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Canada-United States-Ontario-Michigan Border Transportation Partnership

Draft Practical Alternatives Evaluation Working Paper

Natural Heritage

July 2007
Version 1

EXECUTIVE SUMMARY

Assessing the project impacts on natural heritage features such as fisheries, vegetation, wildlife and designated natural areas is an important part of the Detroit River International Crossing (DRIC) Environmental Assessment. The analysis of natural heritage features entailed collection and review of existing information, personal communications with local experts and detailed, multi-season field investigations. An area of investigation (AOI) located within the area of continued analysis (ACA) was defined for each biological discipline based on the potential for displacement or disturbance effects.

VEGETATION AND VEGETATION COMMUNITIES

The DRIC study team investigated all vegetation communities located within the AOI to classify vegetation communities, inventory plants and confirm the presence/absence of species at risk.

How the Analysis was Done

Background information was obtained from the Ministry of Natural Resources (MNR), Essex Region Conservation Authority (ERCA) and local field naturalists. Field investigations were performed in April, May, June, July, August and October 2006, throughout the growing season. Vegetation communities were delineated on air photos and refined through ground truthing. The Ecological Land Classification (ELC) system was used to describe vegetation communities.

A plant survey was conducted in each vegetation community to identify composition, structure and function. Representative photographs were taken. Species at risk were identified in the field where possible or photographs or samples were taken for identification or verification purposes. The locations of species at risk were recorded using a Global Positioning System (GPS), where possible.

Results

Nine types of vegetation communities located in the AOI are considered provincially or globally rare. A total of 618 species of vascular plants were identified, 63 of which are considered provincially rare. Eight plant species are regulated as Endangered, Threatened or Special Concern in the schedules to the *Species at Risk Act* (SARA).

MOLLUSCS AND INSECTS

The DRIC study team screened the AOI and its vicinity for the presence/absence of rare molluscs and insects.

How the Analysis was Done

Secondary source data on molluscs and insects of the Windsor area was collected through literature searches, review of databases and personal communications with local experts. Background data collected was reviewed and compiled into two databases

(molluscs and insects). The scope of the investigation was limited to provincially rare species.

Results

Currently nine species of molluscs, including two classes of Mollusc phyla, the Mussels (Bivalves) and the Snails (Gastropods) are listed as Endangered and one as Threatened by the Committee on the Status of Wildlife in Canada (COSEWIC), and eight species are listed as Endangered by the Committee on the Status of Species at Risk in Ontario (COSSARO). There is the potential that these species may occur in the AOI, but no comprehensive field investigations have been conducted of the Windsor area. Several of these species likely occurred in the Detroit River historically. Data obtained from the MNR indicates that nine rare species of Bivalves and two rare species of Gastropods occur in the vicinity of the AOI.

Over 2055 species of insects have been reported from the Ojibway Prairie Complex. The Ojibway Prairie Complex and its vicinity is the only site for 16 Canadian species and 6 Ontario species records. It is one of a few sites for 37 Canada species and 29 Ontario species records. The insect, *Loxocera ojibwayensis*, is a small Psilidae fly (Diptera) that was discovered at the Ojibway Prairie, and it is the only known site in the world for this species. One-hundred-and-thirteen important species are known from the Ojibway Prairie Complex and its vicinity and an additional seven species of dragonflies (Odonata) potentially occur there as well. These 113 species are broken up into one species of Diptera (true flies), 22 species of Auchenorrhyncha Hemiptera (hoppers), 13 species of Heteroptera Hemiptera (true bugs), 41 species of Hymenoptera (bees and wasps), 17 species of Lepidoptera (moths and butterflies), 13 species of Odonata (damselflies and dragonflies), and six species of Orthoptera (grasshoppers, crickets and katydids). The Monarch is known to occur in the AOI and its vicinity; and it is regulated as Special Concern in Schedule 1 of SARA.

FISH AND FISH HABITAT

The DRIC study team investigated all watercourses and waterbodies located within the AOI to confirm the presence/absence of fish and fish habitat and species at risk.

How the Analysis was Done

Background information was obtained from the Department of Fisheries and Oceans Canada (DFO), MNR and ERCA. Field investigations were performed in May, September and October 2006. The fish community was investigated at 58 stations using backpack electrofishing equipment, minnow traps, dip nets or through direct observation. Fish habitat along 38 watercourse reaches was characterized and photographed. The Detroit River bed in the vicinity of the proposed piers was also videotaped using underwater video camera and sediment was sampled.

Results

Most watercourses in the AOI are designated as agricultural municipal drains and are altered by agricultural or urban development. No watercourses or waterbodies in the AOI support coolwater or coldwater fish communities, with the exception of the Detroit River. The Detroit River, Turkey Creek, Lennon Drain, McKee Creek and Cahill Drain directly

support warmwater sportfish communities (i.e. bass, sunfish, etc.). Remaining fish habitat supports warmwater baitfish communities (i.e. minnows, chubs, etc.). Many watercourses function as municipal agricultural drains and do not directly support fish habitat. No critical fish habitat or fish species at risk were identified in inland watercourses. Species at risk and their habitat is present in the Detroit River; however, no specialized habitat for species at risk is located in the vicinity of the proposed piers.

WILDLIFE AND WILDLIFE HABITAT

The DRIC study team investigated all wildlife habitats located in the AOI to identify important habitat for wildlife, inventory wildlife and confirm the presence/absence of species at risk.

How the Analysis was Done

Background information was obtained from the MNR, ERCA and local field naturalists. Field investigations were performed in March, April, May, June, July, August, September, October and November 2006 and February 2007. Wildlife habitat was delineated on air photos and refined through ground truthing. ELC was used to describe wildlife habitat, where appropriate.

Wildlife was identified through direct observation, vocalizations, tracks, scats and browse. One hundred and twenty point-count breeding bird surveys were performed at 60 stations. Species at risk were identified in the field and a photograph was taken for verification purposes. The locations of species at risk were recorded using a GPS, where possible.

Results

One hundred and twenty-four wildlife habitat units were identified in the AOI, many of which meet the criteria for "significance" in Ontario. A total of 139 wildlife species were recorded in the AOI including 11 reptiles and amphibians, 108 birds and 20 mammals. Breeding bird surveys identified a total of 50 species of breeding birds in the AOI. Red-headed Woodpecker, regulated as Special Concern in Schedule 3 of SARA, was confirmed breeding in the Brighton Beach area. Three eastern foxsnake and four Butler's gartersnake were recorded in the AOI. Both species are regulated as Threatened in Schedule 1 of SARA. Other Threatened, Schedule 1 SARA species known to occur in the Ojibway Prairie Complex, including eastern massasauga and eastern hog-nose snake, were not recorded in the AOI.

DESIGNATED NATURAL AREAS

The DRIC study team investigated all designated natural areas in the AOI and its vicinity.

How the Analysis was Done

Secondary source information on Areas of Natural and Scientific Interest (ANSI), Provincially Significant Wetlands (PSW), Environmentally Sensitive Areas (ESA), Provincial Nature Reserves, Candidate Natural Heritage Sites (CNHS), Carolinian Canada sites, Canadian Heritage Rivers and municipal land use designations was collected and reviewed to identify the location and type of designated natural areas.

Results

The Ojibway Prairie Provincial Nature Reserve is a 65 ha parcel that is regulated under the *Provincial Parks Act* to protect one of the largest remnants of tallgrass prairie and oak savannah in Ontario. The Ojibway Prairie Complex is a provincially significant life science ANSI that is comprised of the following areas: Ojibway Prairie Provincial Nature Reserve; Ojibway Park; Titcombe Road North; Spring Garden Road; Black Oak Woods; and, Prairie Remnants (Southeast of Nature Reserve). A total of five ESAs are located in the AOI and its vicinity including: Ojibway Prairie Complex (#3); Sandwich West Woodlot/Lasalle Woods (#18); Ojibway Black Oak Woods (#19); Spring Garden Road Prairie (#29); and, St. Clair College Prairie (#49). Three areas are designated as Natural Environment by the Town of LaSalle Official Plan, including: Southeast of the Nature Reserve ANSI; the Spring Garden Forest ANSI; and, the LaSalle Woods. Three areas are designated as Natural Heritage by the City of Windsor Official Plan, including: Ojibway Prairie Complex; Oakwood Bush and the eastern section of Malden Park; and, three areas are designated as Special Policy Area "A" including two areas of the Titcombe Road North ANSI, a section of the Spring Garden Forest ANSI and the St. Clair College Prairie ESA. A total of three CNHSs are identified in LaSalle and ten CNHSs are identified in Windsor. There are no PSWs located in the AOI. The Detroit River is designated as a Canadian Heritage River.

EVALUATION OF PRACTICAL ALTERNATIVES

The natural heritage discipline conducted an evaluation of seven crossing and plaza combinations and 18 access road combinations. The evaluation was conducted using five criteria:

- Impacts to ecological landscapes located in the right-of-way (ROW);
- Impacts to terrestrial communities/ecosystems located in the ROW;
- Impacts to aquatic communities/ecosystems located in the ROW;
- Impacts to species/population at risk located in the ROW; and,
- Impacts to designated natural areas located on adjacent lands within 120 metres of the ROW.

Indicators were used, where appropriate, to measure the number, area, type and significance of natural heritage features.

An arithmetic evaluation was conducted using the simple additive weighting method. Weights were assigned to criteria and indicators to reflect their level of importance. The results of the arithmetic evaluation were reviewed against the original data to ensure that the numerical results could be supported through reasoned argument. The evaluation of the practical alternatives using natural heritage criteria resulted in the identification of preferred plazas, crossings and access roads.

Plazas and Crossings

- The most preferred crossing and plaza is Crossing C to Plaza C. Crossing C to Plaza C is most preferred because it avoids the natural heritage features associated with the Brighton Beach area and the area north of Chappus Road. Crossing A to Plaza A

is least preferred because it will displace natural heritage features located in the Brighton Beach area and the area north of Chappus Road.

- Plaza B1 from Crossing C has the greatest potential to disturb designated natural heritage features located on adjacent lands, due to its close proximity to the Black Oak Woods ANSI/ESA.
- The alternatives involving Plaza A are least preferred, with the exception of Plaza A from Crossing C through C-G (Ojibway Parkway) which is the second most preferred alternative because it avoids the Brighton Beach area.
- An impact score of "3" (low impact) was assigned to Crossing C to Plaza C; an impact score of "2" (moderate impact) was assigned to Crossing C to Plaza A through C-G, Crossing C to Plaza B and Crossing B to Plaza B1; and, an impact score of "1" (high impact) was assigned to Crossing C to Plaza A through C-E-G, Crossing B to Plaza A and Crossing A to Plaza A.

Access Roads

- There is no significant difference among access roads based on vertical profile (i.e. at grade (Alternative 1), depressed (Alternative 2) or tunnel (Alternative 3)) Any advantages gained with a tunnel are negated by the increased complexity and risk to surface water, groundwater and adjacent natural heritage features.
- All access roads that connect Plaza B or C with the existing Highway 401 are preferred to access roads that connect Plaza A with the existing Highway 401 because they result in less displacement of rare vegetation communities in the Malden Road area.
- An impact score of "3" (low impact) was assigned to all access roads that connect Plaza B or C with the existing Highway 401 and an impact score of "2" (moderate impact) was assigned to all access roads that connect Plaza A with the existing Highway 401.

Environmental Protection Measures

All crossings, plazas and access roads will result in the displacement of provincially rare vegetation communities, wildlife habitat and species at risk. Since total avoidance cannot be achieved, environmental protection measures will be required to address the impacts of displacement and disturbance on natural heritage features.

Provincially Rare Vegetation Communities

The goal of the DRIC study team is to maintain no net loss of the area or function of provincially rare vegetation communities, including tallgrass prairies. Several mitigation strategies are available to compensate for the loss of provincially rare vegetation communities including, in order of preference: enhance existing natural remnants; enlarge existing natural remnants; and, establish new tallgrass prairie communities.

Species at Risk

The proposed facility will result in the loss of plant and animal species and their habitat that are provincially rare, listed by COSEWIC and COSSARO, or regulated under SARA. The DRIC study team will consider opportunities to avoid, integrate, or salvage and relocate plant species at risk to the extent possible. The success rate for capture and

relocation of Butler's gartersnake or eastern foxsnake is unknown. Management strategies for species at risk will be discussed with regulatory agencies and comply with species at risk legislation.

Groundwater

Groundwater is known to play an important role in sustaining tallgrass prairie communities. The tallgrass prairie communities are sustained by the surficial sand, silt and fill layer (surface aquifer) that is saturated by rainfall. Creating permanent, open, and depressed highways within the native clays using slopes or supported with retaining walls (that do not cut off groundwater pressure gradients from adjacent higher grades) will result in a permanent lowering of the groundwater level within the clay soils. It is anticipated that if low permeability in situ walls (e.g. contiguous caisson walls or concrete diaphragm walls) are used for excavation support or for permanent below grade structures, that the influence of the excavation on near-surface groundwater would be minimal. As a result, no changes to the composition or structure of the tallgrass prairies are anticipated if cut-off walls are used.

Surface Water

A depressed or tunnel highway profile along the access route will require alteration of these surface water features through diversion, enclosure, siphoning or aquaducting depending on the characteristics of the watercourse and the depth of the highway below existing grades. Any harmful alteration of these watercourses is subject to the requirements of the *Fisheries Act*. Since none of these watercourses directly support critical fish habitat, the full suite of environmental protection options, including fish habitat compensation to maintain no net loss of the productive capacity of fish habitat, are available.

REMAINING ACTIVITIES

The evaluation of crossings, plazas and access roads by the natural heritage discipline will be incorporated into the multi-disciplinary evaluation of practical alternatives. A site-specific impact assessment will be performed and environmental protection measures will be identified once a technically preferred alternative is selected. No additional field investigations are proposed at this time.

PREFACE

The Detroit River International Crossing (DRIC) Environmental Assessment Study is being conducted by a partnership of the federal, state and provincial governments in Canada and the United States in accordance with the requirements of the *Canadian Environmental Assessment Act* (CEAA), the *Ontario Environmental Assessment Act* (OEAA), and the U.S. *National Environmental Policy Act* (NEPA). In 2006, the Canadian and U.S. Study Teams completed an assessment of illustrative crossing, plaza and access road alternatives. This assessment is documented in two reports: *Generation and Assessment of Illustrative Alternatives Report - Draft (November 2006)* (Canadian side) and *Evaluation of Illustrative Alternatives Report (December 2006)* (U.S. side). The results of this assessment led to the identification of an Area of Continued Analysis (ACA) as shown in Exhibit 1.

Within the ACA, practical alternatives were developed for the crossings, plazas and access routes alternatives. The evaluation of practical crossing, plaza and access route alternatives is based on the following seven factors:

- Changes to Air Quality
- Protection of Community and Neighbourhood Characteristics
- Consistency with Existing and Planned Land Use
- Protection of Cultural Resources
- Protection of the Natural Environment
- Improvements to Regional Mobility
- Cost and Constructability

This report pertains to the Protection of the Natural Environment factor and is one of several reports that will be used in support of the evaluation of practical alternatives and the selection of the technically and environmentally preferred alternative. This report will form a part of the environmental assessment documentation for this study.

Additional documentation pertaining to the evaluation of practical alternatives is available for viewing/downloading at the study website (www.partnershipborderstudy.com).

Practical Alternatives Evaluation Working Paper

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1.0 INTRODUCTION

The Ontario *Environmental Assessment Act* (OEAA) and the *Canadian Environmental Assessment Act* (CEAA) require assessment of all aspects of a project on the environment. The role of the natural heritage discipline in the Detroit River International Crossing Study is to assess the environmental effects of crossings, plazas and access roads on the biophysical environment. Input is provided during site and route selection, preliminary design, detail design and construction to avoid, minimize or mitigate the potential effects of the project on natural heritage.

"Protection of the natural environment" is one of seven factors being used to evaluate practical alternatives in the Detroit River International Crossing Study. This Working Paper presents the data and analysis of the practical alternatives, as it pertains to natural heritage, and provides a starting point to assess the environmental effects of the technically preferred alternative. Additional work will be undertaken later in the study to complete the assessment of effects, and to identify mitigation measures that may be required to eliminate or reduce the effects. This additional work, together with the information in this report, will also lay the foundation for meeting the requirements of CEAA. The specific requirements of CEAA, and the manner in which these requirements are being coordinated in this study, are outlined in the Federal Environmental Assessment Guidelines that have been prepared for this project and are available on the project website.

Natural heritage is defined in Ontario as:

> "features and areas, including significant wetlands, significant coastal wetlands, fish habitat, significant woodlands, significant valleylands, significant habitat of endangered and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscapes of an area" (OMMAH 2005).

The natural heritage discipline is guided by government legislation, regulations, policies and guidelines within federal, provincial and municipal jurisdictions. The major impetus for the natural heritage investigation includes:

- *Canadian Biodiversity Strategy;*
- Canada *Fisheries Act;*
- Canada *Species at Risk Act;*
- Canada *Migratory Birds Convention Act;*
- Canada *Wildlife Act;*
- *Canadian Federal Policy on Wetland Conservation;*
- *Ontario Biodiversity Strategy;*
- Ontario *Endangered Species Act;*
- Ontario *Fish and Wildlife Conservation Act;*
- *Ontario Water Resources Act;*
- Ontario *Planning Act* and the *Provincial Policy Statement;*

- Ontario *Conservation Authorities Act; and*
- *Implementation Strategy: Areas of Natural and Scientific Interest.*

As outlined in the Natural Heritage Work Plan (Border Transportation Partnership 2005), consideration of natural heritage is incorporated into all four stages of the site and route selection process. The purpose of natural heritage input at each step is described below.

Preliminary Analysis Area

To profile the natural heritage areas and features located in the Preliminary Analysis Area and identify opportunities for and constraints to facility siting.

Illustrative Alternatives

To evaluate on a comparative basis the natural heritage areas and features influenced by illustrative alternatives, including crossings, plazas and access roads to contribute to the identification of practical alternatives.

Practical Alternatives

To evaluate on a comparative basis the natural heritage areas and features influenced by practical alternatives including crossings, plazas and access roads to contribute to the identification of conceptual alternatives.

Conceptual Alternatives

To evaluate on a comparative basis the natural heritage areas and features influenced by conceptual alternatives including crossings, plazas and access roads to contribute to the identification of the technically preferred alternative.

The natural heritage discipline also assesses the significant adverse effects of the technically preferred alternative on natural heritage and identifies environmental protection measures.

At each stage of the study process, similar tasks occur. These tasks include:

Task 1 – Define Area of Investigation

Identify the study area for the purposes of investigating the potential effects of the project.

Task 2 – Data Collection

Identify the type, source, level of detail and methods to be used to obtain information.

Task 3 – Data Analysis

Identify how the information will be interpreted to determine the significance and sensitivity of natural heritage features.

Task 4 – Evaluate Alternatives

Identify the natural heritage criteria and indicators that will be used to compare alternatives.

Task 5 – Conduct Impact Assessment

Identify the range of potential environmental effects to be assessed.

Task 6 – Recommend Environmental Protection Measures

Identify the range of potential environmental protection measures to be assessed. Environmental protection measures typically include avoidance, minimization, mitigation, compensation and monitoring.

These tasks are summarized for each stage of the study process in Table 1. This Practical Alternatives Evaluation Working Paper presents the results of each task of the natural heritage investigation for the evaluation of practical alternatives.

Task 2, Data Collection, identified in Table 1 was revised for the evaluation of practical alternatives. The original approach was to conduct preliminary, single-season pedestrian surveys for each practical alternative and detailed, multi-season pedestrian surveys for each conceptual alternative. However, to accommodate an entire year of field investigations within the project schedule, detailed, multi-season pedestrian surveys were performed at the practical alternatives stage. This modification had no influence on the natural heritage investigation other than a much broader area was investigated at a greater level of detail than originally anticipated.

TABLE 1.
NATURAL HERITAGE INVESTIGATION BY STUDY STAGE

Study Stage[1]	Ecological Analysis Level	Task 1 Define Area of Investigation	Task 2 Data Collection	Task 3 Data Analysis	Task 4 Evaluate Alternatives	Task 5 Impact Assessment	Task 6 Environmental Protection Measures
Stage 1 – Define Study Area	Ecodistrict - 1:250,000 scale	Preliminary Analysis Area	• Secondary source • Air photo interpretation	Identify designated/ regulated natural heritage features to determine national, provincial, regional and local significance.	• Avoid, where feasible, designated/regulated natural heritage features located within Preliminary Analysis Area.	Opportunities/ Constraints Analysis	• Avoidance
Stage 2 – Illustrative Alternatives	Ecosection - 1:100,000 scale	Illustrative routes, plazas, plaza extensions and crossings rights-of-way, footprints and adjacent zones of influence	• Secondary source • Air photo interpretation • Windshield/ aerial surveys	Identify designated/ regulated natural heritage features to determine national, provincial, regional and local significance.	• Compare potential loss of designated/regulated natural heritage features located within rights-of-way and footprint areas (extent, significance). • Compare potential disturbance to designated/regulated natural heritage features located within adjacent zones of influence (extent, significance).	Opportunities/ Constraints Analysis	• Avoidance
Stage 3 – Practical Alternatives	Ecosite - 1:10,000 scale	Practical routes, plazas, plaza extensions and crossings rights-of-way, footprints and adjacent zones of influence	• Secondary source • Air photo interpretation • Preliminary single season pedestrian surveys	Identify landscapes, ecosystems/communities and populations/species to determine national, provincial, regional and local significance and sensitivity to impacts.	• Compare potential loss of terrestrial and aquatic landscapes, ecosystems/communities and populations/species located within rights-of-way and footprint areas (extent, type, significance, sensitivity). • Compare potential disturbance to terrestrial and aquatic landscapes, ecosystems/communities and populations/species located within adjacent zones of influence (extent, type, significance, sensitivity).	Generic Impacts	• Avoidance • Minimization • Generic mitigation

TABLE 1.
NATURAL HERITAGE INVESTIGATION BY STUDY STAGE

Study Stage[1]	Ecological Analysis Level	Task 1 Define Area of Investigation	Task 2 Data Collection	Task 3 Data Analysis	Task 4 Evaluate Alternatives	Task 5 Impact Assessment	Task 6 Environmental Protection Measures
Stage 4 – Concept Design Alternatives	Ecoelement - 1:1,000 scale	Concept design routes, plazas, plaza extensions and crossings rights-of-way, footprints and adjacent zones of influence	• Secondary source • Air photo interpretation • Detailed multi-season pedestrian surveys	Identify landscapes, ecosystems/communities and populations/species to determine national, provincial, regional and local significance and sensitivity to impacts.	• Compare potential loss of terrestrial and aquatic landscapes, ecosystems/communities and populations/species located within rights-of-way and footprint areas (extent, type, significance, sensitivity). • Compare potential disturbance to terrestrial and aquatic landscapes, ecosystems/communities and populations/species located within adjacent zones of influence (extent, type, significance, sensitivity).	Conceptual Site-Specific Impacts	• Avoidance • Minimization • Conceptual site-specific mitigation, compensation and monitoring

[1] Detail Design is not currently included in the Detroit River International Crossing Route Planning and Environmental Assessment Study

2.0 PRACTICAL ALTERNATIVES

A total of three crossings, three plazas and five access roads were generated within the Area of Continued Analysis (ACA). A variation on Plaza B was generated and identified as Plaza B1. The combination of crossings and plazas resulted in the generation of seven potential crossing and plaza alternatives. A number of variations on access roads were also generated resulting in a total of 18 potential access roads to connect existing Highway 401 with Plazas A, B/B1 and C. The ACA is presented in Figure 1.

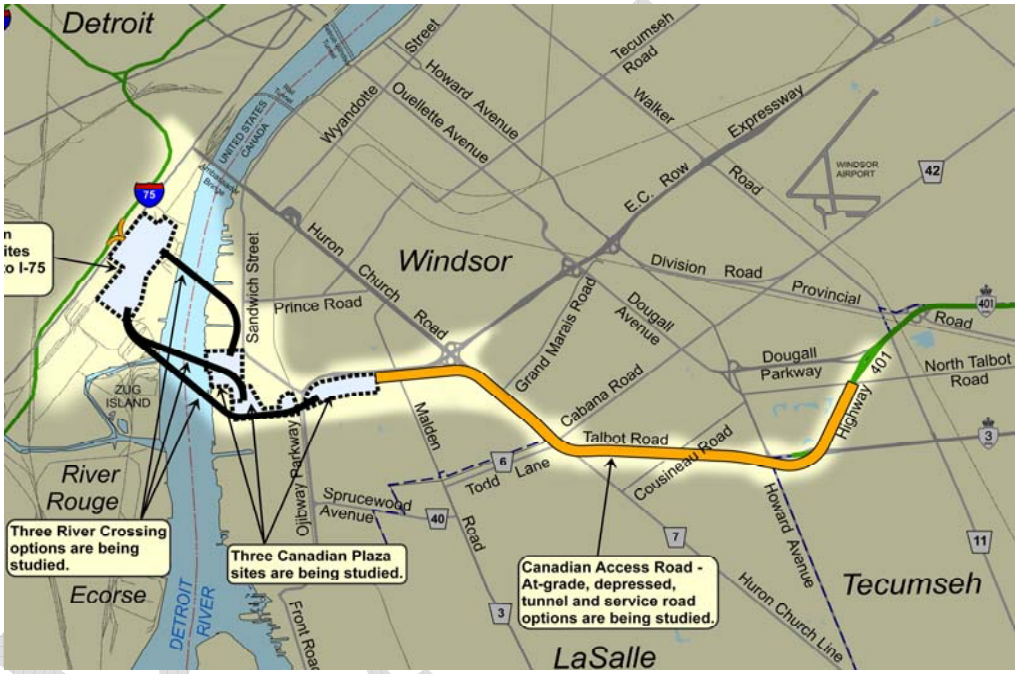


FIGURE 1. KEY PLAN OF THE AREA OF CONTINUED ANALYSIS

2.1 Area of Investigation

The area of investigation (AOI) is specific to each biological discipline (i.e. vegetation, fisheries, wildlife, etc.) and is based on the level of detail of secondary source information, the area of influence of the project and the level of effort required for field investigations.

2.1.1 Vegetation and Vegetation Communities

The AOI for vegetation and vegetation communities includes all lands located within the maximum footprint area of the combined practical alternatives and adjacent lands located within 120 m of the right-of-way. This area corresponds approximately with the ACA.

2.1.2 Molluscs and Insects

The AOI for molluscs and insects includes the ACA and its vicinity.

2.1.3 Fish and Fish Habitat

The AOI for fish and fish habitat includes the ACA. Benthic invertebrates were surveyed at several stations located within the ACA and its vicinity.

2.1.4 Wildlife and Wildlife Habitat

The AOI for wildlife and wildlife habitat includes all lands located within the maximum footprint area of the combined practical alternatives and adjacent lands located within 120 m of the right-of-way. This area corresponds approximately with the ACA.

2.1.5 Designated Natural Areas

The AOI for designated natural areas includes the ACA and its vicinity.

2.2 Data Collection

The methods for data collection are specific to each biological discipline. Data was collected from secondary source information, personal communications and detailed, multi-season field investigations.

2.2.1 Vegetation and Vegetation Communities

The geographical extent, composition, structure and function of vegetation communities were identified through air photo interpretation and field investigations. Air photos were interpreted to determine the limits and characteristics of vegetation communities. In the office, a coding system was used to identify each polygon according to its general location. These polygons were confirmed, refined and classified through field investigations. Data collection sheets, including a checklist of vascular plants likely to occur in the AOI and vegetation community forms, were prepared in the office for completion in the field. Botanical inventories prepared previously for Areas of Natural and Scientific Interest (ANSIs), Environmentally Sensitive Areas (ESAs), Evaluated Wetlands and Candidate Natural Heritage Sites (CNHSs) were reviewed to familiarize the botanists with floral composition of the AOI and to assist with field identification. Information collected in the field was transcribed and verified in the office.

Field investigations of natural/semi-natural vegetation were conducted by LGL Limited on: April 17-21, 2006; May 15-19, 2006; June 12-16, 2006; July 24-28, 2006; August 21-24, 2006; and, October 2-6, 2006. Field crews typically consisted of two to four botanists working in tandem. Vegetation communities were surveyed several times throughout the year to capture the optimal growing season for the flora present.

Vegetation communities were classified according to the *Ecological Land Classification (ELC) for Southern Ontario: First Approximation and Its Application* (Lee *et al.* 1998). The vegetation communities were sampled using a plotless method for the purpose of determining general composition and structure of the vegetation. Plant species status was reviewed for Canada (Committee on the Status of Endangered Wildlife in Canada

(COSEWIC) 2006), Ontario (Committee on the Status of Species at Risk in Ontario (COSSARO) 2006) and for Essex County (Oldham 1993). Vascular plant nomenclature follows Newmaster *et al.* (1998), with a few exceptions.

Every attempt was made to identify vascular plants in the field. Where a conclusive identification could not be made in the field, plant material was collected for examination in the laboratory. A GPS unit was used to record the location of species at risk whose identify could be confirmed in the field. Many species at risk and representative vegetation communities were also photographed for verification purposes.

2.2.2 Molluscs and Insects

The mollusc and insect investigation is based on secondary source information collected in 2006 through literature searches, review of databases and personal communications with local experts. Data was requested and obtained via email, fax, letter, personal communications, and from published and unpublished literature. The following organizations were contacted directly for data:

- Department of Fisheries and Oceans Canada – Sarnia District Office and Burlington District Office (Great Lakes Laboratory for Fisheries and Aquatic Sciences);
- Environment Canada – Karner Blue Recovery Team;
- Ontario Ministry of Natural Resources – Natural Heritage Information Centre (NHIC), Peterborough and Chatham Area Office;
- Essex Region Conservation Authority;
- Ojibway Nature Centre;
- Toronto Entomology Association (Ontario Insects);
- Toronto Zoo;
- University of Guelph – insect collection, and entomology and mollusc researchers; and
- University of Windsor – fisheries and mollusc researchers.

Background data collected was reviewed and compiled into two databases (molluscs and insects), since all of the data received related to these two invertebrate groups. Nomenclature and taxonomy follows the University of Guelph Insect Collection Ojibway Prairie Species List, recent journal articles and the NHIC.

Federal and provincial rankings administered by COSEWIC and COSSARO were considered during the species review. Due to the lack of evaluations of invertebrate species by COSEWIC and COSSARO, "S-ranks" were also considered during the investigation as many more invertebrates have received an S-rank. S-ranks are a ranking system for a species status in Ontario and are also applied by the NHIC. Species with an S-rank of S1 to S3 are considered extremely rare, very rare or rare within the province and were used to limit the scope of the investigation.

2.2.3 Fish and Fish Habitat

All watercourses/waterbodies located within the AOI were investigated to determine the presence/absence of fish habitat and the characteristics of the fish community present. Field investigations were conducted by LGL Limited on: May 3-5, 2006; September 18-21, 2006; and, October 5, 2006.

The fish community was surveyed by visual observation or by fish collections using a backpack electrofishing unit, dip net or minnow trap at a total of 58 stations. The location of sampling stations is presented in Figure 2 and described in Table 2. Prior to field investigations, a Permit to Collect Fish for Scientific Purposes was obtained from the MNR Area Office in Chatham and the Department of Fisheries and Oceans was contacted to determine if a Species at Risk Permit was required. All fish captured were identified in the field or preserved in alcohol for laboratory identification.

Fish habitat was characterized along each stream reach located within the AOI. Stream reaches were delineated using the boundary of the ACA, road or highway crossings or the confluence with another watercourse. The habitat survey was carried out following the MTO Environmental Manual - Fisheries (MTO 1994), the Draft Environmental Reference for Highway Design (MTO 2002) and in accordance with the MTO/MNR Fisheries Protocol (1993). Physical features were surveyed in sufficient detail to enable mapping and identification of key habitat types. The physical habitat attributes assessed included:

- Stream dimensions and flow conditions;
- Water quality, including conductivity, pH , temperature and water colour;
- Stream morphology;
- Groundwater discharge areas;
- Substrate characteristics;
- Stream bank stability;
- In-stream cover;
- Riparian vegetation;
- Stream canopy cover;
- Stream gradient;
- Macrophytic (aquatic) vegetation;
- Instream barriers to fish movement;
- Critical habitats; and
- Potential fish habitat compensation measures.

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Benthic Sampling Station
- Fish Sampling Station
- Bird Point-Count Survey Station

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

BENTHIC, FISH, AND BIRD POINT-COUNT SURVEY STATIONS

LGL Limited
environmental research associates

Project:	TA4137	**Figure:**	2
Date:	February 2007	**Prepared By:**	MWF
Scale:	1 : 35,000	**Checked By:**	GNK

TABLE 2.
FISH SAMPLING STATIONS

Station No.	GPS Coordinates	Drains	Habitat
1	0328333 4684598	Large Bay	Fish habitat
2	0328042 4683627	McKee Creek	Fish Habitat
3	0327835 4683101	Ditch	Not Fish Habitat
4	0327675 4682830	Healy Drain	Not Fish Habitat
5	0327582 4682648	Healy Drain	Seasonal Fish Habitat
6	0327120 4682805	Healy Drain	Seasonal Fish Habitat
7	0327060 4682524	Broadway Drain	Seasonal Fish Habitat
8	0327564 4682464	Healy Drain	Not Fish Habitat
9	0327433 4682299	Broadway Drain	Not Fish Habitat
10	0327491 4682145	Pond	Not Fish Habitat
11	0328028 4682098	Broadway Drain	Not Fish Habitat
12	0328099 4682253	Healy Drain	Not Fish Habitat
13	0328421 4681784	Susan Drain	Not Fish Habitat
14	0328591 4681910	NoName Drain	Not Fish Habitat
15	0328976 4681555	Susan and NoName	Not Fish Habitat
16	0328467 4682497	McKee Creek	Fish Habitat
17	0328823 4682421	McKee Drain	Fish Habitat
18	0329205 4682444	McKee Drain	Fish Habitat
19	0329110 4682267	McKee Drain	Fish Habitat Downstream Only
20	0329305 4682215	McKee Drain	Not Fish Habitat
21	0329696 4681545	Titcombe Drain	Seasonal Fish Habitat
22	0330185 4682207	Vernal pool	Not Fish Habitat
23	0329759 4681811	Titcombe Drain	Seasonal Fish Habitat
24	0330594 4681942	Basin Drain	Not Fish Habitat
25	0330569 4681911	Basin Drain	Not Fish Habitat
26	0330562 4681875	Basin Drain	Fish Habitat
27	0331273 4681458	Youngstown Drain	Seasonal Fish Habitat
28	0330924 4681537	Youngstown Drain	Seasonal Fish Habitat
29	0330822 4681556	Youngstown Drain	Seasonal Fish Habitat
30	0330700 4681553	Basin Drain	Fish Habitat
31	0330714 4681496	Basin and Youngstown	Fish Habitat
32	0330778 4681487	Youngstown Drain	Seasonal Fish Habitat
33	0330352 4681030	Basin Drain	Fish Habitat
34	0331391 4681255	Marentette Drain	Not Fish Habitat
35	0331082 4680897	Marentette Drain	Not Fish Habitat
36	0331256 4680379	Marentette and Turkey	Not Fish Habitat
37	0330880 4680589	Wetland	Not Fish Habitat
38	0331652 4680693	Turkey Creek	Fish Habitat
39	0331543 4680078	Standing water	Not Fish Habitat
40	0332332 4679259	Lennon Drain	Fish Habitat
41	0332477 4678862	Cahill Drain	Fish Habitat
42	0332915 4678928	Cahill and Talbot	Fish Habitat
43	0333348 4678533	Talbot Drain	Not Fish Habitat
44	0335132 4676696	Howard Ave, Noname, Dickson	Not Fish Habitat
45	0335166 4676667	Burke, NoName	Not Fish Habitat

TABLE 2.
FISH SAMPLING STATIONS

Station No.	GPS Coordinates	Drains	Habitat
46	0335467 4676542	Dickson, Benson	Fish Habitat
47	0335900 4677241	Burke Drain	Fish Habitat
48	0336718 4677364	Collins Drain	Seasonal Fish Habitat
49	0336309 4677566	Collins and Wolfe	Fish Habitat (Wolfe)
50	0336072 4677640	NoName	Not Fish Habitat
51	0335714 4677723	Wolfe Drain	Fish Habitat
52	0335269 4677923	NoName and Wolfe	Fish Habitat (Wolfe)
53	0334095 4678714	Cahill Drain	Fish Habitat
54	0333789 4678642	Cahill and Wolfe	Fish Habitat
55	0333191 4678972	Cahill and Wolfe	Fish Habitat
56	0332540 4679315	Lennon Drain	Fish Habitat
57	not recorded	pond	Fish Habitat
58	not recorded	McKee Creek	Fish Habitat

Data was recorded in the field using the standard MTO Field Collection Record forms and representative photographs were taken.

In addition, benthic samples were collected from six stations in the AOI (Stations 3 and 9) and its vicinity (Stations 1, 4, 5 and 6). Stations 2, 7 and 8 are located on watercourses located outside the AOI. The location of benthic sampling stations is presented in Figure 2. Samples were collected on March 9, 2005 (Stations 1 and 3), and March 10, 2005 (Station 4, 5, 6, and 9) using the traveling kick and sweep transect method. Three samples were taken at each station, two from riffles and one from a pool. Benthic organisms from each transect were identified separately and then replicate samples from each station were combined to achieve sufficient populations for analysis.

A habitat and substrate survey of the Detroit River at the locations of the proposed bridge piers in Canadian waters was conducted on October 5, 2006 using an underwater video camera and Ekman dredge. At each pier location, a SeaViewer underwater camera was deployed over the side of the boat and data recorded to a hand-held video recorder. GPS coordinates along transects were recorded simultaneously through a feature on the video camera system. The captain of the boat controlled the drift speed with an electric trolling motor. Several drifts were made at the southern bridge pier and one at the northern bridge pier. Data were recorded to the digital video tape in the hand held camcorder and transferred to DVD at a later time. Once all of the video runs were completed at the sites, the substrate was investigated using an Ekman dredge.

2.2.4 Wildlife and Wildlife Habitat

The purpose of the field investigations was to document wildlife habitat and wildlife occupation and to characterize the nature, extent and significance of animal usage within the AOI. Existing information on wildlife species previously found within the AOI came from various sources. The Ontario Herpetofaunal Summary Database of the Natural Heritage Information Center (NHIC) provided amphibian and reptile lists, locations and status. The Ontario Breeding Bird Atlas (OBBA) program provided up-to-date lists of birds breeding within specific areas of Ontario while information from The Conservation

Priorities for the Birds of Southern Ontario provided lists of migratory bird species in Essex County designated as species for habitat protection by local municipalities. It also ranks bird species highly sensitive to disturbances of their breeding habitats. The Atlas of the Mammals of Ontario provided locations of species found in Essex County. More specific information about wildlife previously documented around the AOI came from communications with personnel from the Ontario Ministry of Natural Resources and the Ojibway Prairie Nature Center in Windsor.

Wildlife habitat was delineated on air photos and refined through ground-truthing. The Ecological Land Classification (ELC) system was used to describe wildlife habitat, where appropriate. In many cases, similar wildlife habitat polygons were combined into a single polygon to reduce duplication, while in others cases new wildlife habitat polygons were delineated in areas not classified according to ELC. For this reason, the wildlife habitat polygons do not correspond exactly with the vegetation community polygons. Several areas, including factories, retail outlets and residential areas with high density could not be accessed or do not support wildlife habitat; hence, these areas were not investigated. The methods described in the Significant Wildlife Habitat Technical Guide (MNR 2000) were used to establish the significance of wildlife habitat.

Methods used to collect in-field information were tailored to each vertebrate class (ie. amphibians, reptiles, birds and mammals). Once the specific wildlife units within the AOI were mapped and the methods of investigation were established, diurnal and nocturnal investigations took place. Data was collected by a field crew of one or two biologists working in tandem using aerial photo maps, a GPS unit, binoculars, cameras, a headlamp, field notebooks and a laptop computer. Field investigations were conducted on: April 12-14 and 18-21, 2006; May 1-4, 2006; June 4-7, 11-16, 18-24 and 29-30, 2006; July 1, 2006; September 17-21, 2006; November 22-23, 2006; and, February 21-23, 2007.

Herpetofauna (reptiles and amphibians) were inventoried using the Visual Encounter Survey (VES) method (Heyer, et al. 1994). Data was collected by simply searching for animals in a likely habitat at a likely time. Reptile investigations started in late spring and early summer after species came out of their hibernacula. Following the VES methodology, early morning searches for snakes in suitable habitats included flipping over rocks, logs, boards, shingles or any material snakes would hide under through the night. From mid to late morning, rocks, logs and ashphalt pathways, used for basking areas, were also investigated. By the afternoon, searches turned to habitats considered as snake hunting and feeding areas, like cultural meadows and areas in and around wetlands. Also, sheets of wood, laid out in different habitats to attract snakes for use as cover and warmth, were checked in the morning and late afternoons for activity. Turtles were found by investigating their potential habitats, like creek drains or ponds, and observing them basking on logs in ponds during late mornings, swimming on the bottom of ponds in search of food or crossing over roads and pathways when moving from pond to pond during the day.

For amphibians, in the spring and early summer season when frog and toad activity was at its peak, nightly road cruises by vehicle and breeding call surveys were employed. By identifying frog and toad breeding calls during evening road cruises, locations of important breeding areas were found. Daytime searches of wetlands, identified as potential amphibian breeding areas, were also made. After the breeding season, wetlands were searched for amphibian egg masses and/or tadpoles to identify any frog or toad species found in these locations.

Prior to conducting bird surveys, aerial photos of the AOI and its surroundings were checked to see if there were areas of continuous forests, cultural thickets, etc. that could potentially be used as spring and fall migration corridors. These maps were also used to determine where preferred nesting habitats could exist during the breeding season. Any potential areas were then ground-truthed by simply observing and recording species in chosen habitats at the right time of year. During the spring and fall seasons, specific habitats throughout the AOI were monitored for areas of large bird movements and stopover points.

Two inventory methods were used to determine the breeding bird composition and locations of breeding activity in the AOI: the point-count method (Ralph et al. 1995; Bibby et al. 1997); and, nest surveys. Due to the large size of the AOI and the need to represent as many of the habitats as possible, non-random locations were selected for point-counts. These specific locations, selected in areas that maximized the amount of habitats covered per count, increased the number of species recorded in as short of time as possible. Each point-count station was recorded using a hand-held GPS unit. A total of 60 point-count stations were censused twice, a minimum of seven days apart, for a total of 120 point-count surveys. The locations of the point-count survey stations are shown in Figure 2. Point-counts were started 30 minutes before dawn and stopped by 0900 to 0930 hours. Five minutes of suitable bird observation and bird call listening times were standard per station (time increased to 10 minutes in areas of high environmental noise such as traffic or industrial activities). Station locations were at least 125 m or more apart to prevent bird identification overlap. The criteria of the BBA breeding bird survey was used for identifying breeding bird behaviour (eg. carrying food to young, territorial song, etc.) as evidence of birds breeding within a location. Evening spot checks were also made in habitats considered to have owl species. Tape recordings of owl calls were played to induce a response for species identification.

The second method used to identify species composition consisted of a nest survey performed in the summer and fall seasons. This was undertaken as a secondary method of data collection to determine breeding bird occurrence in particular habitats. In the summer season, most nests were located by focusing on the breeding behaviour of particular bird species. Early morning observations of female returning to their nests after morning forages were used to identify their nest location. Observations of other behavioural signals (eg. carrying nest-building materials, copulations, territorial disputes, etc.) were used to lead an observer to areas of high nest probability or directly to the nest itself. In the fall season, when breeding season was over and tree foliage disappeared, clumps of structured grasses in trees or fecal deposits under tree nest holes were used to identify nests. Nest locations were recorded and habitat types noted.

Mammals were inventoried using a variety of methods, such as the identification of tracks, trails, sounds, scats, smells and individual species behavioral signs, such as plant cuttings, nest sites, lodges, etc. (Wilson et al. 1996). As many habitats as possible were searched using the VES method. The investigatior simply walked through an area searching for mammals using the variety of methods mentioned above. Evening road cruises by vehicle were made to spot mammals crossing roadways. Early morning walks just before sunrise and late afternoon walks just before dark were also made to catch mammal movements to and from their daytime haunts. These investigations were repeated in the same wildlife areas more than once to increase the accuracy of the species composition recorded. Species locations and the habitats they were sighted in were recorded. Daily mammal movement corridors which showed important connections between habitats were also recorded. Bats however, being volant mammals of the night, were difficult to identify in the field without the proper equipment. Since high frequency

bat detectors were unavailable, secondary source information was relied upon to determine the species present in the AOI.

Any species at risk found in the field had its location recorded with a GPS unit and a photograph taken for verification, where possible. Data collected in the field from each of the vertebrate class investigations was transferred into a laptop computer on a daily basis. Field note observations, GPS coordinates and photographs were downloaded into wildlife tables for future analysis. This data was analysized and used to determine the locations of sensitive habitats in the AOI.

2.2.5 Designated Natural Areas

Information on designated natural heritage areas was derived from the secondary sources consulted during the preparation of the Environmental Overview Report (Border Transportation Partnership 2005). The information contained in the Environmental Overview Report was reviewed, updated and augmented to reflect the revised AOI.

2.3 Data Analysis

2.3.1 Vegetation and Vegetation Communities

2.3.1.1 Vegetation Species

A total of 618 vascular plant taxa were recorded in the AOI. One-hundred and eighty-six taxa or 30 percent of the recorded flora are considered introduced and non-native to Ontario. Sixty-three species are considered Extremely Rare, Very Rare or Rare within the province (S1-S3) and eight are regulated under the federal *Species at Risk Act*. The acronyms and definitions used to assign global, federal and provincial importance to species are presented in Appendix A. A list of vascular plants identified in the AOI is presented in Appendix B.

2.3.1.2 Vegetation Communities

Vegetation communities located in the AOI consist primarily of recently disturbed communities, including Cultural Woodlands (CUW1), Cultural Meadows (CUM1-1), Cultural Thickets (CUT1) and Cultural Savannahs (CUS1). In the past, these areas would have been dominated by a mixture of tallgrass prairie and natural savannah. As a result of anthropogenic influences, there has been a reduction in the frequency of fire, and an increase in agricultural activities and urban development. Non-prairie herbaceous plant species have invaded and now dominate the meadows and ground cover. Woody species have increased due to the lack of fire and now dominate in the form of CUW1, CUT1 and CUS1 communities. Despite the influence that humans have had on the composition and structure of the vegetation communities located within the AOI, remnant patches of Tallgrass Prairie (TPO2-1) exist on the periphery of the Ojibway Prairie Complex. The location of vegetation communities is presented in Figure 3. A detailed description of community types and their corresponding polygon codes is presented in Appendix C. The general structure and composition of the predominant vegetation community types are described.

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Vegetation Community Boundary

Provincially Rare Vegetation Community (S Rank)

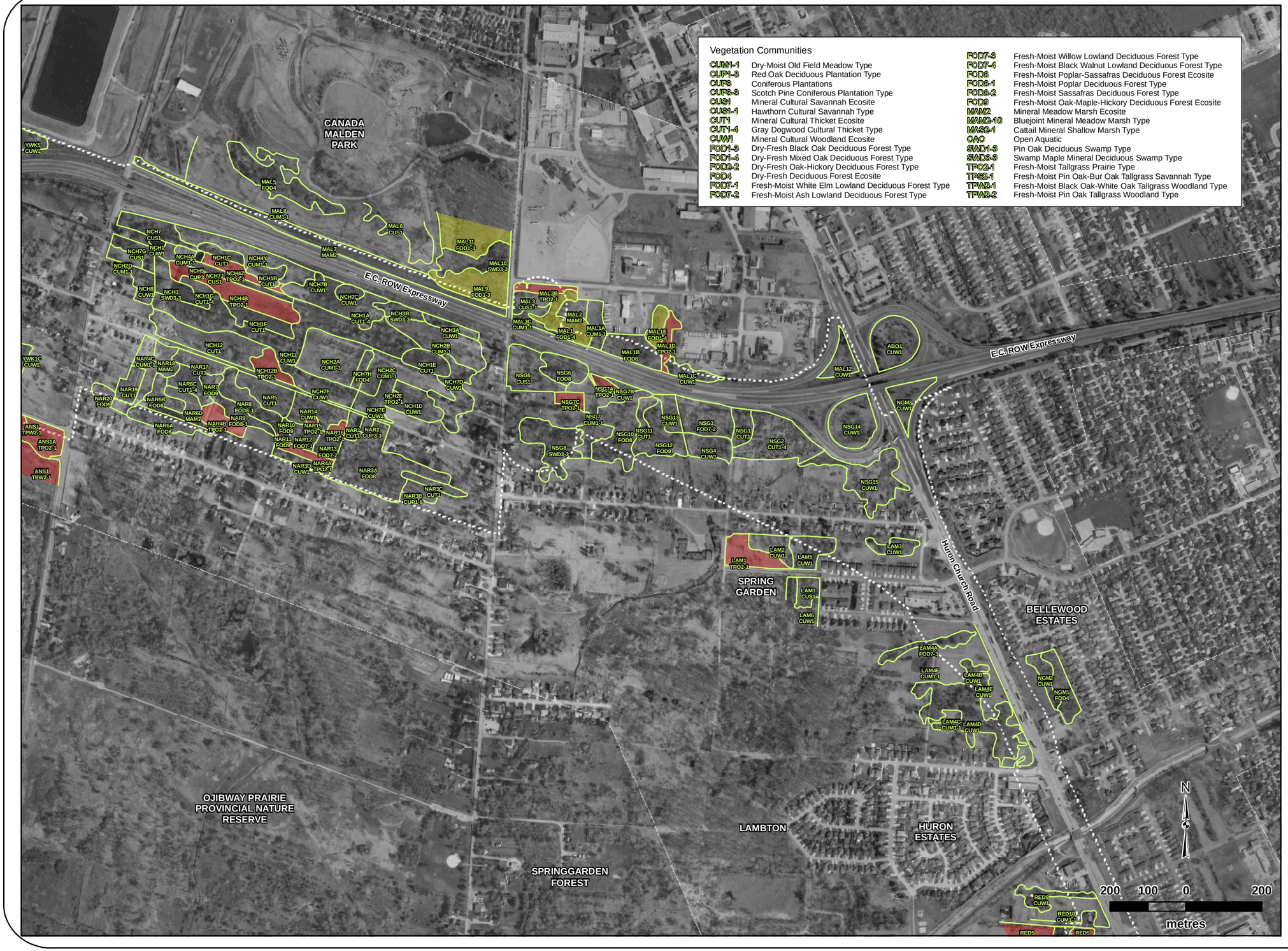
- S1
- S2/S3
- S3 or S3/S4

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

ELC VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project:	TA4137	**Figure:**	3a
Date:	February 2007	**Prepared By:**	MWF
Scale:	1 : 10,000	**Checked By:**	GNK



Vegetation Communities

CUM1-1	Dry-Moist Old Field Meadow Type
CUP1-3	Red Oak Deciduous Plantation Type
CUP3	Coniferous Plantations
CUP3-3	Scotch Pine Coniferous Plantation Type
CUS1	Mineral Cultural Savannah Ecosite
CUS1-1	Hawthorn Cultural Savannah Type
CUT1	Mineral Cultural Thicket Ecosite
CUT1-4	Gray Dogwood Cultural Thicket Type
CUW1	Mineral Cultural Woodland Ecosite
FOD1-3	Dry-Fresh Black Oak Deciduous Forest Type
FOD1-4	Dry-Fresh Mixed Oak Deciduous Forest Type
FOD2-2	Dry-Fresh Oak-Hickory Deciduous Forest Type
FOD4	Dry-Fresh Deciduous Forest Ecosite
FOD7-1	Fresh-Moist White Elm Lowland Deciduous Forest Type
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest Type
FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite
FOD8-1	Fresh-Moist Poplar Deciduous Forest Type
FOD8-2	Fresh-Moist Sassafras Deciduous Forest Type
FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite
MAM2	Mineral Meadow Marsh Ecosite
MAM2-10	Bluejoint Mineral Meadow Marsh Type
MAS2-1	Cattail Mineral Shallow Marsh Type
OAO	Open Aquatic
SWD1-3	Pin Oak Deciduous Swamp Type
SWD3-3	Swamp Maple Mineral Deciduous Swamp Type
TPO2-1	Fresh-Moist Tallgrass Prairie Type
TPS2-1	Fresh-Moist Pin Oak-Bur Oak Tallgrass Savannah Type
TPW2-1	Fresh-Moist Black Oak-White Oak Tallgrass Woodland Type
TPW2-2	Fresh-Moist Pin Oak Tallgrass Woodland Type

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Vegetation Community Boundary

Provincially Rare Vegetation Community (S Rank)

- S1
- S2/S3
- S3 or S3/S4

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

ELC VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project:	TA4137	**Figure:**	3b
Date:	February 2007	**Prepared By:**	MWF
Scale:	1 : 10,000	**Checked By:**	GNK

Vegetation Communities

CUM1-1	Dry-Moist Old Field Meadow Type	FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
CUP1-3	Red Oak Deciduous Plantation Type	FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest Type
CUP3	Coniferous Plantations	FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite
CUP3-3	Scotch Pine Coniferous Plantation Type	FOD8-1	Fresh-Moist Poplar Deciduous Forest Type
CUS1	Mineral Cultural Savannah Ecosite	FOD8-2	Fresh-Moist Sassafras Deciduous Forest Type
CUS1-1	Hawthorn Cultural Savannah Type	FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite
CUT1	Mineral Cultural Thicket Ecosite	MAM2	Mineral Meadow Marsh Ecosite
CUT1-4	Gray Dogwood Cultural Thicket Type	MAM2-10	Bluejoint Mineral Meadow Marsh Type
CUW1	Mineral Cultural Woodland Ecosite	MAS2-1	Cattail Mineral Shallow Marsh Type
FOD1-3	Dry-Fresh Black Oak Deciduous Forest Type	OAO	Open Aquatic
FOD1-4	Dry-Fresh Mixed Oak Deciduous Forest Type	SWD1-3	Pin Oak Deciduous Swamp Type
FOD2-2	Dry-Fresh Oak-Hickory Deciduous Forest Type	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type
FOD4	Dry-Fresh Deciduous Forest Ecosite	TPO2-1	Fresh-Moist Tallgrass Prairie Type
FOD7-1	Fresh-Moist White Elm Lowland Deciduous Forest Type	TPS2-1	Fresh-Moist Pin Oak-Bur Oak Tallgrass Savannah Type
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest Type	TPW2-1	Fresh-Moist Black Oak-White Oak Tallgrass Woodland Type
		TPW2-2	Fresh-Moist Pin Oak Tallgrass Woodland Type

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Vegetation Community Boundary

Provincially Rare Vegetation Community (S Rank)

- S1
- S2/S3
- S3 or S3/S4

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

ELC VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project:	TA4137	**Figure:**	3c
Date:	February 2007	**Prepared By:**	MWF
Scale:	1 : 10,000	**Checked By:**	GNK

Vegetation Communities

CUM1-1	Dry-Moist Old Field Meadow Type
CUP1-3	Red Oak Deciduous Plantation Type
CUP3	Coniferous Plantations
CUP3-3	Scotch Pine Coniferous Plantation Type
CUS1	Mineral Cultural Savannah Ecosite
CUS1-1	Hawthorn Cultural Savannah Type
CUT1	Mineral Cultural Thicket Ecosite
CUT1-4	Gray Dogwood Cultural Thicket Type
CUW1	Mineral Cultural Woodland Ecosite
FOD1-3	Dry-Fresh Black Oak Deciduous Forest Type
FOD1-4	Dry-Fresh Mixed Oak Deciduous Forest Type
FOD2-2	Dry-Fresh Oak-Hickory Deciduous Forest Type
FOD4	Dry-Fresh Deciduous Forest Ecosite
FOD7-1	Fresh-Moist White Elm Lowland Deciduous Forest Type
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest Type
FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest Type
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest Type
FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite
FOD8-1	Fresh-Moist Poplar Deciduous Forest Type
FOD8-2	Fresh-Moist Sassafras Deciduous Forest Type
FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite
MAM2	Mineral Meadow Marsh Ecosite
MAM2-10	Bluejoint Mineral Meadow Marsh Type
MAS2-1	Cattail Mineral Shallow Marsh Type
OAO	Open Aquatic
SWD1-3	Pin Oak Deciduous Swamp Type
SWD3-3	Swamp Maple Mineral Deciduous Swamp Type
TPO2-1	Fresh-Moist Tallgrass Prairie Type
TPS3-1	Fresh-Moist Pin Oak-Bur Oak Tallgrass Savannah Type
TPW2-1	Fresh-Moist Black Oak-White Oak Tallgrass Woodland Type
TPW2-2	Fresh-Moist Pin Oak Tallgrass Woodland Type

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Vegetation Community Boundary

Provincially Rare Vegetation Community (S Rank)

- S1
- S2/S3
- S3 or S3/S4

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

ELC VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project:	TA4137	**Figure:**	3d
Date:	February 2007	**Prepared By:**	MWF
Scale:	1 : 10,000	**Checked By:**	GNK

Wooded Cultural Communities

CUW1 communities are dominated by a mixture of adventive woody species such as eastern cottonwood (*Populus deltoides* ssp. *deltoides*), Freeman's maple (*Acer X freemanii*) and Manitoba maple (*Acer negundo*) and they have less than 60 percent tree cover. CUS1 communities have a lower percent tree cover at less than 35 percent and are made up of Manitoba maple, black walnut (*Juglans nigra*) and eastern cottonwood. CUT1 communities are clusters of shrubs, including gray dogwood (*Cornus foemina* ssp. *racemosa*), staghorn sumac (*Rhus typhina*) and common buckthorn (*Rhamnus cathartica*). All three community types have a high percentage of species that are considered introduced and non-native to Ontario. Three Cultural Plantations (CUP) are present in the AOI including planted red oak (*Quercus rubra*), eastern white cedar (*Thuja occidentalis*) and Scots pine (*Pinus sylvestris*).

Cultural Meadow

CUM1-1 communities consist of species that are typical of disturbed sites. Based on the species composition of these sites, it is likely that they are regularly mown (manicured) or ploughed. Grasses and invasive forbs, such as wild carrot (*Daucus carota*), common reed (*Phragmites australis*), tall goldenrod (*Solidago altissima* var. *altissima*), orchard grass (*Dactylis glomerata*), Canada goldenrod (*Solidago canadensis*) and Kentucky bluegrass (*Poa pratensis* ssp. *pratensis*) are dominant. Colonization of these areas by woody species is limited. Some of the cultural meadow communities were cultivated in the past.

Deciduous Forests

There was a wide range of successional stages in the deciduous forest communities in the AOI. Communities ranged from young through mid-aged to mature. Many of the forests contained a high percentage of native species, while others were dominated by non-native species. Deciduous forests occurred in both upland and lowland areas. Forests with dry to fresh soil conditions were dominated by black oak, white oak, shagbark hickory (*Carya ovata*), Manitoba maple and black locust (*Robinia pseudo-acacia*). Forests with fresh to moist soil conditions were dominated by American elm (*Ulmus americana*), red ash (*Fraxinus pennsylvanica*), black willow (*Salix nigra*), black walnut, eastern cottonwood, sassafras (*Sassafras albidum*), pin oak, swamp white oak (*Quercus bicolor*) and Freeman's maple. Natural succession and anthropogenic disturbances have resulted in high forest diversity with a total of 12 ELC forest community types.

Tallgrass Prairie

A proportion of the meadow communities contain a greater abundance of early successional tallgrass prairie species. These meadows have the potential to be classified as either meadow or forb prairie, but there is no classification within the ELC manual for early successional forb prairie communities. Thus, a criterion was used by LGL to classify forb prairies as either CUM1-1 or TPO2-1 communities. This criterion was the amount of anthropogenic disturbance and the ratio of introduced to tallgrass species. The forb prairies in the area of investigation contain wild bergamot (*Monarda fistulosa*), ironweed (*Vernonia gigantea*), Canadian tick-trefoil (*Desmodium canadense*), gray-headed coneflower (*Ratibida pinnata*), rough-headed bush-clover (*Lespedeza capitata*), tall

tickseed (*Coreopsis tripteris*), tall wild sunflower (*Helianthus giganteus*) and spiked blazing star (*Liatris spicata*). Conversely, the forb prairies contained a lesser proportion of tallgrass than in the tallgrass prairie communities. TPO2-1 communities have experienced the least amount of anthropogenic disturbance of the open communities found in the AOI. They contain a mixture of native tall grasses and prairie forbs, including Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), Virginia culver's root (*Veronicastrum virginicum*), colic-root (*Aletris farinosa*), ironweed and tall cord grass (*Spartina pectinata*). Past fire occurrence is evident in many of the healthy TPO2-1 communities.

Groundwater is known to play an important role in sustaining the tallgrass prairie communities. Hydrogeological conditions in the AOI consist generally of shallow surficial sand, silt and fill over unsaturated clayey silt over saturated silty clay over bedrock. The tallgrass prairie communities are sustained by the surficial sand, silt and fill layer (surface aquifer) that is saturated by rainfall. Percolation downwards from the surface aquifer through the unsaturated clayey silt (aquatard) to the deep aquifer (saturated clayey silt and bedrock) is very slow. The groundwater table in the surficial aquifer is located approximately 2 to 3 m below ground surface, depending on site-specific conditions and the amount of rainfall.

Oak Savannah and Woodland

One oak savannah community was found in the AOI and it was dominated by pin oak (*Quercus palustris*) and bur oak (*Quercus macrocarpa*). Two types of oak woodlands were encountered and they consist of black oak, white oak and pin oak. These communities contain many native drought resistant grasses and sedges, plus numerous tallgrass prairie forb species.

Wetlands

The wetlands in the AOI include swamps, marshes and open aquatic communities. The deciduous swamps are dominated by pin oak, Freeman's maple and eastern cottonwood. The meadow marshes are composed of common reed, European beggar-ticks (*Bidens tripartita*) and devil's beggar-ticks (*Bidens frondosa*), while the shallow marshes are made up of narrow-leaved cattail (*Typha angustifolia*). There was one small Open Aquatic (OAO) community that had an algal bloom in the mid-summer, which cleared up by the late summer.

2.3.1.3 Species at Risk

Eight species listed as Special Concern, Threatened or Endangered (SC, T or E) by COSEWIC or COSSARO and regulated under the *Species at Risk Act* were recorded during field investigations (colic-root, willow aster, Kentucky coffee-tree, spiked blazing star, Shumard oak, prairie rose, Riddell's goldenrod and butternut). Two species, summer snowflake, considered Globally Very Rare (G2) and butternut, considered Globally Rare to Uncommon (G3), were also recorded duing field investigations. Sixty-three species considered Extremely Rare (S1), Very Rare (S2) and Rare to Uncommon (S3) according to the NHIC were observed during field investigations. A list of provincially rare plant species located in the AOI is presented in Table 3.

TABLE 3.
PROVINCIALLY RARE VEGETATION SPECIES LOCATED IN THE AOI

#	Scientific Name	Common Name	COSEWIC	COSSARO	Grank	Srank
1	*Agalinis purpurea*	large purple agalinis			G5	S1
2	*Aristida purpurascens* var. *purpurascens*	arrow-feather three-awn			G5T?	S1
3	*Eupatorium altissimum*	tall joe-pyeweed			G5	S1
4	*Euthamia gymnospermoides*	viscid bushy goldenrod			G5	S1
5	*Juncus biflorus*	two-flowered rush			G5Q	S1
6	*Juncus brachycarpus*	short-fruited rush			G4G5	S1
7	*Ludwigia alternifolia*	rattle-box			G5	S1
8	*Pycnanthemum verticillatum* var. *pilosum*	hairy mountain-mint			G5T5	S1
9	*Rudbeckia fulgida*	orange coneflower			G5	S1
10	*Scleria triglomerata*	tall nut-rush			G5	S1
11	*Silphium terebinthinaceum* var. *terebinthinaceum*	prairie dock			G4G5 T4T5	S1
12	*Sisyrinchium albidum*	white blue-eyed-grass			G5?	S1
13	*Vitis labrusca*	fox grape			G5	S1
14	*Agalinis tenuifolia* var. *macrophylla*	slender-leaved agalinis			G4G5 Q	S1?
15	*Aletris farinose*	colic-root	THR SARA (1)	THR	G5	S2
16	*Asclepias purpurascens*	purple milkweed			G4G5	S2
17	*Asclepias sullivantii*	Sullivant's milkweed			G5	S2
18	*Aster praealtus* var. *praealtus*	willow aster	THR SARA (1)	THR	G5T?	S2
19	*Baptisia tinctoria*	wild indigo			G5	S2
20	*Campsis radicans*	trumpet creeper			G5	S2
21	*Carex squarrosa*	squarrose sedge			G4G5	S2
22	*Coreopsis tripteris*	tall tickseed			G5	S2
23	*Fraxinus profunda*	pumpkin ash			G4	S2
24	*Gaura biennis*	biennial gaura			G5	S2
25	*Gleditsia triacanthos*	honey locust			G5	S2
26	*Gymnocladus dioicus*	Kentucky coffee-tree	THR SARA (1)	THR	G5	S2
27	*Juncus marginatus*	grass-leaved rush			G5	S2
28	*Krigia biflora* var. *biflora*	two-flowered Cynthia			G5	S2
29	*Liatris aspera* var. *intermedia*	rough blazing star			G4G5 T?	S2
30	*Liatris spicata*	spiked blazing star	THR SARA (1)	THR	G5	S2
31	*Ludwigia polycarpa*	many-fruited false loosestrife			G4	S2
32	*Oxypolis rigidior*	cowbane			G5	S2
33	*Paspalum setaceum*	bristle-like paspalum			G5	S2
34	*Suaeda calceoliformis*	western seablite			G5	S2
35	*Thalictrum revolutum*	waxy meadow-rue			G5	S2
36	*Tradescantia ohiensis*	Ohio spiderwort			G5	S2
37	*Veronicastrum virginicum*	Virginia culver's-root			G4	S2

TABLE 3.
PROVINCIALLY RARE VEGETATION SPECIES LOCATED IN THE AOI

#	Scientific Name	Common Name	COSEWIC	COSSARO	Grank	Srank
38	*Ratibida pinnata*	gray-headed coneflower			G5	S2S3
39	*Agrimonia parviflora*	many-flowered agrimony			G5	S3
40	*Aureolaria flava*	yellow false foxglove			G5	S3
41	*Aureolaria pedicularia*	fern-leaved false foxglove			G5	S3
42	*Carex swanii*	swan's sedge			G5	S3
43	*Carex trichocarpa*	hairy-fruited sedge			G4	S3
44	*Carya glabra*	pignut hickory			G5	S3
45	*Carya laciniosa*	big shellbark hickory			G5	S3
46	*Eupatorium purpureum* var. *purpureum*	purple joe-pye-weed			G5T?	S3
47	*Galium pilosum* var. *pilosum*	hairy bedstraw			G5T?	S3
48	*Geum vernum*	spring avens			G5	S3
49	*Hypoxis hirsute*	yellow star-grass			G5	S3
50	*Juncus greenei*	Greene's rush			G5	S3
51	*Lithospermum caroliniense* var. *croceum*	plains puccoon			G4G5 T4T5	S3
52	*Lythrum alatum*	wing-angled loosestrife			G5	S3
53	*Nyssa sylvatica*	black gum			G5	S3
54	*Panicum sphaerocarpon*	rough-fruited panic grass			G5	S3
55	*Quercus palustris*	pin oak			G5	S3
56	*Quercus shumardii*	shumard oak	SC SARA (3)	SC	G5	S3
57	*Rosa setigera*	prairie rose	SC SARA (1)	SC	G5	S3
58	*Solidago riddellii*	Riddell's goldenrod	SC SARA (1)	SC	G5	S3
59	*Solidago rigida* ssp. *Rigida*	stiff-leaved goldenrod			G5T5	S3
60	*Vernonia gigantea*	ironweed			G5T	S3
61	*Juglans cinerea*	butternut	END SARA (1)	END	G3G4	S3?
62	*Vernonia missurica*	ironweed			G4G5	S3?
63	*Ornithogalum umbellatum*	summer snowflake			G2?	SE3

Many of the vegetation communities identified in the AOI are considered Provincially Extremely Rare (S1), Provincially Very Rare (S2) or Provincially Rare to Uncommon (S3), while others and/or the same communities are considered Globally Extremely Rare (G1) or Globally Very Rare (G2) (NHIC 1997). Notable communities include:

- 24 Fresh-Moist Tallgrass Prairies (TPO2-1) (G2 and S1);
- four Pin Oak Mineral Deciduous Swamps (SWD1-3) (G2 and S2S3);
- three Dry-Fresh Black Oak Deciduous Forests (FOD1-3) (S3);
- two Dry-Fresh Mixed Oak Deciduous Forests (FOD1-4) (S3S4);
- two Fresh-Moist Black Walnut Lowland Deciduous Forests (FOD7-4) (S2S3);
- two Fresh-Moist Black Oak-White Oak Tallgrass Woodlands (TPW2-1) (G2 and S1);
- one Dry-Fresh Oak-Hickory Deciduous Forest (FOD2-2) (S3S4);
- one Fresh-Moist Pin Oak-Bur Oak Tallgrass Savannah (TPS2-1) (G1 and S1); and
- one Fresh-Moist Pin Oak Tallgrass Woodland (TPW2-2) (G1 and S1).

A list of provincially significant vegetation communities located in the AOI ordered by S-rank is presented in Table 4. Based on a review of secondary source information, we believe that most of these rare vegetation communities and species are represented in the designated Ojibway Prairie Complex ANSI, although further field investigations in areas located outside of the AOI would be required to substantiate this opinion.

TABLE 4.
PROVINCIALLY RARE VEGETATION COMMUNITIES LOCATED IN THE AOI

ELC Code	ELC Description	G rank	S rank
TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1
TPS2-1	Fresh-Moist Pin Oak-Bur Oak Tallgrass Savannah	G1	S1
TPW2-1	Fresh-Moist Black Oak-White Oak Tallgrass Woodland	G2	S1
TPW2-2	Fresh-Moist Pin Oak Tallgrass Woodland	G1	S1
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest	G4?	S2S3
SWD1-3	Pin Oak Mineral Deciduous Swamp	G2	S2S3
SWD1-3	Pin Oak Mineral Deciduous Swamp	G2	S2S3
SWD1-3	Pin Oak Mineral Deciduous Swamp	G2	S2S3
FOD1-3	Dry-Fresh Black Oak Deciduous Forest	G4?	S3
FOD1-4	Dry-Fresh Mixed Oak Deciduous Forest	G?	S3S4
FOD2-2	Dry-Fresh Oak-Hickory Deciduous Forest	G4?	S3S4

There were numerous vegetation communities that contain a high diversity of provincially rare (S1 to S3) species. Vegetation communities LAM1, ANS2C, ANS2, NAR15, NAR16, NCH12, ANS1, NHC4B, LAM2, YWK1, YWK1C, ANS2B, ANS2D, ESA5, HCL3, MAL3B, NAR1, NAR4A, NAR4C, NCH4Z and YWK1B contain ten to 18 S1 to S3 species. Vegetation communities ESA2, NSG5, OAK1B, RED12, RED13, BBA4F-L,N,P,R, HCL6, MAL1D, ESA4, MAL3, NAR4B, NCH12B, NCH2B, OAK1A, RED2, RED8, ANS1A, LAM3, LAM4D, MAL1, NCH2E, BBA1, BBA4EC, BBA4MB, ESA2, MAL10, MAL11, MAL1B, MAL9, NCH1A, NCH1B, NCH1C, NCH1D,NGM1, NGM2, OAK2, OAK3, OAK4, RED4 and RED7 contain five to nine S1 to S3 species. Ninety-eight other ELC communities

contain one to four S1 to S3 species. A complete list of vegetation communities and the species of rare plants identified in these communities is presented in Appendix D.

2.3.2 Molluscs and Insects

2.3.2.1 Molluscs

Molluscs are among the most conspicuous and familiar invertebrate animals and include such forms as clams, squids, octopods and snails. Data were reviewed and obtained on two classes of Mollusc phyla, the Bivalves (clams) and the Gastropods (snails).

Freshwater mussels (Unionids) are a type of Bivalve and are benthic sedentary animals with a life expectancy of 10 to 80 years depending on the species. Unionids spend the bulk of their life residing in the sediment of watercourses. However, as part of the larvae (glochidia) development, the offspring must attach to the gills of a host fish (or salamander for one species) and parasitize the host until they are sufficiently mature to drop off as juveniles. Many species of Unionids require specific host fish species for development. Unionids are among the most endangered organisms in North America (Metcalfe-Smith *et. al.* 2005), and considerable research has been done in Ontario to investigate our native species. In Ontario 28 of 41 native species are showing signs of decline (Metcalfe-Smith *et. al.* 2005), and 10 species are ranked federally and/or provincially as Endangered or Threatened (Table 5).

Much less is known of the terrestrial and aquatic Gastropods of Ontario. Gastropods are divided into three groups, the Prosobranchs, Opisthobrachs and the Pulmonates. The Prosobranchs and Opisthobrachs posses gills and are purely aquatic, but only the Prosobranchs are a freshwater species. Pulmonates have lungs that enable them to respire oxygen from freshwater and/or the air. There are approximately 485 species of Gastropods in North America, none of which are ranked federally or provincially in Ontario.

Screening for Mollusc Species of Significance

Mollusc investigations in the Windsor area have been largely limited to the Detroit River, and very little data is available on the terrestrial Gastropods or the Unionids and Gastropods inhabiting the inland watercourses. Historically, numerous native species of Unionids were known to inhabit the Detroit River, however recent studies indicate that no native Unionids remain in the Detroit River due to pollution, habitat loss and competition with zebra mussels (*Dreissena polymorha*) (T. Morris, J. Ciborowski, L. Corkum and G. Mackie pers. comm.). Screenings for the presence of native Unionids within the watercourses in the AOI and its vicinity were unable to confirm the presence of any federally or provincially ranked species. No known recent mollusc investigations have been conducted in the AOI and its vicinity (aside from the Detroit River). However, Snuffbox (*Epioblasma triquetra*) is known to occur within the County of Essex according to the NHIC.

TABLE 5.
SUMMARY OF SIGNIFICANT MOLLUSC SPECIES POTENTIALLY PRESENT IN THE AOI AND ITS VICINITY

Class	Family	Scientific Name	Common Name	Present	COSEWIC	COSSARO	SRank	Legal
Gastropoda	Pomatiopsidae	*Pomatiopsis lapidaria*	Slender Walker	?[E]			S3	FA
	Discidae	*Discus patulus*	Domed Disc	?[E]			S2S3	FA
	Philomycidae	*Philomycus carolinianus*	Carolina Mantleslug	?[E]			S1S2	FA
	Polygyridae	*Mesodon pennsylvanicus*	A Snail	Y			S1	FA
		Mesodon zaletus	Toothed Globe	Y			S1S2	FA
		Stenotrema barbatum	Bristled Slitmouth	?[E]			S2	FA
		Stenotrema hirsutum	Hairy Slitmouth	?[E]			S1	FA
		Xolotrema denotatum	A Snail	?[E]			S2S3	FA
	Succineidae	*Succinea ovalis*	A Snail	?[E]			S3S4	FA
	Zonitidae	*Glyphyalinia luticola*	A Snail	?[E]			S1S2	FA
Bivalvia	Unionidae	*Epioblasma torulosa rangiana*	Northern Riffleshell	?	END	END	S1	SARA(1), FA
		Epioblasma triquetra	Snuffbox	?[E]	END	END	S1	SARA(1), FA
		Lampsilis fasciola	Wavy-rayed Lampmussel	?	END	END	S1	SARA(1), FA
		Obovaria subrotunda	Round Hickorynut	?	END	END	S1	SARA(1), FA
		Pleurobema sintoxia	Round Pigtoe	?	END	END	S1	SARA(1), FA
		Ptychobranchus fasciolaris	Kidneyshell	?	END	END	S1	SARA(1), FA
		Quadrula quadrula	Mapleleaf	?	THR	Pending*	S2	SARA(Pending*), FA
		Simpsonaias ambigua	Mudpuppy Mussel	?	END	END	S1	SARA(1), FA
		Villosa fabalis	Rayed Bean	?	END	END	S1	SARA(1), FA
		Villosa iris	Rainbow	?	END	Pending*	S2S3	SARA(Pending*), FA

*Status not yet assigned, though anticipated shortly. COSEWIC and COSSARO are expected to list these species concurrently.

Present:
Y – confirmed present in the vicinity of the AOI
? – possibly present in the vicinity of the AOI
?[E] – possibly present in the vicinity of the AOI and known to occur in Essex County according to NHIC
?[T] – possibly present in the vicinity of the AOI and known to occur in the Town of Tecumseh
?[OD] – possibly present in the vicinity of the AOI and documented in extreme southern Ontario by the Odonate Database, NHIC

Currently nine species are ranked Endangered and one Threatened by COSEWIC, and eight species are ranked Endangered by COSSARO (Table 5). There is the potential that these species may occur in the AOI and its vicinity as no comprehensive field investigations have been conducted of the Windsor area, and several of these species likely occurred in the Detroit River historically. All Unionids are regulated under the *Fisheries Act*, and eight of the species are also listed under Schedule 1 of the *Species at Risk Act*. The two remaining species will likely be added to Schedule 1 of SARA in the near future and designated by COSSARO.

Data obtained from the MNR also indicates that two significant species of Gastropod occur in the AOI and its vicinity (Table 5). These two species (*Mesodon pennsylvanicus* and *Mesodon zaletus*) are ranked S1 and S1S2 respectively, meaning that they are Extremely Rare to Very Rare in Ontario. An additional eight provincially rare species are known to occur in the County of Essex and may occur in the AOI and its vicinity. There is the potential that these species and other rare Gastropods may occur in the AOI and its vicinity as no comprehensive field investigations has been conducted of the Windsor area. All aquatic Gastropods are regulated under the *Fisheries Act.*

Further investigation is required to determine the presence/absence of significant mollusc species in the AOI. Field investigations and habitat assessments are strongly recommended to screen for Unionids. Watercourses should be searched for living animals and discarded shells. Habitat assessments including inventories of water quality, connectivity, substrate, presence of host fish and other parameters is highly advised. Field investigations and habitat assessments using these sorts of techniques should also be applied for the screening of significant Gastropods.

2.3.2.2 Insects

There are an estimated 30,000 known species of insects in Canada and over 2055 species of insects have been reported in the Ojibway Prairie Complex alone. Insects are the most abundant fauna in the world, and there are over 26 Orders of insects, including mayflies, damselflies and dragonflies, grasshoppers, cockroaches, termites, earwigs, stoneflies, lice, true bugs, thrips, beetles, fleas, true flies, caddisflies, moths and butterflies, and wasps and ants. Insects are present in all habitats and have a wide variety of forms and life cycles. Insects are generally under-investigated and under-protected; however, some research has been conducted in the Ojibway Prairie Complex area by researchers from the University of Guelph and other institutions. Considerable data has been gathered on the insects of the Ojibway Prairie but a lot of research still remains to be done. This area is known for its high species diversity and many rare species due to its geographic location and significant habitats.

Screening for Species of Significance

The Ojibway Prairie Complex area has recently been relatively intensively investigated by entomologists, and there are several recent publications documenting researchers' findings. Given the sheer number of species present, most of the research efforts and publications have focused on select groups of insects. Records on insect species captured are maintained by the Ojibway Nature Centre and a database of insects of the Ojibway Prairie is maintained by the University of Guelph. In addition, there are several regular entomological activities organized at the Ojibway Prairie including an annual

butterfly count organized by the North American Butterfly Association and a dragonfly count organized by the Toronto Entomology Association, in conjunction with the Ojibway Nature Center.

Several species listed by COSEWIC and COSSARO were reviewed to determine if they were potentially present in the AOI and its vicinity. In Ontario, the following insects are listed by COSEWIC and COSSARO:

- Frosted Elfin (*Callophrys irus*) is listed as Extirpated by COSEWIC and Endangered (Regulated) by COSSARO;
- Karner Blue (*Lycaeides melissa samuelis*) is listed as Extirpated by COSEWIC and Endangered (Regulated) by COSSARO;
- Aweme Borer (*Papaipema aweme*) is listed as Endangered (no Schedule) by COSEWIC only;
- Monarch (*Danaus plexippus*) is listed as Special Concern by both COSEWIC and COSSARO; and
- West Virginia White (*Pieris virginiensis*) is listed as Special Concern by COSSARO only.

The Monarch is known to occur in the AOI and its vicinity; however, it is highly unlikely that the remainder of the above mentioned species occur in proximity to the AOI and its vicinity given their current distributions and habitat requirements.

Much of the data recently published on the insects in the vicinity of the AOI is documentation of new species for Canada, Ontario or the region. Compilation of this data and other records indicates that there are at least 113 species of conservation concern known from this area. This includes one species of Diptera (true flies), 22 species of Auchenorrhyncha Hemiptera (hoppers), 13 species of Heteroptera Hemiptera (true bugs), 41 species of Hymenoptera (bees and wasps), 17 species of Lepidopera (moths and butterflies), 13 species of Odonata (damselflies and dragonflies), and six species of Orthoptera (grasshoppers, crickets and katydids) (Table 6). Seven other species of Odonata may also be present based on data from the NHIC Odonata Database indicating that they occur in the County of Essex, Town of Tecumseh and/or extreme southern Ontario.

Of the 120 species present (or potentially present), 69 species have been assigned an S-rank of S1 to S3 indicating that they are Extremely Rare, Very Rare or Rare to Uncommon within the province and five species have a rank of S4 or S5. A further 46 species are ranked SNR as there is insufficient data to rank the species. Since many of these species are new records for Ontario or Canada and are under-documented, there is a strong likelihood that many of these species ranked SNR are also provincially rare.

The Monarch is listed as Special Concern by COSEWIC and regulated under Schedule 1 of the *Species at Risk Act*. The Monarch and five other species of butterflies are also regulated under the Ontario *Fish and Wildlife Conservation Act*, due to their interest to collectors. Monarchs are known to inhabit and migrate through the Windsor area; however, there are no known Monarch staging (stop over) areas in the vicinity of the AOI.

TABLE 6.
SUMMARY OF SIGNIFICANT INSECT SPECIES POTENTIALLY PRESENT IN THE AOI AND ITS VICINITY

Order	Family	Scientific Name	Common Name	Present	COSEWIC	COSSARO	Srank	Legal
Diptera	Psilidae	*Loxocera ojibwayensis*	A Fly	Y			SNR*	
Hemiptera	Cicadellidae	*Balclutha abdominalis*	A Leafhopper	Y			S1	
(Auchenorrhyncha)		*Chlorotettix fallax*	A Leafhopper	Y			S1	
		Chlorotettix spatulatus	A Leafhopper	Y			S2	
		Cuerna fenestella	A Leafhopper	Y			S1	
		Dorydiella kansana	A Leafhopper	Y			S1	
		Flexamia inflate	A Leafhopper	Y			S1	
		Flexamia prairiana	A Leafhopper	Y			S1	
		Graminella oquaka	A Leafhopper	Y			S1	
		Graminella pallidula	A Leafhopper	Y			S1	
		Hecalus flavidus	A Leafhopper	Y			S1	
		Laevicephalus unicoloratus	A Leafhopper	Y			S2	
		Limotettix elegans	A Leafhopper	Y			S1	
		Mesamia nigridorsum	A Leafhopper	Y			S1	
		Neokolla lugubris	A Leafhopper	Y			S1?	
		Xerophloea major	A Leafhopper	Y			S1	
		Xerophloea peltata	A Leafhopper	Y			S1	
	Delphacidae	*Delphacodes waldeni*	A Plant Hopper	Y			S1?	
		Megamelus metzaria	A Plant Hopper	Y			SNR	
	Derbidae	*Anotia westwoodi*	A Plant Hopper	Y			SNR	
	Flatidae	*Anormenis septentrionalis*	A Plant Hopper	Y			SNR	
		Ormenoides venusta	A Plant Hopper	Y			SNR	
	Membracidae	*Publilia reticulate*	A Tree Hopper	Y			S1?	

TABLE 6.
SUMMARY OF SIGNIFICANT INSECT SPECIES POTENTIALLY PRESENT IN THE AOI AND ITS VICINITY

Order	Family	Scientific Name	Common Name	Present	COSEWIC	COSSARO	Srank	Legal
Hemiptera	Aradidae	*Neuroctenus simplex*	A Flat Bug	Y			S1S3	
(Heteroptera)	Coreidae	*Chariesterus antennator*	A Leaf-footed Bug	Y			S1S2	
		Euthochtha galeator (Fabricius)	A Leaf-footed Bug	Y			S1S3	
	Cydnidae	*Pangaeus bilineatus*	A Burrowing Bug	Y			S2S4	
	Geocoridae	*Isthmocoris piceus (Say)*	A Big-eyed Bug	Y			S2S4	
	Lygaeidae	*Lygaeus turcicus (Fabricius)*	Small Milkweed Bug	Y			S1S3	
	Nabidae	*Hoplistoscelis sordidus*	A Damsel Bug	Y			S4	
	Pentatomidae	*Amaurochroa ovalis*	A Stink Bug	Y			S1?	
		Dendrocoris humeralis	A Stink Bug	Y			S2S4	
		Stiretrus anchorago fimbriatus (Say)	A Stink Bug	Y			S1S3	
	Rhyparochromidae	*Cryphula trimaculata*	A Seed Bug	Y			S1?	
		Ozophora picturata (Uhler)	A Seed Bug	Y			S1S3	
	Tingidae	*Leptopharsa heidemanni*	A Lace Bug	Y			S1	
Hymenoptera	Andrenidae	*Perdita (Cockerellia) bequaerti bequaerti*	A Minning Bee	Y			SNR*	
	Crabronidae (Astatinae)	*Astata nubecula*	An Aculeate Wasp	Y			SNR*	
	Crabronidae	*Bicyrets quadrifasciatus*	A Digger Wasp	Y			SNR*	
	(Bembicinae)	*Clitemnestra bipunctata*	A Digger Wasp	Y			SNR*	
		Didineis texana	A Digger Wasp	Y			SNR*	
		Epinysson mellipes	A Digger Wasp	Y			SNR*	
		Epinysson tramosericus	A Digger Wasp	Y			SNR*	
		Epinysson tuberculatus	A Digger Wasp	Y			SNR*	
		Hoplisoides placidus	A Digger Wasp	Y			SNR*	
		Nysson simplicicornis	A Digger Wasp	Y			SNR*	
		Nysson subtilis	A Digger Wasp	Y			SNR*	

TABLE 6.
SUMMARY OF SIGNIFICANT INSECT SPECIES POTENTIALLY PRESENT IN THE AOI AND ITS VICINITY

Order	Family	Scientific Name	Common Name	Present	COSEWIC	COSSARO	Srank	Legal
Hymenoptera	Crabronidae	*Ectemnius dilectus*	A Digger Wasp	Y			SNR*	
(continued)	(Crabroninae)	*Ectemnius scaber*	A Digger Wasp	Y			SNR*	
		Entomognathus lenapeorum	A Digger Wasp	Y			SNR*	
		Entomognathus memorialis	A Digger Wasp	Y			SNR*	
		Oxybelus cressonii	A Digger Wasp	Y			SNR*	
		Oxybelus decorosus	A Digger Wasp	Y			SNR*	
		Oxybelus subcornutus	A Digger Wasp	Y			SNR*	
		Tachysphex antennatus	A Digger Wasp	Y			SNR*	
		Tachysphex apicalis	A Digger Wasp	Y			SNR*	
		Tachytes crassus	A Digger Wasp	Y			SNR*	
		Tachytes harpax	A Digger Wasp	Y			SNR*	
		Tachytes intermedius	A Digger Wasp	Y			SNR*	
	Crabronidae	*Diodontus virginianus*	A Digger Wasp	Y			SNR*	
	(Pemphredoninae)	*Mimumesa leucopus*	A Digger Wasp	Y			SNR*	
		Mimumesa longicornis	A Digger Wasp	Y			SNR*	
	Crabronidae	*Cerceris astarte*	A Digger Wasp	Y			SNR*	
	(Philanthinae)	*Cerceris cruces*	A Digger Wasp	Y			SNR*	
		Cerceris echo	A Digger Wasp	Y			SNR*	
		Cerceris finitima	A Digger Wasp	Y			SNR*	
		Cerceris fumipennis	A Digger Wasp	Y			SNR*	
		Cerceris halone	A Digger Wasp	Y			SNR*	
		Cerceris insolita	A Digger Wasp	Y			SNR*	
		Cerceris kennicottii	A Digger Wasp	Y			SNR*	
		Crabro snowii	A Digger Wasp	Y			SNR*	
		Philanthus lepidus	A Digger Wasp	Y			SNR*	
	Megachilidae	*Stelis costalis*	A Cuckoo Leaf-Cutting Bee	Y			SNR*	
	Sphecidae	*Ammophila nigricans*	A Digger Wasp	Y			SNR*	
		Cerceris bicornuta	A Digger Wasp	Y			SNR*	
		Isodontia elegans	A Digger Wasp	Y			SNR*	
		Sphex pensylvanicus	A Spider Wasp	Y			SNR*	

TABLE 6.
SUMMARY OF SIGNIFICANT INSECT SPECIES POTENTIALLY PRESENT IN THE AOI AND ITS VICINITY

Order	Family	Scientific Name	Common Name	Present	COSEWIC	COSSARO	Srank	Legal
Lepidoptera	Hesperiidae	*Amblyscirtes hegon*	Pepper and Salt Skipper	Y			S3?	
		Erynnis brizo	Sleepy Duskywing	Y			S1	
		Erynnis martialis	Mottled Duskywing	Y			S2	FWCA(P)
		Euphyes dukesi	Duke's Skipper	Y			S2	
		Poanes massasoit	Mulberry Wing	Y			S3	
		Thorybes bathyllus	Southern Cloudywing	Y			S2S3	
	Lycaenidae	*Satyrium caryaevorum*	Hickory Hairstreak	Y			S3S4	
	Noctuidae	*Papaipema baptisiae*	Wild Indigo Borer Moth	Y			S1	
		Papaipema cerussata	Ironweed Borer Moth	Y			S1	
		Papaipema sciata	Culver's-root Borer Moth	Y			S1	
	Nymphalidae	*Asterocampa celtis*	Hackberry Emperor	Y			S2	
		Asterocampa clyton	Tawney Emperor	Y			S2S3	
		Danaus plexippus	Monarch	Y	SC	SC	S4	SARA(1), FWCA(P)
	Papilionidae	*Papilio cresphontes*	Giant Swallowtail	Y			S2	FWCA(P)
		Papilio glaucus	Eastern Tiger Swallowtail	Y			S4S5	FWCA(P)
		Papilio polyxenes	Black Swallowtail	Y			S5	FWCA(P)
		Papilio Troilus	Spicebush Swallowtail	Y			S4	FWCA(P)

TABLE 6.
SUMMARY OF SIGNIFICANT INSECT SPECIES POTENTIALLY PRESENT IN THE AOI AND ITS VICINITY

Order	Family	Scientific Name	Common Name	Present	COSEWIC	COSSARO	Srank	Legal
Odonata	Aeshnidae	*Aeshna clepsydra*	Mottled Darner	?[E, OD]			S3	
		Epiaeschna heros	Swamp Darner	Y			S2S3	
		Nasiaeschna pentacantha	Cyrano Darner	?[E]			S3	
	Coenagrionidae	*Argia tibialis*	Blue-tipped Dancer	?[E]			S3	
		Enallagma aspersum	Azure Bluet	Y			S3	
		Enallagma basidens	Double-striped Bluet	Y			S3	
		Ischnura hastate	Citrine Forktail	Y			S2	
	Gomphidae	*Arigomphus villosipes*	Unicorn Clubtail	?[E]			S1S2	
		Gomphus descriptus	Harpoon Clubtail	?[T]			S3	
		Gomphus fraternus	Midland Clubtail	?[E]			S3	
		Gomphus graslinellus	Pronghorn Clubtail	Y			S2	
		Gomphus vastus	Cobra Clubtail	Y			S1	
		Ophiogomphus carolus	Riffle Snaketail	?[T]			S2	
		Progomphus obscurus	Common Sanddragon	Y			S1	
		Stylurus notatus	Elusive Clubtail	Y			S2	
	Libellulidae	*Celithemis eponina*	Halloween Pennant	Y			S3	
		Libellula semifasciata	Painted Skimmer	Y			S2	
		Libellula vibrans	Great Blue Skimmer	Y			S1	
		Perithemis tenera	Eastern Amberwing	Y			S3	
	Macromiidae	*Macromia taeniolata*	Royal River Cruiser	Y			S1	

TABLE 6.
SUMMARY OF SIGNIFICANT INSECT SPECIES POTENTIALLY PRESENT IN THE AOI AND ITS VICINITY

Order	Family	Scientific Name	Common Name	Present	COSEWIC	COSSARO	Srank	Legal
Orthoptera	Acrididae	*Dicromorpha viridis*	A Short-Winged Green Grasshopper	Y			S1?	
		Melanoplus scudderi scudderi	Scudder's short-winged grasshopper	Y			S1?	
		Melanoplus walshii	A Short Horned Grasshopper	Y			S3S4	
	Gryllidae	*Anaxipha exigua*	Say's Bush Cricket	Y			S2S4	
		Neoxabea bipunctata	Two-spotted Tree Cricket	Y			S1?	
	Tettigoniidae	*Microcentrum rhombifolium*	A Katydid	Y			S2S3	

*SNR – insufficient data to rank, though potentially afforded a significant rank due to new published records.

Present:
Y – confirmed present in the vicinity of the area of continued analysis
? – possibly present in the vicinity of the area of continued analysis
$?^{E}$ – possibly present in the vicinity of the area of continued analysis and known to occur in Essex County according to NHIC
$?^{T}$ – possibly present in the vicinity of the area of continued analysis and know to occur in the Town of Tecumseh
$?^{OD}$ – possibly present in the vicinity of the area of continued analysis and documented in the region by the Odonate Database, NHIC

The data presented in Table 6 represents the significant species for groups of insects which are tracked and/or have been recently documented by researchers. No doubt given the data in Table 6 and the sheer abundance of insect species likely present, numerous other significant species also occur in the vicinity of the AOI that have yet to be reported.

The Ojibway Prairie Complex and its vicinity are entomologically significant and home to many of Canada's rarest insect species and habitats. One new species of fly has recently been discovered here, and the Ojibway Prairie is also home to many rare species and new or significant records for Ontario and Canada. The area within and surrounding the Ojibway Prairie has always been an entomological gem, for amateurs and researches, and will likely continue to yield further discoveries.

Since the Ojibway Prairie is located partially in the AOI and similar habitats exist outside of the Ojibway Prairie Complex, efforts should be made to determine what further insect species of significance occur in the area. Sensitive species and locations should be identified through field investigations, further research and correspondence. Areas falling within the AOI should also be further investigated to determine if significant populations or habitat exist. Members of the entomology community should be further consulted to ascertain additional sensitivities. Impacts to Monarchs should also be further evaluated and efforts should also be taken to identify the main areas used by Monarchs for protection and/or mitigation.

The Entomological Importance of the Ojibway Prairie Complex and its Vicinity

The Ojibway Prairie Complex and its vicinity is a unique area composed of tallgrass prairies, savannahs, Carolinian zone vegetation, wetlands and forests. The diversity of rare habitats and plant species contributes towards the high diversity and rarity of insect species present.

The Ojibway Prairie Complex is truly one of the most entomologically unique and important areas in Canada. A review of recent publications on new records for Ontario and Canada indicates that there are many species which can only be found in the Ojibway Prairie, or at a few other locations (Buck & Marshall 2006, Buck, Paiero & Marshall 2005, Marshall, Paiero & Buck 2005, Marshall, Paiero & Lonsdale 2004, Buck 2003, Paiero & Buck 2003, Paiero & Marshall 2003, and Hamilton 1994).

New records include 16 new species for Canada and six new species for Ontario, which have only been found at the Ojibway Prairie. A further 37 new records for Canada and 29 for Ontario have only been found at the Ojibway Prairie and a few other sites. Amazingly, a new species to science was recently discovered in Ojibway Prairie (Buck & Marshall 2006). This insect, *Loxocera ojibwayensis*, is a small Psilidae fly (Diptera) that has been named after the Ojibway Prairie, which is the only known site in the world for this species. A list of the species with the new occurrence record details is provided in Table 7, including four new local records of significant Orthoptera (grasshoppers).

TABLE 7.
SUMMARY OF RECENT SIGNIFICANT RECORDS FROM OJIBWAY PRAIRIE COMPLEX VICINITY

Order	Family	New Canadian Record & Only Site is Ojibway	New Canadian Record, with a Few Known Sites	New Ontario Record & Only Site is Ojibway	New Ontario Record, with a Few Known Sites	Significant Local Record
Diptera	Psilidae	• *Loxocera ojibwayensis**				
Hemiptera (Auchenorrhyncha)	Cicadellidae	• *Chlorotettix fallax* • *Hecalus flavidus* • *Limotettix elegans* • *Neokolla lugubris*	• *Balclutha abdominalus* • *Chlorotettix spatulatus*	• *Cuema fenestella* • *Xerophloea major* • *Xerophloea peltata*	• *Dorydiella kansaa* • *Flexamia inflata* • *Flexamia prairiana* • *Graminella oquaka* • *Graminella pallidula* • *Mesamia nigridorsum* • *Laevicephalus unicoloratus*	
	Delphacidae	• *Delphacodes waldeni*			• *Megamelus metzaria*	
	Derbidae	• *Anotia westwoodi*				
	Flatidae	• *Ormenoides venusta*	• *Anormensis septentrionalis*			
	Membracidae	• *Publilia reticulata*				

TABLE 7.
SUMMARY OF RECENT SIGNIFICANT RECORDS FROM OJIBWAY PRAIRIE COMPLEX VICINITY

Order	Family	New Canadian Record & Only Site is Ojibway	New Canadian Record, with a Few Known Sites	New Ontario Record & Only Site is Ojibway	New Ontario Record, with a Few Known Sites	Significant Local Record
Hemiptera (Heteroptera)	Aradidae		• *Neuroctenus simplex*			
	Coreidae		• *Chariesterus antennator*			
	Cydnidae				• *Pangaeus bilineatus*	
	Lygaeidae	• *Lygaeus turcicus (Fabricius)*				
	Nabidae		• *Hoplistoscelis sordidus*			
	Pentatomidae	• *Stiretrus anchorago fimbriatus (Say)*	• *Amaurochroa ovalis* • *Dendrocoris humeralis*			
	Rhyparochromidae		• *Cryphula trimaculata*	• *Ozophora picturata (Uhler)*		
	Tingidae	• *Leptopharsa heidemanni*				

TABLE 7.
SUMMARY OF RECENT SIGNIFICANT RECORDS FROM OJIBWAY PRAIRIE COMPLEX VICINITY

Order	Family	New Canadian Record & Only Site is Ojibway	New Canadian Record, with a Few Known Sites	New Ontario Record & Only Site is Ojibway	New Ontario Record, with a Few Known Sites	Significant Local Record
Hymenoptera	Andrenidae	• *Perdita b. bequaeti*				
	Crabronidae (Astatinae)				• *Astata nubecula*	
	Crabronidae (Bembicinae)		• *Didineis texana* • *Nysson simplicicornis* • *Bicyrets quadrifasciatus* • *Epinysson tuberculatus* • *Hoplisoides placidus* • *Didineis latimana* • *Epinysson tramosericus* • *Nysson subtillis*		• *Clitemnestra bipunctata* • *Epinysson mellipes*	
	Crabronidae (Crabroninae)	• *Entomognathus lenapeorum*	• *Ectemnius scaber* • *Oxybelus cressonii* • *Oxybelus decorosus* • *Tachytes intermedius* • *Entomognathus memorialis* • *Oxybelus subcornutus* • *Tachytes crassus* • *Tachytes harpax* • *Solierella plenoculoides* • *Trypoxylon attenuatum*	• *Tachysphex apicalis*	• *Ectemnius dilectus* • *Miscophus americanus* • *Plenoculus davisi* • *Rhopalum rufigaster* • *Tachysphex antennatus*	

TABLE 7.
SUMMARY OF RECENT SIGNIFICANT RECORDS FROM OJIBWAY PRAIRIE COMPLEX VICINITY

Order	Family	New Canadian Record & Only Site is Ojibway	New Canadian Record, with a Few Known Sites	New Ontario Record & Only Site is Ojibway	New Ontario Record, with a Few Known Sites	Significant Local Record
Hymenoptera (continued)	Crabronidae (Pemphredoninae)		• *Diodontus virginianus* • *Mimumesa longicornis*		• *Diodontus minutus* • *Mimumesa leucopus*	
	Crabronidae (Philanthinae)	• *Cerceris insolita*	• *Cerceris echo*	• *Cerceris finitima*	• *Cerceris crucis* • *Cerceris kennicottii* • *Crabro snowii* • *Cerceris astarte* • *Cerceris fumipennis* • *Cerceris halone* • *Philanthus lepidus*	
	Megachilidae		• *Stelis costalis*			
	Sphecidae		• *Cerceris bicornuta*		• *Isodontia elegans* • *Ammophila nigricans* • *Sphex pensyvanicus*	
Lepidoptera	Noctuidae	• *Papaipema cerussata* • *Papaipema sciata*	• *Papaipema baptisiae*			

TABLE 7.
SUMMARY OF RECENT SIGNIFICANT RECORDS FROM OJIBWAY PRAIRIE COMPLEX VICINITY

Order	Family	New Canadian Record & Only Site is Ojibway	New Canadian Record, with a Few Known Sites	New Ontario Record & Only Site is Ojibway	New Ontario Record, with a Few Known Sites	Significant Local Record
Orthoptera	Acrididae		• *Dicromorpha viridis* • *Melanoplus scudderi scudderi* • *Melanoplus walshii*			• *Melanoplus d. differentialis*
	Gryllidae		• *Neoxabea bipunctata*			• *Anaxipha exigua* • *Oecanthus niveus*
	Tettigoniidae					• *Microcentrum rhombifolium*
Total		17*	37	6	29	4

*The Diptera record is for a newly identified and discovered species.

2.3.3 Fish and Fish Habitat

2.3.3.1 Fish Species

Based on fisheries information provided by the Essex Region Conservation Authority (ERCA) and field investigations, a total of 21 species of fish inhabit streams located in the AOI, excluding the Detroit River. The fish community located in "inland" watercourses/waterbodies is comprised of resident warmwater sport and bait fish. Northern pike were observed spawning in several small drains located in the Chappus Road area. Table 8 presents the fish occurrence records for the watercourses containing fish as well as the historical fish records provided by ERCA.

Fish species in the Detroit River were recently sampled by four gear types (seine net, boat electrofishing, hoop net and Windemere trap) in the shallow offshore water of the Detroit River during July and August 2003 (Lapointe, Corkum and Mandrak 2005). The reach of the Detroit River sampled included Canadian waters from the confluence with Turkey Creek to the confluence with the River Canard. A total of 38 species of fish were captured. Based on this recent survey and historic fish records, a total of 69 species of fish are reported from the Detroit River. Table 9 presents the fish species known to inhabit the Detroit River.

TABLE 8.
FISH SPECIES OCCURRENCE RECORDS FOR THE AOI EXCLUDING THE DETROIT RIVER

Common Name	Scientific Name	COSEWIC	COSSARO	Srank	Basin Drain	Burke Drain	Cahill Drain	Dickson Drain	G. Marais Drain	Lennon Drain	McKee Creek	McKee Drain	Titcombe Drain	Wolfe Drain	Pond
central mudminnow	*Umbra limi*			S5			152	46							
northern pike	*Esox lucius*			S5								17	23		
goldfish	*Carassius auratus*			SE			152		38	153					
common carp	*Cyprinus carpio*			SE			152		38						
golden shiner	*Notemigonus crysoleucas*			S5			152								
hornyhead chub	*Nocomis biguttatus*	NAR	NAR	S4					38						
striped shiner	*Luxilus chrysocephalus*	NAR	NAR	S4			152								
spotfin shiner	*Cyprinella spliloptera*			S5			152								
fathead minnow	*Pimephales promelas*			S5	26		152		38, 150, 151	40, 153				55	
bluntnose minnow	*Pimephales notatus*	NAR	NAR	S5			152		38	40					
emerald shiner	*Notropis atherinoides*			S5			152		150						
minnow family	Cyprinidae						152			153					
white sucker	*Catostomus commersoni*			S5			152								
black bullhead	*Ameiurus melas*			S4			152				2				
black crappie	*Pomoxis nigromaculatus*			S4											X
rock bass	*Ambloplites rupestris*			S5			152					2			
largemouth bass	*Micropterus salmoides*			S5			152		38	40					
smallmouth bass	*Micropterus dolomieu*			S5					38						
green sunfish	*Lepomis cyanellus*	NAR	NAR	S4		47	152		150, 151						
bluegill	*Lepomis macrochirus*			S5					38						
pumpkinseed	*Lepomis gibbosus*			S5			152		38	40, 153					

Station information:

Historical:
ERCA (May 2000) – 152, 153
ERCA (April 2001) –150, 151

LGL Surveys:
LGL (May 2006) - 17, 23
LGL (September 2006) – 2, 26, 38, 40, 46, 47, 55, X

TABLE 9.
FISH SPECIES OCCURRENCE RECORDS FOR THE DETROIT RIVER

Common Name	Scientific Name	COSEWIC	COSSARO	Srank	Legal Status
sea lamprey	*Petromyzon marinus*			SE	
lake sturgeon	*Acipenser fulvescens*	NAR	NAR	S3	
spotted gar	*Lepisosteus oculatus*	THR	THR	S2	PA
longnose gar	*Lepisosteus osseus*			S4	
bowfin	*Amia calva*			S4	
American eel	*Anguilla rostrata*			S5	
alewife	*Alosa pseudoharengus*			SE	
gizzard shad	*Dorosoma cepedianum*			S4	
mooneye	*Hiodon tergisus*			S4	
chinook salmon	*Oncorhynchus tshawytscha*			SE	
coho salmon	*Oncorhynchus kisutch*			SE	
pink salmon	*Oncorhynchus gorbuscha*			SE	
rainbow trout	*Oncorhynchus mykiss*			SE	
brown trout	*Salmo trutta*			SE	
lake trout	*Salvelinus namaycush*			S5	
lake whitefish	*Coregonus clupeaformis*			S5	
rainbow smelt	*Osmerus mordax*			S5	
northern pike	*Esox lucius*			S5	
muskellunge	*Esox masquinongy*			S4	
goldfish	*Carrasius auratus*			SE	
common carp	*Cyprinus carpio*			SE	
silver chub	*Macrhybopsis storeriana*	SC	SC	S2	
golden shiner	*Notemigonus crysoleucas*			S5	
bluntnose minnow	*Pimephales notatus*	NAR	NAR	S5	
emerald shiner	*Notropis atherinoides*			S5	
pugnose minnow	*Opsopoeodus emiliae*	SC	SC	S2	
blacknose shiner	*Notropis heterolepis*			S5	
spottail shiner	*Notropis hudsonius*			S4	
sand shiner	*Notropis stramineus*			S4	
mimic shiner	*Notropis volucellus*			S5	
quillback	*Carpiodes cyprinus*			S4	
longnose sucker	*Catostomus catostomus*			S5	
white sucker	*Catostomus commersoni*			S5	
northern hog sucker	*Hypentelium nigricans*			S4	
bigmouth buffalo	*Ictiobus cyprinellus*	SC	SC	SU	
smallmouth buffalo	*Ictiobus bubalus*				
spotted sucker	*Minytrema melanops*	SC	SC	S2	
redhorse (unidentified)	*Moxostoma sp.*				
silver redhorse	*Moxostoma* anisurum			S4	
golden redhorse	*Moxostoma* erythrurum	NAR	NAR	S4	
shorthead redhorse	*Moxostoma macrolepidotum*			S5	
river redhorse	*Moxostoma carinatum*	SC	SC	S2	
yellow bullhead	*Ameiurus natalis*			S4	
black bullhead	*Ameiurus melas*			S4	
brown bullhead	*Ameiurus nebulosus*			S5	
channel catfish	*Ictalurus punctatus*			S4	
stonecat	*Noturus flavus*			S4	
trout-perch	*Percopsis omiscomaycus*			S5	
burbot	*Lota lota*			S5	

TABLE 9.
FISH SPECIES OCCURRENCE RECORDS FOR THE DETROIT RIVER

Common Name	Scientific Name	COSEWIC	COSSARO	Srank	Legal Status
banded killifish	*Fundulus diaphanous*			S5	
brook silverside	*Labidesthes sicculus*	NAR	NAR	S4	
four horn sculpin	*Myoxocephalus quadricornis*			S2?	
white perch	*Morone Americana*			SE	
white bass	*Morone chrysops*			S4	
rock bass	*Ambloplites rupestris*			S5	
green sunfish	*Lepomis cyanellus*	NAR	NAR	S4	
largemouth bass	*Micropterus salmoides*			S5	
smallmouth bass	*Micropterus dolomieu*			S5	
bluegill	*Lepomis macrochirus*			S5	
pumpkinseed	*Lepomis gibbosus*			S5	
black crappie	*Pomoxis nigromaculatus*			S4	
white crappie	*Pomoxis annularis*			S4	
logperch	*Percina caprodes*			S5	
yellow perch	*Perca flavescens*			S5	
sauger	*Sander canadense*			S4	
walleye	*Sander vitreus*			S5	
freshwater drum	*Aplodinotus grunniens*			S5	
round goby	*Neogobius melanostomus*			SE	
tubenose goby	*Proterorhinus marmoratus*			SE	

2.3.3.2 Fish Habitat

Drainage within the AOI is provided by a number of municipal agricultural drains that flow towards the Detroit River. The major drains that transverse the access route include Cahill Drain, Lennon Drain and Grand Marais Drain (Turkey Creek) and Wolfe Drain parallels the access route on the north side of Highway 3 from the existing Highway 401 to Cahill Drain. The following watercourses/waterbodies are located in the AOI:

- Detroit River;
- Basin Drain;
- Benson Drain;
- Broadway Drain;
- Burke Drain;
- Cahill Drain;
- Collins Drain;
- Dickson Drain;
- Grand Marais Drain (Turkey Creek);
- Healy Drain;
- Lennon Drain;
- Marentette Drain;
- McKee Creek;
- No Name Drain associated with Benson Drain;
- No Name Drain associated with Susan Drain;
- No Name Drain tributary of Wolfe Drain (at Highway 401);
- No Name Drain tributary of Wolfe Drain (at Howard Ave);
- Susan Drain;
- Talbot Drain;
- Titcombe Drain;
- Wolfe Drain;
- Youngstown Drain; and
- Unnamed pond.

All of the above listed waterbodies were surveyed for fish habitat potential. Appendix E presents a summary of the fish habitat assessment survey completed by LGL Limited in May and September 2006. The watercourses and fish habitat located in the AOI are presented in Figure 4.

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Drainage
- Drainage - Important Fish Habitat
- Drainage - Marginal Fish Habitat
- Drainage - Not Fish Habitat
- Fish Habitat
- Seasonal Fish Habitat
- No Fish Habitat

Data Sources: LGL Limited field surveys, Essex Region Conservation Authourity, Spring 2006 aerial photography.

WATERCOURSES AND FISH HABITAT LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 4a
Date: February 2007	**Prepared By:** MWF
Scale: 1 : 10,000	**Checked By:** GNK

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Drainage
- Drainage - Important Fish Habitat
- Drainage - Marginal Fish Habitat
- Drainage - Not Fish Habitat
- Fish Habitat
- Seasonal Fish Habitat
- No Fish Habitat

Data Sources: LGL Limited field surveys, Essex Region Conservation Authourity, Spring 2006 aerial photography.

WATERCOURSES AND FISH HABITAT LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 4b
Date: February 2007	**Prepared By:** MWF
Scale: 1 : 10,000	**Checked By:** GNK

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Drainage
- Drainage - Important Fish Habitat
- Drainage - Marginal Fish Habitat
- Drainage - Not Fish Habitat
- Fish Habitat
- Seasonal Fish Habitat
- No Fish Habitat

Data Sources: LGL Limited field surveys, Essex Region Conservation Authourity, Spring 2006 aerial photography.

WATERCOURSES AND FISH HABITAT LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 4c
Date: February 2007	**Prepared By:** MWF
Scale: 1 : 10,000	**Checked By:** GNK

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Drainage
- Drainage - Important Fish Habitat
- Drainage - Marginal Fish Habitat
- Drainage - Not Fish Habitat
- Fish Habitat
- Seasonal Fish Habitat
- No Fish Habitat

Data Sources: LGL Limited field surveys, Essex Region Conservation Authourity, Spring 2006 aerial photography.

WATERCOURSES AND FISH HABITAT LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 4d
Date: February 2007	**Prepared By:** MWF
Scale: 1 : 10,000	**Checked By:** GNK

Heavy impacts associated with agricultural and/or urban development affect all of these watercourses. These impacts include both physical (e.g., channelization, piping, barriers); and chemical (e.g., metals, organic compounds, nutrients) (MDNR and MOE 1991). None of the watercourses, with the exception of the Detroit River, support an important migratory fishery. Despite the extent of alteration that has occurred in watercourses located within the AOI, several of the larger watercourses continue to sustain warmwater sportfish and baitfish communities.

The Detroit River and the inland watersheds within the AOI fall under the jurisdiction of the Essex Region Conservation Authority (ERCA), the Ontario Ministry of Natural Resources (OMNR) Aylmer District and the Department of Fisheries and Oceans (DFO). Most of the inland watercourses located in the AOI have been classified as drains by the ERCA using the Agricultural Municipal Drains Class Authorization System (DFO 1999). A single unconnected pond is found at the eastern limits of the AOI. Water courses that were confirmed to support fish habitat are described below.

Basin Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is permanent and supports a warmwater baitfish community downstream of the E.C. Row Expressway. Here the channelized watercourse flows through a muck and clay lined channel. Riparian vegetation consists of trees, shrubs and herbaceous vegetation. This fish habitat is considered marginal. Upstream of the E.C. Row Expressway the watercourse is mostly piped underground with a pool of open water upstream of the expressway. This upstream reach of Basin Drain is not fish habitat as the buried culvert under the expressway is a barrier to fish migration.

Benson Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is likely intermittent as flows were low in May and September 2006. It was determined that this watercourse likely supports a warmwater baitfish community as central mudminnow were captured downstream of South Talbot Road in Dickson Drain. This channelized watercourse flows through a clay lined channel. Riparian vegetation consists of trees, shrubs and herbaceous vegetation. This fish habitat is considered marginal.

Broadway Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is likely intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse likely supports a seasonal fish community when flows in the Detroit River are high enough to allow fish to migrate upstream over the gravel beach barrier. Only the reach downstream of Sandwich Street was determined to be fish habitat as the hot water entering the channel from a pipe at Sandwich Street likely presents a thermal barrier to fish movement. This channelized watercourse flows through a detritus lined channel. Riparian vegetation consists of trees, shrubs and fragmites. This fish habitat is considered marginal.

Burke Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is likely intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse supports a warmwater sportfish community. This channelized watercourse flows through a detritus and muck lined channel. Riparian vegetation consists of cattails. This fish habitat is considered marginal. Downstream of South Talbot Road this watercourse was dry and is not fish habitat.

Cahill Drain

Cahill Drain is separated into two reaches, one upstream of the confluence with Wolfe Drain, the other downstream of the confluence with Wolfe Drain. The upstream reach is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. The upstream reach is listed as a type E drain, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. LGL determined that this watercourse is permanent warmwater fish habitat. Only baitfish were captured in Wolfe Drain between the two reaches, however habitat potential exists for sportfish. Upstream of Wolfe Drain this channelized watercourse flows through a clay lined channel with herbaceous riparian vegetation. This fish habitat is considered marginal. Downstream of Wolfe Drain the channel is much larger and flows over a muck substrate. Here there is some channel definition and habitat heterogeneity. Riparian vegetation consists of trees, shrubs, and herbaceous vegetation. This fish habitat is considered important.

Collins Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is likely intermittent as flows were low in May and September 2006. It was determined that this watercourse likely supports a warmwater baitfish community as fathead minnow were captured downstream in Wolfe Drain, and no barrier to fish migration exists. This channelized watercourse flows through a clay and silt lined channel. Riparian vegetation consists of cattails and fragmites. This fish habitat is considered marginal.

Dickson Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is likely intermittent as flows were low in May and September 2006. It was determined that this watercourse supports a warmwater baitfish community. This channelized watercourse flows through a clay lined channel. Riparian vegetation consists of trees, shrubs and herbaceous vegetation. This fish habitat is considered marginal. The reach upstream of South Talbot Road was determined to be ephemeral and not fish habitat.

Grand Marais Drain (Turkey Creek)

This watercourse is listed as a type E municipal drain downstream of Huron Church Road, indicating that it is permanent, the temperature regime is warmwater and sportfish are

present. The reach upstream of Huron Church Road is unclassified. LGL determined that this watercourse is permanent and supports a warmwater sportfish community. This watercourse flows through a concrete lined channel. Even though fish habitat is homogenous, it supports a relatively diverse warmwater community. There is no riparian vegetation throughout this reach as the banks are also concrete lined. This reach is regularly cleaned out to maintain flood control. Despite the presence of sportfish, this fish habitat is considered marginal as the habitat exists in a concrete lined channel.

Healy Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is likely intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse likely supports a seasonal fish community when flows in the Detroit River are high enough to allow fish to migrate upstream over the gravel beach barrier. Only the reach downstream of Sandwich Street was determined to be fish habitat as the buried culvert under Sandwich Street is a barrier to fish movement. This channelized watercourse flows through a detritus lined channel, which is choked with fragmites. This fish habitat is considered marginal.

Lennon Drain

This watercourse is listed as a type E municipal drain downstream of Huron Church Road, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. LGL determined that this watercourse is permanent and supports a warmwater sportfish community. Upstream of Talbot Road, the channelized watercourse flows through a silt, clay and geotextile substrate, with manicured grasses and a few trees as riparian vegetation. Between Talbot Road and Huron Church Line, the channelized watercourse flows through a riprap lined channel with herbaceous vegetation and a few shrubs providing shade to the channel. Downstream of Huron Church Line the watercourse flows through a clay channel with manicured grasses and a few trees as riparian vegetation. This fish habitat is considered important.

McKee Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is likely intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse likely supports a seasonal fish community as a northern pike was observed upstream of the E.C. Row Expressway in May 2006. This channelized watercourse flows through a muck and detritus lined channel, which is choked with fragmites. Upstream of Matchette Road the watercourse is piped under a residential property. This pipe is a barrier to fish migration and the watercourse upstream of this pipe is not fish habitat. This fish habitat is considered important.

McKee Creek

This watercourse is listed as a type E municipal drain downstream of Sandwich Street, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. The reach upstream of Sandwich Street is listed as a type F drain, indicating that

it is intermittent, the temperature regime and potential fish species are unknown. LGL determined that this watercourse is permanent and supports a warmwater sportfish community. This channelized watercourse flows through a muck lined channel. The banks upstream of Sandwich Street are lined with sheet piling. The riparian vegetation consists of fragmites, cattails, and herbaceous vegetation. Downstream of Sandwich Street, the channel flows through a series of double culverts and flows into a canal. A local fisherman indicated that in the spring walleye and perch often migrate upstream but are limited by the size of the double culverts and most cannot make it past this barrier. The removal of this barrier presents an excellent opportunity for habitat enhancement. This fish habitat is considered important.

Titcombe Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is intermittent as there was no flow, and only standing pools of water in September 2006. It was determined that this watercourse likely supports a seasonal fish community as a northern pike was observed in May 2006. This channelized watercourse flows through a silt and detritus lined channel. Riparian vegetation consists of trees, shrubs, herbaceous vegetation and manicured grasses. This fish habitat is considered important.

Wolfe Drain

Downstream of the confluence with Cahill Drain, the watercourse is listed as a type E municipal drain, indicating that it is permanent, the temperature regime is warmwater and sportfish are present. Upstream of the confluence with Cahill Drain, the watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse supports permanent warmwater baitfish habitat as flows were moderate in May and September 2006. Only baitfish were captured upstream of Talbot Road, however habitat potential exists for sportfish. This channelized watercourse flows through a clay lined channel. There is very little habitat heterogeneity. Riparian vegetation consists of shrubs, trees, and herbaceous vegetation. This fish habitat is considered important.

Youngstown Drain

This watercourse is listed as a type F municipal drain, indicating that it is intermittent, and the temperature regime and potential fish species are unknown. LGL determined that this watercourse is likely intermittent as there was little flow in May and September 2006. It was determined that this watercourse likely supports a seasonal fish community. This channelized watercourse flows through a silt lined channel. Riparian vegetation consists mainly of herbaceous species. This fish habitat is considered marginal.

Unnamed Pond

This waterbody is unclassified. LGL determined the waterbody to be permanent and to support a warmwater sportfish community. It appears to be man-made and it is not connected to any nearby drains. Substrate in the pond appears to be clay and muck. A few riparian trees and shrubs are found around the pond. This fish habitat is considered important.

Detroit River

Previous reports indicate that at least 69 species of fish inhabit the Detroit River (Manny *et al*. 1988 *in* MDNR; MOE 1991 and LaPointe, Corkum and Mandrak 2005). These species are listed in Table 9 and include many sportfish as well as migratory species that use the river to move between Lakes Erie and St. Clair. Diverse habitat exists within the river, especially in the wetlands which are used by warmwater species for many of their life functions (spawning, nursery, foraging). Several provincially significant wetlands exist within the river or are associated with tributary river mouths. These wetlands cover an area of 462.5 ha. As reported in MDNR and MOE (1991), 41 fish species have been reported to spawn within the Detroit River and an additional seven species are suspected of spawning. Manny *et al*. (1988 *in* MDNR and MOE 1991) reported that 25 species use the river as nursery habitat, including both warm and coldwater species.

The investigation in the vicinity of the bridge piers was compromised by turbid water conditions. Strong northeast winds stirred up sediment in Lake St. Clair which were conveyed downstream in the Detroit River. As a result, visibility was reduced to less than 20 cm. For this reason, the camera, which is equipped with strong LED lights, did not record many features of the Detroit River bottom as it requires relatively clear water to operate. The strong current also made proper deployment difficult. Despite these problems, some substrate features were recorded intermittently by the underwater camera. These included short aquatic vegetation which was rooted to the substrates and details that enabled the camera to discern clay, sand and gravel substrates. No large or distinct habitat features (i.e. boulders, logs, etc.) were observed. The Ekman dredge did not deploy correctly due to the strong current and great depth (10-15 m). As a result, no full grab samples were taken. However, some substrate was attached to the Ekman as it was on the bottom of the river and consisted of clay and a clay/sand mix. The low-lying aquatic vegetation seen on the underwater video was also attached to some of the grab samples. The fish habitat in the Detroit River in the vicinity of the bridge piers is considered important.

2.3.3.3 Benthic Invertebrates

The Hilsenhoff Biotic Index (HBI) was used to evaluate water quality at benthic sampling stations. HBI values give us an indication of the levels of organic pollution in the water. Other metrics were also used to interpret water quality and habitat conditions at these stations such as species richness and percentage of intolerant species. Table 10 provides a summary of the metrics and HBI values for combined replicates for sampling stations. Results from individual replicates are not shown as they had too few organisms in each sample to analyze HBI values. Stations 2, 7 and 8 are located on watercourses found outside the AOI; therefore, they are not described.

The benthic surveys reveal that the habitat quality at all sampling stations is poor. All stations have been highly altered. Stations 1 and 6 in Cahill Drain have been channelized. Stations 3 and 4 in Turkey Creek have been straightened and have a concrete channel. Station 5 in Turkey Creek has had gabion reinforcement of the bank. Station 9 in Lennon Drain has been channelized and filled with rip rap material.

TABLE 10.

SUMMARY OF BENTHIC DATA FOR STATIONS LOCATED IN THE AREA OF INVESTIGATION

	Station 1 Cahill Drain	Station 3 Turkey Creek	Station 4 Turkey Creek	Station 5 Turkey Creek	Station 6 Cahill Drain	Station 9 Lennon Drain
Date sampled	9March05	9March05	10March05	10March05	10March05	10March05
abundance	338	256	196	125	293	347
richness	16	15	4	7	8	14
EPT abundance	5	0	0	2	0	0
EPT richness	2	0	0	1	0	0
% EPT	1.48%	0.00%	0.00%%	1.60%	0.00%	0.00%
# intolerant	2	3	1	1	0	2
% tolerant	80.00%	73.73%	75.00%	80.00%	100.00%	75.00%
% oligochaetes	26.63%	50.78%	0.00%	2.40%	6.83%	6.63%
% grazers	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
HBI	6.80	6.14	5.98	7.43	6.18	7.36
Water quality	Fairly Poor	Fair	Fair	Fairly Poor	Fair	Fairly Poor

Station 1 – Cahill Drain Downstream of Huron Church Line

Habitat conditions at this station were homogeneous. Substrate consisted of mainly silt. Riparian vegetation was composed of old field species with some shrubs and trees.

Water quality rating from the HBI value for this station was Fairly Poor. This indicates that there is significant organic pollution at this station. One species of mayfly (Ephemeroptera), and one species of caddisfly (Trichoptera) were found at this station. These organisms are usually indicators of good water quality, however the mayfly genus *Caenis* found at this station is tolerant of degraded habitat conditions. Percentage of tolerant organisms at this station was very high indicating that while species richness is average, the species present are tolerant of poor habitat and water quality conditions. Oligochaetes (worms) are found in habitats with fine sediments and a higher oxygen demand. The high percentage of oligochaetes at this station is an indicator of the poor habitat conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 3 - Turkey Creek Downstream of Huron Church Road

Habitat conditions at this station were homogeneous. Substrate consisted of a concrete channel with some gravel, sand, and silt. Riparian vegetation was limited to old field species along the concrete banks. Upstream of the sample station, there is no riparian vegetation as the banks are concrete.

Water quality rating from the HBI value for this station was Fair. This indicates that there is fairly significant organic pollution at this station. No mayflies (Ephemeroptera), stoneflies (Plecoptera), or caddisflies (Trichoptera) were found at this station. These organisms are usually indicators of good water quality. Their absence may indicate that water quality at this station is poor. Percentage of tolerant organisms at this station was very high indicating that while species richness is average, the species present are tolerant of poor habitat and water quality conditions. The high percentage of oligochaetes at this station is an indicator of the poor habitat conditions. The lack of grazers at this

station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 4 - Turkey Creek Downstream of Dominion Boulevard

Habitat conditions at this station were homogeneous. Substrate consisted of a concrete channel with some sand, and silt deposits. There was no riparian vegetation as the banks were concrete.

Water quality rating from the HBI value for this station was Fair. This indicates that there is fairly significant organic pollution at this station. Species richness was low at this station indicating that habitat diversity is low and conditions are degraded. No mayflies, stoneflies , or caddisflies were found at this station. Their absence may indicate that water quality at this station is poor. Percentage of tolerant organisms at this station was very high indicating that while species richness is average, the species present are tolerant of poor habitat and water quality conditions. Chironomids accounted for 99.5% of the sample. These organisms occupy the same habitat niche as the oligochaetes indicating the poor habitat conditions at this station. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 5 – Turkey Creek Downstream of Malden Road

Habitat conditions at this station were more diverse then the rest of the stations. Substrate consisted of mainly silt with some cobble. Riparian vegetation was composed of old field species with some shrubs. Only one replicate was taken at this station, as only one transect downstream of the bridge was shallow enough to wade. Water depth was high upstream and downstream of the bridge.

Water quality rating from the HBI value for this station was Fair. This indicates that there is fairly significant organic pollution at this station. Species richness was low at this station indicating that habitat diversity low and conditions are degraded. One species of caddisfly was found at this station that is somewhat intolerant of degraded habitat conditions. Percentage of tolerant organisms at this station was very high indicating that the species present are tolerant of poor habitat and water quality conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 6 – Cahill Drain Downstream of Malden Road

Habitat conditions at this station were homogeneous. Substrate consisted of mainly sand and silt. Riparian vegetation was composed of old field species with some shrubs.

Water quality rating from the HBI value for this station was Fair. This indicates that there is fairly significant organic pollution at this station. Species richness was low at this station indicating that habitat diversity low and conditions are degraded. No mayflies, stoneflies, or caddisflies were found at this station. Their absence may indicate that water quality at this station is poor. Percentage of tolerant organisms was 100%, indicating that the species present are tolerant of poor habitat and water quality conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

Station 9 – Lennon Drain Downstream of Huron Church Line

Habitat conditions at this station were homogeneous. Substrate consisted of rip rap. Riparian vegetation was composed of old field species with some shrubs.

Water quality rating from the HBI value for this station was Fairly Poor. This indicates that there is significant organic pollution at this station. No mayflies, stoneflies, or caddisflies were found at this station. Their absence may indicate that water quality at this station is poor. Percentage of tolerant organisms at this station was very high indicating that while species richness is average, the species present are tolerant of poor habitat and water quality conditions. The lack of grazers at this station is an indicator of the lack of allochtonous material (such as leaf litter) in this system.

2.3.3.4 Species at Risk

Five species of fish historically reported from the Detroit River are considered to be at risk in Ontario. No species at risk are reported from inland watercourses located within the AOI. Spotted gar (*Lepisosteus oculatus*) is ranked S2 and is considered to be Threatened by both COSEWIC and COSSARO. Its general provincial status is "at risk" likely due to its restricted range within Ontario, and it is tracked by the NHIC. Two cyprinid species reported from the Detroit River are also considered to be at risk: silver chub (*Macrhybopsis storeriana*) and pugnose minnow (*Opsopoeodus emiliae*). Both are ranked S2 and are considered of Special Concern by COSEWIC and COSSARO. Both are currently tracked by the NHIC and have a general provincial status of "sensitive". The last two species of concern are both in the sucker family: bigmouth buffalo (*Ictiobus cyprinellus*) and river redhorse (*Moxostoma carinatum*). The bigmouth buffalo is ranked SU, meaning that it is unrankable at this time as more data is needed. The river redhorse is ranked S2. Both of these species are considered of Special Concern by COSEWIC and COSSARO. The general provincial status of the bigmouth buffalo is "undetermined" and the river redhorse general provincial status is "sensitive". The proposed location of the bridge piers does not support critical habitat for any of these known species at risk.

2.3.4 Wildlife and Wildlife Habitat

2.3.4.1 Wildlife Species

The natural heritage features of the AOI were divided into 124 wildlife habitat units. These units formed the basic habitats around which most of the terrestrial vertebrates were recorded, SARA species were searched for and priority species of conservation concern were noted. Four continuous seasons of data collection and in-field wildlife investigations within and around these wildlife units resulted in the compilation of 139 species (11 herpetofauna, 108 birds and 20 mammals). A list of terrestrial vertebrates recorded in the AOI is presented in Appendix F.

Four amphibian species and seven reptile species were recorded in the AOI. Amphibians include frogs and toads since no salamanders were located anywhere in the the AOI. The absence of salamanders from the AOI was expected based on discussions with local experts and review of secondary information.

The majority of the amphibians were found at specific vernal ponds and creek drains during the breeding season. As a result, these locations were identified as important amphibian breeding areas. American toad (*Bufo americanus*) and/or western chorus frog (*Pseudacris triseriata*) were found in most of the breeding areas recorded. Only one pond, located near the east limits of the AOI, had green frog (*Rana clamitans*) egg masses. Chorus frogs were located predominantly in or around vernal pools within woodlots, whereas American toads and green frogs preferred ponds or creek drains in open areas. No leopard frog egg masses were found in any of the ponds investigated although adults were seen around creek drains throughout the summer.

Of the reptiles observed, snakes were recorded most often. The eastern foxsnake (*Elaphe gloydi*) was recorded on numerous occasions in wooded areas, along creeks, under buildings or under log piles in residential backyards. The other four species were located in tallgrass prairies, cultural meadows and cultural thickets under boards, tiles, rocks, or whatever they could hide under during the evenings and early mornings. Of these, Butler's gartersnake (*Thamnophis butleri*) was recorded only in the open tallgrass prairie (TPO2-1) habitats between Chappus Road and E.C. Row Expressway. Based on discussions with local experts, Butler's gartersnake was present in Malden Park prior to the construction of the E.C. Row Expressway and conversion of Malden Park into parkland. However, this population has been extirpated from Malden Park and one of the few remaining areas for Butler's gartersnake outside of the Ojibway Prairie is the area between Chappus Road and the E.C. Row Expressway. This species has a strong affinity to prairie communities and a very small home range; therefore, it is very sensitive to habitat loss. A migrating painted turtle (*Chrysemys picta*) was found along Broadway Street just north of the Black Oak Woods. A snapping turtle (*Chelydra serpentina*) was observed in a creek drain north of Armanda Street near the east Chappus Road extension.

Birds comprised 108 of the 139 wildlife species recorded, with representatives in every habitat. Field survey data showed that 50 of these species were breeding birds that nested in about 75 % of the designated wildlife habitat units. The results of the breeding bird survey are presented in Appendix G. A list of the bird species recorded during the point-count surveys is presented in Appendix H. Most of the remaining 58 species, observed primarily in the spring and fall seasons, were considered non-residents or migrants. These migrants were observed moving through the western two-thirds of the area of investigation, using the Detroit River, Black Oak Woods, Ojibway Park, Ojibway Prairie Provincial Nature Reserve, Spring Garden Forest, the deciduous forests around Reddock Avenue and the St. Clair College Prairie ESA as migration corridors. Many of the forests, woodlots and cultural thickets, north of these major natural heritage features and within the area of investigation, were being used as continuations of these major north-south migration corridors. Areas like the forests, woodlots and cultural thickets of Brighton Beach, the Malden Park forest connecting with the woodlots and cultural thickets around Chappus Street, the woodlots around E.C. Row Expressway just north of Spring Garden Park and the woodlots and cultural thickets on the south side of Talbot Road opposite St. Clair College, all contained hundreds of migrating birds during the spring and fall seasons and contributed to the continuation of a series of bird migration corridors going through the AOI. The entire AOI is located within two continental bird migration corridors associated with the Atlantic and Mississippi Flyways. The large forest on the west side of Huron Church Road, just south of Turkey Creek (north and south of Reddock Avenue) was identified as a stop-over area for birds of prey on migration. Hundreds of Broad-winged Hawks (*Buteo platypterus*), Red-tailed Hawks (*Buteo jamaicensis*),

Coopers Hawk (*Accipter cooperii*), Goshawk (*Accipiter gentilis*) and Turkey Vultures (*Cathartes aura*) stopped in this forest to roost while on their journey southward.

Two species of swallows were located on the Turkey Creek Bridge on Huron Church Road. Up to 20 nests were found on the ceiling cross beams but only 11 were considered active at the time of investigation. Eight Barn Swallow (*Hirundo rustica*) nests, located on the ceiling beams at the center of the bridge, and three Cliff Swallow (*Petrochelidon pyrrhonota*) nests, located on the outside ceiling beams, were recorded.

Two wildlife units contained a large number of migratory bird nests as compared to most of the other units. W-BBA9 and W-NSG7 contained multiple nests from species such as Brown Trasher (*Toxostoma rufum*), Gray Catbird (*Dumetella carolinensis*), American Robin (*Turdus migratorius*), American Goldfinch (*Carduelis tristis*), Willow Flycatcher (*Empidonax traillii*), Yellow Warbler (*Dendroica petechia*) and Mourning Dove (*Zenaida macroura*). The diversity of migratory bird species centralized in such small areas makes these habitats highly important.

Based primarily on evidence from signs such as trails, tracks, scats, smells, sounds, etc., evidence for mammal activity was recorded in every habitat type. Incidental observations were made of red fox (*Vulpes vulpes*) carrying food to their pups in wildlife unit W-BBA9 and 3 fox pups playing in the early morning hours opposite W-BBA4. The only European hare (*Lepus europaeus*) recorded was spotted in the cultural meadow of W-BBA20 whereas eastern cottontails (*Sylvilagus floridanus*) were observed in open areas thoughout the AOI. Individuals were seen moving through the cultural meadows in W-CH12 and W-LAM6 or feeding around human habitations such as St. Clair College or the residence front lawns along Montgomery Drive just west of Talbot Road. Grey squirrel (*Sciurus carolinensis*) dreys were found in nearly every forest and woodlot. The abundance of raccoons (*Procyon lotor*) was recorded primarily from observing their trails and tracks going from habitat to habitat. White-tailed deer (*Odocoileus virginianus*) was also recorded in nearly every habitat type. Tracks, trails, scats, bedding areas and direct observations indicated their presence in cultural meadows, cultural thickets, marshes and forests throughout the AOI. Road kills were another method used to determine mammal presence in particular habitats. Opossums (*Didelphis virginianus*) were found along Broadway Street just east of Ojibway Parkway and along Talbot Road next to a meadow marsh on the south side of the Heritage Park Alliance Church.

Migration corridors for mammals were seen through every habitat and connecting each of the habitat types. Of particular note, the Cahill Drain, connecting the St. Clair College Prairie ESA on the north side of Highway 3 to the deciduous swamp located on the south side of Highway 3 was heavily traveled by mammals in both summer and winter. Tracks of small mammals, muskrat (*Ondatra zibethica*), red fox, coyote (*Canis latrans*) and raccoon were recorded along Cahill Drain and under Highway 3 going in both directions. White-tailed deer showed no evidence of travel through the culvert but used the creek drain for travel on the north side of Highway 3. The fact that corridors were so abundant indicated high mammal activity and the importance of the remaining natural heritage features found in the AOI.

Winter investigations indicated that most of the AOI had a limited amount of wildlife activity. Herpetofauna were in hibernation and most of the breeding bird species had left the area. Only a few winter bird species remained using particular habitats as winter feeding areas. Trails and tracks showed that a few mammal species used certain

portions of the AOI for traveling and bedding down. Fox and coyote used frozen creek drains, open fields and human made paths through woodlots for winter travel. Raccoons, especially during their late winter breeding season, travelled from woodlot to wooldlot. Random white-tailed deer travel corridors, to and from feeding areas, existed in the forests and cultural thickets between Turkey Creek and Cabana Road, between Spring Garden Road and E.C. Row Expressway and between Armanda Street and E.C. Row Expressway. Only a few deer bedding areas found in the AOI were located in the forested area of wildlife unit W-CH2 around Chappus Road north of Armanda Street. Most of the deer bedding areas appeared to be outside the AOI, concentrated in the Spring Garden Forest ANSI, while most of the feeding areas appeared to be in the AOI.

2.3.4.2 Wildlife Habitat

All the wildlife units contained one or more of 13 habitat types recognized in the AOI. These habitat types are described below. A detailed assessment of the significance of each wildlife habitat unit is presented in Appendix I. By analyzing each of the habitat types throughout the AOI, a pattern of species composition per habitat type became evident. The location of wildlife habitat units located in the AOI is presented in Figure 5.

Deciduous Forests and Cultural Woodlots

Many wildlife species used the deciduous forests (FOD) and cultural woodlots (CUW) as migration corridors, living spaces and breeding areas. Besides their use for the seasonal migration of birds (noted above), mammals regularly used these habitats as corridors for daily movements to and from their feeding and resting areas in various habitats. Small mammals, red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginianus*) are a few species that used FODs and CUWs as a food source. Raccoons and other small mammals also used specific trees within the habitat for hibernation den sites while white-tailed deer used certain areas for winter deer yards protecting them from the elements. Forests and woodlots were also important breeding areas for wildlife. Chorus frogs were recorded calling and breeding at many of the vernal ponds found within some of these woodlots. Up to 23 species of migratory birds, many considered species of conservation priority, were recorded using the forests and woodlots for nest sites. Red-tailed Hawk, Eastern Wood Pewee (*Contopus virens*) and Baltimore Oriole (*Icterus galbula*) nested in the forest canopies while the understory contained nests of Indigo Bunting (*Passerina cyanea*), Wood Thrush (*Hylocichla mustelina*) and American Robin to name a few. Cavities in the trunks of dead standing trees were used by Tree Swallows (*Tachycineta bicolor*) and Black-capped Chickadees (*Poecile atricapillus*), whereas Downy Woodpecker (*Picoides pubescens*) and Northern Flicker (*Colaptes auratus*) excavated their own cavities in the trunks of live trees. Many of the woodlot trees were also used as den sites by small mammals and raccoons and dreys were constructed in them by gray squirrels (*Sciurus carolinensis*) for raising their young.

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Wildlife Habitat Unit

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

WILDLIFE HABITAT UNITS LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 5a
Date: February 2007	**Prepared By:** MWF
Scale: 1 : 10,000	**Checked By:** GNK

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Wildlife Habitat Unit

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

WILDLIFE HABITAT UNITS LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 5b
Date: February 2007	**Prepared By:** MWF
Scale: 1 : 10,000	**Checked By:** GNK

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Wildlife Habitat Unit

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

WILDLIFE HABITAT UNITS LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 5c
Date: February 2007	**Prepared By:** MWF
Scale: 1 : 10,000	**Checked By:** GNK

LEGEND

- Maximum Footprint Area of Combined Alternatives
- Wildlife Habitat Unit

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

WILDLIFE HABITAT UNITS LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 5d
Date: February 2007	**Prepared By:** MWF
Scale: 1 : 10,000	**Checked By:** GNK

Cultural Thickets

Being continuations of the some of the larger fragmented FOD and CUW migration corridors, cultural thickets (CUT) were also used by migratory birds as stop over areas for feeding while on their seasonal migrations. Many CUTs surrounded creek drains and provided protection from the elements for amphibian species breeding there. Numerous garter snakes (*Thomnophis sirtalis*) were recorded using this habitat for hunting during the day and hiding through the night. CUTs also linked larger habitats together so mammals used them as daily movement corridors from feeding areas to resting areas. Track evidence through corridors showed heavy use of CUTs by raccoon, red fox, coyote (*Canis latrans*) and white-tailed deer. Of most importance, CUTs provided a large number of breeding birds with a well protected habitat for their nests. Up to 14 species of migratory birds were recorded to use CUTs in the AOI for breeding. For example, wildlife unit W-NSG7 recorded numerous Gray Catbird nests, plus nests of Yellow Warbler, American Goldfinch and American Robin. Breeding bird evidence then accounted for another three to four species added to this unit.

Cultural Meadows

Cultural meadows (CUM), found in more wildlife units in the AOI than any other habitat, were used by wildlife as migration corridors, feeding and breeding areas. American toads were recorded many times in the habitat using it as a food source while Dekay's brown snakes (*Storeria decayi*) were recorded migrating through it to get to a wetter forest environment. Grassland bird species were recorded using these CUMs for food sources with increased numbers recorded during the migration periods. This habitat is also a breeding area for bird species such as Field Sparrow (*Spizella pusilla*), Savannah Sparrow (*Passerculus sandwichensis*) and Eastern Kingbird (*Tyrannus tyrannus*). White-tailed deer bedding areas were found throughout numerous CUMs in the area of investigation as were trails and tracks of raccoon, fox and coyote using these habitats as a travel corridors and feeding zones.

Cultural Savannahs

Ten cultural savannahs were identified as wildlife habitat units. Breeding evidence for at least 12 species of migratory birds, such as Orchard Oriole (*Icterus spurius*), Gray Catbird, American Goldfinch, Willow Flycatcher and Yellow Warbler, was found. Numerous mammal corridors extended through these habitats connecting feeding areas and dwelling areas in surrounding habitats.

Tallgrass Prairies

Although represented in numerous wildlife units within the area of investigation, the area each tallgrass prairie (TPO) represents is relatively small in comparison to other habitats. However, they contain some of the most unique wildlife species. Every snake species recorded in the AOI was found in the TPO habitats. Snakes used this habitat for hunting their prey and as corridors to neighboring habitats. Two of these species, Butler's gartersnake and eastern foxsnake, are regulated under SARA. Bird nests and breeding bird behaviours indicated that species, such as Willow Flycatcher and Field Sparrow, nested in this habitat. Trail evidence also indicated that the TPO's were used by mammals as potential feeding areas and as movement corridors among surrounding habitats.

Meadow Marsh and Shallow Marsh

These meadows (MAM and MAS) attract wildlife species dependant on a greater amount of water during their life cycle. Many snake species, like foxsnakes, are attracted to these habitats for a food source. Up to 15 species of birds were recorded within MAMs and MASs of the AOI. Some species recorded, like American Woodcock (*Scolopax minor*), Yellow Warbler and Common Yellowthroat (*Geothlypis trichas*), prefer to breed in this type of habitat. Numerous mammal species, like cottontail (*Sylvilagus floridanus*), opossum (*Didelphis virginianus*), raccoon and deer used these habitats for feeding. Numerous trails throughout these habitats also showed their use as movement corridors among surrounding habitats.

Deciduous Swamps

Four wildlife units contained deciduous swamps (SWD). A combination of both forest and wetland species, such as Baltimore Oriole, Common Grackle (*Quiscalus quiscula*), Carolina Wren, Cooper's Hawk, Common Yellowthroat and Song Sparrow, were recorded. Trails and tracks from deer, coyote and raccoon were also observed.

Cultural Plantations

Not known for their biodiversity, cultural plantations (CUP) recorded a limited variety of wildlife. Foxsnakes were recorded moving through these habitats when located next to human residences. No breeding birds were recorded within these habitats but several species were observed using them as feeding areas. Mammals used them as protective migration corridors moving to and from surrounding habitats.

Open Water

The only open water (OAO) found was a pond in one of the agricultural areas. Trails leading to the pond indicated its use as a water and food source for mammals. Amphibians, such as green frog, bred there because it is a permanent water source. Birds, such as tree swallows, fed over the water and appeared to be nesting in the dead trees located on the northwest side of the pond.

Agricultural Areas

These areas are not recognized by the ecological land classification system (ELC), but were recorded as wildlife habitat units because of their uniqness as breeding habitats to many species of birds. Found predominantly at the east end of the AOI, bird species such as Horned Larks (*Eremophila alpestris*), Killdeer (*Charadrius vociferus*), Spotted Sandpiper (*Actitis macularius*) and Vesper Sparrow (*Pooecetes gramineus*), used these tilled open fields to nest in. The edges of these agricultural fields consisted of tree rows, thickets and creek drains that provided additional nesting habitats. Kingbirds, Savannah Sparrows, Song Sparrows (*Melospiza melodia*), Canada Geese (*Branta canadensis*) and Mallard (*Anas platyrhynchos*) were all recorded nesting on the periphery of these agricultural fields.

Residential Areas

Also not recognized by ELC, these wildlife habitat units contained wildlife species particularly adapted to human presence. Snakes, such as the foxsnake, were recorded dwelling in backyard wood piles or under garages of individual homes. Birds, like Catbirds, Chipping Sparrows (*Spizella passerina*) and Mourning Doves, nested on or in close proximity to the residences themselves. Opportunistic mammals, like white-tailed deer, raccoon, striped skunk (*Mephitis mephitis*) and eastern chipmunk (*Tamias striatus*) used residential areas for foraging and den sites.

2.3.4.3 Species at Risk

None of the amphibians recorded in the AOI are regulated by legislation. Four of the reptile species are regulated under the *Fish and Wildlife Conservation Act* (FWCA). Two of these species, Butler's gartersnake and eastern foxsnake, are also listed as Schedule 1 species under the *Species at Risk Act*. Butler's gartersnake was found in two separate locations on the south side of E.C. Row Expressway in wildlife units W-CH10 and W-CH22. Three foxsnakes were observed in two different field locations while another three were reported by local residents in two separate residential areas. Two of the three foxsnakes found during the investigations were located along the shoreline of Turkey Creek just west of the Huron Church Road Bridge. The other was found basking on the asphalt walkway just south of Spring Garden Road at the northwest corner of wildlife habitat unit W-LAM1. Two of the residential reports were in the woodlot and a residence backyard on the north side of Armanda Street, while the other was reported dwelling under the back corner of a garage next to a residence along the north side of Reddock Street just west of Huron Church Road. Both of these residential locations were verified by local biologists. The eastern Massasauga (*Sistrurus catenatus catenatus*) and the eastern hog-nosed snake (*Heterodon platirhinos*), both designated as Threatened by COSEWIC and COSSARO and regulated under the FWCA and Schedule 1 of SARA, occur in the Ojibway Prairie Complex, but none were observed during field investigations.

The *Migratory Birds Convention Act* (MBCA) regulates 90 of the 108 bird species recorded. The *Fish and Wildlife Conservation Act* (FWCA) regulates eleven species, primarily the birds of prey. The only avian species regulated by SARA is the Red-headed Woodpecker found in the Black Oak Woods between Ojibway Parkway and Matchette Road. The Red-headed Woodpecker is listed as Special Concern (SC) in Schedule 3 of SARA. Locally, 38 bird species are considered priority species of conservation concern by Bird Studies Canada for Essex County. Of these, 32 species are ranked as highly sensitive to any disturbances in or around their habitat.

Fifteen of the mammals recorded are regulated under the FWCA. No mammal species found in the area of investigation are regulated under SARA. The status of terrestrial vertebrate species recorded in the AOI is presented in Appendix F.

2.3.5 Designated Natural Areas

A number of Areas of Natural and Scientific Interest (ANSIs) and Environmentally Significant Areas (ESAs) and one Provincial Nature Reserve are located within the AOI. One of these natural heritage features has also been evaluated by Carolinian Canada. In addition, the City of Windsor and the Town of LaSalle have both undertaken biological

inventories of the remnant forest and prairie habitat features not already designated and afforded some form of protection in planning documents to determine if these areas should be included under an Open Space/Greenway system policy. These areas are referred to as Candidate Natural Heritage Sites (CNHSs). This section provides a summary of these designated natural areas located in the AOI and its vicinity. The location of designated natural areas is presented in Figure 6.

2.3.5.1 Provincial Nature Reserve

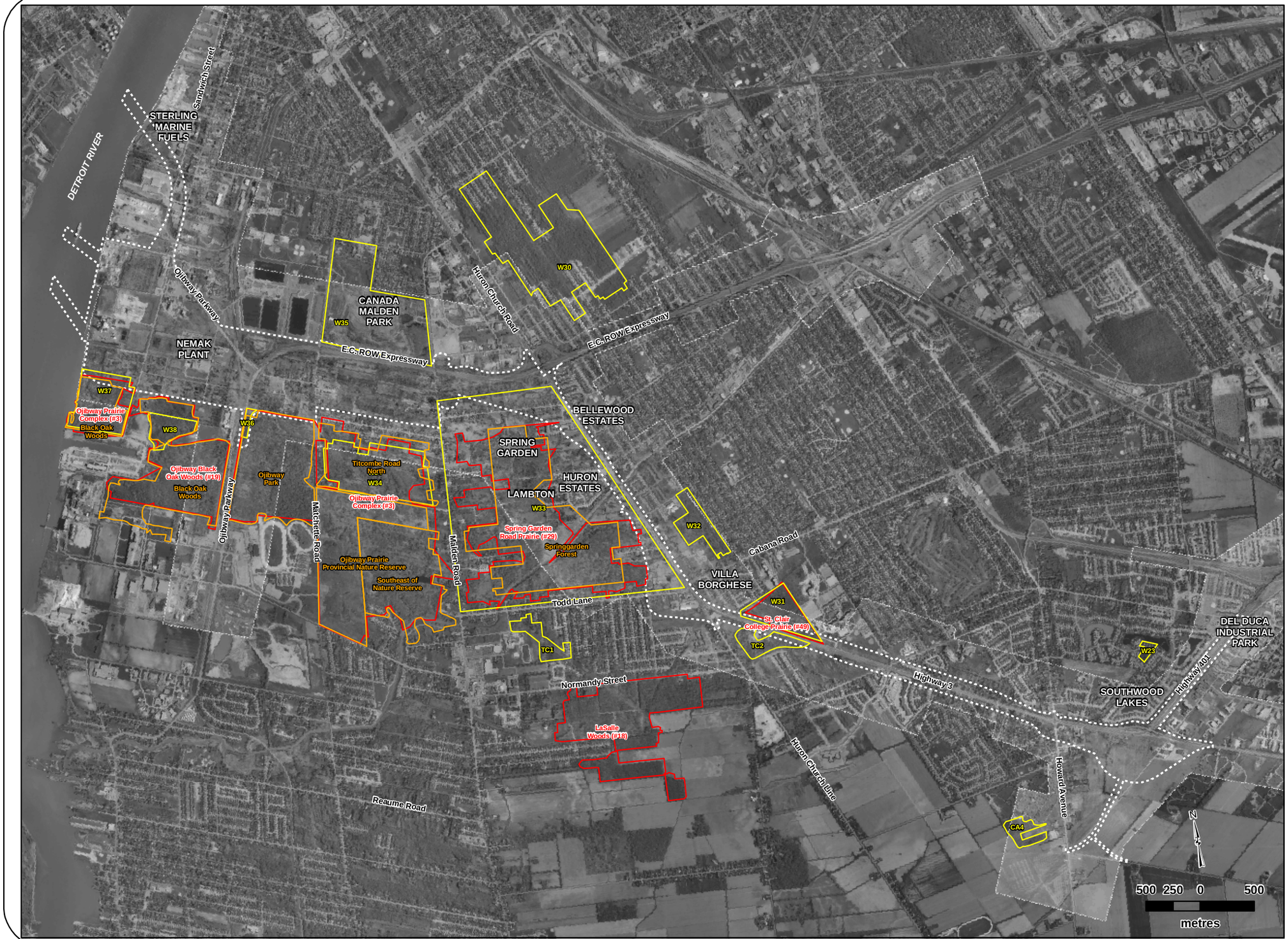
Provincial Nature Reserves are areas selected to represent the distinctive natural communities and landforms in Ontario. Ojibway Prairie is a 65 ha Provincial Nature Reserve that was regulated under the *Provincial Parks Act* in 1977 to protect one of the largest remnants of tallgrass prairie and oak savannah in Ontario (OMNR 2002). The dominant feature of this nature reserve is the tallgrass prairie plant community. Within the Ojibway Prairie Provincial Nature Reserve, 533 flowering plant species have been documented, of which over 60 are of prairie and western affinity. It is home to over 60 plants that are rare in Ontario as well as a number of animal species representative of prairie habitats (Pratt 1979; OMNR 2002). The Ojibway Prairie Provincial Nature Reserve forms one component of the Ojibway Prairie Complex ANSI.

Vegetation communities in the Provincial Nature Reserve include Old Field (27.5 ha), Forb Prairie (17 ha), Tallgrass Prairie (11.5 ha), Thickets (3 ha), Oak Savannah (4.5 ha), and Black Oak/Red Hickory Forest (1.5 ha). While some early successional tallgrass prairie species occur in Old Field communities, the majority of species with a prairie affinity are located within the remaining vegetation communities. The Provincial Nature Reserve contains two vegetation communities that are globally and provincially rare. Moist-Fresh Tallgrass Prairie Type (TPO2-1) and Moist-Fresh Black Oak Tallgrass Savannah Type (TPS2) both have a global rank of G1 (Extremely Rare – having less than five occurrences in the overall range) and a provincial rank of S1 (Extremely Rare in Ontario – having less than five occurrences in the province).

The Provincial Nature Reserve provides habitat for three nationally and provincially Threatened wildlife species listed on SARA, Schedule 1, including eastern foxsnake (*Elpahe gloydi*), Butler's gartersnake (*Thamnophis butleri*) and eastern hog-nosed snake (*Heterodon platirhinos*). Purple twayblade (*Liparis liliifolia*) and eastern prairire fringed orchid (*Platanthera leucophaea*), both nationally and provincially Endangered and listed on SARA, Schedule 1, are present in the reserve. Colicroot (*Aletris farinosa*) and willowleaf aster (*Symphotrichum praealtum*), both nationally and provincially Threatened and listed on SARA, Schedule 1, are present in the reserve. Several provincially, regionally and/or locally significant species are also present in the Provincial Nature Reserve.

2.3.5.2 Evaluated Wetlands

There are no evaluated wetlands located in the AOI.



LEGEND

- Maximum Footprint Area of Combined Alternatives
- Area of Natural and Scientific Interest
- Candidate Natural Heritage Site
- Environmentally Significant Area

Data Sources: LGL Limited field surveys, Spring 2006 aerial photography.

DESIGNATED NATURAL AREAS LOCATED IN THE AREA OF INVESTIGATION

LGL Limited
environmental research associates

Project:	TA4137	**Figure:**	6
Date:	February 2007	**Prepared By:**	MWF
Scale:	1 : 35,000	**Checked By:**	GNK

2.3.5.3 Areas of Natural and Scientific Interest

ANSIs in the AOI include several provincially and regionally significant Life Science ANSIs. According to the OMNR (1998; 2004a), the Ojibway Prairie Complex provincially significant Life Science ANSI is comprised of the following areas:

- Ojibway Prairie Provincial Nature Reserve;
- Prairie Remnants (Ojibway Park) Life ANSI;
- Prairie Remnants (Titcombe Road North) Life ANSI;
- Prairie Remnants (Spring Garden Road) Life ANSI;
- Prairie Remnants (Black Oak Woods) Life ANSI; and
- Prairie Remnants (Southeast of Nature Reserve) Life ANSI.

These areas are identified on Figure 6.

Ojibway Prairie Provincial Nature Reserve

A summary of the features of the Ojibway Prairie Provincial Nature Reserve was presented previously.

Ojibway Park

Ojibway Park is a 64 ha site dominated by a Swamp White Oak Mineral Deciduous Swamp (SWD1-1), which has a provincial rank of S2S3 (Very Rare to Uncommon in Ontario – having five to 100 occurrences in the province). Prairie, savannah and woodland communities are also present. At least three different prairie communities have been identified in the park based on differing herbaceous layer species assemblages. Woody species in savannah and woodland communities include pin oak, swamp white oak, black oak (*Q. velutina*), and red maple.

Slender bush-clover (*Lespedeza virginica*), which is nationally and provincially Endangered and listed on SARA, Schedule 1, is present in Ojibway Park. Several provincially, regionally and/or locally significant species are also present in Ojibway Park (OMNR 2002).

Titcombe Road North

This 40 ha site consists of tallgrass prairie and oak woodland communities. At least three different prairie communities have been identified in the Titcombe Road North ANSI based on differing herbaceous layer species assemblages. Woody species in woodland communities include black oak, white oak (*Quercus alba*) and red hickory (*Carya ovalis*).

Data collected by LGL Limited to date does not provide details as to the presence/absence of significant species in this portion of the Ojibway Prairie Complex provincially significant Life Science ANSI (OMNR 2002).

Spring Garden Road

This 165 ha site consists of tallgrass prairie and oak savannah communities, all of which have a provincial rank of S1 (Extremely Rare in Ontario – having less than five occurrences in the province). Other vegetation communities present in Spring Garden

Road ANSI include a large wetland and old field communities. The wetland was originally an artificially constructed lagoon and is presently the largest remaining wetland in the City of Windsor (Woodliffe 1994).

Spring Garden Road ANSI is home to approximately 475 species of plants, 66 species of breeding birds, 14 species of mammals, 10 species of reptiles, four species of amphibians and 66 species of butterflies. Many of the plant species have a prairie affinity (Woodliffe 1994). Purple twayblade, which is nationally and provincially Endangered and listed on SARA, Schedule 1, is present in Spring Garden Road ANSI. Two nationally and provincially Threatened species listed on SARA, Schedule 1 are present including colicroot and dense blazing star (*Liatris spicata*). American chestnut (*Castanea dentata*), which is nationally and provincially Threatened and listed on SARA, Schedule 2, and prairie rose (*Rosa setigera*) and Riddell's goldenrod (*Solidago riddellii*), which are listed on SARA, Schedule 1 and as Special Concern both nationally and provincially, are present in Spring Garden Road ANSI. Several provincially, regionally and/or locally significant species are also present in Spring Garden Road ANSI (Oldham 1994).

Black Oak Woods

This 46 ha site is dominated by a Moist-Fresh Black Oak-White Oak Tallgrass Woodland community (TPW2-1). This community type has a global rank of G1 (Extremely Rare – having less than five occurrences in the overall range) and a provincial rank of S1 (Extremely Rare in Ontario – having less than five occurrences in the province). Dominant tree species include black oak and white oak, with some particularly large specimen trees situated at the north end of the woodland.

This ANSI is home to at least 24 prairie indicator species. Purple twayblade, which is nationally and provincially Endangered and listed on SARA, Schedule 1, willowleaf aster (*Symphotrichum praealtum*), which is nationally and provincially Threatened and listed on SARA, Schedule 1, and American chestnut, which is nationally and provincially Threatened and listed on SARA, Schedule 2 are all present in Black Oak Woods ANSI. Several provincially, regionally and/or locally significant species are also present in Black Oak Woods ANSI (OMNR 2002).

Southeast of Nature Reserve

This 40 ha site located to the southeast of Ojibway Prairie Provincial Nature Reserve contains species and communities with a prairie affinity (OMNR 2002). Data collected by LGL Limited to date does not specify the communities located within this portion of the Ojibway Prairie Complex provincially significant Life Science ANSI, nor does it provide details as to the presence/absence of significant species.

2.3.5.4 Environmentally Significant Areas

A number of ESAs are located in the AOI and its vicinity. Sixty-three (63) potential ESAs were inventoried in 1981 and/or 1982 and summarized by Oldham (1983). These ESAs were evaluated based on several physical, ecological, and social criteria, including:

- Significant Landforms;
- Linkage System;
- Migratory Stopover;

- Significant Communities;
- Hydrological Significance;
- Diversity;
- Significant Species;
- Size;
- Research/Education; and
- Aesthetic/Historical.

A location was deemed to be an ESA if at least two of the ten criteria were met. At that time, two ESAs were established within the AOI, including:

- Ojibway Black Oak Woods ESA (ESA #19); and
- Spring Garden Road Prairie ESA (ESA #29).

An update of ESAs within Essex County was undertaken in 1991 to evaluate supplementary sites, including previously considered sites and newly identified candidate ESA sites. At that time, a resolution was passed that all PSWs and ANSIs in Essex County be included as ESAs (information on ESAs that are also ANSIs was provided previously). The Ojibway Prairie Complex ESA was designated as ESA #3 through this decision. An ESA update report was prepared by ERCA (1994), which detailed the criteria met by locations not already designated as a PSW or ANSI. In addition to the above-referenced ANSIs, the following ESAs were identified in the AOI and its vicinity:

- St. Clair College Prairie ESA (ESA #49); and
- Sandwich West Woodlot/LaSalle Woods ESA (ESA #18).

A brief description of these ESAs is presented in Table 11 and their locations are shown in Figure 6.

2.3.5.5 Carolinian Canada Sites

Carolinian Canada is a coalition of groups, agencies and individuals working to halt the loss of and achieve a substantial increase in the size and quality of natural communities characteristic of Carolinian Canada.

Members include Conservation Authorities, Federation of Ontario Naturalists, Ontario Stewardship, federal and provincial departments and ministries, Canadian Botanical Association, Ontario Federation of Agriculture, and other groups. Dynamic Partnerships are the key to effective program delivery in this complex region. Since 1984 Carolinian Canada has provided a mechanism for cooperation between different levels of government, agencies, conservation authorities and non-government organizations.

TABLE 11.
SUMMARY OF ENVIRONMENTALLY SIGNIFICANT AREAS IN THE AOI AND ITS VICINITY

ESA Name/ Number	Significant Landforms	Linkage System	Migratory Stopover	Significant Communities	Significant Habitats/ Hydrological Significance	Diversity	Significant Species	Size	Research/ Education	Aesthetic and/or Historical Values
Ojibway Prairie Complex (#3)	See Section 2.3.5.1 Provincial Nature Reserve									
Sandwich West Woodlot/ LaSalle Woods (#18)		Linkage with Turkey Creek and Ojibway Prairie via a hydro corridor		Species assemblages include species with a prairie affinity	Prairie habitat	Good	Six SARA, Schedule 1 species, one SARA, Schedule 2 species, several provincially and locally significant species	115 ha	Associated with Brunet Park. Potential for scientific research on prairie flora and fauna	
Ojibway Black Oak Woods (#19)		Linkage with Ojibway Prairie		Species assemblages include species with a prairie affinity			One SARA, Schedule 2 species, several provincially and locally significant species			
Spring Garden Road Prairie (#29)		Linkage with Ojibway Prairie		Considered to be one of the best prairie remnants remaining in Essex County	Prairie habitat		Three SARA, Schedule 1 species, one SARA, Schedule 2 species, several provincially and locally significant species			Impressive display of fall-blooming prairie wildflowers
St. Clair College Prairie (#49)					Species assemblages include species with prairie and savannah affinities	Good	Three SARA, Schedule 1 species, several provincially and locally significant species		The St. Clair College of Applied Arts and Technology is adjacent to this ESA	

In 1984, 38 sites were identified as critical natural areas in a study by the identification sub-committee of Carolinian Canada. These sites total 40,800 acres in area. Since 1984, conservation efforts in Carolinian Canada have been directed towards securing these sites through a number of mechanisms that included purchase, municipal designation, landowner contact and private stewardship, and education and public awareness. A land acquisition and stewardship program from 1987-1992 secured over 15,000 acres through voluntary agreements with landowners. This landowner contact program was an innovative, ground-breaking program that spawned many subsequent initiatives. A further ~2,000 acres was purchased for conservation. Today a total of 14,500 acres of the sites is owned by conservation groups. The acquired Carolinian Canada sites are managed by different conservation organizations and by private landowners for conservation purposes. Today, Carolinian Canada promotes innovative and comprehensive approaches to conserving our natural heritage. Through the Big Picture Project, Carolinian Canada has adopted a new conservation vision of an integrated natural heritage network that connects and enhances these islands of green.

One of the 38 Carolinian Canada sites is present within the AOI, the Ojibway Prairie Remnants (Site #31). The Ojibway Prairie Remnants site is now encompassed within the Ojibway Prairie Complex ANSI.

2.3.5.6 Candidate Natural Heritage Sites

The City of Windsor and the Town of LaSalle have both undertaken biological inventories of the remnant forest and prairie habitat features to determine their local significance. These Candidate Natural Heritage Sites (CNHSs) are summarized in Town of LaSalle (1996) for the Town of LaSalle and in City of Windsor (1992) for the City of Windsor. The location of CNHSs is presented in Figure 6.

In the Town of LaSalle, CNHSs were evaluated based on several physical and ecological criteria, including:

- Significant Ravine, Valley, River, and Stream Corridors;
- Habitat of Endangered, Threatened, and Vulnerable Species;
- Significant Woodlands;
- Significant Wildlife;
- Significant Wetland;
- Significant Ecological Function;
- Diversity;
- Significant Species;
- Significant Communities;
- Significant Earth Feature; and
- Condition.

Table 12 presents a summary of the LaSalle CNHSs located in the AOI and its vicinity.

In the City of Windsor, CNHSs were evaluated based on several physical and ecological criteria, including:

- Significant Ecological Function;
- Diversity;
- Significant Communities;
- Significant Species;
- Size;
- Representation;
- Condition; and
- Significant Earth Science Features.

Table 13 presents a summary of the Windsor CNHSs located in the AOI and its vicinity.

2.3.5.7 Canadian Heritage Rivers System

The Detroit River flows in a north-south direction connecting Lake St. Clair in the north to Lake Erie in the south. Acting as an international border, the river connects American and Canadian communities culturally and economically. More than 14,000,000 vehicles and 8,000 commercial ships cross the Detroit River annually. It also serves many ecological functions as part of the Great Lakes watershed.

The importance of the Detroit River as a natural heritage feature is only one component of its function. Parks Canada designated the Detroit River as a Canadian Heritage River, which recognizes its importance to Canadian history and culture. The Detroit River received American Heritage River designation in 1998 and Canadian Heritage River designation in 2001, making it the first River with dual designations.

The Canadian Heritage River System (CHRS) is a public trust, promoted by local citizens. The program is administered by the Canadian Heritage Rivers Board, whose members are appointed by the Federal, Provincial and Territorial governments. The CHRS was established in 1984 to conserve and protect the best examples of Canada's river heritage, to give them national recognition, and to encourage the public to enjoy and appreciate them. Parks Canada is responsible for submitting recommendations to the Minister of new heritage rivers and providing other forms of support to the CHRS. The CHRS is governed by the *Canadian Heritage Rivers System Charter* and implemented by a *Strategic Plan*.

For a river to become a Canadian Heritage River there are two steps in the process: nomination and designation. The Minister of the Environment and the Provincial/Territorial Minister of the nominating government must grant formal approval of both the nomination and designation. To be considered for nomination, a River must meet the following criteria:

- the nomination must come officially by the participating government, but are generated by private citizens and groups;

TABLE 12.
TOWN OF LASALLE CANDIDATE NATURAL HERITAGE SITES IN THE AOI AND ITS VICINITY

Candidate Natural Heritage Site	Significant Ravine, Valley, Stream Corridor	Habitat of Endangered, Threatened, Vulnerable Species	Significant Woodland	Significant Wildlife Habitat	Significant Ecological Function	Overall Diversity	Number of Significant Species Present	Significant Communities	Significant Earth Feature	Condition
TC1		Colicroot, Dense Blazing Star, rairie Rose	3.0 ha	Yes	Groundwater recharge, stormwater retention, hydrological flow	High	22	Tallgrass Prairie, Black Oak-Pignut Hickory Forest, Pin Oak-Swamp White Oak Swamp		Good
TC2	Connects LaSalle Woodlot ESA and St. Clair College Prairie	Prairie Rose, Spiked Blazing Star		Yes		High	8		Sand ridge	Disturbed
CA4		Shumard Oak, Prairie rose	6.1 ha	Yes	Groundwater recharge, stormwater retention, hydrogeological flow, linkage area	Low	5	Shumard Oak-Shellbark Hickory Forest		Disturbed

TABLE 13.
CITY OF WINDSOR CANDIDATE NATURAL HERITAGE SITES IN THE AOI AND ITS VICINITY

Candidate Natural Heritage Site	Significant Ecological Function	Diversity	Significant Communities	Number of Significant Species Present	Size	Representation	Condition	Significant Earth Features
W23	Stormwater retention				12.0 ha			
W30		Good		28	98.0 ha		Good	
W31		Good	Tallgrass Prairie, Savannah-like Forest	38	15.0 ha		Good	
W32	Stormwater retention	Good	Tallgrass Prairie, Upland Carolinian Forest	59	17.0 ha	Representative communities of the natural landscape of the City of Windsor that are not adequately represented in existing protected areas		
W33	Part of a linkage system that includes Spring Garden Prairie, the Ojibway Prairie Complex, LaSalle Woodlot, Black Oak Heritage Park and C.N.H.S. #37 and #38	Good	Tallgrass Prairie	77	170.0 ha	Contains the only dry-phase prairie remnant in Windsor, is the only remaining habitat in Windsor for the Eastern Massasauga and a number of butterfly species, and contains the best representation of Cattail Marsh in Windsor	Good	
W34	Provides linkage through the Ojibway Prairie Complex, serves as a migratory bird stopover	Good	Black Oak Savannah	18	30.0 ha	Presence of many rare plants and animals also found in the Ojibway Prairie Nature Reserve	Good	
W35		Good		15	10.3 ha		Good	

TABLE 13.
CITY OF WINDSOR CANDIDATE NATURAL HERITAGE SITES IN THE AOI AND ITS VICINITY

Candidate Natural Heritage Site	Significant Ecological Function	Diversity	Significant Communities	Number of Significant Species Present	Size	Representation	Condition	Significant Earth Features
W36	Linkage through the Ojibway Prairie/Black Oak Complex				1.7 ha		Good	
W37	Linkage between the natural areas of the Ojibway region and the Detroit River			7	24.8 ha		Good	
W38	Linkage between the natural areas of the Ojibway region, Black Oak Heritage Park and C.N.H.S. #37			10	77.0 ha		Good	Sand dune

- criteria for consideration include:
  - outstanding natural, cultural and/or recreational values;
  - high level of public support;
  - demonstrated that sufficient measures will be put in place to ensure that those values will be maintained;
- the participating government agrees to pursue nomination;
- the nominated river must meet the criteria set by the CHRS Board; and
- the nomination must be recommended to the responsible Ministers.

It is unclear as to which group nominated the Detroit River for CHRS status. However, the CHRS website provides links to the Detroit River Canadian Cleanup Committee, Detroit River Remedial Action Team and Detroit River Remedial Action Plan, each of which appear to be Canadian based.

A River officially becomes designated once a management plan/heritage strategy is lodged with the CHRS Board by the nominating government. Production of the management plan/heritage strategy is based on public consultation and consensus.

The CHRS has no legislative authority. Nominations are driven by volunteers through partnerships and community involvement. Guidelines are in place to ensure that candidate rivers meet the selection and integrity criteria to become a Canadian Heritage River.

2.3.5.8 Municipal Land Use Designations

Town of LaSalle

Legal Status of Plan

The "*Town of LaSalle Official Plan – LaSalle 2016 – Healthy, Vibrant and Caring"* was adopted on October 14, 1997. The Plan was approved by the Ministry of Municipal Affairs and Housing (MMAH) on May 18, 1998. The document used for this report is the November 4, 2003 Office Consolidation, which incorporates Official Plan Amendment No. 1, provincially approved on November 4, 2003.

Environmental Designations

Section 2 identifies general development policies for various uses, including: woodlots; developments along inland watercourses; re-use of potentially contaminated sites; and, special policy area – species at risk.

Section 3 provides the land use designations for natural heritage sites, including permitted uses and other restrictions in the Town.

Two areas within the AOI are designated as Natural Environment: the Southeast of Nature Reserve ANSI and the Spring Garden Forest ANSI. The LaSalle Woods, located in the vicinity of the AOI, is also designated as Natural Environment.

Areas designated as Natural Environment include: woodlots; wetlands; and prairie communities. These areas are recognized as playing an important role in keeping people physically, mentally and spiritually healthy. Permitted uses in these areas include: passive recreation; wildlife management; conservation uses; and, buildings/structures associated with these uses. The official plan states that utility corridors and inland watercourses should be used as linkages between natural heritage sites, and should be enhanced and maintained as wildlife habitat areas, recreational trails, bikeways and walkways. Preservation and management of areas designated Natural Heritage shall be via public purchase, private stewardship, conservation easements and management agreements.

Level of Protection

The Town of LaSalle, through its Official Plan has set a goal of creating a Greenway System, which will comprise trails, parks and woodlots for the benefit and enjoyment of wildlife and residents alike. As a municipal planning policy, this provides a reasonable level of protection for natural features within the proposed Greenway System.

Environmental land use designations within the Town of LaSalle are regulated by the Official Plan, which is approved under the *Planning Act*. The Official Plan, the Provincial Policy Statement and the *Planning Act* afford protection for provincially, regionally and locally significant designated natural areas.

City of Windsor

Legal Status of Plan

The City of Windsor Official Plan (2004) was adopted on October 25, 1999 by By-law 350-1999. The Plan was approved by the Ontario Ministry of Municipal Affairs and Housing (MMAH), in part, on March 28, 2000. The remainder of the Plan was approved by an Ontario Municipal Board decision on November 1, 2002. This is an office consolidation of the Plan which incorporates the approved Plan plus subsequent Amendments.

Environmental Designations

Section 5, Volume 1 of the Official Plan identifies designations as being part of the '*Greenway System'* on Schedule B of the City's Official Plan.

Section 6.8, Volume 1 of the Official Plan identifies permitted uses for each of the land use designations in the City. The Natural Heritage designation governs natural heritage areas located in the City.

Permitted uses within the Natural Heritage designation include nature reserves and wildland management. Ancillary uses may include recreation and leisure activities and facilities, provided the use is secondary and complementary to the main permitted use. If development is proposed, an Environmental Evaluation Report (EER) is required to demonstrate that features and functions will not be adversely impacted. EERs are also required for any development on lands adjacent to those designated Natural Heritage.

Several overlays are subcategories to the land use designations and are identified as *'Development Constraint Area'* on Schedule C of the City's Official Plan. These

Constraint Areas, including Natural Heritage, Environmental Policy Areas and Candidate Natural Heritage Sites, afford various levels of protection to the City's natural environmental features.

Natural Heritage Policies identify areas under provincial protection (ie. Provincially Significant Wetlands and ANSIs). Environmental Policy Areas identify areas of significance that may permit development, subject to criteria, including: biological diversity; significant natural community; vulnerable, threatened or endangered species; low levels of disturbance; significant earth science features; and, visual, aesthetic or recreational importance to the City. Candidate Natural Heritage Sites contain potentially significant and/or sensitive environmental features or functions, which are subject to an Environmental Evaluation Report to determine if development is appropriate.

Several natural heritage land use designations are identified in the Schedules to the Official Plan. Three areas located in the AOI are designated as Natural Heritage: Ojibway Prairie Complex, Oakwood Bush and the eastern section of Malden Park. Two areas of the Titcombe Road North ANSI, a section of the Spring Garden Forest ANSI and the St. Clair College Prairie ESA are designated as Special Policy Area "A".

Secondary Planning Areas

The Official Plan – Volume 2 contains several Secondary Plans, some of which have natural feature components. The Spring Garden Planning Area is located in the AOI.

Spring Garden Planning Area

- Features in this area are recognized as significant, including Spring Garden Natural Area Complex (Schedule SG-1) and shall be conserved. Development must adhere to the Spring Garden Complex Management Plan.
- All lands within the Spring Garden Natural Area Complex shall be acquired in stages, by means of exchanges, parkland conveyance provisions (*Planning Act*), purchase by City based on independent appraisal, or purchase by appropriate government agencies.

Level of Protection

Lands included as part of the Greenway System may be protected via: conveyance/dedication as part of the planning system; land purchase; partnership arrangements with the ERCA or other group; conservation as a condition of planning approval; leases with private property owners to protect parts/all of the identified area; land exchange; donations/gifts/bequeaths from individuals/corporations; conservation easements; stewardship agreements; and other measures.

Environmental land use designations in the City of Windsor are governed by the Official Plan, the Provincial Policy Statement and the *Planning Act*. These laws, policies and plans afford protection to provincially, regionally and locally significant natural heritage areas.

2.4 Evaluate Alternatives

2.4.1 Practical Alternatives

There are five potential alternatives for the proposed access road and seven different combinations for plaza-crossing locations. The location of crossings, plazas and access roads are presented in Figure 7.

2.4.1.1 Access Roads

Each of the five access road alternatives (1A, 1B, 2A, 2B & 3) has differing road alignments in certain segments of the access road, which results in slightly different impacts. The five alternatives for the proposed access road differ based on the built-form of highway and/or access roads. The access road alternatives include:

- Alternative 1A is an at-grade six-lane freeway with one-way service roads on either side.
- Alternative 1B is a below grade six-lane freeway with one-way service roads on either side.
- Alternative 2A is an at-grade six-lane freeway with two-way services roads located south of the freeway.
- Alternative 2B is a below grade six-lane freeway with two-way service roads located south of the freeway.
- Alternative 3 is a cut and cover tunnelled six-lane freeway underneath Huron Church/Highway 3 corridor. Huron Church/Highway 3 would remain and be used as service roads.

2.4.1.2 Plazas and Crossings

There are three different proposed locations for a new border crossing in the west Windsor area and four plaza alternatives. Seven plaza/crossing combinations have been proposed:

- Crossing A-Plaza A is a bridge crossing south of the Brighton Beach Power Generation Station and plaza located south of E.C. Row Expressway, east of Ojibway Parkway. The approach road between the plaza and crossing generally runs along side Broadway Street.
- Crossing B-Plaza A is a bridge crossing north of the Brighton Beach Power Generation Station and plaza located south of E.C. Row Expressway, east of Ojibway Parkway. The approach road runs alongside Sandwich and Broadway Streets.
- Crossing C-Plaza A is a bridge crossing in the industrial portlands near Russell Street/Sandwich Street and plaza located south of E.C. Row Expressway, east of Ojibway Parkway. There are two possible connecting road options, one runs alongside Sandwich Street and Broadway Avenue through Brighton Beach, while the other is along Sandwich Street and the western extension of Ojibway Parkway.

LEGEND

CROSSINGS, PLAZAS AND ACCESS ROADS

LGL Limited
environmental research associates

Project: TA4137	**Figure:** 7
Date: February 2007	**Prepared By:** URS
Scale:	**Checked By:** GNK

- Crossing B-Plaza B1 is a bridge crossing north of the Brighton Beach Power Generation Station directly connected to a plaza located at the southern end of Sandwich Street, connecting to the new crossing via of Broadway Street.
- Crossing C-Plaza B is a bridge crossing in the industrial portlands near Russell Street/Sandwich Street and plaza located at the southern end of Sandwich Street, north of Broadway Street. The approach road runs generally alongside Sandwich Street.
- Crossing C-Plaza C is a bridge crossing in the industrial portlands near Russell Street and Sandwich Street and plaza located west of Sandwich Street, south of Prospect Avenue. The approach road runs alongside Sandwich Street.

2.4.2 Evaluation Criteria

Comparative criteria were developed to evaluate the practical alternatives based on the approach described in the *Draft Natural Heritage Work Plan* (Border Transportation Partnership 2005). The natural heritage evaluation criteria addressed three levels of biological organization: landscapes; ecosystems/communities; and, populations/species and two areas of project influence: right-of-way; and, adjacent lands. The right-of-way study area included all lands located within the footprint of each practical alternative, including crossings, plazas and access roads. The adjacent lands study area included all lands located within 120 metres of the footprint of each practical alternative, including crossings, plazas and access roads. The 120 metre distance for adjacent lands was based on historical precedent, accepted environmental practice and a recognition that most disturbance effects to natural heritage features occur within 120 metres of the proposed facility. The performance measure, criteria, indicators, and data sources used to evaluate practical alternatives are presented in Table 14.

2.4.2.1 Impacts to Ecological Landscapes Located in the ROW

A landscape is a heterogeneous land area composed of a cluster of interacting ecosystems that is repeated in similar form throughout. Landscapes vary in size, down to a few kilometers in diameter. Three types of landscapes are recognized: patch; corridor; and, matrix. A patch is a non-linear surface area differing in appearance from its surroundings. Patches can be isodiametric, elongated, ring or peninsula shaped. A corridor is a narrow strip of land that differs from the matrix on either side. Corridors can be line, strip or stream. A matrix is the most extensive and most connected landscape element type present, which plays the dominant role in landscape functioning (Forman and Godron 1986).

Significance

The significance of the landscape unit was assessed based on professional judgement and application of the principles of landscape ecology (Forman and Godron 1986). The significance of ecological landscapes was categorized as follows:

- Natural heritage features that display a high level of prominence in the landscape based on size, shape, number, type and/or configuration (i.e. pattern and connectivity) were considered of “high” significance. The Detroit River was identified as a landscape unit with a high level of prominence in the landscape. The Ojibway Prairie Complex is also considered to have a high level of prominence in the landscape, but this landscape unit will not be fragmented or severed by any of the practical alternatives.

TABLE 14.
NATURAL HERITAGE CRITERIA USED TO EVALUATE PRACTICAL ALTERNATIVES

Performance Measure	Criteria	Indicator	Data Source
Ecological Landscapes	Impacts to Ecological Landscapes Located in the ROW	• Landscape name and type (patch, corridor, matrix) • Landscape significance (high, moderate, low)	• Aerial photographs • Field investigations • Plan and Profile
Communities/ Ecosystems	Impacts to Terrestrial Communities/ Ecosystems Located in the ROW	• Community name and type (ELC) • Area displaced by crossing, plaza and access road footprint (ha) • Community significance (high, moderate, low)	• Aerial photographs • Field investigations • Plan and Profile
	Impacts to Aquatic Communities/ Ecosystems Located in the ROW	• Community name • Area displaced by crossing, plaza and access road footprint (ha) • Community significance (high, moderate, low, negligible)	• Aerial photographs • Field investigations • Plan and Profile
Populations/ Species	Impacts to Species at Risk Located in the ROW	• Species name • Number of species at risk (provincial rank S1 to S3)	• Field investigations • Plan and Profile
Designated Natural Areas	Impacts to Designated Natural Areas Located on Adjacent Lands	• Area name and type (ANSI, ESA, CNHS) • Area disturbed within 120 m of crossing, plaza and access road footprint (ha)	• Aerial photographs • Plan and Profile • ANSI, ESA, CNHS reports and maps

- Natural heritage features that display a moderate level of prominence in the landscape based on size, shape, number, type and/or configuration were considered of "moderate" significance. Major stream corridors, such as Turkey Creek, were identified as landscape units with a moderate level of prominence in the landscape. Matrices, and strip corridors with high connectivity to adjacent natural heritage features, were also identified as landscape units with a moderate level of prominence in the landscape.
- Natural heritage features that display a low level of prominence in the landscape based on size, shape, number, type and/or configuration were considered of "low" significance. Minor stream corridors, patches and strip and line corridors with low

connectivity to adjacent natural heritage features were identified as landscape units with a low level of prominence in the landscape.

2.4.2.2 Impacts to Terrestrial Communities/Ecosystems Located in the ROW

Terrestrial communities/ecosystems include any land-based environment, from small to large, in which plants and animals interact with the chemical and physical features of the environment. In Ontario, the Ecological Land Classification for Southern Ontario is used to classify terrestrial communities/ecosystems based primarily on vegetation structure and composition and soil characteristics.

Significance

The significance of terrestrial communities/ecosystems was catergorized as follows:

- All vegetation communities ranked S1 to S3 by the Natural Heritage Information Centre (NHIC) were considered of "high" significance. The NHIC has ranked many vegetation communities located in Ontario based on rarity. Vegetation communities ranked S1, S2 and S3 are considered provincially rare by the NHIC and were attributed a "high" level of significance by the study team.
- Natural vegetation communities ranked S4 to S5 or not ranked by the NHIC were considered of "moderate" significance. Natural vegetation communities that were found to be in a state more typical of pre-human settlement were assigned a "moderate" level of significance.
- Cultural vegetation communities ranked S4 to S5 or not ranked by the NHIC were considered of "low" significance. Cultural vegetation communities occur as a result of human influence and were assigned a "low" level of significance.

While it was recognized that these definitions tend to generalize the significance of vegetation communities, this approach was considered reasonable for the purposes of evaluating practical alternatives.

2.4.2.3 Impacts to Aquatic Communities/Ecosystems Located in the ROW

Aquatic ecosystems/communities include any watery environment, from small to large, in which plants and animals interact with the chemical and physical features of the environment. Types of aquatic communities/ecosystems are typically classified as lentic (i.e. waterbodies such as ponds, lakes and oceans) and lotic (i.e. watercourses such as ditches, agricultural drains, streams and rivers).

Significance

The significance of aquatic communities/ecosystems was categorized was follows:

- Aquatic communities that directly support critical fish habitat were considered of "high" significance. Critical fish habitats require a high level of protection because of their importance in sustaining subsistence, commercial or recreational fisheries, their rareness, their high productive capacity, the sensitivity of certain life stages of the fish species they support, etc. No watercourses located in the AOI directly support critical fish habitat.

- Aquatic communities that directly support important fish habitat were considered of "moderate" significance. Important fish habitats require a moderate level of protection and may include areas utilized by fish for feeding, growth and migration which, while important to the fish stock, are not considered critical. Areas in this category usually contain a relatively large amount of similar habitat that is readily available to the stock. Habitat that has been disrupted by past human activity may also fall into this category.
- Aquatic communities that directly support marginal fish habitat were considered of "low" significance. Marginal fish habitats require a minimal level of protection and have a low productive capacity. These habitats contribute marginally to fish production, but do have reasonable potential for enhancement or restoration.
- Aquatic communities that do not directly support fish habitat were considered of "negligible" significance. Areas that do not directly support fish habitat may contribute to the maintenance of fish habitat elsewhere in the system through baseflow, temperature moderation or chemical and organic inputs.

2.4.2.4 Impacts to Species at Risk Located in the ROW

Species at risk is used here as a general term that indicates that a species is of conservation concern due to reduced populations, limited distribution or habitat loss. For evaluation purposes, species at risk included all vascular plants and terrestrial vertebrate species ranked S1 to S3 by the NHIC.

2.4.2.5 Impacts to Designated Natural Heritage Features Located on Adjacent Lands

Designated natural heritage features included Areas of Natural or Scientific Interest (ANSIs), Environmentally Sensitive Areas (ESAs) and Candidate Natural Heritage Sites (CNHSs). There are no Provincially Significant Wetlands (PSWs) located in the AOI. No differentiation among these types of designated natural heritage areas was made based on significance for the purposes of evaluation. Natural heritage areas with multiple designations (i.e. the same area is designated as an ANSI/ESA/CNHS) were counted only once to represent the actual area disturbed and to avoid double-counting.

2.4.3 Evaluation Method

Natural heritage information, including ELC polygons, wildlife habitat polygons, stream reaches, designated natural heritage areas, etc. were delineated on aerial photographs, digitized and entered into the GIS. Attribute information, including ELC code, species at risk, habitat type, etc. were entered into the GIS database and linked to the geographical information. The footprint occupied by each practical alternative and adjacent lands located within 120 metres of the footprint were also digitized and entered into the GIS. The GIS was then used to superimpose the facility footprint and adjacent lands over the natural heritage information. A GIS algorithm was used to output the name, type, area and significance of each ELC polygon area overlapped by the footprint of each practical alternative. For adjacent lands, the GIS algorithm output the type and area of each designated natural area polygon overlapped within 120 metres of the footprint of each practical alternative. Data

was output by segment to an Excel spreadsheet for analysis. The raw information output by the GIS algorithm is maintained on file by LGL Limited. This raw information was then analyzed based on significance (high, moderate, low and negligible) for each criterion, where relevant, and totalled. The analysis of significance by segment is presented in Appendix J. The data for each segment was then added together to derive a total to be used to evaluate crossings, plazas and access roads from end to end. The data used to evaluate crossings, plazas and access roads from end to end are presented in Table 15. The crossings, plazas and access roads superimposed on the ELC vegetation communities and watercourses are presented in Appendix K.

The evaluation of alternatives was based on the number, area, type and significance of natural heritage features to be displaced or disturbed by the transportation facility. Generally, the practical alternatives with the greatest impact (number or area) to the most important natural heritage features (type and significance) were considered less preferred than the practical alternatives that resulted in the least impact to the least important natural heritage features.

An arithmetic evaluation method was used to compare practical alternatives using criteria and indicators. Criteria are the standards used to compare alternatives (i.e. impacts to ecological landscapes located in the ROW); indicators are the measurement units used to compare alternatives (i.e. number, area, significance, etc.). The indicators and criteria were assigned weights to reflect the level of importance of each indicator and criterion in decision-making. At the indicators level of analysis, each indicator for a criterion was weighted such that the total weight for all indicators for a criterion totaled one. At the criteria level of analysis, each criterion was weighted such that the total weight for all criteria totaled one. Weighted scores were then added to derive a total weighted score for each crossing and plaza and each access road. This evaluation method is often referred to as simple additive weighting.

The rationale for assigning weights at the indicators level of analysis was to assign a greater weight to indicators with a greater level of significance (i.e. “high,” “moderate,” “low” and “negligible”). For “impacts to ecological landscapes located in the ROW,” “high” was not assigned a weight because all crossing and plaza alternatives affected one “high” significance landscape (Detroit River) and no access road alternatives affected “high” significance landscapes. Because “high” was not considered decision relevant, a weight of 0.65 was assigned to “moderate” and 0.35 was assigned to “low.” For “impacts to terrestrial communities/ecosystems located in the ROW,” the greatest weight was assigned to “high” (0.6), followed by “moderate” (0.3) and then “low” (0.1). For “impacts to aquatic communities/ecosystems located in the ROW,” weights were assigned to “moderate” (0.6), followed by “low” (0.3) and then “negligible” (0.1). Because there were no watercourses or waterbodies with “high” significance and “high” was not considered decision relevant, greater importance was placed on “moderate,” “low” and “negligible.” “Impacts to species at risk located in the ROW” and “impacts to designated natural areas located on adjacent lands” were not assigned a weight because these two criteria each had only one indicator.

TABLE 15.
DATA USED TO EVALUATE CROSSINGS, PLAZAS AND ACCESS ROADS END TO END

Performance Measure			Ecological Landscapes			Communities / Ecosystems									Populations / Species	Designated Natural Areas
Criteria / Indicator			Impacts to Ecological Landscapes			Impacts to Terrestrial Communities / Ecosystems				Impacts to Aquatic Communities / Ecosystems					Impacts to Species at Risk	Impacts to Designated Natural Areas
Measurement / Units			Landscape Number and Significance			Community Area and Significance				Community Area and Significance					Number of Species	Area (ha)
Plaza	From Crossing	Segment	Number of Landscapes			Area Displaced (ha)			Total Area (ha) Displaced	Area Displaced (ha)				Total Area (ha) Displaced	Provincially Rare Specimens / Colonies	Total Area (ha) Disturbed
			High	Moderate	Low	High	Moderate	Low		High	Moderate	Low	Neg.			
A	A	A-G	1	2	2	2.98	1.83	27.77	32.58	0.00	0.10	0.01	0.11	0.22	232	7.38
	B	B-G	1	2	2	2.70	1.82	26.24	30.77	0.00	0.10	0.03	0.18	0.31	223	2.38
	C	C-E-G	1	2	3	2.69	2.74	25.44	30.87	0.00	0.13	0.03	0.15	0.31	231	1.48
	C	C-G	1	2	1	2.70	2.73	22.86	28.29	0.00	0.13	0.01	0.11	0.25	186	1.73
B	C	C-G	1	3	6	2.02	2.09	36.56	40.68	0.00	0.21	0.13	0.30	0.64	195	14.82
B1	B	B-G	1	2	5	1.09	1.19	42.79	45.07	0.00	0.17	0.07	0.35	0.59	185	10.96
C	C	C-G	1	2	7	0.89	2.11	33.23	36.23	0.00	0.19	0.19	0.18	0.56	153	7.77

TABLE 15.
DATA USED TO EVALUATE CROSSINGS, PLAZAS AND ACCESS ROADS END TO END

Performance Measure	Ecological Landscapes			Communities / Ecosystems									Populations / Species	Designated Natural Areas
Criteria / Indicator	Impacts to Ecological Landscapes			Impacts to Terrestrial Communities / Ecosystems				Impacts to Aquatic Communities / Ecosystems					Impacts to Species at Risk	Impacts to Designated Natural Areas
Measurement / Units	Landscape Number and Significance			Community Area and Significance				Community Area and Significance					Number of Species	Area (ha)
Routes	Number of Landscapes			Area Displaced (ha)			Total Area (ha) Displaced	Area Displaced (ha)				Total Area (ha) Displaced	Provincially Rare Specimens / Colonies	Total Area (ha) Disturbed
	High	Moderate	Low	High	Moderate	Low		High	Moderate	Low	Neg.			
Alt1A-Plaza A	0	3	19	1.43	7.25	16.35	25.03	0.00	0.39	0.85	0.06	1.29	142	54.49
Alt1A-Plaza B or C	0	3	19	0.44	3.14	13.51	17.10	0.00	0.39	0.74	0.03	1.16	102	44.34
Alt1AOpt2-Plaza A	0	3	19	1.53	7.79	17.32	26.63	0.00	0.31	0.45	0.09	0.85	134	54.82
Alt1AOpt2-Plaza B or C	0	3	19	0.50	3.68	14.41	18.58	0.00	0.31	0.17	0.03	0.51	92	44.67
Alt1B-Plaza A	0	3	19	1.46	7.29	17.03	25.78	0.00	0.40	0.83	0.08	1.32	152	54.18
Alt1B-Plaza B or C	0	3	19	0.43	3.18	13.69	17.30	0.00	0.40	0.74	0.03	1.17	112	44.10
Alt1BOpt2-Plaza A	0	3	19	1.46	7.29	17.04	25.79	0.00	0.40	0.84	0.07	1.32	152	54.51
Alt1BOpt2-Plaza B or C	0	3	19	0.54	3.82	14.92	19.28	0.00	0.28	0.18	0.03	0.49	103	44.62
Alt2A-Plaza A	0	3	19	2.22	7.65	18.35	28.22	0.00	0.38	0.87	0.05	1.30	162	55.54
Alt2A-Plaza B or C	0	3	19	1.19	3.64	14.92	19.75	0.00	0.38	0.71	0.02	1.11	122	46.07
Alt2AOpt2-Plaza A	0	3	19	2.22	7.80	18.66	28.68	0.00	0.08	0.26	0.05	0.40	155	55.26
Alt2AOpt2-Plaza B or C	0	3	19	1.18	3.79	15.46	20.43	0.00	0.08	0.16	0.02	0.26	116	45.79
Alt2B-Plaza A	0	3	19	1.86	7.60	17.61	27.07	0.00	0.38	0.87	0.05	1.31	145	53.88
Alt2B-Plaza B or C	0	3	19	0.82	3.60	14.28	18.70	0.00	0.38	0.77	0.02	1.17	105	44.41
Alt2BOpt2-Plaza A	0	3	19	1.86	7.75	18.23	27.84	0.00	0.38	0.87	0.05	1.31	145	53.61
Alt2BOpt2-Plaza B or C	0	3	19	0.82	3.75	14.90	19.47	0.00	0.38	0.77	0.02	1.17	105	44.14
Alt3-Plaza A	0	3	19	1.48	7.41	14.36	23.25	0.00	0.37	0.39	0.06	0.82	131	53.50
Alt3-Plaza B or C	0	3	19	0.50	3.40	11.46	15.36	0.00	0.37	0.28	0.02	0.67	92	43.38

The rationale for assigning weights at the criteria level of analysis was based on professional judgement taking into consideration the importance of the natural heritage features and the potential effects of the new highway facility. "Impacts to terrestrial communities/ecosystems located in the ROW" measures the area and significance of vegetation communities that will be displaced by a new transportation facility. Because a number of these vegetation communities are provincially and globally rare, the community/ecosystem level of biological organization is considered the most important, and replacement of provincially and globally rare vegetation communities requires dedicated management efforts, this criterion was assigned a weight of 0.4.

"Impacts to aquatic communities/ecosystems located in the ROW" measures the area and significance of aquatic communities that will be altered by a new transportation facility. Since many of the aquatic communities have been degraded and restoration is more easily achieved than is the case with complex/rare terrestrial ecosystems, this criterion was assigned a weight of 0.2.

"Impacts to species at risk located in the ROW" measures the number of rare specimens/colonies that will be displaced by a new transportation facility. The loss of provincially rare plant and animal species was considered important; however, many of these provincially rare specimens/colonies are located in provincially rare communities that already received a weight of 0.4 under the "impacts to terrestrial communities/ecosystems located in the ROW" criterion. For this reason, "impacts to species at risk located in the ROW" was assigned a weight of 0.2 to add further emphasis to the importance of "impacts to terrestrial communities/ecosystems located in the ROW," but not too much weight to result in a double or triple counting of impacts.

"Impacts to ecological landscapes located in the ROW" measures the number and significance of landscape units that will be lost or fragmented by the transportation facility. Since this criterion is similar to "impacts to terrestrial/aquatic communities/ecosystems located in the ROW," which was already assigned a combined weight of 0.6, this criterion was assigned a weight of 0.1.

"Impacts to designated natural areas located on adjacent lands" measures the area of important natural heritage features located nearby that may be disturbed by a new transportation facility. The effects of disturbance are considered less severe and more easily mitigated than the effects of displacement; therefore, this criterion was considered less important. However, because the features located on adjacent lands are designated for protection, their importance is increased. As a result, a weight of 0.1 was assigned to this criterion.

The values were then multiplied by the weights to derive a weighted indicator score and a weighted criterion score for each practical alternative. The results of the weighting of indicators are presented in Table 16 and the results of the weighting of criteria are presented in Table 17. A lower weighted score reflects less environmental impact and is thus preferred to a higher weighted score.

TABLE 16.
WEIGHTED INDICATORS FOR CROSSINGS, PLAZAS AND ACCESS ROADS END TO END

Performance Measure			Ecological Landscapes				Communities / Ecosystems									Populations / Species	Designated Natural Areas
Criteria / Indicator			Impacts to Ecological Landscapes				Impacts to Terrestrial Communities / Ecosystems				Impacts to Aquatic Communities / Ecosystems					Impacts to Species at Risk	Impacts to Designated Natural Areas
Measurement / Units			Landscape Number and Significance				Community Area and Significance				Community Area and Significance					Number of Species	Area (ha)
Plaza	From Crossing	Segment	Number of Landscapes			Weighted Score	Area Displaced (ha)			Weighted Score	Area Displaced (ha)				Weighted Score	Provincially Rare Specimens/Colonies	Total Area (ha) Disturbed
			High	Moderate	Low		High	Moderate	Low		High	Moderate	Low	Neg.			
A	A	A-G	1	2	2	1.40	2.98	1.83	27.77	5.11	0.00	0.10	0.01	0.11	0.07	232	7.38
	B	B-G	1	2	2	1.40	2.70	1.82	26.24	4.79	0.00	0.10	0.03	0.18	0.09	223	2.38
	C	C-E-G	1	2	3	1.50	2.69	2.74	25.44	4.98	0.00	0.13	0.03	0.15	0.10	231	1.48
		C-G	1	2	1	1.30	2.70	2.73	22.86	4.73	0.00	0.13	0.01	0.11	0.09	186	1.73
B	C	C-G	1	3	6	2.10	2.02	2.09	36.56	5.50	0.00	0.21	0.13	0.30	0.20	195	14.82
B1	B	B-G	1	2	5	1.70	1.09	1.19	42.79	5.29	0.00	0.17	0.07	0.35	0.16	185	10.96
C	C	C-G	1	2	7	1.90	0.89	2.11	33.23	4.49	0.00	0.19	0.19	0.18	0.19	153	7.77
Indicator Weight			0.60	0.30	0.10	1.00	0.60	0.30	0.10	1.00	0.00	0.60	0.30	0.10	1.00	1.00	1.00

TABLE 16.
WEIGHTED INDICATORS FOR CROSSINGS, PLAZAS AND ACCESS ROADS END TO END

Performance Measure	Ecological Landscapes				Communities / Ecosystems									Populations / Species	Designated Natural Areas
Criteria / Indicator	Impacts to Ecological Landscapes				Impacts to Terrestrial Communities / Ecosystems				Impacts to Aquatic Communities / Ecosystems					Impacts to Species at Risk	Impacts to Designated Natural Areas
Measurement / Units	Landscape Number and Significance				Community Area and Significance				Community Area and Significance					Number of Species	Area (ha)
Route	Number of Landscapes			Weighted Score	Area Displaced (ha)			Weighted Score	Area Displaced (ha)				Weighted Score	Provincially Rare Specimens / Colonies	Total Area (ha) Disturbed
	High	Moderate	Low		High	Moderate	Low		High	Moderate	Low	Neg.			
Alt1A-Plaza A	0	3	19	8.60	1.43	7.25	16.35	4.67	0.00	0.39	0.85	0.06	0.49	142	54.49
Alt1A-Plaza B or C	0	3	19	8.60	0.44	3.14	13.51	2.56	0.00	0.39	0.74	0.03	0.46	102	44.34
Alt1AOpt2-Plaza A	0	3	19	8.60	1.53	7.79	17.32	4.98	0.00	0.31	0.45	0.09	0.33	134	54.82
Alt1AOpt2-Plaza B or C	0	3	19	8.60	0.50	3.68	14.41	2.84	0.00	0.31	0.17	0.03	0.24	92	44.67
Alt1B-Plaza A	0	3	19	8.60	1.46	7.29	17.03	4.77	0.00	0.40	0.83	0.08	0.50	152	54.18
Alt1B-Plaza B or C	0	3	19	8.60	0.43	3.18	13.69	2.58	0.00	0.40	0.74	0.03	0.47	112	44.10
Alt1BOpt2-Plaza A	0	3	19	8.60	1.46	7.29	17.04	4.77	0.00	0.40	0.84	0.07	0.50	152	54.51
Alt1BOpt2-Plaza B or C	0	3	19	8.60	0.54	3.82	14.92	2.96	0.00	0.28	0.18	0.03	0.23	103	44.62
Alt2A-Plaza A	0	3	19	8.60	2.22	7.65	18.35	5.46	0.00	0.38	0.87	0.05	0.49	162	55.54
Alt2A-Plaza B or C	0	3	19	8.60	1.19	3.64	14.92	3.30	0.00	0.38	0.71	0.02	0.44	122	46.07
Alt2AOpt2-Plaza A	0	3	19	8.60	2.22	7.80	18.66	5.54	0.00	0.08	0.26	0.05	0.13	155	55.26
Alt2AOpt2-Plaza B or C	0	3	19	8.60	1.18	3.79	15.46	3.39	0.00	0.08	0.16	0.02	0.10	116	45.79
Alt2B-Plaza A	0	3	19	8.60	1.86	7.60	17.61	5.16	0.00	0.38	0.87	0.05	0.50	145	53.88
Alt2B-Plaza B or C	0	3	19	8.60	0.82	3.60	14.28	3.00	0.00	0.38	0.77	0.02	0.46	105	44.41
Alt2BOpt2-Plaza A	0	3	19	8.60	1.86	7.75	18.23	5.26	0.00	0.38	0.87	0.05	0.50	145	53.61
Alt2BOpt2-Plaza B or C	0	3	19	8.60	0.82	3.75	14.90	3.11	0.00	0.38	0.77	0.02	0.46	105	44.14
Alt3-Plaza A	0	3	19	8.60	1.48	7.41	14.36	4.55	0.00	0.37	0.39	0.06	0.35	131	53.50
Alt3-Plaza B or C	0	3	19	8.60	0.50	3.40	11.46	2.47	0.00	0.37	0.28	0.02	0.31	92	43.38
Indicator Weight	0.00	0.65	0.35	1.00	0.60	0.30	0.10	1.00	0.00	0.60	0.30	0.10	1.00	1.00	1.00

TABLE 17.
WEIGHTED CRITERIA FOR CROSSINGS, PLAZAS AND ACCESS ROADS END TO END

Performance Measure			Ecological Landscapes		Communities / Ecosystems				Populations / Species		Designated Natural Areas		Total Weighted Score
Criteria / Indicator			Impacts to Ecological Landscapes		Impacts to Terrestrial Communities / Ecosystems		Impacts to Aquatic Communities / Ecosystems		Impacts to Species at Risk		Impacts to Designated Natural Areas		
Plaza	From Crossing	Segment	Weighted Indicator Score	Weighted Criterion Score	Weighted Indicator Score	Weighted Criterion Score	Weighted Indicator Score	Weighted Criterion Score	Provincially Rare Specimens /Colonies	Weighted Criterion Score	Total Area (ha) Disturbed	Weighted Criterion Score	
A	A	A-G	1.40	0.14	5.11	2.05	0.07	0.01	232	46.40	7.38	0.74	49.34
	B	B-G	1.40	0.14	4.79	1.92	0.09	0.02	223	44.60	2.38	0.24	46.91
	C	C-E-G	1.50	0.15	4.98	1.99	0.10	0.02	231	46.20	1.48	0.15	48.51
		C-G	1.30	0.13	4.73	1.89	0.09	0.02	186	37.20	1.73	0.17	39.41
B	C	C-G	2.10	0.21	5.50	2.20	0.20	0.04	195	39.00	14.82	1.48	42.93
B1	B	B-G	1.70	0.17	5.29	2.12	0.16	0.03	185	37.00	10.96	1.10	40.41
C	C	C-G	1.90	0.19	4.49	1.80	0.19	0.04	153	30.60	7.77	0.78	33.40
Criteria Weight			0.10		0.40		0.20		0.20		0.10		1.00

TABLE 17.
WEIGHTED CRITERIA FOR CROSSINGS, PLAZAS AND ACCESS ROADS END TO END

Performance Measure	Ecological Landscapes		Communities / Ecosystems				Populations / Species		Designated Natural Areas		Total Weighted Score
Criteria / Indicator	Impacts to Ecological Landscapes		Impacts to Terrestrial Communities / Ecosystems		Impacts to Aquatic Communities / Ecosystems		Impacts to Species at Risk		Impacts to Designated Natural Areas		
Route	Weighted Indicator Score	Weighted Criterion Score	Weighted Indicator Score	Weighted Criterion Score	Weighted Indicator Score	Weighted Criterion Score	Provincially Rare Specimens / Colonies	Weighted Criterion Score	Total Area (ha) Disturbed	Weighted Criterion Score	
Alt1A-Plaza A	8.60	0.86	4.67	1.87	0.49	0.10	142	28.4	54.49	5.45	36.68
Alt1A-Plaza B or C	8.60	0.86	2.56	1.02	0.46	0.09	102	20.4	44.34	4.43	26.81
Alt1AOpt2-Plaza A	8.60	0.86	4.98	1.99	0.33	0.07	134	26.8	54.82	5.48	35.20
Alt1AOpt2-Plaza B or C	8.60	0.86	2.84	1.14	0.24	0.05	92	18.4	44.67	4.47	24.91
Alt1B-Plaza A	8.60	0.86	4.77	1.91	0.50	0.10	152	30.4	54.18	5.42	38.68
Alt1B-Plaza B or C	8.60	0.86	2.58	1.03	0.47	0.09	112	22.4	44.10	4.41	28.80
Alt1BOpt2-Plaza A	8.60	0.86	4.77	1.91	0.50	0.10	152	30.4	54.51	5.45	38.72
Alt1BOpt2-Plaza B or C	8.60	0.86	2.96	1.18	0.23	0.05	103	20.6	44.62	4.46	27.15
Alt2A-Plaza A	8.60	0.86	5.46	2.18	0.49	0.10	162	32.4	55.54	5.55	41.10
Alt2A-Plaza B or C	8.60	0.86	3.30	1.32	0.44	0.09	122	24.4	46.07	4.61	31.27
Alt2AOpt2-Plaza A	8.60	0.86	5.54	2.21	0.13	0.03	155	31	55.26	5.53	39.63
Alt2AOpt2-Plaza B or C	8.60	0.86	3.39	1.36	0.10	0.02	116	23.2	45.79	4.58	30.02
Alt2B-Plaza A	8.60	0.86	5.16	2.06	0.50	0.10	145	29	53.88	5.39	37.41
Alt2B-Plaza B or C	8.60	0.86	3.00	1.20	0.46	0.09	105	21	44.41	4.44	27.59
Alt2BOpt2-Plaza A	8.60	0.86	5.26	2.11	0.50	0.10	145	29	53.61	5.36	37.43
Alt2BOpt2-Plaza B or C	8.60	0.86	3.11	1.24	0.46	0.09	105	21	44.14	4.41	27.61
Alt3-Plaza A	8.60	0.86	4.55	1.82	0.35	0.07	131	26.2	53.50	5.35	34.30
Alt3-Plaza B or C	8.60	0.86	2.47	0.99	0.31	0.06	92	18.4	43.38	4.34	24.65
Criteria Weight	0.10		0.40		0.20		0.20		0.10		1.00

2.4.3 Results

The total weighted scores were used to establish a level of preference for practical alternatives. The total weighted scores for practical alternatives are presented in Table 18. The results of the arithmetic evaluation were then reviewed in light of the information to gain an appreciation for the advantages and disadvantages of each practical alternative and to confirm that the arithmetic evaluation was sound. The results of the qualitative and quantifative evaluations are presented below.

2.4.3.1 Access Roads

The access roads are illustrated in Figure 7 and Appendix K.

Review of Information

Access Road 1A from Plaza A will result in the loss of 25.03 ha of terrestrial communities and 1.29 ha of aquatic communities. This includes 1.43 ha of provincially rare vegetation communities and 142 specimens/colonies of species at risk. A total of 54.49 ha of designated natural areas is located on adjacent lands. Access Road 1A from Plazas B or C will result in the loss of 17.10 ha of terrestrial communities and 1.16 ha of aquatic communities. This includes 0.44 ha of provincially rare vegetation communities and 102 specimens/colonies of species at risk. A total of 44.34 ha of designated natural areas is located on adjacent lands. Option 2 from Plaza A will result in the loss of 26.63 ha of terrestrial communities and 0.85 ha of aquatic communities. This includes 1.53 ha of provincially rare vegetation communities and 134 specimens/colonies of species at risk. A total of 54.82 ha of designated natural areas is located on adjacent lands. Option 2 from Plazas B or C will result in the loss of 18.58 ha of aquatic communities and 0.51 ha of aquatic communities. This includes 0.50 ha of provincially rare vegetation communities and 92 specimens/colonies of species at risk. A total of 44.67 ha of designated natural areas is located on adjacent lands.

Access Road 1B from Plaza A will result in the loss of 25.78 ha of terrestrial communities and 1.32 ha of aquatic communities. This includes 1.46 ha of provincially rare vegetation communities and 152 specimens/colonies of species at risk. A total of 54.18 ha of designated natural areas is located on adjacent lands. Access Road 1B from Plazas B or C will result in the loss of 17.30 ha of terrestrial communities and 1.17 ha of aquatic communities. This includes 0.43 ha of provincially rare vegetation communities and 112 species at risk. A total of 44.10 ha of designated natural areas is located on adjacent lands. Option 2 from Plaza A will result in the loss of 25.79 ha of terrestrial communities and 1.32 ha of aquatic communities. This includes 1.46 ha of provincially rare vegetation communities and 152 specimens/colonies of species at risk. A total of 54.51 ha of designated natural areas is located on adjacent lands. Option 2 from Plazas B or C will result in the loss of 19.28 ha of terrestrial communities and 0.49 ha of aquatic communities. This includes 0.54 ha of provincially rare vegetation communities and 103 specimens/colonies of species at risk. A total of 44.62 ha of designated natural areas is located on adjacent lands.

TABLE 18.
TOTAL WEIGHTED SCORES FOR CROSSINGS, PLAZAS AND ACCESS ROADS END TO END

Plaza	From Crossing	Section	Total Weighted Score	Relative Impact Score
C	C	C-G	33.40	3
A	C	C-G	39.41	2
B1	B	B-G	40.41	2
B	C	C-G	42.93	2
A	B	B-G	46.91	1
A	C	C-E-G	48.51	1
A	A	A-G	49.34	1
Access Roads			Total Weighted Score	Relative Impact Score
Alt3-Plaza B or C			24.65	3
Alt1AOpt2-Plaza B or C			24.91	3
Alt1A-Plaza B or C			26.81	3
Alt1BOpt2-Plaza B or C			27.15	3
Alt2B-Plaza B or C			27.59	3
Alt2BOpt2-Plaza B or C			27.61	3
Alt1B-Plaza B or C			28.80	3
Alt2AOpt2-Plaza B or C			30.02	3
Alt2A-Plaza B or C			31.27	3
Alt3-Plaza A			34.30	2
Alt1AOpt2-Plaza A			35.20	2
Alt1A-Plaza A			36.68	2
Alt2B-Plaza A			37.41	2
Alt2BOpt2-Plaza A			37.43	2
Alt1B-Plaza A			38.68	2
Alt1BOpt2-Plaza A			38.72	2
Alt2AOpt2-Plaza A			39.63	2
Alt2A-Plaza A			41.10	2

Access Road 2A from Plaza A will result in the loss of 28.22 ha of terrestrial communities and 1.30 ha of aquatic communities. This includes 2.22 ha of provincially rare vegetation communities and 162 specimens/colonies of species at risk. A total of 55.54 ha of designated natural areas is located on adjacent lands. Access Road 2A from Plazas B or C will result in the loss of 19.75 ha of terrestrial communities and 1.11 ha of aquatic communities. This includes 1.19 ha of provincially rare vegetation communities and 122 specimens/colonies of species at risk. A total of 46.07 ha of designated natural areas is located on adjacent lands. Option 2 from Plaza A will result in the loss of 26.68 ha of terrestrial communities and 0.40 ha of aquatic communities. This includes 2.22 ha of provincially rare vegetation communities and 155 specimens/colonies of species at risk. A total of 55.26 ha of designated natural areas is located on adjacent lands. Option 2 from Plazas B or C will result in the loss of 20.43 ha of aquatic communities and 0.26 ha of aquatic communities. This includes 1.18 ha of provincially rare vegetation communities and 116 specimens/colonies of species at risk. A total of 45.79 ha of designated natural areas is located on adjacent lands.

Access Road 2B from Plaza A will result in the loss of 27.07 ha of terrestrial communities and 1.31 ha of aquatic communities. This includes 1.86 ha of provincially rare vegetation communities and 145 specimens/colonies of species at risk. A total of 53.88 ha of designated natural areas is located on adjacent lands. Access Road 2B from Plazas B or C will result in the loss of 18.70 ha of terrestrial communities and 1.17 ha of aquatic communities. This includes 0.82 ha of provincially rare vegetation communities and 105 species at risk. A total of 44.41 ha of designated natural areas is located on adjacent lands. Option 2 from Plaza A will result in the loss of 27.84 ha of terrestrial communities and 1.31 ha of aquatic communities. This includes 1.86 ha of provincially rare vegetation communities and 145 specimens/colonies of species at risk. A total of 53.61 ha of designated natural areas is located on adjacent lands. Option 2 from Plazas B or C will result in the loss of 19.47 ha of terrestrial communities and 1.17 ha of aquatic communities. This includes 0.82 ha of provincially rare vegetation communities and 105 specimens/colonies of species at risk. A total of 44.14 ha of designated natural areas is located on adjacent lands.

Access Road 3 from Plaza A will result in the loss of 23.25 ha of terrestrial communities and 0.82 ha of aquatic communities. This includes 1.48 ha of provincially rare vegetation communities and 131 specimens/colonies of species at risk. A total of 53.50 ha of designated natural areas is located on adjacent lands. Access Road 3 from Plazas B or C will result in the loss of 15.36 ha of terrestrial communities and 0.67 ha of aquatic communities. This includes 0.50 ha of provincially rare vegetation communities and 92 specimens/colonies of species at risk. A total of 43.38 ha of designated natural areas is located on adjacent lands.

All access roads will impact 22 ecological landscapes of moderate to low sensitivity.

Access Roads 1A, 1B and 3 will encroach on the St. Clair College Prairie ESA; Access Roads 2 and 2A will not.

Conclusions

All access roads that connect Plazas B or C with the existing Highway 401 result in less displacement of provincially rare vegetation communities than access roads that connect Plaza A with the existing Highway 401. The access road destined for Plazas B or C with the highest level of displacement of provincially rare vegetation communities (Alternative 2A) performs better than the access road destined for Plaza A with the lowest level of displacement of provincially rare vegetation communities (Alternative 1A). The same holds true for impacts to species at risk where the worst access road destined for Plazas B or C (Alternative 2A) performs better than the best access road to Plaza A (Alternative 3). For impacts to designated natural areas located on adjacent lands, the worst access road destined for Plazas B or C (Alternative 2A) also performs better than the best access road to Plaza A (Alternative 3).

For impacts to aquatic communities, all access roads that connect Plaza B or C with the existing Highway 401 perform better than their Plaza A counterpart. All access roads result in the same number and significance of ecological landscapes that will be displaced.

The evaluation of practical alternatives is based on the impacts of displacement that will occur within the footprint area of the proposed facility, and disruption that will occur on adjacent lands within approximately 120 metres of the proposed facility. These criteria address the impacts of the proposed crossing, plaza and access road based on its horizontal plan, but they do not take into consideration the vertical profile of the proposed access road.

Alternative 1 and its permutations include a new access road located at grade, Alternative 2 and its permutations include a new access road located several metres below grade/depressed, and Alternative 3 and its permutations include a new access road located entirely below grade in a tunnel. The vertical profile of the new access roads present advantages and disadvantages related to hydrology and hydrogeology.

For example, an at-grade access road will have the least impact on surface water, because watercourses can be spanned with a bridge or culvert. A depressed or tunnel access road requires modification to watercourses through diversion, enclosure, siphoning or aquaducting. The potential impacts associated with these drainage modifications are not considered in the arithmetic evaluation of practical alternatives, but must be considered in the reasoned argument evaluation. Similarly, a depressed or tunnel access road will require dewatering during construction which could have a potential impact on adjacent natural heritage features. While the effects of dewatering can be mitigated using cut-off walls, timing and duration restrictions, artificial recharge and other methods, these construction techniques are more complex and pose a higher risk to adjacent natural heritage features.

Based on the results of the quantitative and qualitative evaluations, there is no significant difference between Alternative 1 (at-grade), Alternative 2 (depressed) and Alternative 3 (tunnel) based on potential impacts to natural heritage features. The potential environmental effects associated with a tunnel can be mitigated, although this alternative is considered more complex and poses a greater risk to surface water and groundwater features. As a result, at-grade and depressed alternatives are considered slightly preferred to tunnel alternatives, but these alternatives do not offer a significant advantage or disadvantage for natural heritage features when compared to a tunnel.

The difference among access roads is more closely related to their destination. All access roads that lead to Plazas B or C are preferred to access roads that lead to Plaza A. As a result, access roads leading to Plazas B or C were assigned an impact score of “3” (low impact), while access roads leading to Plaza A were assigned an impact score of “2” (moderate impact).

2.4.3.2 Crossings and Plazas

The crossings and plazas are illustrated in Figure 7 and Appendix K.

Review of Information

Plaza A from Crossing A will result in the loss of 32.58 ha of terrestrial communities and 0.22 ha of aquatic communities. This includes 2.98 ha of provincially rare vegetation communities and 232 specimens/colonies of species at risk. A total of 7.38 ha of designated natural areas is located on adjacent lands within 120 m of the facility footprint. Five ecological landscapes will be impacted by this alternative.

Plaza A from Crossing B will result in the loss of 30.77 ha of terrestrial communities and 0.31 ha of aquatic communities. This includes 2.70 ha of provincially rare vegetation communities and 223 specimens/colonies of species at risk. A total of 2.38 ha of designated natural areas is located on adjacent lands. Five ecological landscapes will be impacted by this alternative.

Plaza A from Crossing C through C-E-G near Brighton Beach will result in the loss of 30.87 ha of terrestrial communities and 0.31 ha of aquatic communities. This includes 2.69 ha of

provincially rare vegetation communities and 231 specimens/colonies of species at risk. A total of 1.48 ha of designated natural areas is located on adjacent lands. Six ecological landscapes will be impacted by this alternative.

Plaza A from Crossing C through C-G along the Ojibway Parkway will result in the loss 28.29 ha of terrestrial communities and 0.25 ha of aquatic communities. This includes 2.70 ha of provincially rare vegetation communities and 186 specimens/colonies or species at risk. A total of 1.73 ha of designated natural areas is located on adjacent lands. Four ecological landscapes will be impacted by this alternative.

Plaza B from Crossing C will result in the loss of 40.68 ha of terrestrial communities and 0.64 ha of aquatic communities. This includes 2.02 ha of provincially rare vegetation communities and 195 specimens/colonies of species at risk. A total of 14.82 ha of designated natural areas is located on adjacent lands. Ten ecological landscapes will be impacted by this alternative.

Plaza B1 from Crossing B will result in the loss of 45.07 ha of terrestrial communities and 0.59 ha of aquatic communities. This includes 1.09 ha of provincially rare vegetation communities and 185 specimens/colonies of species at risk. A total of 10.96 ha of designated natural areas is located on adjacent lands. Eight ecological landscapes will be impacted by this alternative.

Plaza C from Crossing C will result in the loss of 36.23 ha of terrestrial communities and 0.56 ha of aquatic communities. This includes 0.89 ha of provincially rare vegetation communities and 153 specimens/colonies of species at risk. A total of 7.77 ha of designated natural areas is located on adjacent lands. Ten ecological landscapes will be impacted by this alternative.

Plaza B will encroach on the Black Oak Woods ANSI/ESA. No other plazas will encroach on designated natural areas.

Conclusions

The crossings and plazas that displace the least area of provincially rare vegetation communities are preferred given the high level of importance assigned to these features by the DRIC study team. As a result, Plaza C is the most preferred plaza, followed by Plazas B and B1, followed by Plaza A.

Crossing C to Plaza C will result in the least displacement of provincially rare vegetation communities and species at risk and a relatively low to moderate level of potential disturbance to designated natural areas located on adjacent lands. This combination has a relatively higher level of displacement of ecological landscapes and aquatic communities than the other alternatives. The total weighted score for this alternative is considerably lower than the total weighted score for the next best alternative making this alternative clearly preferred to the other alternatives.

Crossing C to Plaza B and Crossing B to Plaza B1 will result in a lower level of displacement of provincially rare vegetation communities and species at risk than Plaza A and its associated crossings, with the exception of Crossing C to Plaza A through C-G, which will displace fewer species at risk. Crossing C to Plaza B and Crossing B to Plaza B1 have the greatest potential to disturb designated natural heritage features located on adjacent lands, as these plazas are located adjacent to the Black Oak Woods ANSI, ESA and CNHS. The

southeast corner of Plaza B will displace a small area of the Black Oak Woods ANSI, ESA and CNHS. No other plazas or crossings will displace any designated natural heritage areas. Plaza B and B1 are located in the Brighton Beach area. While both of these plazas are preferred to Plaza A (except Crossing C to Plaza A through C-G), they do not perform as well as Plaza C.

Plaza A and its associated crossings have the least impact on ecological landscapes, terrestrial communities, aquatic communities and designated natural areas located on adjacent lands. However, Plaza A and its associated crossings have the greatest impact on provincially rare vegetation communities and species at risk (with the exception of Crossing C to Plaza A through C-G). Given the importance assigned to these provincially rare vegetation communities and species at risk by the DRIC study team, Plaza A and its associated crossings are considered least preferred.

The exception is Plaza A from Crossing C through segment C-G which is the second most preferred alternative because it has the least displacement of ecological landscapes, the least displacement of terrestrial and aquatic communities and a relatively moderate level of displacement of species at risk. While Plaza A is least preferred from a natural heritage perspective, segment C-G is the most preferred because it avoids the natural heritage features associated with the Brighton Beach area. The connection between Crossing C and Plaza A along Ojibway Parkway (Segment C-G) verses through the Brighton Beach area (Segment C-E-G) increases the preference of this alternative from least preferred to the second most preferred, on par with the Plaza B and Plaza B1 alternatives.

Based on the results of the quatitative and qualitative evaluations, Plaza C from Crossing C stands alone as the alternative with the least relative impact to natural heritage features and was assigned an impact score of "3" (low impact). Plaza A from Crossing C (Segment C-G), Plaza B1 from Crossing B and Plaza B from Crossing C, represent the alternatives with the next least relative impact to natural heritage features and were assigned an impact score of "2" (moderate impact). The remaining Plaza A alternatives, including Plaza A from Crossing B, Plaza A from Crossing C (Segment C-E-G) and Plaza A from Crossing A represent the alternatives with the greatest relative impact to natural heritage features and were assigned an impact score of "1" (high impact).

2.5 Assessment of Impacts

The *Draft Natural Heritage Work Plan* (Border Transportation Partnership 2005) indicates that the assessment of impacts will be addressed in a generic manner at the practical alternatives stage. The rationale for this approach is that site-specific environmental effects cannot be assessed until a technically preferred alternative is selected. However, the information contained in Table 15 and described previously that was used to evaluate practical alternatives provides a good indication of the potential impacts of each practical alternative on landscape ecology, terrestrial and aquatic ecosystems/communities, species at risk and adjacent designated natural areas. Based on a review of this table, it is concluded that all crossing, plaza and access road alternatives will result in the loss of provincially rare vegetation communities and species at risk. It is not possible to avoid all of these important natural heritage features. The practical alternatives that avoid or reduce the area or number of these valued ecosystem components are considered preferred by the natural heritage discipline. Given that is is not possible to avoid all provincially rare vegetation communities

and species at risk, mitigation measures are required to reduce the adverse effects of the project on natural heritage.

2.6 Environmental Protection Measures

The *Draft Natural Heritage Work Plan* (Border Transportation Partnership 2005) indicates that the environmental protection measures to be considered at the practical alternatives stage include avoidance of natural heritage features, minimization of the loss of natural heritage features and generic mitigation measures typically incorporated into the design of linear transportation facilities. Once again, given that it is not possible to avoid all provincially rare vegetation communities and species at risk, generic mitigation strategies are required to reduce the adverse effects of the project.

It should be noted that the most important natural heritage features (i.e. the Ojibway Prairie Complex, the Detroit River Marshes, etc.) located in the preliminary analysis area were mostly avoided during the evaluation of illustrative alternatives and in establishing the ACA. Avoidance is considered the most effective environmental protection measure and it has been the primary goal of the DRIC study team throughout the route planning study.

2.6.1 Provincially Rare Vegetation Communities

In the case of provincially rare vegetation communities, in particular tallgrass prairies, the goal of the Border Transportation Partnership is to ensure no net loss of the area or function of these natural heritage features. A number of compensation strategies are available to offset this adverse effect in order of preference including: enhance existing natural remnants; enlarge existing natural remnants; and, establish new tallgrass prairies. These strategies are generic since the ultimate selection of a compensation strategy will depend on the condition and availability of suitable sites.

2.6.1.1 Enhance Existing Natural Remnants

This strategy is the most preferred compensation approach, since it benefits an existing community and may not require an intensive management effort. This approach identifies existing remnants of tallgrass prairie in the local area that are showing inherent prairie features or functions such as prairie flora, sandy soils or lack of tree cover. This strategy involves an assessment of the needs of the natural community, which may include one or many management techniques such as planting, burning, or tree cutting. There are many examples of restoring (improving quality) remnant tallgrass prairie communities including the Ojibway Prairie in Windsor, Ontario, High Park in Toronto, Ontario and the Konza Prairie in Kansas.

2.6.1.2 Enlarge Existing Natural Remnants

This strategy involves adding new area to an existing prairie remnant. This is likely to involve a more intensive restoration strategy to establish site conditions suitable for prairie plants. Plantings can be achieved through collection and hand broadcast of seed from the adjacent unit or through the natural spread of prairie seed.

2.6.1.3 Establish New Tallgrass Prairie

This strategy involves the establishment of tallgrass prairie communities on newly disturbed, existing agricultural or degraded land. This is likely to involve the most intensive restoration strategy to recreate the ecology of a natural prairie community. This type of restoration has been successfully conducted through three methods; seeding, planting seedlings, or by transferring sod from an intact prairie. Commonly, a seeding approach is undertaken which requires a long time to fully establish due to the germination cycle of seeds. Also, done equally often is the planting of plant plugs, which is more expensive but gives a quicker response. Transferring sod from an intact prairie can be quite successful due to the transfer of soil microorganisms, seed bank, and soil materials. This approach requires a careful and immediate placement once removed to ensure the viability of all biota in the sod.

All of the above strategies to establish new tallgrass prairie require an active plan including long term management. This plan needs to be site-specific to conditions such as soil types, topography, and soil moisture. Prairie has been established on a variety of existing agricultural fields or other degraded sites. However, the condition of the existing site will determine how effective the restoration will be (endpoint) and how much initial preparation is required.

In addition to site preparation, the plan needs to document planting methods, species selection, and long term management. Prairies are maintained by disturbance, historically, through wildfire. Ideally, prairies should be periodically subjected to a prescribed fire (Delaney et al. 2000, Schramm 1990). The incorporation of fire needs to be considered at the onset of the project since it may affect site selection, species selection as well as who will carry out the long term management.

This approach also has an inherent unpredictability, as restoration is an applied science which is subject to weather, introduced species, and timing. It is also important to stress that current restoration methods are unable to restore exact plant diversity in tallgrass prairie, as would be seen in a remnant tallgrass prairie (Martin et al. 2005). Van Dyke et al. suggest that to achieve high-functioning native prairie communities large areas are required as well as long term efforts including introductions of species of high conservation value. Several examples where this strategy has been applied include the Pioneer Prairie in Texas, Fermilab in Batavia, Illinois and roadside planting projects undertaken in Ontario and elsewhere.

Roadside planting projects have been undertaken throughout the United States and Ontario. The Ontario Ministry of Transportation has undertaken research on this subject and has produced a report entitled “Wildflower and Prairie Seeding Recommendations for Ontario Roadsides.” This document reviews a number of approaches, and describes the most effective strategies for roadside plantings including topics such as soil preparation, seed mixes and maintenance. Thus success can be achieved with careful initial assessment of conditions and the implementation of an appropriate plan.

2.6.2 Species at Risk

The proposed project will result in the loss of plant and animal species and their habitat that are provincially rare (S1 to S3), listed by COSEWIC and COSSARO (Endangered, Threatened or Special Concern) or regulated under the *Species at Risk Act*.

Environmental protection measures typically used to mitigate the loss of species at risk and their habitat include avoidance, integration and relocation. The DRIC study team has made every reasonable attempt to avoid provincially rare habitats and species at risk. However, in areas where avoidance cannot be achieved, attempts will be made to incorporate species at risk and their habitat into site plans to the extent feasible. Once these opportunities have been exhausted, salvage and relocation efforts will be considered. The DRIC study team will explore salvage opportunities for plants including: transplanting of live plant material; the collection and broadcasting of seeds; and, the stripping, relocation and placement of sod.

The DRIC study team conducted a preliminary investigation into the feasibility of capturing and relocating eastern foxsnake (*Elaphe gloydi*) and Butler's gartersnake (*Thamnophis butler*). The investigation included a review of scientific publications and communication with experts in the field of snake relocation. The results of the review of scientific publications proved inconclusive as no research has been conducted to determine if Butler's gartersnake or eastern foxsnake can be successfully captured and relocated.

Several biologists in Ontario and the United States, currently studying the feasibility and success rates of relocated snakes were contacted to obtain opinions on the possibility of a relocation program with Butler's gartersnake and eastern foxsnake. Despite the fact that these biologists would be considered experts in this field, they had little information to offer, due to the absence of experience or information related to the relocation of Butler's gartersnake and eastern foxsnake (Pratt, personal communication, 2007). Eastern Massasauga snakes bred in captivity at the Metro Toronto Zoo were recently introduced into the Ojibway Prairie Complex with mixed results. Several of these introduced snakes found winter hibernacula on their own, but others had to be actively encouraged to enter hibernacula (Pratt, personal communication 2007).

Based on the results of the preliminary investigation, the success rate for relocation of Butler's gartersnake and eastern foxsnake is unknown. Given the Butler's gartersnake's affinity to tallgrass prairies and its limited home range (< 300 m), relocation may present a challenge. On the other hand, eastern foxsnake may be more suitable for relocation given its compatibility with many habitat types (including human-made) and its broad home range. The capture and relocation of these two snake species as a mitigation strategy for this project offers an excellent opportunity to conduct primary scientific research.

The strategies for managing species at risk and their habitats will be developed in consultation with regulatory agencies and in compliance with the Canada *Species at risk Act* and the new *Ontario Endangered Species Act*.

2.6.3 Groundwater

Based on a review of groundwater conditions by Golder Associates (2006) it was determined that creating permanent, open, and depressed roadways within the native clays using slopes or supported with retaining walls (that do not cut off groundwater pressure gradients from adjacent higher grades) will result in a permanent lowering of the groundwater level within the clay soils. Based on the limited available information, and for preliminary planning purposes, it is anticipated that the zone of influence of such groundwater lowering within the silty clay should be assumed to be a distance equal to about 5 to 10 times the depth of cut. Such groundwater lowering will induce settlement within the silty clay subsoils within this zone. It is anticipated that if low permeability in situ walls (e.g. contiguous caisson walls or concrete

diaphragm walls) are used for excavation support or for permanent below grade structures, that the influence of the excavation on near-surface groundwater would be minimal. As a result, no changes to the composition or structure of the tallgrass prairies are anticipated if cut-off walls are used. Further refinement of this zone of influence and the magnitude of potential settlement requires additional site-specific investigation and analyses.

2.6.4 Surface Water

A depressed or tunnel highway profile will require alteration of existing watercourses through diversion, enclosure, siphoning or aquaducting depending on the characteristics of the watercourse and the depth of the highway below existing grade. Any harmful alteration of these watercourses is subject to the requirements of the *Fisheries Act*. Since none of these watercourses directly support critical fish habitat, the full suite of environmental protection options, including fish habitat compensation to maintain no net loss of the productive capacity of fish habitat, are available. Environmental protection measures to be employed for each watercourse crossing will be determined in consultation with regulatory agencies and in compliance with the *Fisheries Act*.

A more detailed assessment of impacts and recommendations for environmental protection measures will be performed at the concept design alternatives stage.

2.7 Conclusions

The ACA identified during the evaluation of illustrative alternatives avoids most of the important natural heritage features associated with the designated Ojibway Prairie Complex. Data collection and analysis performed within the ACA to evaluate practical alternatives confirms the presence of remnant natural heritage features that support provincially rare species and their habitat. Some of the practical alternatives avoid more of the provincially rare species and habitats than others; none of the practical alternatives avoid all natural heritage features of provincial importance.

The practical alternatives that are most preferred by the natural heritage discipline include Crossing C to Plaza C and all access roads that lead to Plazas B or C. With the exception of Crossing C to Plaza A along the Ojibway Parkway (Segment C-G), Plaza A is the least preferred plaza alternative and destination for access roads. At-grade and depressed highway profiles are considered slightly more preferred than a tunnel due to less potential risk to natural heritage features, but there is no significant difference among these highway profile alternatives because the area that will be displaced by the highway footprint is similar.

Environmental protection measures that go beyond avoidance will be required to minimize, mitigate and compensate for adverse environmental effects on natural heritage features. By using the full suite of environmental protection measures including habitat restoration, none of the practical alternatives will result in significant adverse environmental effects on natural heritage features. Site-specific environmental impacts and environmental protection measures will be analyzed for the technically preferred alternative during the concept alternatives stage.

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APPENDICES

APPENDIX A

APPENDIX A
ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

Species Status

COSEWIC — Committee On The Status Of Endangered Wildlife In Canada

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species that are considered to be at risk in Canada.

Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)	A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

COSSARO/OMNR — Committee On The Status Of Species At Risk In Ontario/Ontario Ministry Of Natural Resources

The Committee on the Status of Species at Risk in Ontario (COSSARO)/Ontario Ministry of Natural Resources (OMNR) assesses the provincial status of wild species that are considered to be at risk in Ontario.

Extinct (EXT)	A species that no longer exists anywhere.
Extirpated (EXP)	A species that no longer exists in the wild in Ontario but still occurs elsewhere.
Endangered (Regulated) (END–R)	A species facing imminent extinction or extirpation in Ontario which has be regulated under Ontario's *Endangered Species Act*.
Endangered (END)	A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's *Endangered Species Act*.
Threatened (THR)	A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
Special Concern (SC)	A species with characteristics that make it sensitive to human activities or natural events.
Not at Risk (NAR)	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)	A species for which there is insufficient information for a provincial status recommendation.

Species Rank

GRANK Global Rank

Global ranks are assigned by a consensus of the network of Conservation Data Centres, scientific experts, and The Nature Conservatory to designate a rarity rank based on the range-wide status of a species, subspecies or variety.

The most important factors considered in assigning global ranks are the total number of known, extant sites world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria include the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at its known sites. The taxonomic distinctness of each taxon has also been considered. Hybrids, introduced species, and taxonomically dubious species, subspecies and varieties have not been included.

G1	Extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2	Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3	Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4	Common; usually more than 100 occurrences; usually not susceptible to immediate threats.
G5	Very common; demonstrably secure under present conditions.
GH	Historic, no records in the past 20 years.
GU	Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.
GX	Globally extinct. No recent records despite specific searches.
?	Denotes inexact numeric rank (i.e. G4?).
G	A "G" (or "T") followed by a blank space means that the NHIC has not yet obtained the Global Rank from The Nature Conservancy.
G?	Unranked, or, if following a ranking, rank tentatively assigned (e.g. G3?).
Q	Denotes that the taxonomic status of the species, subspecies, or variety is questionable.
T	Denotes that the rank applies to a subspecies or variety.

SRANK Provincial Rank

Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually.

S1 Critically imperilled in Ontario because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation.

S2 Imperilled in Ontario because of rarity due to very restricted range, very few populations (often 20 or fewer occurences) steep declines or other factors making it very vulnerable to extirpation.

S3 Vulnerable in Ontario due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure—Common, widespread, and abundant in Ontario.

SX Presumed Extirpated – Species or community is believed to be extirpated from Ontario.

SH Possibly Extirpated – Species or community occurred historically in Ontario and there is some possibility that it may be rediscovered.

SNR Unranked—Conservation status in Ontario not yet assessed

SU Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNA Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

S#S# Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

Species Regulated by Statute

SARA Species at Risk Act

The Canada *Species at Risk Act* provides a framework for actions across Canada to ensure the survival of wildlife species and the protection of our natural heritage. It sets out how to decide which species are a priority for action and what to do to protect a species. It identifies ways governments, organizations and individuals can work together, and it establishes penalties for a failure to obey the law. Regulated species are listed in Schedules 1, 2 and 3 of the Act.

Schedule 1 SARA (1)	Species that are currently covered under the Act.
Schedule 2 SARA (2)	Species that are endangered or threatened that have not been re-assessed by COSEWIC for inclusion on Schedule 1.
Schedule 3 SARA (3)	Species that are of special concern that have not yet been re-assessed by COSEWIC for inclusion on Schedule 1.

ESA Endangered Species Act

The Ontario *Endangered Species Act* provides for the conservation, protection, restoration and propagation of species of fauna and flora of the Province of Ontario that are threatened with extinction. Regulated species are listed in Ontario Regulation 338.

Schedule 1 ESA (1)	The species of fauna listed in Schedule 1 are declared to be threatened with extinction.
Schedule 2 ESA (2)	The species of flora listed in Schedule 2 are declared to be threatened with extinction.

FWCA Fish and Wildlife Conservation Act

The Ontario *Fish and Wildlife Conservation Act* enables the Ministry of Natural Resources to protect and manage a broad range of fish and wildlife species. Regulated fish and wildlife are listed as furbearing (F), game (G) or protected (P) in schedules to the Act.

FWCA (F)	Furbearing mammals (Schedule 1).
FWCA (G)	Game mammals (Schedule 2), birds (Schedule 3), reptiles (Schedule 4) and amphibians (Schedule 5)
FWCA (SP)	Specially protected mammals (Schedule 6), birds (raptors) (Schedule 7), birds (other than raptors) (Schedule 8), reptiles (Schedule 9), amphibians (Schedule 10) and invertebrates (Schedule 11).

MBCA Migratory Birds Convention Act

The Canada *Migratory Birds Convention Act* implements the Convention by protecting and conserving migratory birds — as populations and individual birds — and their nests. Article 1 identifies the migratory game birds, migratory insectivorous birds and other migratory non-game birds regulated by the Act.

FA Fisheries Act

The Canada *Fisheries Act* enables the Department of Fisheries and Oceans to protect and manage fish and fish habitat. Fish includes: parts of fish; shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals; and, the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals.

PA Planning Act

The Ontario *Planning Act* legislates land use planning and development within the province. The *Provincial Policy Statement* is issued under the authority of Section 3 of the *Planning Act.* It provides direction on matters of provincial interest related to land use planning and development, and promotes the provincial "policy-led" planning system. The PPS enables the Province to protect significant natural heritage features and areas including the significant habitat of endangered and threatened species.

APPENDIX B

APPENDIX B

LIST OF VASCULAR PLANTS LOCATED IN THE AREA OF INVESTIGATION

	Scientific Name	Common Name	COSEWIC	COSSARO	Grank	Srank	Local Status	Legal Status
	EQUISETACEAE	HORSETAIL FAMILY						
	Equisetum arvense	field horsetail			G5	S5	C	
	Equisetum hyemale ssp. *affine*	scouring-rush			G5T5	S5	C	
	Equisetum laevigatum	smooth scouring-rush			G5	S4	VU	
	Equisetum pratense	meadow horsetail			G5	S5	?	
	Equisetum variegatum ssp. *variegatum*	variegated horsetail			G5T	S5	R2	
	OPHIOGLOSSACEAE	ADDER'S TONGUE FAMILY						
	Botrychium dissectum	cut-leaved grape fern			G5	S5	C	
	OSMUNDACEAE	ROYAL FERN FAMILY						
	Osmunda claytoniana	interrupted fern			G5	S5	U	
	Osmunda regalis var. *spectabilis*	royal fern			G5T5	S5	U	
	DENNSTAEDTIACEAE	BRACKEN FERN FAMILY						
	Pteridium aquilinum var. *latiusculum*	eastern bracken-fern			G5T5	S5	U	
	THELYPTERIDACEAE	MARSH FERN						
	Thelypteris noveboracensis	New York fern			G5	S4S5	R5	
	Thelypteris palustris var. *pubescens*	marsh fern			G5T5	S5	C	
	DRYOPTERIDACEAE	WOOD FERN FAMILY						
	Athyrium filix-femina var. *angustum*	northern lady fern			G5T5	S5	C	
	Dryopteris carthusiana	spinulose wood fern			G5	S5	C	
	Matteuccia struthiopteris var. *pensylvanica*	ostrich fern			G5T5	S5	R3	
	Onoclea sensibilis	sensitive fern			G5	S5	C	
	PINACEAE	PINE FAMILY						
*	*Picea abies*	Norway spruce			G?	SE3	?	
	Picea glauca	white spruce			G5	S5	?	
*	*Picea pungens*	Colorado spruce			G5	SE1	?	
*	*Pinus nigra*	Austrian pine			G?	SE2	?	
	Pinus strobus	eastern white pine			G5	S5	R1	
*	*Pinus sylvestris*	scotch pine			G?	SE5	?	
	CUPRESSACEAE	CEDAR FAMILY						
	Juniperus communis	common juniper			G5	S5	R4	
	Juniperus virginiana	eastern red cedar			G5	S5	C	
	Thuja occidentalis	eastern white cedar			G5	S5	?	

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	Scientific Name	Common Name	COSEWIC	COSSARO	Grank	Srank	Local Status	Legal Status
	TAXACEAE	YEW FAMILY						
*	*Taxus cuspidata*	Japanese yew				SE	?	
	MAGNOLIACEAE	MAGNOLIA FAMILY						
*	*Magnolia soulangeana*	saucer magnolia				SE	?	
	LAURACEAE	LAUREL FAMILY						
	Sassafras albidum	sassafras			G5	S4	C	
	RANUNCULACEAE	BUTTERCUP FAMILY						
	Actaea pachypoda	white baneberry			G5	S5	C	
	Anemone americana	round-lobed hepatica			G?	S5	R5	
	Anemone canadensis	Canada anemone			G5	S5	C	
	Anemone cylindrica	thimbleweed			G5	S4	VU	
	Anemone quinquefolia var. *quinquefolia*	wood anemone			G5	S5	C	
	Anemone virginiana var. *virginiana*	thimbleweed			G5T5	S5	C	
	Aquilegia canadensis	wild columbine			G5	S5	C	
	Ranunculus abortivus	kidney-leaf buttercup			G5	S5	C	
*	*Ranunculus acris*	tall buttercup			G5	SE5	Ivu	
	Ranunculus hispidus var. *caricetorum*	swamp buttercup			G5T5	S5	C	
	Ranunculus recurvatus var. *recurvatus*	hooked buttercup			G5	S5	VU	
	Ranunculus sceleratus var. *sceleratus*	cursed buttercup			G5T5	SU	C	
	Thalictrum dasycarpum	purple meadow-rue			G5	S4?	C	
	Thalictrum dioicum	early meadow-rue			G5	S5	C	
	Thalictrum pubescens	tall meadow-rue			G5	S5	?	
	Thalictrum revolutum	waxy meadow-rue			G5	S2	R2	
	BERBERIDACEAE	BARBERRY FAMILY						
*	*Berberis thunbergii*	Japanese barberry			G?	SE5	Iu	
*	*Berberis vulgaris*	common barberry			G?	SE5	?	
	Podophyllum peltatum	may-apple			G5	S5	C	
	MENISPERMACEAE	MOONSEED FAMILY						
	Menispermum canadense	moonseed			G5	S4	C	
	PAPAVERACEAE	POPPY FAMILY						
*	*Chelidonium majus*	celandine			G?	SE5	Ir	
	PLATANACEAE	PLANE-TREE FAMILY						
	Platanus occidentalis	sycamore			G5	S4	C	
	HAMAMELIDACEAE	WITCH-HAZEL FAMILY						

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	Scientific Name	Common Name	COSEWIC	COSSARO	Grank	Srank	Local Status	Legal Status
	Hamamelis virginiana	witch-hazel			G5	S5	C	
	ULMACEAE	ELM FAMILY						
	Celtis occidentalis	common hackberry			G5	S4	C	
	Ulmus americana	white elm			G5?	S5	C	
*	*Ulmus glabra*	Scotch elm			G?	SE1	?	
*	*Ulmus pumila*	Siberian elm			G?	SE3	Ivu	
	Ulmus rubra	slippery elm			G5	S5	C	
	MORACEAE	MULBERRY FAMILY						
*	*Morus alba*	white mulberry			G?	SE5	Ic	
	URTICACEAE	NETTLE FAMILY						
	Boehmeria cylindrica	false nettle			G5	S5	C	
	Pilea pumila	dwarf clearweed			G5	S5	C	
*	*Urtica dioica* ssp. *dioica*	European stinging nettle			G5T?	SE2	?	
	JUGLANDACEAE	WALNUT FAMILY						
	Carya cordiformis	bitternut hickory			G5	S5	C	
	Carya glabra	pignut hickory			G5	S3	VU	
	Carya laciniosa	big shellbark hickory			G5	S3	C	
	Carya ovata var. *ovata*	shagbark hickory			G5	S5	C	
	Juglans cinerea	butternut	END	END	G3G4	S3?	C	SARA (1), PA
	Juglans nigra	black walnut			G5	S4	C	
*	*Juglans regia*	English walnut			G?	SE1	?	
	FAGACEAE	BEECH FAMILY						
	Quercus alba	white oak			G5	S5	C	
	Quercus bicolor	swamp white oak			G5	S4	C	
	Quercus macrocarpa	bur oak			G5	S5	C	
	Quercus palustris	pin oak			G5	S3	C	
	Quercus rubra	red oak			G5	S5	C	
	Quercus shumardii	shumard oak	SC	SC	G5	S3	U	SARA (3)
	Quercus velutina	black oak			G5	S4	C	
	BETULACEAE	BIRCH FAMILY						
	Betula papyrifera	white birch			G5	S5	Ir	
*	*Betula pendula*	European weeping birch			G?	SE4	?	
	Carpinus caroliniana ssp. *virginiana*	blue beech			G5T	S5	C	
	Corylus americana	American hazel			G5	S5	C	
	Corylus cornuta ssp. *cornuta*	beaked hazel			G5T	S5	?	
	Ostrya virginiana	ironwood			G5	S5	C	
	PHYTOLACCACEAE	POKEWEED FAMILY						

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	Scientific Name	Common Name	COSEWIC	COSSARO	Grank	Srank	Local Status	Legal Status
	Phytolacca americana	pokeweed			G5	S4	C	
	NYCTAGINACEAE	FOUR-O-CLOCK FAMILY						
	Mirabilis nyctaginea	wild four-o'clock			G5	S4	Ic	
	CHENOPODIACEAE	GOOSEFOOT FAMILY						
*	*Chenopodium album* var. *album*	lamb's quarters			G5T5	SE5	Ic	
*	*Salsola kali*	Russian thistle			G?	SE1	Ic	
	Suaeda calceoliformis	western seablite			G5	S2	?	
	CARYOPHYLLACEAE	PINK FAMILY						
*	*Cerastium semidecandrum*	small chickweed			G?	SE5	Ir	
*	*Dianthus armeria*	deptford pink			G?	SE5	Ic	
*	*Lychnis coronaria*	mullein pink			G?	SE3	?	
*	*Saponaria officinalis*	bouncing-bet			G?	SE5	Ic	
*	*Silene latifolia*	bladder campion			G?	SE5	Iu	
*	*Stellaria media*	common chickweed			G?	SE5	Ic	
	POLYGONACEAE	SMARTWEED FAMILY						
*	*Polygonum convolvulus*	black bindweed			G?	SE5	Ic	
*	*Polygonum cuspidatum*	Japanese knotweed			G?	SE4	Ir	
*	*Polygonum hydropiper*	water-pepper			G5	SE5	C	
	Polygonum lapathifolium	pale smartweed			G5	S5	C	
	Polygonum pensylvanicum	Pennsylvania smartweed			G5	S5	C	
*	*Polygonum persicaria*	lady's-thumb			G?	SE5	Ic	
	Polygonum punctatum	water smartweed			G5	S5	C	
	Polygonum virginianum	Virginia knotweed			G5	S4	C	
*	*Rumex acetosella* ssp. *acetosella*	sheep sorrel			G5T	SE	Ic	
*	*Rumex crispus*	curly-leaf dock			G?	SE5	Ic	
	GUTTIFERAE	ST. JOHN'S-WORT FAMILY						
*	*Hypericum perforatum*	common St. John's-wort			G?	SE5	Ic	
	Hypericum punctatum	corymbed St. John's-wort			G5	S5	C	
	TILIACEAE	LINDEN FAMILY						
	Tilia americana	American basswood			G5	S5	C	
	MALVACEAE	MALLOW FAMILY						
*	*Abutilon theophrasti*	velvet-leaf			G?	SE5	Ic	
*	*Hibiscus syriacus*	Rose-of-Shraon					Ir	
*	*Hibiscus trionum*	flower-of-an-hour			G?	SE4	Iu	
*	*Malva neglecta*	cheeses			G?	SE5	Ir	
	VIOLACEAE	VIOLET FAMILY						
	Viola blanda	sweet white violet			G4G5	S4S	R2	

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	Scientific Name	Common Name	COSEWIC	COSSARO	Grank	Srank	Local Status	Legal Status
						5		
	Viola pubescens	downy yellow violet			G5	S5	C	
	Viola sagittata var. *sagittata*	arrow-leaved violet			G5T5	S4	R4	
	Viola sororia	woolly blue violet			G5	S5	C	
	SALICACEAE	WILLOW FAMILY						
*	*Populus alba*	silver poplar			G5	SE5	Ir	
	Populus balsamifera ssp. *balsamifera*	balsam poplar			G5T5	S5	R2	
	Populus deltoides ssp. *deltoides*	eastern cottonwood			G5T5	SU	C	
	Populus grandidentata	large-tooth aspen			G5	S5	U	
	Populus tremuloides	trembling aspen			G5	S5	C	
*	*Salix alba*	white willow			G5	SE4	Ir	
	Salix amygdaloides	peach-leaved willow			G5	S5	C	
	Salix bebbiana	long-beaked willow			G5	S5	VU	
	Salix discolor	pussy willow			G5	S5	C	
	Salix eriocephala	Missouri willow			G5	S5	C	
	Salix exigua	sandbar willow			G5	S5	C	
	Salix humilis	prairie willow			G5	S5	R4	
	Salix lucida	shining willow			G5	S5	R1	
*	*Salix matsudana*	corkscrew willow					Ir	
	Salix nigra	black willow			G5	S4?	U	
	Salix petiolaris	slender willow			G5	S5	R1	
*	*Salix X rubens*	hybrid crack willow			HYB	SE4	Ir	
*	*Salix X sepulcralis*	weeping willow			HYB	SE2	?	
	BRASSICACEAE	MUSTARD FAMILY						
*	*Alliaria petiolata*	garlic mustard			G5	SE5	Ic	
*	*Barbarea vulgaris*	yellow rocket			G?	SE5	Ic	
*	*Berteroa incana*	hoary alyssum			G?	SE5	Iu	
*	*Brassica nigra*	black mustard			G?	SE5	?	
*	*Capsella bursa-pastoris*	shepherd's purse			G?	SE5	Ic	
	Cardamine douglassii	purple cress			G5	S4	C	
*	*Erysimum cheiranthoides* ssp. *cheiranthoides*	wormseed mustard				SE5	Ic	
*	*Hesperis matronalis*	dame's rocket			G4G5	SE5	Iu	
*	*Lepidium campestre*	field cress			G?	SE5	Ic	
*	*Rorippa sylvestris*	creeping yellow-cress			G5	SE5	Ivu	
*	*Sisymbrium altissimum*	tall tumble-mustard			G?	SE5	Ivu	
*	*Thlaspi arvense*	field penny-cress			G?	SE5	Ic	

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	ERICACEAE	HEATH FAMILY						
	Vaccinium pallidum	pale blueberry			G5	S4	C	
	PYROLACEAE	WINTERGREEN FAMILY						
	Pyrola elliptica	shinleaf			G5	S5	R3	
	PRIMULACEAE	PRIMROSE FAMILY						
	Lysimachia ciliata	fringed loosestrife			G5	S5	C	
*	*Lysimachia nummularia*	moneywort			G?	SE5	Ic	
	Lysimachia quadriflora	four-flowered loosestrife			G5?	S4	R4	
	Lysimachia quadrifolia	whorled loosestrife			G5	S4	R4	
	GROSSULARIACEAE	GOOSEBERRY FAMILY						
	Ribes americanum	wild black currant			G5	S5	C	
	Ribes cynosbati	prickly gooseberry			G5	S5	C	
	Ribes hirtellum	smooth gooseberry			G5	S5	R3	
*	*Ribes rubrum*	red currant			G4G5	SE5	?	
	SAXIFRAGACEAE	SAXIFRAGE FAMILY						
	Penthorum sedoides	ditch stonecrop			G5	S5	C	
	ROSACEAE	ROSE FAMILY						
	Agrimonia gryposepala	tall hairy agrimony			G5	S5	C	
	Agrimonia parviflora	many-flowered agrimony			G5	S3	C	
	Amelanchier arborea	downy juneberry			G5	S5	U	
	Amelanchier laevis	smooth juneberry			G4G5Q	S5	VU	
	Aronia melanocarpa	black chokeberry			G5	S5	U	
	Crataegus crus-galli	cockspur thorn			G5	S5	C	
	Crataegus mollis	downy thorn			G5	S5	R1	
*	*Crataegus monogyna*	English hawthorn			G5	SE5	Ir	
	Crataegus punctata	large-fruited thorn			G5	S5	C	
	Fragaria virginiana ssp. *virginiana*	scarlet strawberry			G5T5	SU	C	
	Geum aleppicum	yellow avens			G5T5	S5	R3	
	Geum canadense	white avens			G5	S5	C	
	Geum vernum	spring avens			G5	S3	C	
*	*Malus baccata*	Siberian crabapple			G?	SE1	?	
	Malus coronaria	narrow-leaved crabapple			G5	S4	C	
*	*Malus pumila*	common crabapple			G5	SE5	Ir	
	Physocarpus opulifolius	ninebark			G5	S5	R2	
	Potentilla anserina ssp. *anserina*	silverweed				S5	C	
	Potentilla canadensis	common cinquefoil			G5	SU	?	

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	Potentilla norvegica ssp. *norvegica*	cinquefoil			G5T?	SU	Ic	
*	*Potentilla recta*	rough-fruited cinquefoil			G?	SE5	Ic	
	Potentilla simplex	old-field cinquefoil			G5	S5	C	
*	*Prunus avium*	sweet cherry			G?	SE4	Ir	
*	*Prunus cerasus*	sour cherry			G?	SE1	Ir	
	Prunus pensylvanica	pin cherry			G5	S5	R1	
	Prunus serotina	black cherry			G5	S5	C	
	Prunus virginiana ssp. *virginiana*	choke cherry			G5T5	S5	C	
*	*Prunus virginiana* var. *Schubert*	Schubert Chokecherry					?	
*	*Pyrus communis*	common pear			G5	SE4	Ir	
	Rosa acicularis ssp. *sayi*	prickly rose			G5T5	S5	?	
	Rosa blanda	smooth rose			G5	S5	C	
	Rosa carolina	swamp rose			G5	S4	C	
*	*Rosa multiflora*	multiflora rose			G?	SE4	Ic	
	Rosa palustris	marsh rose			G5	S5	C	
*	*Rosa rubiginosa*	sweetbrier rose				SE4	Iu	
	Rosa setigera	prairie rose	SC	SC	G5	S3	C	SARA (1)
	Rubus allegheniensis	common blackberry			G5	S5	C	
	Rubus canadensis	smooth blackberry			G5	S4?	?	
	Rubus flagellaris	prickly raspberry			G5	S4	C	
	Rubus hispidus	trailing blackberry			G5	S4S5	C	
	Rubus idaeus ssp. *melanolasius*	wild red raspberry			G5T5	S5	C	
	Rubus occidentalis	thimble-berry			G5	S5	C	
*	*Sorbaria sorbifolia*	false spiraea			G5	SE4	?	
*	*Sorbus aucuparia*	European mountain-ash			G5	SE4	Ir	
	Spiraea alba	narrow-leaved meadow-sweet			G5	S5	C	
*	*Spiraea prunifolia*	bridal-wreath spiraea			G5	SE1	?	
	Spiraea tomentosa	tomentose meadow-sweet			G5	S4S5	R4	
	FABACEAE	PEA FAMILY						
	Amphicarpaea bracteata	hog peanut			G5	S5	C	
	Apios americana	groundnut			G5	S5	C	
	Baptisia tinctoria	wild indigo			G5	S2	R5	
*	*Caragana arborescens*	Siberian pea tree			G?	SE1	?	
	Cercis canadensis	Canadian redbud			G5	SX	Rh	

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*	*Coronilla varia*	variable crown-vetch			G?	SE5	Iu	
	Desmodium canadense	Canadian tick-trefoil			G5	S4	C	
	Desmodium glutinosum	pointed-leaved tick-trefoil			G5	S4	U	
	Gleditsia triacanthos	honey locust			G5	S2	U	
	Gymnocladus dioicus	Kentucky coffee-tree	THR	THR	G5	S2	VU	SARA (1), PA
*	*Lathyrus latifolius*	everlasting pea			G?	SE4	Ivu	
	Lathyrus ochroleucus	cream-coloured vetchling			G4G5	S4	R1	
	Lathyrus palustris	marsh vetchling			G5	S5	U	
*	*Lathyrus tuberosus*	tuberous vetchling			G?	SE3	Ir	
	Lespedeza capitata	round-headed bush-clover			G5	S4	R3	
*	*Lotus corniculatus*	bird's-foot trefoil			G?	SE5	Ic	
*	*Medicago lupulina*	black medick			G?	SE5	Ic	
*	*Medicago sativa* ssp. *sativa*	alfalfa			G?T?	SE5	Ivu	
*	*Melilotus alba*	white sweet-clover			G?	SE5	Ic	
*	*Melilotus officinalis*	yellow sweet-clover			G?	SE5	Ic	
*	*Robinia pseudo-acacia*	black locust			G5	SE5	Iu	
*	*Trifolium aureum*	yellow clover			G?	SE5	Ir	
*	*Trifolium hybridum* ssp. *elegans*	alsike clover				SE5	Ir	
*	*Trifolium pratense*	red clover			G?	SE5	Iu	
*	*Trifolium repens*	white clover			G?	SE5	Iu	
*	*Vicia cracca*	tufted vetch			G?	SE5	Ir	
	ELAEAGNACEAE	OLEASTER FAMILY						
*	*Elaeagnus angustifolia*	Russian olive			G?	SE3	Ir	
*	*Elaeagnus umbellata*	Russian olive			G?	SE3	Ir	
	LYTHRACEAE	LOOSESTRIFE FAMILY						
	Lythrum alatum	wing-angled loosestrife			G5	S3	C	
*	*Lythrum salicaria*	purple loosestrife			G5	SE5	Ic	
	ONAGRACEAE	EVENING-PRIMROSE FAMILY						
	Circaea lutetiana ssp. *canadensis*	yellowish enchanter's nightshade			G5T5	S5	C	
	Epilobium ciliatum ssp. *ciliatum*	ciliate willow-herb			G5T?	S5	R1	
*	*Epilobium hirsutum*	great hairy willow-herb			G?	SE5	Ic	
	Gaura biennis	biennial gaura			G5	S2	U	
	Ludwigia alternifolia	rattle-box			G5	S1	R3	
	Ludwigia polycarpa	many-fruited false loosestrife			G4	S2	U	
	Oenothera biennis	common evening-primrose			G5	S5	C	

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	Oenothera perennis	perennial evening-primrose			G5	S4S5	R1	
	CORNACEAE	DOGWOOD FAMILY						
	Cornus amomum ssp. *obliqua*	silky dogwood			G5T?	S5	C	
	Cornus drummondii	Drummond's dogwood			G5	S4	C	
	Cornus foemina ssp. *racemosa*	gray dogwood			G5T5?	S5	C	
	Cornus rugosa	round-leaved dogwood			G5	S5	?	
	Cornus stolonifera	red-osier dogwood			G5	S5	C	
	NYSSACEAE	SOUR GUM FAMILY						
	Nyssa sylvatica	black gum			G5	S3	U	
	SANTALACEAE	SANDALWOOD FAMILY						
	Comandra umbellata	bastard toad-flax			G5	S5	C	
	CELASTRACEAE	STAFF-TREE FAMILY						
*	*Celastrus orbiculatus*	Oriental bittersweet			G?	SE2	?	
	Celastrus scandens	climbing bittersweet			G5	S5	C	
*	*Euonymus alata*	winged spindle tree			G?	SE2	Ir	
*	*Euonymus europaea*	spindle tree			G?	SE2	Ir	
	Euonymus obovata	running strawberry-bush			G5	S5	C	
	EUPHORBIACEAE	SPURGE FAMILY						
	Acalypha virginica var. *rhomboidea*	three-seeded mercury			G5T5	S5	C	
*	*Chamaesyce maculata*	spotted spurge			G5?	SE5	Ic	
	Euphorbia corollata	flowering spurge			G5	S4	VU	
	RHAMNACEAE	BUCKTHORN FAMILY						
*	*Rhamnus cathartica*	common buckthorn			G?	SE5	Ivu	
*	*Rhamnus frangula*	glossy buckthorn			G?	SE5	Ir	
	VITACEAE	GRAPE FAMILY						
	Parthenocissus inserta	inserted Virginia-creeper			G5	S5	C	
	Parthenocissus quinquefolia	five-leaved Virginia-creeper			G5	S4?	C	
	Vitis aestivalis	summer grape			G5	S4	U	
	Vitis labrusca	fox grape			G5	S1	R1/Ir	
	Vitis riparia	riverbank grape			G5	S5	C	
	POLYGALACEAE	MILKWORT FAMILY						
	Polygala sanguinea	blood-red milkwort			G5	S4	R4	
	Polygala verticillata	whorled milkwort			G5	S4	VU	
	HIPPOCASTANACEAE	BUCKEYE FAMILY						

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*	*Aesculus hippocastanum*	horse chestnut			G?	SE2	Ir	
	ACERACEAE	MAPLE FAMILY						
	Acer negundo	Manitoba maple			G5	S5	C	
*	*Acer platanoides*	Norway maple			G?	SE5	Iu	
	Acer rubrum	red maple			G5	S5	C	
	Acer saccharinum	silver maple			G5	S5	C	
	Acer saccharum ssp. *saccharum*	sugar maple			G5T5	S5	C	
	Acer X freemanii	freeman's maple			HYB	S5?	R?	
	ANACARDIACEAE	SUMAC FAMILY						
	Rhus glabra	smooth sumac			G5	S5	U	
	Rhus radicans	poison-ivy			G5	S5	C	
	Rhus rydbergii	western poison-ivy			G5T	S5	C	
	Rhus typhina	staghorn sumac			G5	S5	C	
	SIMAROUBACEAE	AILANTHUS FAMILY						
*	*Ailanthus altissima*	tree-of-heaven			G?	SE5	Ir	
	RUTACEAE	RUE FAMILY						
	Zanthoxylum americanum	American prickly-ash			G5	S5	C	
	OXALIDACEAE	WOOD SORREL FAMILY						
	Oxalis stricta	upright yellow wood-sorrel			G5	S5	C	
	GERANIACEAE	GERANIUM FAMILY						
	Geranium maculatum	spotted crane's-bill			G5	S5	C	
	BALSAMINACEAE	TOUCH-ME-NOT FAMILY						
	Impatiens capensis	spotted touch-me-not			G5	S5	C	
	ARALIACEAE	GINSENG FAMILY						
	Aralia nudicaulis	wild sarsaparilla			G5	S5	C	
	APIACEAE	PARSLEY FAMILY						
	Angelica atropurpurea	dark-purple alexanders			G5	S5	R1	
	Cicuta maculata	spotted water-hemlock			G5	S5	C	
*	*Daucus carota*	wild carrot			G?	SE5	Ic	
	Heracleum lanatum	cow-parsnip			G5	S5	R5	
	Oxypolis rigidior	cowbane			G5	S2	U	
*	*Pastinaca sativa*	wild parsnip			G?	SE5	Iu	
	Sanicula canadensis var. *canadensis*	Canada snakeroot			G5T5	S4	C	
	Sanicula marilandica	black snakeroot			G5	S5	C	
	Sium suave	hemlock water-parsnip			G5	S5	C	
	GENTIANACEAE	GENTIAN FAMILY						
*	*Centaurium erythraea*	erythraea-like centaury			G?	SE2	Ir	

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	Gentiana andrewsii	closed gentian			G4	S4	U	
	Gentianopsis crinita	fringed gentian				S5	R4	
	APOCYNACEAE	DOGBANE FAMILY						
	Apocynum androsaemifolium ssp. *androsaemifolium*	spreading dogbane			G5T5	S5	U	
	Apocynum cannabinum var. *cannabinum*	Indian hemp			G5T	S5	C	
*	*Vinca minor*	periwinkle			G?	SE5	Ir	
	ASCLEPIADACEAE	MILKWEED FAMILY						
	Asclepias incarnata ssp. *incarnata*	swamp milkweed			G5T5	S5	C	
	Asclepias purpurascens	purple milkweed			G4G5	S2	R5	
	Asclepias sullivantii	Sullivant's milkweed			G5	S2	?	
	Asclepias syriaca	common milkweed			G5	S5	C	
	Asclepias tuberosa	butterfly-weed			G5?	S4	U	
*	*Cynanchum nigrum*	black swallow-wort			G?	SE?	?	
*	*Cynanchum rossicum*	swallow-wort			G?	SE5	?	
	SOLANACEAE	POTATO FAMILY						
*	*Lycopersicon esculentum*	tomato			G?	SE2	?	
	Physalis heterophylla	clammy ground-cherry			G5	S4	C	
	Physalis virginiana	Virginia ground-cherry			G5	SU	R1	
*	*Solanum carolinense*	horse nettle			G5	SE3	Iu	
*	*Solanum dulcamara*	bitter nightshade			G?	SE5	Ic	
*	*Solanum tuberosum*	potato			G?	SE1	?	
	CONVOLVULACEAE	MORNING-GLORY FAMILY						
	Calystegia sepium ssp. *angulatum*	hedge bindweed			G4G5T?	SU	C	
	Calystegia spithamaea ssp. *Spithamaea*	low bindweed			G4G5T4T5	S4S5	?	
*	*Convolvulus arvensis*	field bindweed			G?	SE5	Ic	
	Cuscuta sp.	dodder					?	
	BORAGINACEAE	BORAGE FAMILY						
*	*Cynoglossum officinale*	hound's-tongue			G?	SE5	Ir	
*	*Echium vulgare*	blueweed			G?	SE5	Ir	
	Hackelia deflexa	spurred stickweed			G5	S5	?	
	Hackelia virginiana	Virginia stickweed			G5	S5	C	
	Lithospermum caroliniense var. *croceum*	plains puccoon			G4G5T4T5	S3	R2	
	PHRYMACEAE	LOPSEED FAMILY						
	Phryma leptostachya	lopseed			G5	S4S	C	

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						5		
	VERBENACEAE	VERVAIN FAMILY						
	Verbena hastata	blue vervain			G5	S5	C	
	Verbena stricta	hoary vervain			G5	S4	R2	
	Verbena urticifolia	white vervain			G5	S5	C	
	LAMIACEAE	MINT FAMILY						
	Clinopodium vulgare	wild basil			G5	S5	U	
	Collinsonia canadensis	stoneroot			G5	S4	C	
*	*Glechoma hederacea*	creeping Charlie			G?	SE5	Ic	
*	*Lamium amplexicaule*	henbit			G?	SE3	Ir	
*	*Leonurus cardiaca* ssp. *cardiaca*	common motherwort			G?T?	SE5	Ic	
	Lycopus americanus	cut-leaved water-horehound			G5	S5	C	
	Lycopus uniflorus	northern water-horehound			G5	S5	U	
	Mentha arvensis ssp. *borealis*	American wild mint			G5T5	S5	C	
*	*Mentha X piperita*	pepper mint			HYB	SE4	Ivu	
	Monarda fistulosa	wild bergamot			G5	S5	C	
*	*Nepeta cataria*	catnip			G?	SE5	Ic	
	Physostegia virginiana ssp. *virginiana*	Virginia false dragonhead			G5T?	S4	R5	
*	*Prunella vulgaris* ssp. *vulgaris*	common heal-all			G5T?	SE3	C	
	Pycnanthemum verticillatum var. *pilosum*	hairy mountain-mint			G5T5	S1	R4	
	Pycnanthemum virginianum	Virginia mountain-mint			G5	S4	C	
	Scutellaria lateriflora	mad-dog skullcap			G5	S5	C	
	Stachys hispida	rough hedge-nettle			G4Q	S4S5	C	
*	*Stachys palustris*	hedge-nettle			G5	SE5	?	
	PLANTAGINACEAE	PLANTAIN FAMILY						
*	*Plantago lanceolata*	ribgrass			G5	SE5	Ic	
*	*Plantago major*	common plantain			G5	SE5	Ivu	
	OLEACEAE	OLIVE FAMILY						
*	*Forsythia viridissima*	golden-bells			G?	SE2	?	
	Fraxinus americana	white ash			G5	S5	C	
	Fraxinus nigra	black ash			G5	S5	C	
	Fraxinus pennsylvanica	red ash			G5	S5	C	
	Fraxinus profunda	pumpkin ash			G4	S2	VU	
*	*Ligustrum vulgare*	common privet			G?	SE5	Ivu	

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*	*Syringa vulgaris*	common lilac			G?	SE5	Ir	
	SCROPHULARIACEAE	FIGWORT FAMILY						
	Agalinis purpurea	large purple agalinis			G5	S1	R5	
	Agalinis tenuifolia var. *macrophylla*	slender-leaved agalinis			G4G5Q	S1?	VU	
	Aureolaria flava	yellow false foxglove			G5	S3	R5	
	Aureolaria pedicularia	fern-leaved false foxglove			G5	S3	R1	
*	*Linaria vulgaris*	butter-and-eggs			G?	SE5	Ic	
	Mimulus ringens	square-stemmed monkey-flower			G5	S5	C	
	Pedicularis lanceolata	swamp wood-betony			G5	S4	VU	
	Penstemon digitalis	foxglove beard-tongue			G5	S4S5	VU	
*	*Verbascum blattaria*	moth mullein			G?	SE5	Ic	
*	*Verbascum thapsus*	common mullein			G?	SE5	Ic	
	Veronicastrum virginicum	Virginia culver's-root			G4	S2	R4	
	BIGNONIACEAE	TRUMPET-CREEPER FAMILY						
	Campsis radicans	trumpet creeper			G5	S2	R5/Ir	
*	*Catalpa bignonioides*	common catalpa			G4G5	SE1	?	
*	*Catalpa speciosa*	northern catalpa			GU	SE1	?	
	CAMPANULACEAE	BLUEBELL FAMILY						
*	*Campanula rapunculoides*	creeping bellflower			G?	SE5	C	
	Lobelia inflata	Indian tobacco			G5	S5	U	
	Lobelia siphilitica	great lobelia			G5	S5	C	
	Lobelia spicata	pale-spiked lobelia			G5	S4	VU	
	RUBIACEAE	MADDER FAMILY						
	Cephalanthus occidentalis	eastern buttonbush			G5	S5	C	
	Galium aparine	cleavers			G5	S5	C	
	Galium asprellum	rough bedstraw			G5	S5	R3	
	Galium circaezans	white wild licorice			G5	S5	C	
*	*Galium mollugo*	white bedstraw			G?	SE5	?	
	Galium palustre	marsh bedstraw			G5	S5	R4	
	Galium pilosum var. *pilosum*	hairy bedstraw			G5T?	S3	R3	
	Galium trifidum ssp. *trifidum*	small bedstraw			G5T5	S5	R5	
	Galium triflorum	sweet-scented bedstraw			G5	S5	C	
	CAPRIFOLIACEAE	HONEYSUCKLE FAMILY						
	Diervilla lonicera	bush honeysuckle			G5	S5	R1	
	Lonicera canadensis	American fly honeysuckle			G5	S5	R1	
	Lonicera dioica	glaucous honeysuckle			G5	S5	C	

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LIST OF VASCULAR PLANTS LOCATED IN THE AREA OF INVESTIGATION

	Scientific Name	Common Name	COSEWIC	COSSARO	Grank	Srank	Local Status	Legal Status
*	*Lonicera maackii*	amur honeysuckle			G?	SE2	Ir	
*	*Lonicera tatarica*	Tartarian honeysuckle			G?	SE5	Iu	
	Sambucus canadensis	common elderberry			G5	S5	C	
	Sambucus racemosa ssp. *pubens*	red-berried elderberry			G5T5	S5	R4	
*	*Symphoricarpos occidentalis*	wolfberry			G5	SE3	?	
	Viburnum acerifolium	maple-leaved viburnum			G5	S5	C	
*	*Viburnum lantana*	bending wayfaring-tree			G?	SE2	?	
	Viburnum lentago	nannyberry			G5	S5	C	
*	*Viburnum macrocephalum*	Snowball Viburnum					?	
*	*Viburnum opulus*	guelder rose			G5	SE4	?	
	Viburnum rafinesquianum	downy arrow-wood			G5	S5	C	
	Viburnum recognitum	southern arrow-wood			G5	S4	R1	
	DIPSACACEAE	TEASEL FAMILY						
*	*Dipsacus fullonum* ssp. *sylvestris*	wild teasel			G?T?	SE5	Ic	
	ASTERACEAE	ASTER FAMILY						
*	*Achillea millefolium* ssp. *millefolium*	common yarrow			G5T?	SE?	C	
	Ambrosia artemisiifolia	common ragweed			G5	S5	C	
	Ambrosia trifida	giant ragweed			G5	S5	C	
	Anaphalis margaritacea	pearly everlasting			G5	S5	R1?	
	Antennaria neglecta	field pussytoes			G5	S5	R2	
	Antennaria parlinii ssp. *fallax*	Parlin's pussytoes			G4G5 T?	SU	C	
*	*Arctium lappa*	great burdock			G?	SE5	Ir	
*	*Arctium minus* ssp. *minus*	common burdock			G?T?	SE5	Ic	
*	*Artemisia vulgaris*	common mugwort			G?	SE5	Ir	
	Aster cordifolius	heart-leaved aster			G5	S5	U	
	Aster ericoides ssp. *ericoides*	white heath aster			G5T?	S5	C	
	Aster laevis var. *laevis*	smooth blue aster			G5T?	S5	U	
	Aster lanceolatus ssp. *lanceolatus*	tall white aster			G5T?	S5	C	
	Aster lateriflorus var. *lateriflorus*	calico aster			G5T5	S5	C	
	Aster macrophyllus	large-leaved aster			G5	S5	C	
	Aster novae-angliae	New England aster			G5	S5	C	
	Aster oolentangiensis	sky blue aster			G5	S4	R4	
	Aster pilosus var. *pilosus*	hairy aster			G5T?	S5	C	

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	Aster praealtus var. *praealtus*	willow aster	THR	THR	G5T?	S2	R2	SARA (1), PA
	Aster shortii	short's aster	NAR	NAR	G4G5	S4	U	
*	*Aster subulatus* var. *subulatus*	annual saltmarsh aster			G5	SE2	Ir	
	Aster umbellatus var. *umbellatus*	flat-top white aster			G5T?	S5	R3	
	Aster urophyllus	arrow-leaved aster			G4	S4	C	
	Bidens frondosa	devil's beggar-ticks			G5	S5	C	
	Bidens tripartita	European beggar-ticks			G5	S5	C	
*	*Centaurea maculosa*	spotted knapweed			G?	SE5	Ivu	
*	*Chrysanthemum leucanthemum*	ox-eye daisy			G?	SE5	Ic	
*	*Cichorium intybus*	chicory			G?	SE5	Ic	
*	*Cirsium arvense*	Canada thistle			G?	SE5	Ic	
	Cirsium discolor	field thistle			G5	S4	U	
*	*Cirsium vulgare*	bull thistle			G5	SE5	Ic	
	Conyza canadensis	horseweed			G5	S5	C	
	Coreopsis tripteris	tall tickseed			G5	S2	U	
	Erechtites hieracifolia	fire-weed			G5	S5	C	
	Erigeron annuus	daisy fleabane			G5	S5	C	
	Erigeron philadelphicus ssp. *philadelphicus*	Philadelphia fleabane			G5T5	S5	C	
	Erigeron strigosus	daisy fleabane			G5	S5	C	
	Eupatorium altissimum	tall joe-pyeweed			G5	S1	R3/ Iu	
	Eupatorium maculatum ssp. *maculatum*	spotted joe-pye-weed			G5T5	S5	C	
	Eupatorium perfoliatum	perfoliate thoroughwort			G5	S5	C	
	Eupatorium purpureum var. *purpureum*	purple joe-pye-weed			G5T?	S3	VU	
	Euthamia graminifolia	flat-topped bushy goldenrod			G5	S5	C	
	Euthamia gymnospermoides	viscid bushy goldenrod			G5	S1	R3	
	Helenium autumnale	common sneezeweed			G5	S5	U	
*	*Helenium flexuosum*	purple-headed sneezeweed			G5	SE2 ?	?	
	Helianthus divaricatus	rough woodland sunflower			G5	S5	C	
	Helianthus giganteus	tall wild sunflower			G5	S5	C	
*	*Helianthus tuberosus*	Jerusalem artichoke			G5	SE5	Iu	
*	*Hieracium aurantiacum*	devil's paintbrush			G?	SE5	Ir	

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*	*Hieracium caespitosum* ssp. *caespitosum*	field hawkweed				SE5	Iu	
	Hieracium scabrum	rough hawkweed			G5	S4	VU	
	Krigia biflora var. *biflora*	two-flowered Cynthia			G5	S2	U	
	Lactuca biennis	biennial lettuce			G5	S5	VU	
	Lactuca canadensis	tall lettuce			G5	S5	C	
*	*Lactuca serriola*	prickly lettuce			G?	SE5	Ic	
	Liatris aspera var. *intermedia*	rough blazing star			G4G5 T?	S2	R2	
	Liatris spicata	spiked blazing star	THR	THR	G5	S2	R5	SARA (1), PA
*	*Matricaria matricarioides*	pineapple-weed			G5	SE5	Iu	
	Prenanthes alba	white rattlesnake-root			G5	S5	C	
	Prenanthes racemosa ssp. *racemosa*	glaucous white rattlesnake-root			G5T?	SU	R4	
	Ratibida pinnata	gray-headed coneflower			G5	S2S3	U	
*	*Rudbeckia fulgida*	orange coneflower			G5	S1	?	
	Rudbeckia hirta	black-eyed Susan			G5	S5	C	
	Senecio aureus	golden groundsel			G5	S5	VU	
	Silphium terebinthinaceum var. *terebinthinaceum*	prairie dock			G4G5 T4T5	S1	VU	
	Solidago altissima var. *altissima*	tall goldenrod				S5	C	
	Solidago caesia	blue-stem goldenrod			G5	S5	C	
	Solidago canadensis	Canada goldenrod			G5	S5	C	
	Solidago gigantea	giant goldenrod			G5	S5	VU	
	Solidago juncea	early goldenrod			G5	S5	U	
	Solidago nemoralis ssp. *nemoralis*	gray goldenrod			G5T5	S5	C	
	Solidago ohioensis	Ohio goldenrod			G4	S4	?	
	Solidago riddellii	Riddell's goldenrod	SC	SC	G5	S3	VU	SARA (1)
	Solidago rigida ssp. *rigida*	stiff-leaved goldenrod			G5T5	S3	U	
	Solidago rugosa ssp. *rugosa*	rough goldenrod			G5T?	S5	C	
*	*Solidago sempervirens*	seaside goldenrod			G5	SE2	Ivu	
*	*Sonchus arvensis* ssp. *arvensis*	field sow-thistle			G?T?	SE5	Ic	
*	*Sonchus asper* ssp. *asper*	spiny-leaved sow-thistle			G?T?	SE5	Iu	
*	*Sonchus oleraceus*	common sow-thistle			G?	SE5	Ivu	
*	*Tanacetum vulgare*	common tansy			G?	SE5	Ir	

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*	*Taraxacum officinale*	common dandelion			G5	SE5	Ic	
*	*Tragopogon dubius*	doubtful goat's-beard			G?	SE5	Ic	
	*Vernonia gigantea**	ironweed			G5T	S3	C	
	*Vernonica missurica**	ironweed			G4G5	S3?	?	
	Xanthium strumarium	tumor-curing cocklebur			G5	S5	C	
	BUTOMACEAE	FLOWERING RUSH FAMILY						
*	*Butomus umbellatus*	flowering-rush			G5	SE5	Ic	
	ALISMATACEAE	WATER-PLANTAIN FAMILY						
	Alisma plantago-aquatica	common water-plantain			G5	SRF	C	
	Sagittaria latifolia	broad-leaved arrowhead			G5	S5	C	
	HYDROCHARITACEAE	FROG'S-BIT FAMILY						
	Elodea nuttallii	Nuttall's waterweed			G5	S4	R1	
	Vallisneria americana	water-celery			G5	S5	VU	
	POTAMOGETONACEAE	PONDWEED FAMILY						
	Potamogeton foliosus	leafy pondweed			G5	S5	U	
	Potamogeton nodosus	knotty pondweed			G5	S5	R2	
	Potamogeton sp.	pondweed					?	
	NAJADACEAE	NAIAD FAMILY						
	Najas flexilis	slender najas			G5	S5	VU	
	ARACEAE	ARUM FAMILY						
	Arisaema triphyllum ssp. *triphyllum*	small jack-in-the-pulpit			G5T5	S5	C	
	LEMNACEAE	DUCKWEED FAMILY						
	Lemna minor	lesser duckweed			G5	S5	C	
	COMMELINACEAE	SPIDERWORT FAMILY						
	Tradescantia ohiensis	Ohio spiderwort			G5	S2	VU	
	JUNCACEAE	RUSH FAMILY						
	Juncus alpinoarticulatus	Richardson's rush			G5	S5	R5	
	Juncus biflorus	two-flowered rush			G5Q	S1	R3	
	Juncus brachycarpus	short-fruited rush			G4G5	S1	R3	
	Juncus bufonius	toad rush			G5	S5	VU	
	Juncus dudleyi	Dudley's rush			G5	S5	C	
	Juncus greenei	Greene's rush			G5	S3	R3	
	Juncus marginatus	grass-leaved rush			G5	S2	R1	
	Juncus nodosus	knotted rush			G5	S5	U	
	Juncus tenuis	path rush			G5	S5	R1	
	Juncus torreyi	Torrey's rush			G5	S5	C	
	Luzula multiflora ssp.	woodrush			G5T5	S5	U	

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multiflora							
CYPERACEAE	SEDGE FAMILY						
Carex arctata	drooping wood sedge			G5?	S5	?	
Carex bebbii	Bebb's sedge			G5	S5	C	
Carex blanda	woodland sedge			G5?	S5	C	
Carex brevior	shorter sedge			G5?	S4S5	R4	
Carex buxbaumii	brown sedge			G5	S5	VU	
Carex cephaloidea	thin-leaved sedge			G5	S5	U	
Carex cephalophora	oval-headed sedge			G5	S5	C	
Carex foena	bronzy sedge			G5	S5	R1	
Carex granularis	meadow sedge			G5	S5	C	
Carex lacustris	lake-bank sedge			G5	S5	C	
Carex lasiocarpa	slender sedge			G5	S5	R2	
Carex normalis	larger straw sedge			G5	S4	C	
Carex pellita	woolly sedge			G5	S5	C	
Carex pensylvanica	Pennsylvania sedge			G5	S5	C	
Carex pseudo-cyperus	cypress-like sedge			G5	S5	?	
Carex radiata	radiate sedge			G4	S4	C	
Carex rosea	stellate sedge			G5	S5	C	
Carex scoparia	pointed broom sedge			G5	S5	R3	
Carex squarrosa	squarrose sedge			G4G5	S2	C	
Carex stipata	awl-fruited sedge			G5	S5	C	
Carex stricta	tussock sedge			G5	S5	C	
Carex swanii	swan's sedge			G5	S3	C	
Carex tenera	straw sedge			G5	S5	C	
Carex trichocarpa	hairy-fruited sedge			G4	S3	?	
Carex viridula ssp. *viridula*	greenish sedge			G5T5	S5	R4	
Carex vulpinoidea	fox sedge			G5	S5	C	
Carex woodii	wood's sedge			G4Q	S4	VU	
Cyperus esculentus	yellow nut-grass			G5	S5	C	
Cyperus odoratus	fragrant umbrella sedge			G5	S5	C	
Cyperus strigosus	straw-colored umbrella sedge			G5	S5	C	
Eleocharis erythropoda	red-footed spike-rush			G5	S5	C	
Eleocharis obtusa	blunt spike-rush			G5	S5	C	
Rhynchospora capitellata	small-headed beaked-rush			G5	S4	R3	
Scirpus atrovirens	dark-green bulrush			G5?	S5	C	
Scirpus pendulus	lined bulrush			G5	S5	C	
Scirpus validus	American great bulrush			G?	S5	U	

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	Scleria triglomerata	tall nut-rush			G5	S1	R4	
	POACEAE	GRASS FAMILY						
*	*Agrostis gigantea*	red-top			G4G5	SE5	Ic	
	Agrostis stolonifera	redtop			G5	S5	U	
	Andropogon gerardii	big bluestem			G5	S4	U	
	Andropogon virginicus	Virginia broom-sedge			G5	S4	VU	
*	*Anthoxanthum odoratum* ssp. *odoratum*	sweet vernal grass			G?T?	SE4	?	
	Aristida purpurascens var. *purpurascens*	arrow-feather three-awn			G5T?	S1	R4	
*	*Avena fatua*	wild oats			G?	SE3	Ir	
*	*Bromus inermis* ssp. *inermis*	awnless brome			G4G5T?	SE5	Ic	
*	*Bromus tectorum*	downy chess			G?	SE5	Iu	
	Calamagrostis canadensis	blue-joint grass			G5	S5	C	
*	*Dactylis glomerata*	orchard grass			G?	SE5	Ic	
	Danthonia spicata	poverty oat grass			G5	S5	C	
*	*Digitaria ischaemum*	small crabgrass			G?	SE5	Iu	
*	*Digitaria sanguinalis*	large crabgrass			G5	SE5	Iu	
*	*Echinochloa crusgalli*	common barnyard grass			G?	SE5	Ic	
	Echinochloa microstachya	small-spiked barnyard grass			G5Q	S4S5	R?	
	Elymus canadensis	nodding wild rye			G5	S4S5	VU	
	Elymus hystrix	bottle-brush grass			G5	S5	C	
*	*Elymus repens*	quack grass			G?	SE5	Ic	
	Elymus virginicus var. *virginicus*	Virginia wild rye			G5T?	S5	C	
*	*Festuca arundinacea*	tall fescue			G?	SE5	Ic	
*	*Festuca pratensis*	meadow fescue			G5	SE5	Ir	
	Festuca rubra ssp. *rubra*	red fescue			G5T4	S5	Ir	
	Glyceria striata	fowl meadow grass			G5	S5	C	
	Hierochloe odorata ssp. *odorata*	sweet grass			G5T?	S4	R3	
*	*Hordeum jubatum* ssp. *jubatum*	squirrel-tail grass			G5T?	SE5	Iu	
	Leersia oryzoides	rice cut grass			G5	S5	C	
	Leersia virginica	white cut grass			G5	S4	C	
*	*Lolium perenne*	English rye grass			G?	SE4	Iu	
	Milium effusum	wood millet			G5	S4S	R3	

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						5		
	Muhlenbergia frondosa	leafy satin grass			G5	S4	VU	
	Muhlenbergia mexicana var. *mexicana*	Mexican satin grass			G5T?	S5	U	
	Panicum acuminatum var. *acuminatum*	acuminate panic grass			G5T	S5	C	
	Panicum capillare	witch grass			G5	S5	C	
	Panicum columbianum var. *siccanum*	panic grass			G5T5	S4	R1	
*	*Panicum dichotomiflorum*	fall panicum			G5	SE5	Ic	
	Panicum latifolium	broad-leaved panic grass			G5	S4	U	
	Panicum sphaerocarpon	rough-fruited panic grass			G5	S3	R5	
	Panicum virgatum	switch grass			G5	S4	U	
	Paspalum setaceum	bristle-like paspalum			G5	S2	R4	
	Phalaris arundinacea	reed canary grass			G5	S5	C	
*	*Phleum pratense*	timothy			G?	SE5	Ic	
	Phragmites australis	common reed			G5	S5	C	
	Poa compressa	Canada blue grass			G?	SE5	C	
	Poa palustris	fowl meadow grass			G5	S5	VU	
	Poa pratensis ssp. *pratensis*	Kentucky bluegrass			G5T5?	S5	C	
	Schizachyrium scoparium	little bluestem			G5	S4	U	
*	*Setaria faberi*	giant foxtail			G?	SE4	Ic	
*	*Setaria pumila*	yellow foxtail			G?	SE5	Ic	
*	*Setaria viridis*	green foxtail			G?	SE5	Ic	
	Sorghastrum nutans	Indian grass			G5	S4	R5	
	Spartina pectinata	tall cord grass			G5	S4	U	
	TYPHACEAE	CAT-TAIL FAMILY						
	Typha angustifolia	narrow-leaved cattail			G5	SE5	C	
	Typha latifolia	broad-leaved cattail			G5	S5	U	
	LILIACEAE	LILY FAMILY						
	Aletris farinosa	colic-root	THR	THR	G5	S2	R4	SARA (1), PA
	Allium canadense var. *canadense*	Canada wild onion			G5T5	S5	C	
*	*Asparagus officinalis*	garden asparagus			G5?	SE5	Ic	
*	*Convallaria majalis*	lily-of-the-valley			G5	SE5	Ir	
	Erythronium americanum ssp. *americanum*	yellow trout lily			G5T5	S5	C	
*	*Hemerocallis fulva*	orange day-lily			G?	SE5	Iu	
	Hypoxis hirsuta	yellow star-grass			G5	S3	R5	

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	Maianthemum racemosum ssp. *racemosum*	false Solomon's seal			G5T5	S5	C	
	Maianthemum stellatum	star-flowered Solomon's seal			G5	S5	C	
	Muscari botryoides	grape hyacinth			G?	SE3	?	
*	*Narcissus pseudonarcissus*	daffodil			G?	SE2	Ir	
*	*Ornithogalum umbellatum*	summer snowflake			G2?	SE3	Ir	
	Polygonatum biflorum	hairy Solomon's seal			G5	S4	C	
	Polygonatum pubescens	hairy Solomon's seal			G5	S5	C	
	Streptopus roseus	rose twisted-stalk			G5	S5	?	
	Trillium grandiflorum	white trillium			G5	S5	C	
	Uvularia sessilifolia	sessile-leaved bellwort			G5	S4	R5	
	IRIDACEAE	IRIS FAMILY						
	Iris virginica	southern blue-flag			G5	S5	C	
	Sisyrinchium albidum	white blue-eyed-grass			G5?	S1	R4	
	Sisyrinchium angustifolium	pointed blue-eyed-grass			G5	S4	C	
	SMILACACEAE	CATBRIER FAMILY						
	Smilax herbacea	herbaceous carrion flower			G5	S4	R1	
	Smilax hispida	bristly greenbrier			G5	S4	C	
	Smilax lasioneura	hairy-nerved carrion flower			G5	S4	C	
	DIOSCOREACEAE	YAM FAMILY						
	Dioscorea quaternata	wild yam-root			G5	S4	C	
	ORCHIDACEAE	ORCHID FAMILY						
	Cypripedium calceolus var. *pubescens*	large yellow lady's slipper			G5T	S5	R2	
*	*Epipactis helleborine*	common helleborine			G?	SE5	Ir	
	SAPINDACEAE	SOAPBERRY FAMILY						
*	*Koelreuteria paniculata*	Golden rain tree					?	
	TAMARICACEAE	TAMARISK FAMILY						
*	*Tamarix ramosissima*	Tamarisk					?	
	MORACEAE	FIG FAMILY						
*	*Ficus* sp.	Fig tree					?	

* Species introduced to Ontario

Local Status Distribution and Status of the Vascular Plants of Southwestern Ontario

Status of the plants in Essex County was thoroughly investigated by the Ontario Ministry of Natural Resources through the use of plant stations. Plant stations are locations that are defined as a 1 km radius around a plant occurrence. Plant rarity is based on the number of stations for a native plant species. A variable cut-off is used for the number of stations based on the size of the municipality or site district and by the intensity of fieldwork that has been carried out in the area.

R - Native and rare, based on 5 or fewer recent (post-1963) stations. A station is a population separated by at least 1 kilometer from the nearest population of the same species.
R# - Rare, number of recent stations.
R? - Rare, exact number of stations not known.
Rh - Rare, known only from historic (pre-1964) record.
VU - Native and very uncommon, based on 6 to 8 recent stations.
U - Native and uncommon, based on 9 to 15 recent stations.
C - Native and common, based on more than 15 recent stations.
I - Introduced and persisting of cultivation.
Ir - Introduced and rare, based on 5 or fewer recent stations.
Ivu - Introduced and very uncommon, based on 6 to 8 recent stations.
Iu - Introduced and uncommon, based on 9 to 15 recent stations.
Ic - Introduced and common, based on more than 15 recent stations.
Ih - Introduced and known only from historic (pre-1964) records
? - Questionable record. These are typically literature reports for which no specimen is known, or other records for which there is some reason to doubt either the identity or origin of the record
? - Not listed as present within Essex County, but was found by LGL staff in 2006.

APPENDIX C

APPENDIX C

SUMMARY OF ECOLOGICAL LAND CLASSIFICATION[1] VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
Terrestrial-Natural/Semi-Natural				
TPO	OPEN TALL-GRASS PRAIRIE			
TPO2-1	Fresh - Moist Tallgrass Prairie	Canopy: Eastern cottonwood (*Populus deltoides* ssp. deltoides) is dominant. Understorey: Silky dogwood (*Cornus amomum* ssp. *obliqua*) is dominant with gray dogwood (*Cornus foemina* ssp. *racemosa*) and multiflora rose (*Rosa multiflora*) as associates. Ground Cover: Big bluestem (*Andropogon gerardii*), Canadian tick-trefoil (*Desmodium canadense*), common reed (*Phragmites australis*), gray goldenrod (*Solidago nemoralis* ssp. *nemoralis*), gray-headed coneflower (*Ratibida pinnata*), Indian grass (*Sorghastrum nutans*), ironweed (*Vernonia gigantea*), little bluestem (*Schizachyrium scoparium*), switch grass (*Panicum virgatum*), Virginia broom-sedge (*Andropogon virginicus*), Virginia mountain-mint (*Pycnanthemum virginianum*), wild bergamot (*Monarda fistulosa*) and wild carrot (*Daucus carota*) are abundant with occasional blood-red milkwort (*Polygala sanguinea*), butterfly-weed (*Asclepias tuberosa*), calico aster (*Aster lateriflorus* var. *lateriflorus*), Canada bluegrass (*Poa compressa*), Canada goldenrod (*Solidago canadensis*), colic-root (*Aletris farinosa*), cut-leaved water-horehound (*Lycopus americanus*), early goldenrod (*Solidago juncea*), field thistle (*Cirsium discolor*), flowering spurge (*Euphorbia corollata*), Kentucky bluegrass (*Poa pratensis* ssp. pratensis), large purple agalinis (*Agalinis purpurea*), New England aster (*Aster novae-angliae*), orchard grass (*Dactylis glomerata*), prickly raspberry (*Rubus flagellaris*), rough goldenrod (*Solidago rugosa* ssp. *rugosa*), rough-headed bush-clover (*Lespedeza capitata*), slender-leaved agalinis (Agalinis tenuifolia var. macrophylla), smooth blue aster (*Aster laevis* var. *laevis*), spiked blazing star (*Liatris spicata*), stiff-leaved goldenrod (*Solidago rigida* ssp. rigida), swamp milkweed (*Asclepias incarnata* ssp. *incarnata*), tall cord grass (*Spartina pectinata*), tall fescue (*Festuca arundinacea*), tall goldenrod (*Solidago altissima* var. *altissima*), tall tickseed (*Coreopsis tripteris*), tall wild sunflower (*Helianthus giganteus*), Virginia culver's root (*Veronicastrum* virginicum), white heath aster (*Aster ericoides* ssp. *ericoides*), and wing-angled loosestrife (*Lythrum alatum*).	- Tree cover <= 25%; shrub cover <= 25%. - Subject to seasonal extremes in moisture conditions; spring flooding and summer drought (TPO). - Dominated by Prairie graminoids and forbs (2-1). - Pioneer community resulting from, or maintained by, frequent disturbance by fire.	ANS1A, BBA4EC, BBA4MB, ESA1, LAM1, MAL1D, MAL3B, NAR4A, NAR4B, NAR15, NAR16, NCH2E, NCH4B, NCH4Z, NCH12B, NSG7A, NSG7C, OAK3, OAK4, RED5, RED12, YWK1B

[1] Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources, Southcentral Sciences Section, Science Development and Transfer Branch. SCSS Field Guide FG-02. North Bay, Ontario.

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ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
TPS	TALL-GRASS SAVANNAH			
TPS2-1	Fresh - Moist Pin Oak - Bur Oak Tallgrass Savannah	Canopy: Pin oak (*Quercus palustris*) and bur oak (*Quercus macrocarpa*) are co-dominant with American elm (*Ulmus americana*), eastern cottonwood, red ash (*Fraxinus pennsylvanica*) and shagbark hickory (*Carya ovata* var. *ovata*) as associates. Understorey: American hazel (*Corylus americana*), black ash (*Fraxinus nigra*), black locust (*Robinia pseudo-acacia*), common buckthorn (*Rhamnus cathartica*), Drummond's dogwood (*Cornus drummondii*), gray dogwood, Manitoba maple (*Acer negundo*), red ash, staghorn sumac (*Rhus typhina*) and Tartarian honeysuckle (*Lonicera tatarica*). Ground Cover: Common dandelion (*Taraxacum officinale*), eastern cottonwood, gray goldenrod, Pennsylvania sedge (*Carex pensylvanica*), scarlet strawberry (*Fragaria virginiana* ssp. *virginiana*), spotted crane's bill (*Geranium maculatum*), tall tickseed, yellow avens (*Geum aleppicum*) and yellow trout lily (*Erythronium americanum* ssp. *americanum*).	- 25% < Tree Cover <= 35% with prairie graminoids and forbs in the Ground Cover (TPS). - Seasonal flooding followed by summer drought. - Fresh - Moist conditions, dominated by Pin Oak and Bur Oak (2-1). - Young Community.	ESA5
TPW	TALL-GRASS WOODLAND			
TPW2-1	Fresh - Moist Black Oak - White Oak Tallgrass Woodland	Canopy: Black oak (*Quercus velutina*) and pin oak are dominant with black cherry (*Prunus serotina*), eastern cottonwood, freeman's maple (*Acer X freemanii*) and white oak (*Quercus alba*) as associates. Understorey: Black cherry is dominant with American hazel, gray dogwood, prairie rose (*Rosa setigera*), riverbank grape (*Vitis riparia*), sassafras (*Sassafras albidum*), staghorn sumac, thimble-berry (*Rubus occidentalis*) and white mulberry (*Morus alba*) as associates. Ground Cover: Eastern bracken-fern (*Pteridium aquilinum* var. *latiusculum*), four-flowered loosestrife (*Lysimachia quadriflora*), glaucous white rattlesnake-root (*Prenanthes racemosa* ssp. *racemosa*), many-flowered agrimony (*Agrimony parviflora*), orchard grass, spotted crane's bill and swamp white oak (*Quercus bicolor*).	- 35% < Tree Cover <= 60% with prairie graminoids and forbs in the Ground Cover (TPS). - Seasonal flooding followed by summer drought. - Fresh - Moist conditions, dominated by Black Oak and White Oak (2-1). - Mid-age to Mature Community.	ANS1, ANS2C
TPW2-2	Fresh - Moist Pin Oak Tallgrass Woodland	Canopy: Pin oak is dominant with black cherry and freeman's maple as associates. Understorey: Black cherry is dominant with American hazel, gray dogwood, prairie rose, riverbank grape, sassafras, staghorn sumac, thimble-berry and white mulberry as associates. Ground Cover: Eastern bracken-fern, many-flowered agrimony, orchard grass, spotted crane's bill and swamp white oak.	- 35% < Tree Cover <= 60% with prairie graminoids and forbs in the Ground Cover (TPS). - Seasonal flooding followed by summer drought. - Fresh - Moist conditions, dominated by Pin Oak (2-2). - Mid-age to Mature Community.	ANS2

APPENDIX C

SUMMARY OF ECOLOGICAL LAND CLASSIFICATION[1] VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
FOD	DECIDUOUS FOREST			
FOD1-3	Dry - Fresh Black Oak Deciduous Forest	Canopy: Black oak, pin oak, freeman's maple and eastern cottonwood are dominant with American elm, black cherry and swamp white oak as associates. Subcanopy: American elm, black oak, black cherry and red maple (*Acer rubrum*). Understorey: Black cherry and common reed are co-dominant with American hazel, gray dogwood, narrow-leaved crabapple (*Malus coronaria*), red ash and sassafras as associates. Ground Layer: Common reed, eastern bracken-fern (*Pteridium aquilinum* var. *latiusculum*), inserted Virginia-creeper (*Parthenocissus inserta*), Pennsylvania sedge and riverbank grape are dominant with garlic mustard (*Alliaria petiolata*), spotted crane's bill and wood anemone (*Anemone quinquefolia* var. *quinquefolia*) as associates.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Black Oak is dominant (1-3). - Sand and loam soils with rapid drainage in upper to middle slope positions (Dry-Fresh). - Mature Community.	MAL9, MAL11, YWK2
FOD1-4	Dry - Fresh Mixed Oak Deciduous Forest	Canopy: Black oak and white oak are dominant with eastern cottonwood, pin oak and swamp white oak as associates. Subcanopy: Black oak and pin oak are dominant with abundant black cherry. Understorey: American hazel and gray dogwood are co-dominant. Ground Layer: Canada goldenrod, common reed, eastern bracken-fern, inserted Virginia-creeper, interrupted fern (*Osmunda claytoniana*), rose twisted-stalk (*Streptopus roseus*), Royal fern (*Osmunda regalis*) and spotted crane's bill are dominant.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - More than two Oak species are dominant (1-4). - Sand and loam soils with rapid drainage in upper to middle slope positions (Dry-Fresh). - Mid-age to Mature Community.	MAL1, MAL1E
FOD2-2	Dry - Fresh Oak - Hickory Deciduous Forest	Canopy: Black oak, swamp white oak and shagbark hickory are dominant with bur oak, pin oak, red oak (Quercus rubra), freeman's maple and white oak as associates. Subcanopy: Black cherry and freeman's maple are co-dominant. Understorey: Black cherry and choke cherry (*Prunus virginiana* ssp. virginiana) are co-dominant with American elm and red ash as associates. Ground Layer: Garlic mustard, large-leaved aster (*Aster macrophyllus*), spotted crane's bill and yellowish enchanter's nightshade (*Circaea lutetiana* ssp. *canadensis*) are dominant with common blackberry (*Rubus allegheniensis*), inserted Virginia-creeper, Pennsylvania sedge, western poison-ivy (*Rhus rydbergii*), wild red raspberry (*Rubus idaeus* ssp. *melanolasius*) and yellow trout lily as associates.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Oak and Hickory are dominant (2-2). - Sand and loam soils with rapid drainage in upper to middle slope positions (Dry-Fresh). - Mature Community.	ESA2

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SUMMARY OF ECOLOGICAL LAND CLASSIFICATION[1] VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
FOD4	Dry - Fresh Deciduous Forest	Canopy: Manitoba maple, black locust and eastern cottonwood are dominant with black cherry, freeman's maple, American elm and black walnut (*Juglans nigra*) as associates. Subcanopy: Black cherry, Manitoba maple and white mulberry. Understorey: Manitoba maple is dominant with abundant black cherry, prairie rose, Tartarian honeysuckle and white mulberry with some gray dogwood, poison-ivy (*Rhus radicans*), red ash, riverbank grape, smooth sumac (*Rhus glabra*), staghorn sumac and freeman's maple. Ground Layer: Garlic mustard is dominant with common dandelion (*Taraxacum officinale*), cleavers (*Galium aparine*) and inserted Virginia-creeper.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Tree species associations that are either relatively uncommon or a result of disturbance or management (4). - Sand and loam soils with rapid drainage in upper to middle slope positions (Dry-Fresh). - Young Community.	BBA1A, BBA7,BBA8, BBA12, BBBA14, MAL5, NCH7H, NGM1
FOD7-1	Fresh - Moist White Elm Lowland Deciduous Forest	Canopy: American elm is dominant with abundant standing snags of red ash with some black cherry, eastern cottonwood, pin oak and swamp white oak. Subcanopy: American elm, pin oak and swamp white oak are dominant. Understorey: Gray dogwood is dominant with American hazel, choke cherry, prairie rose and Tartarian honeysuckle as associates. Ground Layer: Common dandelion, inserted Virginia-creeper, Manitoba maple, marsh bedstraw (*Galium palustre*), marsh fern (*Thelypteris palustris* var. *pubescens*) and Sensitive fern.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Lowland deciduous forest (7), dominated by White Elm (-1). - Sand, loam and clay soils that are poorly drained, in lower slope, mid slope, and bottomland positions (Fresh-Moist). - Mid-age community.	NAR12
FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest	Canopy: Red ash is dominant with American elm, eastern cottonwood, black cherry and red maple as associates. Subcanopy: American elm, black cherry, glossy buckthorn (*Rhamnus frangula*), Manitoba maple, pin oak and red ash. Understorey: Black walnut, common buckthorn, choke cherry, gray dogwood, multiflora rose, nannyberry (*Viburnum lentago*), prairie rose, red ash, staghorn sumac and Tartarian honeysuckle. Ground Layer: Common dandelion, inserted Virginia-creeper, Manitoba maple, wild parsnip (*Pastinaca sativa*) and yellowish enchanter's nightshade.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Lowland deciduous forest (7), dominated by Red Ash (-2). - Sand, loam and clay soils that are poorly drained, in lower slope, mid slope, and bottomland positions (Fresh-Moist). - Young to Mid-age Community.	NAR13, NSG3

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ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
FOD7-3	Fresh - Moist Willow Lowland Deciduous Forest	Canopy: Black willow (*Salix nigra*) is dominant with black cherry and Manitoba maple as associates. Subcanopy: Manitoba maple is dominant with black cherry, Drummond's dogwood, red ash and white mulberry as associates. Understorey: Common buckthorn, gray dogwood, and Tartarian honeysuckle are dominant with American elm, Black walnut, choke cherry, inserted Virginia-creeper, multiflora rose, nannyberry (*Viburnum lentago*), riverbank grape, prairie rose, red ash, red currant (*Ribes rubrum*) and staghorn sumac as associates. Ground Layer: Awnless brome (*Bromus inermis* ssp. *inermis*), Canada goldenrod, Canada thistle (*Cirsium arvense*), Common dandelion, inserted Virginia-creeper, Manitoba maple, orchard grass, upright yellow wood-sorrel (*Oxalis stricta*), wild parsnip (*Pastinaca sativa*) and yellowish enchanter's nightshade.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Lowland deciduous forest (7), dominated by Black Willow (-3). - Sand, loam and clay soils that are poorly drained, in lower slope, mid slope, and bottomland positions (Fresh-Moist). - Mature Community.	LAM4A
FOD7-4	Fresh - Moist Black Walnut Lowland Deciduous Forest	Canopy: Black walnut is dominant with American elm, black cherry, black locust, common hackberry (*Celtis occidentalis*), eastern cottonwood, Manitoba maple, silver poplar (*Populus alba*) and freeman's maple as associates. Subcanopy: Black cherry, black walnut, common hackberry, Manitoba maple and white mulberry. Understorey: Black cherry, gray dogwood and Manitoba maple are dominant with amur honeysuckle (*Lonicera maackii*), black locust, choke cherry, common elderberry (*Sambucus canadensis*), common hackberry, narrow-leaved crabapple, poison-ivy, prairie rose, riverbank grape, sassafras, freeman's maple, Tartarian honeysuckle, thimble-berry and tree-of-heaven as associates. Ground Layer: Garlic mustard, lily-of-the-valley and inserted Virginia-creeper are dominant with Canada anemone (*Anemone canadensis*), cleavers, common burdock (*Arctium minus* ssp. *minus*), common motherwort (*Leonurus cardiaca* ssp. *cardiaca*), hound's-tongue (*Cynoglossum officinale*), Philadelphia fleabane (*Erigeron philadelphicus* ssp. *philadelphicus*), riverbank grape, scarlet strawberry, star-flowered Solomon's seal (*Maianthemum stellatum*), upright yellow wood-sorrel, white avens (*Geum canadense*) and yellow avens as associates.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Lowland deciduous forest (7), dominated by Black Walnut (-4). - Sand, loam and clay soils that are poorly drained, in lower slope, mid slope, and bottomland positions (Fresh-Moist). - Mid-age Community.	BBA2, BBA13

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ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
FOD8	Fresh - Moist Poplar-Sassafras Deciduous Forest	Canopy: Eastern cottonwood is dominant with abundant pin oak and freeman's maple with some black cherry, black oak, red ash, red oak and white oak. Subcanopy: Manitoba maple and red ash are dominant with black cherry, black willow, peach-leaved willow (*Salix amygdaloides*), pin oak, sassafras, freeman's maple and white mulberry as associates. Understorey: Gray dogwood, black cherry and Manitoba maple are dominant with black willow, choke cherry, common buckthorn, Drummond's dogwood, nannyberry, red ash, sassafras and wild black currant (*Ribes americanum*) as associates. Ground Layer: Canada bluegrass, Canada goldenrod, common reed, garlic mustard, inserted Virginia-creeper, Pennsylvania sedge, riverbank grape, spotted crane's bill and yellowish enchanter's nightshade.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Dominated by Poplars and Sassafras (8). - Sand, loam and clay soils that are poorly drained, in lower slope, mid slope, and bottomland positions (Fresh-Moist). - Young to Mature Community.	MAL1B, NAR3A, NAR6A, NAR6B, NSG6, NSG10, OAK2
FOD8-1	Fresh - Moist Poplar Deciduous Forest	Canopy: Eastern cottonwood is dominant with American elm, Manitoba maple and trembling aspen (*Populus tremuloides*) as associates. Subcanopy: Gray dogwood and Manitoba maple are dominant. Understorey: American hazel, black cherry, choke cherry, common buckthorn, gray dogwood, Manitoba maple, prairie rose and red ash. Ground Layer: Common dandelion, inserted Virginia-creeper, old-field cinquefoil (*Potentilla simplex*), sensitive fern, yellow trout lily and yellowish enchanter's nightshade.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Dominated by Poplars (8-1). - Sand, loam and clay soils that are poorly drained, in lower slope, mid slope, and bottomland positions (Fresh-Moist). - Young Community.	HCL2, NAR8, NAR9
FOD8-2	Fresh - Moist Sassafras Deciduous Forest	Canopy: Sassafras is dominant with black cherry, eastern cottonwood and pin oak. Subcanopy: Black cherry and sassafras are dominant. Understorey: Black cherry, choke cherry, common buckthorn and sassafras. Ground Layer: Cleavers, inserted Virginia-creeper, rose twisted-stalk, sessile-leaved bellwort (*Uvularia sessilifolia*), spotted crane's bill, wild columbine (*Aquilegia canadensis*) and yellow trout lily.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Dominated by Sassafras (8-2). - Sand, loam and clay soils that are poorly drained, in lower slope, mid slope, and bottomland positions (Fresh-Moist). - Young Community.	HCL1A, HCL10

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ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
FOD9	Fresh - Moist Oak - Maple - Hickory Deciduous Forest	Canopy: Eastern cottonwood, pin oak and freeman's maple are dominant with black cherry, black oak and red oak. Subcanopy: American elm, black cherry, Manitoba maple, red ash and white mulberry. Understorey: American hazel, black cherry, gray dogwood and multiflora rose. Ground Layer: Inserted Virginia-creeper, Pennsylvania sedge, prickly raspberry, riverbank grape and yellowish enchanter's nightshade.	- Tree cover > 60 % (FO). - Deciduous trees > 75 % of canopy cover (D). - Dominated by Oak and Maple (9). - Sand, loam and clay soils that are poorly drained, in lower slope, mid slope, and bottomland positions (Fresh-Moist). - Young to Mid-age Community.	NAR7, NAR10, NAR11, NAR20, NSG12
Terrestrial/Cultural				
CUP	CULTURAL PLANTATION			
CUP1-8	Red Oak Deciduous Plantation	Canopy: Red oak is dominant with freeman's maple as a secondary. Subcanopy: Red Oak is dominant. Understorey: Gray dogwood and red ash are co-dominant. Ground Layer: Kentucky bluegrass, choke cherry and creeping Charlie (*Glechoma hederacea*) are dominant.	- Cultural communities (CU). - Planted tree cover > 60% (P). - Deciduous trees > 75% of canopy cover (1), dominated by Red Oak (-8). - Mid-age community.	NAR3B
CUP3	Coniferous Plantation	Canopy: Eastern white cedar (*Thuja occidentalis*) is dominant with eastern white pine (*Pinus strobus*) and red ash as associates. Understorey: Red ash and riverbank grape are co-dominant. Ground Cover: Field horsetail (*Equisetum arvense*) is dominant.	- Cultural communities (CU). - Planted tree cover > 60% (P). - Coniferous trees > 75% of canopy cover (3). - Young community.	NCH5
CUP3-3	Scotch Pine Coniferous Plantation	Canopy: Scotch pine (*Pinus sylvestris*) is dominant with Manitoba maple, black oak and eastern cottonwood as associates. Subcanopy: Black cherry, red ash and common crabapple (*Malus pumila*). Understorey: Red ash, American hazel and gray dogwood. Ground Cover: Field horsetail is dominant.	- Cultural communities (CU). - Planted tree cover > 60% (P). - Coniferous trees > 75% of canopy cover (3), dominated by Scotch Pine (-3). - Young community.	NAR2

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ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
CUM	CULTURAL MEADOW			
CUM1-1	Dry - Moist Old Field Meadow	Canopy: Wild carrot, common reed, tall goldenrod, orchard grass, Canada goldenrod, Kentucky bluegrass, Canada thistle, ribgrass (*Plantago lanceolata*), common St. John's-wort (*Hypericum perforatum*), common yarrow (*Achillea millefolium* ssp. *millefolium*), white heath aster white sweet-clover (*Melilotus alba*), wild bergamot, Canada bluegrass common motherwort (*Leonurus cardiaca* ssp. *cardiaca*), creeping Charlie, garlic mustard, awnless brome, common dandelion, field horsetail, ironweed, prickly raspberry, quack grass (*Elymus repens*), scarlet strawberry, sensitive fern (*Onoclea sensibilis*) and shepherd's purse (*Capsella bursa-pastoris*).	- Cultural communities (CU). - Tree cover and shrub cover < 25% (M). - Parent mineral material or mineral soils (1). - This community can occur on a wide range of soil moisture regimes (Dry-Moist) (-1). - Pioneer community resulting from, or maintained by, anthropogenic-based influences.	BBA3A, BBA4E, BBA4EB, BBA4F, BBA4G, BBA4H, BBA4I, BBA4J, BBA4K, BBA4M, BBA4S, BBA5, BBA7B, BBA8B, BBA16B, HCL7, HCL9, HWY1, HWY5, LAM4F, LAM4G, MAL1A, MAL3C, MAL8, NAR4C, NCH2A, NCH2B, NCH2C, NCH2D, NCH4A, NCH4Y, NSG7, OAK1A, RED2B, RED10, RED11, RED15, YWK3, YWK3A, YWK6, YWK8
CUT	CULTURAL THICKET			
CUT1	Mineral Cultural Thicket	Canopy: Eastern cottonwood, red ash, American elm, freeman's maple, Cockspur thorn (*Crataegus crus-galli*) and pin oak. Understorey: Gray dogwood, staghorn sumac, common buckthorn, Manitoba maple, red ash, riverbank grape, silky dogwood and Tartarian honeysuckle. Ground Cover: Scarlet strawberry, Canada goldenrod, common dandelion, garlic mustard and sensitive fern.	- Cultural communities (CU). - Tree cover <= 25%; shrub cover > 25% (T). - Parent mineral material or mineral soils (1). - Young community resulting from, or maintained by, anthropogenic-based influences.	BBA17, ESA3, ESA4, HWY4, NAR1, NAR3C, NAR5, NAR17, NAR19, NCH1B, NCH1C, NCH1E, NCH1F, NCH12, NSG1, NSG11, RED3, RED13

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ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
CUT1-4	Gray Dogwood Cultural Thicket	Canopy: Eastern cottonwood, red ash, pin oak, American elm and freeman's maple. Understorey: Gray dogwood is dominant with staghorn sumac and Drummond's dogwood as associates. Ground Cover: Common reed, common cinquefoil (*Potentilla canadensis*) and wild carrot.	- Cultural communities (CU). - Tree cover <= 25%; shrub cover > 25% (T). - Parent mineral material or mineral soils (1), dominated by Gray Dogwood (-4). - Young community resulting from, or maintained by, anthropogenic-based influences.	BBA3, HCL3, HCL6, NAR6C, NCH1A, NCH1G, NSG2
CUS	CULTURAL SAVANNAH			
CUS1	Mineral Cultural Savannah	Canopy: Manitoba maple, black walnut, eastern cottonwood, freeman's maple, tree-of-heaven (*Ailanthus altissima*) and white mulberry. Understorey: Manitoba maple, Tartarian honeysuckle, Drummond's dogwood, gray dogwood, prairie rose, Siberian elm, American elm, red ash and staghorn sumac. Ground Cover: Orchard grass, wild carrot, common mullein (*Verbascum thapsus*), common reed, white clover (*Trifolium repens*), awnless brome, Canada goldenrod, catnip (*Nepeta cataria*), common heal-all, inserted Virginia-creeper, tall goldenrod and white heath aster.	- Cultural communities (CU). - 25% < Tree Cover <= 35% (S). - Parent mineral material or mineral soils (1). - Young community resulting from, or maintained by, anthropogenic-based influences.	BBA1, BBA1B, BBA4B, BBA4C, BBA4D, BBA4L, BBA4N, BBA4P, BBA4R, LAM3, MAL6, NCH7, NCH7G, NCH7J, NSG5
CUS1-1	Hawthorn Mineral Cultural Savannah	Canopy: Eastern cottonwood is dominant with Manitoba maple, red ash and black locust as associates. Understorey: Staghorn sumac is dominant with gray dogwood, cockspur thorn and eastern cottonwood as associates. Ground Cover: Common reed and Kentucky bluegrass are co-dominant with tall fescue, white sweet-clover, tall goldenrod and Orchard grass as associates.	- Cultural communities (CU). - 25% < Tree Cover <= 35% (S). - Parent mineral material or mineral soils (1), dominated by hawthorn and a mixture of other woody plants. - Young community resulting from, or maintained by, anthropogenic-based influences.	MAL3

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SUMMARY OF ECOLOGICAL LAND CLASSIFICATION[1] VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
CUW	CULTURAL WOODLAND			
CUW1	Mineral Cultural Woodland	Canopy: Eastern cottonwood, freeman's maple, Manitoba maple, red ash, American elm, black cherry, black locust, black oak, pin oak, Siberian elm, silver maple (*Acer saccharinum*), tree-of-heaven, weeping willow (*Salix X sepulcralis*) and white mulberry. Subcanopy: Manitoba maple, red ash, American elm, Drummond's dogwood, freeman's maple and white mulberry. Understorey: Black cherry, gray dogwood, white mulberry, common buckthorn, red ash, American elm, common crabapple, eastern red cedar, guelder rose (*Viburnum opulus*), Japanese barberry (*Berberis thunbergii*), Manitoba maple, multiflora rose, nannyberry (*Viburnum lentago*), prairie rose, riverbank grape, Siberian elm, silky dogwood, staghorn sumac, Tartarian honeysuckle and thimble-berry. Ground Cover: Garlic mustard, common reed, inserted Virginia-creeper, yellowish enchanter's nightshade, calico aster, Canada bluegrass, Canada goldenrod, common dandelion, Indian hemp (*Apocynum cannabinum* var. *cannabinum*), Kentucky bluegrass, many-flowered agrimony, old-field cinquefoil, orchard grass, scarlet strawberry, sensitive fern, spotted crane's-bill, tall goldenrod, tall hairy agrimony (*Agrimonia gryposepala*), wild carrot and yellow avens.	- Cultural communities (CU) - 35% < Tree Cover <= 60% (W). - Parent mineral material or mineral soils (1). - Young community resulting from, or maintained by, anthropogenic-based influences.	ABO1, BBA4A, BBA4JB, BBA5B, BBA6, BBA9, BBA16, HCL1, HWY2, LAM2, LAM4B, LAM4D, LAM4E, LAM5, LAM6, LAM7, MAL1C MAL12, , NAR3D, NAR14, NCH1, NCH1D, NCH3A, NCH7B, NCH7C, NCH7D, NCH7E, NCH7F, NCH8, NCH11, NGM2, NGM3, NSG4, NSG7B, NSG13, NSG14, NSG15, OAK1B, OAK2B, OAK2C, RED2A, RED9, YWK1, YWK1C, YWK4, YWK5

APPENDIX C

SUMMARY OF ECOLOGICAL LAND CLASSIFICATION[1] VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
Wetland				
SWD	DECIDUOUS SWAMP			
SWD1-3	Pin Oak Mineral Deciduous Swamp	Canopy: Pin oak is dominant with abundant eastern cottonwood with some American elm, big shellbark hickory, black cherry, black oak, bur oak, Manitoba maple, red ash, shumard oak (*Quercus shumardii*), freeman's maple, swamp white oak, trembling aspen and white oak. Subcanopy: Pin oak is dominant with American elm, Manitoba maple, red ash, freeman's maple and swamp white oak as associates. Understorey: American hazel, big shellbark hickory (*Carya laciniosa*), black cherry, choke cherry, common buckthorn, gray dogwood, Manitoba maple, narrow-leaved crabapple and red ash. Ground Cover: Eastern cottonwood seedlings, inserted Virginia-creeper, marsh fern, Pennsylvania sedge, prickly raspberry, sensitive fern, spotted crane's bill, western poison-ivy, wood anemone, yellowish enchanter's nightshade and yellow trout lily.	- Standing water >20% of ground coverage dominated by hydrophytic shrub and tree species (SW). - Tree cover > 25% with deciduous tree species > 75% of canopy cover (D). - Mineral soil (1). - Pin Oak is dominant (-3).	HCL5, RED2. RED4, RED8
SWD3-3	Freeman's Maple Mineral Deciduous Swamp	Canopy: Eastern cottonwood and freeman's maple are dominant with American basswood, American elm, black cherry, Manitoba maple, pin oak, red ash and trembling aspen as associates. Subcanopy: Swamp maple is dominant with American elm, Manitoba maple, pin oak and red ash as associates. Understorey: Red ash, silky dogwood and freeman's maple are dominant with Black cherry, common buckthorn, gray dogwood, guelder rose, Manitoba maple, Russian olive and staghorn sumac as associates. Ground Layer: Common reed, garlic mustard, inserted Virginia-creeper, riverbank grape, sensitive fern and wood anemone are dominant.	- Standing water >20% of ground coverage dominated by hydrophytic shrub and tree species (SW). - Tree cover > 25% with deciduous tree species > 75% of canopy cover (D). - Mineral soil (3). - Freeman's Maple is dominant (-3).	MAL10, NCH3, NCH3B, NSG8, OAK2A, RED6, RED7
MAM	MEADOW MARSH			
MAM2	Mineral Meadow Marsh	Canopy: Common reed is dominant with broad-leaved cattail (*Typha latifolia*), gray dogwood, Manitoba maple, narrow-leaved cattail (Typha angustifolia) and riverbank grape as associates. Ground Cover: Common barnyard grass (*Echinochloa crusgalli*), eastern cottonwood, hairy aster (*Aster pilosus* var. pilosus), Indian hemp, ironweed, Philadelphia fleabane, riverbank grape, small-spiked barnyard grass (*Echinochloa microstachya*), straw-colored umbrella sedge (*Cyperus strigosus*), tall goldenrod, Torrey's rush (*Juncus torreyi*), tree-of-heaven and white heath aster.	- Seasonally flooded and is dominated by emergent hydrophytic macrophytes (MAM). - Represents the wetland – terrestrial interface. - Tree and shrub cover <= 25%. - Mineral soil (2), dominated by common reed. - Community age pioneer.	BBA10, HCL4, MAL2, MAL7, NAR6D, NAR18, RED14, YWK7

APPENDIX C

SUMMARY OF ECOLOGICAL LAND CLASSIFICATION[1] VEGETATION COMMUNITIES LOCATED IN THE AREA OF INVESTIGATION

ELC Code	Vegetation Type	Species Association	Comments	LGL Polygon Reference
MAM2-10	Forb Mineral Meadow Marsh	Canopy: European beggar-ticks (*Bidens tripartita*) is dominant with abundant devil's beggar-ticks (*Bidens frondosa*), spotted touch-me-not (*Impatiens capensis*) and tumor-curing cocklebur (*Xanthium strumarium*) as associates.	- Seasonally flooded and is dominated by emergent hydrophytic macrophytes (MAM). - Represents the wetland – terrestrial interface. - Tree and shrub cover <= 25%. - Mineral soil (2), dominated by forbs (-10). Community age pioneer.	BBA15
MAS	SHALLOW MARSH			
MAS2-1	Cattail Mineral Shallow Marsh	Canopy: Narrow-leaved cattail is dominant with calico aster, Canada thistle, field sow-thistle (*Sonchus arvensis* ssp. *arvensis*), fowl meadow grass (*Poa palustris*), orchard grass and tumor-curing cocklebur as associates.	- Standing or flowing water for much of the growing season and hydrophytic emergent macrophyte cover >25 % (MAS). - Tree and shrub cover <= 25%. - Mineral soil (2). - Narrow-leaved Cattail is dominant (-1). - Community age pioneer.	HCL8, YWK9
OAO	OPEN AQUATIC			
OAO	Open Aquatic	Ground Cover: Not applicable	- No Macrophyte vegetation, trees, or shrub cover. - Water Depth > 2m	HWY3

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PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
ABO1	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	38,60
ANS1	TPW2-1	Fresh-Moist Black Oak-White Oak Tallgrass Woodland	G2	S1	12	8,22,30,32,35,37, 39,48,52,55,60,62
ANS1A	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	4	8,9,16,35
ANS2	TPW2-2	Fresh-Moist Pin Oak Tallgrass Woodland	G1	S1	13	13,22,26,30, 32,37,39,42, 44,45,48,55,60
ANS2C	TPW2-1	Fresh-Moist Black Oak-White Oak Tallgrass Woodland	G2	S1	17	13,22,27,30,32,35,37, 39,42,44,45,47, 48,55,58,60,62
BBA1	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	5	3,14,38,39,60
BBA1A	FOD4	Dry-Fresh Deciduous Forest Ecosite	not ranked	not ranked	0	
BBA1B	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	0	
BBA2	FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest	G4?	S2S3	1	48
BBA3	CUT1-4	Gray Dogwood Cultural Thicket	not ranked	not ranked	0	
BBA3A	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
BBA4A	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	1	60
BBA4B	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	3	3,7,60
BBA4C	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	2	3,60
BBA4D	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	3	3,25,60
BBA4E	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	1	60
BBA4EB	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	1	60
BBA4EC	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	5	3,7,30,38,60
BBA4F	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	8	20,25,37-39,52,57,60
BBA4G	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked		
BBA4H	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked		

[1] Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources, Southcentral Sciences Section, Science Development and Transfer Branch. SCSS Field Guide FG-02. North Bay, Ontario.

[2] Numbers correspond with the species number listed in Table 2 of the main report.

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PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
BBA4I	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked		
BBA4J	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked		
BBA4JB	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked		
BBA4K	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked		
BBA4L	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked		
BBA4N	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked		
BBA4P	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked		
BBA4R	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked		
BBA4S	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	1	25
BBA4M	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	2	52,60
BBA4MB	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	5	30,37,38,52,60
BBA5	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
BBA5B	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
BBA6	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
BBA7	FOD4	Dry-Fresh Deciduous Forest Ecosite	not ranked	not ranked	1	48
BBA7B	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
BBA8	FOD4	Dry-Fresh Deciduous Forest Ecosite	not ranked	not ranked	0	
BBA8B	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
BBA9	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
BBA10	MAM2	Mineral Meadow Marsh Ecosite	not ranked	not ranked	1	3
BBA12	FOD4	Dry-Fresh Deciduous Forest Ecosite	not ranked	not ranked	1	48
BBA13	FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest	G4?	S2S3	1	48
BBA14	FOD4	Dry-Fresh Deciduous Forest Ecosite	not ranked	not ranked	2	25,48
BBA15	MAM2-10	Forb Mineral Meadow Marsh	G5?	S5	0	
BBA16	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not	1	3

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PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
				ranked		
BBA16B	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	1	3
BBA17	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	2	35,55
ESA1	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	4	37,38,57,60
ESA2	FOD2-2	Dry-Fresh Oak-Hickory Deciduous Forest	G4?	S3S4	5	16,25,37,39,55
ESA3	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	9	8,11,17,30,39, 52,55,57,60
ESA4	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	7	8,11,30,39,55,57,60
ESA5	TPS2-1	Fresh-Moist Pin Oak-Bur Oak Tallgrass Savannah	G1	S1	10	2,11,17,22,30, 37,39,55,57,60
HCL1	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	1	39
HCL1A	FOD8-2	Fresh-Moist Sassafras Deciduous Forest	not ranked	not ranked	1	55
HCL2	FOD8-1	Fresh-Moist Poplar Deciduous Forest	not ranked	not ranked	1	48
HCL3	CUT1-4	Gray Dogwood Cultural Thicket	not ranked	not ranked	10	8,17,30,37,39, 43,52,55,57,60
HCL4	MAM2	Mineral Meadow Marsh Ecosite	not ranked	not ranked	3	22,52,60
HCL5	SWD1-3	Pin Oak Mineral Deciduous Swamp	G2	S2S3	3	39,55,57
HCL6	CUT1-4	Gray Dogwood Cultural Thicket	not ranked	not ranked	8	11,17,22,38, 39,55,57,60
HCL7	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
HCL8	MAS2-1	Cattail Mineral Shallow Marsh	G5	S5	1	18
HCL9	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	1	22
HCL10	FOD8-2	Fresh-Moist Sassafras Deciduous Forest	not ranked	not ranked	1	55
HWY1	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	4	22,39,52,60
HWY2	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
HWY3	OAO	Open Aquatic	NA	S5	0	
HWY4	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	0	
HWY5	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
LAM1	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	18	3,8,11,18,22,28, 30,32,35,37-39, 46,49,54,58-60
LAM2	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	11	8,11,18,22,30,37, 39,50,55,57,60

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PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
LAM3	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	6	18,39,42,55,58,60
LAM4A	FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest	not ranked	not ranked	0	
LAM4B	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	18,22
LAM4D	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	6	13,18,22,39,48,55
LAM4E	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
LAM4F	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
LAM4G	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
LAM5	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	39,55
LAM6	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
LAM7	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	39,55
MAL1	FOD1-4	Dry-Fresh Mixed Oak Deciduous Forest	G?	S3S4	6	22,37,44,49,53,55
MAL1A	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
MAL1B	FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite	not ranked	not ranked	5	21,22,30,37,55
MAL1C	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
MAL1D	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	7	24,38,39,52, 57,59,60
MAL1E	FOD1-4	Dry-Fresh Mixed Oak Deciduous Forest	G?	S3S4	2	21,55
MAL2	MAM2	Mineral Meadow Marsh Ecosite	not ranked	not ranked	0	
MAL3	CUS1-1	Hawthorn Cultural Savannah	not ranked	not ranked	7	22,30,37,39, 49,52,60
MAL3B	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	10	3,14,18,22,30, 37,39,49,52,60
MAL3C	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	1	39
MAL5	FOD4	Dry-Fresh Deciduous Forest Ecosite	not ranked	not ranked	1	48
MAL6	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	0	
MAL7	MAM2	Mineral Meadow Marsh Ecosite	not ranked	not ranked	0	
MAL8	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
MAL9	FOD1-3	Dry-Fresh Black Oak Deciduous Forest	G4?	S3	5	22,35,37,39,55
MAL10	SWD3-3	Freeman's Maple Mineral Deciduous	not ranked	not	5	22,35,37,39,55

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PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
		Swamp		ranked		
MAL11	FOD1-3	Dry-Fresh Black Oak Deciduous Forest	G4?	S3	5	22,35,37,39,55
MAL12	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	38,60
NAR1	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	10	4,14,22,30,38, 49,51,55,59,60
NAR2	CUP3-3	Scotch Pine Coniferous Plantation	not ranked	not ranked	0	
NAR3A	FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite	not ranked	not ranked	2	39,55
NAR3B	CUP1-8	Red Oak Deciduous Plantation	not ranked	not ranked	0	
NAR3C	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	0	
NAR3D	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	1	55
NAR4A	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	10	4,14,22,30, 37-39,49,52,60
NAR4B	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	7	4,14,22,30,37,52,60
NAR4C	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	10	4,6,9,14,22, 30,32,37,52,60
NAR5	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	2	1,55
NAR6A	FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite	not ranked	not ranked	1	55
NAR6B	FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite	not ranked	not ranked	1	55
NAR6C	CUT1-4	Gray Dogwood Cultural Thicket	not ranked	not ranked	1	55
NAR6D	MAM2	Mineral Meadow Marsh Ecosite	not ranked	not ranked	2	34,52
NAR7	FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite	not ranked	not ranked	0	
NAR8	FOD8-1	Fresh-Moist Poplar Deciduous Forest	not ranked	not ranked	1	36
NAR9	FOD8-1	Fresh-Moist Poplar Deciduous Forest	not ranked	not ranked	0	
NAR10	FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite	not ranked	not ranked	1	55
NAR11	FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite	not ranked	not ranked	0	
NAR12	FOD7-1	Fresh-Moist White Elm Lowland Deciduous Forest	not ranked	not ranked	4	10,37,39,55
NAR13	FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest	not ranked	not ranked	0	
NAR14	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	3	22,37,39

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PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
NAR15	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	13	4,5,9,10,14,22,30, 37,38,49,55,59,60
NAR16	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	13	5,9,10,14,22,30,37-39,49,55,59,60
NAR17	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	1	55
NAR18	MAM2-2	Reed-canary Grass Mineral Meadow Marsh	not ranked	not ranked	0	
NAR19	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	4	9,39,55,60
NAR20	FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite	not ranked	not ranked	1	55
NCH1	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	1	39
NCH1A	CUT1-4	Gray Dogwood Cultural Thicket	not ranked	not ranked	5	4,5,39,49,55
NCH1B	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	5	4,5,39,49,55
NCH1C	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	5	4,5,39,49,55
NCH1D	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	5	9,22,37,39,55
NCH1E	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	1	57
NCH1F	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	2	39,55
NCH1G	CUT1-4	Gray Dogwood Cultural Thicket	not ranked	not ranked	2	39,55
NCH2A	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	4	5,37,39,60
NCH2B	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	7	9,15,22,24,35,55,60
NCH2C	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	3	22,30,60
NCH2D	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	2	39,55
NCH2E	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	6	1,4,14,15,22,30
NCH3	SWD3-3	Freeman's Maple Mineral Deciduous Swamp	not ranked	not ranked	1	39
NCH3A	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
NCH3B	SWD3-3	Freeman's Maple Mineral Deciduous Swamp	not ranked	not ranked	0	
NCH4A	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	2	39,60
NCH4B	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	12	2,4,14,15,22,27, 30,37-39,59,60
NCH4Y	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not	3	27,39,60

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PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
				ranked		
NCH4Z	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	10	4,14,15,22,30,37-39,59,60
NCH5	CUP3	Coniferous Plantations	not ranked	not ranked	0	
NCH7	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	2	39,59
NCH7B	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	1	55
NCH7C	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	1	55
NCH7D	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
NCH7E	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	18,22
NCH7F	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	4	9,22,39,59
NCH7G	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	0	
NCH7H	FOD4	Dry-Fresh Deciduous Forest Ecosite	not ranked	not ranked	1	39
NCH7J	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	2	39,55
NCH8	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	39,48
NCH11	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	39,55
NCH12	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	13	1,5,6,14,15,19,22, 29,30,37,49,52,60
NCH12B	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	7	15,18,22,30, 32,37,52,
NGM1	FOD4	Dry-Fresh Deciduous Forest Ecosite	not ranked	not ranked	5	23,55,59-61
NGM2	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	5	23,55,59-61
NGM3	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	38,60
NSG1	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	2	39,55
NSG2	CUT1-4	Gray Dogwood Cultural Thicket	not ranked	not ranked	3	11,22,39
NSG3	FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest	not ranked	not ranked	2	39,55
NSG4	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
NSG5	CUS1	Mineral Cultural Savannah Ecosite	not ranked	not ranked	9	22,30,37-39,49,53,55,60
NSG6	FOD8	Fresh-Moist Poplar-Sassafras Deciduous	not ranked	not	1	55

APPENDIX D

PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
		Forest Ecosite		ranked		
NSG7	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	3	30,38,60
NSG7A	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	3	30,38,60
NSG7B	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	1	55
NSG7C	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	3	30,38,60
NSG8	SWD3-3	Freeman's Maple Mineral Deciduous Swamp	not ranked	not ranked	1	55
NSG10	FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite	not ranked	not ranked	1	55
NSG11	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	3	22,39,55
NSG12	FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite	not ranked	not ranked	1	55
NSG13	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	38,55
NSG14	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	38,60
NSG15	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
OAK1A	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	7	9,14,22,30,32,52,60
OAK1B	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	9	4,21,23,30,39, 52,55,57,60
OAK2	FOD8	Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite	not ranked	not ranked	5	22,39,48,55,60
OAK2A	SWD3-3	Freeman's Maple Mineral Deciduous Swamp	not ranked	not ranked	1	23
OAK2B	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	1	60
OAK2C	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	2	22,39
OAK3	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	5	1,14,30,32,33
OAK4	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	0	1,14,30,32,33
RED2	SWD1-3	Pin Oak Mineral Deciduous Swamp	G2	S2S3	7	22,36,39,41,55-57
RED2A	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	3	1,39,56
RED2B	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	4	1,9,15,55
RED3	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	3	22,59,60
RED4	SWD1-3	Pin Oak Mineral Deciduous Swamp	G2	S2S3	5	22,39,45,55,56
RED5	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	4	22,30,39,60
RED6	SWD3-3	Freeman's Maple Mineral Deciduous Swamp	not ranked	not ranked	0	

APPENDIX D

PROVINCIALLY RARE ELC VEGETATION COMMUNITIES[1] LOCATED IN THE AREA OF INVESTIGATION

LGL ID	ELC Code	ELC Description	Grank	Srank	# of S1-S3	S1-S3 Plant Species Identifier[2]
RED7	SWD3-3	Freeman's Maple Mineral Deciduous Swamp	not ranked	not ranked	5	18,37,39,55,60
RED8	SWD1-3	Pin Oak Mineral Deciduous Swamp	G2	S2S3	7	18,22,37,39, 44,55,56
RED9	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	0	
RED10	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
RED11	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
RED12	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	9	8,14,15,19, 22,30,39,52,60
RED13	CUT1	Mineral Cultural Thicket Ecosite	not ranked	not ranked	9	8,14,15,19,22, 30,39,52,60
RED14	MAM2	Mineral Meadow Marsh Ecosite	not ranked	not ranked	2	52,60
RED15	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
YWK1	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	11	4,22,30,32,37,39, 40,49,51,55,60
YWK1B	TPO2-1	Fresh-Moist Tallgrass Prairie	G2	S1	10	4,22,30,32,37,39, 40,49,51,60
YWK1C	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	11	4,22,30,32,37,39, 40,49,51,55,60
YWK2	FOD1-3	Dry-Fresh Black Oak Deciduous Forest	G4?	S3	4	22,48,55,60
YWK3	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	3	18,22,60
YWK3A	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	0	
YWK4	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	4	7,37,55,60
YWK5	CUW1	Mineral Cultural Woodland Ecosite	not ranked	not ranked	3	34,55,60
YWK6	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	1	34
YWK7	MAM2	Mineral Meadow Marsh Ecosite	not ranked	not ranked	2	55,60
YWK8	CUM1-1	Dry-Moist Old Field Meadow	not ranked	not ranked	3	7,37,60
YWK9	MAS2-1	Cattail Mineral Shallow Marsh	G5	S5	0	

Note: Shading indicates vegetation communities that are provincially rare.

APPENDIX E

APPENDIX E
FISH HABITAT ASSESSMENT SUMMARY

Watercourse/ Waterbody Name	Reach Location	Agricultural Municipal Drain Classification (A, B, C, D, E, F)	Fish Community (warmwater, coolwater, coldwater, baitfish, sportfish, migratory)	Habitat Summary	Flow Conditions (ephemeral, intermittent, permanent)	Drainage Connectivity (obstructed, partially obstructed, unobstructed)	Habitat Class (marginal, important, critical)	Channel Structure (channelized, channelized lined, natural)	Comments
Basin Drain	Upstream of E.C. Row	F	none	• piped upstream and downstream of Continental Drive • open pooled water upstream of E.C. Row • buried culvert?	permanent	obstructed	none	channelized	
Basin Drain	Downstream of E.C. Row	F	warmwater baitfish	• ditched watercourse • morphology – flats with small riffle and pools near Spring Garden Road • width 2 m, depth 30 cm • more shallow and diverse downstream • sparse instream cover upstream, more downstream • riparian vegetation – trees, shrubs and herbaceous vegetation • substrate – muck	permanent	unobstructed	marginal	channelized	
Benson Drain	Upstream of South Talbot Road	F	warmwater baitfish	• narrow ditched watercourse • morphology – flats with dry areas • width 0.5 m, depth 10 cm • riparian vegetation – trees, shrubs, grasses and herbaceous vegetation • good shade • sparse instream cover • substrate – clay	intermittent	unobstructed	marginal	channelized	
Broadway Drain	Upstream of Sandwich Street	F	none	• roadside ditch • dry • lack of channel definition • riparian vegetation – cattails and *Phragmites*	intermittent	partially obstructed	marginal	channelized	
Broadway Drain	Downstream of Sandwich Street	F	warmwater	• seasonal ditched watercourse • mostly dry – rip rap-lined pool at culvert receives warm effluent • pool 2.5 m wide, 25 cm deep • some channel definition • riparian vegetation - cattails, *Phragmites* and trees • channel accessible from Detroit River during high flows	intermittent	partially obstructed	marginal	channelized	
Burke Drain	South Talbot Road to Talbot Road	F	warmwater sportfish	• pooled water in roadside ditch • width 2 m, depth 15 cm • riparian vegetation – cattails • substrate – detritus and muck	intermittent	partially obstructed	marginal	channelized	• Water does not appear to be flowing. • Water is pooled in a deep roadside ditch
Burke Drain	Downstream of South Talbot Road	F	none	• roadside ditch • dry • lack of channel definition	ephemeral	partially obstructed	none	channelized	
Cahill Drain	Upstream of confluence with Wolfe Drain	F	warmwater baitfish	• narrow ditched watercourse • morphology – flats with some runs and riffles • width 1.5 m, depth 20 cm • sparse instream cover • riparian vegetation – herbaceous vegetation and grasses • substrate – clay	permanent	unobstructed	marginal	channelized	

APPENDIX E

FISH HABITAT ASSESSMENT SUMMARY

Watercourse/ Waterbody Name	Reach Location	Agricultural Municipal Drain Classification (A, B, C, D, E, F)	Fish Community (warmwater, coolwater, coldwater, baitfish, sportfish, migratory)	Habitat Summary	Flow Conditions (ephemeral, intermittent, permanent)	Drainage Connectivity (obstructed, partially obstructed, unobstructed)	Habitat Class (marginal, important, critical)	Channel Structure (channelized, channelized lined, natural)	Comments
Cahill Drain	Downstream of Talbot Road	E	warmwater sportfish	• ditched watercourse with some naturalization • morphology – flats with some runs and pools • width 4 m, depth 40 cm • riparian vegetation – trees, shrubs, herbaceous vegetation and grasses • substrate – muck	permanent	unobstructed	important	channelized	
Collins Drain	Upstream of Confluence with Wolfe Drain	F	warmwater baitfish	• ditched watercourse • morphology - flats • width 1.5 m, depth 5 cm • riparian vegetation – cattails and *Phragmites* • substrate – clay/silt	intermittent	unobstructed	marginal	channelized	
Dickson Drain	Upstream of Confluence with Benson Drain	F	none	• roadside ditch • dry • lack of channel definition • riparian vegetation – cattails	ephemeral	partially obstructed	none	channelized	
Dickson Drain	Downstream of South Talbot Road	F	warmwater baitfish	• narrow ditched watercourse • morphology – flats with dry areas • width 1 m, depth 10 cm • riparian vegetation – trees, shrubs, grasses and herbaceous vegetation • good shade • sparse instream cover • substrate – clay	intermittent	unobstructed	marginal	channelized	
Grand Marais Drain (Turkey Creek)	Upstream of Huron Church Road	unclassified	warmwater sportfish	• concrete lined channel • morphology - runs • width 2.2 m, depth 25 cm • very sparse instream cover • no riparian vegetation • substrate – silt and sand over concrete	permanent	unobstructed	marginal	channelized concrete lined	
Grand Marais Drain (Turkey Creek)	Downstream of Huron Church Road	E	warmwater sportfish	• concrete lined channel • morphology – runs with small riffles • width 2.2 m, depth 25 cm • sparse instream cover • no riparian vegetation for 100 m, then old field vegetation • substrate – silt and sand over concrete	permanent	unobstructed	marginal	channelized concrete lined	
Healy Drain	Upstream of Sandwich Street	F	none	• roadside ditch • obstructed by buried culvert • some standing water • lack of channel definition • riparian vegetation – cattails and *Phragmites*	intermittent	obstructed	none	channelized	
Healy Drain	Downstream of Sandwich Street	F	warmwater	• seasonal ditched watercourse • dry • riparian vegetation – cattails and *Phragmites* • channel accessible from Detroit River during high flows	intermittent	partially obstructed	marginal	channelized	
Howard Avenue Drain	Upstream of South Talbot Road	F	none	• roadside ditch • dry • lack of channel definition • riparian vegetation - cattails	ephemeral	partially obstructed	none	channelized	

APPENDIX E

FISH HABITAT ASSESSMENT SUMMARY

Watercourse/ Waterbody Name	Reach Location	Agricultural Municipal Drain Classification (A, B, C, D, E, F)	Fish Community (warmwater, coolwater, coldwater, baitfish, sportfish, migratory)	Habitat Summary	Flow Conditions (ephemeral, intermittent, permanent)	Drainage Connectivity (obstructed, partially obstructed, unobstructed)	Habitat Class (marginal, important, critical)	Channel Structure (channelized, channelized lined, natural)	Comments
Lennon Drain	Upstream of Talbot Road	F	warmwater sportfish	• ditched watercourse • morphology – flats • width 2 m, depth 25 cm • sparse instream cover • riparian vegetation – manicured grass with some trees • substrate – geotextile and clay	permanent	unobstructed	important	channelized	
Lennon Drain	Talbot Road to Huron Church Line	E	warmwater sportfish	• ditched watercourse • morphology – runs with few riffles • width 1.5 m, depth 20 cm • riparian vegetation – herbaceous vegetation, grasses, and few shrubs • substrate – rip rap • good instream cover	permanent	unobstructed	important	channelized rip rap lined	
Lennon Drain	Downstream of Huron Church Line	E	warmwater sportfish	• ditched watercourse • morphology – runs with few riffles • width 1.5 m, depth 20 cm • sparse instream cover • riparian vegetation – manicured grass with some trees • substrate - clay	permanent	unobstructed	important	channelized	
Marentette Drain	Upstream of Huron Church Road	F	none	• Piped	intermittent	obstructed	none	channelized	
Marentette Drain	Downstream of Huron Church Road	F	none	• piped for ~60 m then open dry channel • riparian vegetation – trees • substrate – silt and detritus	intermittent	obstructed	none	channelized	
McKee Drain	Upstream of Matchette Road	F	none	• piped upstream of Matchette Road across residential property • open channel inaccessible to fish • riparian vegetation – manicured grass	intermittent	obstructed	none	channelized	
McKee Drain	Matchette Road to E.C. Row	F	warmwater sportfish	• ditched watercourse • partially rip rap lined near E.C. Row • morphology – flat • width 1.5 m, depth 20 • less water near Matchette Road • riparian vegetation – *Phragmites* • substrate – muck and detritus	intermittent	unobstructed	important	channelized	
McKee Drain	Downstream of E.C. Row	F	warmwater sportfish	• ditched watercourse • rip rap lined • morphology - flat • width 2 m, depth 20 cm • riparian vegetation – *Phragmites* • substrate – muck and detritus	intermittent	unobstructed	important	channelized	
McKee Creek	Upstream of Sandwich Street	F	warmwater sportfish	• ditched watercourse lined with sheet piling • morphology – flat • width 3 m, depth 15 cm • riparian vegetation – old field with vines • substrate – muck	permanent	unobstructed	important	channelized	

APPENDIX E

FISH HABITAT ASSESSMENT SUMMARY

Watercourse/ Waterbody Name	Reach Location	Agricultural Municipal Drain Classification (A, B, C, D, E, F)	Fish Community (warmwater, coolwater, coldwater, baitfish, sportfish, migratory)	Habitat Summary	Flow Conditions (ephemeral, intermittent, permanent)	Drainage Connectivity (obstructed, partially obstructed, unobstructed)	Habitat Class (marginal, important, critical)	Channel Structure (channelized, channelized lined, natural)	Comments
McKee Creek	Downstream of Sandwich Street	E	warmwater sportfish	• ditched watercourse flows downstream of sandwich street into a canal on Van De Hogen property • morphology – flat • width 4 m, depth 25 cm • riparian vegetation – *Phragmites* • substrate – muck and silt	permanent	partially obstructed	important	channelized	
NoName Tributary of Dickson Drain along South Talbot Road	Upstream of Confluence with Dickson Drain	F	none	• roadside ditch • dry • lack of channel definition • riparian vegetation - cattails	ephemeral	partially obstructed	none	channelized	
NoName Tributary of Susan Drain along Broadway Street	Upstream of Confluence with Susan Drain	F	none	• roadside ditch • dry • lack of channel definition • riparian vegetation – cattails and *Phragmites*	none	partially obstructed	none	channelized	
No Name Tributary of Wolfe Drain along HWY 401	Upstream of confluence with Wolfe Drain	F	none	• roadside ditch • dry • lack of channel definition • riparian vegetation – cattails and *Phragmites*	ephemeral	partially obstructed	none	channelized	
No Name Tributary of Wolfe Drain along Howard Avenue	Upstream of confluence with Wolfe Drain	F	none	• roadside ditch • dry • lack of channel definition • riparian vegetation – cattails and *Phragmites*	ephemeral	partially obstructed	none	channelized	
Susan Drain	Downstream of Broadway Street to Confluence with NoName Tributary	F	none	• ditched watercourse • dry • riparian vegetation – Oak forest • substrate - detritus	intermittent	unobstructed	none	channelized	
Talbot Drain	Upstream of confluence with Cahill Drain	F	none	• narrow ditched watercourse • riparian vegetation – trees, shrubs, herbaceous vegetation and grasses • substrate – clay • perched above Cahill Drain at confluence	intermittent	obstructed	none	channelized	
Titcombe Drain	Downstream of E.C. Row	F	warmwater sportfish	• seasonal ditched watercourse • no flow in September 2006 • pockets of standing water near Chappus Road • approximate width of channel 1.5 m • riparian vegetation – trees, shrubs, herbaceous vegetation and manicured grass • substrate – silt and detritus	intermittent	unobstructed	important	channelized	
Unnamed pond	West of Outer Drive, east of Howard Ave, South of Talbot Road	unclassified	warmwater sportfish	• pond habitat • dimensions approximately 55x55 m • riparian vegetation – cattails, trees and shrubs • substrate – clay and muck	permanent	Not connected	marginal	Man made	• Man made pond • Not connected to watercourses
Wolfe Drain	Upstream of Confluence with Collins Drain	F	warmwater baitfish	• ditched watercourse • morphology – flats and runs • width 1.5 m, depth 25 cm • sparse instream cover • riparian vegetation – herbaceous vegetation and grasses • substrate - clay	permanent	unobstructed	marginal	channelized	

APPENDIX E

FISH HABITAT ASSESSMENT SUMMARY

Watercourse/ Waterbody Name	Reach Location	Agricultural Municipal Drain Classification (A, B, C, D, E, F)	Fish Community (warmwater, coolwater, coldwater, baitfish, sportfish, migratory)	Habitat Summary	Flow Conditions (ephemeral, intermittent, permanent)	Drainage Connectivity (obstructed, partially obstructed, unobstructed)	Habitat Class (marginal, important, critical)	Channel Structure (channelized, channelized lined, natural)	Comments
Wolfe Drain	Confluence with Collins Drain to Confluence with Cahill Drain	F	warmwater baitfish	• ditched watercourse • morphology – flats with some runs, pools and riffles • width 2 m, depth 25 cm • sparse instream cover • riparian vegetation – trees, shrubs, herbaceous vegetation and grasses • well shaded for most of reach • substrate - clay	permanent	unobstructed	marginal	channelized	
Wolfe Drain	Confluence with Cahill Drain to Talbot Road Crossing	E	warmwater sportfish	• ditched watercourse • morphology – flats with some runs, riffles and pools • width 2 m, depth 15 cm • sparse instream cover • riparian vegetation –shrubs, herbaceous vegetation and grasses • good shade for most of reach • substrate - clay	permanent	unobstructed	marginal	channelized	
Youngstown Drain	Upstream of Confluence with Basin Drain	F	warmwater baitfish	• narrow ditched watercourse • morphology - flats • width 0.3 m, depth 10 cm • very little flow • riparian vegetation – herbaceous vegetation and grasses • substrate – clay	intermittent	unobstructed	marginal	channelized	

APPENDIX F

APPENDIX F
LIST OF WILDLIFE SPECIES RECORDED IN THE AREA OF INVESTIGATION

Wildlife	Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others[1]
Herpetofauna	*Bufo americanus*	American Toad					
	Pseudacris triseriata	Western Chorus Frog					
	Rana pipiens	Northern Leopard Frog					
	Rana clamitans	Green Frog					
	Chelydra serpentina	Snapping Turtle				FWCA(G)	
	Chrysemys picta marginata	Midland Painted Turtle				FWCA(P)	
	Thamnophis sirtalis	Eastern Gartersnake					
	Thamnophis butleri	Butler's Gartersnake	THR	THR		SARA(1)/ FWCA(P)	
	Storeria dekayi	Dekay's Brown Snake					
	Storeria occipitomaculata	Northern Red-bellied Snake					
	Elaphe gloydi	Eastern Fox Snake	THR	THR		SARA(1)/ FWCA(P)	
Birds	*Branta canadensis*	Canada Goose				MBCA	
	Aix sponsa	Wood Duck			BSC	MBCA	
	Anas platyrhynchos	Mallard				MBCA	
	Phasianus colchicus	Ring-necked Pheasant				MBCA / FWCA(G)	
	Phalacrocorax auritus	Double-crested Cormorant					
	Ardea herodias	Great Blue Heron				MBCA	
	Ardea alba	Great Egret				MBCA	
	Nycticorax nycticorax	Black-crowned Night Heron			BSC	MBCA	
	Cathartes aura	Turkey Vulture			BSC	FWCA(P)	
	Pandion haliaetus	Osprey			BSC	FWCA(P)	
	Accipiter striatus	Sharp-shinned Hawk				FWCA(P)	
	Accipiter cooperii	Cooper's Hawk				FWCA(P)	
	Accipiter gentilis	Northern Goshawk				FWCA(P)	
	Buteo platypterus	Broad-winged Hawk			BSC	FWCA(P)	
	Buteo jamaicensis	Red-tailed Hawk				FWCA(P)	
	Falco sparverius	American Kestrel			BSC	FWCA(P)	
	Charadrius vociferus	Killdeer				MBCA	
	Actitis macularius	Spotted Sandpiper			BSC	MBCA	
	Gallinago delicata	Wilson's Snipe			BSC	MBCA	
	Scolopax minor	American Woodcock			BSC	MBCA	
	Larus delawarensis	Ring-billed Gull				MBCA	
	Columba livia	Rock Pigeon					
	Zenaida macroura	Mourning Dove				MBCA	
	Coccyzus americanus	Yellow-billed Cuckoo			BSC	MBCA	*
	Megascops asio	Eastern Screech-Owl				FWCA(P)	
	Archilochus colubris	Ruby-throated Hummingbird			BSC	MBCA	
	Melanerpes erythrocephalus	Red-headed Woodpecker	SC	SC	BSC	MBCA	
	Melanerpes carolinus	Red-bellied Woodpecker			BSC	MBCA	
	Picoides pubescens	Downy Woodpecker				MBCA	
	Picoides villosus	Hairy Woodpecker				MBCA	*
	Colaptes auratus	Northern Flicker				MBCA	
	Contopus virens	Eastern Wood Pewee				MBCA	

[1] An asterisk indicates that the species has been identified by others and that suitable habitat exists in the area of investigation.

APPENDIX F
LIST OF WILDLIFE SPECIES RECORDED IN THE AREA OF INVESTIGATION

Wildlife	Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others[1]
	Empidonax traillii	Willow Flycatcher				MBCA	
	Empidonax minimus	Least Flycatcher				MBCA	
	Sayornis phoebe	Eastern Phoebe			BSC	MBCA	
	Myiarchus crinitus	Great Crested Flycatcher				MBCA	*
	Tyrannus tyrannus	Eastern Kingbird			BSC	MBCA	
	Vireo flavifrons	Yellow-throated Vireo				MBCA	
	Vireo solitarius	Blue-headed Vireo				MBCA	
	Vireo gilvus	Warbling Vireo				MBCA	
	Vireo olivaceus	Red-eyed Vireo				MBCA	
	Cyanocitta cristata	Blue Jay				FWCA(P)	
	Corvus brachyrhynchos	American Crow					
	Eremophila alpestris	Horned Lark			BSC	MBCA	
	Tachycineta bicolor	Tree Swallow				MBCA	
	Stelgidopteryx serripennis	Northern Rough-winged Swallow			BSC	MBCA	
	Petrochelidon pyrrhonota	Cliff Swallow			BSC	MBCA	
	Hirundo rustica	Barn Swallow			BSC	MBCA	
	Poecile atricapillus	Black-capped Chickadee				MBCA	
	Sitta carolinensis	White-breasted Nuthatch				MBCA	
	Certhia americana	Brown Creeper			BSC	MBCA	
	Thryothorus ludovicianus	Carolina Wren			BSC	MBCA	
	Troglodytes aedon	House Wren				MBCA	
	Regulus satrapa	Golden-crowned Kinglet				MBCA	
	Regulus calendula	Ruby-crowned Kinglet				MBCA	
	Polioptila caerulea	Blue-gray Gnatcatcher			BSC	MBCA	
	Sialia sialis	Eastern Bluebird			BSC	MBCA	
	Cathartes fuscescens	Veery			BSC	MBCA	
	Catharus guttatus	Hermit Thrush				MBCA	
	Hylocichla mustelina	Wood Thrush				MBCA	
	Turdus migratorius	American Robin				MBCA	
	Dumetella carolinensis	Gray Catbird			BSC	MBCA	
	Toxostoma rufum	Brown Thrasher			BSC	MBCA	
	Sturnus vulgaris	European Starling					
	Bombycilla cedrorum	Cedar Waxwing				MBCA	
	Vermivora chrysoptera	Golden-winged Warbler				MBCA	
	Vermivora peregrina	Tennessee Warbler				MBCA	
	Vermivora ruficapilla	Nashville Warbler				MBCA	
	Parula americana	Northern Parula				MBCA	
	Dendroica petechia	Yellow Warbler				MBCA	
	Dendroica pensylvanica	Chestnut-sided Warbler			BSC	MBCA	
	Dendroica magnolia	Magnolia Warbler				MBCA	
	Dendroica caerulescens	Black-throated Blue Warbler				MBCA	
	Dendroica coronata	Yellow-rumped Warbler				MBCA	
	Dendroica virens	Black-throated Green Warbler				MBCA	
	Dendroica fusca	Blackburnian Warbler				MBCA	
	Dendroica pinus	Pine Warbler				MBCA	
	Dendroica palmarum	Palm Warbler				MBCA	
	Dendroica castanea	Bay-breasted Warbler				MBCA	
	Mniotilta varia	Black and White Warbler				MBCA	
	Setophaga ruticilla	American Redstart			BSC	MBCA	

APPENDIX F
LIST OF WILDLIFE SPECIES RECORDED IN THE AREA OF INVESTIGATION

Wildlife	Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others[1]
	Seiurus aurocapilla	Ovenbird			BSC	MBCA	*
	Oporornis philadelphia	Mourning Warbler			BSC	MBCA	
	Geothlypis trichas	Common Yellowthroat				MBCA	
	Wilsonia pusilla	Wilson's Warbler				MBCA	
	Piranga olivacea	Scarlet Tanager			BSC	MBCA	*
	Pipilo erythrophthalmus	Eastern Towhee			BSC	MBCA	
	Spizella passerina	Chipping Sparrow				MBCA	
	Spizella pusilla	Field Sparrow			BSC	MBCA	
	Pooecetes gramineus	Vesper Sparrow			BSC	MBCA	
	Passerculus sandwichensis	Savannah Sparrow			BSC	MBCA	
	Melospiza georgiana	Swamp Sparrow			BSC	MBCA	*
	Melospiza melodia	Song Sparrow				MBCA	
	Melospiza lincolnii	Lincoln's Sparrow				MBCA	
	Zonotrichia albicollis	White-throated Sparrow				MBCA	
	Zonotrichia leucophrys	White-crowned Sparrow				MBCA	
	Junco hyemalis	Dark-eyed Junco				MBCA	
	Cardinalis cardinalis	Northern Cardinal				MBCA	
	Pheucticus ludovicianus	Rose-breasted Grosbeak				MBCA	
	Passerina cyanea	Indigo Bunting				MBCA	
	Agelaius phoeniceus	Red-winged Blackbird					
	Quiscalus quiscula	Common Grackle					
	Molothrus ater	Brown-headed Cowbird					
	Icterus spurius	Orchard Oriole			BSC	MBCA	
	Icterus galbula	Baltimore Oriole				MBCA	
	Carpodacus mexicanus	House Finch				MBCA	
	Carduelis tristis	American Goldfinch			BSC	MBCA	
	Passer domesticus	House Sparrow					
Mammals	*Didelphis virginiana*	Virginia Opossum				FWCA(F)	
	Blarina brevicauda	N. Short-tailed Shrew				FWCA(P)	
	Eptesicus fuscus	Big Brown Bat				FWCA(P)	*
	Lasiurus borealis	Eastern Red Bat				FWCA(P)	*
	Lasiurus cinereus	Hoary Bat				FWCA(P)	*
	Sylvilagus floridanus	Eastern Cottontail				FWCA(G)	
	Lepus europaeus	European Hare				FWCA(G)	
	Tamias striatus	Eastern Chipmunk				FWCA(P)	
	Marmota monax	Groundhog					
	Sciurus carolinensis	Gray Squirrel				FWCA(G)	
	Peromyscus leucopus	White-footed Mouse					
	Microtus pennsylvanicus	Meadow Vole					
	Ondatra zibethica	Muskrat				FWCA(F)	
	Rattus norvegicus	Norway Rat					*
	Mus musculus	House Mouse					*
	Canis latrans	Coyote				FWCA(F)	
	Vulpes vulpes	Red Fox				FWCA(F)	
	Procyon lotor	Raccoon				FWCA(F)	
	Mephitis mephitis	Striped Skunk				FWCA(F)	
	Odocoileus virginianus	White-tailed Deer				FWCA(G)	

APPENDIX G

APPENDIX G
LIST OF BIRD SPECIES WITH BREEDING EVIDENCE

Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others[1]	BBE
Branta canadensis	Canada Goose				MBCA		NE, FY
Aix sponsa	Wood Duck			BSC	MBCA		
Anas platyrhynchos	Mallard				MBCA		FY
Phasianus colchicus	Ring-necked Pheasant				MBCA/ FWCA(G)		T
Phalacrocorax auritus	Double-crested Cormorant						
Ardea herodias	Great Blue Heron				MBCA		
Ardea alba	Great Egret				MBCA		
Nycticorax nycticorax	Black-crowned Night Heron			BSC	MBCA		
Cathartes aura	Turkey Vulture			BSC	FWCA(P)		
Pandion haliaetus	Osprey			BSC	FWCA(P)		
Accipiter striatus	Sharp-shinned Hawk				FWCA(P)		
Accipiter cooperii	Cooper's Hawk				FWCA(P)		H
Accipiter gentilis	Northern Goshawk				FWCA(P)		
Buteo platypterus	Broad-winged Hawk			BSC	FWCA(P)		
Buteo jamaicensis	Red-tailed Hawk				FWCA(P)		NE
Falco sparverius	American Kestrel			BSC	FWCA(P)		CF
Charadrius vociferus	Killdeer				MBCA		T, A, FY
Actitis macularius	Spotted Sandpiper			BSC	MBCA		T, A
Gallinago delicata	Wilson's Snipe			BSC	MBCA		
Scolopax minor	American Woodcock			BSC	MBCA		
Larus delawarensis	Ring-billed Gull				MBCA		
Columba livia	Rock Pigeon						
Zenaida macroura	Mourning Dove				MBCA		T, FY
Coccyzus americanus	Yellow-billed Cuckoo			BSC	MBCA	*	
Megascops asio	Eastern Screech-Owl				FWCA(P)		
Archilochus colubris	Ruby-throated Hummingbird			BSC	MBCA		
Melanerpes erythrocephalus	Red-headed Woodpecker	SC	SC	BSC	MBCA		
Melanerpes carolinus	Red-bellied Woodpecker			BSC	MBCA		
Picoides pubescens	Downy Woodpecker				MBCA		N, CF, FY
Picoides villosus	Hairy Woodpecker				MBCA	*	
Colaptes auratus	Northern Flicker				MBCA		D, FY
Contopus virens	Eastern Wood Pewee				MBCA		T
Empidonax traillii	Willow Flycatcher				MBCA		NE, NY
Empidonax minimus	Least Flycatcher				MBCA		
Sayornis phoebe	Eastern Phoebe			BSC	MBCA		
Myiarchus crinitus	Great Crested Flycatcher				MBCA	*	
Tyrannus tyrannus	Eastern Kingbird			BSC	MBCA		T, A
Vireo flavifrons	Yellow-throated Vireo				MBCA		S
Vireo solitarius	Blue-headed Vireo				MBCA		
Vireo gilvus	Warbling Vireo				MBCA		S, A
Vireo olivaceus	Red-eyed Vireo				MBCA		S, T
Cyanocitta cristata	Blue Jay				FWCA(P)		T
Corvus brachyrhynchos	American Crow						

[1] An asterisk indicates that the species has been identified by others and that suitable habitat exists in the area of investigation.

APPENDIX G
LIST OF BIRD SPECIES WITH BREEDING EVIDENCE

Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others[1]	BBE
Eremophila alpestris	Horned Lark			BSC	MBCA		FY
Tachycineta bicolor	Tree Swallow				MBCA		AE
Stelgidopteryx serripennis	Northern Rough-winged Swallow			BSC	MBCA		
Petrochelidon pyrrhonota	Cliff Swallow			BSC	MBCA		AE
Hirundo rustica	Barn Swallow			BSC	MBCA		N, AE
Poecile atricapillus	Black-capped Chickadee				MBCA		FY
Sitta carolinensis	White-breasted Nuthatch				MBCA		
Certhia Americana	Brown Creeper			BSC	MBCA		
Thryothorus ludovicianus	Carolina Wren			BSC	MBCA		S
Troglodytes aedon	House Wren				MBCA		S
Regulus satrapa	Golden-crowned Kinglet				MBCA		
Regulus calendula	Ruby-crowned Kinglet				MBCA		
Polioptila caerulea	Blue-gray Gnatcatcher			BSC	MBCA		
Sialia sialis	Eastern Bluebird			BSC	MBCA		
Cathartes fuscescens	Veery			BSC	MBCA		
Catharus guttatus	Hermit Thrush				MBCA		
Hylocichla mustelina	Wood Thrush				MBCA		S, T, NE
Turdus migratorius	American Robin				MBCA		NE, NY, FY
Dumetella carolinensis	Gray Catbird			BSC	MBCA		N, NE, NY, CF
Toxostoma rufum	Brown Thrasher			BSC	MBCA		FY
Sturnus vulgaris	European Starling						AE, FY
Bombycilla cedrorum	Cedar Waxwing				MBCA		A, N, CF
Vermivora chrysoptera	Golden-winged Warbler				MBCA		
Vermivora peregrine	Tennessee Warbler				MBCA		
Vermivora ruficapilla	Nashville Warbler				MBCA		
Parula Americana	Northern Parula				MBCA		
Dendroica petechia	Yellow Warbler				MBCA		NE, CF
Dendroica pensylvanica	Chestnut-sided Warbler			BSC	MBCA		
Dendroica magnolia	Magnolia Warbler				MBCA		
Dendroica caerulescens	Black-throated Blue Warbler				MBCA		
Dendroica coronata	Yellow-rumped Warbler				MBCA		
Dendroica virens	Black-throated Green Warbler				MBCA		
Dendroica fusca	Blackburnian Warbler				MBCA		
Dendroica pinus	Pine Warbler				MBCA		
Dendroica palmarum	Palm Warbler				MBCA		
Dendroica castanea	Bay-breasted Warbler				MBCA		
Mniotilta varia	Black and White Warbler				MBCA		
Setophaga ruticilla	American Redstart			BSC	MBCA		
Seiurus aurocapilla	Ovenbird			BSC	MBCA	*	
Oporornis Philadelphia	Mourning Warbler			BSC	MBCA		
Geothlypis trichas	Common Yellowthroat				MBCA		A, T
Wilsonia pusilla	Wilson's Warbler				MBCA		
Piranga olivacea	Scarlet Tanager			BSC	MBCA	*	
Pipilo erythrophthalmus	Eastern Towhee			BSC	MBCA		S, T

APPENDIX G
LIST OF BIRD SPECIES WITH BREEDING EVIDENCE

Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others[1]	BBE
Spizella passerine	Chipping Sparrow				MBCA		T
Spizella pusilla	Field Sparrow			BSC	MBCA		S, T
Pooecetes gramineus	Vesper Sparrow			BSC	MBCA		CF
Passerculus sandwichensis	Savannah Sparrow			BSC	MBCA		S, T
Melospiza melodia	Song Sparrow				MBCA		CF, FY
Melospiza lincolnii	Lincoln's Sparrow				MBCA		
Melospiza Georgiana	Swamp Sparrow			BSC	MBCA	*	
Zonotrichia albicollis	White-throated Sparrow				MBCA		
Zonotrichia leucophrys	White-crowned Sparrow				MBCA		
Junco hyemalis	Dark-eyed Junco				MBCA		
Cardinalis cardinalis	Northern Cardinal				MBCA		CF
Pheucticus ludovicianus	Rose-breasted Grosbeak				MBCA		S, A, CF
Passerina cyanea	Indigo Bunting				MBCA		S, T, D, CF
Agelaius phoeniceus	Red-winged Blackbird						N, CF, FY
Quiscalus quiscula	Common Grackle						CF, FY
Molothrus ater	Brown-headed Cowbird						NY
Icterus spurious	Orchard Oriole			BSC	MBCA		D, CF
Icterus galbula	Baltimore Oriole				MBCA		NE, CF
Carpodacus mexicanus	House Finch				MBCA		T, FY
Carduelis tristis	American Goldfinch			BSC	MBCA		D
Passer domesticus	House Sparrow						AE, CF, FY

BBE - Breeding Bird Evidence (according to Bird Studies Canada):

Possible Breeding:

- H - Species observed in its breeding season in suitable nesting habitat.
- S - Singing male present in its breeding season in suitable nesting habitat.

Probable Breeding:

- T - Permanent territory presumed through registration of territorial song on at least two days, a week or so apart, at the same place.
- D - Courtship or display between male and female, including courtship feeding or copulation.
- A - Agitated behavior or anxiety calls of an adult.
- N - Nest-building or excavation of nest hole.

Confirmed Breeding:

- AE - Adults leaving or entering nest site in circumstances indication occupied nest.
- NU - Used nest or egg shell found (occupied or laid within the period of study).
- FY - Recently fledged young or downy young, including young incapable of sustained flight.
- CF - Adult carrying food for young.
- NE - Nest containing eggs.
- NY - Nest with young seen or heard.

APPENDIX H

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
1	0328060E 4681980N	Brighton Beach Broadway Street	Jun 5	*Phasianus colchicus* *Zenaida macroura* *Colaptes auratus* *Vireo gilvus* *Poecile atricapillus* *Sialia sialis* *Hylocichla mustelina* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Pipilo erythrophthalmus* *Melospiza melodia* *Cardinalis cardinalis* *Quiscalus quiscula* *Icterus galbula*	Ring necked Pheasant Mourning Dove Northern Flicker Warbling Vireo Black capped Chickadee Eastern Bluebird Wood Thrush American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Eastern Towhee Song Sparrow Northern Cardinal Common Grackle Baltimore Oriole	Jun 15	*Phasianus colchicus* *Vireo gilvus* *Cyanocitta cristata* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Melospiza melodia* *Cardinalis cardinalis* *Icterus galbula*	Ring necked Pheasant Warbling Vireo Blue Jay Carolina Wren House Wren American Robin Gray Catbird Song Sparrow Northern Cardinal Baltimore Oriole
2	0328248E 4682110N	Brighton Beach Scotten Road	Jun 5	*Zenaida macroura* *Colaptes auratus* *Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Passer domesticus*	Mourning Dove Northern Flicker Warbling Vireo House Wren American Robin Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird House Sparrow	Jun 15	*Zenaida macroura* *Colaptes auratus* *Vireo gilvus* *Corvus brachyrhynchos* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater* *Passer domesticus*	Mourning Dove Northern Flicker Warbling Vireo American Crow House Wren American Robin Gray Catbird European Starling Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird Common Grackle Brown headed Cowbird House Sparrow

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
3	0327940E 4682265N	Brighton Beach Road	Jun 5	*Phasianus colchicus* *Zenaida macroura* *Vireo gilvus* *Cyanocitta cristata* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus*	Ring necked Pheasant Mourning Dove Warbling Vireo Blue Jay House Wren American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Song Sparrow Red winged Blackbird	Jun 15	*Charadrius vociferus* *Colaptes auratus* *Vireo gilvus* *Stelgidopteryx serripennis* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater* *Carduelis tristis* *Passer domesticus*	Killdeer Northern Flicker Warbling Vireo Northern Rough winged Swallow House Wren American Robin Gray Catbird European Starling Yellow Warbler Song Sparrow Red winged Blackbird Common Grackle Brown headed Cowbird American Goldfinch House Sparrow
4	0327720E 4682194N	Brighton Beach Broadway Street	Jun 5	*Phasianus colchicus* *Colaptes auratus* *Vireo olivaceus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Ring necked Pheasant Northern Flicker Red eyed Vireo House Wren American Robin Gray Catbird Cedar Waxwing Yellow Warbler Northern Cardinal Rose breasted Grosbeak Red winged Blackbird Brown headed Cowbird Baltimore Oriole American Goldfinch House Sparrow	Jun 15	*Phasianus colchicus* *Picoides pubescens* *Colaptes auratus* *Contopus virens* *Vireo flavifrons* *Vireo gilvus* *Vireo olivaceus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Passerina cyanea* *Molothrus ater* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Ring necked Pheasant Downy Woodpecker Northern Flicker Eastern Wood Pewee Yellow throated Vireo Warbling Vireo Red eyed Vireo House Wren American Robin Gray Catbird Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Rose breasted Grosbeak Indigo Bunting Brown headed Cowbird Baltimore Oriole American Goldfinch House Sparrow

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
5	0327408E 4682286N	Brighton Beach Broadway & Sandwich	Jun 5	*Zenaida macroura* *Colaptes auratus* *Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Passerina cyanea* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Mourning Dove Northern Flicker Warbling Vireo House Wren American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Rose breasted Grosbeak Indigo Bunting Red winged Blackbird Common Grackle Brown headed Cowbird Baltimore Oriole American Goldfinch House Sparrow	Jun 15	*Phasianus colchicus* *Zenaida macroura* *Picoides pubescens* *Colaptes auratus* *Contopus virens* *Tachycineta bicolor* *Thryothorus ludovicianus* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Ring necked Pheasant Mourning Dove Downy Woodpecker Northern Flicker Eastern Wood Pewee Tree Swallow Carolina Wren American Robin Gray Catbird Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird Brown headed Cowbird Baltimore Oriole American Goldfinch House Sparrow
6	0327278E 4682455N	Brighton Beach ? Road	Jun 5	*Megascops asio* *Picoides pubescens* *Colaptes auratus* *Empidonax traillii* *Vireo olivaceus* *Cyanocitta cristata* *Poecile atricapillus* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula*	Eastern Screech Owl Downy Woodpecker Northern Flicker Willow Flycatcher Red eyed Vireo Blue Jay Black capped Chickadee Carolina Wren House Wren American Robin European Starling Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird Brown headed Cowbird Baltimore Oriole	Jun 15	*Phasianus colchicus* *Picoides pubescens* *Colaptes auratus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Toxostoma rufum* *Bombycilla cedrorum* *Dendroica petechia* *Spizella passerina* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Carduelis tristis*	Ring necked Pheasant Downy Woodpecker Northern Flicker House Wren American Robin Gray Catbird Brown Thrasher Cedar Waxwing Yellow Warbler Chipping Sparrow Song Sparrow Northern Cardinal Red winged Blackbird Brown headed Cowbird American Goldfinch

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
7	0327080E 4682640N	Brighton Beach Detroit River	Jun 5	*Empidonax traillii* *Vireo gilvus* *Hirundo rustica* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Icterus galbula* *Carduelis tristis*	Willow Flycatcher Warbling Vireo Barn Swallow Carolina Wren House Wren American Robin Gray Catbird European Starling Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird Baltimore Oriole American Goldfinch	Jun 15	*Picoides pubescens* *Empidonax traillii* *Hirundo rustica* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Icterus galbula* *Carduelis tristis*	Downy Woodpecker Willow Flycatcher Barn Swallow American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Baltimore Oriole American Goldfinch
8	0327678E 4682590N	Brighton Beach Chappus & Sandwich	Jun 5	*Phasianus colchicus* *Zenaida macroura* *Empidonax traillii* *Tyrannus tyrannus* *Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater*	Ring necked Pheasant Mourning Dove Willow Flycatcher Eastern Kingbird Warbling Vireo House Wren American Robin European Starling Yellow Warbler Song Sparrow Red winged Blackbird Common Grackle Brown headed Cowbird	Jun 14	*Zenaida macroura* *Empidonax traillii* *Vireo gilvus* *Hirundo rustica* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Icterus galbula* *Carpodacus mexicanus*	Mourning Dove Willow Flycatcher Warbling Vireo Barn Swallow House Wren American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird Baltimore Oriole House Finch

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
9	0328335E 4682365N	Brighton Beach Chappus & Scotten	Jun 6	*Charadrius vociferus* *Zenaida macroura* *Empidonax traillii* *Turdus migratorius* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus*	Killdeer Mourning Dove Willow Flycatcher American Robin Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird	Jun 14	*Charadrius vociferus* *Empidonax traillii* *Thryothorus ludovicianus* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus* *Carduelis tristis* *Passer domesticus*	Killdeer Willow Flycatcher Carolina Wren American Robin Gray Catbird European Starling Yellow Warbler Song Sparrow Red winged Blackbird American Goldfinch House Sparrow
10	0328448E 4681895N	Yawkey Ojibway & Broadway	Jun 6	*Poecile atricapillus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Cardinalis cardinalis* *Passerina cyanea*	Black capped Chickadee House Wren American Robin Gray Catbird Cedar Waxwing Northern Cardinal Indigo Bunting	Jun 15	*Cyanocitta cristata* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Cardinalis cardinalis* *Passerina cyanea* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Blue Jay Carolina Wren House Wren American Robin Gray Catbird Cedar Waxwing Northern Cardinal Indigo Bunting Baltimore Oriole American Goldfinch House Sparrow

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
11	0328785E 4682010N	Yawkey Beech Street	Jun 6	*Phasianus colchicus* *Picoides pubescens* *Vireo gilvus* *Vireo olivaceus* *Cyanocitta cristata* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Dendroica petechia* *Geothlypis trichas* *Spizella passerina* *Passerina cyanea* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carpodacus mexicanus* *Carduelis tristis* *Passer domesticus*	Ring necked Pheasant Downy Woodpecker Warbling Vireo Red eyed Vireo Blue Jay House Wren American Robin European Starling Yellow Warbler Common Yellowthroat Chipping Sparrow Indigo Bunting Red winged Blackbird Brown headed Cowbird Baltimore Oriole House Finch American Goldfinch House Sparrow	Jun 16	*Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Spizella passerina* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Agelaius phoeniceus* *Molothrus ater* *Carduelis tristis*	Warbling Vireo House Wren American Robin Gray Catbird European Starling Chipping Sparrow Song Sparrow Northern Cardinal Indigo Bunting Red winged Blackbird Brown headed Cowbird American Goldfinch
12	0328630E 4682270N	Yawkey Chappus Street	Jun 6	*Zenaida macroura* *Contopus virens* *Empidonax traillii* *Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Passer domesticus*	Mourning Dove Eastern Wood Pewee Willow Flycatcher Warbling Vireo House Wren American Robin Gray Catbird European Starling Yellow Warbler Northern Cardinal Red winged Blackbird Brown headed Cowbird Baltimore Oriole House Sparrow	Jun 16	*Empidonax traillii* *Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Agelaius phoeniceus* *Passer domesticus*	Willow Flycatcher Warbling Vireo House Wren American Robin Gray Catbird European Starling Yellow Warbler Red winged Blackbird House Sparrow

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
13	0329038E 4681910N	Yawkey Matchette & Armanda	Jun 6	*Zenaida macroura* *Tyrannus tyrannus* *Cyanocitta cristata* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Cardinalis cardinalis* *Agelaius phoeniceus* *Quiscalus quiscula* *Icterus galbula* *Passer domesticus*	Mourning Dove Eastern Kingbird Blue Jay House Wren American Robin European Starling Northern Cardinal Red winged Blackbird Common Grackle Baltimore Oriole House Sparrow	Jun 16	*Zenaida macroura* *Cyanocitta cristata* *Turdus migratorius* *Sturnus vulgaris* *Cardinalis cardinalis* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater* *Icterus galbula* *Passer domesticus*	Mourning Dove Blue Jay American Robin European Starling Northern Cardinal Red winged Blackbird Common Grackle Brown headed Cowbird Baltimore Oriole House Sparrow
14	0328982E 4682330N	Yawkey S.Matchette & EC Row	Jun 6	*Charadrius vociferus* *Hirundo rustica* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus*	Killdeer Barn Swallow American Robin Gray Catbird Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird	Jun 16	*Charadrius vociferus* *Vireo gilvus* *Turdus migratorius* *Sturnus vulgaris* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Geothlypis trichas* *Spizella passerina* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater* *Icterus galbula* *Carpodacus mexicanus* *Passer domesticus*	Killdeer Warbling Vireo American Robin European Starling Gray Catbird Cedar Waxwing Yellow Warbler Common Yellowthroat Chipping Sparrow Song Sparrow Northern Cardinal Red winged Blackbird Common Grackle Brown headed Cowbird Baltimore Oriole House Finch House Sparrow

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
15	0329250E 4682566N	Malden Park N.Matchette & EC Row	Jun 6	*Charadrius vociferus* *Vireo gilvus* *Hirundo rustica* *Turdus migratorius* *Sturnus vulgaris* *Dendroica petechia* *Geothlypis trichas* *Passerculus sandwichensis* *Melospiza melodia* *Agelaius phoeniceus* *Carpodacus mexicanus* *Carduelis tristis*	Killdeer Warbling Vireo Barn Swallow American Robin European Starling Yellow Warbler Common Yellowthroat Savannah Sparrow Song Sparrow Red winged Blackbird House Finch American Goldfinch	Jun 16	*Charadrius vociferus* *Actitis macularius* *Zenaida macroura* *Picoides pubescens* *Empidonax traillii* *Hirundo rustica* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Passerculus sandwichensis* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Agelaius phoeniceus* *Icterus galbula* *Carpodacus mexicanus* *Carduelis tristis* *Passer domesticus*	Killdeer Spotted Sandpiper Mourning Dove Downy Woodpecker Willow Flycatcher Barn Swallow American Robin European Starling Cedar Waxwing Yellow Warbler Savannah Sparrow Song Sparrow Northern Cardinal Indigo Bunting Red winged Blackbird Baltimore Oriole House Finch American Goldfinch House Sparrow

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
16	0329276E 4682170N	North Chappus Road Chappus Road	Jun 6	*Charadrius vociferus*	Killdeer	Jun 16	*Actitis macularius*	Spotted Sandpiper
				Actitis macularius	Spotted Sandpiper		*Contopus virens*	Eastern Wood Pewee
				Colaptes auratus	Northern Flicker		*Vireo gilvus*	Warbling Vireo
				Contopus virens	Eastern Wood Pewee		*Cyanocitta cristata*	Blue Jay
				Tyrannus tyrannus	Eastern Kingbird		*Thryothorus ludovicianus*	Carolina Wren
				Vireo gilvus	Warbling Vireo		*Troglodytes aedon*	House Wren
				Thryothorus ludovicianus	Carolina Wren		*Turdus migratorius*	American Robin
				Troglodytes aedon	House Wren		*Dumetella carolinensis*	Gray Catbird
				Hylocichla mustelina	Wood Thrush		*Melospiza melodia*	Song Sparrow
				Turdus migratorius	American Robin		*Cardinalis cardinalis*	Northern Cardinal
				Dumetella carolinensis	Gray Catbird		*Agelaius phoeniceus*	Red winged Blackbird
				Bombycilla cedrorum	Cedar Waxwing		*Molothrus ater*	Brown headed Cowbird
				Dendroica petechia	Yellow Warbler			
				Geothlypis trichas	Common Yellowthroat			
				Melospiza melodia	Song Sparrow			
				Cardinalis cardinalis	Northern Cardinal			
				Agelaius phoeniceus	Red winged Blackbird			
				Icterus galbula	Baltimore Oriole			
				Carduelis tristis	American Goldfinch			

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
17	0329380E 4681810N	North Chappus Road	Jun 6	*Charadrius vociferus* *Melanerpes carolinus* *Picoides pubescens* *Colaptes auratus* *Contopus virens* *Vireo gilvus* *Cyanocitta cristata* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Melospiza melodia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Agelaius phoeniceus* *Quiscalus quiscula* *Icterus galbula* *Passer domesticus*	Killdeer Red bellied Woodpecker Downy Woodpecker Northern Flicker Eastern Wood Pewee Warbling Vireo Blue Jay House Wren American Robin Gray Catbird Cedar Waxwing Song Sparrow Northern Cardinal Rose breasted Grosbeak Red winged Blackbird Common Grackle Baltimore Oriole House Sparrow	Jun 16	*Zenaida macroura* *Picoides pubescens* *Colaptes auratus* *Empidonax traillii* *Vireo gilvus* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carduelis tristis*	Mourning Dove Downy Woodpecker Northern Flicker Willow Flycatcher Warbling Vireo Carolina Wren House Wren American Robin Gray Catbird European Starling Yellow Warbler Song Sparrow Northern Cardinal Rose breasted Grosbeak Red winged Blackbird Brown headed Cowbird Baltimore Oriole American Goldfinch
18	0329745E 4681758N	North Chappus Road ? Drain	Jun 6	*Picoides pubescens* *Cyanocitta cristata* *Thryothorus ludovicianus* *Troglodytes aedon* *Dumetella carolinensis* *Bombycilla cedrorum* *Pipilo erythrophthalmus* *Cardinalis cardinalis* *Passerina cyanea* *Quiscalus quiscula*	Downy Woodpecker Blue Jay Carolina Wren House Wren Gray Catbird Cedar Waxwing Eastern Towhee Northern Cardinal Indigo Bunting Common Grackle	Jun 16	*Phasianus colchicus* *Contopus virens* *Thryothorus ludovicianus* *Troglodytes aedon* *Dumetella carolinensis* *Cardinalis cardinalis* *Passerina cyanea* *Molothrus ater*	Ring necked Pheasant Eastern Wood Pewee Carolina Wren House Wren Gray Catbird Northern Cardinal Indigo Bunting Brown headed Cowbird

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
19	0329854E 4681940N	Chappus Woods	Jun 6	*Zenaida macroura* *Colaptes auratus* *Empidonax traillii* *Thryothorus ludovicianus* *Turdus migratorius* *Sturnus vulgaris* *Dendroica petechia* *Geothlypis trichas* *Melospiza melodia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carduelis tristis*	Mourning Dove Northern Flicker Willow Flycatcher Carolina Wren American Robin European Starling Yellow Warbler Common Yellowthroat Song Sparrow Northern Cardinal Rose breasted Grosbeak Red winged Blackbird Brown headed Cowbird Baltimore Oriole American Goldfinch	Jun 16	*Colaptes auratus* *Contopus virens* *Empidonax traillii* *Vireo gilvus* *Cyanocitta cristata* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carduelis tristis*	Northern Flicker Eastern Wood Pewee Willow Flycatcher Warbling Vireo Blue Jay American Robin Gray Catbird Yellow Warbler Northern Cardinal Rose breasted Grosbeak Red winged Blackbird Brown headed Cowbird Baltimore Oriole American Goldfinch
20	0329965E 4682016N	Chappus Woods	Jun 6	*Archilochus colubris* *Empidonax traillii* *Vireo gilvus* *Cyanocitta cristata* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Geothlypis trichas* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Carduelis tristis*	Ruby throated Hummingbird Willow Flycatcher Warbling Vireo Blue Jay American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Common Yellowthroat Northern Cardinal Red winged Blackbird Brown headed Cowbird American Goldfinch	Jun 19	*Empidonax traillii* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Geothlypis trichas* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Agelaius phoeniceus* *Molothrus ater* *Carduelis tristis*	Willow Flycatcher American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Common Yellowthroat Song Sparrow Northern Cardinal Indigo Bunting Red winged Blackbird Brown headed Cowbird American Goldfinch

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
21	0329615E 4682085N	Chappus Woods	Jun 6	*Picoides pubescens* *Contopus virens* *Empidonax traillii* *Vireo gilvus* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Pipilo erythrophthalmus* *Spizella pusilla* *Melospiza melodia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carduelis tristis*	Downy Woodpecker Eastern Wood Pewee Willow Flycatcher Warbling Vireo American Robin Gray Catbird Cedar Waxwing Yellow Warbler Eastern Towhee Field Sparrow Song Sparrow Northern Cardinal Rose breasted Grosbeak Red winged Blackbird Brown headed Cowbird Baltimore Oriole American Goldfinch	Jun 19	*Picoides pubescens* *Empidonax traillii* *Tachycineta bicolor* *Thryothorus ludovicianus* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Spizella pusilla* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Icterus galbula*	Downy Woodpecker Willow Flycatcher Tree Swallow Carolina Wren American Robin Gray Catbird Yellow Warbler Field Sparrow Song Sparrow Northern Cardinal Red winged Blackbird Baltimore Oriole
22	0329530E 4681940N	Chappus Woods	Jun 6	*Phasianus colchicus* *Charadrius vociferus* *Melanerpes carolinus* *Sayornis phoebe* *Cyanocitta cristata* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Spizella pusilla* *Melospiza melodia* *Agelaius phoeniceus* *Icterus galbula* *Carduelis tristis*	Ring necked Pheasant Killdeer Red bellied Woodpecker Eastern Phoebe Blue Jay American Robin Gray Catbird Yellow Warbler Field Sparrow Song Sparrow Red winged Blackbird Baltimore Oriole American Goldfinch	Jun 16	*Empidonax traillii* *Tachycineta bicolor* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Agelaius phoeniceus* *Molothrus ater*	Willow Flycatcher Tree Swallow American Robin Gray Catbird European Starling Yellow Warbler Song Sparrow Northern Cardinal Rose breasted Grosbeak Red winged Blackbird Brown headed Cowbird

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
23	0329904E 4681595N	Chappus Woods	Jun 6	*Anas platyrhynchos* *Picoides pubescens* *Contopus virens* *Thryothorus ludovicianus* *Troglodytes aedon* *Hylocichla mustelina* *Turdus migratorius* *Dumetella carolinensis* *Cardinalis cardinalis* *Molothrus ater*	Mallard Downy Woodpecker Eastern Wood Pewee Carolina Wren House Wren Wood Thrush American Robin Gray Catbird Northern Cardinal Brown headed Cowbird	Jun 16	*Phasianus colchicus* *Thryothorus ludovicianus* *Turdus migratorius* *Dumetella carolinensis* *Cardinalis cardinalis* *Dendroica petechia* *Agelaius phoeniceus*	Ring necked Pheasant Carolina Wren American Robin Gray Catbird Northern Cardinal Yellow Warbler Red winged Blackbird
24	0330365E 4681700N	North Spring Garden	Jun 8	*Aix sponsa* *Accipiter cooperii* *Picoides pubescens* *Contopus virens* *Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Dendroica petechia* *Geothlypis trichas* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Icterus galbula*	Wood Duck Cooper's Hawk Downy Woodpecker Eastern Wood Pewee Warbling Vireo House Wren American Robin Yellow Warbler Common Yellowthroat Song Sparrow Northern Cardinal Red winged Blackbird Baltimore Oriole	Jun 20	*Accipiter cooperii* *Picoides pubescens* *Vireo olivaceus* *Poecile atricapillus* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Melospiza melodia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Passerina cyanea* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula*	Cooper's Hawk Downy Woodpecker Red eyed Vireo Black capped Chickadee Carolina Wren House Wren American Robin Gray Catbird Song Sparrow Northern Cardinal Rose breasted Grosbeak Indigo Bunting Red winged Blackbird Brown headed Cowbird Baltimore Oriole

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
25	0330402E 4681855N	North Spring Garden	Jun 8	*Picoides pubescens* *Contopus virens* *Vireo gilvus* *Vireo olivaceus* *Troglodytes aedon* *Dumetella carolinensis* *Dendroica petechia* *Geothlypis trichas* *Melospiza melodia* *Agelaius phoeniceus*	Downy Woodpecker Eastern Wood Pewee Warbling Vireo Red eyed Vireo House Wren Gray Catbird Yellow Warbler Common Yellowthroat Song Sparrow Red winged Blackbird	Jun 20	*Picoides pubescens* *Colaptes auratus* *Contopus virens* *Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Geothlypis trichas* *Melospiza melodia* *Agelaius phoeniceus* *Icterus galbula*	Downy Woodpecker Northern Flicker Eastern Wood Pewee Warbling Vireo House Wren American Robin Gray Catbird Yellow Warbler Common Yellowthroat Song Sparrow Red winged Blackbird Baltimore Oriole
26	0330570E 4681804N	North Spring Garden	Jun 8	*Poecile atricapillus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Cardinalis cardinalis* *Pheucticus ludovicianus* *Agelaius phoeniceus*	Black capped Chickadee House Wren American Robin Gray Catbird Yellow Warbler Northern Cardinal Rose breasted Grosbeak Red winged Blackbird	Jun 20	*Troglodytes aedon* *Hylocichla mustelina* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Quiscalus quiscula* *Icterus galbula* *Carduelis tristis*	House Wren Wood Thrush Gray Catbird Cedar Waxwing Yellow Warbler Northern Cardinal Red winged Blackbird Common Grackle Baltimore Oriole American Goldfinch

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
27	0330755E 4681670N	North Spring Garden	Jun 7	*Cyanocitta cristata* *Poecile atricapillus* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Passerina cyanea* *Carduelis tristis*	Blue Jay Black capped Chickadee Carolina Wren House Wren American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Song Sparrow Indigo Bunting American Goldfinch	Jun 20	*Picoides pubescens* *Colaptes auratus* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Cardinalis cardinalis* *Quiscalus quiscula* *Molothrus ater* *Icterus galbula*	Downy Woodpecker Northern Flicker Carolina Wren House Wren American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Northern Cardinal Common Grackle Brown headed Cowbird Baltimore Oriole
28	0330895E 4681745N	North Spring Garden	Jun 8	*Gallinago delicata* *Picoides pubescens* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Icterus galbula* *Carduelis tristis*	Wilson's Snipe Downy Woodpecker American Robin Gray Catbird Yellow Warbler Northern Cardinal Red winged Blackbird Baltimore Oriole American Goldfinch	Jun 20	*Picoides pubescens* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Pipilo erythrophthalmus* *Cardinalis cardinalis* *Agelaius phoeniceus*	Downy Woodpecker American Robin Gray Catbird Yellow Warbler Eastern Towhee Northern Cardinal Red winged Blackbird
29	0330978E 4681694N	North Spring Garden	Jun 8	*Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Cardinalis cardinalis* *Agelaius phoeniceus*	American Robin Gray Catbird Yellow Warbler Northern Cardinal Red winged Blackbird	Jun 20	*Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Cardinalis cardinalis* *Agelaius phoeniceus*	American Robin Gray Catbird European Starling Yellow Warbler Northern Cardinal Red winged Blackbird

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
30	0330585E 4681450N	Lambton	Jun 7	*Zenaida macroura*	Mourning Dove	Jun 19	*Zenaida macroura*	Mourning Dove
				Picoides pubescens	Downy Woodpecker		*Vireo gilvus*	Warbling Vireo
				Tyrannus tyrannus	Eastern Kingbird		*Troglodytes aedon*	House Wren
				Vireo gilvus	Warbling Vireo		*Turdus migratorius*	American Robin
				Corvus brachyrhynchos	American Crow		*Dumetella carolinensis*	Gray Catbird
				Stelgidopteryx serripennis	Northern Rough winged Swallow		*Sturnus vulgaris*	European Starling
				Hirundo rustica	Barn Swallow		*Bombycilla cedrorum*	Cedar Waxwing
				Troglodytes aedon	House Wren		*Dendroica petechia*	Yellow Warbler
				Turdus migratorius	American Robin		*Spizella passerina*	Chipping Sparrow
				Sturnus vulgaris	European Starling		*Spizella pusilla*	Field Sparrow
				Cardinalis cardinalis	Northern Cardinal		*Agelaius phoeniceus*	Red winged Blackbird
				Agelaius phoeniceus	Red winged Blackbird		*Carpodacus mexicanus*	House Finch
				Icterus galbula	Baltimore Oriole			
				Carduelis tristis	American Goldfinch			
				Passer domesticus	House Sparrow			
31	0330892E 4681394N	Lambton	Jun 7	*Melanerpes carolinus*	Red bellied Woodpecker	Jun 20	*Myiarchus crinitus*	Great Crested Flycatcher
				Picoides pubescens	Downy Woodpecker		*Tyrannus tyrannus*	Eastern Kingbird
				Colaptes auratus	Northern Flicker		*Vireo gilvus*	Warbling Vireo
				Tyrannus tyrannus	Eastern Kingbird		*Troglodytes aedon*	House Wren
				Vireo gilvus	Warbling Vireo		*Turdus migratorius*	American Robin
				Cyanocitta cristata	Blue Jay		*Dumetella carolinensis*	Gray Catbird
				Troglodytes aedon	House Wren		*Pipilo erythrophthalmus*	Eastern Towhee
				Turdus migratorius	American Robin		*Spizella pusilla*	Field Sparrow
				Sturnus vulgaris	European Starling		*Cardinalis cardinalis*	Northern Cardinal
				Bombycilla cedrorum	Cedar Waxwing		*Passerina cyanea*	Indigo Bunting
				Melospiza melodia	Song Sparrow		*Quiscalus quiscula*	Common Grackle
				Cardinalis cardinalis	Northern Cardinal		*Molothrus ater*	Brown headed Cowbird
				Quiscalus quiscula	Common Grackle		*Icterus galbula*	Baltimore Oriole
				Icterus spurius	Orchard Oriole		*Carduelis tristis*	American Goldfinch
				Icterus galbula	Baltimore Oriole		*Passer domesticus*	House Sparrow

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
32	0331247E 4681434N	Lambton	Jun 8	*Zenaida macroura* *Picoides pubescens* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Mourning Dove Downy Woodpecker American Robin Gray Catbird European Starling Baltimore Oriole American Goldfinch House Sparrow	Jun 19	*Columba livia* *Zenaida macroura* *Picoides pubescens* *Cyanocitta cristata* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum*	Rock Pigeon Mourning Dove Downy Woodpecker Blue Jay American Robin Gray Catbird European Starling Cedar Waxwing
33	0331450E 4681040N	Lambton	Jun 8	*Buteo jamaicensis* *Picoides pubescens* *Vireo olivaceus* *Thryothorus ludovicianus* *Turdus migratorius* *Dumetella carolinensis* *Cardinalis cardinalis* *Passerina cyanea* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Red tailed Hawk Downy Woodpecker Red eyed Vireo Carolina Wren American Robin Gray Catbird Northern Cardinal Indigo Bunting Baltimore Oriole American Goldfinch House Sparrow	Jun 21	*Charadrius vociferus* *Picoides pubescens* *Colaptes auratus* *Poecile atricapillus* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Pipilo erythrophthalmus* *Spizella passerina* *Cardinalis cardinalis* *Passerina cyanea* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Killdeer Downy Woodpecker Northern Flicker Black capped Chickadee Carolina Wren House Wren American Robin Gray Catbird Cedar Waxwing Eastern Towhee Chipping Sparrow Northern Cardinal Indigo Bunting Baltimore Oriole American Goldfinch House Sparrow
34	0331678E 4680514N	North and South of Reddock Avenue	Jun 9	*Tyrannus tyrannus* *Vireo gilvus* *Cyanocitta cristata* *Troglodytes aedon* *Cardinalis cardinalis* *Molothrus ater* *Icterus galbula*	Eastern Kingbird Warbling Vireo Blue Jay House Wren Northern Cardinal Brown headed Cowbird Baltimore Oriole	Jun 23	*Cyanocitta cristata* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Agelaius phoeniceus* *Passer domesticus*	Blue Jay House Wren American Robin Gray Catbird European Starling Song Sparrow Northern Cardinal Indigo Bunting Red winged Blackbird House Sparrow

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
35	0331780E 4680168N	North and South of Reddock Avenue	Jun 9	*Zenaida macroura* *Picoides pubescens* *Cyanocitta cristata* *Poecile atricapillus* *Thryothorus ludovicianus* *Troglodytes aedon* *Hylocichla mustelina* *Turdus migratorius* *Sturnus vulgaris* *Cardinalis cardinalis* *Passerina cyanea* *Quiscalus quiscula* *Molothrus ater* *Carduelis tristis* *Passer domesticus*	Mourning Dove Downy Woodpecker Blue Jay Black capped Chickadee Carolina Wren House Wren Wood Thrush American Robin European Starling Northern Cardinal Indigo Bunting Common Grackle Brown headed Cowbird American Goldfinch House Sparrow	Jun 23	*Charadrius vociferus* *Columba livia* *Picoides pubescens* *Cyanocitta cristata* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Spizella passerina* *Cardinalis cardinalis* *Molothrus ater*	Killdeer Rock Pigeon Downy Woodpecker Blue Jay House Wren American Robin European Starling Chipping Sparrow Northern Cardinal Brown headed Cowbird
36	0331875E 4679910N	North and South of Reddock Avenue	Jun 9	*Vireo gilvus* *Turdus migratorius* *Dumetella carolinensis* *Spizella passerina* *Cardinalis cardinalis* *Passerina cyanea* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater* *Icterus galbula* *Carduelis tristis*	Warbling Vireo American Robin Gray Catbird Chipping Sparrow Northern Cardinal Indigo Bunting Red winged Blackbird Common Grackle Brown headed Cowbird Baltimore Oriole American Goldfinch	Jun 23	*Charadrius vociferus* *Tyrannus tyrannus* *Vireo gilvus* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Spizella passerina* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Icterus spurius* *Icterus galbula* *Carduelis tristis*	Killdeer Eastern Kingbird Warbling Vireo American Robin Gray Catbird European Starling Cedar Waxwing Chipping Sparrow Song Sparrow Northern Cardinal Red winged Blackbird Orchard Oriole Baltimore Oriole American Goldfinch

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
37	0332088E 4679970N	Oakwood Bush	Jun 9	*Vireo gilvus* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus* *Icterus galbula* *Carduelis tristis*	Warbling Vireo American Robin Gray Catbird European Starling Cedar Waxwing Yellow Warbler Song Sparrow Red winged Blackbird Baltimore Oriole American Goldfinch	Jun 23	*Zenaida macroura* *Picoides pubescens* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Spizella passerina* *Melospiza melodia* *Agelaius phoeniceus* *Icterus galbula* *Carduelis tristis*	Mourning Dove Downy Woodpecker American Robin Gray Catbird Cedar Waxwing Chipping Sparrow Song Sparrow Red winged Blackbird Baltimore Oriole American Goldfinch
38	0332157E 4679450N	Huron Church north of Cousineau Road	Jun 9	*Charadrius vociferus* *Zenaida macroura* *Corvus brachyrhynchos* *Turdus migratorius* *Sturnus vulgaris* *Molothrus ater* *Carpodacus mexicanus* *Carduelis tristis*	Killdeer Mourning Dove American Crow American Robin European Starling Brown headed Cowbird House Finch American Goldfinch	Jun 23	*Charadrius vociferus* *Actitis macularius* *Cyanocitta cristata* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Melospiza melodia* *Icterus galbula* *Passer domesticus*	Killdeer Spotted Sandpiper Blue Jay American Robin European Starling Cedar Waxwing Song Sparrow Baltimore Oriole House Sparrow
39	0332494E 4679204N	Huron Church north of Cousineau Road	Jun 9	*Zenaida macroura* *Vireo gilvus* *Vireo olivaceus* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Passer domesticus*	Mourning Dove Warbling Vireo Red eyed Vireo House Wren American Robin European Starling Song Sparrow Northern Cardinal Indigo Bunting House Sparrow	Jun 23	*Zenaida macroura* *Hirundo rustica* *Turdus migratorius* *Sturnus vulgaris* *Quiscalus quiscula* *Molothrus ater* *Carduelis tristis* *Passer domesticus*	Mourning Dove Barn Swallow American Robin European Starling Common Grackle Brown headed Cowbird American Goldfinch House Sparrow

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
40	0332868E 4679067N	Huron Church north of Cousineau Road	Jun 9	*Picoides pubescens* *Colaptes auratus* *Empidonax traillii* *Vireo olivaceus* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Icterus galbula* *Carduelis tristis*	Downy Woodpecker Northern Flicker Willow Flycatcher Red eyed Vireo Gray Catbird European Starling Cedar Waxwing Yellow Warbler Northern Cardinal Red winged Blackbird Baltimore Oriole American Goldfinch	Jun 22	*Zenaida macroura* *Picoides pubescens* *Colaptes auratus* *Empidonax traillii* *Poecile atricapillus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Spizella passerina* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Agelaius phoeniceus* *Icterus galbula* *Carduelis tristis* *Passer domesticus*	Mourning Dove Downy Woodpecker Northern Flicker Willow Flycatcher Black capped Chickadee House Wren American Robin Gray Catbird Cedar Waxwing Yellow Warbler Chipping Sparrow Song Sparrow Northern Cardinal Indigo Bunting Red winged Blackbird Baltimore Oriole American Goldfinch House Sparrow
41	0331607E 4680690N	North and South of Reddock Avenue	Jun 9	*Ardea herodias* *Charadrius vociferus* *Petrochelidon pyrrhonota* *Hirundo rustica* *Turdus migratorius* *Dumetella carolinensis* *Agelaius phoeniceus* *Passer domesticus*	Great Blue Heron Killdeer Cliff Swallow Barn Swallow American Robin Gray Catbird Red winged Blackbird House Sparrow	Jun 22	*Charadrius vociferus* *Petrochelidon pyrrhonota* *Hirundo rustica* *Sturnus vulgaris* *Agelaius phoeniceus* *Passer domesticus*	Killdeer Cliff Swallow Barn Swallow European Starling Red winged Blackbird House Sparrow

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
42	0333138E 4678925N	Huron Church north of Cousineau Road	Jun 9	*Empidonax traillii* *Poecile atricapillus* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carduelis tristis*	Willow Flycatcher Black capped Chickadee Yellow Warbler Song Sparrow Red winged Blackbird Brown headed Cowbird Baltimore Oriole American Goldfinch	Jun 22	*Zenaida macroura* *Empidonax traillii* *Hirundo rustica* *Poecile atricapillus* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Passerculus sandwichensis* *Melospiza melodia* *Agelaius phoeniceus* *Molothrus ater* *Carduelis tristis*	Mourning Dove Willow Flycatcher Barn Swallow Black capped Chickadee American Robin Gray Catbird Yellow Warbler Savannah Sparrow Song Sparrow Red winged Blackbird Brown headed Cowbird American Goldfinch
43	0333435E 4678741N	Huron Church north of Cousineau Road	Jun 9	*Zenaida macroura* *Colaptes auratus* *Sturnus vulgaris* *Melospiza melodia* *Agelaius phoeniceus* *Carduelis tristis* *Passer domesticus*	Mourning Dove Northern Flicker European Starling Song Sparrow Red winged Blackbird American Goldfinch House Sparrow	Jun 23	*Charadrius vociferus* *Zenaida macroura* *Stelgidopteryx serripennis* *Hirundo rustica* *Melospiza melodia* *Agelaius phoeniceus* *Carduelis tristis*	Killdeer Mourning Dove Northern Rough winged Swallow Barn Swallow Song Sparrow Red winged Blackbird American Goldfinch
44	0332450E 4679410N	St. Clair College ESA	Jun 13	*Zenaida macroura* *Turdus migratorius* *Bombycilla cedrorum* *Melospiza melodia* *Cardinalis cardinalis* *Quiscalus quiscula* *Molothrus ater* *Carpodacus mexicanus* *Carduelis tristis* *Passer domesticus*	Mourning Dove American Robin Cedar Waxwing Song Sparrow Northern Cardinal Common Grackle Brown headed Cowbird House Finch American Goldfinch House Sparrow	Jun 22	*Zenaida macroura* *Hirundo rustica* *Turdus migratorius* *Sturnus vulgaris* *Spizella passerina* *Cardinalis cardinalis* *Quiscalus quiscula* *Molothrus ater* *Carpodacus mexicanus* *Carduelis tristis* *Passer domesticus*	Mourning Dove Barn Swallow American Robin European Starling Chipping Sparrow Northern Cardinal Common Grackle Brown headed Cowbird House Finch American Goldfinch House Sparrow

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
45	0333225E 4679040N	St. Clair College ESA	Jun 13	*Anas platyrhynchos*	Mallard	Jun 22	*Anas platyrhynchos*	Mallard
				Picoides pubescens	Downy Woodpecker		*Zenaida macroura*	Mourning Dove
				Colaptes auratus	Northern Flicker		*Picoides pubescens*	Downy Woodpecker
				Contopus virens	Eastern Wood Pewee		*Colaptes auratus*	Northern Flicker
				Vireo olivaceus	Red eyed Vireo		*Vireo olivaceus*	Red eyed Vireo
				Turdus migratorius	American Robin		*Stelgidopteryx serripennis*	Northern Rough winged Swallow
				Dumetella carolinensis	Gray Catbird		*Hirundo rustica*	Barn Swallow
				Sturnus vulgaris	European Starling		*Troglodytes aedon*	House Wren
				Dendroica petechia	Yellow Warbler		*Turdus migratorius*	American Robin
				Geothlypis trichas	Common Yellowthroat		*Dumetella carolinensis*	Gray Catbird
				Spizella passerina	Chipping Sparrow		*Sturnus vulgaris*	European Starling
				Melospiza melodia	Song Sparrow		*Bombycilla cedrorum*	Cedar Waxwing
				Cardinalis cardinalis	Northern Cardinal		*Dendroica petechia*	Yellow Warbler
				Passerina cyanea	Indigo Bunting		*Spizella passerina*	Chipping Sparrow
				Agelaius phoeniceus	Red winged Blackbird		*Spizella pusilla*	Field Sparrow
				Molothrus ater	Brown headed Cowbird		*Melospiza melodia*	Song Sparrow
				Carduelis tristis	American Goldfinch		*Cardinalis cardinalis*	Northern Cardinal
				Passer domesticus	House Sparrow		*Passerina cyanea*	Indigo Bunting
							Agelaius phoeniceus	Red winged Blackbird
							Quiscalus quiscula	Common Grackle
							Molothrus ater	Brown headed Cowbird
							Icterus galbula	Baltimore Oriole
							Carduelis tristis	American Goldfinch
							Passer domesticus	House Sparrow

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Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
46	0334535E 4678090N	Montgomery Drive at Talbot Road	Jun 13	*Zenaida macroura* *Cyanocitta cristata* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Spizella passerina* *Cardinalis cardinalis* *Quiscalus quiscula* *Molothrus ater* *Passer domesticus*	Mourning Dove Blue Jay Carolina Wren House Wren American Robin European Starling Cedar Waxwing Yellow Warbler Chipping Sparrow Northern Cardinal Common Grackle Brown headed Cowbird House Sparrow	Jun 23	*Zenaida macroura* *Picoides pubescens* *Cyanocitta cristata* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Spizella passerina* *Cardinalis cardinalis* *Quiscalus quiscula* *Carduelis tristis* *Passer domesticus*	Mourning Dove Downy Woodpecker Blue Jay Carolina Wren House Wren American Robin European Starling Chipping Sparrow Northern Cardinal Common Grackle American Goldfinch House Sparrow
47	0335150E 4677610N	Howard Avenue at Talbot Road	Jun 13	*Zenaida macroura* *Cyanocitta cristata* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Cardinalis cardinalis* *Agelaius phoeniceus* *Quiscalus quiscula* *Passer domesticus*	Mourning Dove Blue Jay House Wren American Robin European Starling Cedar Waxwing Northern Cardinal Red winged Blackbird Common Grackle House Sparrow	Jun 24	*Zenaida macroura* *Picoides pubescens* *Turdus migratorius* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater* *Passer domesticus*	Mourning Dove Downy Woodpecker American Robin Red winged Blackbird Common Grackle Brown headed Cowbird House Sparrow
48	0335560E 4677615N	Highway 401 and Talbot Road	Jun 13	*Zenaida macroura* *Empidonax traillii* *Troglodytes aedon* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Carduelis tristis*	Mourning Dove Willow Flycatcher House Wren Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird American Goldfinch	Jun 22	*Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus* *Carduelis tristis* *Passer domesticus*	Cedar Waxwing Yellow Warbler Song Sparrow Red winged Blackbird American Goldfinch House Sparrow

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Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
49	0335700E 4677560N	Highway 401 and Talbot Road	Jun 13	*Charadrius vociferus* *Zenaida macroura* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus* *Quiscalus quiscula* *Molothrus ater* *Carduelis tristis*	Killdeer Mourning Dove American Robin Gray Catbird European Starling Yellow Warbler Song Sparrow Red winged Blackbird Common Grackle Brown headed Cowbird American Goldfinch	Jun 22	*Branta canadensis* *Anas platyrhynchos* *Charadrius vociferus* *Zenaida macroura* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Agelaius phoeniceus* *Quiscalus quiscula* *Carduelis tristis*	Canada Goose Mallard Killdeer Mourning Dove American Robin European Starling Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Indigo Bunting Red winged Blackbird Common Grackle American Goldfinch
50	0336070E 4677385N	Highway 401 and Talbot Road	Jun 12	*Anas platyrhynchos* *Charadrius vociferus* *Actitis macularius* *Eremophila alpestris* *Turdus migratorius* *Passerculus sandwichensis* *Passer domesticus*	Mallard Killdeer Spotted Sandpiper Horned Lark American Robin Savannah Sparrow House Sparrow	Jun 24	*Anas platyrhynchos* *Ardea alba* *Charadrius vociferus* *Zenaida macroura* *Eremophila alpestris* *Sturnus vulgaris* *Passerculus sandwichensis* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Passer domesticus*	Mallard Great Egret Killdeer Mourning Dove Horned Lark European Starling Savannah Sparrow Song Sparrow Northern Cardinal Red winged Blackbird Brown headed Cowbird House Sparrow

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
51	0335677E 4677070N	Highway 401 and Talbot Road	Jun 12	*Charadrius vociferus* *Zenaida macroura* *Tyrannus tyrannus* *Eremophila alpestris* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Carduelis tristis*	Killdeer Mourning Dove Eastern Kingbird Horned Lark American Robin Gray Catbird Cedar Waxwing Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird Brown headed Cowbird American Goldfinch	Jun 24	*Charadrius vociferus* *Zenaida macroura* *Tyrannus tyrannus* *Eremophila alpestris* *Turdus migratorius* *Dumetella carolinensis* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Carduelis tristis*	Killdeer Mourning Dove Eastern Kingbird Horned Lark American Robin Gray Catbird Song Sparrow Northern Cardinal Red winged Blackbird Brown headed Cowbird American Goldfinch
52	0335503E 4676542N	Highway 401 and Talbot Road	Jun 12	*Buteo jamaicensis* *Charadrius vociferus* *Picoides pubescens* *Cyanocitta cristata* *Eremophila alpestris* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Toxostoma rufum* *Sturnus vulgaris* *Pipilo erythrophthalmus* *Pooecetes gramineus* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Quiscalus quiscula* *Molothrus ater* *Carduelis tristis* *Passer domesticus*	Red tailed Hawk Killdeer Downy Woodpecker Blue Jay Horned Lark House Wren American Robin Gray Catbird Brown Thrasher European Starling Eastern Towhee Vesper Sparrow Song Sparrow Northern Cardinal Indigo Bunting Common Grackle Brown headed Cowbird American Goldfinch House Sparrow	Jun 24	*Eremophila alpestris* *Hirundo rustica* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Pooecetes gramineus* *Passerculus sandwichensis* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Agelaius phoeniceus* *Quiscalus quiscula* *Icterus galbula* *Passer domesticus*	Horned Lark Barn Swallow American Robin Gray Catbird European Starling Vesper Sparrow Savannah Sparrow Song Sparrow Northern Cardinal Indigo Bunting Red winged Blackbird Common Grackle Baltimore Oriole House Sparrow

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
53	0336544E 4677424N	Highway 401 and Talbot Road	Jun 13	*Zenaida macroura* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Spizella passerina* *Agelaius phoeniceus* *Quiscalus quiscula* *Carduelis tristis* *Passer domesticus*	Mourning Dove American Robin European Starling Cedar Waxwing Chipping Sparrow Red winged Blackbird Common Grackle American Goldfinch House Sparrow	Jun 24	*Turdus migratorius* *Sturnus vulgaris* *Spizella passerina* *Passerculus sandwichensis* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Quiscalus quiscula* *Molothrus ater* *Carpodacus mexicanus* *Carduelis tristis* *Passer domesticus*	American Robin European Starling Chipping Sparrow Savannah Sparrow Song Sparrow Northern Cardinal Indigo Bunting Common Grackle Brown headed Cowbird House Finch American Goldfinch House Sparrow
54	0336709E 4677960N	Highway 401 and Talbot Road	Jun 13	*Charadrius vociferus* *Actitis macularius* *Sturnus vulgaris* *Agelaius phoeniceus* *Quiscalus quiscula* *Passer domesticus*	Killdeer Spotted Sandpiper European Starling Red winged Blackbird Common Grackle House Sparrow	Jun 24	*Charadrius vociferus* *Columba livia* *Zenaida macroura* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Melospiza melodia* *Agelaius phoeniceus* *Quiscalus quiscula* *Carduelis tristis* *Passer domesticus*	Killdeer Rock Pigeon Mourning Dove American Robin European Starling Cedar Waxwing Song Sparrow Red winged Blackbird Common Grackle American Goldfinch House Sparrow
55	0327740E 4683580N	Brighton Beach area / Prospect Avenue	Jun 14	*Charadrius vociferus* *Tyrannus tyrannus* *Vireo gilvus* *Hirundo rustica* *Turdus migratorius* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus* *Passer domesticus*	Killdeer Eastern Kingbird Warbling Vireo Barn Swallow American Robin Yellow Warbler Song Sparrow Red winged Blackbird House Sparrow	Jun 24	*Tyrannus tyrannus* *Vireo gilvus* *Hirundo rustica* *Turdus migratorius* *Dendroica petechia* *Melospiza melodia* *Agelaius phoeniceus*	Eastern Kingbird Warbling Vireo Barn Swallow American Robin Yellow Warbler Song Sparrow Red winged Blackbird

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
56	0328260E 4684385N	Brighton Beach area / Russell Drive	Jun 14	*Picoides pubescens* *Vireo olivaceus* *Thryothorus ludovicianus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Bombycilla cedrorum* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Molothrus ater* *Icterus galbula* *Passer domesticus*	Downy Woodpecker Red eyed Vireo Carolina Wren House Wren American Robin Gray Catbird European Starling Cedar Waxwing Song Sparrow Northern Cardinal Indigo Bunting Brown headed Cowbird Baltimore Oriole House Sparrow	Jun 24	*Accipiter cooperii* *Columba livia* *Zenaida macroura* *Vireo olivaceus* *Cyanocitta cristata* *Troglodytes aedon* *Turdus migratorius* *Sturnus vulgaris* *Bombycilla cedrorum* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Passer domesticus*	Cooper's Hawk Rock Pigeon Mourning Dove Red eyed Vireo Blue Jay House Wren American Robin European Starling Cedar Waxwing Song Sparrow Northern Cardinal Indigo Bunting House Sparrow
57	0329565E 4682340N	Malden Park	Jun 14	*Vireo gilvus* *Turdus migratorius* *Dumetella carolinensis* *Sturnus vulgaris* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Carduelis tristis*	Warbling Vireo American Robin Gray Catbird European Starling Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird American Goldfinch	Jun 29	*Vireo gilvus* *Troglodytes aedon* *Turdus migratorius* *Dumetella carolinensis* *Dendroica petechia* *Melospiza melodia* *Cardinalis cardinalis* *Agelaius phoeniceus* *Molothrus ater* *Carduelis tristis*	Warbling Vireo House Wren American Robin Gray Catbird Yellow Warbler Song Sparrow Northern Cardinal Red winged Blackbird Brown headed Cowbird American Goldfinch

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RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
58	0329975E 4682225N	Malden Park	Jun 14	*Zenaida macroura* *Picoides pubescens* *Contopus virens* *Tyrannus tyrannus* *Vireo gilvus* *Cyanocitta cristata* *Turdus migratorius* *Bombycilla cedrorum* *Dendroica petechia* *Spizella passerina* *Passerina cyanea* *Agelaius phoeniceus* *Molothrus ater* *Icterus galbula* *Carduelis tristis*	Mourning Dove Downy Woodpecker Eastern Wood Pewee Eastern Kingbird Warbling Vireo Blue Jay American Robin Cedar Waxwing Yellow Warbler Chipping Sparrow Indigo Bunting Red winged Blackbird Brown headed Cowbird Baltimore Oriole American Goldfinch	Jun 29	*Picoides pubescens* *Colaptes auratus* *Contopus virens* *Tyrannus tyrannus* *Vireo gilvus* *Stelgidopteryx serripennis* *Turdus migratorius* *Dumetella carolinensis* *Bombycilla cedrorum* *Dendroica petechia* *Geothlypis trichas* *Melospiza melodia* *Cardinalis cardinalis* *Passerina cyanea* *Molothrus ater* *Icterus spurius* *Icterus galbula* *Carduelis tristis*	Downy Woodpecker Northern Flicker Eastern Wood Pewee Eastern Kingbird Warbling Vireo Northern Rough winged Swallow American Robin Gray Catbird Cedar Waxwing Yellow Warbler Common Yellowthroat Song Sparrow Northern Cardinal Indigo Bunting Brown headed Cowbird Orchard Oriole Baltimore Oriole American Goldfinch
59	0328635E 4682425N	Yawkey / Ojibway and EC Row	Jun 13	*Buteo jamaicensis* *Tyrannus tyrannus* *Turdus migratorius* *Sturnus vulgaris* *Dendroica petechia* *Geothlypis trichas* *Melospiza melodia* *Agelaius phoeniceus* *Carduelis tristis*	Red tailed Hawk Eastern Kingbird American Robin European Starling Yellow Warbler Common Yellowthroat Song Sparrow Red winged Blackbird American Goldfinch	Jun 29	*Buteo jamaicensis* *Zenaida macroura* *Tyrannus tyrannus* *Turdus migratorius* *Bombycilla cedrorum* *Dendroica petechia* *Geothlypis trichas* *Melospiza melodia* *Passerina cyanea* *Agelaius phoeniceus* *Molothrus ater* *Carpodacus mexicanus* *Carduelis tristis* *Passer domesticus*	Red tailed Hawk Mourning Dove Eastern Kingbird American Robin Cedar Waxwing Yellow Warbler Common Yellowthroat Song Sparrow Indigo Bunting Red winged Blackbird Brown headed Cowbird House Finch American Goldfinch House Sparrow

APPENDIX H
RESULTS OF BIRD POINT COUNT SURVEYS

Site #	UTM's	Location	Date (2006)	Species	Common Name	Date (2006)	Species	Common Name
60	0328430E 4682450N	Yawkey / Ojibway and EC Row	Jun 13	*Picoides pubescens*	Downy Woodpecker	Jun 29	*Picoides pubescens*	Downy Woodpecker
				Empidonax traillii	Willow Flycatcher		*Empidonax traillii*	Willow Flycatcher
				Tyrannus tyrannus	Eastern Kingbird		*Vireo gilvus*	Warbling Vireo
				Vireo gilvus	Warbling Vireo		*Thryothorus ludovicianus*	Carolina Wren
				Thryothorus ludovicianus	Carolina Wren		*Turdus migratorius*	American Robin
				Turdus migratorius	American Robin		*Dumetella carolinensis*	Gray Catbird
				Dumetella carolinensis	Gray Catbird		*Sturnus vulgaris*	European Starling
				Dendroica petechia	Yellow Warbler		*Cardinalis cardinalis*	Northern Cardinal
				Melospiza melodia	Song Sparrow		*Agelaius phoeniceus*	Red winged Blackbird
				Agelaius phoeniceus	Red winged Blackbird		*Molothrus ater*	Brown headed Cowbird
				Passer domesticus	House Sparrow		*Passer domesticus*	House Sparrow

Bold denotes verified breeding (species observed at both visits)

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WILDLIFE HABITAT ASSESSMENT SUMMARY

Reference Number	Location	Habitats (ELC's)	Significant Wildlife Habitat				Comments
			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-BBA1	Brighton Beach Area	CUM	• No evidence	• No areas that would contain wildlife uncommon or rare	• Unable to verify	• Unable to confirm mammal corridors	• Not able to verify – no access to property
W-BBA2	Brighton Beach Area	FOD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• Unable to verify	• Unable to confirm mammal corridors • Small part of larger north-south bird migration corridor	• Not able to verify – no access to property
W-BBA3	Brighton Beach Area	FOD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• Cooper's Hawk	• Unable to confirm mammal corridors	• Not able to verify if Cooper's Hawk nesting or other wildlife species present – no access to property
W-BBA4	Brighton Beach Area	CUW	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• Cooper's Hawk • Gray Catbird	• East-west mammal corridor s connecting residences on east side to factory property on west side • Small part of migration corridor along Detroit River for migrating birds	• Red Fox pups observed on factory property, opposite CUW, along tree row at south end of factory • Cooper's Hawk, although observed in CUW, not nesting there
W-BBA5	Brighton Beach Area	CUW	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• mammal corridors connecting CUW with surrounding industrial property • Small part of migration corridor along Detroit River for migrating birds	• Human adapted wildlife in area
W-BBA6	Brighton Beach Area	MAM	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west mammal corridor from MAM to factory property west of Ojibway Parkway at south end of Russell Street	• Human adapted wildlife in area
W-BBA7	Brighton Beach Area	CUW	• Unable to verify	• Unable to verify	• Unable to verify	• Unable to verify	• Not able to verify – no access to property
W-BBA8	Brighton Beach Area	CUM	• Land bird migratory stopover area	• Habitat for breeding birds of conservation concern	• Eastern Kingbird	• Unable to verify	• Few observations made from outside fenced-in property
W-BBA9	Brighton Beach Area	CUS	• Land bird migratory stopover area	• Grasslands and forest in area	• Carolina Wren • Gray Catbird • American Goldfinch	• North-south corridor for red fox, raccoon, skunk and white-tailed deer moving through CUS. • One section of a larger bird migration corridor that extends north-south along east side of Detroit River	• Numerous species of wildlife use the area for feeding • Red fox den located on Ontario Hydro property just north of BBA9 • Brown snakes located in open area along north edge of FOD • Large number of migratory bird nests
WBBA10	Brighton Beach Area	CUW	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal movement corridor along north forest edge • Small part of migration corridor along Detroit River for migrating birds	• Foraging area for birds and mammals
WBBA11	Brighton Beach Area	CUS	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal movement corridors along roadsides and through CUS • Small part of migration corridor along Detroit River for migrating birds	• Foraging area for birds and mammals
WBBA12	Brighton Beach Area	CUM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal movement corridors along roadsides and through CUM • Small part of migration corridor along Detroit River for migrating birds	• Foraging area for birds and mammals

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WILDLIFE HABITAT ASSESSMENT SUMMARY

Reference Number	Location	Habitats (ELC's)	Significant Wildlife Habitat				Comments
			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
WBBA13	Brighton Beach Area	CUS	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare • Habitat for breeding birds of conservation concern	• Gray Catbird	• Mammal movement corridors along roadsides and through CUM • Small part of migration corridor along Detroit River for migrating birds	• Foraging area for birds and mammals • Deer bedding area in southeast corner
WBBA14	Brighton Beach Area	CUM	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Some evidence of north-south mammal movement corridors through CUM	• Other than white-tailed deer and some small mammal activity, this area has limited amounts of wildlife due to its proximity to the highway
WBBA15	Brighton Beach Area	CUS	• Land bird migratory stopover area	• Nno areas that would contain wildlife uncommon or rare • No forested areas	• No species of conservation concern were recorded	• North-south corridor for red fox, raccoon, skunk and white-tailed deer moving through CUM • Small part of migration corridor along Detroit River for migrating birds.	• Feeding zone for migrating birds.
WBBA16	Brighton Beach Area	FOD	• Land bird migratory stopover area • Potential winter deer yard • Amphibian breeding ponds in spring	• Forest contains trees with numerous nest cavities deadfalls for breeding birds and mammals • Pond inside forest for breeding amphibians	• American Goldfinch • Carolina Wren • Gray Catbird	• Mammal corridors for white-tailed deer, red fox, raccoon, and skunk • One section of a larger bird migration corridor that extends north-south along east side of Detroit River	• Breeding area for many species of migratory birds • Amphibian breeding pond inside forest
WBBA17	Brighton Beach Area	CUM, TPO	• Land bird migratory stopover area	• Habitat for breeding birds of conservation concern	• Brown Thrasher • American Goldfinch	• East-west corridor for red fox, raccoon and white-tailed deer moving along south side of CUM • Small part of migration corridor along Detroit River for migrating birds.	• Feeding zone for migrating birds • Brown snake and red-bellied snake located along roadside at west end of CUM
WBBA18	Brighton Beach Area	CUT	• Land bird migratory stopover area	• Habitat for breeding birds of conservation concern	• Gray Catbird • American Goldfinch • Carolina Wren	• Mammal corridors for white-tailed deer, red fox, raccoon, and skunk • Small part of migration corridor along Detroit River for migrating birds	• Breeding area for migratory birds
WBBA19	Brighton Beach Area	CUM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• no species of conservation concern were recorded	• White-tailed deer corridor along northeast side of CUM • Coyote, fox and raccoon corridor along roadway on east side of CUM	• Green frogs in ditches along north edge of CUM
WBBA20	Brighton Beach Area	CUM	• Land bird migratory stopover area	• Lots of fall seed plants for passerine migrants to forage on	• Gray Catbird • American Goldfinch	• East-west mammal movement corridors along north and south sides of CUM • Small part of migration corridor along Detroit River for migrating birds	• Fall season foraging area for migrating birds
WBBA21	Brighton Beach Area	CUW	• Potential land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• Not able to verify – no access to property	• Unable to confirm mammal corridors	• Not able to verify – no access to property

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WILDLIFE HABITAT ASSESSMENT SUMMARY

Reference Number	Location	Habitats (ELC's)	Significant Wildlife Habitat				Comments
			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-ANS1	ANSI south of Broadway St	TPW	• Land bird migratory stopover area • Summer white-tailed deer bedding areas • Potential winter deer yard	• Habitat for breeding birds of conservation concern • Forest contains trees with numerous nest cavities for breeding birds and mammals	• American Goldfinch • Gray Catbird • Red-headed Woodpecker	• Mammal corridors throughout ANSI for white-tailed deer, raccoon, red fox, coyote, striped skunk and opossum. • Small part of larger north-south bird migration corridor	• ANSI • Deer bedding area • Red-headed Woodpecker is SARA species
W-YWK1	Yawkey	CUM	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west mammal corridor through center of CUM	• This area has limited amounts of wildlife due to its proximity to the highway
W-YWK2	Yawkey	CUW	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west mammal corridors through CUW • Small part of larger north-south bird migration corridor	• This area has limited amounts of wildlife due to its proximity to the highway and human disturbance
W-YWK3	Yawkey	CUM	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• North-south mammal corridors through CUM	• This area has limited amounts of wildlife due to its proximity to the highway and human disturbance
W-YWK4	Yawkey	MAS	• No evidence	• Habitat for breeding birds of conservation concern	• Gray Catbird	• North-south mammal corridors through CUM • Small part of larger north-south bird migration corridor	• This area has limited amounts of wildlife due to its proximity to the highway and human disturbance
W-YWK5	Yawkey	CUW	• Land bird migratory stopover area	• Habitat for breeding birds of conservation concern	• American Goldfinch • Gray Catbird	• Numerous north-south mammal corridors from residences to CUW, through to ANSI • Small part of larger north-south bird migration corridor	• Garter snakes found in north end of CUW • Although it is surrounded by human disturbances, it offers good habitat for foraging and nesting
W-YWK6	Yawkey	CUW	• Land bird migratory stopover area	• Habitat for breeding birds of conservation concern	• Red-tailed Hawk	• East-west mammal corridors through CUW • Small part of larger north-south bird migration corridor	• Active Red-tailed Hawk nest in woodlot
W-YWK7	Yawkey	CUM	• Land bird migratory stopover area	• Habitat for breeding birds of conservation concern	• American Goldfinch • Eastern Kingbird	• White-tailed deer and coyote corridor along east-west ridge on north side of CUM • Small part of larger north-south bird migration corridor	• Minimal wildlife due to landfill site adjacent to CUM
W-YWK8	Yawkey	MAM	• Land bird migratory stopover area	• Habitat for breeding birds of conservation concern	• American Goldfinch • Eastern Kingbird	• Mammal corridors along ditch area in marsh parallel to EC Row Expressway • Small part of larger north-south bird migration corridor	• Chain-link fence on north side parallel to EC Row Expressway and Ojibway Parkway intersection limits movement of mammals north-south
W-CH1	Chappus Street Area	CUM	• Potential snake hibernaculum	• Habitat suitable for breeding birds of conservation concern and snakes	• Spotted Sandpiper	• East-west mammal corridors connecting Matchette Road west to CUW east • Small part of larger north-south bird migration corridor	• Possible garter snake hibernaculum at west end of CUM under tree

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WILDLIFE HABITAT ASSESSMENT SUMMARY

Reference Number	Location	Habitats (ELC's)	Significant Wildlife Habitat				Comments
			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-CH2	Chappus Street Area	FOD, CUW, CUS	• Land bird migratory stopover area • Amphibian breeding areas in creek drains	• Habitat suitable for breeding birds of conservation concern • Temporary creek drains	• Carolina Wren • Eastern Towhee • Gray Catbird • Spotted Sandpiper	• Large continuous corridor of mammal trails extending from Matchete Road and EC Row Expressway in the northwest to Malden Road and Spring Garden Road in the southeast • Small part of larger north-south bird migration corridor	• Creeks running east-west and north-south through center of corridor were breeding areas for American Toad, leopard frog and green frog. • Potential Cooper's Hawk nesting site in CUW at south end of corridor (pair very active in spring around previous nest site).
W-CH3	Chappus Street Area	TPO	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Minor mammal corridors east-west	• White-tailed deer bedding areas around the CUT 's in the TPO area • no movement of mammals north due to chain-linked fence along EC Row Expressway
W-CH4	Chappus Street Area	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Gray Catbird • Ruby-throated Hummingbird	• Mammal corridors connecting surrounding CUW's and CUT's • Small part of larger north-south bird migration corridor	• Human influenced by motorbike trails throughout the area • Creek drain flows parallel to south side of CUT
W-CH5	Chappus Street Area	CUT	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• No evidence	•
W-CH6	Chappus Street Area	CUP	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• no evidence	•
W-CH7	Chappus Street Area	CUW, SWD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west mammal corridor along north side of CUW1 and SWD parallel to fence line • Small part of larger north-south bird migration corridor continuous with Malden Park Forest on north side of EC Row Expressway	• No mammal corridors going north due to chain-linked fence along EC Row Expressway
W-CH8	Chappus Street Area	CUM	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Gray Catbird	• East-west mammal corridor connecting CUW on the west side to residences on the east side • Small part of larger north-south bird migration corridor	•
W-CH9	Chappus Street Area	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird	• Mammal corridors connecting two CUW's on east and west sides • Small part of larger north-south bird migration corridor	• Good area for breeding birds to nest
W-CH10	Chappus Street Area	TPO	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern • Habitat suitable for snakes protected by SARA	• Butler's Garter Snake • Field Sparrow	• White-tailed deer, coyote and raccoon corridors connecting CUS and CUT north of area to CUT and CUW south and east of area • Small part of larger north-south bird migration corridor	• Butler's Garter Snake is a SARA species • It was only found in the TPO's of this section of the AOI.

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WILDLIFE HABITAT ASSESSMENT SUMMARY

Reference Number	Location	Habitats (ELC's)	Significant Wildlife Habitat				Comments
			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-CH11	Chappus Street Area	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Eastern Towhee • Field Sparrow • Gray Catbird	• Mammal corridors east-west through CUT and north-south connecting TPO with CUW1 • Small part of larger north-south bird migration corridor	•
W-CH12	Chappus Street Area	CUM	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern and snakes	• American Goldfinch • Carolina Wren	• Mammal and snake corridors connecting area toCUW1 and creek drain in center and CUW1 on south, east and west sides • Small part of larger north-south bird migration corridor	• Garter snakes and Brown snakes inhabit area • Mammals adapted to human activity using walking trails and 4x4 vehicle trails as corridors
W-CH13	Chappus Street Area	CUT	• Land bird migratory stopover area	• habitat for breeding birds of conservation concern	• American Goldfinch • Carolina Wren • Eastern Phoebe • Gray Catbird	• White-tailed deer, coyote and raccoon corridors connecting CUT and FOD north and south of area • Continuation of snake corridors in TPO • Small part of larger north-south bird migration corridor	• Habitat connection with TPO that contains Butler's Garter Snake • White-tailed deer beds in east end of area
W-CH14	Chappus Street Area	TPO	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern • Habitat suitable for snakes protected by SARA	• Butler's Garter Snake • American Goldfinch • Field Sparrow	• White-tailed deer, coyote and raccoon corridors connecting FOD and CUT north and south of area • Small part of larger north-south bird migration corridor	• Butler's Garter Snake is a SARA species • It was only found in the TPO's of this section of the AOI.
W-CH15	Chappus Street Area	FOD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• No evidence	• Human influenced area
W-CH16	Chappus Street Area	CUT	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Minor mammal corridors between FOD's and residences • Small part of larger north-south bird migration corridor	• Human influenced area
W-CH17	Chappus Street Area	CUM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors connecting MAM on east side to CUT1 on south side • Small part of larger north-south bird migration corridor	•
W-CH18	Chappus Street Area	MAM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors connecting surrounding CUT's to CUM on east side • Small part of larger north-south bird migration corridor	•
W-CH19	Chappus Street Area	FOD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors connecting residence yards in south to MAM and FOD in north • Small part of larger north-south bird migration corridor	• Human influenced area

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			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-CH20	Chappus Street Area	MAM	• No evidence	• Habitat suitable for breeding birds of conservation concern	• American Woodcock	• East-west mammal corridors for white-tailed deer and raccoon connecting surrounding CUT, FOD, CUM and TPO areas. • Small part of larger north-south bird migration corridor	•
W-CH21	Chappus Street Area	TPO	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal and snake corridors connecting CUW on north side to residences and FOD on south side	• Lots of garter snakes in grassy areas • Reports by local residents that fox snakes are common in area although none were observed by LGL field personnel
W-CH22	Chappus Street Area	TPO	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west mammal corridors along north side of TPO connecting FOD on east side to residence back yards on west side	• Lots of human influence
W-CH23	Chappus Street Area	TPO	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors connecting surrounding CUW and FDO's • Small part of larger north-south bird migration corridor	• North-south creek drain on east side of TPO used by American toad, leopard frog and green frog for breeding
W-CH24	Chappus Street Area	CUT	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors north-south between creek drain on west side and CUT connecting CUW on north side to TPO and FOD on south side • Small part of larger north-south bird migration corridor	• North-south creek drain on west side of CUT1 used by American toad, leopard frog and green frog for breeding
W-CH25	Chappus Street Area	CUP	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors north-south connect CUW on north side to FOD on south side • Small part of larger north-south bird migration corridor	• Human influence in this area
W-CH26	Chappus Street Area	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Carolina Wren • Gray Catbird	• Mammal corridors north-south connect FOD to CUP • Small part of larger north-south bird migration corridor	•
W-CH27	Chappus Street Area	CUP	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors north-south connect CUP to residence back yards • Small part of larger north-south bird migration corridor	• Human influence in this area
W-NSG1	North of Spring Garden Road	CUS	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west corridors connecting FOD on east side with Malden Road on west side • Small part of larger north-south bird migration corridor	• Mammal movement north blocked by chain-linked fence along EC Row Expressway

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			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-NSG2	North of Spring Garden Road	FOD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west mammal corridors connecting CUM on east side with CUS on west side • Small part of larger north-south bird migration corridor	• Mammal movement north blocked by chain-linked fence along EC Row Expressway
W-NSG3	North of Spring Garden Road	CUM, TPO	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird	• Mammal corridors throughout CUM connecting FOD and SWD areas • Small part of larger north-south bird migration corridor	• Lots of white-tailed deer bedding areas at south end of CUM
W-NSG4	North of Spring Garden Road	SWD	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Carolina Wren • Cooper's Hawk • Gray Catbird	• Mammal corridors connecting CUM north to residence back yards south and FOD on east side • Small part of larger north-south bird migration corridor	• Cooper's Hawk possibly nesting in area
W-NSG5	North of Spring Garden Road	FOD, CUW	• Land bird migratory stopover area • Amphibian breeding ponds in forest	• Habitat suitable for breeding birds of conservation concern • Vernal ponds in forest	• Carolina Wren • Gray Catbird	• Mammal corridors east-west through forest connecting CUT on east side to CUM on west side • Small part of larger north-south bird migration corridor	• Cooper's Hawk possibly nesting in area • Vernal ponds in west end of forest with breeding chorus frogs • North movements impeded by chain-linked fence along EC Row Expressway • Lots of white-tailed deer trails going east-west through FOD at south end
W-NSG6	North of Spring Garden Road	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Gray Catbird	• Mammal corridors east-west through CUT connecting FOD's on each side • Small part of larger north-south bird migration corridor	•
W-NSG7	North of Spring Garden Road	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Eastern Towhee • Gray Catbird	• Lots of white-tailed deer trails running east-west through CUT connecting FOD on west side to CUT on east side • Small part of larger north-south bird migration corridor	• North movements impeded by chain-linked fence along EC Row Expressway • Lots of breeding bird nests (old and new) found in CUT
W-NSG8	North of Spring Garden Road	CUW	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird	• East-west mammal corridors connecting CUW to resident backyards and CUT on east and south sides • Small part of larger north-south bird migration corridor	• Huron Church Road is partial barrier to east side mammal movements
W-NSG9	North of Spring Garden Road	CUW	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• No mammal corridors evident • Small part of larger north-south bird migration corridor	• CUW surrounded by major highways making it unsuitable for mammals and herpetofauna

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			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-MAL1	Malden Park	MAM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridor east-west through MAM along fence row • Small part of larger north-south bird migration corridor	• South movements impeded by chain-linked fence along EC Row Expressway
W-MAL2	Malden Park	CUM	• No evidence	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch	• Mammal corridors east-west along park roadway plus north-south connections from FOD on north side to MAM on south side • Small part of larger north-south bird migration corridor	• Large portion of this habitat is manicured
W-MAL3	Malden Park	FOD	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird	• Mammal corridors connecting FOD to surrounding habitats • Small part of larger north-south bird migration corridor	• FOD is elevated and primarily a hillside forest
W-MAL4	Malden Park	CUS	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern and snakes	• American Goldfinch • Eastern Kingbird • Orchard Oriole • Rough-winged Swallow	• Mammal corridors east-west along park roadways connecting FOD to CUM • Small part of larger north-south bird migration corridor	• Brown Snakes migrating along east-west roadways in late September
W-MAL5	Malden Park	FOD	• Land bird migratory stopover area • Amphibian breeding ponds	• Habitat suitable for breeding birds of conservation concern • Vernal ponds for amphibians	• Gray Catbird	• Mammal corridors throughout woodlot connecting CUS1 on west side to CUS1 on east side of Malden Road • Small part of larger north-south bird migration corridor	• Pond in center of FOD • Chorus frogs using pond as breeding area in spring
W-MAL6	East of Malden Road	TPO	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Brown snake and garter snake corridors east-west through TPO	• Brown snakes and garter snake found under rock and boards
W-MAL7	East of Malden Road	CUS	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch	• Mammal corridors east-west connecting FOD on east side to FOD on west side across Malden Road • Small part of larger north-south bird migration corridor	• White-tailed deer beds found in center of CUS
W-MAL8	East of Malden Road	CUM	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch	• Mammal corridor connecting CUS to FOD on east-west sides • Small part of larger north-south bird migration corridor	•
W-MAL9	East of Malden Road	MAM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• No mammal corridor evidence • Small part of larger north-south bird migration corridor	• Brown snake and garter snake found on north edge of MAM
W-MAL10	East of Malden Road	CUM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• No corridor evidence	•

APPENDIX I
WILDLIFE HABITAT ASSESSMENT SUMMARY

Reference Number	Location	Habitats (ELC's)	Significant Wildlife Habitat				Comments
			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-MAL11	East of Malden Road	FOD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors connecting TPO on east side to CUM on west side • Small part of larger north-south bird migration corridor	•
W-MAL12	East of Malden Road	TPO	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors at south end connecting FOD to CUW	•
W-MAL13	East of Malden Road	CUW	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west mammal corridor connecting TPO to area along fence row of EC Row Expressway • Small part of larger north-south bird migration corridor	•
W-MAL14	East of Malden Road	CUW	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• No corridor movements evident	• Wildlife presence limited by highways completely surrounding the habitat.
WABO1	NE Quadrant of EC Row and Huron Church	CUW	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• No corridor movements evident	• Wildlife presence limited by highways completely surrounding the habitat.
W-LAM1	North of Lambton Street	TPO	• No evidence	• Grasslands around creek are suitable habitat for fox snake and garter snake • Habitat suitable for breeding birds of conservation concern	• Fox snake • Eastern Kingbird	• East-west snake and mammal corridors connecting creek on west side to CUW on east side • Mammal corridors connecting residence yards on north side with Spring Garden Park on south side	• Fox snake is a SARA species. • Bicycle trails along west and south sides of TPO
W-LAM2	North of Lambton Street	CUW	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Orchard Oriole • Red-bellied Woodpecker	• East-west snake and mammal corridors connecting creek on west side to CUW on east side • North-south snake and mammal corridors connecting creek along north side of CUW to Spring Garden Park on south side • Small part of larger north-south bird migration corridor	•
W-LAM3	North of Lambton Street	CUS	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridor on west side of CUS connecting CUW's on north and south sides	•
W-LAM4	North of Lambton Street	CUW	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird	• Small part of larger north-south bird migration corridor	• Area enclosed by residences and businesses limiting the type of wildlife to human adapted species
W-LAM5	North of Lambton Street	FOD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• East-west mammal corridors along forest edges • Small part of larger north-south bird migration corridor	•
W-LAM6	North of Lambton Street	CUM	• No evidence	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch	• North-south mammal corridors leading from CUM to FOD north and CUW south	• White-tailed deer beds in area • White-tailed deer feeding areas

APPENDIX I

WILDLIFE HABITAT ASSESSMENT SUMMARY

Reference Number	Location	Habitats (ELC's)	Significant Wildlife Habitat				Comments
			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-LAM7	North of Lambton Street	CUW	• Land bird migratory stopover area • Potential deer wintering yard	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird • Carolina Wren	• Numerous mammal corridors, especially of White-tailed deer, throughout woodlot • Small part of larger north-south bird migration corridor	• Deer beds found inside woodlot
W-LAM8	North of Lambton Street	CUM	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors from CUM to surrounding CUW	•
W-LAM9	North of Lambton Street	CUM	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors across CUM and into surrounding CUW	•
W-NGM1	North of Grand Marais Road	CUW	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• No corridor movements evident	• Area surrounded by heavy traffic
W-NGM2	North of Grand Marais Road	CUW	• No evidence	• No areas that would contain wildlife uncommon or rare	• American Goldfinch • Gray Catbird	• Mammal corridors throughout bush connecting to surrounding residences • Small part of larger north-south bird migration corridor	• Wildlife in area human influenced
W-TC1	Turkey Creek (Bridge and Creek Riparian)	Riparian	• Colonial bird breeding colony on Turkey Creek Bridge	• Habitat suitable for breeding birds of conservation concern • Habitat suitable for fox snakes	• Fox Snake	• No corridors observed	• Fox snakes observed along creek just west of Turkey Creek bridge • Fox snake is a SARA species • Cliff Swallow nesting colony on ceiling of bridge • Barn Swallow nesting colony on ceiling of bridge
W-RED1	North and South of Reddock Avenue	TPO	• No evidence	• Habitat suitable for breeding birds of conservation concern	• Eastern Kingbird	• Mammal corridors running north-south through TPO connecting CUT and SWD on south side to SWD and another TPO on north side • Snake corridors east-west and north-south through TPO	• White-tailed deer foraging zone • Garter snake foraging zone
W-RED2	North and South of Reddock Avenue	SWD, FOD, CUW	• Land bird migratory stopover area • Potential winter deer yard • Vernal ponds for breeding amphibians	• Habitat suitable for breeding birds of conservation concern • Habitat suitable for fox snakes • Vernal ponds	• Fox Snake • American Goldfinch • Carolina Wren • Gray Catbird	• Mammal corridors connecting SWD to surrounding TPO, residences to FOD and FOD to CUM on east side • Small part of larger north-south bird migration corridor	• White-tailed deer foraging zone • White-tailed deer using SWD at north end of unit in TPO area (RED-1) for beds • Chorus frog breeding ponds in woodlots • Fox snake is a SARA species (reported in residence backyard and verified by local biologists)
W-RED3	North and South of Reddock Avenue	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Eastern Kingbird	• Mammal corridors connecting TPO to SWD • Small part of larger north-south bird migration corridor	• White-tailed deer bedding area
W-RED4	North and South of Reddock Avenue	CUM	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors from CUM into SWD	•

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Reference Number	Location	Habitats (ELC's)	Significant Wildlife Habitat				Comments
			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-RED5	North and South of Reddock Avenue	CUW	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors connecting residence backyards on north side to CUT on south side • Small part of larger north-south bird migration corridor	•
W-RED6	North and South of Reddock Avenue	CUT	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors connecting CUW on north side to SWD on south side	•
W-RED7	North and South of Reddock Avenue	CUM	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Eastern Kingbird • Gray Catbird • Orchard Oriole	• East-west mammal corridors along north section of FOD	• White-tailed deer foraging area
W-RED8	North and South of Reddock Avenue	MAM	• Land bird migratory stopover area • Vernal pond in fragmite patch	• No areas that would contain wildlife uncommon or rare • Small pond in fragmite patch suitable for breeding amphibians	• No species of conservation concern were recorded	• Mammal corridors connecting area to surrounding CUM • Small part of larger north-south bird migration corridor	• No evidence of movements to the east because of Huron Church Road • Green frogs breeding in fragmite patch next to Huron Church Road
W-OAK1	Oakwood Bush	CUW, FOD	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Gray Catbird	• Mammal corridors connecting inside of woodlots to surrounding CUM's • North-south mammal corridor connecting Cabana Road area in south end to FOD at north end • Small part of larger north-south bird migration corridor	• Small creek drain east-west through center of CUW1
W-OAK2	Oakwood Bush	CUM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors connecting inside of forest to surrounding CUM • Small part of larger north-south bird migration corridor	•
W-HCL1	Between Huron Church Line and Huron Church Road	CUW	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors throughout CUW connecting to FOD on southeast side and surrounding residences • Small part of larger north-south bird migration corridor	• Human adapted wildlife found in this area
W-HCL2	Between Huron Church Line and Huron Church Road	FOD	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors throughout forest connect to CUT on east side and residences on north, west and south sides • Small part of larger north-south bird migration corridor	• Cahill Drain flows along south side of forest
W-HCL3	Between Huron Church Line and Huron Church Road	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Gray Catbird	• Mammal corridors connecting FOD on south side to MAM on north side and SWD on east side • Small part of larger north-south bird migration corridor	• Cahill Drain flows along south side of CUW • evidence mammals crossing from CUW to ESA on north side of Huron Church Road

APPENDIX I
WILDLIFE HABITAT ASSESSMENT SUMMARY

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			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-HCL4	Between Huron Church Line and Huron Church Road	MAM	• Land bird migratory stopover area	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors from MAM to CUT and SWD • Small part of larger north-south bird migration corridor	• Evidence that mammals crossing from MAM to ESA on north side of Huron Church Road
W-HCL5	Between Huron Church Line and Huron Church Road	SWD	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird	• Cahill Drain is a mammal corridor connecting W-ESA to W-HCL5	• Cahill Drain flows east–west through south side of SWD • Track and trail evidence showed muskrat, raccoon, red fox, coyote and white-tailed deer using Cahill Drain as a corridor year-round
W-HCL6	Between Huron Church Line and Huron Church Road	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch	• Cahill Drain is a mammal corridor connecting W-ESA to W-HCL6 • Snake corridors throughout center of CUT • Small part of larger north-south bird migration corridor	• Cahill Drain flows east–west along north side of CUT • Track and trail evidence showed muskrat, raccoon, red fox, coyote and white-tailed deer using Cahill Drain as a corridor year-round • Lots of eastern garter snakes foraging in grassy areas of CUT
W-HCL7	Between Huron Church Line and Huron Church Road	CUM	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Savannah Sparrow	• East-west mammal corridors connecting CUT to MAS and CUM to residences on south side • Small part of larger north-south bird migration corridor	• Entire CUM being cut in mid-June. Recommend not cutting until late July/early August when Savannah Sparrow young have fledged.
W-HCL8	Between Huron Church Line and Huron Church Road	MAS	• Land bird migratory stopover area • amphibian breeding pond	• No areas that would contain wildlife uncommon or rare • breeding pond/marsh habitat	• No species of conservation concern were recorded	• Mammal corridors connecting marsh to surrounding CUM • Small part of larger north-south bird migration corridor	• American toad and chorus frogs seasonal breeding area within 20 m of Talbot Road
W-ESA1	St. Clair College	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird	• Cahill Drain is a mammal corridor connecting W-ESA1 to W-HCL5 and W-HCL6 • Mammal corridors throughout CUT connecting it to St. Clair College and residences	• Lots of human influence throughout CUT from St. Clair College (jogging trails, aerobics fitness center)
W-HWY1	Highway 401	CUM	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch	• Mammal corridors connecting CUW east to residences west. • Mammal corridors connecting CUM to agricultural areas south and east.	• Foraging zone for migratory land birds during spring and fall migrations.
W-HWY2	Highway 401	CUS	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Gray Catbird	• Mammal corridors connecting CUS to surrounding agricultural lands and CUM • Small part of larger north-south bird migration corridor	• White-tailed deer foraging and bedding area
W-HWY3	Highway 401	CUW	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Eastern Kingbird • Gray Catbird	• Mammal corridors north-south through CUW rows giving protection and access to surrounding habitats	• Tree rows next to open fields used for nesting
W-HWY4	Highway 401	OAO	• Land bird migratory stopover area	• No evidence	• No species of conservation concern were recorded	• Mammal corridors to and from pond continuous with surrounding tree rows	• Green frog breeding pond

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			Seasonal Concentration of Animals[1]	Rare Vegetation Communities[2] or Specialized Habitats to Wildlife[3]	Species of Conservation Concern[4]	Animal Movement Corridors[5]	
W-HWY5	Highway 401	CUT	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• Gray Catbird	• Mammal corridors along creek through woodlot and in ditches connecting both sides of Talbot Road and agricultural fields. • Small part of larger north-south bird migration corridor	• Thicket and creek combination is excellent habitat containing species such as Brown Thrasher, Song Sparrow, Northern Cardinal, Indigo Bunting
W-HWY6	Highway 401	CUM1-1	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch	• Mammal corridors in creek drain along north side of cemetery	• Human influenced wildlife present
W-AGR1	Outer Drive	Agricultural	• Land bird migratory stopover area	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Horned Lark • Savannah Sparrow	• Mammal corridors along field edges next to CUT and creek drains	• Abandoned fields from previous season are excellent nesting areas for bird species such as Killdeer, Horned Lark and Vesper Sparrow. • Feeding area for geese, doves, blackbirds, etc.
W-AGR2	Outer Drive	Agricultural	• No evidence	• No areas that would contain wildlife uncommon or rare	• no species of conservation concern were recorded	• Mammal corridors along field edges next to CUT and creek drains	• Field edges next to drain were nesting areas for geese and ducks
W-AGR3	Outer Drive	Agricultural	• No evidence	• No areas that would contain wildlife uncommon or rare	• No species of conservation concern were recorded	• Mammal corridors along field edges next to CUT and creek drains	• Abandoned fields from previous season are excellent nesting areas for bird species
W-AGR4	South Talbot Road east of Outer Drive	Agricultural	• No evidence	• Habitat suitable for breeding birds of conservation concern	• Horned Lark • Vesper Sparrow	• Mammal corridors along field edges connecting to CUT and creek within	• Abandoned fields from previous season are excellent nesting areas for bird species
W-RES1	Montgomery Drive	Urban	• No evidence	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Carolina Wren	• Mammal movements in and around residences	• Wildlife adapted to human presence (bird feeders, human structures for dwellings and surrounding woodlots as suitable nesting areas for migratory birds) • Mammals, such as eastern cottontails, forage on residence lawns.
W-RES2	Chelsea Drive	Urban	• No evidence	• Habitat suitable for breeding birds of conservation concern	• American Goldfinch • Carolina Wren	• Mammal movements in and around residences	• Wildlife adapted to human presence (bird feeders, human structures for dwellings and surrounding woodlots as suitable nesting areas for migratory birds) • Mammals, such as eastern cottontails, forage on residence lawns.

Notes:

[1] Seasonal concentration of animals includes: winter deer yards; moose late winter habitat; colonial bird nesting sites; waterfowl stopover and staging areas; waterfowl nesting areas; shorebird migratory stopover areas; landbird migratory stopover areas; raptor winter feeding and roosting areas; wild turkey winter range; turkey vulture summer roosting areas; reptile hibernacula; bat hibernacula; bullfrog concentration areas; and, migratory butterfly stopover areas.

[2] Rare vegetation communities include: alvars; tall-grass prairies; savannahs; rare forest types; talus slopes; rock barrens; sand barrens; and, Great Lakes dunes.

[3] Specialized habitats for wildlife include: habitat for area-sensitive species; forests providing a high diversity of habitats; old-growth or mature forest stands; foraging areas with abundant mast; amphibian woodland breeding ponds; turtle nesting habitat; specialized raptor nesting habitat; special moose habitat (calving areas, aquatic feeding areas and mineral licks); and, mink, otter, marten or fisher denning sites; cliffs and caves; and, seeps and springs.

[4] Species of conservation concern include: globally rare; nationally rare; provincially rare; regionally rare; locally rare; and, species of concern to the planning authority.

[5] Animal movement corridors include dwelling habitat for plants and animals; and, conduits for daily and seasonal movements of animals, dispersal of organisms and genes and long-distance range shifts of species.

APPENDIX J

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 1A Plaza A																		
			Segments-Malden Road to North Talbot Rd																		
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd				
			G-H			H-I			I-J			J-K			K-L			L-M				
			Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Total Area	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, Type/Area and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low		
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low					
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low								
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low								
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low								
												Benson Drain	Stream Corridor	Low								
												Dickson Drain	Stream Corridor	Low								
												No Name Tributary of Dickson Drain	Stream Corridor	Low								
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0	**0**	**Total High**
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0	**3**	**Total Moderate**
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1	**19**	**Total Low**
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community Type/Area, area, significance and sensitivity	Area Displaced	1.35	High	Area Displaced		High	Area Displaced	0.08	High	Area Displaced		High	Area Displaced		High	Area Displaced	0.00	High	**1.43**	**Total High**
			Area Displaced	6.29	Moderate	Area Displaced	0.30	Moderate	Area Displaced	0.66	Moderate	Area Displaced	0.00	Moderate	Area Displaced		Moderate	Area Displaced	0.00	Moderate	**7.25**	**Total Moderate**
			Area Displaced	10.11	Low	Area Displaced	2.51	Low	Area Displaced	3.06	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low	**16.34**	**Total Low**
			Total Area Displaced	17.75		Total Area Displaced	2.81		Total Area Displaced	3.81		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00		**25.03**	**Total Area Displaced**
	Impacts to Aquatic Communities/	Community Type/Area, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low		
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None		
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.02	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low		
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.01	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate		
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.03	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate		
			Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low		
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.06	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate		
			Marentette Drain	0.03	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None		
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.54	Low	Wolfe Drain		Low	Wolfe Drain		Low		
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate		
			Youngstown Drain	0.08	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low		
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.39	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	**0.39**	**Total Moderate**
			Area Displaced	0.28	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.54	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	**0.85**	**Total Low**
			Area Displaced	0.06	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	**0.06**	**Total None**
			Total Area Displaced	0.34		Total Area Displaced	0.00		Total Area Displaced	0.41		Total Area Displaced	0.54		Total Area Displaced	0.00		Total Area Displaced	0.00		**1.29**	**Total Area Displaced**
Populations/Species	Impacts to Species at Risk	Species name, Type/Area and significance	Provincially Rare Specimens/Colonies	85	High	Provincially Rare Specimens/Colonies	6	High	Provincially Rare Specimens/Colonies	51	High	Provincially Rare Specimens/Colonies	0	High	Provincially Rare Specimens/Colonies	0	High	Provincially Rare Specimens/Colonies	0	High	**142**	**Total Provincially Rare Specimens/Colonies**
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																				
		number of surface water drainages crossings by stream Type/Area																				
		number of encroachments on or severances of surface water drainages																				
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																				
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																				
		area of groundwater recharge affected																				
		areas of seepage affected																				
		area of water table affected by each alternative (draw down zone)																				
		proximity of alternative to public and private drinking water wells																				
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																				
Factor Summary:																						
Factor Score:																						

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 1A Plaza B or C																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.08	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.18	Moderate	Area Displaced	0.30	Moderate	Area Displaced	0.66	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	7.28	Low	Area Displaced	2.51	Low	Area Displaced	3.06	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	9.82		Total Area Displaced	2.81		Total Area Displaced	3.81		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic	Community type, area, significance and	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.02	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.01	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.03	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.06	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.03	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.54	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.04	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.39	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.17	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.54	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.03	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.20		Total Area Displaced	0.00		Total Area Displaced	0.41		Total Area Displaced	0.54		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at Risk	Species name, Type/Area and significance	Provincially Rare Specimens/Colonies	45		Provincially Rare Specimens/Colonies	6		Provincially Rare Specimens/Colonies	51		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water well																		
Other Natural Resources	Impacts to mineral,	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 1A Option 2 Plaza A																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.40	High	Area Displaced	0.00	High	Area Displaced	0.13	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	6.29	Moderate	Area Displaced	0.30	Moderate	Area Displaced	1.20	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	10.21	Low	Area Displaced	2.51	Low	Area Displaced	3.94	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	17.90		Total Area Displaced	2.81		Total Area Displaced	5.26		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.01	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.04	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.06	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.03	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain	0.03	None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.21	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.08	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain	0.04	Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.31	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.28	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.17	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.06	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.03	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.34		Total Area Displaced	0.00		Total Area Displaced	0.31		Total Area Displaced	0.20		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	87.00		Provincially Rare Specimens/Colonies	6.00		Provincially Rare Specimens/Colonies	41.00		Provincially Rare Specimens/Colonies	0.00		Provincially Rare Specimens/Colonies	0.00		Provincially Rare Specimens/Colonies	0.00	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 1A Option 2 Plaza B or C																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.37	High	Area Displaced	0.00	High	Area Displaced	0.13	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.18	Moderate	Area Displaced	0.30	Moderate	Area Displaced	1.20	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	7.30	Low	Area Displaced	2.51	Low	Area Displaced	3.94	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	9.85		Total Area Displaced	2.81		Total Area Displaced	5.26		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.01	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.04	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.06	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.03	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.21	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.04	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.31	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.17	Low	Area Displaced	0.00	Low	Area Displaced		Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.03	None	Area Displaced	0.00	None	Area Displaced		None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.20		Total Area Displaced	0.00		Total Area Displaced	0.31		Total Area Displaced	0.00		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	45		Provincially Rare Specimens/Colonies	6		Provincially Rare Specimens/Colonies	41		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 1B Plaza A																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.40	High	Area Displaced	0.00	High	Area Displaced	0.06	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	6.29	Moderate	Area Displaced	0.33	Moderate	Area Displaced	0.66	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	10.65	Low	Area Displaced	2.91	Low	Area Displaced	2.82	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	18.34		Total Area Displaced	3.24		Total Area Displaced	3.54		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None
			Cahill Drain		None	Cahill Drain		None	Cahill Drain	0.01	None	Cahill Drain		None	Cahill Drain		None	Cahill Drain		None
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.01	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.03	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain	0.02	Moderate	Lennon Drain	0.06	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.04	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.54	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.08	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.02	Moderate	Area Displaced	0.39	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.28	Low	Area Displaced	0.00	Low	Area Displaced	0.01	Low	Area Displaced	0.54	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.07	None	Area Displaced	0.00	None	Area Displaced	0.01	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.35		Total Area Displaced	0.02		Total Area Displaced	0.41		Total Area Displaced	0.54		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	85		Provincially Rare Specimens/Colonies	16		Provincially Rare Specimens/Colonies	51		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 1B Plaza B or C																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.37	High	Area Displaced	0.00	High	Area Displaced	0.06	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.18	Moderate	Area Displaced	0.33	Moderate	Area Displaced	0.66	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	7.30	Low	Area Displaced	2.91	Low	Area Displaced	2.82	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	9.85		Total Area Displaced	3.24		Total Area Displaced	3.54		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.01	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.01	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.03	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain	0.02	Moderate	Lennon Drain	0.06	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.03	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.54	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.04	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.02	Moderate	Area Displaced	0.39	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.17	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.54	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.03	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.20		Total Area Displaced	0.02		Total Area Displaced	0.41		Total Area Displaced	0.54		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	45		Provincially Rare Specimens/Colonies	16		Provincially Rare Specimens/Colonies	51		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 1B Option 2 Plaza A																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.40	High	Area Displaced	0.00	High	Area Displaced	0.06	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	6.29	Moderate	Area Displaced	0.33	Moderate	Area Displaced	0.66	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	10.65	Low	Area Displaced	2.91	Low	Area Displaced	2.82	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	18.34		Total Area Displaced	3.24		Total Area Displaced	3.54		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.01	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.01	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.03	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain	0.02	Moderate	Lennon Drain	0.06	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.04	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.54	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.08	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.02	Moderate	Area Displaced	0.39	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.28	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.54	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.07	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.35		Total Area Displaced	0.02		Total Area Displaced	0.41		Total Area Displaced	0.54		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	85		Provincially Rare Specimens/Colonies	16		Provincially Rare Specimens/Colonies	51		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Alternative 1B Option 2 Plaza B or C																		
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.41	High	Area Displaced	0.00	High	Area Displaced	0.13	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.29	Moderate	Area Displaced	0.33	Moderate	Area Displaced	1.20	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	7.42	Low	Area Displaced	2.91	Low	Area Displaced	3.94	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	10.12		Total Area Displaced	3.24		Total Area Displaced	5.26		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.01	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.04	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.09	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain	0.02	Moderate	Lennon Drain	0.06	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.03	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.16	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.04	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.02	Moderate	Area Displaced	0.27	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.18	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.03	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.21		Total Area Displaced	0.02		Total Area Displaced	0.27		Total Area Displaced	0.00		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	46		Provincially Rare Specimens/Colonies	16		Provincially Rare Specimens/Colonies	41		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0		Provincially Rare Specimens/Colonies	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 2A Plaza A																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.61	High	Area Displaced	0.25	High	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	6.31	Moderate	Area Displaced	0.29	Moderate	Area Displaced	1.04	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	11.01	Low	Area Displaced	4.23	Low	Area Displaced	2.46	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	18.93		Total Area Displaced	4.77		Total Area Displaced	3.86		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.02	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.00	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.04	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.06	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.58	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.09	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.38	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.26	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.58	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.05	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.31		Total Area Displaced	0.00		Total Area Displaced	0.40		Total Area Displaced	0.58		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	94		Provincially Rare	35		Provincially Rare	33		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances of surface water																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge																		
		areas of seepage affected																		
		area of water table affected by each alternative (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 2A Plaza B or C																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.58	High	Area Displaced	0.25	High	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.31	Moderate	Area Displaced	0.29	Moderate	Area Displaced	1.04	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	7.57	Low	Area Displaced	4.23	Low	Area Displaced	2.46	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	10.46		Total Area Displaced	4.77		Total Area Displaced	3.86		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.02	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.00	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.04	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.06	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.58	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.38	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.11	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.58	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.02	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.13		Total Area Displaced	0.00		Total Area Displaced	0.40		Total Area Displaced	0.58		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	54		Provincially Rare	35		Provincially Rare	33		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Alternative 2A Option 2 Plaza A																		
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.61	High	Area Displaced	0.25	High	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	6.31	Moderate	Area Displaced	0.29	Moderate	Area Displaced	1.19	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	10.78	Low	Area Displaced	4.23	Low	Area Displaced	3.00	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	18.70		Total Area Displaced	4.77		Total Area Displaced	4.55		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.04	Moderate	Cahill Drain			Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.06	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Youngstown Drain	0.09	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.08	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.26	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.05	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.31		Total Area Displaced	0.00		Total Area Displaced	0.08		Total Area Displaced	0.00		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	94		Provincially Rare	35		Provincially Rare	26		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 2A Option 2 Plaza B or C																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.58	High	Area Displaced	0.25	High	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.31	Moderate	Area Displaced	0.29	Moderate	Area Displaced	1.19	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	7.57	Low	Area Displaced	4.23	Low	Area Displaced	3.00	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	10.46		Total Area Displaced	4.77		Total Area Displaced	4.55		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.04	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.06	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Youngstown Drain	0.05	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.08	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.16	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.02	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.17		Total Area Displaced	0.00		Total Area Displaced	0.08		Total Area Displaced	0.00		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	55		Provincially Rare	35		Provincially Rare	26		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances of surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 2B Plaza A																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.41	High	Area Displaced	0.09	High	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	6.29	Moderate	Area Displaced	0.27	Moderate	Area Displaced	1.04	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	10.91	Low	Area Displaced	3.58	Low	Area Displaced	2.46	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	18.61		Total Area Displaced	3.94		Total Area Displaced	3.86		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.02	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.00	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.05	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.06	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.59	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.09	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.38	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.26	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.59	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.05	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.32		Total Area Displaced	0.00		Total Area Displaced	0.40		Total Area Displaced	0.59		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	89		Provincially Rare	23		Provincially Rare	33		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 2B Plaza B or C																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.37	High	Area Displaced	0.09	High	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.29	Moderate	Area Displaced	0.27	Moderate	Area Displaced	1.04	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	7.58	Low	Area Displaced	3.58	Low	Area Displaced	2.46	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	10.24		Total Area Displaced	3.94		Total Area Displaced	3.86		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.02	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.00	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.05	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.06	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.59	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.05	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.38	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.16	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.59	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.02	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.18		Total Area Displaced	0.00		Total Area Displaced	0.40		Total Area Displaced	0.59		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	49		Provincially Rare	23		Provincially Rare	33		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 2B Option 2 Plaza A																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.41	High	Area Displaced	0.09	High	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	6.29	Moderate	Area Displaced	0.27	Moderate	Area Displaced	1.19	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	10.91	Low	Area Displaced	3.57	Low	Area Displaced	3.09	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	18.61		Total Area Displaced	3.93		Total Area Displaced	4.64		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.02	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.00	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.05	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.06	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.59	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.09	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.38	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.26	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.59	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.05	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.32		Total Area Displaced	0.00		Total Area Displaced	0.40		Total Area Displaced	0.59		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	89		Provincially Rare	23		Provincially Rare	33		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 2B Option 2 Plaza B or C																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.37	High	Area Displaced	0.09	High	Area Displaced	0.36	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.29	Moderate	Area Displaced	0.27	Moderate	Area Displaced	1.19	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	7.58	Low	Area Displaced	3.57	Low	Area Displaced	3.09	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	10.24		Total Area Displaced	3.93		Total Area Displaced	4.64		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.02	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.00	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.05	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.06	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.59	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.05	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.38	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.16	Low	Area Displaced	0.00	Low	Area Displaced	0.02	Low	Area Displaced	0.59	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.02	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.18		Total Area Displaced	0.00		Total Area Displaced	0.40		Total Area Displaced	0.59		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	49		Provincially Rare	23		Provincially Rare	33		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Alternative 3 Plaza A																		
		Segments-Malden Road to North Talbot Rd																		
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair college Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.40	High	Area Displaced	0.00	High	Area Displaced	0.09	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	6.29	Moderate	Area Displaced	0.26	Moderate	Area Displaced	0.85	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	9.43	Low	Area Displaced	1.82	Low	Area Displaced	2.44	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	17.12		Total Area Displaced	2.09		Total Area Displaced	3.38		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/	Community type, area, significance and sensitivity	Basin Drain	0.11	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Basin Drain	0.03	None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None	Basin Drain		None
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.00	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.00	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.03	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.08	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.03	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.12	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.08	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.37	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.27	Low	Area Displaced	0.00	Low	Area Displaced	0.01	Low	Area Displaced	0.12	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.06	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.32		Total Area Displaced	0.00		Total Area Displaced	0.38		Total Area Displaced	0.12		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	84		Provincially Rare	6		Provincially Rare	41		Provincially Rare	0		Provincially Rare	0		Provincially Rare	0	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment		Natural Alternative 3 Plaza B or C																	
			Segments-Malden Road to North Talbot Rd																	
Performance Measure	Criteria/Indicator	Measurement/Units	Malden Rd to Pulford			Pulford north of Lennon Drain			North of Lennon Drain to Cousineau Rd			Cousineau Rd to Howard Ave			Howard Ave to Highway 401			Highway 3 to North Talbot Rd		
			G-H			H-I			I-J			J-K			K-L			L-M		
			Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance	Name	Type	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Basin Drain	Stream Corridor	Low	Oakwood Bush to Spring Garden ANSI	Strip Corridor	Low	Lennon Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low	Wolfe Drain	Stream Corridor	Low
			Youngstown Drain	Stream Corridor	Low	Lennon Drain	Stream Corridor	Low	St. Clair College Prairie Remnant	Patch	Moderate	Collins Drain	Stream Corridor	Low	No Name Tributary of Wolfe Drain	Stream Corridor	Low			
			Marentette Drain	Stream Corridor	Low				St. Clair College Prairie Remnant to Spring Garden	Strip Corridor	Moderate	Burke Drain	Stream Corridor	Low						
			Grand Marais Drain	Stream Corridor	Moderate				Cahill Drain	Stream Corridor	Low	No Name Tributary of Burke Draine	Stream Corridor	Low						
			North of Spring Garden Road	Matrix	Low							Howard Avenue Drain	Stream Corridor	Low						
												Benson Drain	Stream Corridor	Low						
												Dickson Drain	Stream Corridor	Low						
												No Name Tributary of Dickson Drain	Stream Corridor	Low						
				Total High	0		Total High	0		Total High	0		Total High	0		Total High	0		Total High	0
				Total Moderate	1		Total Moderate	0		Total Moderate	2		Total Moderate	0		Total Moderate	0		Total Moderate	0
				Total Low	4		Total Low	2		Total Low	2		Total Low	8		Total Low	2		Total Low	1
Communities/Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.41	High	Area Displaced	0.00	High	Area Displaced	0.09	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High
			Area Displaced	2.29	Moderate	Area Displaced	0.26	Moderate	Area Displaced	0.85	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	6.53	Low	Area Displaced	1.82	Low	Area Displaced	2.44	Low	Area Displaced	0.00	Low	Area Displaced	0.66	Low	Area Displaced	0.00	Low
			Total Area Displaced	9.24		Total Area Displaced	2.09		Total Area Displaced	3.38		Total Area Displaced	0.00		Total Area Displaced	0.66		Total Area Displaced	0.00	
	Impacts to Aquatic Communities/ Ecosystems	Community type, area, significance and sensitivity	Basin Drain	0.04	Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low	Basin Drain		Low
			Cahill Drain		Low	Cahill Drain		Low	Cahill Drain	0.00	Low	Cahill Drain		Low	Cahill Drain		Low	Cahill Drain		Low
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.00	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain	0.03	Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate	Cahill Drain		Moderate
			Grand Marais Drain	0.08	Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low	Grand Marais Drain		Low
			Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain	0.05	Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate	Lennon Drain		Moderate
			Marentette Drain	0.02	None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None	Marentette Drain		None
			Wolfe Drain		Low	Wolfe Drain		Low	Wolfe Drain	0.01	Low	Wolfe Drain	0.12	Low	Wolfe Drain		Low	Wolfe Drain		Low
			Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain	0.29	Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate	Wolfe Drain		Moderate
			Youngstown Drain	0.03	Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low	Youngstown Drain		Low
			Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.37	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate
			Area Displaced	0.15	Low	Area Displaced	0.00	Low	Area Displaced	0.01	Low	Area Displaced	0.12	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.02	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None	Area Displaced	0.00	None
			Total Area Displaced	0.17		Total Area Displaced	0.00		Total Area Displaced	0.38		Total Area Displaced	0.12		Total Area Displaced	0.00		Total Area Displaced	0.00	
Populations/Species	Impacts to Species at	Species name, type and significance	Provincially Rare	45.00		Provincially Rare	6.00		Provincially Rare	41.00		Provincially Rare	0.00		Provincially Rare	0.00		Provincially Rare	0.00	
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each alternative																		
		number of surface water drainages crossings by stream type																		
		number of encroachments on or severances o surface water drainages																		
		degree of compliance with Provincial and Federal Water Quality Guidelines and Stormwater Management requirements																		
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones affected																		
		area of groundwater recharge affected																		
		areas of seepage affected																		
		area of water table affected by each alternativ (draw down zone)																		
		proximity of alternative to public and private drinking water wells																		
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW																		
Factor Summary:																				
Factor Score:																				

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Plazas and Crossings

Plaza A

Performance Measure	Criteria/ Indicator	Measurement/ Units	From Crossing A			From Crossing B			From Crossing C			From Crossing C		
			A-G			B-G			C-E-G			C-G		
			Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance
Ecological Landscapes	Impacts to Ecological	Landscape name, type and significance	Detroit River	Stream Corridor	High	Detroit River	Stream Corridor	High	Detroit River	Stream Corridor	High	Detroit River	Stream Corridor	High
			Healy Drain	Stream Corridor	Low	Healy Drain	Stream Corridor	Low	McKee Creek	Stream Corridor	Low	McKee Creek	Stream Corridor	Low
			North of Amanda Street	Matrix	Moderate	North of Amanda Street	Matrix	Moderate	Healy Drain	Stream Corridor	Low	North of Amanda Street	Matrix	Moderate
			Malden Park to Prairie Remnants ANSI	Strip Corridor	Moderate	Malden Park to Prairie Remnants ANSI	Strip Corridor	Moderate	North of Amanda Street	Matrix	Moderate	Malden Park to Prairie Remnants ANSI	Strip Corridor	Moderate
			Chappus Street West of Sandwich Street NHF	Patch	Low	Ontario Power Generation NHF	Patch	Low	Malden Park to Prairie Remnants ANSI	Strip Corridor	Moderate			
									Sterling Marine Fuels NHF	Patch	Low			
Communities/ Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	2.98	High	Area Displaced	2.70	High	Area Displaced	2.69	High	Area Displaced	2.70	High
			Area Displaced	1.83	Moderate	Area Displaced	1.82	Moderate	Area Displaced	2.74	Moderate	Area Displaced	2.73	Moderate
			Area Displaced	27.77	Low	Area Displaced	26.24	Low	Area Displaced	25.44	Low	Area Displaced	22.86	Low
			Total Area Displaced	32.58		Total Area Displaced	30.77		Total Area Displaced	30.87		Total Area Displaced	28.29	
	Impacts to Aquatic Communities/	Community type, area, significance and	Healy Drain	0.01	Low	Healy Drain	0.03	Low	Healy Drain	0.03	Low	McKee Creek	0.03	Moderate
			McKee Drain	0.05	Moderate	Healy Drain	0.07	None	Healy Drain	0.04	None	McKee Drain	0.05	Moderate
			McKee Drain	0.11	None	McKee Drain	0.05	Moderate	McKee Creek	0.03	Moderate	McKee Drain	0.11	None
			Titcombe Drain	0.05	Moderate	McKee Drain	0.11	None	McKee Drain	0.05	Moderate	Titcombe Drain	0.05	Moderate
			Detroit River	Pier	Moderate	Titcombe Drain	0.05	Moderate	McKee Drain	0.11	None	No Name Tributary	0.01	Low
						Detroit River	Pier	Moderate	Titcombe Drain	0.05	Moderate			
			Area Displaced	0.10	Moderate	Area Displaced	0.10	Moderate	Area Displaced	0.13	Moderate	Area Displaced	0.13	Moderate
			Area Displaced	0.01	Low	Area Displaced	0.03	Low	Area Displaced	0.03	Low	Area Displaced	0.01	Low
			Area Displaced	0.11	None	Area Displaced	0.18	None	Area Displaced	0.15	None	Area Displaced	0.11	None
			Total Area Displaced	0.22		Total Area Displaced	0.31		Total Area Displaced	0.31	Low	Total Area Displaced	0.25	
Populations/ Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	232	High	Provincially Rare Specimens/Colonies	223	High	Provincially Rare Specimens/Colonies	231	High	Provincially Rare Specimens/Colonies	186	High
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each												
		number of surface water drainages crossings by												
		number of encroachments on or												
		degree of compliance with Provincial and Federal Water Quality												
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones												
		area of groundwater												
		areas of seepage												
		area of water table affected by each												
		proximity of alternative to public and private												
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW												
Factor Summary:														
Factor Score:														

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Plazas and Crossings											
		Plaza A											
Performance Measure	Criteria/ Indicator	Measurement/ Units	From Crossing A			From Crossing B			From Crossing C			From Crossing C		
			A-G			B-G			C-E-G			C-G		
			Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance

PRACTICAL ALTERNATIVE EVALUATION | **Factor: Protect the Natural Environment**

Natural Plazas and Crossings

Plaza B

From Crossing C

Performance Measure	Criteria/ Indicator	Measurement/ Units	C-E			E-F			F-G		
			Name	**Type/Area**	**Significance**	**Name**	**Type/Area**	**Significance**	**Name**	**Type/Area**	**Significance**
Ecological Landscapes	Impacts to Ecological	Landscape name, type and significance	Detroit River	Stream Corridor	High	Broadway Drain	Stream Corridor	Low	McKee Drain	Stream Corridor	Low
			McKee Creek	Stream Corridor	Low				Titcombe Drain	Stream Corridor	Low
			Healy Drain	Stream Corridor	Low				North of Amanda Street	Matrix	Moderate
			Broadway Drain	Stream Corridor	Low				Malden park to Prairie Remnants ANSI	Strip Corridor	Moderate
			Sterling Marine Fuels NHF	Patch	Moderate						
Communities/ Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	1.12	High	Area Displaced	0.01	High	Area Displaced	0.89	High
			Area Displaced	0.90	Moderate	Area Displaced	0.70	Moderate	Area Displaced	0.49	Moderate
			Area Displaced	16.83	Low	Area Displaced	6.18	Low	Area Displaced	13.55	Low
			Total Area Displaced	18.86		Total Area Displaced	6.89		Total Area Displaced	14.93	
	Impacts to Aquatic Communities/	Community type, area, significance and	Broadway Drain	0.05	Low	Healy Drain	0.03	None	McKee Drain	0.02	Moderate
			Healy Drain	0.08	Low	McKee Drain	0.07	Moderate	McKee Drain	0.11	None
			Healy Drain	0.16	None	McKee Drain	0.07	Moderate	Titcombe Draine	0.02	Moderate
			McKee Creek	0.03	Moderate						
			Detroit River	Pier	Moderate						
			No Name Tributary	0.00	Low						
			Area Displaced	0.03	Moderate	Area Displaced	0.14	Moderate	Area Displaced	0.04	Moderate
			Area Displaced	0.13	Low	Area Displaced	0.00	Low	Area Displaced	0.00	Low
			Area Displaced	0.16	None	Area Displaced	0.03	None	Area Displaced	0.11	None
			Total Area Displaced	0.32		Total Area Displaced	0.17		Total Area Displaced	0.15	
Populations/ Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	83	High	Provincially Rare Specimens/Colonies	30	High	Provincially Rare Specimens/Colonies	82	High
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each									
		number of surface water drainages crossings by									
		number of encroachments on or									
		degree of compliance with Provincial and Federal Water Quality									
Groundwater	Change in	area of infiltration zones									

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Plazas and Crossings

			Plaza B								
			From Crossing C								
Performance Measure	Criteria/ Indicator	Measurement/ Units	C-E			E-F			F-G		
			Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance
	groundwater conditions (quality and quantity)	area of groundwater									
		areas of seepage									
		area of water table affected by each									
		proximity of alternative to public and private									
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW									
Factor Summary:											
Factor Score:											

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Plazas and Crossings

Plaza B1

Performance Measure	Criteria/ Indicator	Measurement/ Units	From Crossing B						From Crossing C					
			B-F			F-G			C-F			F-G		
			Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance
Ecological Landscapes	Impacts to Ecological	Landscape name, type and significance	Detroit River	Stream Corridor	High	McKee Drain	Stream Corridor	Low	Detroit River	Stream Corridor	High	McKee Drain	Stream Corridor	Low
			Healy Drain	Stream Corridor	Low	Titcombe Drain	Stream Corridor	Low	McKee Creek	Stream Corridor	Low	Titcombe Drain	Stream Corridor	Low
			Broadway Drain	Stream Corridor	Low	North of Amanda Street	Matrix	Moderate	Healy Drain	Stream Corridor	Low	North of Amanda Street	Matrix	Moderate
			Ontario Power Generation NHF	Patch	Low	Malden Park to Prairie Remnants ANSI	Strip Corridor	Moderate	Broadway Drain	Stream Corridor	Low	Malden Park to Prairie Remnants ANSI	Strip Corridor	Moderate
									Sterling Marine Fuels NHF	Patch	Low			
Communities/ Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.20	High	Area Displaced	0.89	High	Area Displaced	0.20	High	Area Displaced	0.89	High
			Area Displaced	0.70	Moderate	Area Displaced	0.49	Moderate	Area Displaced	1.60	Moderate	Area Displaced	0.49	Moderate
			Area Displaced	28.58	Low	Area Displaced	14.21	Low	Area Displaced	27.77	Low	Area Displaced	14.21	Low
			Total Area Displaced	29.48		Total Area Displaced	15.59		Total Area Displaced	29.57		Total Area Displaced	15.59	
	Impacts to Aquatic Communities/	Community type, area, significance and	Healy Drain	0.07	Low	McKee Drain	0.02	Moderate	Healy Drain	0.05	Low	McKee Drain	0.02	Moderate
			Healy Drain	0.24	None	McKee Drain	0.11	None	Healy Drain	0.22	None	McKee Drain	0.11	None
			McKee Drain	0.06	Moderate	Titcombe Drain	0.02	Moderate	McKee Creek	0.03	Moderate	Titcombe Drain	0.02	Moderate
			McKee Drain	0.07	Moderate				McKee Drain	0.06	Moderate			
			Detroit River	Pier	Moderate				McKee Drain	0.07	Moderate			
									Detroit River	Pier	Moderate			
									No Name Tributary	0.00	Low			
			Area Displaced	0.13	Moderate	Area Displaced	0.04	Moderate	Area Displaced	0.16	Moderate	Area Displaced	0.04	Moderate
			Area Displaced	0.07	Low	Area Displaced	0.00	Low	Area Displaced	0.05	Low	Area Displaced	0.00	Low
			Area Displaced	0.24	None	Area Displaced	0.11	None	Area Displaced	0.22	None	Area Displaced	0.11	None
			Total Area Displaced	0.44		Total Area Displaced	0.15		Total Area Displaced	0.43		Total Area Displaced	0.15	
Populations/ Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	100	High	Provincially Rare Specimens/Colonies	85	High	Provincially Rare Specimens/Colonies	100	High	Provincially Rare Specimens/Colonies	85	High
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each												
		number of surface water drainages crossings by												
		number of encroachments on or												
		degree of compliance with Provincial and Federal Water Quality												
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones												
		area of groundwater												
		areas of seepage												
		area of water table affected by each												
		proximity of alternative to public and private												
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW												
Factor Summary:														
Factor Score:														

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Plazas and Crossings											
		Plaza B1											
Performance Measure	Criteria/ Indicator	Measurement/ Units	From Crossing B						From Crossing C					
			B-F			F-G			C-F			F-G		
			Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance

PRACTICAL ALTERNATIVE EVALUATION	Factor: Protect the Natural Environment	Natural Plazas and Crossings														
			Plaza C													
			From Crossing C													
Performance Measure	Criteria/ Indicator	Measurement/ Units	C-D			D-E			E-F			F-G				
			Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Name	Type/Area	Significance	Total Area	Significance
Ecological Landscapes	Impacts to Ecological Landscapes	Landscape name, type and significance	Detroit River	Stream Corridor	High	Healy Drain	Stream Corridor	Low				McKee Drain	Stream Corridor	Low		
			McKee Creek	Stream Corridor	Low	Ontario Power Generation NHF	Patch	Low				Titcombe Drain	Stream Corridor	Low		
			Healy Drain	Stream Corridor	Low							North of Amanda Street	Matrix	Moderate		
			Sterling Marine Fuels NHF	Patch	Low							Malden Park to Prairie Remnants ANSI	Strip Corridor	Moderate		
Communities/ Ecosystems	Impacts to Terrestrial Communities/ Ecosystems	Community type, area, significance and sensitivity	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.00	High	Area Displaced	0.89	High	**16.16**	**Total High**
			Area Displaced	1.62	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.49	Moderate	**16.60**	**Total Moderate**
			Area Displaced	6.97	Low	Area Displaced	2.76	Low	Area Displaced	10.09	Low	Area Displaced	13.41	Low	**256.87**	**Total Low**
			Total Area Displaced	8.59		Total Area Displaced	2.76		Total Area Displaced	10.09		Total Area Displaced	14.79		**289.65**	**Total Area Displaced**
	Impacts to Aquatic Communities/	Community type, area, significance and	Healy Drain	0.02	None	Healy Drain	0.05	None	Healy Drain	0.04	Low	McKee Drain	0.02	Moderate		
			McKee Drain	0.07	Moderate							McKee Drain	0.11	None		
			McKee Drain	0.08	Moderate							Titcombe Drain	0.02	Moderate		
			Detroit River	Pier	Moderate											
			No Name Tributary	0.15	Low											
			Area Displaced	0.15	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.00	Moderate	Area Displaced	0.04	Moderate	**1.23**	**Total Moderate**
			Area Displaced	0.15	Low	Area Displaced	0.00	Low	Area Displaced	0.04	Low	Area Displaced	0.00	Low	**0.52**	**Total Low**
			Area Displaced	0.02	None	Area Displaced	0.05	None	Area Displaced	0.00	None	Area Displaced	0.11	None	**1.71**	**Total None**
			Total Area Displaced	0.32		Total Area Displaced	0.05		Total Area Displaced	0.04		Total Area Displaced	0.15		**3.46**	**Total Area**
Populations/ Species	Impacts to Species at Risk	Species name, type and significance	Provincially Rare Specimens/Colonies	25	High	Provincially Rare Specimens/Colonies	43	High	Provincially Rare Specimens/Colonies	3	High	Provincially Rare Specimens/Colonies	82	High	**1590**	**Total Provincially Rare**
Surface Water	Changes in surface water conditions (quality and quantity)	area of surface drainage altered by each														
		number of surface water drainages crossings by														
		number of encroachments on or														
		degree of compliance with Provincial and Federal Water Quality														
Groundwater	Change in groundwater conditions (quality and quantity)	area of infiltration zones														
		area of groundwater														
		areas of seepage														
		area of water table affected by each														
		proximity of alternative to public and private														
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW														
Factor Summary:																
Factor Score:																

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

APPENDIX K

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

Alternative 1A - Plaza A

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

CANADA MALDEN PARK

E.C. ROW Expressway

Huron Church Road

BELLEWOOD ESTATES

SPRING GARDEN

HURON ESTATES

LAMBTON

VILLA BORGHESE

Cabana Road

Matchette Road

Malden Road

Todd Lane

Normandy Street

Reaume Road

Huron Church Line

Howard Avenue

Highway 3

SOUTHWOOD LAKES

Highway 401

DEL DUCA INDUSTRIAL PARK

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

Alternative 1A - Plaza B or C

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

CANADA MALDEN PARK

E.C. ROW Expressway

Huron Church Road

BELLEWOOD ESTATES

SPRING GARDEN

HURON ESTATES

LAMBTON

VILLA BORGHESE

Cabana Road

Matchette Road

Malden Road

Todd Lane

Normandy Street

Highway 3

Huron Church Line

Howard Avenue

SOUTHWOOD LAKES

Highway 401

DEL DUCA INDUSTRIAL PARK

Reaume Road

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

Alternative 2A - Plaza A

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

CANADA MALDEN PARK

E.C. ROW Expressway

Huron Church Road

BELLEWOOD ESTATES

SPRING GARDEN

HURON ESTATES

LAMBTON

VILLA BORGHESE

Cabana Road

Matchette Road

Malden Road

Todd Lane

Normandy Street

Reaume Road

Huron Church Line

Howard Avenue

Highway 3

Highway 401

SOUTHWOOD LAKES

DEL DUCA INDUSTRIAL PARK

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

Alternative 2A - Plaza B or C

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

CANADA MALDEN PARK

E.C. ROW Expressway

Huron Church Road

BELLEWOOD ESTATES

SPRING GARDEN

HURON ESTATES

LAMBTON

VILLA BORGHESE

Cabana Road

Matchette Road

Malden Road

Todd Lane

Normandy Street

Reaume Road

Huron Church Line

Howard Avenue

Highway 3

Highway 401

SOUTHWOOD LAKES

DEL DUCA INDUSTRIAL PARK

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

Alternative 3 - Plaza A

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

CANADA MALDEN PARK

E.C. ROW Expressway

Huron Church Road

BELLEWOOD ESTATES

SPRING GARDEN

HURON ESTATES

LAMBTON

VILLA BORGHESE

Cabana Road

Matchette Road

Malden Road

Todd Lane

Normandy Street

Highway 3

SOUTHWOOD LAKES

Highway 401

DEL DUCA INDUSTRIAL PARK

Howard Avenue

Huron Church Line

Reaume Road

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

Alternative 3 - Plaza B or C

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

CANADA MALDEN PARK

E.C. ROW Expressway

Huron Church Road

BELLEWOOD ESTATES

SPRING GARDEN

HURON ESTATES

LAMBTON

VILLA BORGHESE

Cabana Road

Matchette Road

Malden Road

Todd Lane

Normandy Street

Reaume Road

Huron Church Line

Highway 3

Howard Avenue

SOUTHWOOD LAKES

Highway 401

DEL DUCA INDUSTRIAL PARK

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

ROW Crossing A to Plaza A

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practicle Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

STERLING MARINE FUELS

DETROIT RIVER

Sandwich S

Ojibway Parkway

CANADA MALDEN PARK

Huron Church Road

NEMAK PLANT

E.C. ROW Expressway

SPRING GARDEN

HURON ESTATES

LAMBTON

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

ROW Crossing B to Plaza A

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

STERLING MARINE FUELS

DETROIT RIVER

Sandwich S

Ojibway Parkway

CANADA MALDEN PARK

Huron Church Road

NEMAK PLANT

E.C. ROW Expressway

SPRING GARDEN

HURON ESTATES

LAMBTON

N

500 250 0 500

metres

Maximum Footprint Areas of Combined Alternatives

Vegetation Community Boundary

ROW Crossing B to Plaza B1

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

STERLING MARINE FUELS

DETROIT RIVER

Sandwich St

Ojibway Parkway

CANADA MALDEN PARK

Huron Church Road

NEMAK PLANT

E.C. ROW Expressway

SPRING GARDEN

HURON ESTATES

LAMBTON

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

ROW Crossing C(CEG) to Plaza A

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

STERLING MARINE FUELS

DETROIT RIVER

Sandwich S

Ojibway Parkway

CANADA MALDEN PARK

Huron Church Road

NEMAK PLANT

E.C. ROW Expressway

SPRING GARDEN

HURON ESTATES

LAMBTON

N

500 250 0 500

metres

Maximum Footprint Area of Combined Alternatives

Vegetation Community Boundary

ROW Crossing C(CG) to Plaza A

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

STERLING MARINE FUELS

DETROIT RIVER

Sandwich St

Ojibway Parkway

CANADA MALDEN PARK

Huron Church Road

NEMAK PLANT

E.C. ROW Expressway

SPRING GARDEN

HURON ESTATES

LAMBTON

N

500 250 0 500

metres

Maximum Fottprint Area of Combined Alternatives

Vegetation Community Boundary

ROW Crossing C to Plaza B

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation of Natural Heritage Features

LGL LIMITED
environmental research associates

STERLING MARINE FUELS

DETROIT RIVER

Sandwich S

Ojibway Parkway

CANADA MALDEN PARK

Huron Church Road

NEMAK PLANT

E.C. ROW Expressway

SPRING GARDEN

HURON ESTATES

LAMBTON

500 250 0 500
metres

Maximum Footprint of Combined Alternatives

Vegetation Community Boundary

ROW Crossing C to Plaza C

Watercourse

Provincially Rare Vegetation Community (S Rank)

S1

S2/S3

S3 or S3/S4

Practical Alternatives in Relation to Natural Heritage Features

LGL LIMITED
environmental research associates

STERLING MARINE FUELS

DETROIT RIVER

Sandwich St

Ojibway Parkway

W34

NEMAK PLANT

CANADA MALDEN PARK

E/C. ROW Expressway

Huron Church Road

SPRING GARDEN

500 250 0 500
metres
LAMBTON ESTATES