		2					
Sug. Maple		1					
TOTAL		11					100
BASAL AREA (BA)		22					
DEAD							

STAND COMPOSITION:

COMMUNITY PROFILE DIAGRAM

Notes:

GC much more sparse than AS1.
- ALL PET problematic in places
- Tree of heaven by N.S. Blvd.

ELC

SOILS ONTARIO

SITE:

POLYGON:

DATE:

SURVEYOR(S):

	P/A	PP	Dr	Position	Aspect	Slope %	Type	Class	Z	UTM EASTING	UTM NORTHING
1											
2											
3											
4											
5											

SOIL	1	2	3	4	5
TEXTURE x HORIZON	MS exposed				
A TEXTURE					
COURSE FRAGMENTS					
B TEXTURE					
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE					
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF					
MOTTLES					
GLEY					
BEDROCK					
WATER TABLE					
CARBONATES					
DEPTH OF ORGANICS					
PORE SIZE DISC #1					
PORE SIZE DISC #2					
MOISTURE REGIME					
SOIL SURVEY MAP					
LEGEND CLASS					

ELC PLANT SPECIES LIST

SITE: 140326 - Aldershot

POLYGON: AS 2

DATE: JUL 31/18

SURVEYOR(S): AA

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
ACER Sugar	D			O.	
FRAX PEN	O.		O.	O-F	
PRUN NIG	R-O				
QUER RUB	O				
SALI ALB	R				
ACER NEG.				O	
TILI AME	R				
BUI		R			
T. of Heaven	R	F			
towards N.S. TILL	D				
TILI AME			R		
Lonicera		+			
PRUN VIR			O.		
EUON EVR			O.		
RIBE OXY			R		
RBG			O		
ROS			R		
RUBU IDA			R		

SPECIES CODE	LAYER 1	2	3	4	COL.
BL. E. N.S				R	
TUSS FAR				R	
Salix Sp.				O-F	
Historical PILE	DOM			D	
Dame's Rocket				O	
V. Creeper				R	
MAIA STE				R	
LEON CAR				O	
ALLI PET				A	
~~POI PRA~~					
ANEM CAN				R	
Trillium sp.				R	
FARA OFF				R	
Periwinkle				O-A	
GEUM ALE				R	
C. Burdock				R	
S. Jakelhead				R	
Cowker Spark					
IVY				O	
PARTHENOCI				R	
Grass (Agrostis)				R	
CAREX Sp.				R-O	
ELYM REP				R	

@ creek -

Towards N.S. TILL

H ~~POI PRA~~

(UP)

(UP)

ELC

SOILS ONTARIO

SITE:
POLYGON:
DATE:
SURVEYOR(S):

	P/A	PP	Dr	Position	Aspect	Slope %	Type	Class	Z	UTM EASTING	UTM NORTHING
1											
2											
3											
4											
5											

SOIL	1	2	3	4	5
TEXTURE x HORIZON			Riparian		
A TEXTURE					
COURSE FRAGMENTS					
B TEXTURE					
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE					
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF					
MOTTLES					
GLEY					
BEDROCK					
WATER TABLE					
CARBONATES					
DEPTH OF ORGANICS					
PORE SIZE DISC #1					
PORE SIZE DISC #2					
MOISTURE REGIME					
SOIL SURVEY MAP					
LEGEND CLASS					

ELC

PLANT SPECIES LIST

SITE: M0326 - Aldershot
POLYGON: AS3
DATE: JUL 31/18
SURVEYOR(S): AR

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
JUGLNG	O	O			
ACER NEG	R		R		
FRAX PEN	R				
SALI ALBA	O		R		
TILI AME	R→O				
Bw		R			
POPUBAL	R				
Am. Chestnut		→			
Nor. Maple		R			
QUER RUB			+		
ROS			O		
RUBU IDA			R		
W. Mulberry			O		
RBG			R		
W. Creeper			R		
Blk. b.ry			R		
PRUN VIR			R→D		
C. Buckthorn			R→O		
PRUN PEN			R		
LONI TAT			R		
EUON EUR			R		

SPECIES CODE	LAYER 1	2	3	4	COL.
SALI sp.				D	
Q-A 'hce				A	
S. Jewelweed				D→F	
CIRS ARV				O	
MEDI LUP				O→A	
E. N-S				R	
TRIFHYB				R	
RUME CRI				+	
C. Burdock				R→O	
C. Milkweed				R	
ALLI PET				R→O	
Tansey (2 BLMS)				+	
Grasses				R	

Page ..... of .....

Has 2-3 saplings @ base
- Tree is tended (known to UF, I imagine)
* Hummingbird seen - creek shrubs, lots of songbirds, cardinals.

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE:		POLYGON:	
	SURVEYOR(S):	DATE:	TIME: start	
			finish	
	UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
G TERRESTRIAL G WETLAND G AQUATIC	G ORGANIC G MINERAL SOIL G PARENT MIN. G ACIDIC BEDRK. G BASIC BEDRK. G CARB. BEDRK.	G LACUSTRINE G RIVERINE G BOTTOMLAND G TERRACE G VALLEY SLOPE G TABLELAND G ROLL. UPLAND G CLIFF G TALUS G CREVICE / CAVE G ALVAR G ROCKLAND G BEACH / BAR G SAND DUNE G BLUFF	G NATURAL G CULTURAL	G PLANKTON G SUBMERGED G FLOATING-LVD. G GRAMINOID G FORB G LICHEN G BRYOPHYTE G DECIDUOUS G CONIFEROUS G MIXED	G LAKE G POND G RIVER G STREAM G MARSH G SWAMP G FEN G BOG G BARREN G MEADOW G PRAIRIE G THICKET G SAVANNAH G WOODLAND G FOREST G PLANTATION
SITE G OPEN WATER G SHALLOW WATER G SURFICIAL DEP. G BEDROCK			**COVER** G OPEN G SHRUB G TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			JUGLNIG = SALI ALB>
2	SUB-CANOPY			" "
3	UNDERSTOREY			ROD > Ul. Mulberry >
4	GRD. LAYER			SALI (up), Jewelweed @ Creek

HT CODES: 1 = >25 m 2 = 10<HT≤25 m 3 = 2<HT≤10 m 4 = 1<HT≤2 m 5 = 0.5<HT≤1 m 6 = 0.2<HT≤0.5 m 7 = HT<0.2 m

CVR CODES 0= NONE 1= 0% < CVR ≤ 10% 2= 10 < CVR ≤ 25% 3= 25 < CVR ≤ 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

SIZE CLASS ANALYSIS:		< 10		10 - 24		25 - 50		> 50
STANDING SNAGS:		< 10		10 - 24		25 - 50		> 50
DEADFALL / LOGS:		< 10		10 - 24		25 - 50		> 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION: **ELC CODE**

COMMUNITY CLASS:		
COMMUNITY SERIES:		
ECOSITE:		
VEGETATION TYPE:		Cultural infl. → Riparian systems
INCLUSION		
COMPLEX		

Notes:

ELC STAND CHARACTERISTICS	SITE: 40326 - Aldershot
	POLYGON: #3
	DATE: JULY 31/18
	SURVEYOR(S):

TREE TALLY BY SPECIES:

PRISM FACTOR

SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TALLY 5	TOTAL	REL. AVG
TOTAL							100
BASAL AREA (BA)							
DEAD							

STAND COMPOSITION:

COMMUNITY PROFILE DIAGRAM

Notes:

ELC

SOILS ONTARIO

SITE:
POLYGON:
DATE:
SURVEYOR(S):

	P/A	PP	Dr	Position	Aspect	Slope %	Type	Class	Z	UTM EASTING	UTM NORTHING
1											
2											
3											
4											
5											

SOIL	1	2	3	4	5
TEXTURE x HORIZON					
A TEXTURE					
COURSE FRAGMENTS					
B TEXTURE					
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE					
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF					
MOTTLES					
GLEY					
BEDROCK					
WATER TABLE					
CARBONATES					
DEPTH OF ORGANICS					
PORE SIZE DISC #1					
PORE SIZE DISC #2					
MOISTURE REGIME					
SOIL SURVEY MAP					
LEGEND CLASS					

ELC

PLANT SPECIES LIST

SITE: 140326 - Altershot
POLYGON: AS 4
DATE: JUL 31/18
SURVEYOR(S): AA

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
FAGU GRA	R				
W. Mulberry		R			
Tree of Heaven			R→		
W. Ash			R		
ACER RUB		R→			
JUGL NIG	R→				
QUER RUB	R				
Malus (from crust) ←		R→			
PICE GLA	R				
ACER NEG			.		
Honey locust	R				
Tulip tree		R			
Lilac		R			
EWC			R		
EGLANTINE			R		
RBG			O→	F	
V. Creeper			F		
SH Sumac		O	O		
C. Buckthorn		O	O		

SPECIES CODE	LAYER 1	2	3	4	COL.
SOLI sp				D	
VICI CRA				O	
Ragweed				R→O	
TRIF HYB				R	
MEDI LUP				O	
HEAL ALL				O	
EQUI ARV				O	
Q. A Lace				O	
Chickory				R→O	
Buttercup				R	
C. Milkweed				R→	
Winged Vetch				R	
Rumex sp.				+	
Phragmites &				D	
Smooth Brome				O	
Grasses				A	

Page ..... of .....

& Monarchs Seen (11) = (2)

↳ Potential SWH?? <5km from L. Ont.

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE:		POLYGON:	
	SURVEYOR(S):	DATE:	TIME: start	
			finish	
	UTMZ:	UTME:	UTMN:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
G TERRESTRIAL G WETLAND G AQUATIC	G ORGANIC G MINERAL SOIL G PARENT MIN. G ACIDIC BEDRK. G BASIC BEDRK. G CARB. BEDRK.	G LACUSTRINE G RIVERINE G BOTTOMLAND G TERRACE G VALLEY SLOPE G TABLELAND G ROLL. UPLAND G CLIFF G TALUS G CREVICE / CAVE G ALVAR G ROCKLAND G BEACH / BAR G SAND DUNE G BLUFF	G NATURAL G CULTURAL	G PLANKTON G SUBMERGED G FLOATING-LVD. G GRAMINOID G FORB G LICHEN G BRYOPHYTE G DECIDUOUS G CONIFEROUS G MIXED	G LAKE G POND G RIVER G STREAM G MARSH G SWAMP G FEN G BOG G BARREN G MEADOW G PRAIRIE G THICKET G SAVANNAH G WOODLAND G FOREST G PLANTATION
SITE G OPEN WATER G SHALLOW WATER G SURFICIAL DEP. G BEDROCK			**COVER** G OPEN G SHRUB G TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1 = >25 m 2 = 10<HT≤25 m 3 = 2<HT≤10 m 4 = 1<HT≤2 m 5 = 0.5<HT≤1 m 6 = 0.2<HT≤0.5 m 7 = HT<0.2 m

CVR CODES 0= NONE 1= 0% < CVR ≤ 10% 2= 10 < CVR ≤ 25% 3= 25 < CVR ≤ 60% 4= CVR > 60%

STAND COMPOSITION:	BA:

SIZE CLASS ANALYSIS:		< 10		10 - 24		25 - 50		> 50
STANDING SNAGS:		< 10		10 - 24		25 - 50		> 50
DEADFALL / LOGS:		< 10		10 - 24		25 - 50		> 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE :		PIONEER		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES / GLEY	g =	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

		ELC CODE
COMMUNITY CLASS:		
COMMUNITY SERIES:		
ECOSITE:		
VEGETATION TYPE:		CUM 1-1
INCLUSION		
COMPLEX		

Notes:

ELC STAND CHARACTERISTICS	SITE: 140326 - Aldershot
	POLYGON: AS4
	DATE: JUL 31/18
	SURVEYOR(S): AA

TREE TALLY BY SPECIES:

PRISM FACTOR

SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TALLY 5	TOTAL	REL. AVG
TOTAL							100
BASAL AREA (BA)							
DEAD							

STAND COMPOSITION:

COMMUNITY PROFILE DIAGRAM

Notes:

ELC

SOILS ONTARIO

SITE:
POLYGON:
DATE:
SURVEYOR(S):

	P/A	PP	Dr	Position	Aspect	Slope %	Type	Class	Z	UTM EASTING	UTM NORTHING
1											
2											
3											
4											
5											

SOIL	1	2	3	4	5
TEXTURE x HORIZON					
A TEXTURE					
COURSE FRAGMENTS					
B TEXTURE					
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE					
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF					
MOTTLES					
GLEY					
BEDROCK					
WATER TABLE					
CARBONATES					
DEPTH OF ORGANICS					
PORE SIZE DISC #1					
PORE SIZE DISC #2					
MOISTURE REGIME					
SOIL SURVEY MAP					
LEGEND CLASS					

ELC

PLANT SPECIES LIST

SITE: Aldershot 140326
POLYGON: REACH 1
DATE: SEPT 17/18
SURVEYOR(S): AA

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.
W. Mulberry					
V. Creeper					

	SPECIES CODE	LAYER 1	2	3	4	COL.
*	SYMP NOV					
*	S. Jewelweed					
	SOLI CAN					
*	B-S Nightsh. sp.					
	SYMP ERI					
	SOLI NEM					
*	MENT ARV					
*	TUSS FAR					
*	SYMP LAN					
	SOLI FLEX (Both)					
	TOXI RAD					
x	AGER ALT			R-O	← Amphith.	
	HERA SPH			+	Bar Stream	
	SP. Juc Pyc Weed			+		
*	GLYC GRAN					

* x 3 types of Goldenrod in upper portions

Page ..... of .....

- Chipmunk, grey squirrel - Crows
- Big log jam in Reach #2 to clear up??

ELC

SOILS ONTARIO

SITE:

POLYGON:

DATE:

SURVEYOR(S):

	P/A	PP	Dr	Position	Aspect	Slope %	Slope Type	Slope Class	Z	UTM EASTING	UTM NORTHING
1											
2											
3											
4											
5											

SOIL	1	2	3	4	5
TEXTURE x HORIZON					
A TEXTURE					
COURSE FRAGMENTS					
B TEXTURE					
COURSE FRAGMENTS					
C TEXTURE					
COURSE FRAGMENTS					
EFFECTIVE TEXTURE					
SURFACE STONINESS					
SURFACE ROCKINESS					
DEPTH TO / OF					
MOTTLES					
GLEY					
BEDROCK					
WATER TABLE					
CARBONATES					
DEPTH OF ORGANICS					
PORE SIZE DISC #1					
PORE SIZE DISC #2					
MOISTURE REGIME					
SOIL SURVEY MAP					
LEGEND CLASS					

ELC

PLANT SPECIES LIST

SITE: Aldershot

POLYGON: Reach 3

DATE: Sept 17/18

SURVEYOR(S): AF

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTOREY 4 = GROUND (GRD.) LAYER

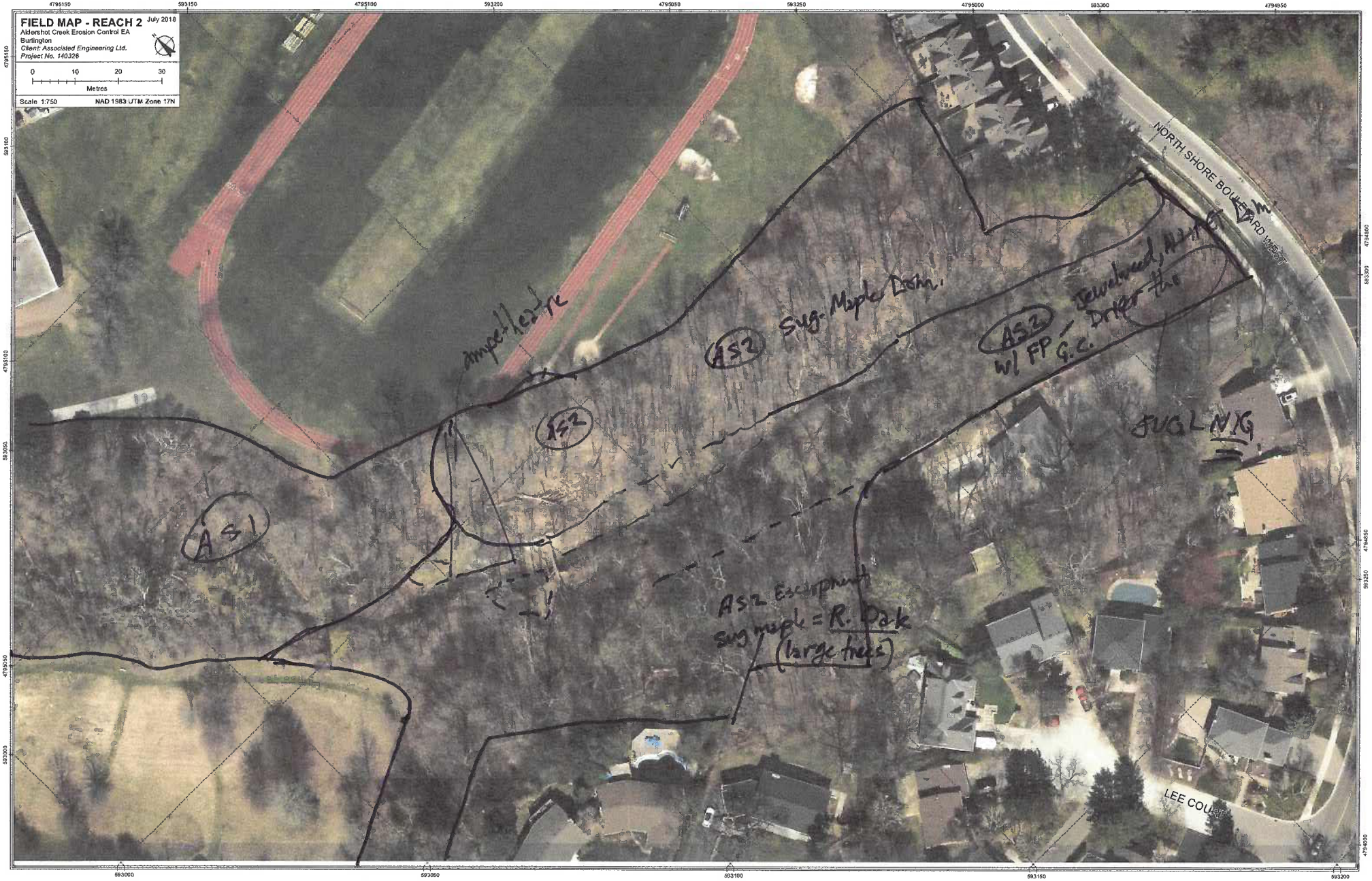
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COL.

SPECIES CODE	LAYER 1	2	3	4	COL.
Ragweed					
*! SOL1 CAN				D	
Penny cress					
QA Lace					
SYMP ERI					
SYMP NOV					
Cyper JDO					

Page ..... of .....

- Cardinals (4+)
- Red capped Woodpecker (1) → verify sp. @ water
- fish in pools (PIC)


FIELD MAP - REACH 2
July 2018
Aldershot Creek Erosion Control EA
Burlington
Client: Associated Engineering Ltd.
Project No. 140326
0 10 20 30
Metres
Scale 1:750
NAD 1983 UTM Zone 17N
4795150
593150
4795100
593200
4795050
593250
4795000
593300
4794950
4795150
593150
4795100
593200
4795050
593250
4795000
593300
4794950
4794900
593300
4794850
593250
4794800
593200
4794750
593150
4794700
593100
4794650
593050
4794600
593000
NORTH SHORE BOULEVARD WEST
LEE COU
AS2
Sug. Maple Dom.
AS2
w/ FP
G.C.
Jewelweed, Aster
Dryer
BUGLNG
AS1
AS2 Escarpment
Sug maple = R. Oak
(large trees)


SW (wet) A
FIELD MAP - REACH 1
July 2018
Aldershot Creek Erosion Control EA
Burlington
Client: Associated Engineering Ltd.
Project No. 140326
0 10 20 30
Metres
Scale 1:750
NAD 1983 UTM Zone 17N
4795250
593000
4795200
593050
4795150
593100
4795100
593150
4795050
592950
592900
592850
4795100
592900
4795050
592950
4795000
593000
4794950
593050
4794900
593100
4794850
593150
4794800
FAIRWOOD PLACE WEST
woodpeckers
small Hawk (white tail band) fighting w/ 3 crows
spring/channel
FP
FP
Staging?
AS1
AS4
Staging?
Path to channel would req. only limited clearing


FIELD MAP - REACH 3
July 2018
Aldershot Creek Erosion Control EA
Burlington
Client: Associated Engineering Ltd.
Project No. 140326
0 10 20 30
Metres
Scale 1:750
NAD 1983 UTM Zone 17N
Honey Locust
Grove of Elm
over manicured
Lawn w/some W. Mulberry
W. Mulberry
Hedge
NORTH SHORE BOULEVARD WEST
A53
open, soil dom.
CULTIVATED
Cleared
SW
LOWN

Aldershot Creek

July 10, 2018, 18°C, 2km/hr, 80% cc, 6:00

PC1 - greenfrog.

1. AMRO
2. REVI
3. SOSP
   AMCR

PC2

4. NOCA

PC3

5. AMGO
6. HOSP
7. BCCH
8. GRCA

Aldershot Creek BB #2

July 19, 2018, 5:55, 15°C, 0% cc, 2km/hr

PC 1 -rabbit

1. NOCA - pair
2. AMGO
3. BCCH
4. SOSP
5. HOSP
6. REVI

PC2

6

PC3

1. CAGO
   2, 6, 4, 3
2. EAPH

Am. Chestnut
(END)



June 3, 2019, 7°C, 11 km/hr, 5% cc 5:53
6:43 end.



1 DADCA
2 SOSP
3 HOSP
4 AMRO
5 AMGO
6 DOWO
7 GWWA N25
8 AMCR
9 GCFL
10 REVI
11 BCCH
RWBL
12 CAGO w/ young – 12 adults
13 EAWP

– continued

Aldershot BB #2
June 21, 2019, 6°C, 2km/hr, 60% cc – 5:33
- 6:22 end.

- coltail
- skunk



(1) HOSP ∴
(2) AMRO ∴ 2 young
(12) MALL ∴ 2 FOGS
(3) NOGA ∴
(4) SOSP ∴
(7) AMCR ∴
(5) BCCH
(6) EAPH
(8) RWBL
(9) CAGO ✓ - R is young ∴
(10) MUSW
(11) BARS ✓ ∴
(13) REVI
(14) AMGO ∴
(15) CEDW
(16) CHSP

Project No:
Observer(s):

Date:
Weather:

Survey Plot #

SYSTEM:	COMMUNITY CLASS:	COMMUNITY SERIES:	GPS POINT:	# SNAGS/CAVITY > 25 DBH
(Terrestrial) Wetland	Cliff, Talus, Rock Barren, Crevice-Cave, (Forest), Swamp	FOD	AS1	(1)

STAND DESCRIPTION:					OTHER:				
COMMUNITY AGE					SOIL MOISTURE				
Pioneer	Young	Mid-aged	(Mature)	Old Growth	(wet)	wet-mesic	mesic	dry-mesic	dry
STANDING SNAGS					SLOPE				
(Rare)	Occasional	Abundant	Dominant		none	gentle	moderate	rolling	(steep) w/ FP
DEADFALL LOGS					SLOPE POSITION				
Rare	(Occasional)	Abundant	Dominant		bottom	toe	(mid-slope)	crest	top

Description of Snag/Cavity Trees >25 cm DBH		
Tree 1: SALALB ~50, cracks	Tree 2:	Tree 3:
Tree 4:	Tree 5:	Tree 6:

Bats or evidence observed
None

Survey Plot #

SYSTEM:	COMMUNITY CLASS:	COMMUNITY SERIES:	GPS POINT:	# SNAGS/CAVITY > 25 DBH
(Terrestrial) Wetland	Cliff, Talus, Rock Barren, Crevice-Cave, (Forest), Swamp	FOD / FP	BAT 1	Ø

STAND DESCRIPTION:					OTHER:				
COMMUNITY AGE					SOIL MOISTURE				
Pioneer	Young	Mid-aged	(Mature)	Old Growth	(wet)	wet-mesic	mesic	dry-mesic	dry
STANDING SNAGS					SLOPE				
(Rare)	Occasional	Abundant	Dominant		none	gentle	moderate	rolling	(steep)
DEADFALL LOGS					SLOPE POSITION				
Rare	(Occasional)	Abundant	Dominant		bottom	toe	(mid-slope)	crest	top

Description of Snag/Cavity Trees >25 cm DBH		
Tree 1: FRAX PEN snag	Tree 2:	Tree 3:
Tree 4: ↳ No Cavities	Tree 5:	Tree 6:

Bats or evidence observed:

Survey Plot #

SYSTEM:	COMMUNITY CLASS:	COMMUNITY SERIES:	GPS POINT:	# SNAGS/CAVITY > 25 DBH
(Terrestrial) Wetland	Cliff, Talus, Rock Barren, Crevice-Cave, (Forest), Swamp	FOD slope	BAT 2	(1)

STAND DESCRIPTION:					OTHER:				
COMMUNITY AGE					SOIL MOISTURE				
Pioneer	Young	Mid-aged	Mature	Old Growth	wet	wet-mesic	mesic	(dry-mesic)	dry
STANDING SNAGS					SLOPE				
Rare	Occasional	Abundant	Dominant		none	gentle	moderate	rolling	(steep)
DEADFALL LOGS					SLOPE POSITION				
Rare	Occasional	Abundant	Dominant		bottom	toe	(mid-slope)	crest	top

Description of Snag/Cavity Trees >25 cm DBH (≥?)		
Tree 1: leaning snag ~30 cm DBH	Tree 2:	Tree 3:
Tree 4:	Tree 5:	Tree 6:

Bats or evidence observed:
spring here

Survey Plot #

SYSTEM:	COMMUNITY CLASS:	COMMUNITY SERIES:	GPS POINT:	# SNAGS/CAVITY > 25 DBH
(Terrestrial) Wetland	Cliff, Talus, Rock Barren, Crevice-Cave, (Forest), Swamp	FOD - slope	BAT 3	Ø

STAND DESCRIPTION:					OTHER:				
COMMUNITY AGE					SOIL MOISTURE				
Pioneer	Young	Mid-aged	(Mature)	Old Growth	wet	wet-mesic	mesic	(dry-mesic)	dry
STANDING SNAGS					SLOPE				
(Rare)	Occasional	Abundant	Dominant		none	gentle	moderate	rolling	(steep)
DEADFALL LOGS					SLOPE POSITION				
Rare	(Occasional)	Abundant	Dominant		bottom	toe	(mid-slope)	crest	top

Description of Snag/Cavity Trees >25 cm DBH		
Tree 1:	Tree 2:	Tree 3:
Tree 4:	Tree 5:	Tree 6:

Bats or evidence observed:

Bat Maternity Roost Survey

Project No:
Observer(s):

Date:
Weather:

Survey Plot #

SYSTEM: Terrestrial / Wetland	COMMUNITY CLASS: Cliff, Talus, Rock Barren, Crevice-Cave, Forest, Swamp	COMMUNITY SERIES: FOD - slope / AS2	GPS POINT: BAT 4	# SNAGS/CAVITY > 25 DBH: 1

STAND DESCRIPTION:	OTHER:
COMMUNITY AGE: Pioneer / Young / Mid-aged / **Mature** / Old Growth	SOIL MOISTURE: wet / wet-mesic / mesic / **dry-mesic** / dry
STANDING SNAGS: **Rare** / Occasional / Abundant / Dominant	SLOPE: none / gentle / moderate / rolling / **steep**
DEADFALL LOGS: **Rare** / Occasional / Abundant / Dominant	SLOPE POSITION: bottom / toe / **mid-slope** → / crest / top

Description of Snag/Cavity Trees >25 cm DBH

Tree 1: S. snag ~ 50 cm	Tree 2:	Tree 3:
Tree 4: topped @ 15m	Tree 5:	Tree 6:

Bats or evidence observed: → cavities throughout (pics)

Survey Plot #

SYSTEM: Terrestrial / Wetland	COMMUNITY CLASS: Cliff, Talus, Rock Barren, Crevice-Cave, Forest, Swamp	COMMUNITY SERIES: FOD (AS2)	GPS POINT: BAT 5	# SNAGS/CAVITY > 25 DBH: ~~11~~ ~~25~~ 1

STAND DESCRIPTION:	OTHER:
COMMUNITY AGE: Pioneer / Young / Mid-aged / **Mature** / Old Growth	SOIL MOISTURE: wet / wet-mesic / mesic / **dry-mesic** / dry
STANDING SNAGS: **Rare** / Occasional / Abundant / Dominant	SLOPE: none / gentle / moderate / rolling / **steep**
DEADFALL LOGS: **Rare** / Occasional / Abundant / Dominant	SLOPE POSITION: bottom / toe / **mid-slope** / crest / top

Description of Snag/Cavity Trees >25 cm DBH

Tree 1: PRUNUS snag - 3 f	Tree 2:	Tree 3:
Tree 4: w/ peeling bark (PICE)	Tree 5:	Tree 6:

Bats or evidence observed: * ACER sugar w/ stick nest @ top

Survey Plot #

SYSTEM: Terrestrial / Wetland	COMMUNITY CLASS: Cliff, Talus, Rock Barren, Crevice-Cave, Forest, Swamp	COMMUNITY SERIES: FOD AS2	GPS POINT: BAT 6	# SNAGS/CAVITY > 25 DBH: ø(?)

STAND DESCRIPTION:	OTHER:
COMMUNITY AGE: Pioneer / Young / Mid-aged / **Mature** / Old Growth	SOIL MOISTURE: wet / wet-mesic / mesic / **dry-mesic** / dry
STANDING SNAGS: **Rare** / Occasional / Abundant / Dominant	SLOPE: none / gentle / moderate / rolling / **steep**
DEADFALL LOGS: **Rare** / Occasional / Abundant / Dominant	SLOPE POSITION: bottom / toe / mid-slope / **crest** / top

Description of Snag/Cavity Trees >25 cm DBH

Tree 1: snag up 3 FWP	Tree 2:	Tree 3:
Tree 4:	Tree 5:	Tree 6:

Bats or evidence observed:

Survey Plot #

SYSTEM: Terrestrial / Wetland	COMMUNITY CLASS: Cliff, Talus, Rock Barren, Crevice-Cave, Forest, Swamp	COMMUNITY SERIES: FOD - AS2	GPS POINT: BAT 7	# SNAGS/CAVITY > 25 DBH: 1?

STAND DESCRIPTION:	OTHER:
COMMUNITY AGE: Pioneer / Young / Mid-aged / **Mature** / Old Growth	SOIL MOISTURE: wet / wet-mesic / **mesic** / dry-mesic / dry
STANDING SNAGS: **Rare** / Occasional / Abundant / Dominant	SLOPE: none / gentle / moderate / rolling / **steep**
DEADFALL LOGS: **Rare** / Occasional / Abundant / Dominant	SLOPE POSITION: bottom / toe / **mid-slope** / crest / top

Description of Snag/Cavity Trees >25 cm DBH

Tree 1: SALI ALB ~90	Tree 2:	Tree 3:
Tree 4: → some peeling	Tree 5:	Tree 6:

Bats or evidence observed: Bark, Trace dying branch (Alive)

Project No:
Observer(s):

Date:
Weather:

Survey Plot #

SYSTEM	COMMUNITY CLASS	COMMUNITY SERIES	GPS POINT	# SNAGS/CAVITY > 25 DBH
Terrestrial Wetland	Cliff, Talus, Rock Barren, Crevice-Cave, Forest, Swamp	FoD - Assessment	BAT 8	1

STAND DESCRIPTION:	OTHER:
COMMUNITY AGE Pioneer Young Mid-aged Mature Old Growth	SOIL MOISTURE wet wet-mesic mesic dry-mesic dry
STANDING SNAGS Rare Occasional Abundant Dominant	SLOPE none gentle moderate rolling steep
DEADFALL LOGS Rare Occasional Abundant Dominant	SLOPE POSITION bottom toe mid-slope crest top

Description of Snag/Cavity Trees >25 cm DBH

Tree 1: R.Oak ~80 Approx 15"	Tree 2:	Tree 3:
Tree 4:	Tree 5:	Tree 6:

Bats or evidence observed: * Best Pot Bat habitat - large trees, overlooking creek on escarp.

Survey Plot #

SYSTEM:	COMMUNITY CLASS:	COMMUNITY SERIES:	GPS POINT:	# SNAGS/CAVITY > 25 DBH
Terrestrial Wetland	Cliff, Talus, Rock Barren, Crevice-Cave, Forest, Swamp			

STAND DESCRIPTION:	OTHER:
COMMUNITY AGE Pioneer Young Mid-aged Mature Old Growth	SOIL MOISTURE wet wet-mesic mesic dry-mesic dry
STANDING SNAGS Rare Occasional Abundant Dominant	SLOPE none gentle moderate rolling steep
DEADFALL LOGS Rare Occasional Abundant Dominant	SLOPE POSITION bottom toe mid-slope crest top

Description of Snag/Cavity Trees >25 cm DBH

Tree 1:	Tree 2:	Tree 3:
Tree 4:	Tree 5:	Tree 6:

Bats or evidence observed:

Survey Plot #

SYSTEM:	COMMUNITY CLASS:	COMMUNITY SERIES:	GPS POINT:	# SNAGS/CAVITY > 25 DBH
Terrestrial Wetland	Cliff, Talus, Rock Barren, Crevice-Cave, Forest, Swamp			

STAND DESCRIPTION:	OTHER:
COMMUNITY AGE Pioneer Young Mid-aged Mature Old Growth	SOIL MOISTURE wet wet-mesic mesic dry-mesic dry
STANDING SNAGS Rare Occasional Abundant Dominant	SLOPE none gentle moderate rolling steep
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Description of Snag/Cavity Trees >25 cm DBH

Tree 1:	Tree 2:	Tree 3:
Tree 4:	Tree 5:	Tree 6:

Bats or evidence observed:

Survey Plot #

SYSTEM:	COMMUNITY CLASS:	COMMUNITY SERIES:	GPS POINT:	# SNAGS/CAVITY > 25 DBH
Terrestrial Wetland	Cliff, Talus, Rock Barren, Crevice-Cave, Forest, Swamp			

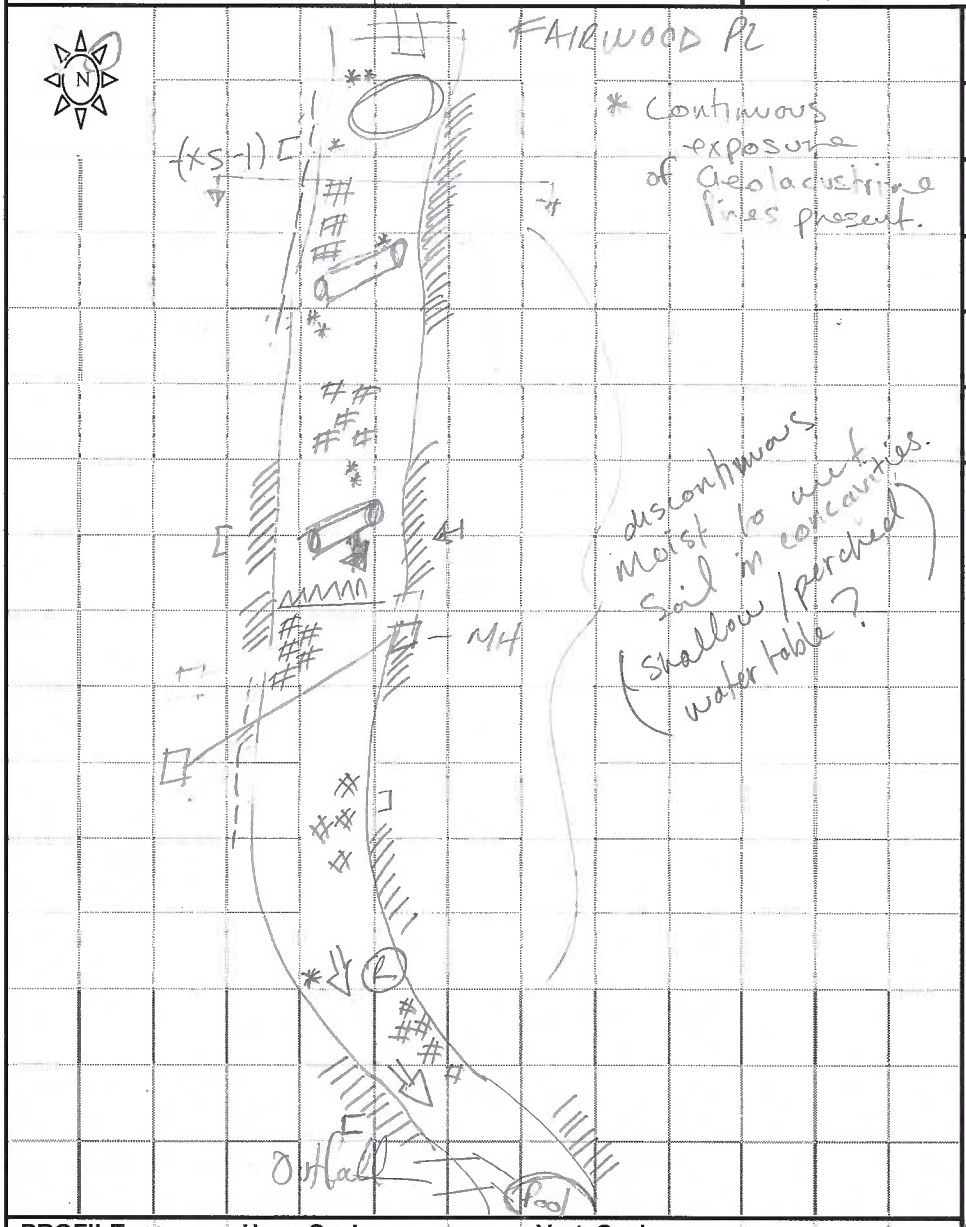
STAND DESCRIPTION:	OTHER:
COMMUNITY AGE Pioneer Young Mid-aged Mature Old Growth	SOIL MOISTURE wet wet-mesic mesic dry-mesic dry
STANDING SNAGS Rare Occasional Abundant Dominant	SLOPE none gentle moderate rolling steep
DEADFALL LOGS Rare Occasional Abundant Dominant	SLOPE POSITION bottom toe mid-slope crest top

Description of Snag/Cavity Trees >25 cm DBH

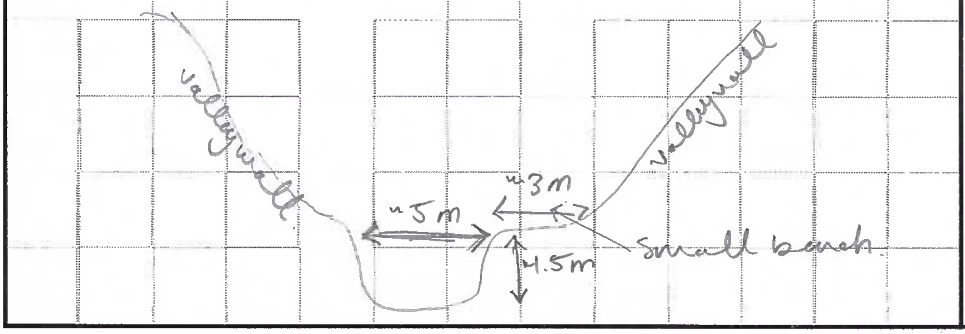
Tree 1:	Tree 2:	Tree 3:
Tree 4:	Tree 5:	Tree 6:

Bats or evidence observed:

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
	Reach 1.	200 m	



PROFILE: XS-1 **Horz. Scale** **Vert. Scale**



PROJECT #: 1406326

MAPPER: MB

NAME OF WATERBODY: west aldershot

CROSSING #:

STATION #:

DATE: DD-MMM-YY 23-08-18

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▒ Island/Bar

⁘ Fine Substrate
Gravel Substrate

oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

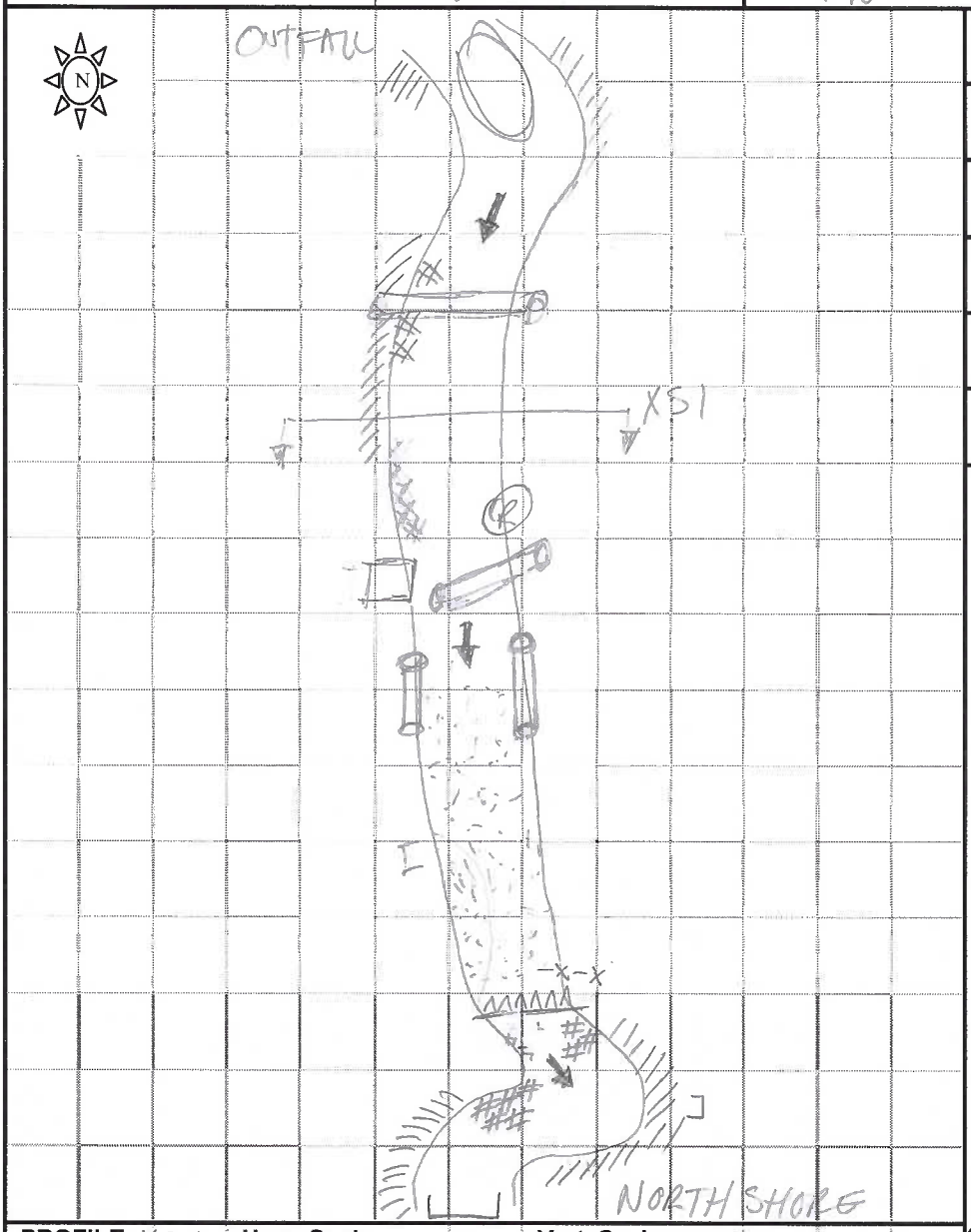
® Riparian Tree

├▶ Seep/Spring
-------- Undercut Bank

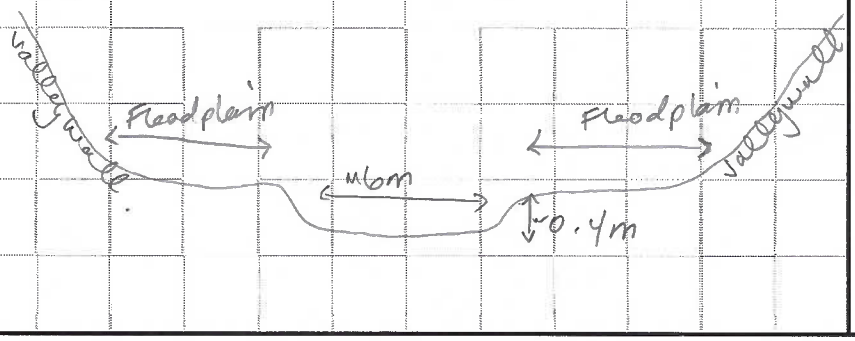
— Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
└┘ Culvert

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
	Reach 2	190 m	



PROFILE: XS1 **Horz. Scale** **Vert. Scale**



PROJECT #: 1400326

MAPPER: MB

NAME OF WATERBODY: West alderflat

CROSSING #:

STATION #:

DATE: DD-MMM-YY 23-08-18

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▒ Island/Bar

⁘ Fine Substrate
Gravel Substrate

oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

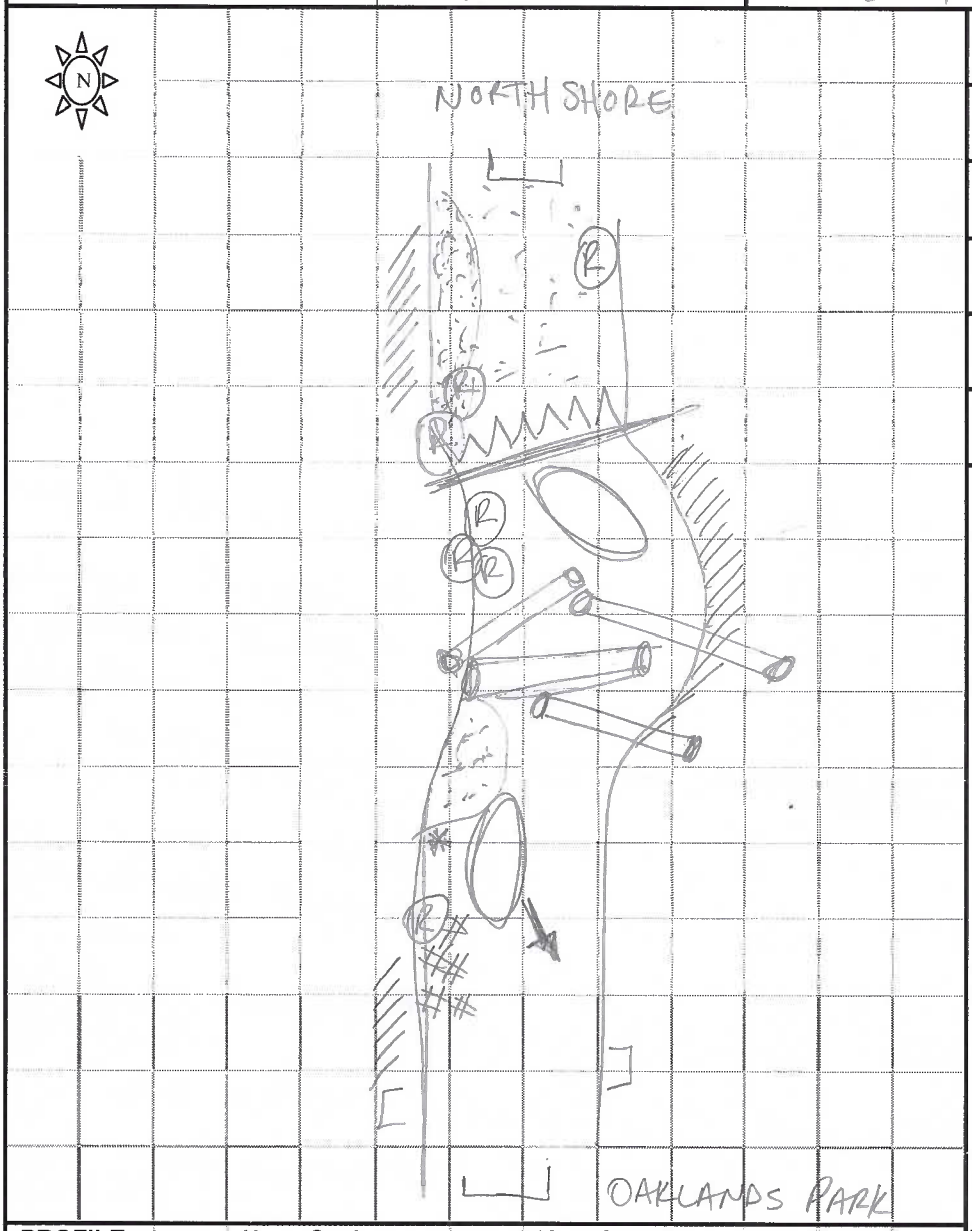
® Riparian Tree

⊢► Seep/Spring
-------- Undercut Bank

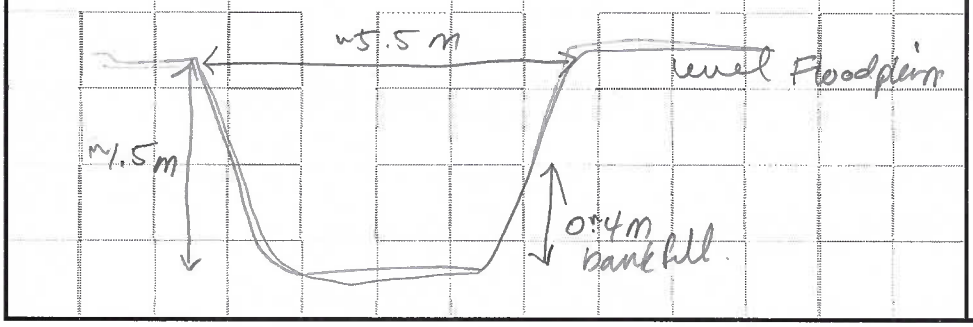
— Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
⌴ Culvert

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
	Reach 3	80M	



PROFILE: **Horz. Scale** **Vert. Scale**



PROJECT #: 1400326

MAPPER: MR

NAME OF WATERBODY: West aldershot

CROSSING #:

STATION #:

DATE: DD-MMM-YY 23-08-18

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▓ Island/Bar

⁙ Fine Substrate
Gravel Substrate

oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

® Riparian Tree

├► Seep/Spring
-------- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
└┘ Culvert

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Appendix B

Plant Inventory

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Appendix B

Plant Inventory

Scientific Name	Common Name	S-Rank	SARO	Halton
Acer negundo	Manitoba Maple	S5		
Acer platanoides	Norway Maple	SE5		
Acer rubrum	Red Maple	S5		
Acer saccharum var. saccharum	Sugar Maple	S5		
Agrostis sp.	Bentgrass Species			
Ailanthus altissima	Tree-of-heaven	SE5		
Alliaria petiolata	Garlic Mustard	SE5		
Ambrosia artemisiifolia	Common Ragweed	S5		
Anemonastrum canadense	Canada Anemone	S5		
Arctium minus	Common Burdock	SE5		
Asclepias syriaca	Common Milkweed	S5		
Betula papyrifera	Paper Birch	S5		
Bromus inermis	Smooth Brome	SE5		
Carex sp.	Sedge species			
Castanea dentata	American Chestnut	S1S2	END	R3
Cichorium intybus	Wild Chicory	SE5		
Circaea canadensis ssp. *canadensis*	Canada Enchanter's Nightshade	S5		
Cirsium arvense	Canada Thistle	SE5		
Cirsium sp.	Thistle Species			
Cornus sericea	Red-osier Dogwood	S5		
Cyperus odoratus	Rusty Flatsedge	S5		
Daucus carota	Wild Carrot	SE5		
Elymus repens	Quackgrass	SE5		
Epilobium ciliatum ssp. *ciliatum*	Northern Willowherb	S5		
Equisetum arvense	Field Horsetail	S5		
Erysimum cheiranthoides	Woormseed wallflower	SE5		
Euonymus europaeus	European Euonymus	SE2		
Eutrochium maculatum var. *maculatum*	Spotted Joe-pye Weed	S5		
Fagus grandifolia	American Beech	S5		
Fraxinus americana	White Ash	S5		
Fraxinus pennsylvanica	Green Ash	S5		
Geum aleppicum	Yellow Avens	S5		

S-Rank – Ontario Ministry of Natural Resources (OMNR). 2018. Natural Heritage Information Centre Species Lists. Last updated January 30, 2018.
SARO – Ontario Ministry of Natural Resources and Forestry (2018). Species Risk in Ontario. Last updated 2018. https://www.ontario.ca/environment-and-energy/species-risk-type
Halton – Varga *et al.* 2000. Greater Toronto Area.

Scientific Name	Common Name	S-Rank	SARO	Halton
Glechoma hederacea	Ground Ivy	SE5		
Gleditsia triacanthos	Honey Locust	S2?		
Glyceria grandis	Tall Mannagrass	S4S5		
Grass sp.	Grass Species			
Hedera helix	English Ivy	SNA		
Heracleum sphondylium	Meadow Cow parsnip	SE1		
Hesperis matronalis	Dame's Rocket	SE5		
Impatiens capensis	Spotted Jewelweed	S5		
Juglans nigra	Black Walnut	S4		
Leonurus cardiaca ssp. *cardiaca*	Common Motherwort	SE5		
Liriodendron tulipifera	Tulip Tree	S4		
Lonicera tatarica	Tatarian Honeysuckle	SE5		
Maianthemum stellatum	Star-flowered False Solomon's Seal	S5		
Malus sp.	Apple Species			
Medicago lupulina	Black Medic	SE5		
Mentha arvensis	Field Mint	S5		
Morus alba	White Mulberry	SE5		
Oryzopsis sp.	Mountain Ricegrass species			
Ostrya virginiana	Eastern Hop-hornbeam	S5		
Oxalis sp.	Wood Sorrel Species			
Parthenocissus quinquefolia	Virginia Creeper	S4?		RLR
Phragmites australis	Common Reed	S5		
Picea glauca	White Spruce	S5		U
Pilea pumila	Dwarf Clearweed	S5		
Pinus sylvestris	Scots Pine	SE5		
Podophyllum peltatum	May-apple	S5		
Populus balsamifera	Balsam Poplar	S5		
Prunella vulgaris ssp. *vulgaris*	Selfheal	SE3		
Prunus nigra	Canada Plum	S4		U
Prunus pensylvanica	Pin Cherry	S5		U
Prunus serotina	Black Cherry	S5		
Prunus virginiana var. *virginiana*	Choke Cherry	S5		
Quercus rubra	Northern Red Oak	S5		
Ranunculus sp.	Buttercup species			
Rhamnus cathartica	European Buckthorn	SE5		
Rhus typhina	Staghorn Sumac	S5		
Ribes oxyacanthoides var. *oxyacanthoides*	Canada Gooseberry	S5		

S-Rank – Ontario Ministry of Natural Resources (OMNR). 2018. Natural Heritage Information Centre Species Lists. Last updated January 30, 2018.
SARO – Ontario Ministry of Natural Resources and Forestry (2018). Species Risk in Ontario. Last updated 2018. https://www.ontario.ca/environment-and-energy/species-risk-type
Halton – Varga *et al.* 2000. Greater Toronto Area.

Scientific Name	Common Name	S-Rank	SARO	Halton
Rosa rubiginosa var. *nemoralis*	Small-flowered rose	SE1		
Rubus allegheniensis	Allegheny Blackberry	S5		
Rubus idaeus ssp. *idaeus*	European Red Raspberry	SE1		
Rumex crispus	Curled Dock	SE5		
Rumex sp.	Dock species			
Salix alba	White Willow	SE4		
Salix bebbiana	Bebb's Willow	S5		
Solanum dulcamara	Bittersweet Nightshade	SE5		
Solidago canadensis	Canada Goldenrod	S5		
Solidago flexicaulis	Zigzag Goldenrod	S5		
Solidago nemoralis var. *nemoralis*	Gray-stemmed Goldenrod	S5		
Solidago sp.	Goldenrod species			
Symphyotrichum ericoides var. *ericoides*	Heath Aster	S5		
Symphyotrichum lanceolatum ssp. *lanceolatum* var. *lanceolatum*	White Panicled Aster	S5		
Symphyotrichum novae-angliae	New England Aster	S5		
Symplocarpus foetidus	Eastern Skunk Cabbage	S5		R2
Syringa vulgaris	Common Lilac	SE5		
Tanacetum vulgare	Common Tansy	SE5		
Taraxacum officinale	Common Dandelion	SE5		
Thlaspi arvense	Field Pennycress	SE5		
Thuja occidentalis	Eastern White Cedar	S5		
Tilia americana	Basswood	S5		
Toxicodendron radicans var. *radicans*	Eastern Poison Ivy	S5		
Trifolium hybridum	Alsike Clover	SE5		
Trillium sp.	Trillium species			
Tussilago farfara	Coltsfoot	SE5		
Vicia cracca	Tufted Vetch	SE5		
Vicia sp.	Vetch species			
Viola sp.	Violet species			
Vitis riparia	Riverbank Grape	S5		

S-Rank – Ontario Ministry of Natural Resources (OMNR). 2018. Natural Heritage Information Centre Species Lists. Last updated January 30, 2018.
SARO – Ontario Ministry of Natural Resources and Forestry (2018). Species Risk in Ontario. Last updated 2018. https://www.ontario.ca/environment-and-energy/species-risk-type
Halton – Varga *et al.* 2000. Greater Toronto Area.

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Appendix C

Breeding Bird Survey Results

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Appendix C

Breeding Bird Survey Results

Common Name	Scientific Name	Status					Locations		Observed on site visit			
		COSEWIC[a]	SARO[a]	S-Rank[b]	Area-sensitive (OMNR)[c]	Breeding Code	Forest	Flyovers and adjacent areas	10-Jul-18	19-Jul-18	03-Jun-19	21-Jun-19
Canada Goose	*Branta canadensis*			S5		FY		1		1	12	18
Eastern Phoebe	*Sayornis phoebe*			S5		S		1		1		1
American Crow	*Corvus brachyrhynchos*			S5		S	1	1	1		2	2
Black-capped Chickadee	*Poecile atricapillus*			S5		S	1		1	1	3	1
American Robin	*Turdus migratorius*			S5		FY	1		1		3	5
Gray Catbird	*Dumetella carolinensis*			S4		S	1		1			
Red-eyed Vireo	*Vireo olivaceus*			S5		S	1		1	1	1	1
Northern Cardinal	*Cardinalis cardinalis*			S5		P	1		1	1	1	2
Song Sparrow	*Melospiza melodia*			S5		S		1	1	1	2	2
American Goldfinch	*Cardeulis tristis*			S5		P	1		1	1	2	4
House Sparrow	*Passer domesticus*			SE		S		1	1	1	1	3
Downy Woodpecker	*Picoides pubescens*			S5		S	1				1	
Red-winged Blackbird	*Agelaius phoeniceus*			S4		X		1			1	1

[a]COSEWIC = Committee on the Status of Endangered Wildlife in Canada – National Species at Risk Listing
[a]Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario). END = Endangered, THR = Threatened, SC = Special Concern

[b] S-Rank – Provincial Breeding Season Rank (from Natural Heritage Information Centre) for breeding status:
S1 (Critically Imperiled), S2 (Imperiled),S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)
SZB (breeding migrants or vagrants) and SR (reported as breeding, but no persuasive documentation) .
SE (exotic, i.e. non-native)
[c]Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p. plus appendices.
Breeding Code: Bird Studies Canada (2001): FY = fledged or downy young; S = single male present or heard in suitable habitat; P = pair observed in suitable habitat; X = species observed in breeding season, no evidence of breeding.

Common Name	Scientific Name	Status					Locations		Observed on site visit			
		COSEWIC[a]	SARO[a]	S-Rank[b]	Area-sensitive (OMNR)[c]	Breeding Code	Forest	Flyovers and adjacent areas	10-Jul-18	19-Jul-18	03-Jun-19	21-Jun-19
Great Crested Flycatcher	*Myiarchus crinitus*			S4		S	1				1	
Eastern Wood-Pewee	*Contopus virens*	SC	SC	S4		S	1				1	
Ring-billed Gull	*Larus delawarensis*			S5		X		1			25	2
Mallard	*Anas platyrhynchos*			S5		P		1				4
Mute Swan	*Cygnus olor*			SE		X		1				1
Barn Swallow	*Hirundo rustica*	THR	THR	S4		X		1				2
Cedar Waxwing	*Bombycilla cedrorum*			S5		S	1					1
Chipping Sparrow	*Spizella passerina*			S5		S	1					1

[a]COSEWIC = Committee on the Status of Endangered Wildlife in Canada – National Species at Risk Listing
[a]Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario). END = Endangered, THR = Threatened, SC = Special Concern

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Breeding Code: Bird Studies Canada (2001): FY = fledged or downy young; S = single male present or heard in suitable habitat; P = pair observed in suitable habitat; X = species observed in breeding season, no evidence of breeding.

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Appendix D

Aquatic Habitat Photo Log

Photograph Log

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.[1]
1	11/12/2018
Direction Photo Taken	DS

Description

Incised channel with undercut banks and limited gravels along the bed



[1] *Aquatic Habitat Assessment was completed August 23, 2019, however, for clarity of channel conditions, photos from a subsequent field visit on November 12, 2019 during leaf off period have been provided*

Photograph Log

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Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
3	11/12/2018

Direction Photo Taken	West (across channel)

Description

Mixed woody and anthropogenic debris jam. Large concrete rubble immediately downstream



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
2	11/12/2018
Direction Photo Taken	DS

Description

Gravel and cobble bed with eroding banks and leaning trees within the channel.

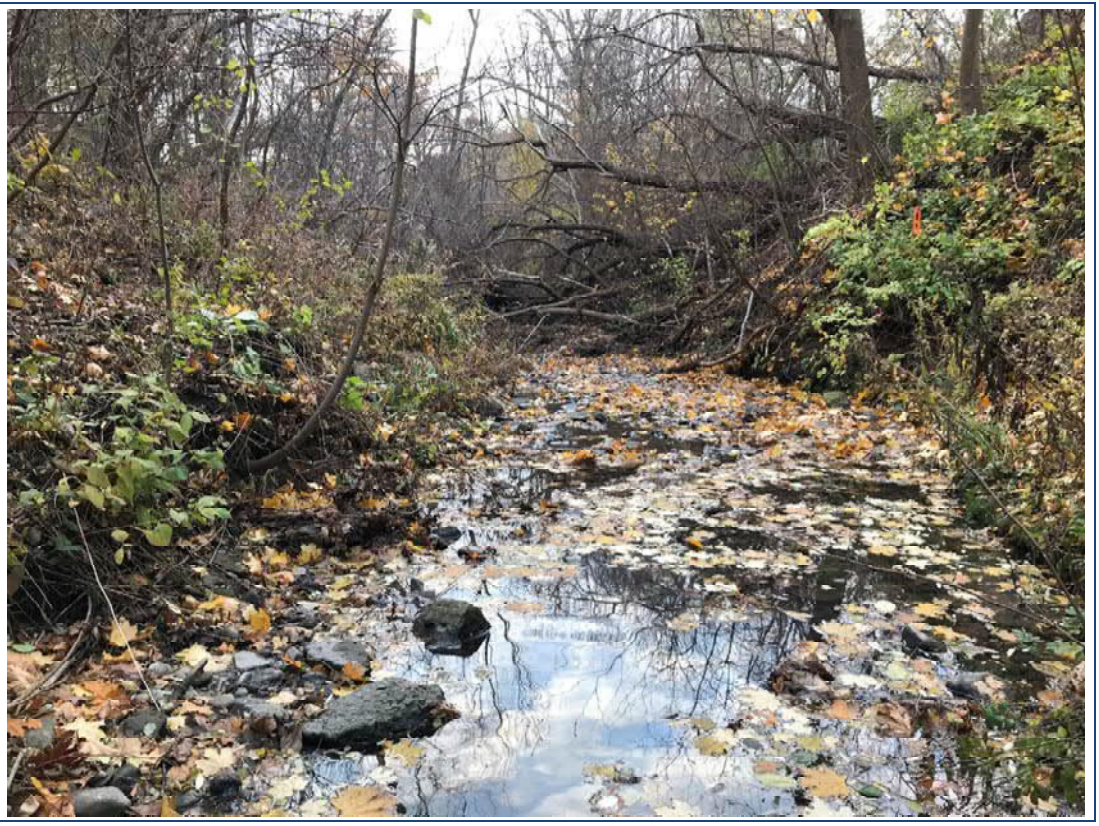


Photo #:	Date.
4	11/12/2018
Direction Photo Taken	DS

Description

Gravel and cobble riffle with woody jam immediately upstream



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
5	11/12/2018
Direction Photo Taken	DS

Description

Reach 1



Photo #:	Date.
6	11/12/2018
Direction Photo Taken	US

Description

Woody jam immediately upstream of exposed maintenance hole. Cobble and gravels discontinuous along the bed



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
7	11/12/2018
Direction Photo Taken	US

Description

Large undercut with gravel bar along the inner bank. No gravels along the bed of the wetted area



Photo #:	Date.
8	11/12/2018
Direction Photo Taken	US

Description

Short run and riffle sequenced along steepened section of channel



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
9	11/12/2018
Direction Photo Taken	DS

Description

Large and deep scour pool immediately downstream of stormwater outfall



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
10	11/12/2018
Direction Photo Taken	DS

Description

Gravel bar and slightly sinuous low flow with poorly defined run-riffle morphology



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
11	11/12/2018
Direction Photo Taken	US

Description

Maintenance hole exposed within channel with instream logs and trees present.

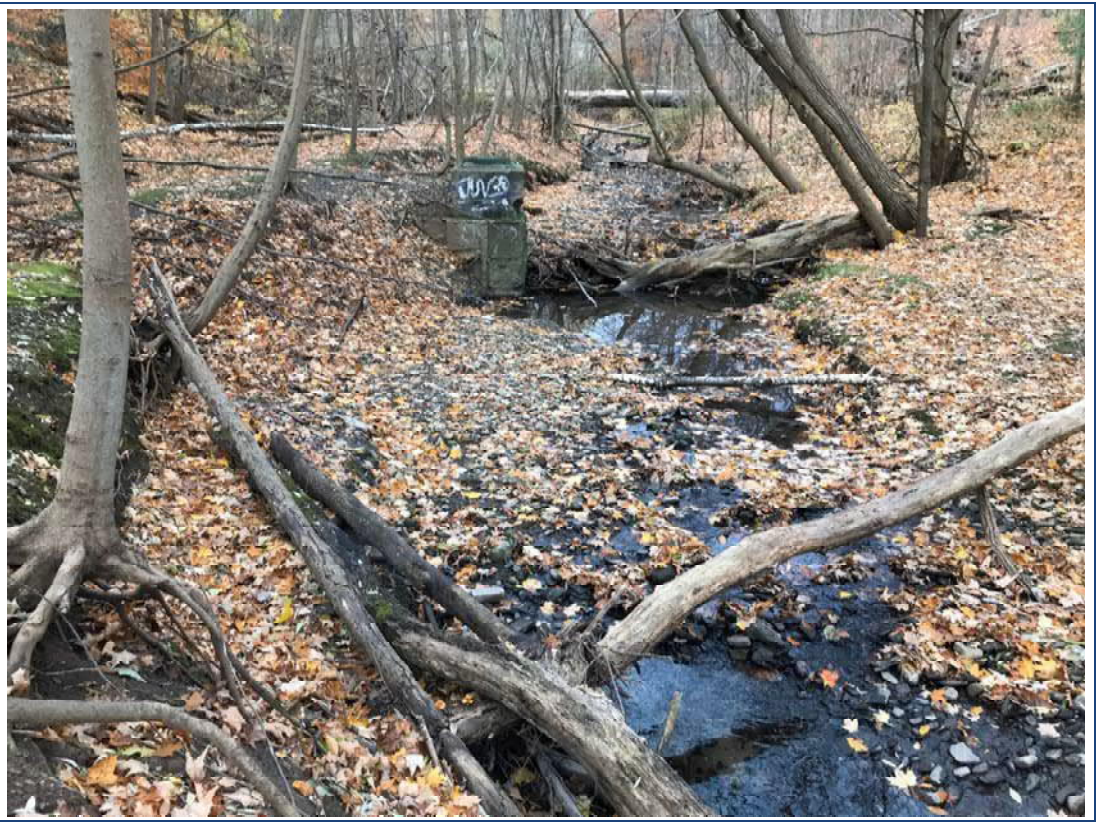


Photo #:	Date.
12	11/12/2018
Direction Photo Taken	US

Description

Downstream extent of reach 2 (upstream of barrier) with sand deposited along bed covering gravels



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
13	11/12/2018
Direction Photo Taken	DS

Description

View of large woody jam which acts as a barrier to fish movement



Photo #:	Date.
14	11/12/2018
Direction Photo Taken	DS

Description

High eroded outer bank with large bars and poorly formed riffle-pool sequence before slightly perched and outflanked culvert



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
15	11/12/2018
Direction Photo Taken	DS

Description

Sand deposition has covered gravels upstream of large woody jam



Photo #:	Date.
16	11/12/2018
Direction Photo Taken	DS

Description

View of large woody jam, which acts as a barrier to fish movement. Sand deposition upstream has covered gravels



Photograph Log

PALMER ENVIRONMENTAL CONSULTING GROUP INC.

Client Name:	Project No.	Site Location:
Associated Engineering	1400326	Aldershot Creek Erosion

Photo #:	Date.
17	11/12/2018
Direction Photo Taken	DS

Description

Anomalous scour of outer bank with increased input of logs and trees



Photo #:	Date.
18	11/12/2018
Direction Photo Taken	DS

Description

Poorly formed riffle-pool sequence with a rubble bar at the downstream extent of Reach 3



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Appendix E

Significant Wildlife Habitat Screening

Appendix E

West Aldershot Creek: Significant Wildlife Habitat Screening – Ecoregion 7E

SWH Type	Presence (Y/P/N)	Rationale
Seasonal Concentration Areas of Animals		
Waterfowl Stopover and Staging Areas (Terrestrial)	N	Habitat not present in the study area.
Waterfowl Stopover and Staging Area (Aquatic)	N	Habitat not present in the study area.
Shorebird Migratory Stopover Area	Y	Designated Colonial Waterbird Nesting Area
Raptor Wintering Area	N	Forests >20 ha not present in the study area.
Bat Hibernacula	N	Habitat not present in the study area.
Bat Maternity Colonies	P	Potential habitat trees >10/ha present in the study area.
Turtle Wintering Area	N	Habitat not present in the study area.
Reptile Hibernaculum	N	Habitat not present in the study area.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	P	Exposed banks are present along the Creek.
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	N	Habitat not present in the study area.
Colonially-nesting Bird Breeding Habitat (Ground)	N	Habitat not present in the study area.
Migratory Butterfly Stopover Area	N	The Site does not hold significant quantities of nectar plants.
Landbird Migratory Stopover Areas	N	Habitat not present in the study area.
Deer Winter Congregation Areas	N	Area not mapped by MNRF.
Rare Vegetation Communities		
Cliffs and Talus Slopes	N	Community type is not present in the study area.
Sand Barren	N	Community type is not present in the study area.
Alvar	N	Community type is not present in the study area.
Old Growth Forest	N	Community type is not present in the study area.
Savannah	N	Community type is not present in the study area.
Tallgrass Prairie	N	Community type is not present in the study area.
Other Rare Vegetation Communities	N	Community type is not present in the study area.
Specialized Habitat for Wildlife		
Waterfowl Nesting Area	N	Habitat not present in the study area.

SWH Type	Presence (Y/P/N)	Rationale
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat	N	Habitat not present in the study area.
Woodland Raptor Nesting Habitat	N	Forests are not >30 ha.
Turtle Nesting Areas	N	Habitat not present in the study area.
Seeps and Springs	P	Seeps are present in the study area.
Amphibian Breeding Habitat (Woodland)	P	Green frog observed. Pooled water is not permanent.
Amphibian Breeding Habitat (Wetlands)	N	Water is not permanent.
Woodland Area-Sensitive Bird Breeding Habitat	N	Forests are not >30 ha.
Habitat of Species of Conservation Concern		
Marsh Bird Breeding Habitat	N	No emergent vegetation present.
Open Country Bird Breeding Habitat	N	Habitat not present in the study area.
Shrub/Early Successional Bird Breeding Habitat	N	Habitat not present in the study area.
Terrestrial Crayfish	N	Habitat not present in the study area.
Special Concern and Rare Wildlife Species	P (N)	Monarch observed; however, no quality potential habitat is found within the Site.
Animal Movement Corridors		
Amphibians	P	Need amphibian breeding surveys to confirm.
Exceptions for Ecoregion 7E		
Bat Migratory Stopover: 7E-2	N	Site is not in Ecoregion 7E-2.