

APPENDIX B - NATURAL ENVIRONMENT TECHNICAL REPORT

Memorandum

Date: April 21, 2020

Project #: 1400328

To: Sarvejit (Serb) Nagi, Associated Engineering (Ont.) Ltd.
From: Austin Adams, Dirk Janas
CC:
Re: **Technical Memo for Culvert Replacement Activities near 5229 Cross Street, Innisfil, Ontario**

1. Introduction

Palmer is pleased to provide this Ecological Technical Memo related to planned culvert replacement activities located near 5229 Cross Street, Town of Innisfil, Ontario (the Site). The Site is comprised of the paved roadway – Cross Street, with a culvert overtop of a tributary of Banks Creek. The principal objective of this memo is to provide sufficient ecological information for the detailed design and implementation of the mitigation measures to meet the requirements of the relevant agencies in support of the environmental permitting and approvals. To this effect, this memo reviews the identified potential permitting and approval requirements, and provides a summary of the collected ecological data that would be required to support those permits. This includes an aquatic assessment of Banks Creek, an assessment of potential Species at Risk (SAR) habitat, and a tree inventory of the potential project area.

The Site currently supports a residential area with manicured grasses, some roadside trees, several hedgerows, a small cultural wooded area and a tributary of Banks Creek which runs east into Lake Simcoe (**Figure 1**). Due to the presence of the watercourse, associated Regulated Lands within the jurisdiction of the Lake Simcoe Region Conservation Authority (LSRCA) are found within the Site. As this project involves regulated areas, it will be critical to the project that an effective environmental permitting strategy is implemented.

2. Methods

Associated Engineering (AE) and Palmer attended a preliminary consultation meeting with the LSRCA on August 1, 2018 regarding permitting requirements for the Site. Background information regarding potential Species at Risk (SAR) was obtained from the Ministry of Natural Resources and Forestry (MNRF), and background information on flora and fauna were obtained from the LSRCA and MNRF. It should be noted that issues concerning SAR are now coordinated by the Ministry of Environment, Conservation and Parks

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(MECP). The Natural Heritage Information Centre (NHIC) Make-a-Map application was referenced for rare species occurrences and environmental designated area mapping.

Palmer ecologists also undertook a field visit on July 23, 2018. Weather conditions were approximately 20°C, muggy and overcast. The objectives of the field investigation were to survey the flora and vegetation communities, characterize the aquatic habitat, conduct a tree inventory, and screen for potential SAR presence and habitat opportunities within the Site.

Vegetation communities were mapped and described following the Ecological Land Classification (ELC) for Southern Ontario (Lee et al., 1998). Vegetation community boundaries were delineated on field maps through the interpretation of recent aerial photographs and refined in the field. Information collected during ELC surveys included dominant species cover, community structure, as well as level of disturbance and presence of indicator species.

An assessment of the existing aquatic habitat and riparian conditions of Banks Creek was conducted. The aquatic and fish habitat were characterized where culvert replacement activities are proposed, upstream and downstream of the Cross Street culvert. Observations such as substrate composition, signs of groundwater seepage or upwellings, aquatic vegetation, riparian vegetation, woody debris, barrier to fish passage, and spawning habitat were recorded.

Prior to the field work, existing SAR records were queried through correspondence with the MNRF Midhurst district and the NHIC database. For the purposes of this report, SAR include species listed as Endangered, Threatened or Special Concern under Ontario's *Endangered Species Act* (ESA). The protection provisions for species and their habitat within the ESA apply only to those species listed as Endangered or Threatened on the Species at Risk in Ontario (SARO) list. Special Concern species may be afforded protection through policy instruments respecting significant wildlife habitat as defined by the Province or other relevant authority, or other protections contained in municipal Official Plan policies.

A tree inventory was completed for all trees >150 mm diameter-at-breast-height (DBH) on the Site, as well as for any trees on adjacent property whose canopies may extend into the project area, in accordance with the *Innisfil Engineering Design Standards and Specifications Manual Section 8: Parks and Landscaping* (Town of Innisfil, 2016). The tree inventory was completed by a Certified Arborist on July 23, 2018. Information collected during the inventory includes species name, tree tag number, diameter at breast height (DBH), georeferenced location, canopy diameter, assessment of condition including health, vigor and structural integrity, suitability for retention and minimum tree protection zone.

No formal wildlife surveys were completed. However, during field surveys, any wildlife or evidence of wildlife, including nests, tracks, scat observed during the survey was to be recorded.

3. Existing Conditions

3.1 Site Characterization

The Site is comprised of residential lots on either side of Cross Street, in Innisfil (**Figure 1**). There is no true ecological land classification (ELC) in the immediate area, with all lands being hard surfaces or manicured lawns, though trees along Banks Creek are primarily mature, established trees and some shrubs. From Lake Simcoe to Cross Street, Banks Creek is a straightened channel with concrete walls. Upstream of Cross Street, Banks Creek has some degree of artificial bank hardening for approximately 20 metres (m), though there is evidence of this hardening breaking and failing. There is a gradual meander throughout this length, which is generally open (**Figure 2**). Upstream of this 20 m there is more tree cover over Banks Creek.

3.2 Aquatic Habitat Assessment

Downstream of the culvert, Banks Creek exhibits a straightened pattern, reflecting a history of channel modification (straightening), and is constrained by a concrete channel. The tributary exhibits low to moderate flow velocities with a channel width of approximately 4.5 m. The Creek has an entrenched confinement and lacks islands but features a 10 m long culvert (Cross Street). The substrate is primarily muck with low visibility. There is a lack of in-stream vegetation and woody debris present within the watercourse. The riparian banks are well vegetated with manicured grasses, shrubs and trees and provide trace amounts of cover with overhanging vegetation. Fish barriers were not observed in the immediate vicinity of the Site.

Upstream of the culvert, Banks Creek exhibits the same velocity, substrate and channel characteristics. Portions of the hardened channel have broken away, providing a limited amount of in-stream shade. The riparian vegetation is also similar but provides more canopy cover with 40% overhanging vegetation. Small fish were also observed approximately 20 m upstream of the culvert. The surrounding land use upstream and downstream of the Banks Creek tributary is residential, contributing a low impact to the channelized watercourse given the presence of a well-vegetated riparian buffer.

3.2.1 Fish Species

From data available from Land Information Ontario (LIO), there are records of 12 fish species in Banks Creek (**Table 1**). All fish species present are native and common to Ontario. Most (11) of the species are spring spawners, taking advantage of both coolwater and warmwater habitats. Brook Trout (*Salvelinus fontinalis*) is an outlier in the creek, being a fall spawner. There are no known SAR fish present.

There are records of 29 fish species in Lake Simcoe (**Table 1**) (Ministry of Natural Resources and Forestry, 2018). The majority of fish species present are native and common to Ontario. There were only three exotic fish species recorded: Brown Trout (*Salmo trutta*), Common Carp (*Cyprinus carpio*) and Rainbow Trout (*Oncorhynchus mykiss*). There was also one hybrid species, Splake (*Salvelinus fontinalis* x *Salvelinus namaycush*). Among these species, there are no known fish SAR present.

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This species composition demonstrates that the habitats in Banks Creek support a different fish community than those of Lake Simcoe. There is a limited overlap in species, with only Brook Trout, Pumpkinseed (*Lepomis gibbosus*) and White Sucker (*Catostomus commersonii*) being recorded in both Banks Creek and Lake Simcoe.

Table 1: Fish Species found in Lake Simcoe

Common Name	Scientific Name	Lake Simcoe	Banks Creek
Largemouth Bass	<i>Micropterus salmoides</i>	✓	
Black Crappie	<i>Pomoxis nigromaculatus</i>	✓	
Bluntnose Minnow	<i>Pimephales notatus</i>		✓
Bowfin	<i>Amia calva</i>	✓	
Brook Stickleback	<i>Culaea inconstans</i>		✓
Brook Trout	<i>Salvelinus fontinalis</i>	✓	✓
Brown Bullhead	<i>Ameiurus nebulosus</i>	✓	
Brown Trout	<i>Salmo trutta</i>	✓	
Burbot	<i>Lota lota</i>	✓	
Central Mudminnow	<i>Umbra limi</i>		✓
Channel Catfish	<i>Ictalurus punctatus</i>	✓	
Cisco	<i>Coregonus artedi</i>	✓	
Common Carp	<i>Cyprinus carpio</i>	✓	
Creek Chub	<i>Semotilus atromaculatus</i>		✓
Eastern Blacknose Dace	<i>Rhinichthys atratulus</i>		✓
Emerald Shiner	<i>Notropis atherinoides</i>		✓
Fathead Minnow	<i>Pimephales promelas</i>		✓
Lake Trout	<i>Salvelinus namaycush</i>	✓	
Lake Whitefish	<i>Coregonus clupeaformis</i>	✓	
Bluegill	<i>Lepomis macrochirus</i>	✓	
Muskellunge	<i>Esox masquinongy</i>	✓	
Northern Pike	<i>Esox lucius</i>	✓	
Northern Redbelly Dace	<i>Chrosomus eos</i>		✓
Pumpkinseed	<i>Lepomis gibbosus</i>	✓	✓
Rainbow Smelt	<i>Osmerus mordax</i>	✓	
Rainbow Trout	<i>Oncorhynchus mykiss</i>	✓	
Rock Bass	<i>Ambloplites rupestris</i>	✓	
Sand Shiner	<i>Notropis stramineus</i>		✓
Smallmouth Bass	<i>Micropterus dolomieu</i>	✓	
Walleye	<i>Sander vitreus</i>	✓	
White Crappie	<i>Pomoxis annularis</i>	✓	
White Sucker	<i>Catostomus commersonii</i>	✓	✓
Yellow Bullhead	<i>Ameiurus natalis</i>	✓	

Common Name	Scientific Name	Lake Simcoe	Banks Creek
Yellow Perch	<i>Perca flavescens</i>	✓	
Mooneye*	<i>Hiodon tergisus</i>	✓	
Aurora Trout*	<i>Salvelinus fontinalis timagamiensis</i>	✓	
Goldeye*	<i>Hiodon alosoides</i>	✓	
Splake*	<i>Salvelinus fontinalis x Salvelinus namaycush</i>	✓	

*Indicates species recorded solely by public (unconfirmed).

3.2.2 Thermal Regime and In-water Work Timing Windows

Data available from LIO marks the thermal regime of Banks Creek as “Unknown”. To determine the in-water work timing window, the spawning periods for fish species within Banks Creek were considered (**Table 2**). Most species within Banks Creek are spring/summer spawners, except for Brook Trout, which is a fall spawner. Direction received from the MNR regarding in-water work timing windows is that the timing restrictions for both seasons (March 15 to July 15 for spring spawning species; October 1 to May 31 for Brook Trout) must be consequently combined (**Appendix A**). Therefore, for Banks Creek, the available in-water work timing window is **July 15th to October 1st** of a given year.

Table 2: Spawning Seasons and Timing Windows for In-water Work

Species	Spawning Season	Spawning Months	Restriction Timing Window	Thermal Regime	Ontario Origin	General Abundance
Bluntnose Minnow	Summer	June-August		Warmwater	Native	Common
Brook Stickleback	Spring-summer	May-July		Coolwater	Native	Common
Brook Trout	Fall	September-November	Oct. 1 to May 3	Coldwater	Native/introduced	Common
Central Mudminnow	Spring	April-May		Coolwater	Native	Common
Creek Chub	Spring	May-June		Coolwater	Native	Common
Eastern Blacknose Dace	Spring	May-June		Coolwater	Native	Limited Distribution
Emerald Shiner	Summer	June-August		Coolwater	Native	Common
Fathead Minnow	Spring-summer	May-August		Warmwater	Native	Common
Northern Redbelly Dace	Spring-summer	May-July		Coolwater	Native	Common
Pumpkinseed	Spring-summer	May-August		Warmwater	Native	Common

Species	Spawning Season	Spawning Months	Restriction Timing Window	Thermal Regime	Ontario Origin	General Abundance
Sand Shiner	Summer	June-August		Warmwater	Native	Common
White Sucker	Spring	April-June		Coolwater	Native	Common

Sources: (Ministry of Natural Resources and Forestry, 2014; Eakins, 2018)

3.3 Wildlife

During the July 23, 2018 field survey, only limited observations of wildlife were made. Occasional songbirds were observed and heard, though no formal survey was made. No nesting structures were observed in the trees inventoried for the project. Within Banks Creek, several small fish were observed, though species were not identified. This demonstrates that Banks Creek is an active fish habitat and mitigation must be implemented for the project.

3.4 Species at Risk Assessment

Due diligence review for SAR includes background screening for potential SAR habitat, and appropriate fieldwork to identify potential habitat(s). Background review regarding SAR revealed records for Henslow’s Sparrow (*Ammodramus henslowii*), an *Endangered* bird species in the vicinity of the Site. MNRFC correspondence dated August 14, 2018 did not identify any additional species records in the vicinity of the Site (**Appendix A**). The MNRFC correspondence notes that having no record (or confirmation) of a SAR on-site does not mean that they are not potentially present if appropriate habitat exists; fieldwork is to identify potential habitat opportunities.

The SAR screening is provided below. This includes a brief habitat description for Henslow’s Sparrow, the species status under the *ESA* and the results of the screening and habitat opportunities identified within or adjacent to the Site (**Table 3**). As developed residential properties, there is no potential habitat for Henslow’s Sparrow on or adjacent to the Site.

Through our review of the Site, correspondence with the MNRFC, and site-specific fieldwork, we have confirmed that there are no other SAR or potential habitat that is likely to occur on or directly adjacent to the Site. As noted in Section 3.2.1, no SAR fish species have been recorded in Banks Creek.

Table 3: Species at Risk Screening

Species	Habitat Requirement Overview	Habitat Suitability
Henslow’s Sparrow	The Henslow’s Sparrow is an area-sensitive grassland obligate; it requires grassland habitat and occurs more frequently and at higher densities in large patches of suitable habitat. In Ontario, Henslow’s Sparrow colonies have been located in abandoned fields, lightly grazed pasture, and wet meadows.	Absent

3.5 Tree Inventory

The tree inventory comprised 31 individual trees >15 cm DBH, including 29 (94%) native and 2 (6%) non-native trees (**Table 4; Figure 2**). These 31 trees are 19% (6) conifers and 81% (25) deciduous. During the inventory, there were no Species at Risk (SAR) trees observed (e.g. Butternut (*Juglans cinerea*)); however, there were two types of Ash species (*Fraxinus americana* and *Fraxinus pennsylvanica*) that are at high risk of infestation but show little to no signs of Emerald Ash Borer (EAB) infestation at this point. The full tree inventory is provided in **Appendix B**.

Table 4: Summary of Tree Inventory Results

Scientific Name	Common Name	Total Number
<i>Fraxinus americana</i> *	White Ash	8
<i>Tilia americana</i> *	Basswood	4
<i>Fraxinus pennsylvanica</i> *	Green Ash	5
<i>Thuja occidentalis</i> *	Eastern White Cedar	3
<i>Picea glauca</i> *	White Spruce	2
<i>Ulmus americana</i> *	American Elm	2
<i>Acer rubrum</i> *	Red Maple	1
<i>Malus</i> sp.	Apple species	1
<i>Acer platanoides</i>	Norway Maple	1
<i>Pinus resinosa</i> *	Red Pine	1
<i>Salix alba</i>	White Willow	1
<i>Betula alleghaniensis</i> *	Yellow Birch	1
<i>Betula papyrifera</i> *	White Birch	1
Total		31

*Native species

4. Environmental Permitting and Approvals Summary

This infrastructure improvement project has been initiated by the Town of Innisfil. For the proposed works, a Schedule “B” Class Environmental Assessment (EA) was completed in 2007 by Ainley Group. An EA addendum is being completed by AE to confirm previous findings due to the lapse of time. However, permits and approvals from the relevant agencies are required as part of the project process. The following permits and approvals have been identified as potentially applicable to this project.

4.1 Federal Approvals

Fisheries Act

The *Fisheries Act* is administered by Fisheries and Oceans Canada (DFO) and requires that project activities avoid causing serious harm to fish. This applies to work being conducted in or near water that support fish that are part of, or support, commercial, recreational, or Aboriginal fisheries. Under the current FA, a Request for Project review is required to determine the potential to cause serious harm and confirm the applicable Measures to Avoid Harm.

Migratory Bird Convention Act

The *Migratory Birds Convention Act* is administered by the Canadian Wildlife Service of Environment Canada. The *Act* enables regulations that require authorization for activities that cause the permanent destruction or disturbance of migratory bird habitat or killing/removing of fledglings, eggs, nests or other harmful activity to migratory birds. Typically, clearing outside of the breeding bird window provides conformity to the MCBA.

To avoid impacts to breeding birds, tree clearing within the C2 nesting calendar period should be avoided, which is primarily April 15 to the end of August (Government of Canada, 2019).

The Species at Risk Act

The federal *Species at Risk Act* (SARA) is administered by Environment and Climate Change Canada (ECCC) and prohibits the damage or destruction of listed species; the killing, harming or capture of listed species, or the possession or trading of listed species. The *Act* also provides recovery strategies and action plans for listed species, and regulations for the protection of critical habitat. While the SARA provides protection to habitat of aquatic species, habitat protection of most terrestrial species applies primarily to federally owned lands.

Requirements under the SARA are typically less applicable to projects of this type as habitat protection is specific to federally owned lands and is more commonly addressed if a project screening under the *Canadian Environmental Assessment Act* (CEAA) is required, which is not the case for this project.

4.2 Provincial Approvals

Provincial Policy Statement

Policy 2.1 of the Provincial Policy Statement (2014) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources. The 2014 PPS defines ten natural heritage features and adjacent lands, and provides planning policies for each. The *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy*

Statement (OMNR 2010) is a technical guidance document used to help assess the natural heritage features listed. The PPS provides provincial policy direction relating to land use planning and development that is subject to the *Planning Act*.

The Conservation Authorities Act

The *Conservation Authorities Act* enables local Conservation Authorities are able to regulate development and activities within a designated flood plain or adjacent to wetlands. The LSRCA administers Ontario Regulation 179/06: *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. A permit is required for all development within the areas regulated by the LSRCA. Conservation Authorities often also provide technical review as commenting agencies on development applications under the *Planning Act*.

The Endangered Species Act (2007)

The ESA prohibits the killing or harming of threatened and endangered species, as well as the destruction of their habitat. Section 9 of the ESA prohibits activities which kill, harm, harass, capture, or take a species of risk to possess, transport, collect, buy or trade a species at risk. Section 10 of the ESA prohibits the damage or destruction of habitat of endangered, threatened or extirpated species. Subject to a review process, permits may be issued if project activities are in contravention of the ESA. Ontario Regulation 242/08 outlines various project or species-specific exemptions.

Under Section 17 of the *Endangered Species Act* the Minister of Natural Resources and Forestry (now MECP) may issue a permit to authorize a person to carry out an activity that would otherwise be prohibited by Section 9 and 10 of the *Act*.

As no species at risk or potential habitat was identified during the background assessment and field studies, the project is considered to present a negligible potential to impact SAR or their habitats. Therefore, no further permitting requirements under SARA or the ESA are anticipated.

The Water Resources Act

Water takings in Ontario are governed by the *Ontario Water Resources Act* (OWRA) and the Water Taking Regulation (O. Reg. 387/04). The Act is administered by the Ministry of the Environment and Climate Change (MOECC); now under the MECP. Section 34 of the OWRA requires a permit be obtained when construction groundwater and storm dewatering volumes are expected to exceed 400,000 litres of water in a day. In the case that dewatering volumes are in the range of 50,000 – 400,000 L/day, registration on the Environmental Activity and Sector Registry (EASR) is required.

Depending on the methods of construction and advancement of the dredging of the channel “in the dry”, a Permit to Take Water (PTTW) or registration of the activity has the potential to be required. However, the amended Water Taking Regulation (O. Reg. 64/16) identifies the conditions that must be met to qualify for an exemption under the regulation; it is expected that the project can be designed in such a way that the exemption criteria can be met.

Invasive Species Act

The *Invasive Species Act* was introduced on November 3, 2016, and is intended to prevent new invasive species from arriving and establishing in Ontario. The act applies to invasive species prescribed by regulation as prohibited or restricted under Section 4 and Section 5 of the Act, and carriers that are prescribed under Section 6. No restricted or prohibited species will be introduced as a result of this project.

4.3 Municipal Approvals

The Town of Innisfil website notes that tree cutting is prohibited on any lands that are subject to site plan, without prior approval from the Town. This includes, but is not limited to waterfront homes, commercial and industrial properties. Additionally, the County of Simcoe has a tree cutting by-law for properties containing more than 1 hectare of woodlands. Note that as an infrastructure work, this project is not subject to site plan or the *Planning Act*.

However, Section 10.1.34 of the Town of Innisfil Official Plan states that trees removed as part of infrastructure works shall be compensated along municipal roads at a rate of two new trees for each tree removed (2:1).

5. Permitting Requirements

A summary of the environmental approvals, authorizations and permits that could be required for this project is provided in **Table 5**.

Table 5: Permits, Approvals, and Authorizations for the Cross Street Culvert Replacement

Legislation	Agency	Permit/Approval/Authorization	Required
<i>Fisheries Act</i>	Fisheries and Oceans Canada (DFO)	Final project design required to evaluate potential harm to fish. Adherence to applicable Measures to Avoid Harm is required. Submission of Request for Review to DFO required.	Request for Project Review
<i>Migratory Birds Convention Act</i>	Environment Canada and Climate Change (ECCC)	Compliance with appropriate timing restrictions on vegetation removals will avoid impacts to birds listed under the MBCA.	No
<i>Conservation Authorities Act</i>	Lake Simcoe and Region Conservation Authority (LSRCA)	Ontario Regulation 179/06 of Development, Interference with Wetlands and Alterations to Shorelines and Watercourse for construction works inside Regulated Limits.	Yes
<i>Endangered Species Act (ESA)</i>	Ministry of Natural Resources and Forestry (MNRF); now Ministry of Environment, Conservation and Parks (MECP)	As no species at risk or potential habitat was identified during the background assessment and field studies, the project is considered to present a negligible potential to impact SAR or their habitats. Therefore, no further permitting requirements under the ESA are anticipated.	No
<i>Water Resources Act</i>	Ministry of the Environment and Climate Change (MOECC); now Ministry of Environment, Conservation and Parks (MECP)	Permit to Take Water (PTTW) or registration on the Environmental Activity Sector Registry (EASR) for construction de-watering. It is expected that the project can be designed in such a way that the exemption criteria of O. Reg. 64/16 can be met.	Unlikely
<i>Invasive Species Act, Bill 37</i>	Ministry of Natural Resources and Forestry (MNRF)	No restricted or prohibited species will be introduced as a result of this project	No
<i>Fish and Wildlife Conservation Act, 1997</i>	Ministry of Natural Resources and Forestry (MNRF)	An MNRF <i>Application for a Licence to Collect Fish</i> would be required for any required fish salvage activities for construction.	Yes
<i>Town of Innisfil</i>	Town of Innisfil	An arborist report and tree protection plan should be developed, including a plan to compensate any required removals at a 2:1 ratio.	Yes

5.1 LSRCA Permitting

The LSRCA has determined that a permit would be required for this project, and ongoing consultation with the Conservation Authority has determined many of the data requirements of the permit. During the pre-consultation meeting with the LSRCA on August 1, 2018, the following permitting information requirements were identified:

- 1) **Description of the Project Objectives:** In the meeting with the LSRCA, the intent of the project was stated as to improve conveyance of the culvert to 10-year flood levels. The provision of an expanded description of the ultimate goals of the improvements was recommended.
- 2) **Description of Improvement Methods:** The LSRCA would require a fulsome description of the replacement methods and materials in the permit application. In the meeting, the replacement of the culvert was discussed. In general, the LSRCA are supportive of “like for like” culvert replacement, though replacement that improved conveyance was recognized as a laudable goal in this case. The LSRCA expressed a desire for a method that could be somewhat naturalized, such as an open bottom or closed box culvert buried at least 0.3 m, with a bed of river rock to channel levels.

Also discussed was the potential to conduct a “sediment dredge” or “clean out” of the channel prior to replacement to see if that would sufficiently improve flows, perhaps not requiring culvert replacement. A description of the methods for water removal/re-direction would be recommended to be included in the permit application.

- 3) **Fish Salvage:** The LSRCA expressed the need to review the methods for fish salvage and/or removal in relation to the above proposed works. This would be required to ensure that fish are protected through the proposed activities. A permit from the MNRF would be required to complete this work.
- 4) **In-water Work Timing Windows:** On the permit application, the LSRCA would require the identification of the in-water work timing window. As identified in Section 3.2.2, the timing window for this section of Banks Creek is **July 15th to October 1st** of a given year. The Aquatic Habitat Assessment (Section 3.2.2) can be used to support this timing window.
- 5) **Species at Risk Mitigation:** In the meeting, the identification of SAR was also expressed. As described in Section 3.3, the project is not likely to encounter any SAR or impact potential habitat. The SAR screening (Section 3.3) could be provided as support for this request.

5.2 Fisheries Permitting

While permitting is not expected to be required, a Request for Project Review to the DFO under the federal Fisheries Act will need to be completed during subsequent phases of the permitting process. Details of the proposed work and project design, mitigation and best management practices will be identified in the

submission for DFO's review. The assessment would also require the identification of fish salvage methods and in-water work timing windows.

As the potential impacts from this type of project are relatively well known, mitigation would need to be described, which would include fish removal (salvage) prior to isolation of the work area and completing the work outside the windows identified in Section 3.2.2.

Palmer would be able to lead the Request for Project Review, with support from AE.

5.3 Tree Permitting

Based on the results of the tree inventory, a complete Arborist Report and Tree Protection Plan should be developed to reflect the planned disturbances required to complete the project. The Arborist Report would detail the trees to be retained and to be removed in relation to the project, and recommend a tree replacement plan to conform to Section 10.1.34 of the Town of Innisfil Official Plan. This plan would detail the tree requirements for replacement as per the Innisfil Engineering Design Standards and Specifications Manual Section 8: Parks and Landscaping (Town of Innisfil, 2016).

6. Mitigation Measures

In advance of final design and construction methods, the following mitigation and enhancement measures have already been identified to minimize the potential impacts to the natural environment during the proposed construction works. While other specific mitigation opportunities may arise during design, the mitigations below should be incorporated into construction planning.

6.1 Timing

- Vegetation removal to be avoided between generally between late **April and late July** to conform with the *Migratory Birds Convention Act* and the Migratory Birds Regulations, specifically any trees that require removal to implement the project. Should vegetation removal be required in this period, a qualified ecologist must screen the area for active nests.;
- The MNRF have outlined that for this section of Banks Creek, the in-water work timing window is **July 15th to October 1st** of a given year.

6.2 Fish Salvage

As the operation and construction will almost certainly require in-water work, the relocation of fish from the work area would be required. The incorporation of this activity into the construction schedule would be required. An MNRF *Application for a Licence to Collect Fish* would be required for this activity.

6.3 Tree Replacement Plantings

To conform to the Town of Innisfil Tree Official Plan (Section 10.1.34), trees identified for removal during project planning should be compensated for via replacement plantings. Tree replacement plantings are recommended at a 2:1 ratio, which is required for street trees. The locations of replacement plantings would

be recommended in the Arborist Report, and should be planted at or near the locations of removals. Other locations may be suggested at the discretion of the Town.

7. Conclusions

We trust that the information provided above is sufficient to consider and develop the methods of culvert improvements for Cross Street. Once project objectives and construction methods have been determined, Palmer can continue to provide permitting and approvals support to AE. While the above information is expected to be sufficient for the LSRCA permit application, Palmer will look to complete the DFO self-assessment with information provided by AE. Once the project footprint has been determined, Palmer can complete the Arborist Report and Tree Protection Plan to identify the protection and replacement needs for the Town of Innisfil.

Yours truly,



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Dirk Janas, B.Sc.
Principal, Ecologist

References

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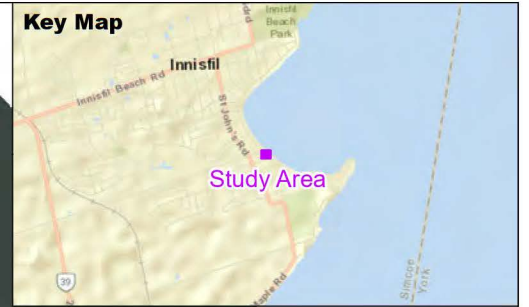
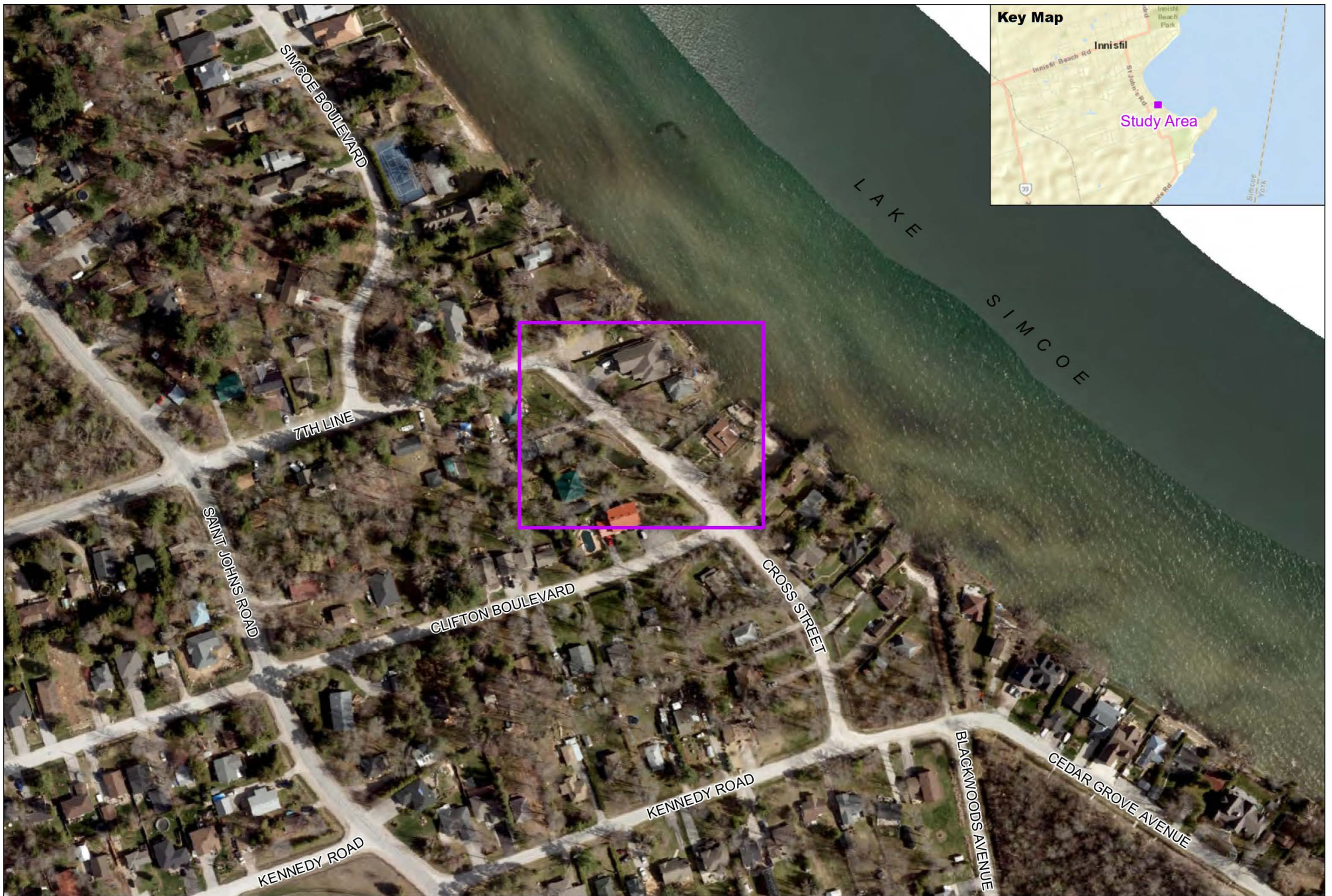
<https://www.gisapplication.lrc.gov.on.ca/FishONLine/Index.html?site=FishONLine&viewer=FishONLine&locale=en-US>

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Retrieved from innisfil.ca: <https://innisfil.ca/wp-content/uploads/2019/06/Engineering-Standards-2019.pdf>

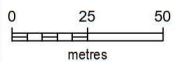
Palmer™

Figures



Palmer™

CLIENT: Associated Engineering
 PROJECT: 5229 Cross Street EA



DRAWN: B. Elder
 CHECKED: A. Adams
 PROJECT: 1403208
 DATE: Apr 17, 2020



Scale 1:2500
 UTM Zone 17N
 NAD 1983

LEGEND

 Study Area

Note: Imagery (2016) ©The Corporation of the County of Simcoe



Site Location

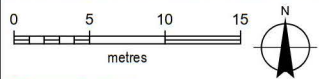
FIGURE 1

DRAFT



Palmer™

CLIENT: Associated Engineering
 PROJECT: 5229 Cross Street EA



DRAWN: B. Elder
 CHECKED: A. Adams
 PROJECT: 1403208
 DATE: Apr 17, 2020

Scale 1:500
 UTM Zone 17N
 NAD 1983

LEGEND

Inventory Tree

Note: Imagery (2016) ©The Corporation of the County of Simcoe



Tree Inventory

FIGURE 2

DRAFT

Appendix A

Correspondence



Austin Adams <austin@pecg.ca>

RE: Information Request in Innisfil (PECG #140328)

2 messages

Austin Adams <austin@pecg.ca>
To: "Shirley, Brent (MNRF)" <brent.shirley@ontario.ca>

Wed, Sep 5, 2018 at 2:56 PM

Hi Brent,

Thanks again for the discussion and information. From that and backgrounding, I'm trying to determine the in-water work timing restrictions for this project, and could use some advice.

Checking LIO (got that going!), the thermal regime for this stream is "unknown" based on the fish species present. Note that the watercourse to the north is "cold" and the one to the south is also "unknown".

From the analysis I've compiled, it looks like the watercourse (which outlets into L. Simcoe) has a Spring Timing restriction using the MNRF guideline (March 15 to July 15 for "other spring spawning species"), except for the record of Brook Trout.

With all the indications that a Spring Timing restriction would be adequate for all other species, would we have to limit work to mid-July to September to accommodate only Brook Trout? Or is some other window more appropriate based on the species?

Regards,

Austin Adams, M.Sc., EP
Senior Terrestrial Ecologist

Palmer Environmental Consulting Group Inc.
74 Berkeley Street, Toronto, ON M5A 2W7
t 647 795 8153 ext 147 c 647 461 2372 e austin@pecg.ca
www.pecg.ca

From: Shirley, Brent (MNRF) <brent.shirley@ontario.ca>
Sent: August 14, 2018 2:02 PM
To: Austin Adams <austin@pecg.ca>
Cc: Benner, Kim (MNRF) <kim.benner@ontario.ca>; Benvenuti, Jodi (MNRF) <jodi.benvenuti@ontario.ca>
Subject: RE: Another Information Request in Innisfil (PECG #140328)

Hi Austin,

If you go on LIO there are 5 fish dots for that watercourse, one is right at the culvert on Cross St. All of the fish dots are publically available now and are available via the link in my email below.

Fish species in that watercourse are Brook Trout, Pumpkinseed, Pike, Emerald Shiner, Central Mudminnow, Blacknose Dace, Bluntnose Minnow, Creek Chub, Fathead Minnow, Sand Shiner.

Best Regards,

Brent

From: Austin Adams [<mailto:austin@pecg.ca>]
Sent: August-14-18 10:21 AM
To: Shirley, Brent (MNRF)
Cc: Benner, Kim (MNRF); Benvenuti, Jodi (MNRF)
Subject: RE: Another Information Request in Innisfil (PECG #140328)

Thanks Brent,

To confirm, are there no fish DOT records, etc here? The most likely impact(s) at this location is to the creek/channel.

Regards,

Austin Adams, M.Sc., EP
Senior Terrestrial Ecologist

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www.pecg.ca

From: Shirley, Brent (MNRF) <brent.shirley@ontario.ca>
Sent: August 14, 2018 9:59 AM
To: Austin Adams <austin@pecg.ca>
Cc: Benner, Kim (MNRF) <kim.benner@ontario.ca>; Benvenuti, Jodi (MNRF) <jodi.benvenuti@ontario.ca>
Subject: RE: Another Information Request in Innisfil (PECG #140328)

Hi Austin,

Thank you for inquiry into MNRF's data holdings. Please consider the following.

The province has centralized and made publicly available digital and species data that lends to inform data needs such as the information requests we receive. Given the volume of information requests we receive there is an expectation you would demonstrate some effort in compiling available information from these sources. Going forward your requirements can largely be met through the use of the following data sources and reference documents.

Digital data for natural heritage features (e.g. wetland and ANSI mapping, fish community data) can be obtained through Land Information Ontario and/or through the Make a Map: Natural Heritage Areas tool through LIO at ...

Land Information Ontario: <https://www.ontario.ca/page/land-information-ontario>

Make a Map: Natural Heritage Areas: http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US_ NHIC data is also available through this interactive map tool.

Other resources to consider,

"Atlas of the Breeding Birds of Ontario"

"Ontario Reptile and Amphibian Atlas"

We do not have data for additional occurrences of species at risk beyond what you will find through the NHIC/LIO in the immediate area of your study area. However, as you are likely aware the species at risk records found in the NHIC database are not exhaustive and are based on **known** occurrences only. As a result, although there may be no record (or confirmation) of a species at risk on site it does not mean that they are not present if appropriate habitat exists. Due diligence is therefore still required and would include an appropriate consideration of what species could be present based on available habitat on and adjacent to your study site. Your field work should inform you on what species on the SARO list could possibly be encountered based on available habitats in the area of the study and the possible survey methodologies required during your site assessments.

On completing your preliminary screening we would be pleased to review your summary and recommend any additional species as appropriate given our knowledge of this district.

Evaluating for other natural heritage values for example candidate significant wildlife habitats (SWH) will be informed by direction in the Natural Heritage Reference Manual, the Significant Wildlife Habitat Technical Guide and SWH Criteria Schedule for Ecoregion 6E. Similarly to SAR occurrence reports, that mapping for natural heritage features might not be available is not indicative they are not on site, rather the assessments to identify them have not been done. Your field work will inform your review of the property for natural heritage features and functions.

If you require specific information with respect to species and natural heritage features identified in your preliminary review please email midhurstinfo@ontario.ca with the specific request using the attached form.

Threatened and endangered species and their habitat are protected under the Endangered Species Act (ESA). Avoidance and mitigation measures may need to be considered for the project. The proponent should be aware that approvals under the ESA may be required for this project. Additional information on Species at Risk including guides, resources, permits, authorizations and overall benefit information can be obtained at: <https://www.ontario.ca/page/species-risk>

Thanks for your inquiry.

Brent Shirley

A/ Management Biologist

Midhurst District Ministry of Natural Resources & Forestry

2284 Nursery Rd

Midhurst, ON

L9X 1N8

Phone- 705-725-7547

Fax- 705-725-7584

From: Austin Adams [<mailto:austin@pecg.ca>]

Sent: August-13-18 2:01 PM

To: Shirley, Brent (MNRF)

Cc: Benner, Kim (MNRF)

Subject: Another Information Request in Innisfil (PECG #140328)

Hi Brent,

Here's the second request. Let me know if there's any issues.

Regards,

Austin Adams, M.Sc., EP
Senior Terrestrial Ecologist

Palmer Environmental Consulting Group Inc.
74 Berkeley Street, Toronto, ON M5A 2W7
t 647 795 8153 ext 147 c 647 461 2372 e austin@pecg.ca
www.pecg.ca

From: Austin Adams <austin@pecg.ca>
Sent: August 1, 2018 12:15 PM
To: Jodi Benvenuti (jodi.benvenuti@ontario.ca) <jodi.benvenuti@ontario.ca>
Subject: Another Information Request in Innisfil (PECG #140328)

Hi again Jodi,

Please find attached another information request, again in Innisfil. Please let me know how/who to best route Info Requests to.

This project is a culvert rehab/replacement on Cross Street in Innisfil. The creek that is culverted outlets to Lake Simcoe about 30 – 40 m downstream. Thus, any fish data would be appreciated, in addition to SAR and NHF data. The ultimate proponent for this work is the Town.

Best Regards,

Austin Adams, M.Sc., EP
Senior Terrestrial Ecologist

Palmer Environmental Consulting Group Inc.
74 Berkeley Street, Toronto, ON M5A 2W7
t 647 795 8153 ext 147 c 647 461 2372 e austin@pecg.ca
www.pecg.ca

2 attachments

 **Construction In-water Work Timing Windows (MNRF).pdf**
308K

 **Thermal Regime Analysis.xlsx**
11K

Shirley, Brent (MNRF) <brent.shirley@ontario.ca>
To: Austin Adams <austin@pecg.ca>

Thu, Sep 6, 2018 at 11:55 AM

Hi Austin,

Since the watercourse has both spring spawners and brook trout. The timing window for in-water work would be between July 15th until October 1st.

Brook trout are a very sensitive species and require the timing window of no in-water work between October 1 until May 31st to protect them.

If you have any further questions or concerns please feel free to contact me at any time.

Best Regards,

Brent

From: Austin Adams [mailto:austin@pecg.ca]
Sent: September-05-18 2:57 PM
To: Shirley, Brent (MNRF)
Subject: RE: Information Request in Innisfil (PECG #140328)

[Quoted text hidden]

Appendix B

Tree Inventory

Appendix B: Tree Inventory

Tag #	Common Name	Scientific Name	DBH (cm)	Effective DBH (cm)	Tree Protection Zone (m)	Structure (G/F/P)	Vigour (G/F/P/D)	% Dead Branches	Notes
1	White Ash	<i>Fraxinus americana</i>	11	11	2.4	G	G	0	No EAB symptoms.
2	Norway Maple	<i>Acer platanoides</i>	30	30	2.4	G-F	G	0	Leans - Right at water.
3	White Ash	<i>Fraxinus americana</i>	38	38	2.4	G	P	30	No EAB exit holes, but weakened, Brown rot @ base (pic).
4	Red Maple	<i>Acer rubrum</i>	18	18	2.4	G (F)	G	0	
5	White Ash	<i>Fraxinus americana</i>	16	16	2.4	F	P	40	Leans, thin, likely EAB, large wound @ DBH on stem.
6	White Ash	<i>Fraxinus americana</i>	40, 20	45	4.1	G-F	P	20	Smaller stems pruned @ base, R. Maple growing from base (6b).
6b	Red Maple	<i>Acer rubrum</i>	10	10	1.8	G (F)	G	0	
7	White Spruce	<i>Picea glauca</i>	24	24	2.4	G-F	F	40	Leans towards water.
8	White Ash	<i>Fraxinus americana</i>	24, 15	28	2.4	F	P	50	Slight lean to water.
9	Red Pine	<i>Pinus resinosa</i>	29	29	2.4	G	A G	<10	Some lean to driveway.
10	White Ash	<i>Fraxinus americana</i>	73	73	5.9	F*	F	20	Ys @ 10m -> incl bark, hazard w/ deck under?
11	White Willow	<i>Salix alba</i>	~150	150	11.4	P	G	10	Some pruning but vigorous.
12	White Birch	<i>Betula papyrifera</i>	23	23	2.4	F-P	G	<10	Leans, rot below DBH (pic).
13	Eastern White Cedar	<i>Thuja occidentalis</i>	35	35	2.4	G	F	<10	Thin.
14	Basswood	<i>Tilia americana</i>	45	45	4.1	G	G	<10	Birdhouse.
15	White Ash	<i>Fraxinus americana</i>	37	37	2.4	G	F	20	
16	Eastern White Cedar	<i>Thuja occidentalis</i>	40	40	2.4	G (F)	G	<10	Significant lean.
17	Yellow Birch	<i>Betula alleghaniensis</i>	24, 22	33	2.4	P	G	0	Y @ 1m -> included bark to base of tree.
18	White Ash	<i>Fraxinus americana</i>	40	40	2.4	P	F	<10	
19	Basswood	<i>Tilia americana</i>	25, 21, 20, 23, 22	50	4.1	F	G	<10	
20	Basswood	<i>Tilia americana</i>	22, 30, 32, 26	56	4.4	F	G	<10	Some cracking/splitting bark below 2 m.
21	Common Lilac	<i>Syringa vulgaris</i>	11	11	2.4	G	G	0	
22	Green Ash	<i>Fraxinus pennsylvanica</i>	48	48	4.1	G	G	0	Vigorous, but also epicormic shoots.
23	White Spruce	<i>Picea glauca</i>	14	14	2.4	G	G (F)	<10	
24	White Spruce	<i>Picea glauca</i>	6	6	1.8	P	P	30	Failing 2nd leader, R. Maple sapling @ base.
25	Green Ash	<i>Fraxinus pennsylvanica</i>	44	44	4.1	G	G-F	10	
26	Green Ash	<i>Fraxinus pennsylvanica</i>	62	62	5.9	G	G	<10	One prunable branch.
27	Apple species	<i>Malus sp.</i>	22	22	2.4	G (F)	G	<10	Some lean to water.
28	Green Ash	<i>Fraxinus pennsylvanica</i>	33	33	2.4	G (F)	G (F)	15	Base 1/2 in gravel behind channel wall.
29	American Elm	<i>Ulmus americana</i>	31	31	2.4	F		<10	Base 1/2 in gravel behind channel wall.
30	American Elm	<i>Ulmus americana</i>	32	32	2.4	F-P	G	<10	Base 1/2 in gravel behind channel wall, lean to water, branches leaning.
31	Basswood	<i>Tilia americana</i>	6	6	1.8	G	G	0	Large wound @ DBH.
32	Eastern White Cedar	<i>Thuja occidentalis</i>	23, 19	30	2.4	G	P	25-30	Riverbank Grape covers tree.
33	Green Ash	<i>Fraxinus pennsylvanica</i>	25	25	2.4	G	F	10	Wound above DBH.
34	White Birch	<i>Betula papyrifera</i>	7	7	1.8	G	G	0	Riverbank Grape at edge of channel.
35	White Birch	<i>Betula papyrifera</i>	9	9	1.8	G (F)	G	0	Riverbank Grape at edge of channel.
36	Basswood	<i>Tilia americana</i>	29, ~35, ~35	57	4.4	F	G	10	One ~35 cm DBH stem topped @ ~8m.
37	White Ash	<i>Fraxinus americana</i>	63	63	5.9	G	G	0	Vigorous.
Cedar Group 1	E. White Cedar hedgerow; ~50 stems	<i>Thuja occidentalis</i>	<10	<10	1.8	G	G	<10	
Cedar Group 1	Also contains 2 Manitoba Maple	<i>Acer negundo</i>	<10	<10	1.8	G	G	0	