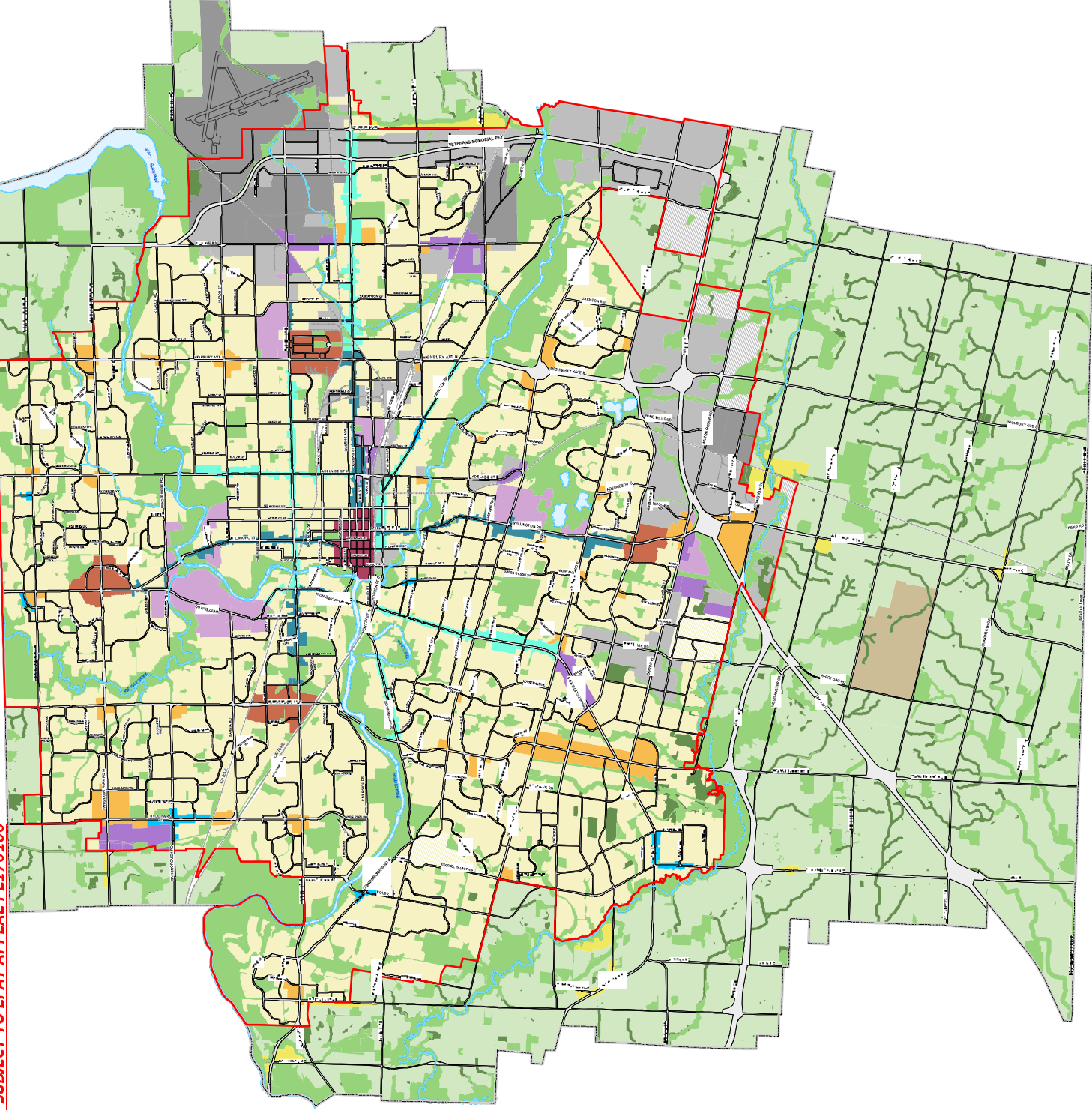


Appendix **A**

The London Plan, Map 1 and Map 5

MAP 1 - PLACE TYPES

MAP SUBJECT TO LPAT APPEAL PL170100



LEGEND

PLACE TYPES

- Heavy Industrial
- Light Industrial
- Rural Community Growth
- Future Industrial Growth
- Rural Land
- Waste Management Resource Recovery Area
- Urban Growth Boundary
- Environmental Review
- Transit Village
- Rapid Transit Corridor
- Urban Corridor
- Shopping Area
- Neighbourhoods
- Institutional

BASE MAP FEATURES

- Street (See Map 3)
- Railways



0 500 1,000 2,000 3,000 4,000 Metres

1:30,000

ADOPTED BY COUNCIL ON JUNE 23, 2016

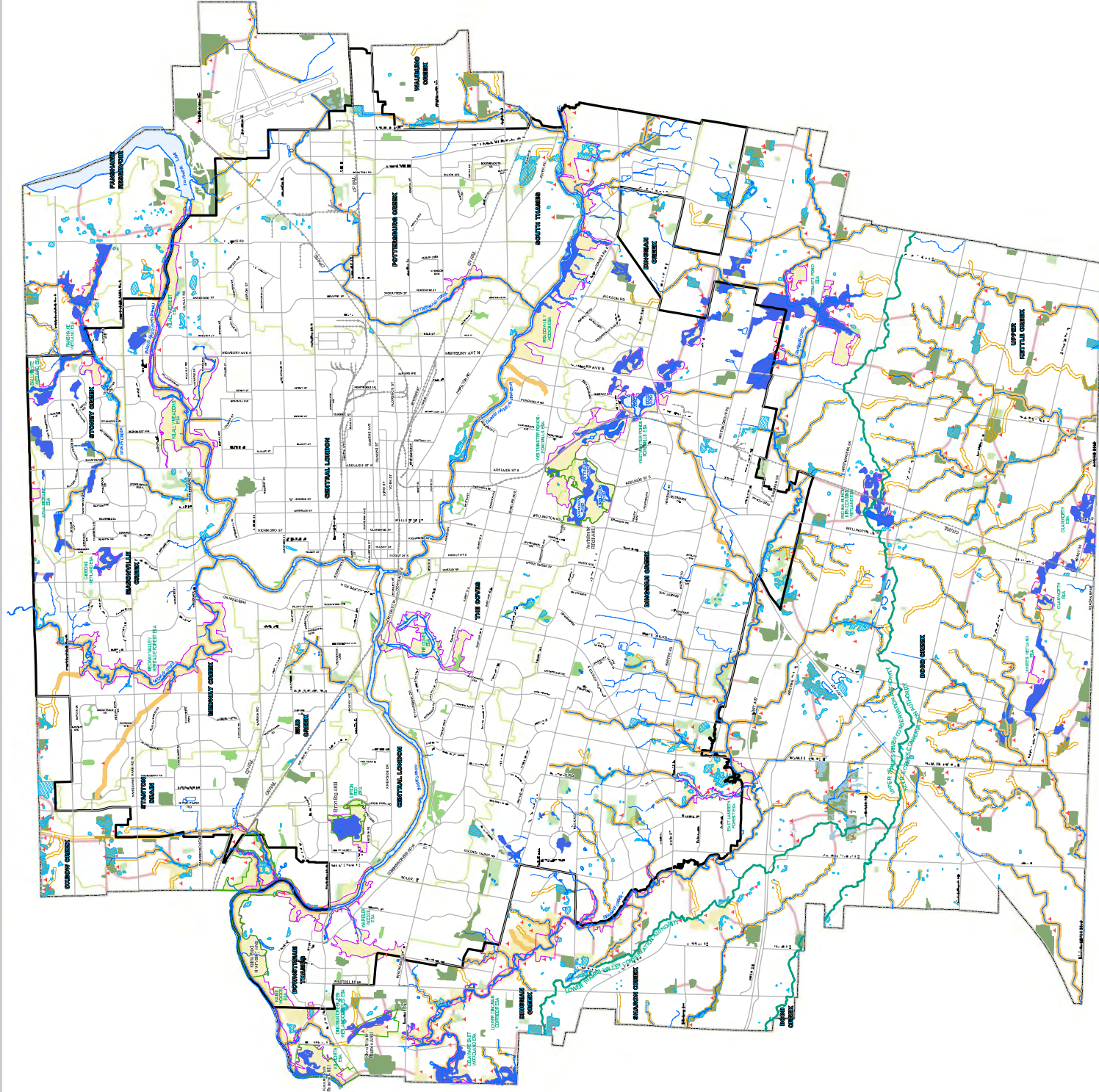
APPROVED BY THE PROVINCE ON DECEMBER 28, 2016

THIS MAP MUST BE READ IN CONJUNCTION
WITH THE TEXT OF THE LONDON PLAN

NOTES: At the time of the updating of this map, the Rapid Transit Plan is in progress. It is expected that a final transit alignment will be known before the London Plan is approved. This map shows the Rapid Transit Corridors and Urban Corridors to recognize potential alignments. These Place Types will be modified to align with the results of the EA process in the final version of the London Plan.

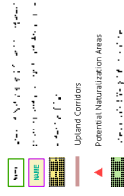
While every effort has been made to ensure that the mapping is accurate, a reader should verify all information on this map with the City of London, Ontario, 1000 Dundas Street West, Suite 300, 300 Dundas Avenue, London, Ontario, M6B 1Z2 or by calling (519) 661-1000 extension 4429.

MAP 5 - NATURAL HERITAGE

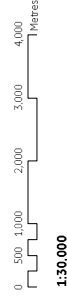


LEGEND

NATURAL HERITAGE SYSTEM



BASE MAP FEATURES



ADOPTED BY COUNCIL ON JUNE 23, 2016

UNDER REVIEW BY THE PROVINCE

THIS MAP MUST BE READ IN CONJUNCTION
WITH THE TEXT OF THE LONDON PLAN

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Appendix **B**

Biology Work Plan – Environmental Assessment of the Proposed W12A Landfill Expansion, City of London

August 2019

BIOLOGY WORK PLAN

Environmental Assessment of the Proposed W12A Landfill Expansion
City of London

Submitted to:
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Manager of Solid Waste Engineering
City of London
300 Dufferin Avenue
London, Ontario
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Distribution List

of copies recipient

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Appendix A - References

1.0 Introduction

This document presents the proposed detailed work plan for the Biology Component of the Environmental Assessment (EA) for the proposed W12A Landfill expansion (project) in London, Ontario. The work plan is being submitted for approval to the Minister of Natural Resources and Forestry (MNRF).

This work plan has been developed with consideration of the commitments made for the project within the development of the Terms of Reference (ToR). The relevant commitments are provided below in Table 1.0-1.

Table 1.0-1: Project Commitments from ToR Relevant to Work Plan Development

ID	Commitment
5	Where described in the ToR for the environmental Components, detailed work plans for the technical studies will be prepared and provided to the appropriate GRT* agency for review and concurrence.
6	The City will share work plans with Indigenous Communities and post work plans on the project website.
10	During the EA, the preliminary criteria and indicators for each of the environmental Components will be refined and described in the EA study report.
11	The preliminary Study Areas will be reviewed and confirmed during the EA and described in the EA study report.
12	A more detailed description of the environmental conditions will be prepared during the EA to reflect the confirmed Study Areas using a combination of sources of existing information and site-specific investigations and studies and provided in the EA study report.

* Government Review Team (GRT)

2.0 Assessment Framework

2.1 Overall Approach

It is proposed that the EA work will be undertaken in a series of nine steps (further details are provided in Section 4.0) as follows:

- Step 1 – Characterize existing environmental conditions;

- Step 2 – Identify the ‘Alternative Methods’ of landfill expansion;
- Step 3 – Qualitative evaluation of ‘Alternative Methods’;
- Step 4 – Compare the ‘Alternative Methods’ for landfill expansion and identify the preferred alternative;
- Step 5 – Refine the mitigation measures and determine the net effects of the preferred alternative;
- Step 6 – Describe the preferred ‘Alternative Method’;
- Step 7 – Consideration of climate change;
- Step 8 – Cumulative impact assessment; and
- Step 9 – Preparation of the EA Study Report.

Consultation with the public, Indigenous Communities, GRT members, City of London Advisory Committees, and other stakeholders will be ongoing throughout the EA process.

2.2 Project Team Organization

The project tasks will be organized to be completed by the following teams:

- The EA Management Team consists of the project director, project manager and project coordinator for the EA;
- The Design and Operations (D&O) Team consists of landfill design technical staff and AutoCAD technicians; and
- The EA Team consists of technical discipline leads for each of the specified environmental Components.

2.3 Study Areas

Data for the EA will be collected and analyzed for preliminary generic study areas presented in the ToR. These will be confirmed and may be refined during the EA. These preliminary generic study areas are as follows:

Biology Work Plan

Environmental Assessment of the Proposed W12A Landfill Expansion, City of London

Site Study Area – The existing W12A Landfill Site, located at 3502 Manning Drive and adjacent lands where landfill expansion may occur.

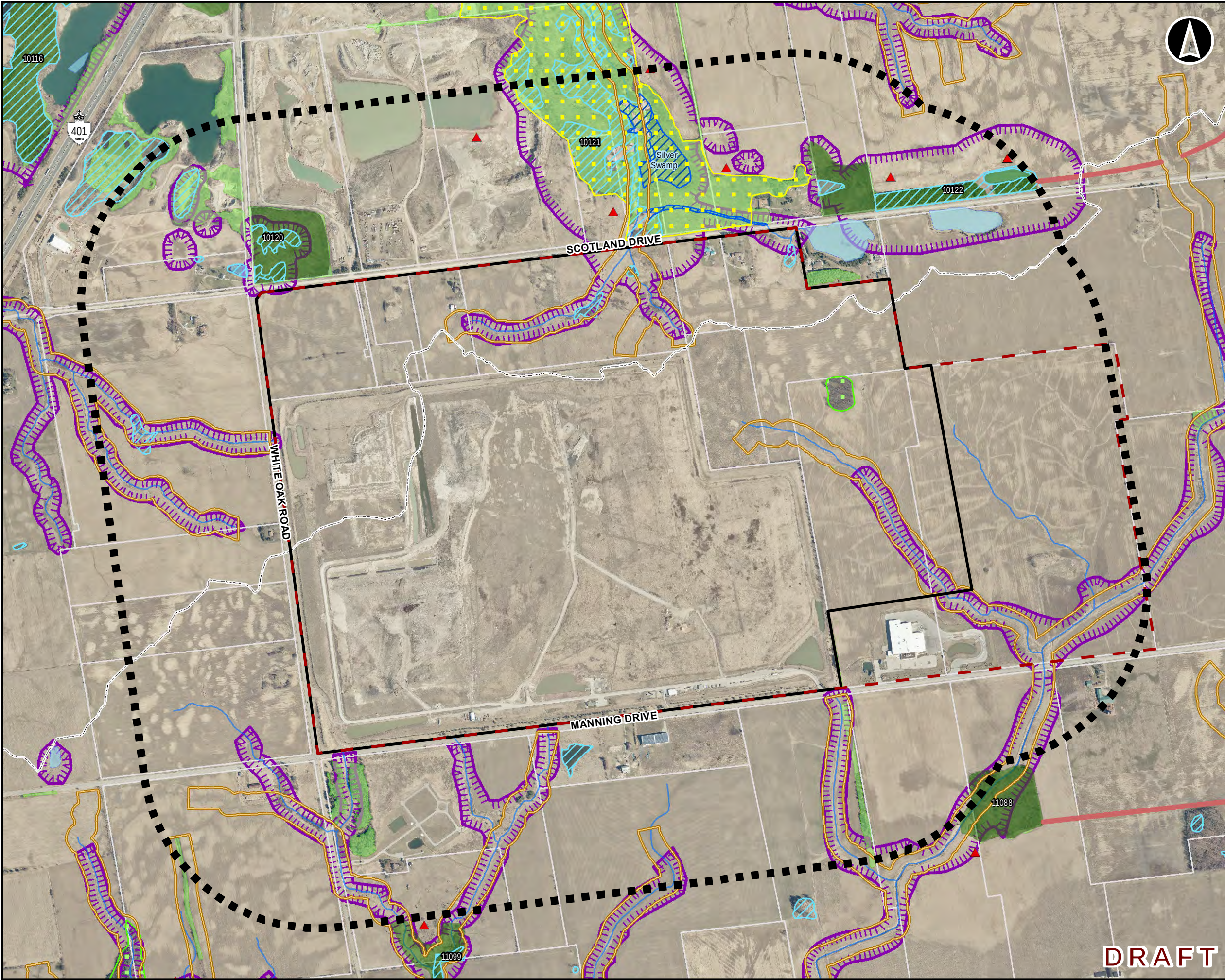
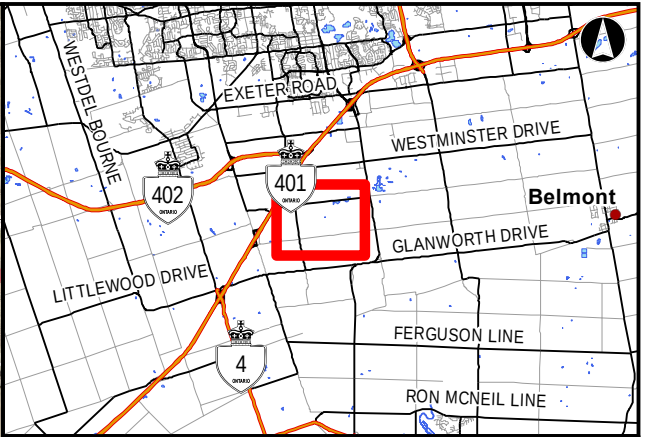
Site-vicinity Study Area – The lands in the area immediately adjacent to the Site Study Area that have the potential to be directly affected by the landfill expansion and activities with the Site Study Area. The extent of the Site-vicinity Study Area will be determined for each of the environmental Components. For most environmental Components, a Site-vicinity Study Area of 500 metres from the Site Study Area is appropriate.

Wider Study Area – An area that takes on the broader community generally beyond the immediate site vicinity and for specific environmental Components may include the entire Municipality.

The proposed preliminary study area for the Biology Component is presented in Table 2.3-1 and shown on Figure 2.3-1.

Table 2.3-1: Proposed Preliminary Study Areas for the Biology Component

Environmental Component	Preliminary Area(s) to be Studied	Rationale
Biology	Site and Site-vicinity	Potential effects on biological resources are expected to be limited to 500 m from the Site Study Area.



Legend

Watercourse

Waterbody

Wooded Area (MNR, 2018)

Conservation Authority Regulation Limit

Parcel Fabric

Site Study Area

Site-vicinity Study Area

Waste Management Resource Recovery Area Boundary

City of London - Natural Heritage Features (2017)

11038

Woodlot Patch ID

Potential Naturalization

Conservation Authority

Upland Corridor

Unevaluated Valleyland

Locally Significant Wetlands

Unevaluated Wetland

Significant Woodland

Unevaluated Vegetation Patch

Potential ESA

050100200

200

300

400

500

Meters

W12A Landfill Expansion
Biology Assessment

Study Area

Aug, 2019	1:10,500	Datum: NAD 1983 UTM Zone 17N Source: LIO, City of London
P#: 60556244	V#: 001	

AECOM

Figure 2.3-1

This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent.

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3.0 Assessment Criteria and Indicators

The Biology Component will be assessed for the potential effects of the undertaking based on two criteria as follows.

The rationale, indicators and data sources for the proposed assessment sub-Components are provided in the ToR and are presented in Table 3.0-1 below.

Table 3.0-1 Component Rationale and Indicators for the EA

Sub-Component	Rationale	Indicator(s)	Data Sources
Aquatic ecosystems	Landfill expansion could remove or disturb the functioning of natural aquatic habitats and species, including rare, threatened or endangered species.	<ul style="list-style-type: none"> • Expected change in surface water quality on-site and within the site-vicinity. • Expected impact on aquatic habitat and biota, including rare, threatened or endangered species within on-site and within the site-vicinity. 	<ul style="list-style-type: none"> • <i>W12A Landfill Area Plan Study – Ecological Background Study and Natural Heritage Study</i> (Earth Tech, 2005). • <i>Middlesex Natural Heritage Systems Study</i> (Middlesex County, 2014). • <i>The London Plan</i> (2016) • <i>City of London Inventory and Evaluation of Woodlands</i> (North-South Environmental Inc. (2009). • <i>Dingman Creek Subwatershed Study</i> (Aquafor Beech et.al., 1995) and <i>Dingman Creek Subwatershed Study Update</i> (Delcan, 2005). • <i>Dingman Creek Watershed Report Card</i> (2012). • <i>Dodd Creek Subwatershed Strategy</i> (Wilcox Betsy, 2005). • <i>Department of Fisheries and Oceans (DFO) Drain Classification and Fish Habitat Data</i> from the Upper Thames River Conservation Authority (UTRCA) and Kettle Creek Conservation Authority (KCCA). • Land Information Ontario (LIO). • Ministry of Natural Resources and Forestry (MNRF) SAR List. • Natural Heritage Information Centre.

Biology Work Plan

Environmental Assessment of the Proposed W12A Landfill Expansion, City of London

Sub-Component	Rationale	Indicator(s)	Data Sources
			<ul style="list-style-type: none"> • DFO <i>Drain Classification and Fish Habitat Data</i> from the UTRCA and KCCA. • Aquatic habitat and Benthic Water Quality • Species at Risk screening & habitat assessment
Terrestrial ecosystems	Landfill expansion could remove or disturb the functioning of natural terrestrial habitats and vegetation, including rare, threatened or endangered species.	Expected impact on terrestrial vegetation communities, wildlife habitat, and wildlife, including rare, threatened or endangered species on-site and within the site-vicinity.	<ul style="list-style-type: none"> • <i>W12A Landfill Area Plan Study – Ecological Background Study and Natural Heritage Study</i> (Earth Tech, 2005). • <i>Middlesex Natural Heritage Systems Study</i> (Middlesex County, 2014). • <i>The London Plan</i> (2016). • <i>City of London Inventory and Evaluation of Woodlands</i> (North-South Environmental Inc., 2009). • <i>Dingman Creek Subwatershed Study</i> (Aquafor Beech et. al., 1995) and <i>Dingman Creek Subwatershed Study Update</i> (Delcan, 2005). • <i>Dingman Creek Watershed Report Card</i> (2012). • <i>Dodd Creek Subwatershed Strategy</i> (Wilcox Betsy, 2005). • <i>DFO Drain Classification and Fish Habitat Data</i> from the UTRCA and KCCA. • Land Information Ontario (LIO). • <i>MNRF Ontario SAR List</i>. • <i>Natural Heritage Ontario Reptile and Amphibian Atlas</i>. • <i>Ontario Breeding Bird Atlas</i>. • <i>Ontario Butterfly Atlas</i>. • Terrestrial and wetland vegetation community investigations, breeding

Sub-Component	Rationale	Indicator(s)	Data Sources
			birds surveys, herpetofauna (amphibians and salamanders) surveys, bat habitat surveys, snake cover board and area searches, lepidoptera and odonata (butterfly, dragonfly and damselfly) surveys and wildlife habitat surveys <ul style="list-style-type: none">• Complete Species at Risk screening & habitat assessment

The criteria and indicators will be refined during the EA as necessary.

4.0 Detailed Workplan

4.1 Step 1: Characterize Existing Environmental Conditions

This section presents an overview of existing environmental conditions for the Biology Component on and in the area of the W12A Landfill based on existing documentation. As described in the Ministry of the Environment, Conservation and Parks (*MECP Code of Practice* (MOECC, 2014a), the City of London will complete additional studies/investigations to present a more detailed description of the environmental conditions in the EA Report.

4.1.1 Overview of Existing Conditions (Existing Documentation)

The Biology Component of this study is comprised of terrestrial, wetland and aquatic ecosystems.

Natural vegetation in the Middlesex region consists primarily of deciduous forest communities (Middlesex County, 2014) including Dry-fresh Deciduous Forest, Fresh-moist Sugar Maple Deciduous Forest and Fresh-moist Poplar-sassafras Deciduous Forest (North-South Environmental Inc., 2009).

Clay to silt textured soils are the predominant type in the Dingman Creek Subwatershed (Delcan, 2005) and areas of imperfect to poor drainage may contribute to the presence of wetlands in the general area. Several man-made or managed drains are also present. Unevaluated woodlands, unevaluated wetlands and a potential Environmentally Significant Area (ESA) are located in the Site-vicinity Study Area, as well as some successional meadows and thickets.

Biology Work Plan

Environmental Assessment of the Proposed W12A Landfill Expansion, City of London

Previous investigations identified several vegetation community types within the general area of the landfill site, including cultural, forest, marsh, open aquatic and swamp communities.

The primary terrestrial features found within the general area of the W12A Landfill as shown on Figure 2.3-1 include:

- A potential ESA on the north side of Scotland Drive (vegetation patch #10121)
- Significant Woodlands north of Scotland Drive (vegetation patches #10120 and #10122)
- Significant woodland south of Manning Drive (vegetation patch #11068)
- Unevaluated wetlands north of Scotland Drive
- Locally Significant Wetland north of Scotland Drive (Silver Swamp)

The primary aquatic features identified in the area include the Shore Drain, Sterling Drain, Bannister Johnson Drain and C.B. Smith Drain. Most of these watercourses have been altered (e.g., channelized) to facilitate drainage for surrounding land use.

Fish habitat has been identified as either Type 2 (generally important but not critical) or Type 3 (marginal/severely degraded). Fish species previously observed were ranked globally as G5 and provincially as S5 (in each case meaning very common and abundant). The benthic macroinvertebrate community is considered of poor quality and is indicative of shallow, eutrophic aquatic habitat.

Previous studies have identified several species of mammals, birds, amphibians and reptiles in the region. The background review has identified known records of several plant, bird, snake, and mammal Species at Risk (SAR) and Species of Conservation Concern (SOCC), and potential Significant Wildlife Habitat (SWH) including features supporting bat maternity colonies, amphibian breeding, and habitat for SOCC. To determine the presence/absence of any significant species or features within the study areas, site-specific field investigations will be required.

A Biology Assessment (*W12A Landfill Area Plan Study – Ecological Background Study and Natural Heritage Study*) was undertaken in 2005 to fully describe the conditions that existed within the Site and Site-vicinity Study Area. Although a significant amount of fieldwork was completed within the Site and Site-vicinity Study Area, the information is considered dated and requires updating. In addition, previous studies did not include habitat assessments and surveys for Species at Risk.

4.1.2 Additional Studies/Investigations

This work consists of a three (3) season inventory of the natural heritage features within the Site and Site-vicinity Study Area and will follow City of London data collection guidelines as per the City of London Environmental Management Guidelines (2007).

Species at Risk Screening

To determine the potential for Species at Risk (SAR) within the study area, a habitat screening will first be conducted whereby an Ecologist will review available background documents such as MNRF's online database, Amphibian and Reptiles Atlas, the Ontario Breeding Bird Atlas, Agency correspondence, etc. to create a complete list of potential SAR within the area. The listed species habitat preferences will then be compared to habitat characteristics to determine if the Site and Site-vicinity study areas may potentially contain preferred habitat for the potential SAR.

Aquatic Ecosystems Studies/Investigations

Aquatic habitat and benthic (macro) invertebrate studies will be required to further the understanding of existing conditions of the aquatic ecosystems. All of the studies described below were completed in 2018.

Aquatic Habitat Assessments

Aquatic biologists will conduct aquatic habitat assessments of the four (4) watercourses within the Site-vicinity Study Area where property is access allowed. Investigations include the determination of drainage patterns and determination of the status of watercourses. Data collection includes:

- Channel type (natural or channelized)
- Channel morphology (width, depth)
- Flow characteristics
- Substrates
- Instream cover
- Specialized habitat present
- Bank and riparian community characteristics
- Valley form characteristics

Benthic (macro) Invertebrate Surveys

Surveys are to be completed at four primary sites within the Site and Site-vicinity Study Areas. Benthic monitoring will be conducted following protocols established by Dr. Bob Bailly (University of Western University, 2001) and involve transverse sweeps or 'kicks' across suitable habitats (i.e., riffles). Sampling will be done during the period between early June to late September avoiding spring and fall spawning activity.

Terrestrial Ecosystem Studies/Investigations

Terrestrial and wetland vegetation community investigations, breeding birds surveys, herpetofauna (amphibians and salamanders) surveys, bat habitat surveys, snake cover board and area searches, lepidoptera and odonata (butterfly, dragonfly and damselfly) surveys and wildlife habitat surveys will be completed to further the understanding of existing conditions of the terrestrial ecosystems.

Ecological Land Classification Confirmation & Floral Inventory

Vegetation communities will be delineated and assessed according to the protocols outlined in the Ecological Land Classification (ELC) system for Southern Ontario (Lee et al., 1998) to Vegetation Community Type where possible. A three-season plant inventory will be completed to ensure that spring ephemerals and seasonally significant species are documented. Vegetation communities will be mapped and used to further refine the results of the SAR and SWH screening exercises.

Wetland Community Boundary Delineation

Where wetland communities are observed, wetland community boundaries and descriptions will be documented following protocols outlined in the Ontario Ministry of Natural Resources Ontario Wetland Evaluation System (OWES) for Southern Ontario (MNR 2014).

Breeding Bird Surveys

Breeding bird surveys should typically be conducted over a minimum of two (2) site visits during peak calling season and peak calling hours. However, given the identification of grassland bird SAR species during the preliminary SAR Screening, and the presence of candidate habitat, three rounds of surveys are required to satisfy survey requirements for SAR grassland birds (i.e., Bobolink and Eastern Meadowlark). For the majority of Ontario's breeding birds this occurs between a half-hour before sunrise to approximately 10:00 a.m. from May 24th to July 10th. Birds observed exhibiting various breeding behaviors in suitable habitat on or adjacent to the Site-vicinity Study Area will be recorded. Incidental observations of other wildlife, including amphibians and mammals, will also be recorded on each field visit.

Herpetofauna Surveys

To survey for the presence of breeding amphibians and salamanders, daytime site visits will be conducted to examine the suitability of vegetation communities present within the Site and Site-vicinity Study Area for the presence of vernal pools. The following parameters will be used to identify potential viable vernal pools:

- Small, isolated pools (lacking the presence of fish populations);
- The potential to hold water at least until July;

Biology Work Plan

Environmental Assessment of the Proposed W12A Landfill Expansion, City of London

- Have water depths of at least 30 cm in early spring to be considered suitable amphibian breeding habitat. The 30 cm depth criterion is consistent with the recommendations of Calhoun and deMaynadier (2004);
- Good surrounding upland forested habitat;
- Each viable vernal pool would be mapped and marked using GPS, as the identified pools will serve as the amphibian/salamander survey stations; and
- Water depth, classification of surrounding vegetation, in-water characteristics (i.e., %vegetation vs % open water), and evidence of breeding amphibians (egg masses) would be recorded.

Following the identification of viable vernal pools, the following additional amphibian and salamander surveys will be conducted:

- Auditory Amphibian Surveys following the protocols as outlined in the Marsh Monitoring Protocol, the standardized field methodology for audio-surveying breeding frogs and toads. Amphibian surveys will be completed at each of the pre-determined survey stations established during the amphibian/salamander habitat surveys.
- Visual Amphibian/Salamander surveys will be conducted within suitable habitat identified during the vernal pool surveys. Area searches were conducted in conjunction with other surveys completed for the Site and Site-vicinity Study Area.

Bat Habitat Suitability Assessment

To survey for the presence of bat habitat, a bat habitat suitability assessment will be completed within the Site and Site-vicinity Study Area during the leaf-off and leaf-on period. This assessment will be conducted within identified ELC areas of candidate habitat (i.e., CUW, FOD, FOM, FOC, SWD, SWM and SWC) following the MNRF Survey Protocol for Species at Risk within Treed Habitats – Little Brown, Northern Myotis, and Tri-Colored Bat (April 2017).

Snake Cover Board and Area Searches

To survey for the presence of snakes and identify candidate habitat within the Site Area, a combination of cover board surveys and area searches will be completed. These surveys will be completed during daytime bat habitat assessments, ELC investigations, as well as breeding bird surveys. Five (5) daytime searches will be conducted, to survey potential habitat including hibernacula (rock or debris piles) and installed cover boards.

Lepidoptera and Odonata Surveys

Butterfly, dragonfly and damselfly surveys will be conducted in conjunction with ELC and SWH surveys within the study area. These will be conducted by walking the entire Site and Site-vicinity Study Areas capturing and identifying species as they are seen. Once identified, the species will be released.

Significant Wildlife Habitat Surveys

A Significant Wildlife Habitat screening exercise will be conducted using the Wildlife Habitat Ecoregion Criteria Schedule 7E (OMNR 2015) to determine the presence of Candidate SWH within the Site and Site-vicinity Study Areas. The presence of candidate habitat for all five SWH categories will be determined by comparing existing conditions, based on ELC site investigations, to criterion listed within the 7E schedule.

4.2 Step 2: Identify ‘Alternative Methods’ of Landfill Expansion

During the initial stage of the EA, a reasonable range of expansion alternatives will be identified and described at a sufficient level of detail (i.e., conceptual designs) so that potential effects of the expanded landfill on each environmental Component can be assessed and compared.

This task will involve developing the conceptual site design for the proposed expansion of the W12A Landfill, to gain an additional 25 years of disposal capacity. This task will be completed by the Design and Operations Team.

4.3 Step 3: Qualitative Evaluation of ‘Alternative Methods’

Based on the conceptual site design, and considering mitigation measures, potential impacts of the proposed W12A Landfill expansion on the Biology Component will be assessed. The Biology Component technical discipline lead will evaluate each ‘Alternative Method’ qualitatively and quantitatively including:

- Identify differences in potential impacts to watercourses.
 - temperature,
 - sedimentation,
 - fish habitat: quality of fish habitat lost or affected; and area of fish habitat lost or affected
- Identify differences in the ‘Alternative Methods’ that will impact terrestrial features (removal of habitat, harm or harassment of species, sedimentation, dust, spills and potential contamination).
 - Woodlands: area of woodland lost or affected,
 - Significant Wildlife Habitat (SWH): area of habitat lost or affected ,
 - Species at Risk (SAR) and their habitat: area of habitat lost or affected,

- unevaluated wetlands: area of wetland lost or affected,
- potential ESA north of Scotland Drive,
- locally significant wetland (Silver Swamp).

In this step, each 'Alternative Method' of the W12A Landfill expansion will be examined by the EA Team to determine if it would ultimately be approvable under the Environmental Protection Act (EPA).

This screening step is included to eliminate any alternative that would likely not be approvable. Should an alternative be found to not be approvable due to unacceptable net effects (i.e., no further refinement of mitigation is possible) or technical reasons, then the alternative would be eliminated from further consideration. At this point, the EA Management Team may consider additional 'Alternatives Methods' for the project that may have been identified by the public or other parties during the EA process.

4.4 Step 4: Compare the 'Alternative Methods' for Landfill Expansion and Identify the Preferred Alternative

A comparative evaluation of the 'Alternative Methods' will be completed and would consist of evaluating the relative importance or ranking of the assessment criteria (i.e., although all criteria are relevant, certain criteria may be considered more important than others¹).

The Biology Component technical discipline lead will complete the following tasks:

- Rank each 'Alternative Method' based on aquatic ecosystem differences.
- Rank each 'Alternative Method' based on terrestrial ecosystem differences.
- Describe advantages and disadvantages of each 'Alternative Method'

The EA Management Team will take each discipline's comparison and compile the overall comparison of 'Alternative Methods'.

¹ The public has been asked during the consultation on the Terms of Reference and will be asked during consultation on the EA to provide input into the ranking of the relative importance of the Components.

4.5 Step 5: Refine Mitigation Measures and Determine Net Effects of the Preferred Alternative

In this task, the EA Team will identify linkages between the environmental Components (i.e., direct or indirect effects of the proposed expansion on the Biology Component via another Component) and prepare diagrams. The purpose of linkage diagrams, prepared by the technical discipline leads, is to facilitate an integrated assessment of effects.

The prediction of future environmental effects associated with the preferred 'Alternative Method' (with conceptual design mitigation measures in place) will be determined by the Biology Component technical discipline lead. Assessment of potential effects will be done using appropriate objectives, standards, policies and regulations. The remaining net effects, if any, will be documented.

Also, a qualitative comparison will be made between the predicted effects of the preferred alternative and the Do-Nothing alternative considering the indicators for the Biology Component.

4.6 Step 6: Describe the Preferred 'Alternative Method' for Landfill Expansion

A description of the preferred landfill expansion alternative will be detailed following the identification of appropriate mitigation measures. In addition, a leachate management assessment will be completed that will include;

- the quantity of leachate generated from the preferred landfill expansion alternative will be predicted,
- the quality of the leachate associated with the expansion and requiring treatment will be assessed,
- a high level assessment of the capability of the existing forcemain to continue to convey the collected leachate to the municipal sewer system will be completed; and,
- a high level assessment of the capability of the Greenway Wastewater Treatment Plant to continue to treat the leachate will be carried out.

The results will be provided in the EA study report (Task 9).

4.7 Step 7: Consideration of Climate Change

The potential effects of climate change on infrastructure associated with the site, as well as ways that the project could reduce greenhouse gas (GHG) emissions or remove GHG from the atmosphere will be considered by the air quality, surface water and geology and hydrogeology Component technical discipline leads.

4.8 Step 8: Cumulative Impact Assessment

The EA Team will work to identify the predicted effects of other existing or known proposed projects in the area of the site. The Biology Component technical discipline lead will consider any identified effects together with those predicted during the comparative evaluation of 'Alternative Methods' to determine if there are any unacceptable predicted cumulative effects.

4.9 Step 9: Preparation of EA Study Report

In support of the completion of this task, the Biology Component technical discipline lead will carry out the following tasks:

- document the assessment results in a Biology Supporting Document that will form an appendix to the EA submission,
- participate in meetings with the GRT including upfront consultations with the MNRF during the EA to obtain pre-approval of tasks in the work plan, as required,
- support consultation events as required in development of presentation material and/or being at the event; and,
- provide technical support during the review of the draft EA by the regulatory agencies and public.

Appendix A

References

Biology Work Plan

Environmental Assessment of the Proposed W12A Landfill Expansion, City of London

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Appendix **C**

Agency Correspondence

Ross, Matthew

From: Jennifer Dow <jennifer@kettlecreekconservation.on.ca>
Sent: Monday, November 19, 2018 4:21 PM
To: Ross, Matthew
Cc: Joe Gordon
Subject: RE: Natural Heritage data request for W12 landfill EA
Attachments: In-Water Work Timing Window Guidelines.pdf; 20181119_141513.jpg; Shore Creek Drain_Manning_95375.JPG; Shore Creek Drain_Glanworth_95373.JPG; Water Quality Site_Site#6_CL.JPG; Benthic Site_Harry White_B2.JPG; WM White Drain_Harry White_95348_95349.JPG; 2004 Middlesex-Elgin Groundwater Study_Dillon.pdf

Hello Ross,

Thank you for allowing KCCA to provide natural heritage information for the proposed W12A Landfill Expansion EA. While KCCA does not have any long term monitoring sites within the study area or 500m buffer, KCCA does have some information near the study area that might be helpful for your review. For your reference, I have attached a copy of the in-water work timing window guidelines.

Additional Study Report:

Northeast of the study area is located the Kirk-Cousins Management Area (KCMA) (located on Scotland Drive, just east of Wellington Road S.) Attached is a photo of the front cover of an October 2000 report of a three-year study completed at the KCMA on flora and fauna. This report can be made available if you think it would be useful for natural heritage review. There are several hard copies here at the main KCCA office if you would like to borrow one, or alternatively, I can make a PDF copy.

Fish Community:

As part of KCCA's environmental monitoring program, staff have been collecting fish data as part of a drain classification program for Fisheries and Oceans Canada. In 2018, one site (95375) was sampled that is located within the buffer of the study site and one site (95373) was sampled downstream of the study area. Number in brackets is the total number of that species collected during the sampling events.

Site 1: Shore Creek Drain @Manning Drive (see map—I also circled the location of the KCMA in blue)

Drain Segment ID: 95375

Sample Date: August 17, 2018

Species collected: Johnny Darter (17), Creek Chub (2), Brook Stickleback (12), Bluntnose Minnow (14)

Site 2: Shore Creek Drain @Glanworth Drive (see map)

Drain Segment ID: 95373

Sample Date: August 30, 2018

Species collected: Bluntnose Minnow (5), Creek Chub (16), White Sucker (18), Blacknose Dace (2), Johnny Darter (4), Brook Stickleback (3)

2016 Sites on W.M White Drain @Harry White Drive (see map, these sites are near the study site)

Drain Segment ID: 95348

Sample Date: October 11, 2016

Species collected: Blacknose Dace (11), Bluntnose Minnow (15), Common Shiner (25), Creek Chub (90), Johnny Darter (5), Least Darter (8), Brook Stickleback (14), White Sucker (58)

Drain Segment ID: 95349

Sample Date: October 11, 2016

Species collected: Blacknose Dace (2), Common Shiner (3), Creek Chub (9), Johnny Darter (6), Least Darter (16), Brook Stickleback (19), White Sucker (7)

Water Quality:

There is a long-term surface water quality monitoring site on Clinton Line (see attached map) which is downstream of your study site. Surface water samples are collected at this site during the ice-free months, generally March to November for a suite of parameters (general chemistry, bacteria, nutrients and metals). This site has water quality data from 2006 to present. This data can be made available if you think it would be useful for natural heritage review, however it is well outside of your study area.

Benthic Invertebrate data:

There is one long-term benthic invertebrate monitoring station located downstream of the study site on Harry White Drive just west of White Oak (Site B2), (see attached map). Benthic samples have been collected at this site every year in the fall since 2006. Data was collected using the BioMap protocol from 2006 to 2009 and OBBN from 2010 to present. This data can be made available if you think it would be useful for natural heritage review, however it is well outside of your study area.

Groundwater:

While KCCA does not have any groundwater monitoring wells located in or near the study site, there is a 2004 Dillon Consulting/Golder Associates report on Middlesex-Elgin Groundwater that might be useful (Project No. 02-0394). I have attached a copy of the report.

Should you have any questions, or require any additional information, please feel free to contact me.

Thank you,
Jennifer Dow

Water Conservation Supervisor
Kettle Creek Conservation Authority
Tel: (519) 631-1270 ext.228
Fax: (519) 631-5026
www.kettlecreekconservation.on.ca



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From: Ross, Matthew [<mailto:Matthew.Ross@aecom.com>]
Sent: October-30-18 1:40 PM
To: Joe Gordon <joe@kettlecreekconservation.on.ca>
Subject: Natural Heritage data request for W12 landfill

Hello Joe,

Please see the attached natural heritage data information request and location map for a project site at the W12 landfill in London, Ontario.

Regards,

Matthew Ross, B.Sc.

Terrestrial Ecologist, Water & Natural Resources, Environment

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From: Cari Ramsey <ramseyc@thamesriver.on.ca>
Sent: Tuesday, October 30, 2018 1:24 PM
To: Ross, Matthew
Subject: W12 Landfill Site
Attachments: Scotland.pdf

Hi Matthew;

My apologies on this one. I thought I sent the info, but apparently it was a different site and this one got lost in the shuffle. I have attached the mapping for this area and you will notice that only half the subject area is within the UTRCA watershed. The additional area will be within the Kettle Creek CA jurisdiction so you should contact them for any additional information. For the rest of the info I have the following:

*No SARA species within the area

*Warm water watercourses therefore the timing windows would be No In-Water Work from March 15th to July 15th

*Water quality and quantity information would come from Ministry of the Environment, Conservation and Parks (MECP)

* We do not have any fish, benthic or mussel information for that area

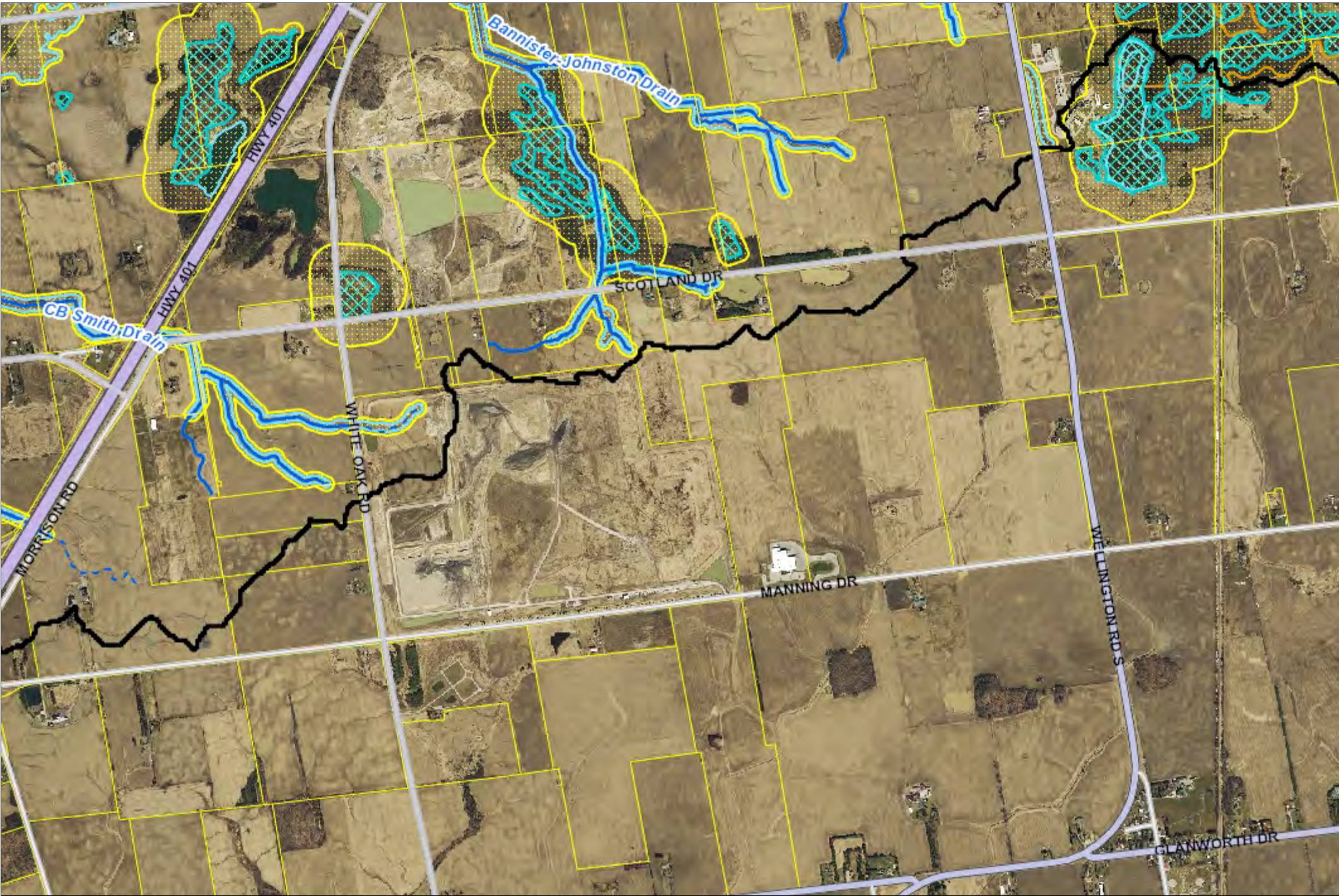
Sorry it took that long to not have that much info, but if you have any questions please feel free to contact me.

Thanks!

Cari

Cari Ramsey
Environmental Regulations Technician/ Health and Safety Specialist
UTRCA
1424 Clarke Side Road
London, ON
N5V 5B9
(519)451-2800 ext. 289
ramseyc@thamesriver.on.ca

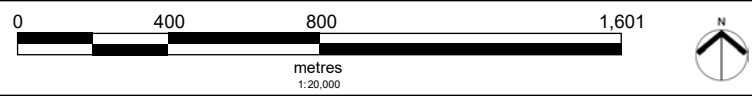
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Notes:
Scotland/White Oak

Created By: cr October 30, 2018

* Please note: Any reference to scale on this map is only appropriate when it is printed landscape on legal-sized (8.5" x 14") paper.



Regulation Limit

Regulation under s.28 of the *Conservation Authorities Act*
Development, interference with wetlands, and alterations
to shorelines and watercourses. O.Reg 157/06, 97/04.

Legend

- UTRCA Watershed (1:10K)
- Assessment Parcel (MPAC)
- Watercourse**
 - Open
 - Tiled
- Wetland Hazard
- Flooding Hazard
- Erosion Hazard
- Regulation Limit 2015

The Regulation Limit depicted on this map schedule is a representation of O.Reg 157/06 under O.Reg 97/04.

The Regulation Limit is a conservative estimation of the hazard lands within the UTRCA watershed. In the case of discrepancies between the mapping and the actual features on a property, the text of Ontario Regulation 157/06 prevails and the jurisdiction of the UTRCA may extend beyond areas shown on the maps.

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This map is not a substitute for professional advice. Please contact UTRCA staff for any changes, updates and amendments to the information provided.

This document is not a Plan of Survey.

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CONSERVATION AUTHORITY
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From: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Sent: Friday, December 15, 2017 10:30 AM
To: Ross, Matthew
Subject: RE: Natural heritage information request for W12 landfill EA
Attachments: 2017-04_SAR Screening Process_Technical Bulletin.pdf

Good morning Matthew,

The Ministry of Natural Resources and Forestry (MNRF) understands that AECOM is conducting an Information Request for the City of London's W12A Landfill Expansion EA proposed at Lots 18-20, Concession 6 in the City of London, as identified in the information provide.

MNRF provides the following natural heritage information in response to your request.

Species at Risk (SAR)

The Species at Risk in Ontario (SARO) List (<https://www.ontario.ca/laws/regulation/080230>) is Ontario Regulation 230/08 issued under the *Endangered Species Act, 2007* (ESA). The ESA came into force on June 30, 2008, and provides both species protection (under section 9) and habitat protection (under section 10) to species listed as endangered or threatened on the SARO List.

An initial SAR (Endangered and Threatened species) screening has been completed for the above-noted property.

There are known occurrences of SAR on the property, including:

- Barn Swallow (threatened) – receives species and general habitat protection;
- Bobolink (threatened) – receives species and general habitat protection; and
- Eastern Meadowlark (threatened) – receives species and general habitat protection.

There are also known occurrences of SAR in the general project area that may occur on-site, including

- Butternut (endangered) – receives species and general habitat protection;
- Eastern Flowering Dogwood (endangered) – receives species and regulated habitat protection; and
- SAR Bats (endangered) – receives species and general habitat protection.

Please note that this is an initial screening for SAR and the absence of an element occurrence does not indicate the absence of species. The province has not been surveyed comprehensively for the presence or absence of SAR and MNRF data relies on observers to report sightings of SAR. Field assessments by a qualified professional may be necessary if there is a high likelihood for SAR species and/or habitat to occur within the project footprint and potentially be impacted.

MNRF recommends that field assessments are undertaken by a qualified biologist to determine whether the proposed project may contravene the ESA. If the project has the potential to contravene the ESA, an Information Gathering Form (IGF) should be submitted to ESA.Aylmer@Ontario.ca and no on-site activity (i.e. site alteration, vegetation/debris removal, etc.) should occur until a Stage 2 Screening is complete to ensure compliance with the Act. Please see our attached Technical Bulletin regarding the Aylmer District Species at Risk Screening Process for more information.

It is important to note the following:

- The Committee on the Status of Species at Risk in Ontario (COSSARO) meets regularly to evaluate new species for listing and/or re-evaluate species already on the SARO List.
- As a result, species designations may change and changes may occur in both species and habitat protection which could affect the level of protection they receive under the ESA 2007 and whether proposed projects may have adverse effects on SAR.
- Habitat protection provisions for a species may change if a species-specific habitat regulation comes into effect.

If an activity or project will result in adverse effects to endangered or threatened species and/or the habitat, additional action would need to be taken in order to remain in compliance with the ESA. Additional action could be applying for an authorization under section 17(2)(c) of the ESA, or completing an online registry for an ESA regulation and following the rules in regulation if the project is eligible (<http://www.ontario.ca/environment-and-energy/natural-resources-approvals>).

Questions about the registry process should be directed to MNRF's Registry and Approval Services Centre at 1-855-613-4256 or at mnr.rasc@ontario.ca. Please be advised that applying for an authorization does not guarantee approval and the process can take several months.

Significant Wildlife Habitat (SWH)

Significant wildlife habitat (SWH) may be present on or adjacent to the above-noted subject lands (within 120 m). Please consult the Significant Wildlife Habitat Technical Guide (SWHTG, OMNR 2000), the Natural Heritage Reference Manual (NHRM) and the Ecoregion Criteria Schedules for criteria on identifying and determining significance of wildlife habitat. SWH is identified by planning authorities using the criteria and processes recommended in the SWHTG and Ecoregion Criteria Schedules.

Link to the SWHTG: <https://www.ontario.ca/environment-and-energy/guide-significant-wildlife-habitat>

Link to Ecoregion 7E criteria schedule: http://publicdocs.mnr.gov.on.ca/View.asp?Document_ID=21843&Attachment_ID=45645

Habitat of species of special concern (not legally protected under the ESA) and those ranked S 1 to 3 receives consideration for SWH of Special Concern and Rare Wildlife Species. The following species are known to occur in the area for your information:

- Eastern Wood-pewee (Special Concern), last observed date: 2002
- Snapping Turtle (Special Concern), last observed date: 2013
- Yellow Bartonian (S2), last observed date: 1932
- Slender Bluet (S2) last observed date: 2000
- Double-striped Bluet (S3) last observed date: 2000

Areas of Natural and Scientific Interest (ANSIs)

There are no Provincially or Regionally Significant Earth or Life Science ANSI's within or adjacent to the proposed subject lands.

Significant Wetlands

There are no Provincially Significant Wetlands (PSWs) present within or adjacent to the above-noted subject lands. However, there is an evaluated wetland (Non PSW), Silver Swamp, located immediately adjacent to the project area, north of Scotland Dr. Wetland shapefiles can be downloaded from Land Information Ontario (LIO) or viewed on our Make a Natural Heritage Map tool (<https://www.ontario.ca/page/make-natural-heritage-area-map>).

Significant Valleylands

MNRF does not possess significant valleylands mapping. The NHRM provides guidance and evaluation criteria for determining significant valleylands. Conservation authorities should be contacted to inquire about information pertaining to significant valleylands if they have not been identified in the applicable Official Plan.

Fish and Fish Habitat

There appear to be watercourses within and adjacent to the project area; however, no information on fish and fish habitat or mussel and mussel habitat is available.

MNRF recommends you contact the appropriate conservation authority and DFO for up-to-date fisheries, mussel, and drain information.

- Conservation Authorities and Official Plans may provide additional natural heritage information for this study.

Please be advised that it is your responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

If you have any questions or require additional information, please feel free to contact me.

Kind regards,

Kathleen Buck
Management Biologist
MNRF Aylmer District
615 John St. N.
Aylmer, ON N5H2S8
P (519)773-4785
F (519)773-9014
Kathleen.Buck@ontario.ca

As part of providing [accessible customer service](#), please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Ross, Matthew [<mailto:Matthew.Ross@aecom.com>]
Sent: October-17-17 3:02 PM
To: ESA-Aylmer (MNRF)
Subject: Natural heritage information request for W12 landfill EA

To whom it may concern,

Please see the attached information request and project location map for the W12 landfill Environmental Assessment in London, Ontario.

Regards,

Matthew Ross, B.Sc.
Terrestrial Ecologist, Water & Natural Resources, Environment
D +1-519-650-8628
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