THE CORPORATION OF THE CITY OF WINDSOR

Appendix H-1 – St. Rose Pump Station Preferred Location – Natural Environmental Review

Sewer and Coastal Flood Protection Master Plan

August 2020 – 17-6638

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1.0 Introduction

Dillon was retained by the City of Windsor to complete the Windsor Sewer and Coastal Flood Protection Master Plan (WSMP). The objective of this master plan is to develop solutions to mitigate flooding throughout the City of Windsor. During major rain events, significant surface flooding is observed throughout the Riverside Drive East area, between Ford Boulevard and Jefferson Avenue. To mitigate flooding and associated roadway access issues and private property damage, a comprehensive stormwater management solution has been developed for this area. This solution includes various storm pump station improvements, storm trunk sewers and private property improvements (i.e. downspout disconnection). One component of this solution includes the construction of a new pump station at the intersection of Riverside Drive East and St. Rose Avenue which is the convergence of two major storm trunk sewer systems (south St. Rose Avenue drainage area and west Riverside Drive drainage area). More information on the analysis and functional design of this pump station will be included in the final (WSMP) report.

This memo has been drafted to provide an overview of the existing natural environment conditions and address the potential for impacts that may occur as a result of the improvements proposed within the St. Rose Beach Park, at the intersection of St. Rose Avenue and Riverside Drive East, within the City of Windsor, Ontario. The recommended storm system flood mitigation solutions determined through the environmental assessment evaluation includes the following:

- Construction of a stormwater pump station within the grassed area, between the existing concrete sidewalk to the west and residential property to the east (7010 Riverside Drive East); and
- Potential construction of a second submerged storm sewer outlet sewer adjacent to the existing outlet.

The site in which the pumping station would be constructed is referred to as the St. Rose Pump Station Study Area (the Study Area). A project location figure has been provided in (Attachment A).

2.0 Methods

In order to characterize the existing natural environment conditions, a background review of the site as well as preliminary aquatic and terrestrial habitat assessments were conducted. Access to private lands was not available during the field investigations.

The purpose of the terrestrial investigation was to complete high-level Ecological Land Classification (ELC) reconnaissance with the objective of confirming the presence of the features identified during the background review, as well as identifying additional features, if present.

The purpose of the aquatic assessment was to complete a high-level reconnaissance of general aquatic features and conditions with the objective of confirming the potential for fish habitat and where possible, identify any critical, sensitive or limiting habitat features within the Study Area. The aquatic assessment included documenting fish habitat characteristics (where applicable) such as channel form, presence/absence of flow, substrate type, channel dimensions and riparian vegetation. Fish community sampling was not completed.

More in-depth terrestrial and aquatic surveys may be required during the spring/summer months in order to fulfill agency requirements required in advance of the detailed design and construction.

3.0 Results

A terrestrial assessment of the Study Area was completed on November 29, 2019. Based on a background review of aerial imagery and field investigation, the majority of the land within the Study Area is classified as CVR - Residential, with smaller sections of CVI: Transportation and CGL: Greenlands as classified using the Ecological Land Classification Manual (Lee et al. 1998). The Greenlands habitat consisted of manicured lawn with park features such as landscaped trees, a cement walkway and park benches. Photos documenting the existing conditions are presented in Attachment B. Based on the background review and terrestrial assessment, no Significant Wildlife Habitat (SWH), habitat for Species of Conservation Concern (SCC) or Species at Risk (SAR) were identified within the terrestrial portion of the site.

A review of the DFO Aquatic SAR map (August 2019) and MNRF data were reviewed to determine Species of Conservation Concern (SCC) (SRank of S1 to S3, Special Concern and Federally Endangered, Threatened and Special Concern Species) and Provincially Endangered and Threatened Aquatic SAR with the potential to occur within the Study Area[1]. A list of potential species includes Northern Madtom (Noturus stigmosus; with Critical Habitat[2]), Silver Chub (Macrhybopsis storeriana), Eastern Sand Darter (Ammocrypta pellucida), Channel Darter (Percida copelandi), Threehorn Wartyback (Obliquaria reflexa), Fawnsfoot (Truncilla donaciformis), Round Pigtoe (Pleurobema sintoxia), Elusive Clubtail (Stylurus notatus), Silver Lamprey (Ichthyomyzon unicispis), Spotted Sucker (Minytrema melanops), and Lake Sturgeon (Acipenser fulvescens pop. 3).

An aquatic assessment of the Study Area was completed on January 28, 2020. Based on background review and the aquatic assessment, the Detroit River within the Study Area was classified as OAO: Open Aquatic with a warm thermal regime (LIO Aquatic Resource Area Database, October 2018). Within the Study Area, the shoreline consisted of hardened steel sheet pile and concrete within a manicured park-like setting. Due to water depth, turbidity and ice flows, typical substrate and instream habitat features were not observed. Despite the constructed/altered shoreline and riparian habitat, candidate Significant Wildlife Habitat (SWH) for Turtle Wintering Areas is present within the Detroit River based on the MNRF's Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (2015). This area was identified

[1] Ontario SRank: S5 = secure; S4= apparently secure; S3 = vulnerable; S2 = imperiled; SX = Extirpated; SH = Possibly Extirpated; SNA = non-native or exotic species to Ontario; Provincial Endangered Species Act (2007) designations: Endangered = lives in the wild in Ontario but is facing imminent extinction or extirpation; Threatened = lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it; Special Concern = lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats; Federal Species at Risk Act (2002) designations: Endangered = species facing imminent extirpation or extinction; Threatened = species which are likely to become endangered if nothing is done to reverse the factors leading to their extirpation or extinction; Special Concern = species which may become threatened or endangered because of a combination of biological characteristics and identified threats;

[2] Critical Habitat for Aquatic Species (federal)= vital to the survival or recovery of wildlife species. The habitat may be an identified breeding site, nursery area or feeding ground (DFO, 2016).

as candidate SWH based on the deep, open water and potential for soft substrate for turtle overwintering. In addition to SWH, based on the aquatic conditions observed, the Detroit River provides direct fish habitat within the Study Area.

4.0 Conclusion

Terrestrial Environment

Due to the lack of potential SWH, SCC and SAR within the terrestrial portion of the Study Area, appropriate measures to mitigate impacts to wildlife habitat will be identified and incorporated at the detailed design phase.

Aquatic Environment

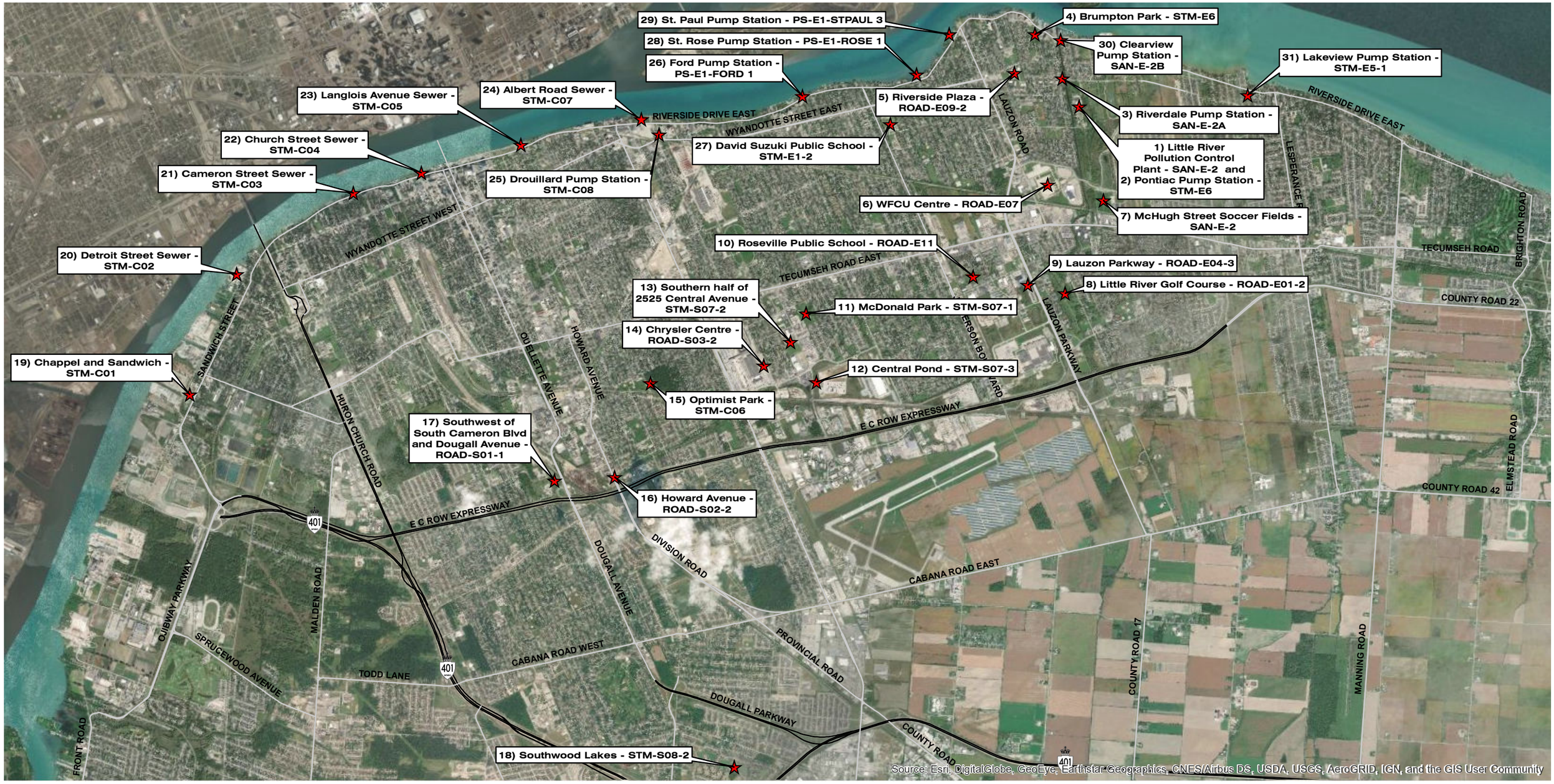
As the proposed works in the aquatic portion of the Study Area involve in-water works, measures to mitigate impacts to aquatic species and their habitat during construction and installation of the storm sewer outlet will need to be implemented. These measures include but are not limited to adherence to sensitive species timing windows, site isolation (i.e. through cofferdams or turbidity curtains), and erosion and sediment controls.

Under permanent operating conditions, the recommended second storm sewer outlet is proposed to accommodate full pumping capacity of the new storm sewer pump station. Frequency of discharge from this secondary outlet is dependent on frequency of large rain events. The increase in storm flows from this outlet will be confirmed through detailed design and appropriate measures to mitigate potential impacts will be developed and implemented.

Due to the potential SWH, SCC and SAR within the Detroit River, it is recommended that site specific data requests be submitted to DFO and if deemed necessary, further field investigations to determine the suitability of substrate be conducted. This will assist in confirming if SWH, SCC or SAR habitat are present within the Study Area, in advance of final design. Furthermore, consultation with the MECP and DFO is recommended and approvals/permits should be obtained under the Endangered Species Act and the Fisheries Act as required.

Appendix H-1-a

Figures



CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

PROJECT LOCATION
FIGURE 1

THE CITY OF WINDSOR

★ Project Location

DILLON CONSULTING

MAP CREATED BY: SFG
MAP CHECKED BY: BM
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

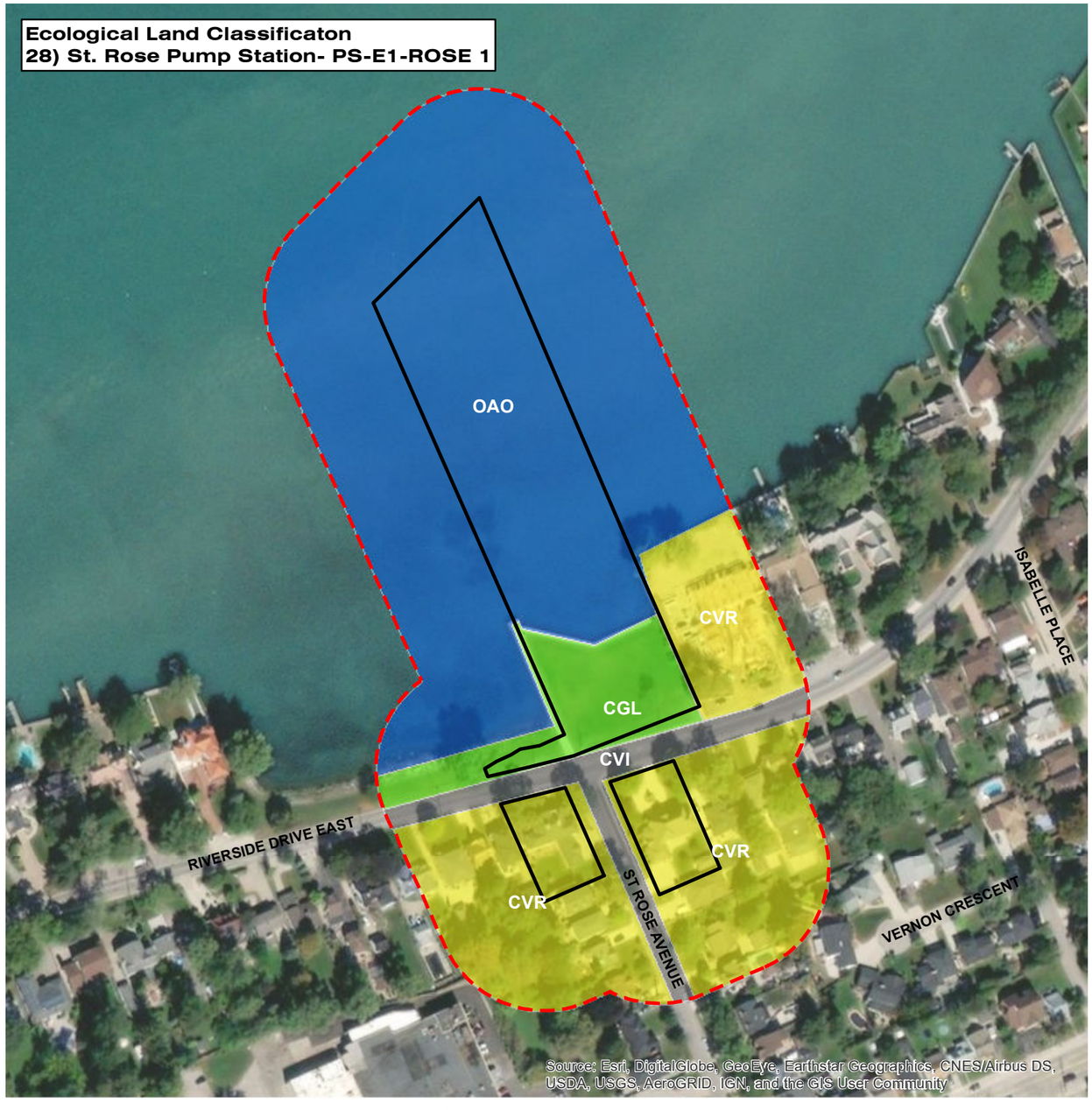
0 400 800 1,200 m

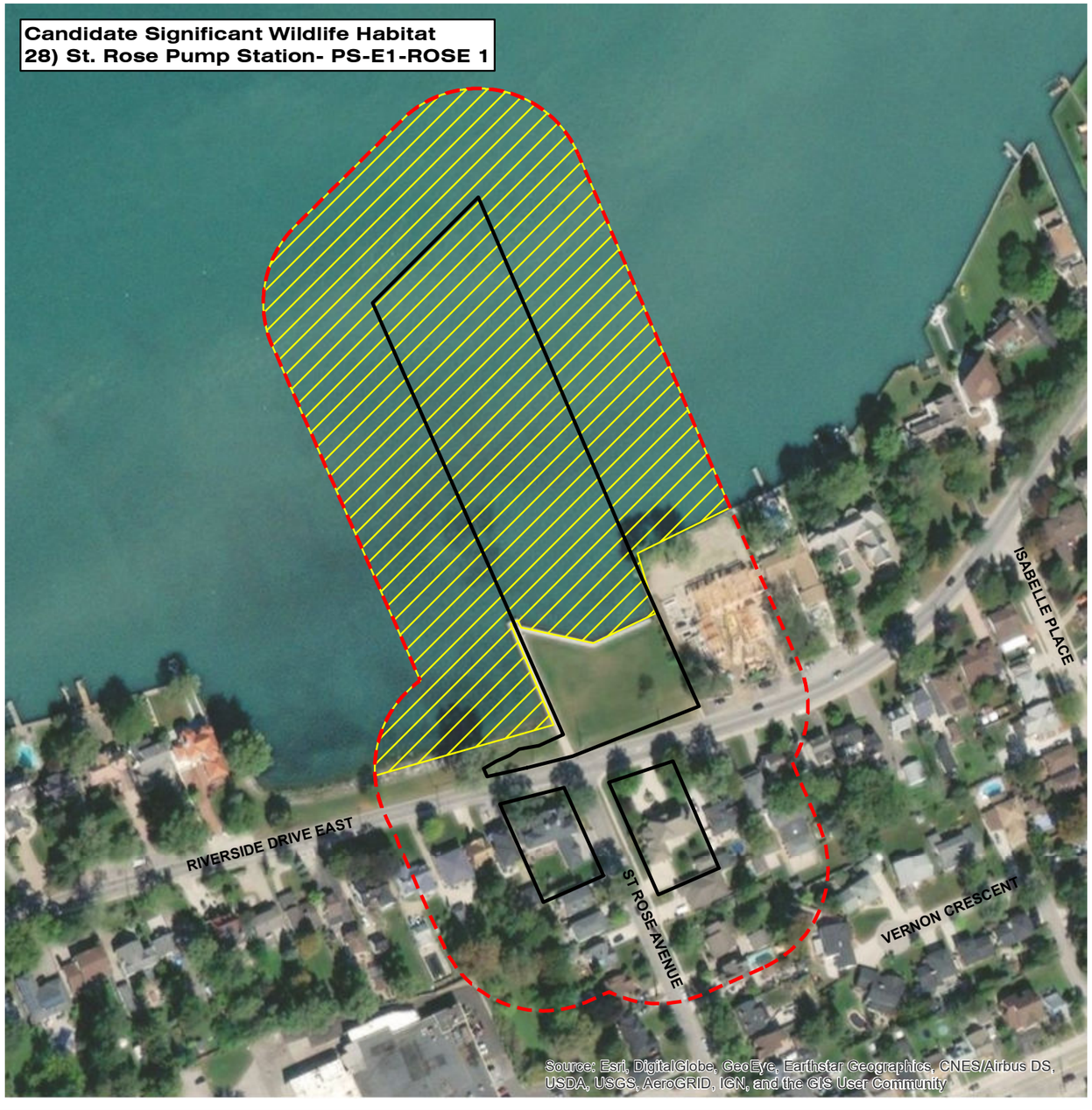
SCALE 1: 35,000

N W E S

FILE LOCATION: G:\cad\GIS\176638\GIS\MXDs\Reporting\Project Location.mxd

PROJECT: 176638 STATUS: DRAFT DATE: DECEMBER 2019





CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

ECOLOGICAL LAND CLASSIFICATION & SIGNIFICANT WILDLIFE HABITAT
FIGURE 3

THE CITY OF WINDSOR

Study Area (50 m)
Project Location

Ecological Land Classification
- CGL: Greenlands
- CVC: Commercial and Institutional
- CVI: Transportation and Utilities
- CVR: Residential
- FOD: Deciduous Forest
- MA: Marsh
- ME: Meadow; ME
- OAG: Open Agriculture
- OAO: Open Aquatic
- SA: Shallow Water
- TAGM5: Fencerow
- THD: Deciduous Thicket

Candidate Significant Wildlife Habitat
- Bat Maternity Colonies
- Turtle Wintering Areas
- Reptile Hibernaculum

DILLON CONSULTING

MAP CREATED BY: SFG
MAP CHECKED BY: BM
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

0 15 30 45 m

SCALE 1: 35,000

N W E S

FILE LOCATION: G:\cad\GIS\176638\GIS\MXDs\Reporting\Ecological Land Classification and Significant Wildlife Habitat.mxd

PROJECT: 176638 STATUS: DRAFT DATE: DECEMBER 2019

Appendix H-1-b

Site Photographs

Photograph 1 November 29, 2019 St. Rose Pump Station (PS-E1-ROSE 1) Looking southeast from the central part of the Project Location. Note: Pedestrian pathway and maintained lawn.	
Photograph 2 November 29, 2019 St. Rose Pump Station (PS-E1-ROSE 1) Looking southwest from the central part of the Project Location. Note: Pedestrian pathway and maintained lawn.	

Photograph 3 November 29, 2019 St. Rose Pump Station (PS-E1-ROSE 1) Looking northeast from the central part of the Project Location. Note: Maintained lawn.	
Photograph 4 January 28, 2020 St. Rose Pump Station (PS-E1-ROSE 1) Facing north toward the gravity outfall in the Detroit River.	

Photograph 5 January 28, 2020 St. Rose Pump Station (PS-E1-ROSE 1) Facing east from the gravity outfall. Typical nearshore conditions in the Detroit River.	
Photograph 6 January 28, 2020 St. Rose Pump Station (PS-E1-ROSE 1) Facing west from the gravity outfall. Abundant waterfowl on the Detroit River in the top- right corner.	

Photograph 7 January 28, 2020 St. Rose Pump Station (PS-E1-ROSE 1) Facing south along the gravity outfall walkway. Abundant ice present within the Detroit River.	

THE CORPORATION OF THE CITY OF WINDSOR

Appendix H-2 – Natural Environment Baseline Conditions of Project Location

Sewer and Coastal Flood Protection Master Plan

August 2020 – 17-6638

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Tables

Appendices

1.0 Introduction

This memo documents the natural environment existing conditions completed as part of the Windsor Sewer and Coastal Flood Protection Master Plan Class Environmental Assessment. The undertaking involves varied proposals to reduce risk of basement, surface and/or coastal flooding throughout the City of Windsor. Solutions to mitigate flooding include, but is not limited to: replacing or constructing new inline sewer infrastructure, construction of stormwater retention facilities (surface or underground), reconstruction of new sewer outlets to water bodies and pump station improvements at multiple locations in the City of Windsor (the 'City'). As part of this environmental assessment process, multiple solutions alternatives were identified and to assist with the evaluation of alternatives natural environment assessments were completed for all sites. Existing condition reviews were completed at 31 locations within the City (Attachment A; Figure 1), see list below. Only areas associated with 'Recommended' solutions are recommended for construction through the Master Plan, those sites are bolded below.

- **Little River Pollution Control Plant (9400 Little River Road)**;
- **Pontiac Pump Station (9410 Little River Road)**;
- Riverdale Pump Station (594 Riverdale Avenue);
- Brumpton Park (8890 Cedarview Street);
- **Riverside Plaza (0 and 8380 Wyandotte Street East)**;
- WFCU Centre (1600 Lauzon Road);
- McHugh Street Soccer Fields (9655 McHugh Street);
- **Little River Golf Course (2861 Lauzon Road)**;
- Lauzon Parkway and Meadowbrook Park (2851 Meadowbrook Lane and 2885, 2825, and 2755 Lauzon Parkway);
- Roseville Public School (6405 Roseville Garden Drive);
- McDonald Park (3971 Ypres Avenue);
- Central Pond (3600 Central Avenue);
- West of Central Avenue, between Somme Avenue and Grand Marais Road East (southern half of 2525 Central Avenue);
- Chrysler Centre (0 and 2883 Somme Avenue);
- **Optimist Park (1075 Ypres Avenue)**;
- Howard Avenue (2827 Remington Avenue and 2929 Howard Avenue);
- Southwest of South Cameron Boulevard and Dougall Avenue (0 South Cameron Boulevard);
- Southwood Lakes (southeast of North Talbot Road and Howard Avenue);
- Chappell Avenue and Sandwich Street (3800 Russell Street);
- Detroit Street Sewer (210 Detroit Street);
- Cameron Street Sewer (1530 Riverside Drive West);
- Church Street Sewer (78 Riverside Drive West);

- **Marentette Avenue Sewer (340 Riverside Drive East)**;
- Albert Road Sewer (0 Riverside Drive East);
- **Drouillard Pump Station (0 and 290 Drouillard Road)**;
- **Ford Pump Station (5270 and 5325 Riverside Drive East)**;
- David Suzuki Public School (6320 Raymond Avenue);
- **St. Rose Pump Station (6867, 6902, 6945 Riverside Drive East)**;
- **St. Paul Pump Station (7730 Riverside Drive East)**;
- Clearview Pump Station (southwest of Riverside Drive East and Bertha Avenue); and
- **Lakeview Pump Station (11997 Riverside Drive East)**.

In addition to these locations, a landform barrier is proposed that is parallel to Riverside Drive East generally from Ford Boulevard to the City of Windsor city limits to the east. The proposed landform barrier will consist of an earth berm located along the City's right of way and include local storm sewers and catch basins to provide local drainage. This work may require landscape tree removals, stripping of soil and removal of pavement. For mitigation measures related to select tree removals, please refer to the summary section below.

This memo will also be used to identify Species at Risk (SAR) that have the potential to occur within and adjacent to the locations and to evaluate the likelihood and possible presence of Significant Wildlife Habitat and fish habitat.

2.0 Natural Environment Background Information Review

The background information contained in this memo is based on a combination of existing published data, information made available through various public agencies, and web-based mapping programs. Information sources reviewed in support of the background data collection process are listed below in Table 1.

Table 1: List of Background Information, Literature, and Secondary Source

Resource Source	Records Requested and/or Reviewed
Ontario Ministry of Natural Resources and Forestry (MNRF)	
Land Information Ontario (LIO); accessed November2019	Interactive online mapping tool; (Including Aquatic Resources Area Database).
Natural Heritage Information Centre (NHIC) database	1 kilometre (km) square numbers: 17LG2783, 17LG2883, 17LG2885, 17LG3086, 17LG3087, 17LG3187, 17LG3287, 17LG3382, 17LG3387, 17LG3482, 17LG3483, 17LG3484, 17LG3487, 17LG3488, 17LG3578, 17LG3584, 17LG3678, 17LG3684, 17LG3783, 17LG3784, 17LG3788, 17LG3887, 17LG3888, 17LG3989, 17LG4087, 17LG4088, 17LG4089, 17LG4186, 17LG4187, 17LG4188, 17LG4189, and 17LG4388.
Species at Risk in Ontario (SARO) List and Distribution Maps; accessed November 2019	Accessed to determine the at-risk status of wildlife species and their distribution within Essex County.
MNRF	Significant Wildlife Habitat Technical Guide (2010) and Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (2015).
MNRF, Michigan Department of Natural Resources	Fish and Fisheries of the Detroit River
Environment Canada and Fisheries and Oceans Canada	
Fisheries and Oceans Canada (DFO) Aquatic Species atRisk Map; accessed November 2019	Aquatic species at risk map.
Ontario Ministry of Agricultural, Food and Rural Affairs (OMAFRA)	
Agricultural Information Atlas; accessed November 2019	AgMaps
Wildlife Atlases & Distribution Data	
Ontario Breeding Bird Atlas (OBBA); accessed November 2019	Second Atlas (2001-2005) – data for squares 17LG28, 17LG38, and 17LG48 – grid based on 10 km2 system.
Christmas Bird Count (CBC); accessed November 2019	Closest Count Circle North Shore (ONNS) – Historical Records from 2000 – 2018.

Resource Source	Records Requested and/or Reviewed
Ontario Reptile and Amphibian Atlas; accessed via Ontario Nature November 2019	List of reptile and amphibian species occurrences for squares 17LG28, 17LG38, and 17LG48.
Ontario Butterfly Atlas; accessed via Toronto Entomologists Association November 2019	List of butterfly species occurrences for squares 17LG28, 17LG38, and 17LG48.
Bumble Bees of North America – (Williams et al. 2014)	Distribution data for bumble bees.
Atlas of the Mammals of Ontario – (Dobbyn 1994)	Distribution data for mammals.
Upper and Lower Tier Municipalities	
County of Essex	Official Plan (2014)
City of Windsor	Official Plan (2013)

3.0 Field Investigations

Field investigations were conducted on November 20 and 29, 2019, January 28, 29, March 6, and 10, 2020 by Dillon biologists to document existing natural features as well as assess the Project Locations for potential Significant Wildlife Habitat (SWH), SAR occurrences, SAR habitat suitability, and fish habitat. Refer to Attachment B for site photographs.

3.1 Aquatic Resources

Field investigations were conducted from within the extents of twelve Project Location's associated with a watercourse or waterbody to determine whether the system had the potential to support fish habitat. Field investigations were not completed at the Detroit Street Sewer Project Location due to property access restrictions. The purpose of the field investigations was to complete a high-level reconnaissance of general aquatic features and conditions with the objective of confirming the potential for fish habitat and where possible identify any critical, sensitive or limiting habitat features within the Project Locations.

The aquatic assessments included documenting fish habitat characteristics (where applicable) such as channel form, presence/absence of flow, substrate type, channel dimensions and riparian vegetation. Fish community sampling was not completed.

3.2 Terrestrial Resources

Field investigations were conducted from within the extents of each Project Location and included a visual assessment of the lands and natural heritage features. The purpose of the field investigations was to complete high-level Ecological Land Classification (ELC) reconnaissance with the objective of confirming the presence of the features identified during the background review, as well as identifying additional features, if present. Access to private lands was not available during the field investigations. In-depth details for features over multiple seasons, and confirmation of the presence or absence of wildlife, SAR, and/or their habitats was not part of the field program.

4.0 Results

4.1 Background Information Review

The County's OP designates the Project Locations as Settlement Area (City of Windsor). As a result, policies within the City of Windsor OP take precedence over the County OP.

The City's OP designates the Project Locations as varied land uses and identifies some development constraints (Table 2; Attachment A; Figure 2).

Table 2: Project Location Land Uses And Development Constraints

Label Code	Project Location	Windsor OP, Schedule C – Development Constraints	Windsor OP, Schedule D – Land Use
SAN-E-2	Little River Pollution Control Plant	Environmental Policy Area B, Known or Suspected Former Waste Disposal Sites, and Pollution Control Sites	Open Space
STM-E6	Pontiac Pump Station	Near Environmental Policy Area B, Known or Suspected Former Waste Disposal Sites, and Pollution Control Sites	Open Space
SAN-E-2A	Riverdale Pump Station	Near Environmental Policy Area	Residential
STM-E6	Brumpton Park	N/A	Open Space
ROAD-E09-2	Riverside Plaza	N/A	Mixed Use
ROAD-E07	WFCU Centre	N/A	Industrial
SAN-E-2	McHugh Street Soccer Fields	Near Natural Heritage	Residential
ROAD-E01-2	Little River Golf Course	N/A	Open Space
ROAD-E04-3	Lauzon Parkway and Meadowbrook Park	N/A	Residential, Mixed Use, and Business Park
ROAD-E11	Roseville Public School	N/A	Mixed Use
STM-S07-1	McDonald Park	N/A	Open Space
STM-S07-3	Central Pond	Floodplain Areas	Industrial
STM-S07-2	Southern half of 2525 Central Avenue	N/A	Business Park
ROAD-S03-2	Chrysler Centre	N/A	Industrial
STM-C06	Optimist Park	Natural Heritage	Natural Heritage

Label Code	Project Location	Windsor OP, Schedule C – Development Constraints	Windsor OP, Schedule D – Land Use
ROAD-S02-2	Howard Avenue	N/A	Residential and Commercial Corridor
ROAD-S01-1	Southwest of South Cameron Boulevard and Dougall Avenue	Near Environmental Policy Area B	Business Park
STM-S08-2	Southwood Lakes	Near Natural Heritage I	Residential
STM-C01	Chappell Avenue and Sandwich Street	Near Shoreline and Floodprone Areas	Waterfront Port
STM-C02	Detroit Street Sewer	Known or Suspected Former Waste Disposal Sites	Waterfront Recreation
STM-C03	Cameron Street Sewer	N/A	Waterfront Recreation
STM-C04	Church Street Sewer	N/A	Waterfront Recreation
STM-C05	Marentette Avenue Sewer	N/A	Waterfront Recreation
STM-C07	Albert Road Sewer	N/A	Waterfront Port
STM-C08	Drouillard Pump Station	Near Rail Yard	Business Park
PS-E1-FORD 1	Ford Pump Station	N/A	Waterfront Recreation
STM-E1-2	David Suzuki Public School	Near Shoreline and Floodprone Area	Residential
PS-E1-ROSE 1	St. Rose Pump Station	N/A	Waterfront Residential
PS-E1-STPAUL 3	St. Paul Pump Station	N/A	Waterfront Recreation
SAN-E-2B	Clearview Pump Station	Near Environmental Policy Area	Open Space
STM-E5-1	Lakeview Pump Station	Near Shoreline and Floodprone Areas	Open Space and Residential

4.1.1 Aquatic Background Review

A review of MNRF base mapping and OMAFRA AgMaps identifies the Detroit River, Little River, Lake St. Clair, Grand Marais Drain and a series of Stormwater Management (SWM) ponds as the watercourses and waterbodies associated with the Project Locations. The Detroit River is a permanent, natural watercourse with a warm water thermal regime (LIO Aquatic Resource Area Database, 2018). Lake St. Clair is a permanent natural waterbody, also with a warm water thermal regime (LIO Aquatic Resource Area Database, 2018).

A review of the OMAFRA AgMaps DFO Drain Classification identifies the Little River as a Class 'E' municipal drainage feature throughout its downstream reaches and a Class 'C' municipal drainage feature further upstream. The Class 'E' rating indicates a permanent flow regime with sensitive species present, while the Type 'C' classification indicates the watercourse is permanent and contains a warm water fishery with no sensitive species present.

A review of the OMAFRA AgMaps DFO Drain Classification identifies the Grand Marais Drain as a Class 'F' municipal drainage feature in its furthest upstream reach and 'Not Rated' throughout its remaining reaches. The Class 'F' rating indicates an intermittent flow regime with no fish community information and the 'Not Rated' classification indicates no available information regarding flow regime or fish habitat.

There was no applicable background information associated with three SWM ponds at the Southwood Lakes Project Location.

Based on review of background documents, there are thirteen provincially and/or federally Threatened and Endangered aquatic species identified as having the potential to occur within the thirteen Project Locations associated with a watercourse or waterbody. In addition, critical habitat was identified within Project Locations for Northern Madtom (Noturus stigmosus).

A review of LIO GIS data (Aquatic Resource Area Point and Polygon Segments, 2018) and MNRF data identified mixed communities of spring and summer spawning baitfish, coarse fish and sportfish, including top predators in the Detroit River, Lake St. Clair and Little River. Table 3 includes the list of fish species identified during the background review.

Table 3: Fish and Mussel Species within the Detroit River, Lake St. Clair and/or Little River Based on Background Review

Scientific Name	Common Name	SARA[1]	ESA[2]	SRank[3]	ARA[4]	MNRF[5]	DFO[6]
Alosa pseudoharengus	Alewife	---	---	SNA		x	
Fundulus diaphanus	Banded Killifish	---	---	S5	x		
Pimephales notatus	Bluntnose Minnow	---	---	S5	x	x	
Noturus miurus	Brindled Madtom	---	---	S2		x	
Labidesthes sicculus	Brook Silverside	---	---	S4	x		
Percina copelandi	Channel Darter	END	SC	S2			x
Cyprinus carpio	Common Carp	---	---	SNA	x		
Luxilus cornutus	Common Shiner	---	---	S5	x		
Semotilus atromaculatus	Creek Chub	---	---	S5	x		
Ligumia nasuta	Eastern Pondmussel	SC	SC	S1		x	
Ammocrypta pellucida	Eastern Sand Darter (Ontario populations)	THR	END	S2			x
Notropis atherinoides	Emerald Shiner	---	---	S5	x	x	
Pimephales promelas	Fathead Minnow	---	---	S5	x		
Truncilla donaciformis	Fawnsfoot	END	END	S2		x	x
Aplodinotus grunniens	Freshwater Drum	---	---	S5	x	x	
Dorosoma cepedianum	Gizzard Shad	---	---	S4	x		

Scientific Name	Common Name	SARA[1]	ESA[2]	SRank[3]	ARA[4]	MNRF[5]	DFO[6]
Esox americanus vermiculatus	Grass Pickerel	SC	SC	S3		x	
Lepomis cyanellus	Green Sunfish	---	---	S4	x		
Ptychobranchus fasciolaris	Kidneyshell	END	END	S1		x	
Acipenser fulvescens pop. 3	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	---	END	S2			
Micropterus salmoides	Largemouth Bass	---	---	S5	x		
Lepisosteus osseus	Longnose Gar	---	---	S4	x		
Catostomus catostomus	Longnose Sucker	---	---	S5	x		
Esox masquinongy	Muskellunge	---	---	S4		x	
Noturus stigmosus	Northern Madtom	END	END	S1			x
Esox lucius	Northern Pike	---	---	S5	x		
Epioblasma torulosa rangiana	Northern Riffleshell	END	END	S1		x	
Notropis anogenus	Pugnose Shiner	END	THR	S2			x
Lepomis gibbosus	Pumpkinseed	---	---	S5	x		
Oncorhynchus mykiss	Rainbow Trout	---	---	SNA	x		
Ambloplites rupestris	Rock Bass	---	---	S5	x	x	
Neogobius melanostomus	Round Goby	---	---	SNA	x		
Obovaria subrotunda	Round Hickorynut	END	END	S1		x	
Pleurobema sintoxia	Round Pigtoe	END	END	S1		x	x
Sander canadensis	Sauger	---	---	S4	x		
Macrhybopsis storeriana	Silver Chub	END	THR	S2			x
Ichthyomyzon unicuspis	Silver Lamprey	---	---	S3			x
Micropterus dolomieu	Smallmouth Bass	---	---	S5	x	x	
Epioblasma triquetra	Snuffbox	END	END	S1		x	
Notropis hudsonius	Spottail Shiner	---	---	S5	x	x	
Obliquaria reflexa	Threehorn Wartyback	THR	THR	S1			x
Proterorhinus marmoratus	Tubenose Goby	---	---	SNA	x		
Sander vitreus vitreus	Walleye	---	---	S5		x	
Morone chrysops	White Bass	---	---	S4		x	
Morone americana	White Perch	---	---	SNA			

Scientific Name	Common Name	SARA[1]	ESA[2]	SRank[3]	ARA[4]	MNRF[5]	DFO[6]
Catostomus commersonii	White Sucker	---	---	S5	x		
Ameiurus natalis	Yellow Bullhead			S4	x		
Perca flavescens	Yellow Perch			S5	x	x	

[1]Federal Species at Risk Act designation; [2]Provincial Endangered Species Act designation; [3]Provincial Conservation Ranking where SNA = not applicable, S5= secure and S4= apparently secure, [4]LIO GIS Aquatic Resource Area Line Segment Database; [5]MNRF & Michigan Department of Natural Resources and/or NHIC database; [6]Fisheries and Oceans Canada Aquatic Species at Risk map (August 2019).

4.2 Aquatic Resources

Aquatic habitat was assessed based on high-level shoreline aquatic habitat assessments and one detailed aquatic habitat assessment within the Project Locations, where conditions were appropriate.

Detroit River

Eight of the Project Locations are located along the south shoreline of the Detroit River within the City. The Detroit River is a permanent, natural watercourse within the Project Locations, which were all characterized by hardened shorelines consisting of steel sheet pile, concrete and/or large rip rap boulder protection surrounding pump station outlets (some of which were visible and others were submerged and not visible). The majority of Project Locations are located within City parks where riparian conditions consist predominately of maintained lawn, concrete pathways and planted landscape trees. The Detroit Street Sewer Project Location consists of an existing industrial property and was not accessible during field investigations.

Lake St. Clair

One Project Location (the Lakeview Pump Station) is located along Lake St. Clair northwest of the Riverside Drive East and Winclare Drive intersection. The Lakeview Pump Station Project Location consisted of a sandy beach at Lake St. Clair with surrounding maintained residential lands. Due to safety concerns working adjacent to the Detroit River and Lake St. Clair, water depth, substrate and in-stream habitat features were not visible at the majority of sites. Based on the shoreline aquatic habitat assessments, all nine Project Locations along the Detroit River and Lake St. Clair provide suitable conditions to support direct fish habitat.

Little River

One Project Location (the Pontiac Pump Station) is located along Little River approximately 260 m south of Wyandotte Street East. The Little River Pollution Control Plant Project Location is located along Little River and due to appropriate site conditions, a shoreline aquatic habitat assessment was completed. The site consists of a short outlet channel (approximately 50 m) from the Pontiac Pump Station to Little River. Little River is a permanent, channelized municipal drainage feature within the Project Location.

Several Gizzard Shad were observed within Little River during the field investigation, therefore the outlet channel and Little River support direct fish habitat within the Project Location.

A second Project Location (the Little River Golf Course) is located along the Little River Drain and a detailed aquatic habitat assessment was completed. Within the Project Location, the Little River Drain is a permanent, channelized, municipal drainage feature. At the time of assessment, mean wetted width was approximately 8 m with a depth of approximately 0.6 m. Substrate was varied and consisted of clay (dominant), gravel and detritus. Riparian habitat consisted of deciduous trees and shrubs along both steep banks providing abundant shade to the watercourse, with maintained golf course lands beyond the top of slope. Due to seasonal conditions, water levels were slightly elevated and water conditions were turbid, therefore in-stream habitat features were not observed. Based on the aquatic habitat assessment, the Little River Drain provides suitable conditions to support direct fish habitat within the Project Location.

Stormwater Management Ponds

One Project Location (the Central Pond) is located along the Grand Marais Drain immediately southeast of the Central Ave and Plymouth Drive intersection. The Central Pond Project Location consists of two SWM ponds receiving flows from piped drainage features to the north and east. The larger south pond is connected to the north pond through an outlet channel and the north pond eventually discharges to the piped Grand Marais Drain underneath Central Ave. The riparian habitat around both ponds consists of Common Reed (Phragmites australis), Dogwood (Cornus sp.) and meadow species. Both ponds were largely frozen over during the site investigation. Though common, warm water fish species may be present within the Stormwater Management (SWM) Ponds they are an artificial waterbody and considered not habitat for fish under the Fisheries Act as they are not connected to a waterbody that contains fish at any time during any given year.

A second Project Location (the Southwood Lakes) consists of three SWM Ponds (Lake Como, Lake Grande and Lake Laguna) receiving flows from residential subdivisions along Lake Trail Drive, south of North Talbot Road. No open inlet or outlet channels were observed around the three ponds and the riparian areas consist of maintained residential properties to the shorelines. All three ponds were largely frozen over during the site investigation. Though common, warm water fish species may be present within the SWM Ponds they are an artificial waterbody and considered not habitat for fish under the Fisheries Act as they are not connected to a waterbody that contains fish at any time during any given year.

Site specific conditions associated with the aforementioned Project Locations are provided, where available, in Table 1 – Attachment C. Site photographs are provided in Attachment B (Photos 53-91)

4.3 Terrestrial Resources

4.3.1 Ecological Land Classification

Vegetation communities were assessed using ecological land classification (ELC) as a first step to identify potential natural heritage features within the Project Locations. The ecological community boundaries were first determined based on review of aerial imagery using the ELC System for Southern Ontario (Lee et al. 1998) in order to classify and map ecological communities to the vegetation level, where possible, and subsequently refined based on field investigations. The following 6 natural ELC communities and 6 cultural communities were observed to be within the Project Locations:

Natural Ecological Communities ·

- ME: Meadow
- THD: Deciduous Thicket ·
- FOD: Deciduous Forest ·
- MA: Marsh
- OA: Open Water
- SA: Shallow Water

Cultural Communities

- OAG: Open Agriculture
- TAGM5: Fencerow
- CVR: Residential
- CVI: Transportation and Utilities
- CVC: Commercial and Institutional
- CGL: Green Lands

Based on the results of the field investigations, the majority of the Project Locations are predominately Green Lands. Refer to Attachment A; Figures 3 for the ELC results. Site specific ELC communities are provided in Attachment C.

4.3.2 Woodlands

A search and analysis of the records and resources outlined in Table 1 identified three Project Locations with MNRF mapped woodlands present. These woodlands are found along Old Little River at the Little River Pollution Control Plant, along Little River at the Little River Golf Course, and encompassing existing, scattered trees at St. Paul Pump Station (Attachment A; Figure 2).

4.3.3 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) are types of natural heritage features that are identified for protection by provincial policy. They consist of wildlife habitats, including vegetation communities that are ecologically important in terms of features, functions, representation, or amount, and contribute to the quality and diversity of an identifiable geographic area or a natural heritage system. SWH are first identified on the basis of geographic location and ELC communities using applicable criteria specific to a region.

An assessment of each Project Location's potential to support SWH was completed based on review of the information included in Table 1; particularly the Significant Wildlife Habitat Technical Guide (MNRF 2000) and the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015), as well as the November 20, 29, 2019, January 29, March 6, and 10, 2020 field investigation results. There are four categories of SWH, with various habitat types included in each of the four categories. Habitat types are confirmed significant based on the criterion included in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015). Based on the background review and field investigation, each Project Location was assessed as having the potential to provide SWH for the following habitat types.

Seasonal Concentration Areas of Animals

This category identifies habitat where wildlife species gather annually, at certain times of the year. This SWH category requires the presence of a given species, or several species, in specific densities based on approved survey protocol in order to meet the criteria for significance. The Project Locations contain the following candidate SWH types:

- Bat Maternity Colonies (FOD);
- Turtle Wintering Areas (OA); and
- Reptile Hibernaculum (ME, TAGM5, and FOD).

Rare Vegetation Communities or Specialized Habitat for Wildlife

The criterion for rare vegetation communities considers the provincial Sub-national rank (SRank) of a species or community type, and includes SRanks of S1 (extremely rare), S2 (very rare), and S3 (rare to uncommon). The criteria for specialized habitat for wildlife captures sizeable habitat requirements for listed species to carry out key life processes. The Project Locations contain the following candidate SWH types:

<u>Specialized Habitat for Wildlife</u>

- Amphibian Breeding Habitat (Woodland; FOD) and
- Amphibian Breeding Habitat (Wetlands; MA, OA, and SA).

Habitat for Species of Conservation Concern

The Significant Wildlife Habitat Technical Guide (MNRF 2000) defines Species of Conservation Concern (SCC) as species listed as Threatened or Endangered under the Federal Species at Risk Act, 2002 (SARA), but not under the provincial Endangered Species Act, 2007 (ESA); species that are provincially rare/tracked (i.e. provincial Sub-national rank [SRank] of S1 – Critically Imperiled, S2 – Imperiled, or S3 – Vulnerable) and/or are designated as Special Concern (SC) under the ESA.

This category identifies habitat for wildlife species that are listed as SC, rare (SRank of S1-S3), and/or declining. The Project Locations contain the following candidate SWH type:

- Special Concern and Rare Wildlife Species.

Animal Movement Corridors

Animal movement corridors identify areas that wildlife move between habitats in order to carry out their life processes. Confirmed or candidate SWH are identified by the MNRF or the planning authority. The Project Locations contains no candidate SWH types.

Refer to Attachment A; Figure 3 for SWH within the Project Locations. Site specific SWH is provided in Attachment C.

4.4 Species of Conservation Concern and Species at Risk

The following sections outline SCC and SAR with the potential to occur within and/or in proximity (i.e. within 1 km) to the Project Locations. SCC are defined as species listed as Threatened or Endangered under the Federal Species at Risk Act, 2002 (SARA), but not under the provincial Endangered Species Act, 2007 (ESA); species that are provincially rare/tracked (i.e. provincial Sub-national rank [SRank] of S1 – Critically Imperiled, S2 – Imperiled, or S3 – Vulnerable) and/or are designated as Special Concern (SC) under the ESA. SAR are defined as species listed as Threated or Endangered under the Provincial Endangered Species Act, 2007 (ESA) and species listed as Threatened or Endangered under the Federal Species at Risk Act, 2002 (SARA).

4.4.1 Species of Conservation Concern

The list of SCC with the potential to occur within and/or in proximity (i.e. within 1 km) to the Project Locations is based on a review of the information in Table 1 and has been refined based on Dillon's field work experience in the general area. Refer to Attachment D for the list of SCC identified during the background review and Table 4 for the refined list of SCC with the potential to occur within the Project Locations. Site specific SCC are provided in Attachment C.

Table 4: SCC with the Potential to Occur within the Project Locations

Scientific Name	Common Name	SARA[1]	ESA[2]	SRank[3]
Birds				
Chordeiles minor	Common Nighthawk	THR	SC	S4B
Melanerpes erythrocephalus	Red-headed Woodpecker	THR	SC	S4B
Contopus virens	Eastern Wood-pewee	SC	SC	S4B
Lepidoptera				
Danaus plexippus	Monarch	SC	SC	S2N,S4B
Odonata				
Stylurus notatus	Elusive Clubtail	---	---	S2
Fishes				
Ichthyomyzon unicuspis	Silver Lamprey	SC	SC	S3
Noturus miurus	Brindled Madtom	---	---	S2
Percina copelandi	Channel Darter	THR	SC	S2
Molluscs				
Ligumia nasuta	Eastern Pondmussel	END	SC	S1
Reptiles				
Chelydra serpentina	Snapping Turtle	SC	SC	S3
Plants				
Oxypolis rigidior	Stiff Cowbane	---	---	S2
Asclepias sullivantii	Prairie Milkweed	---	---	S3
Bidens trichosperma	Crowned Beggarticks	---	---	S2
Coreopsis tripteris	Tall Tickseed	---	---	S2
Ratibida pinnata	Gray-headed Prairie Coneflower	---	---	S3
Silphium laciniatum	Compass Plant	---	---	S1
Silphium terebinthinaceum	Prairie Rosinweed	---	---	S1
Solidago riddellii	Riddell's Goldenrod	SC	SC	S3
Solidago rigida ssp. rigida	Eastern Stiff-leaved Goldenrod	---	---	S3
Vernonia gigantea	Giant Ironweed	---	---	S1?
Lechea mucronata	Hairy Pinweed	---	---	S3
Tradescantia ohiensis	Ohio Spiderwort	---	---	S2
Carex annectens	Yellow-fruited Sedge	---	---	S2
Quercus shumardii	Shumard Oak	---	SC	S3
Lythrum alatum	Winged Loosestrife	---	---	S3
Nelumbo lutea	American Lotus	---	---	S2
Ludwigia polycarpa	Many-fruit Seedbox	---	---	S2S3
Oenothera gaura	Biennial Gaura	---	---	S3
Dichanthelium praecocius	White-haired Panicgrass	---	---	S3
Rosa setigera	Climbing Prairie Rose	SC	SC	S3
Veronicastrum virginicum	Culver's Root	---	---	S2

[1]Federal SARA status, where END = Endangered, THR = Threatened, and SC = Special Concern; [2]Ontario ESA status, where END = Endangered, THR = Threatened, and SC = Special Concern; [3]Provincial Conservation/Sub-national Rank (SRank) is an indicator of

commonness in the province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common; --- denotes no information or not applicable.

4.4.2 Species at Risk

The list of SAR with the potential to occur within and/or in proximity (i.e. within 1 km) to the Project Locations is based on a review of the information in Table 1 and has been refined based on Dillon's field work experience in the general area. Refer to Attachment D for the list of SAR identified during the background review and Table 5 for the refined list of SAR with the potential to occur within the Project Locations. Site specific SAR are provided in Attachment C.

Table 5: SAR with the Potential to Occur within the Project Locations

Scientific Name	Common Name	SARA[1]	ESA[2]	SRank[3]
Birds				
Chaetura pelagica	Chimney Swift	THR	THR	S4B,S4N
Hirundo rustica	Barn Swallow	THR	THR	S4B
Fishes				
Acipenser fulvescens pop. 3	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	---	END	S2
Noturus stigmosus	Northern Madtom	END	END	S1
Ammocrypta pellusida	Eastern Sand Darter (Ontario populations)	THR	END	S2
Macrhybopsis storeriana	Silver Chub	SC	THR	S2
Reptiles				
Pantherophis gloydi pop. 2	EasternFoxsnake (Carolinian population)	END	END	S2
Thamnophis butleri	Butler's Gartersnake	END	END	S2
Apalone spinifera	Spiny Softshell	THR	END	S3
Mammals				
Myotis leibii	Eastern Small-footed Myotis	---	END	S2S3
Myotis lucifugus	Little Brown Myotis	END	END	S4
Myotis septentrionalis	Northern Myotis	END	END	S3
Pipistrellus subflavus	Tri-colored Bat	END	END	S3?
Molluscs				
Plants				
Liatris spicata	Dense Blazing Star	THR	THR	S2
Symphyotrichum praealtum	Willowleaf Aster	THR	THR	S2
Cornus florida	Eastern Flowering Dogwood	END	END	S2?
Gymnocladus dioicus	Kentucky Coffee-tree	THR	THR	S2
Platanthera leucophaea	Eastern Prairie Fringed-orchid	END	END	S2

[1]Federal SARA status, where END = Endangered, THR = Threatened; [2]Ontario ESA status, where END = Endangered, THR = Threatened; [3]Provincial Conservation/Sub-national Rank (SRank) is an indicator of commonness in the province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common; --- denotes no information or not applicable.

The Project Locations are generally dominated by Green Lands, Residential, and Commercial and Institutional lands, and as a result, are regularly disturbed. In the event project activities have the potential to impact SAR and/or their habitat, species-specific surveys may be required to confirm presence/absence of the aforementioned species (and/or habitat) during Detailed Design.

Although trees associated with any Fencerow community (TAGM5) have the potential to support individual SAR bats, it has been Dillon's experience that the removal of trees associated with this community can be achieved through a Ministry of the Environment, Conservation and Parks (MECP) issued Letter to Proponent (e.g. approval under the ESA; typically includes timing windows for removal).

Eastern Sand Darter, Eastern Foxsnake, Eastern Flowering Dogwood, and Eastern Prairie Fringed-orchid have regulated habitat protection; whereas all other provincially listed SAR included in Table 5 have general habitat protection under the ESA. General habitat includes areas in which species depend on, directly or indirectly, to carry out life processes. Habitat regulations under Ontario Regulation 242/08 replaces general habitat protection and provides a more precise definition on the species habitat, geographic boundaries, and/or other unique characteristics. Regulated habitat may be smaller and/or larger than general habitat and may also include areas in which the species is not observed. In addition to the species listed above with protection under the ESA, Northern Madtom and Eastern Sand Darter are protected by the Species at Risk Act (SARA).

Based on the results included herein, the potential to impact potential terrestrial SAR habitat is low. Potential impacts can be generally avoided through appropriate mitigation measures and best practices (e.g. timing windows, etc.), and/or through an MECP-issued Letter to Proponent.

Based on the results included herein, there is potential to impact aquatic SAR habitat. The majority of potential impacts can generally be avoided through mitigation measures including, but not limited to, adherence to in-water timing windows for construction, site isolation and erosion and sediment controls. Further consultation with MECP and DFO is recommended as discussed below to comply with the ESA and SARA.

5.0 Summary

Records of natural heritage features and species occurrences were identified for the Project Locations during the background review. Based on field investigations conducted on November 20, 29, 2019, January 28, 29, March 6, and 10, 2020, several of these features were confirmed to be present within the Project Locations. In general, the Project Locations contain a mix of cultural and natural ELC communities, with the latter consisting of relatively small areas within some Project Locations. There are five watercourse/waterbody features associated with the Project Locations including the Detroit River, Lake St. Clair, Little River, Central Pond/Grand Marais Drain and Southwood Lakes SWM Ponds. The Detroit River, Lake St Clair and Little River sites provide suitable conditions to support direct fish habitat, while the Central Pond and Southwood Lakes sites are associated with SWM ponds that do not appear to be directly connected to fish habitat. There is potential for the Project Locations to provide wildlife habitat, including habitat for 31 SCC, 18 SAR, and 6 candidate SWH. However, considering the current land uses within and adjacent to the Project Locations (i.e. predominately Green Lands, Residential, and Commercial and Institutional lands), as well as the proposed works, the results of the background review and field investigations suggest that the proposed activities have a low likelihood of impacting terrestrial SAR and/or SAR habitat. Regarding the aquatic environment, considering the potential SAR as well as the proposed works, there is potential to impact aquatic SAR and/or aquatic SAR habitat.

Aside from the Project Locations where field investigations occurred, the landform barrier that is parallel to Riverside Drive, will required select, landscape tree removal. As no SAR and/or SAR habitat is expected to be negatively impacted, we recommend a qualified biologist conduct a wildlife sweep of this area at least 48 hours prior to the proposed works to ensure no nesting wildlife, SAR, and/or SAR habitat will be negatively impacted.

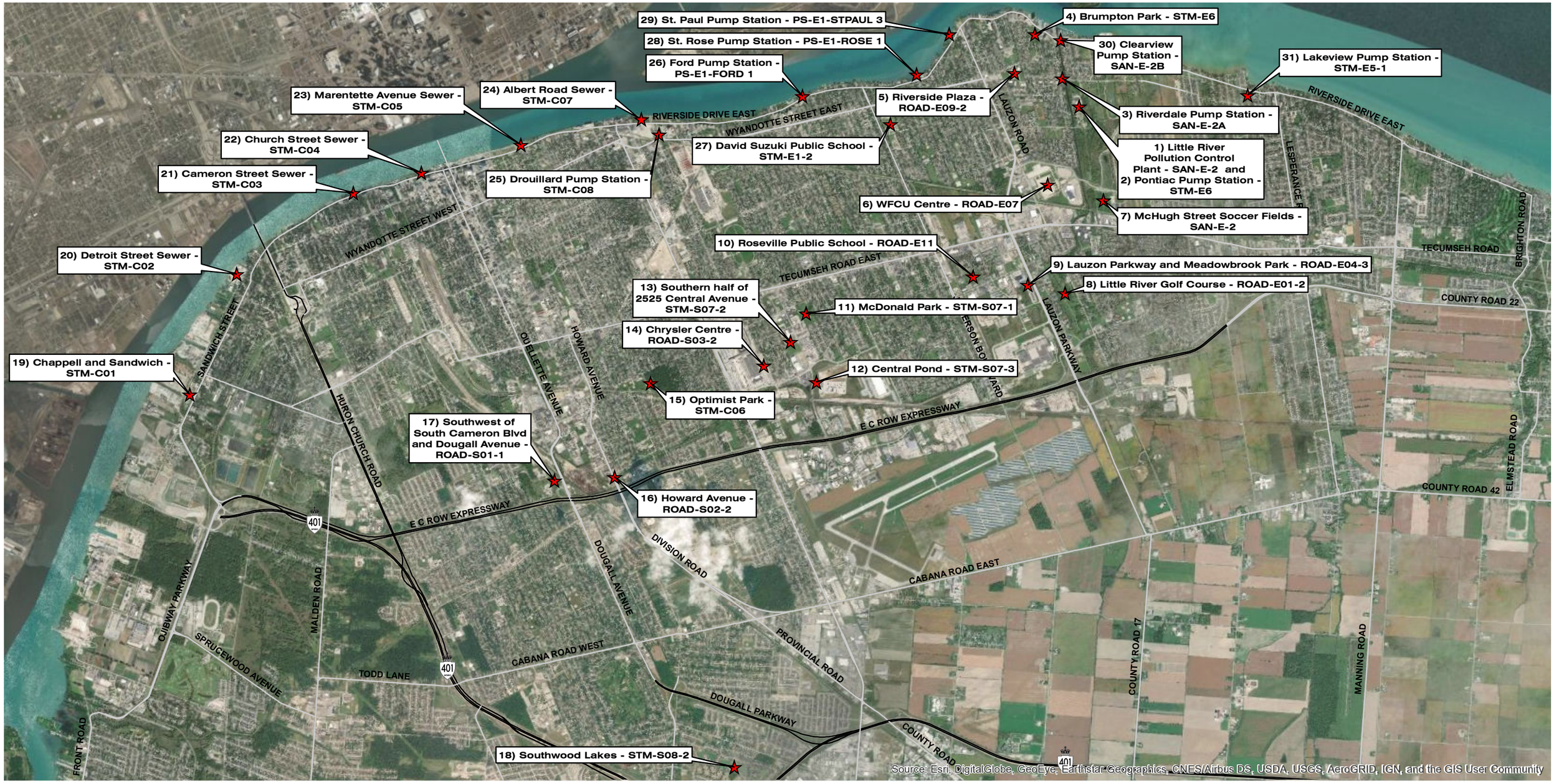
6.0 Next Steps

As of April 1, 2019, the administration of the ESA transitioned responsibility from the MNRF to the MECP. As a result, depending on the proposed project and its potential implications it may be recommended that the MECP be consulted to confirm whether additional field investigations are required and/or whether permitting and approvals under the ESA will be required in support of the Project.

Due to the potential SWH, SCC and SAR within the Detroit River, Little River and Lake St. Clair, it is recommended that site specific data requests be submitted to DFO and if deemed necessary further field investigations to determine the suitability of substrate be conducted. This will assist in confirming if SWH, SCC or SAR habitat are present within the Project Locations, in advance of final design. Furthermore given the potential impacts of the Project to aquatic SAR and the potential for Harmful Alteration, Disruption or Destruction (HADD) of fish habitat, as defined by the Fisheries Act, it is anticipated that a "Request for Review" will need to be submitted to DFO for several Project Locations to determine if Fisheries Act Authorizations (or SARA permit applications) are required to be submitted. Preliminary design drawings would need to form part of the submission packages.

Appendix H-2-a

Figures



CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

PROJECT LOCATION
FIGURE 1

THE CITY OF WINDSOR

★ Project Location

DILLON CONSULTING

MAP CREATED BY: SFG
MAP CHECKED BY: BM
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

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SCALE 1: 35,000

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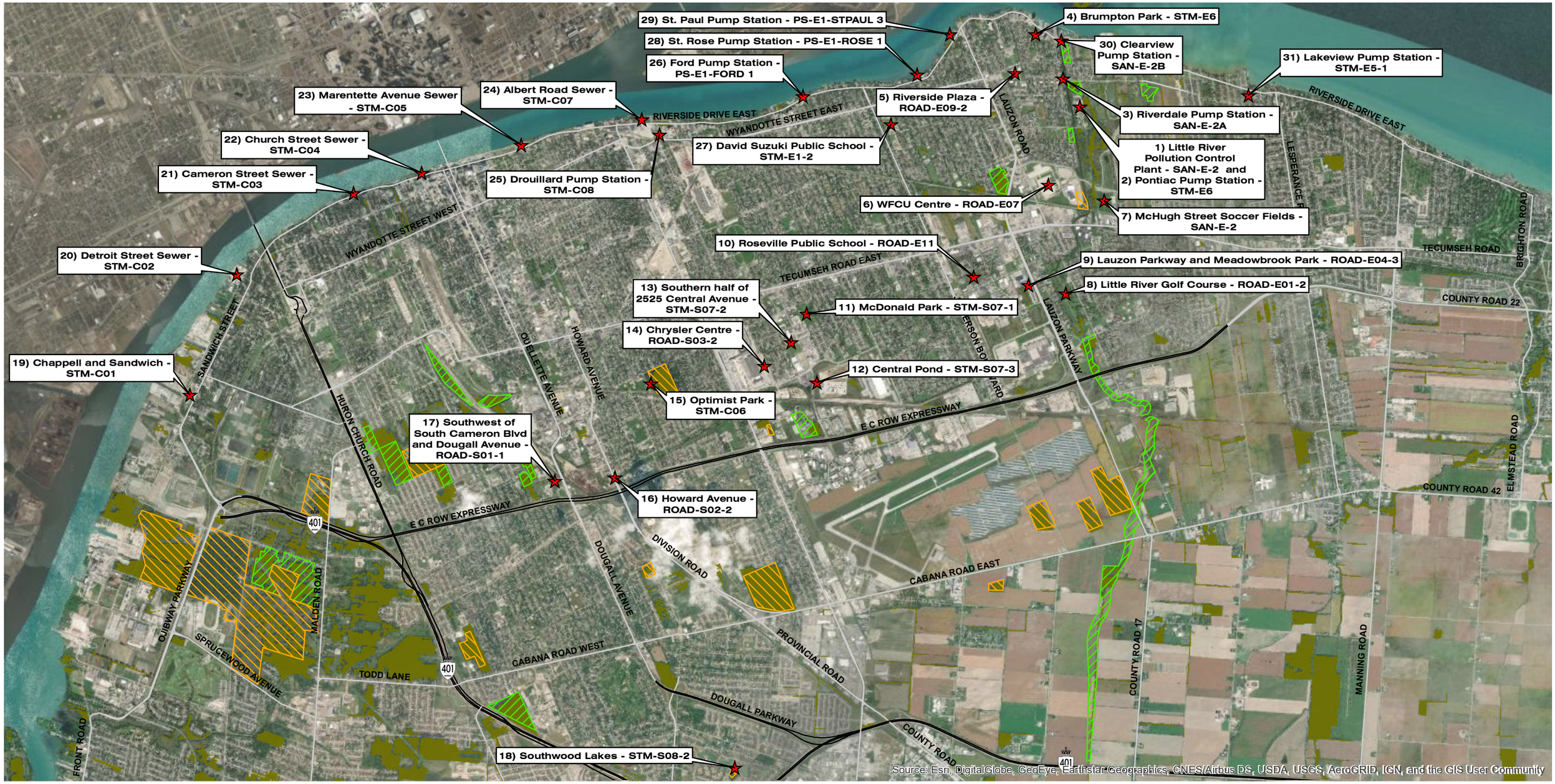
PROJECT: 176638 STATUS: DRAFT DATE: DECEMBER 2019



CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

DESIGNATED NATURAL FEATURES
FIGURE 2

THE CITY OF WINDSOR

- Project Location
- Environmental Policy A&B (City of Windsor Schedule C)
- Natural Heritage (City of Windsor Schedule C)
- Woodland (MNRF, 2019)

DILLON CONSULTING

MAP CREATED BY: SFG
MAP CHECKED BY: BM
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

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SCALE 1: 35,000

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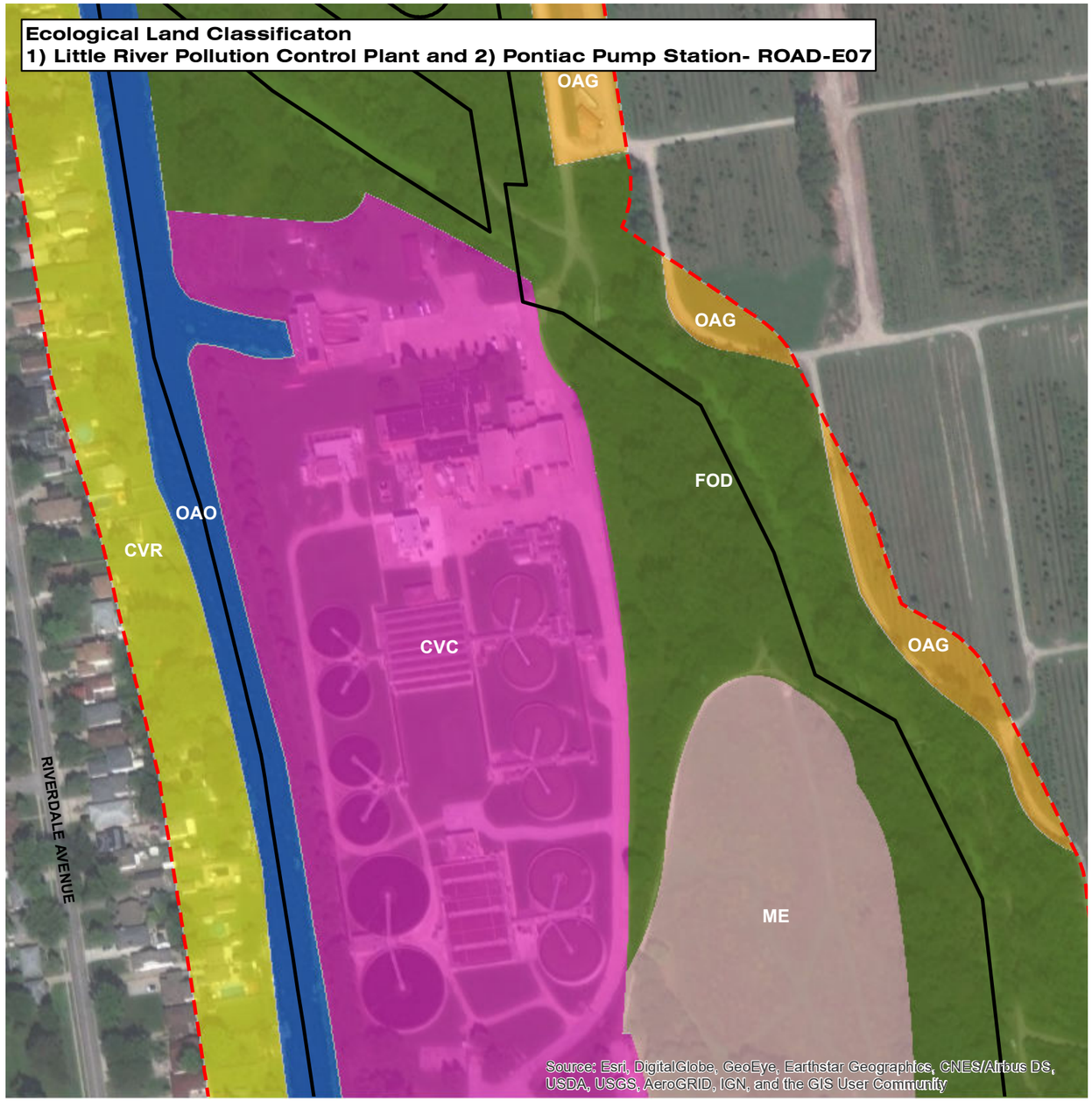

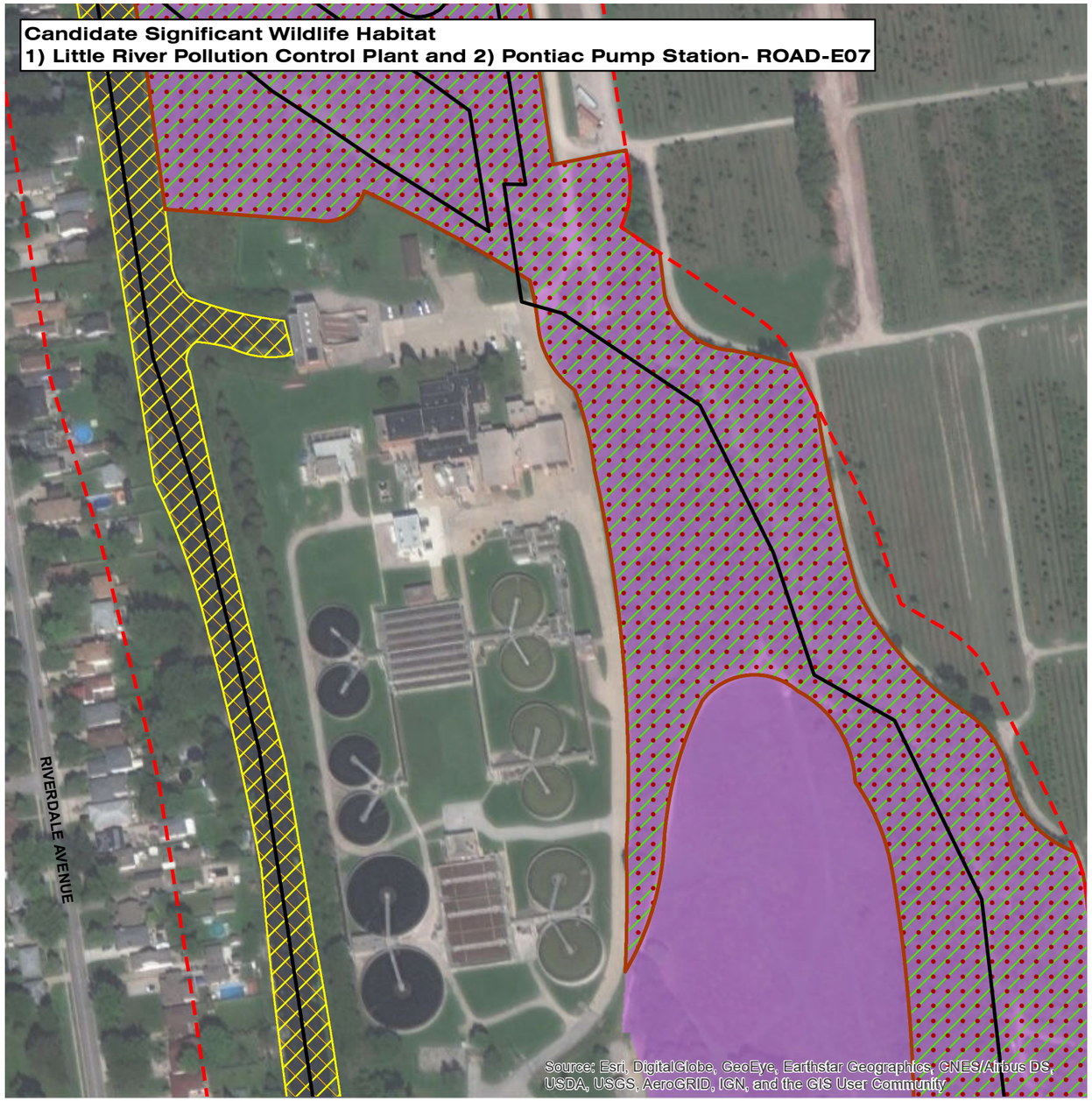

CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

ECOLOGICAL LAND CLASSIFICATION & SIGNIFICANT WILDLIFE HABITAT
FIGURE 3

THE CITY OF WINDSOR

Study Area (50 m)
Project Location

Ecological Land Classification
- CGL: Greenlands
- CVC: Commercial and Institutional
- CVI: Transportation and Utilities
- CVR: Residential
- FOD: Deciduous Forest
- MA: Marsh
- ME: Meadow; ME
- OAG: Open Agriculture
- OAO: Open Aquatic
- SA: Shallow Water
- TAGM5: Fencerow
- THD: Deciduous Thicket

Candidate Significant Wildlife Habitat
- Bat Maternity Colonies
- Turtle Wintering Areas
- Amphibian Breeding Habitat (Woodland)
- Amphibian Breeding Habitat (Wetlands)
- Reptile Hibernaculum

DILLON CONSULTING

MAP CREATED BY: SFG
MAP CHECKED BY: BM
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

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SCALE 1: 35,000

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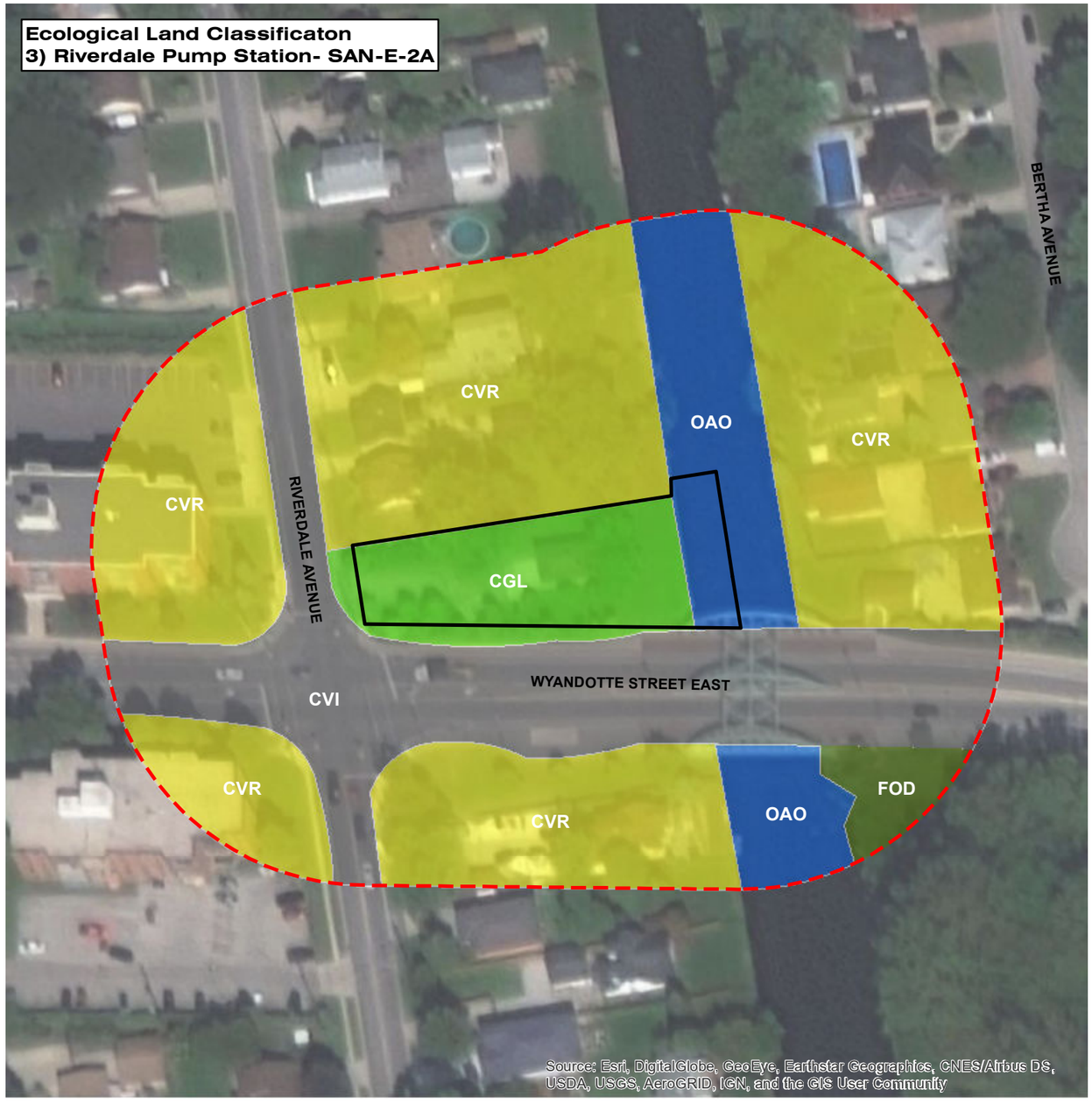

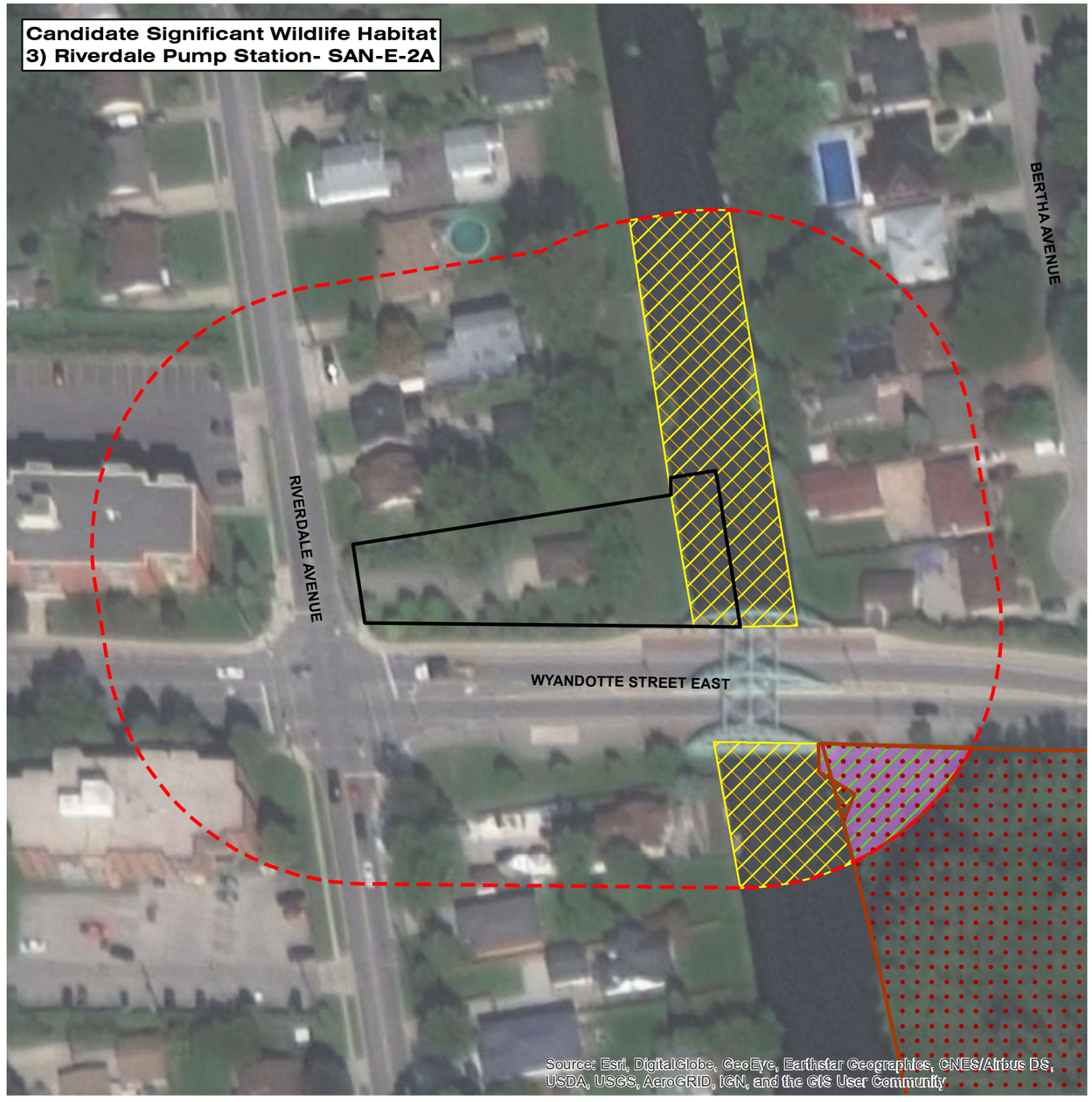

CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

ECOLOGICAL LAND CLASSIFICATION & SIGNIFICANT WILDLIFE HABITAT
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0 15 30 45 m

SCALE 1: 35,000

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CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

ECOLOGICAL LAND CLASSIFICATION & SIGNIFICANT WILDLIFE HABITAT

FIGURE 3

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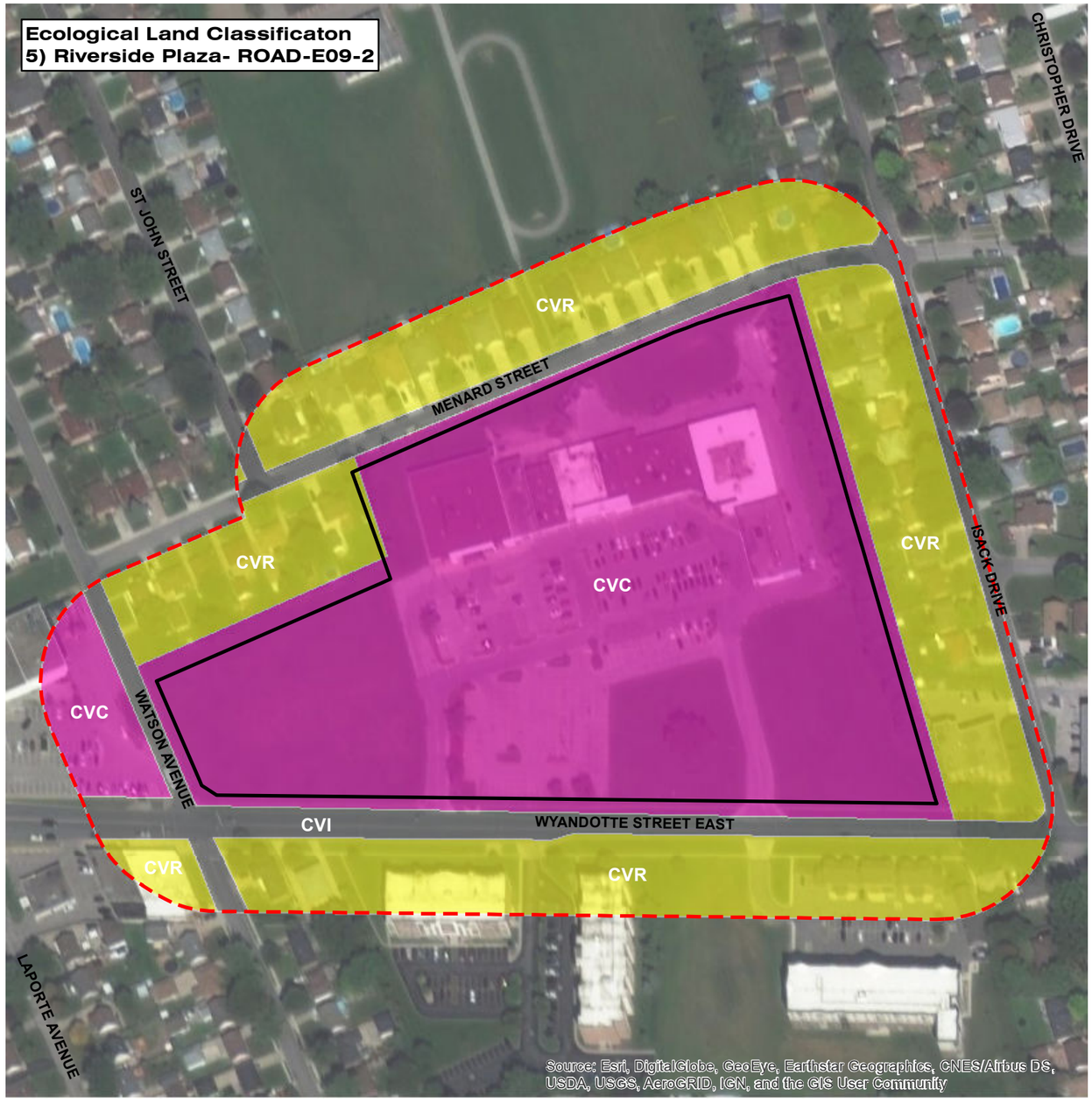

CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

ECOLOGICAL LAND CLASSIFICATION & SIGNIFICANT WILDLIFE HABITAT
FIGURE 3

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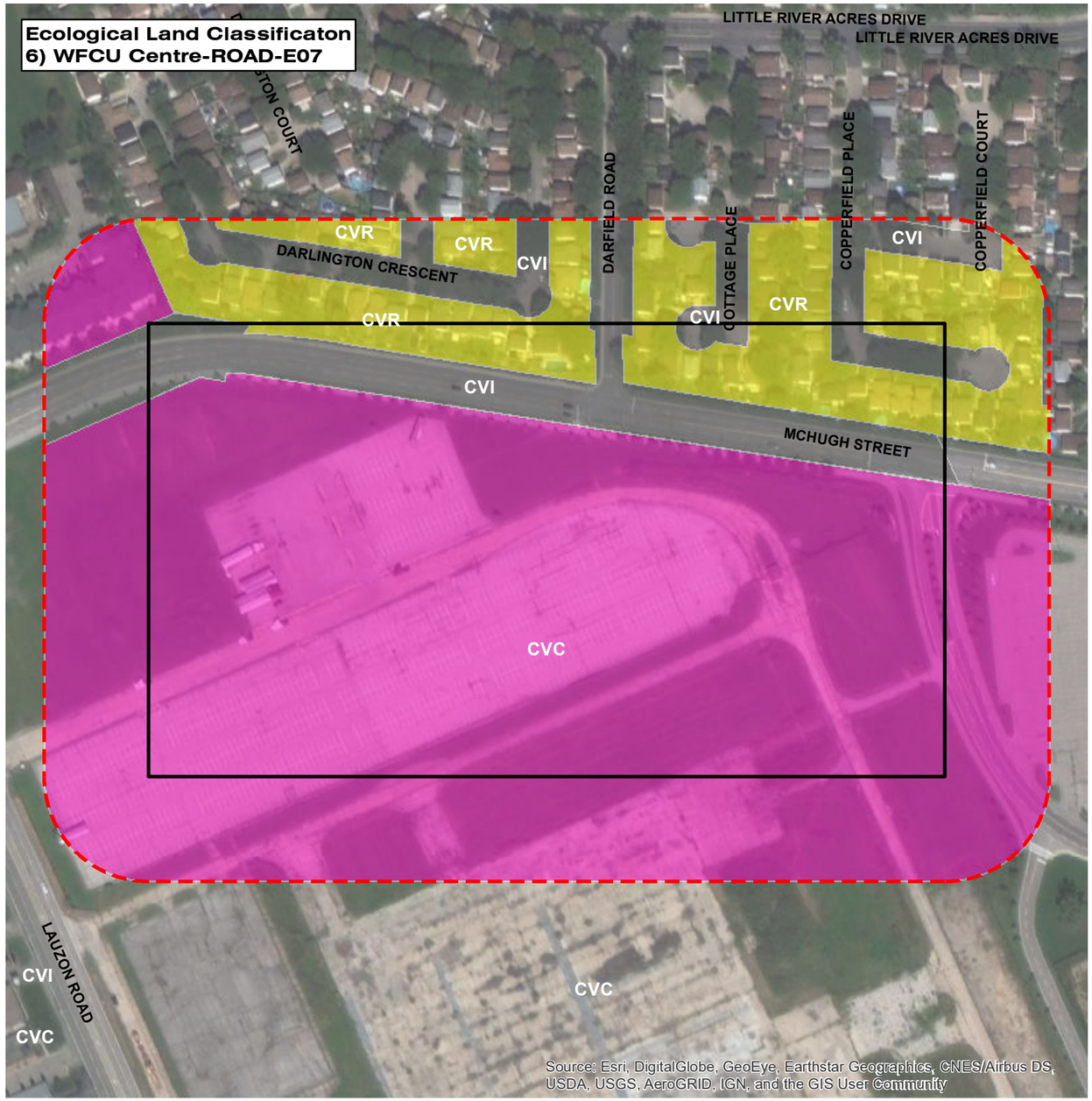

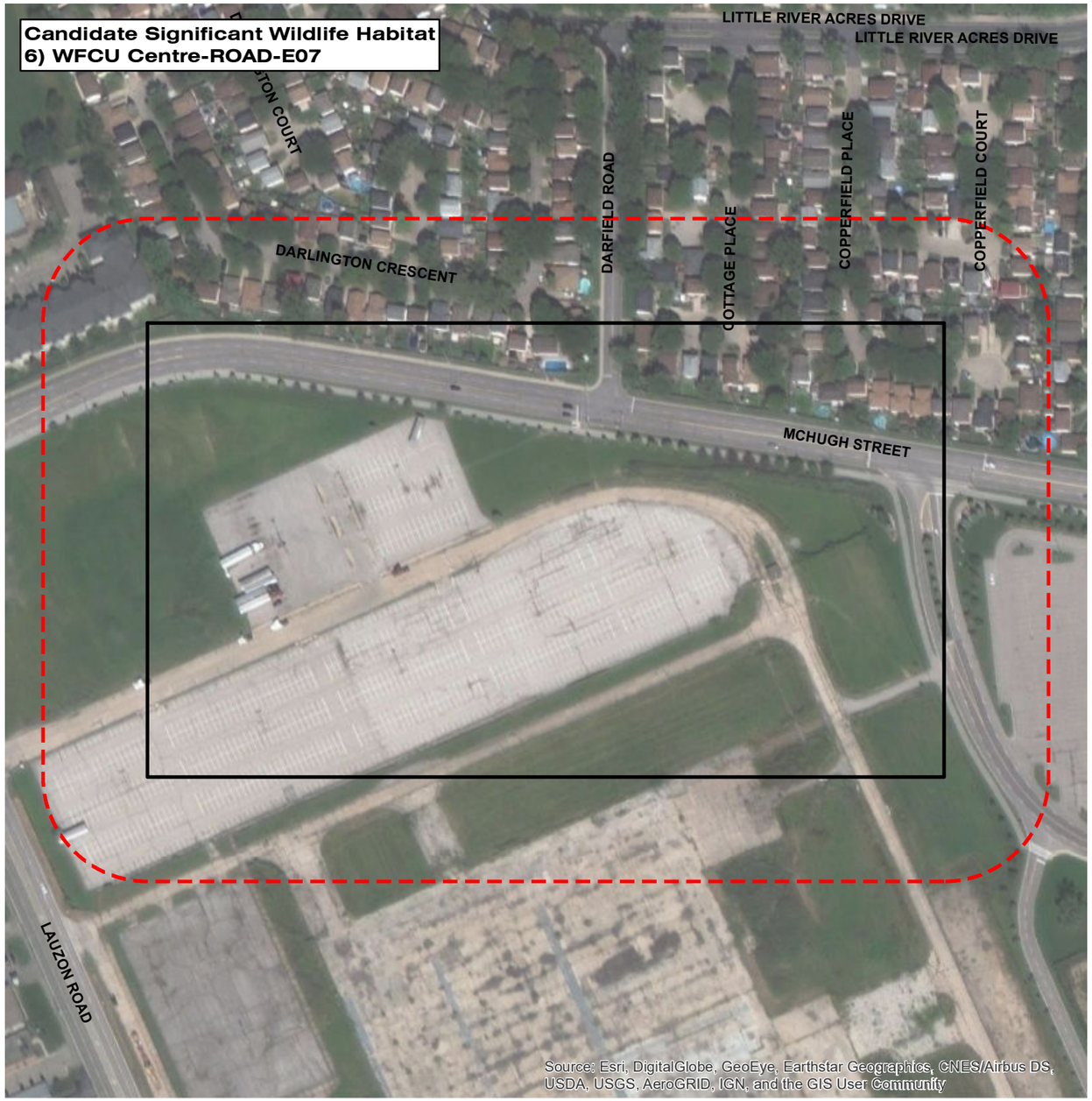

CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

ECOLOGICAL LAND CLASSIFICATION & SIGNIFICANT WILDLIFE HABITAT
FIGURE 3

THE CITY OF WINDSOR

Study Area (50 m)
Project Location

Ecological Land Classification
- CGL: Greenlands
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- CVI: Transportation and Utilities
- CVR: Residential
- FOD: Deciduous Forest
- MA: Marsh
- ME: Meadow; ME
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Candidate Significant Wildlife Habitat
- Bat Maternity Colonies
- Turtle Wintering Areas
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- Reptile Hibernaculum

DILLON CONSULTING

MAP CREATED BY: SFG
MAP CHECKED BY: BM
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

0 15 30 45 m

SCALE 1: 35,000

N W E S

FILE LOCATION: G:\cad\GIS\176638\GIS\MXDs\Reporting\Ecological Land Classification and Significant Wildlife Habitat.mxd

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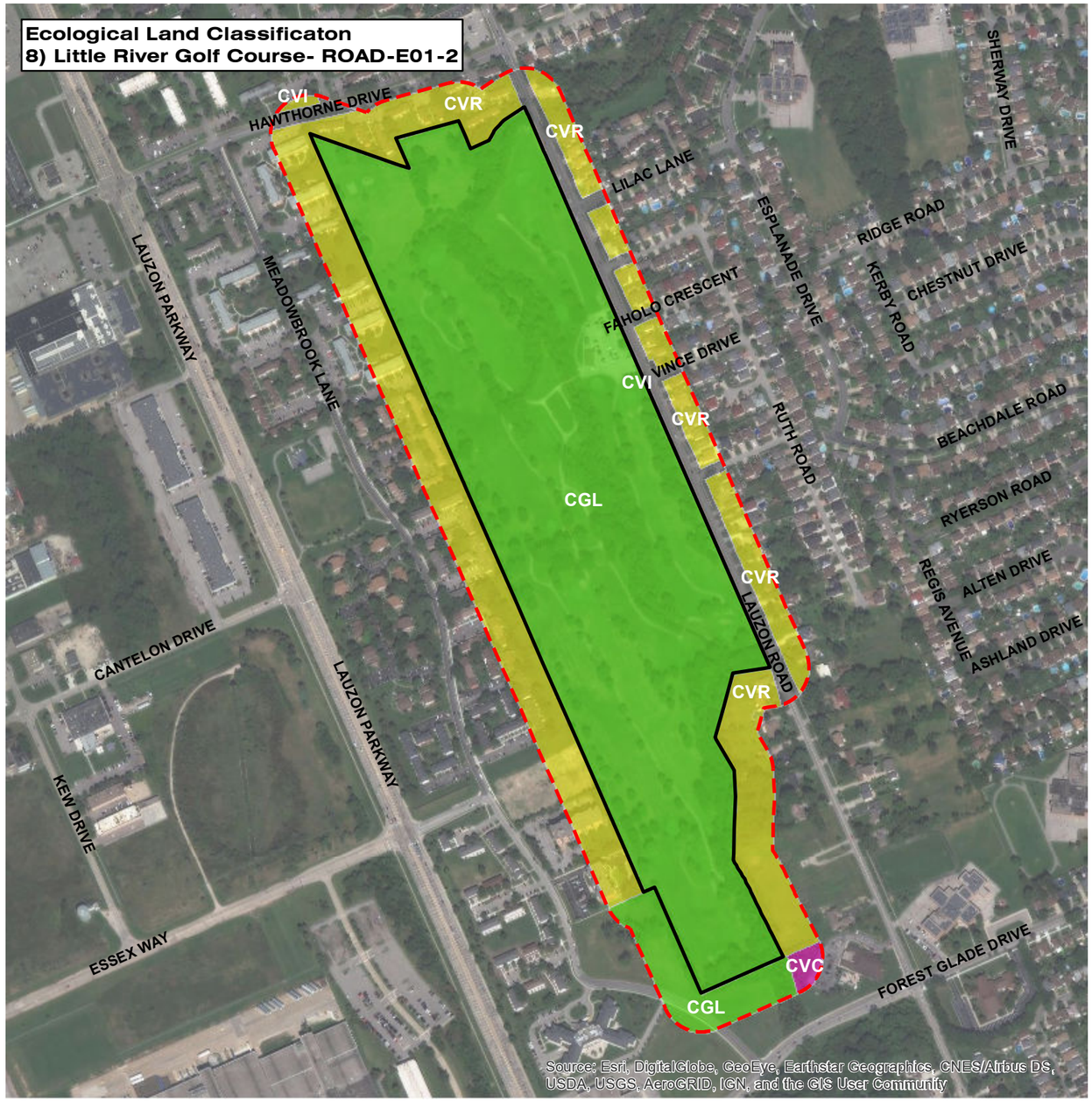

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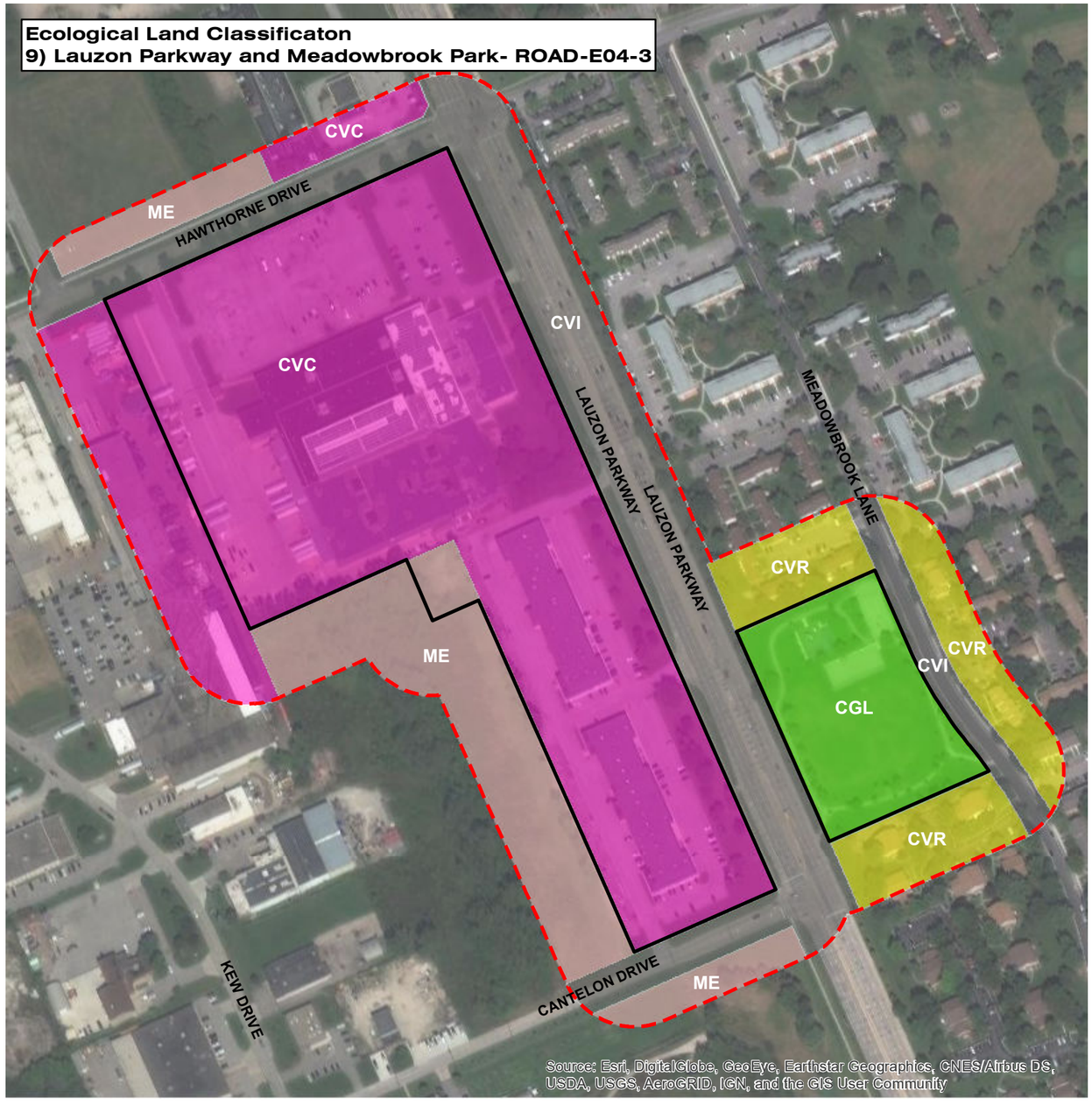

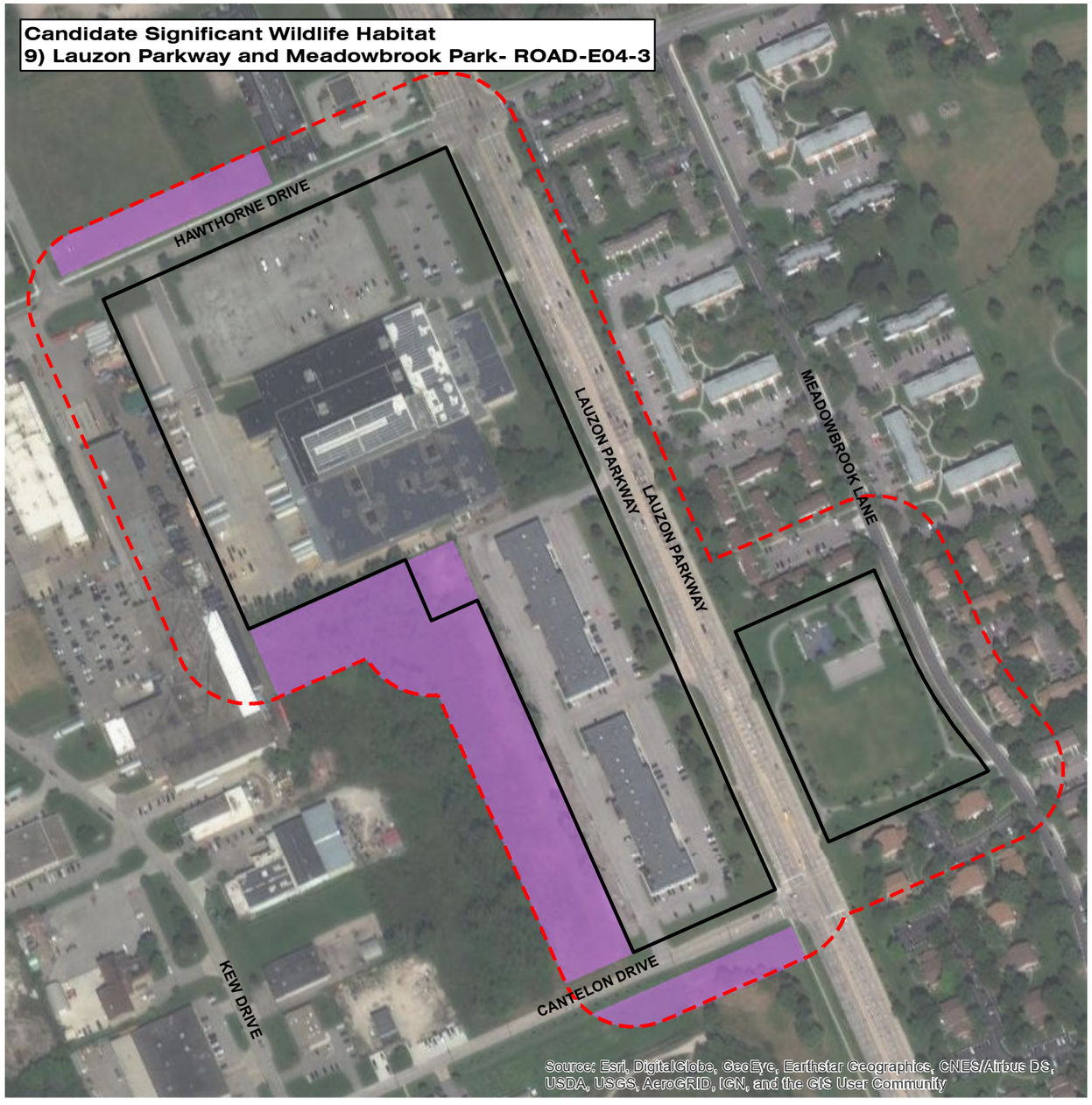

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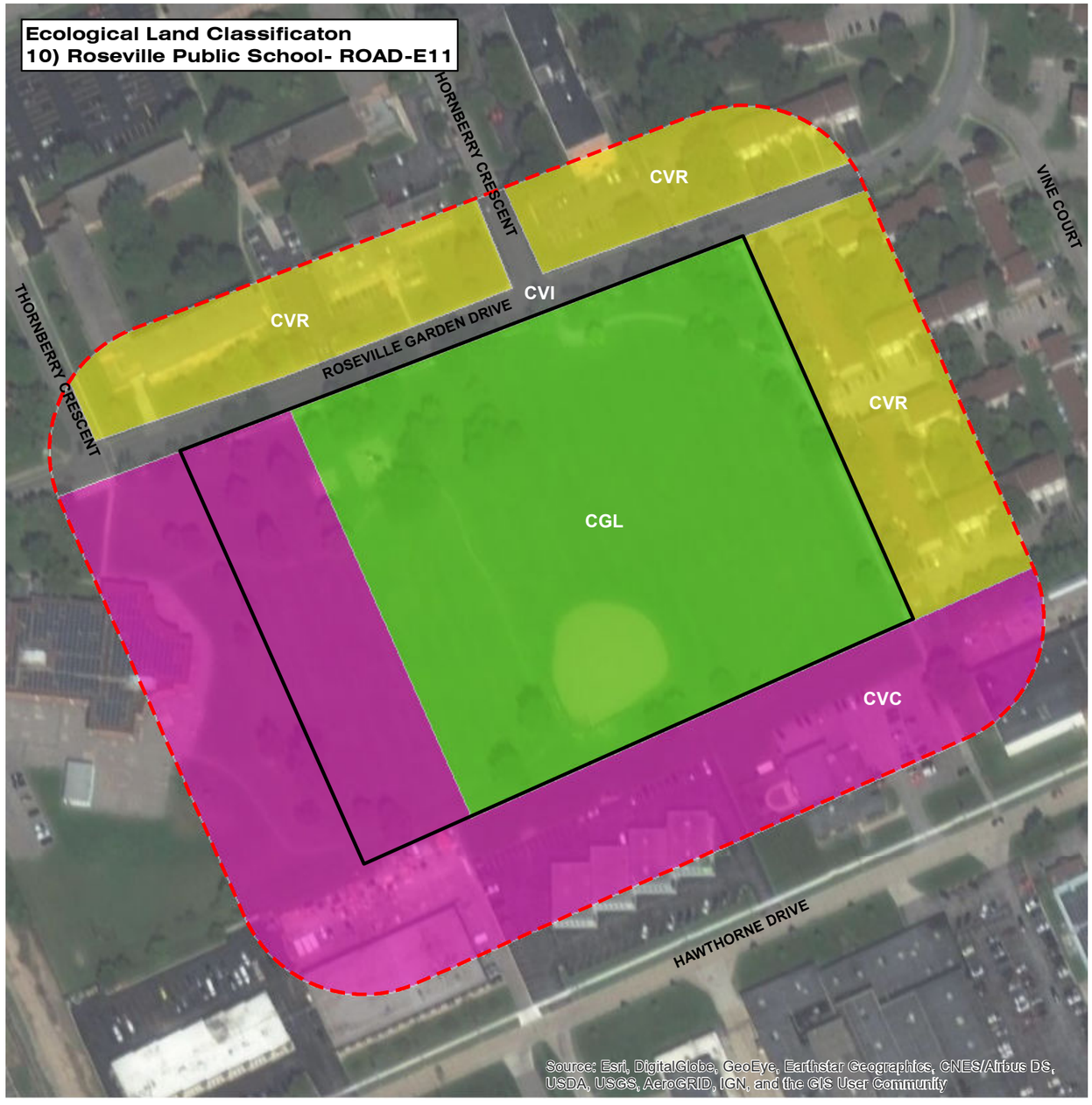

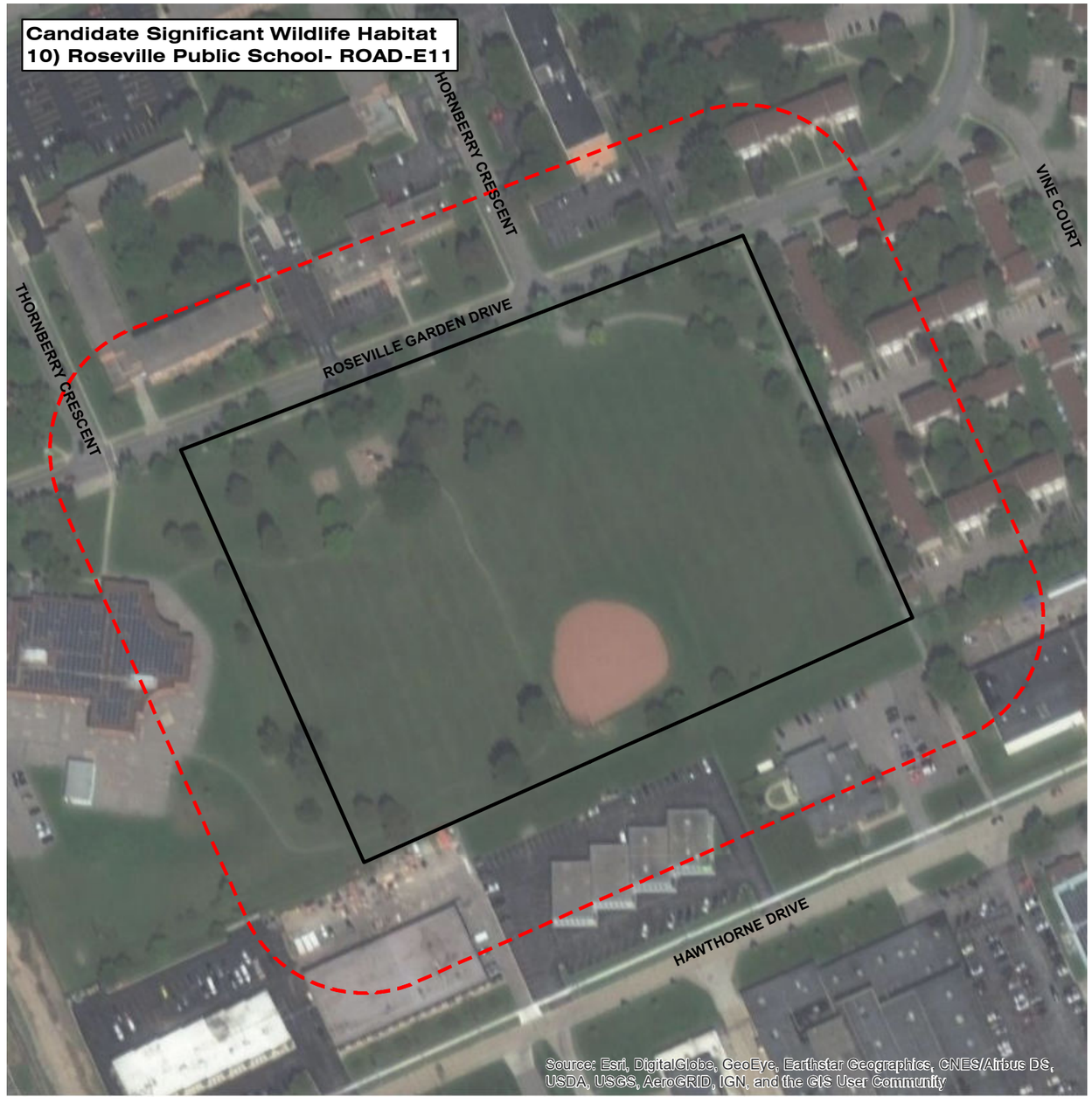

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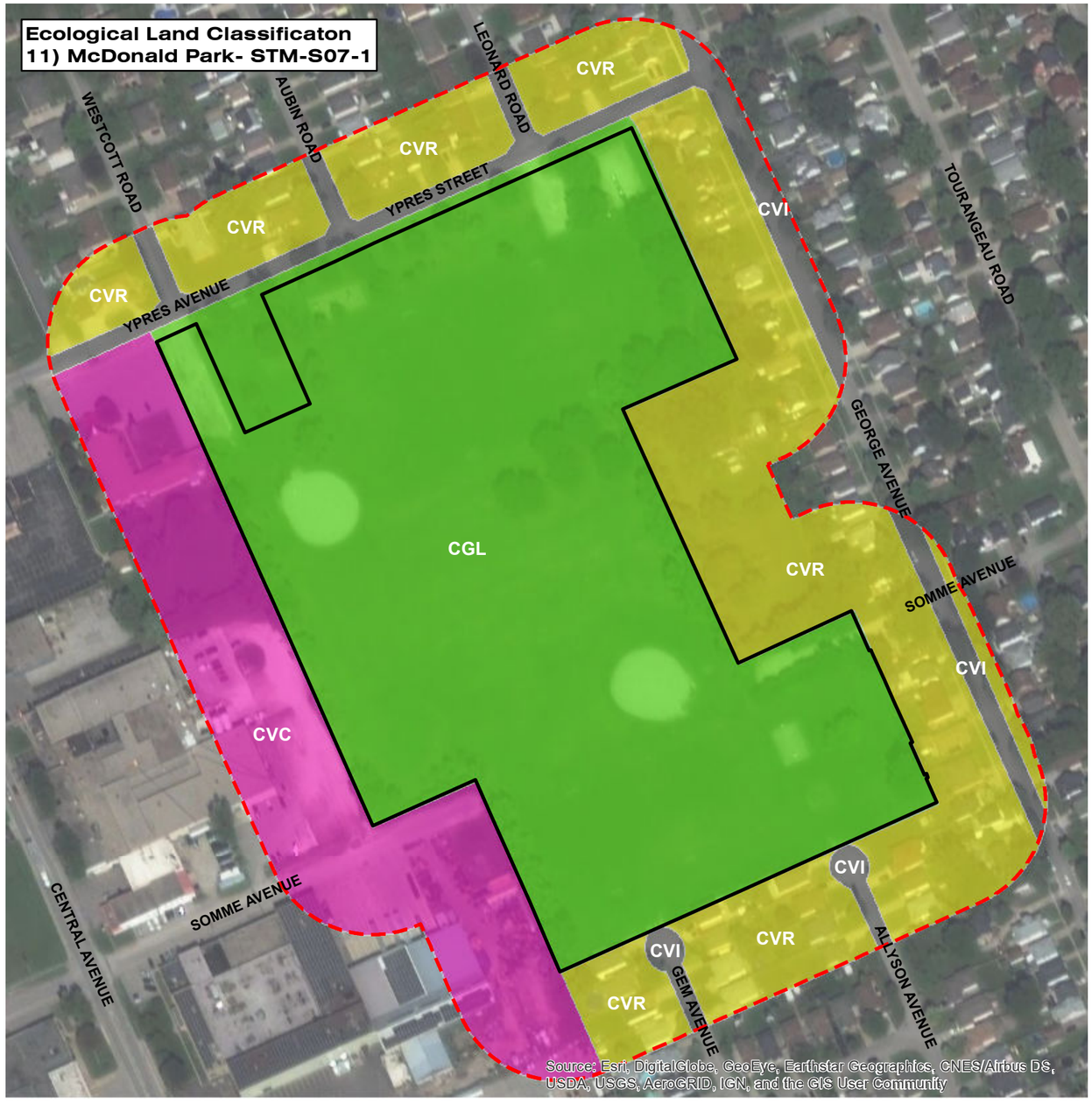

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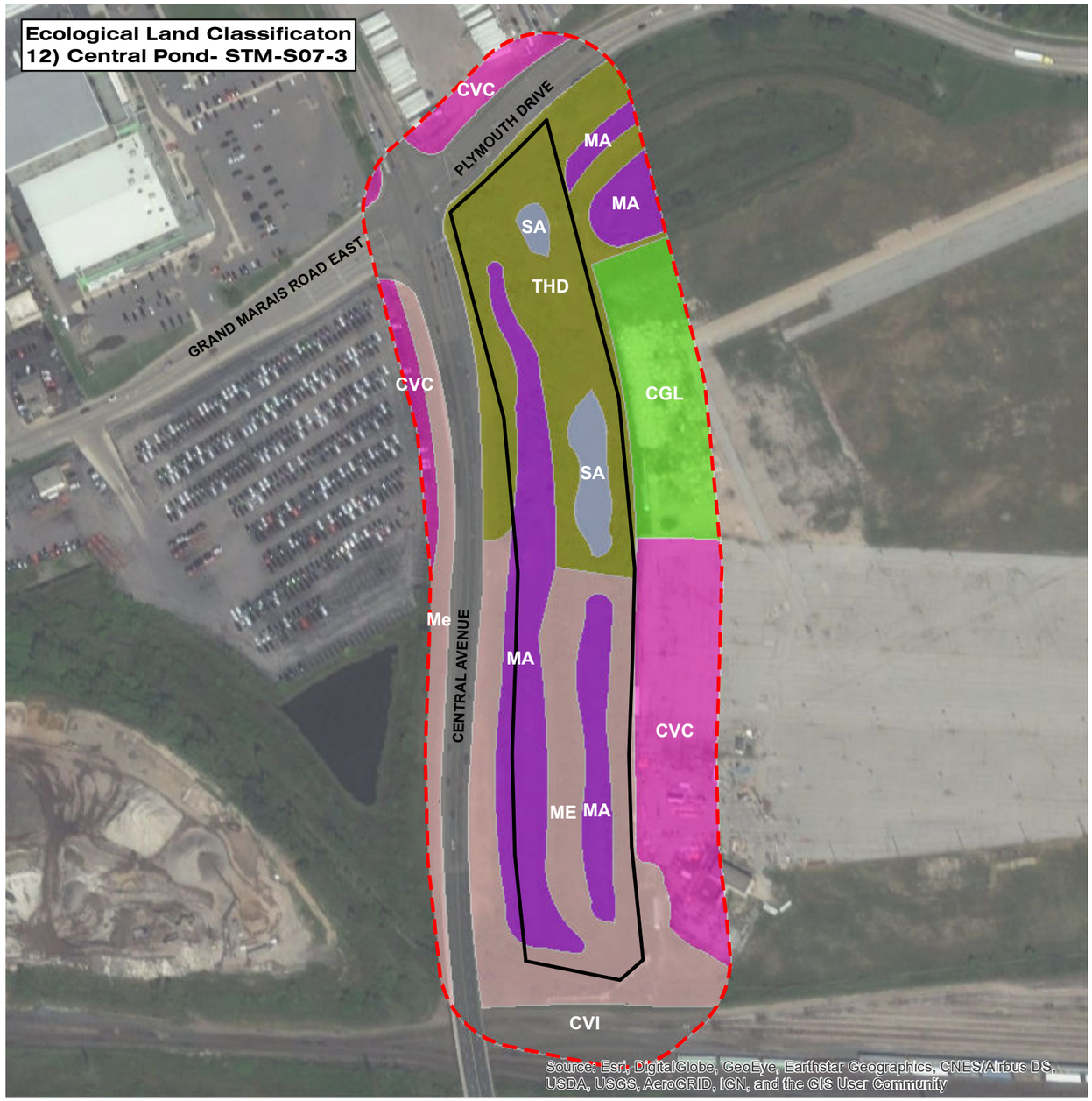

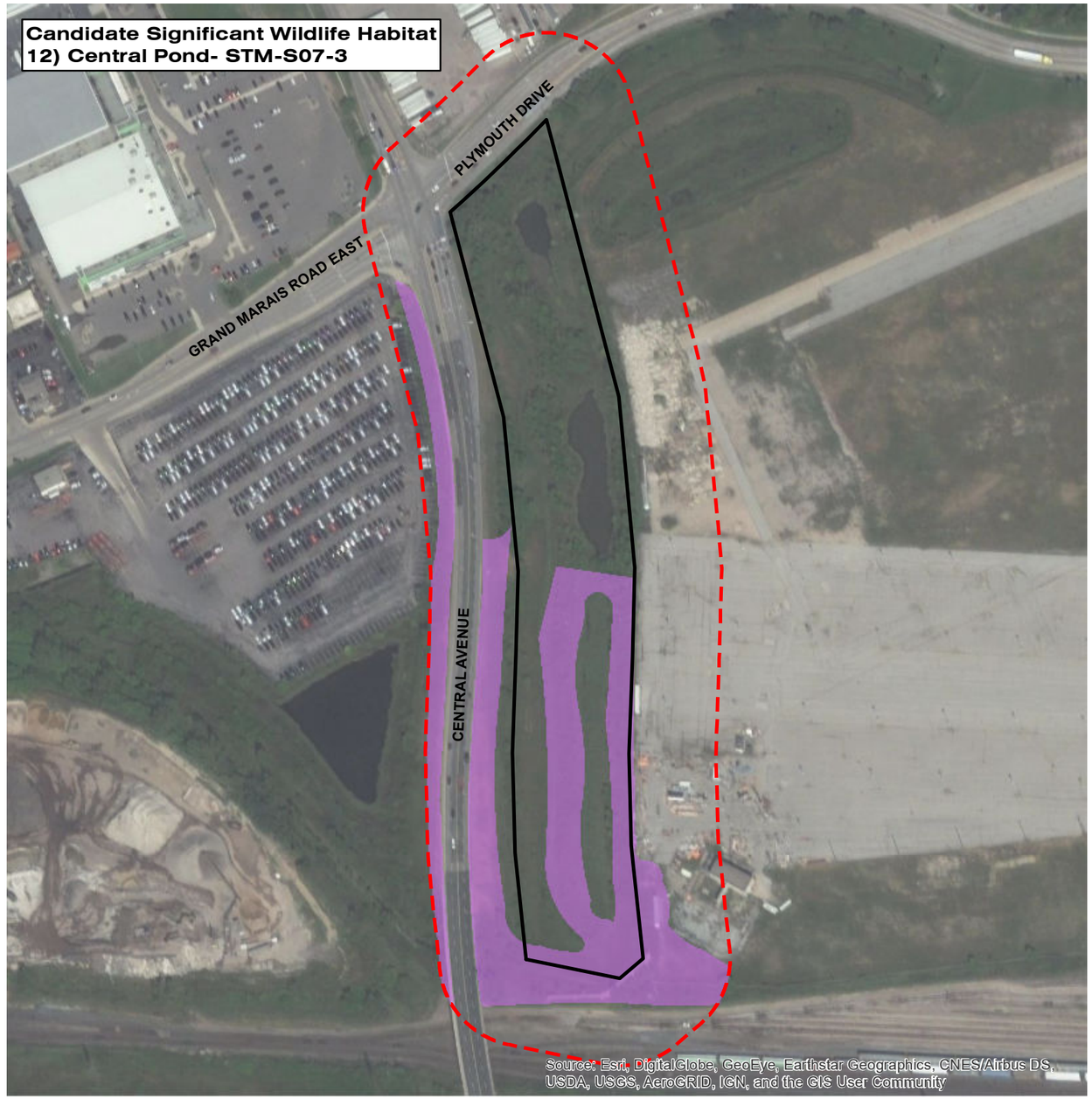

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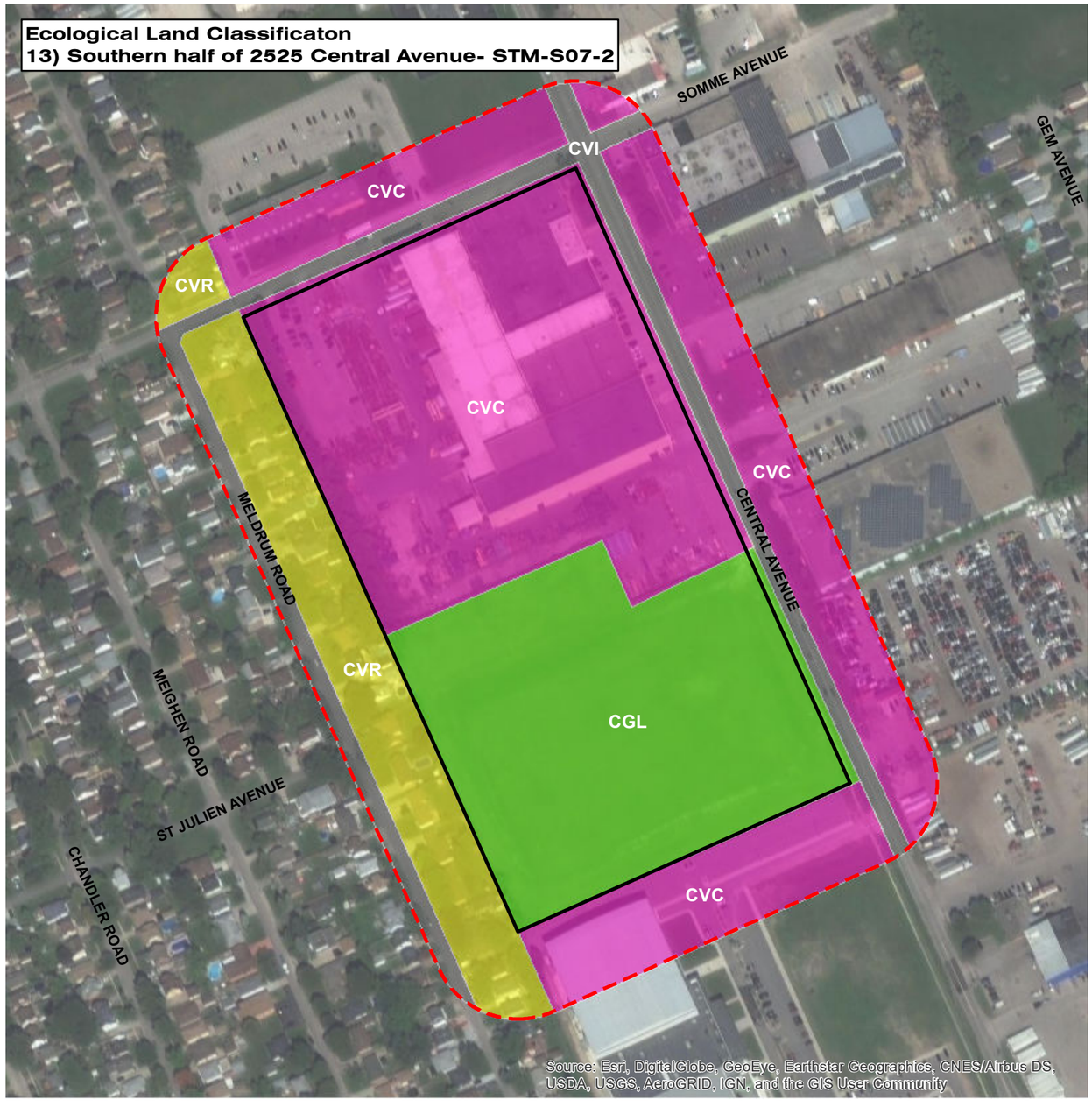

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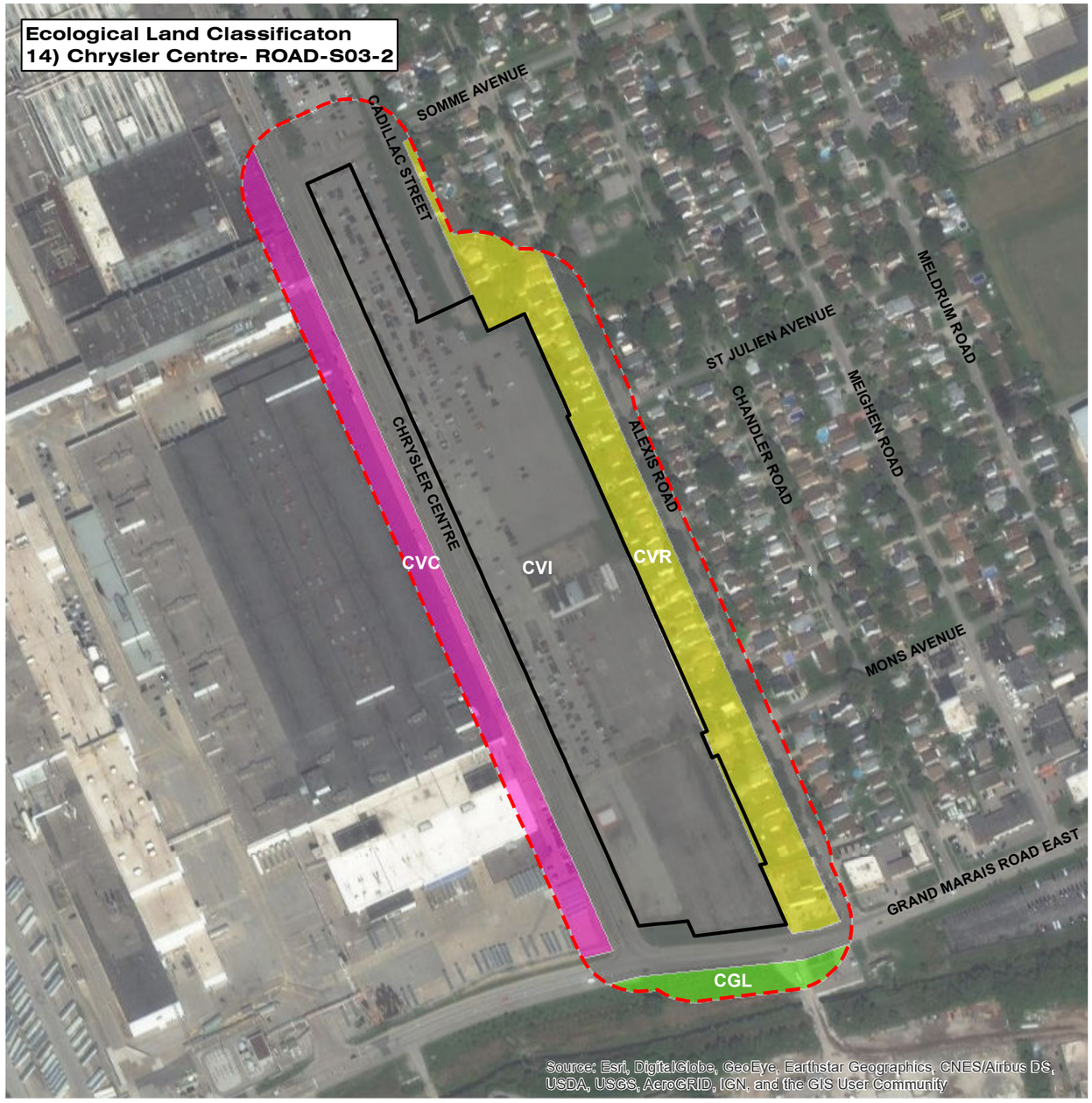

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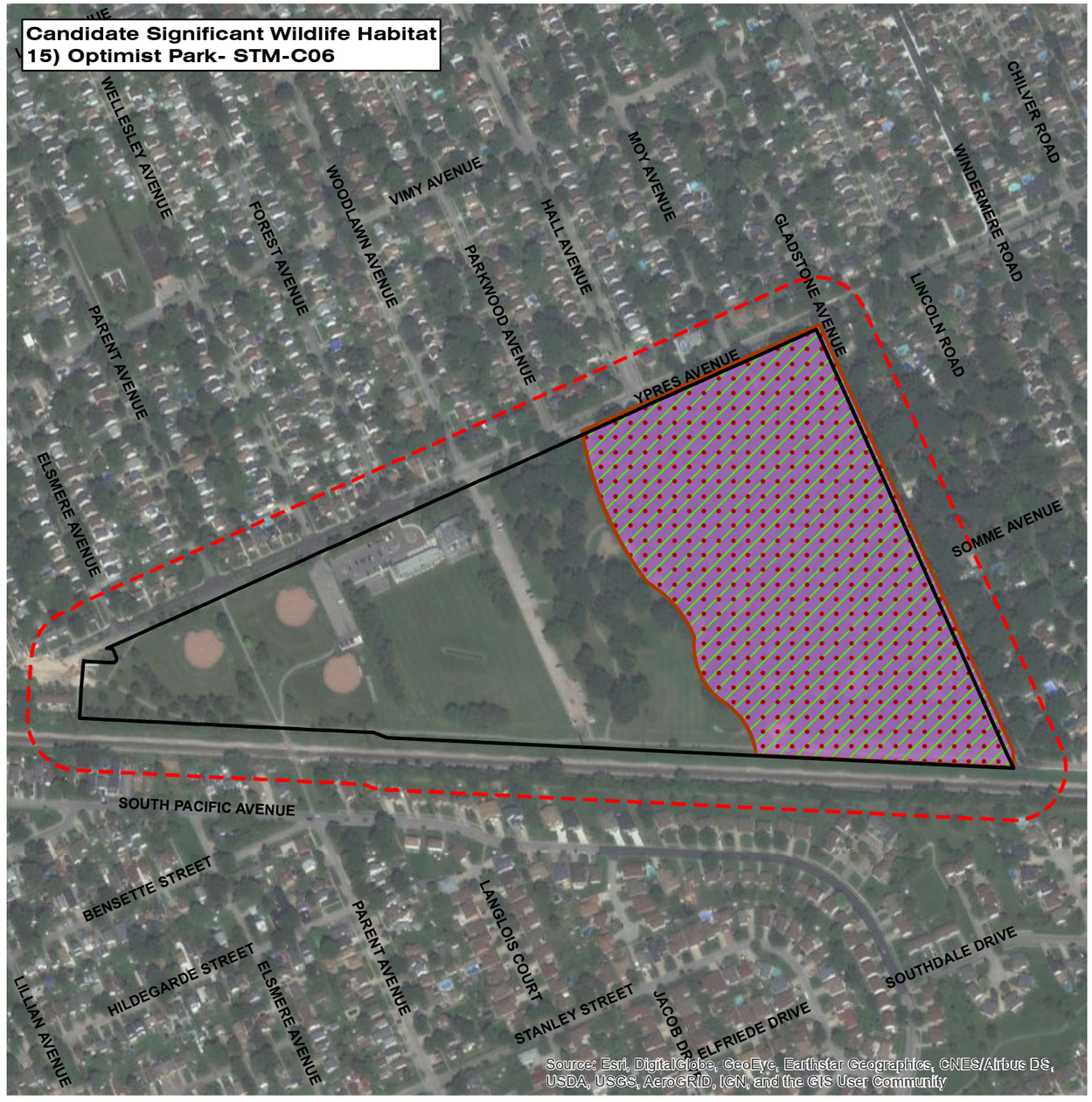

CITY OF WINDSOR
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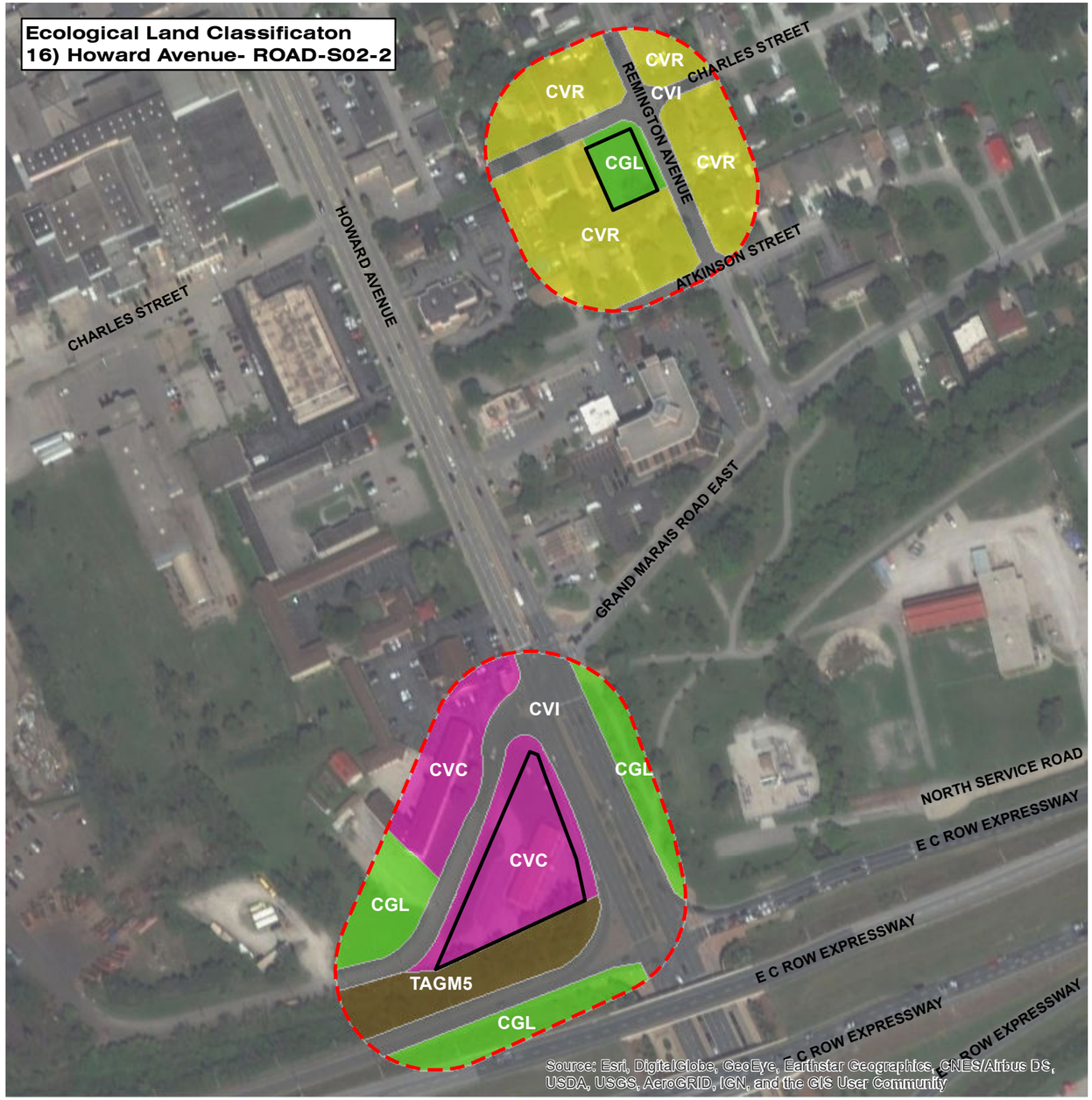

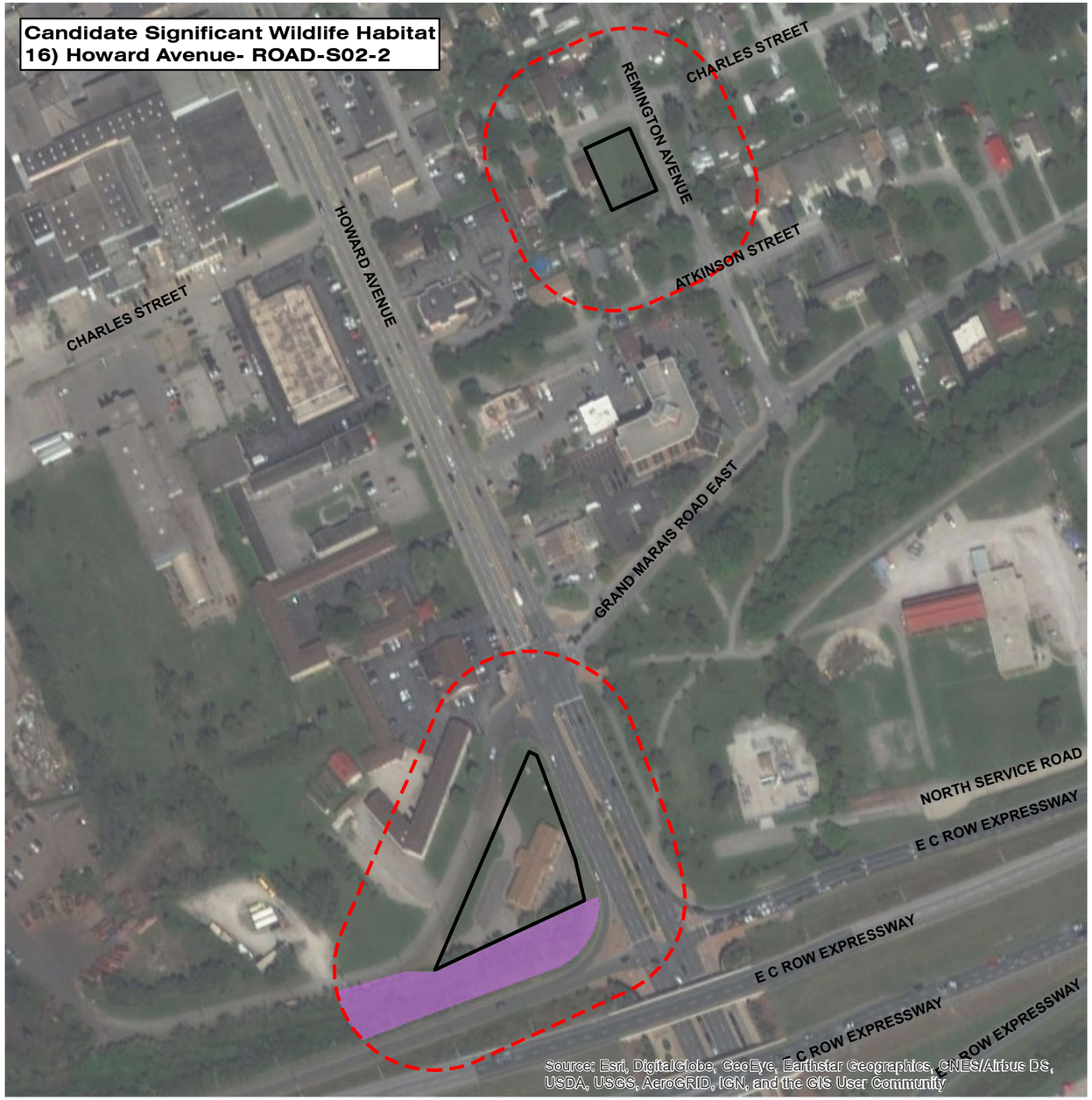

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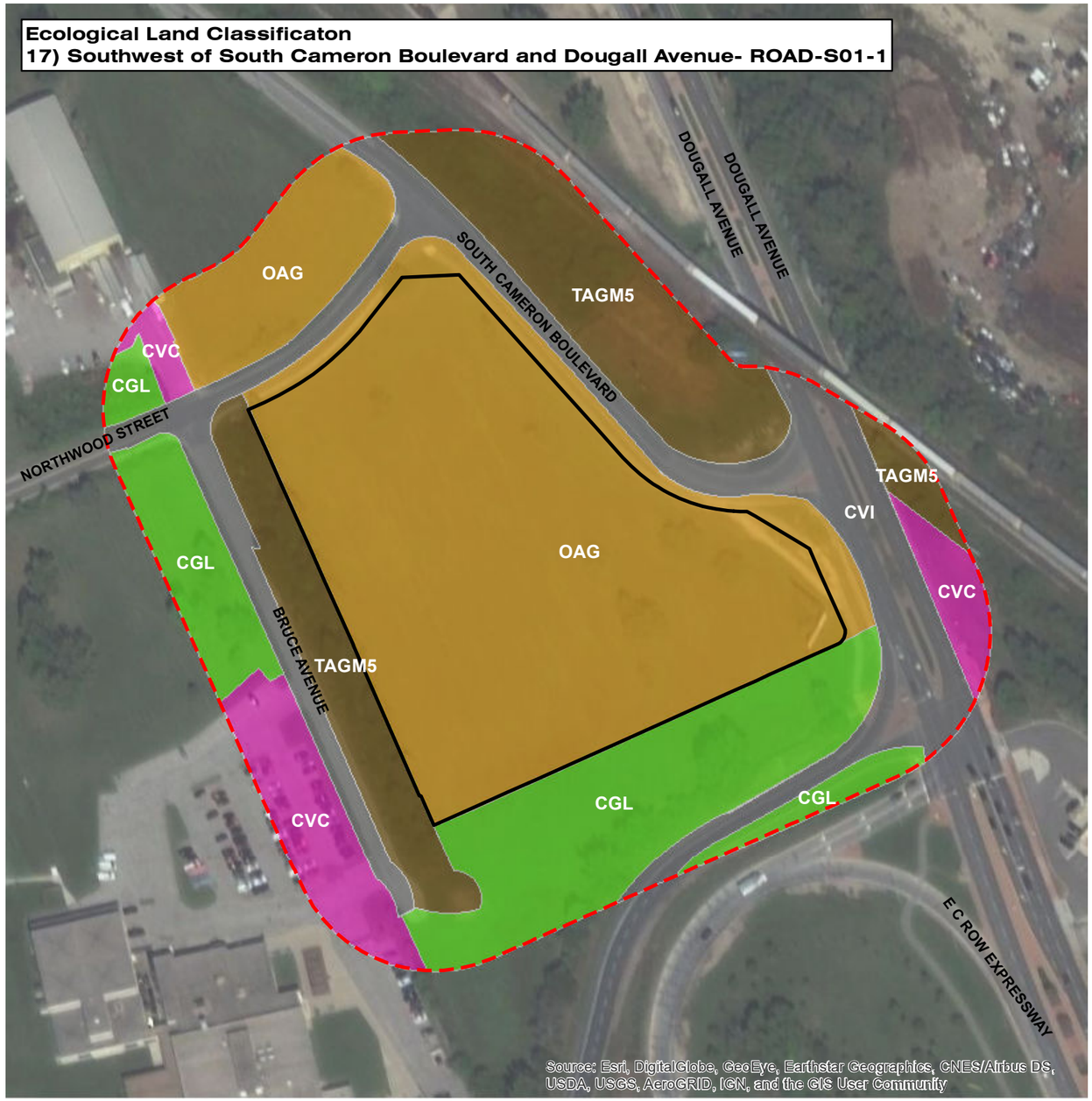

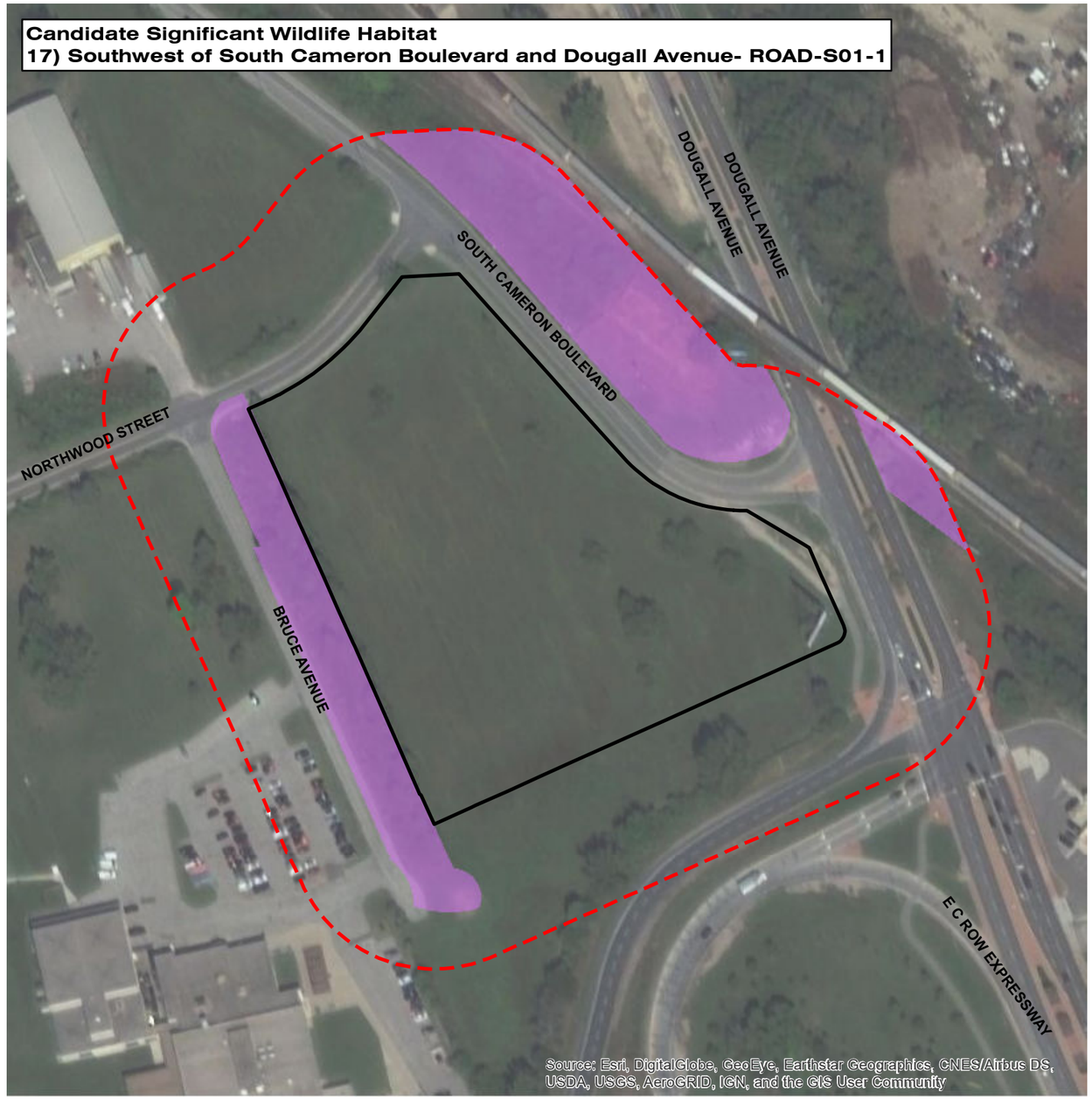

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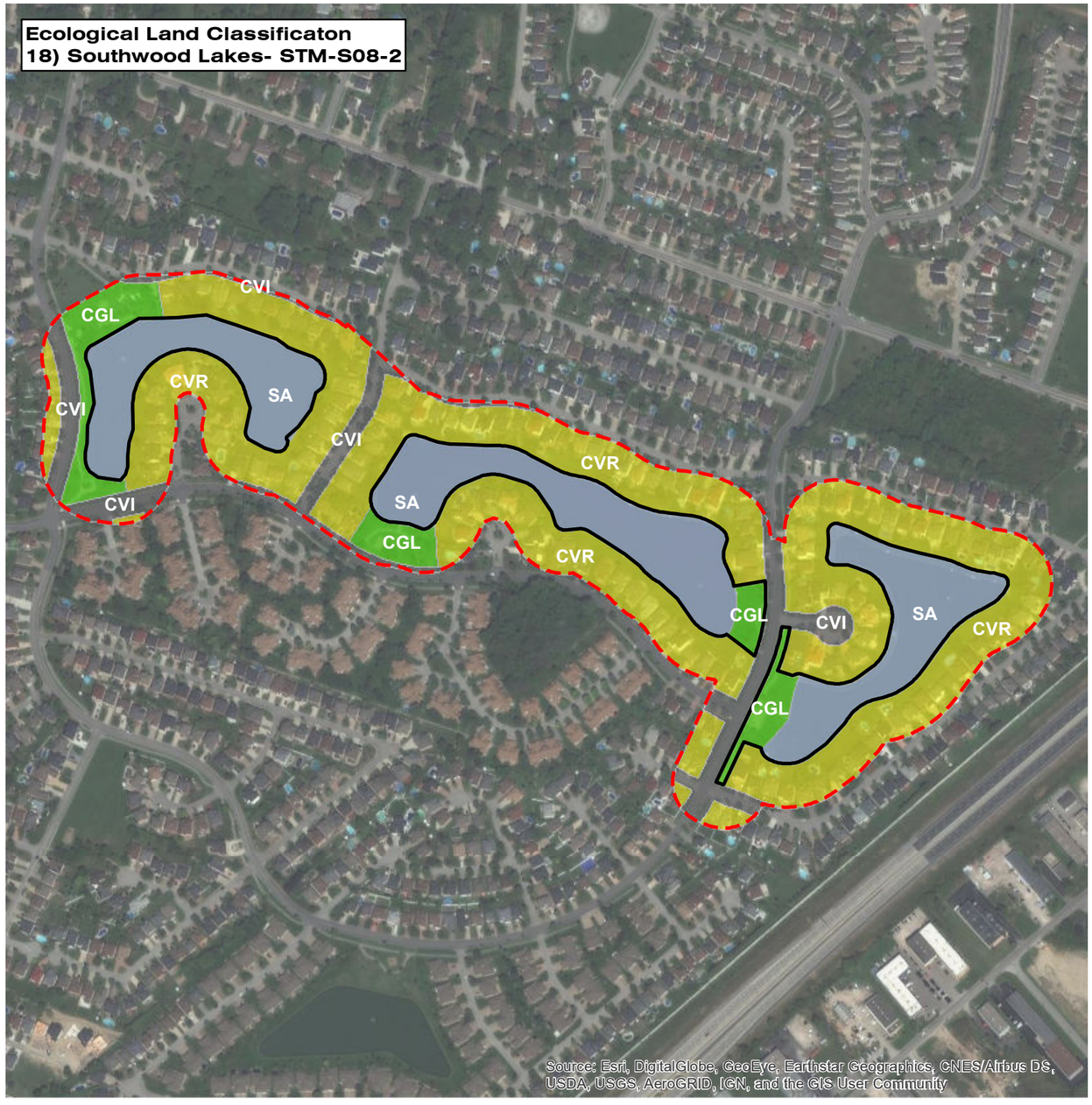

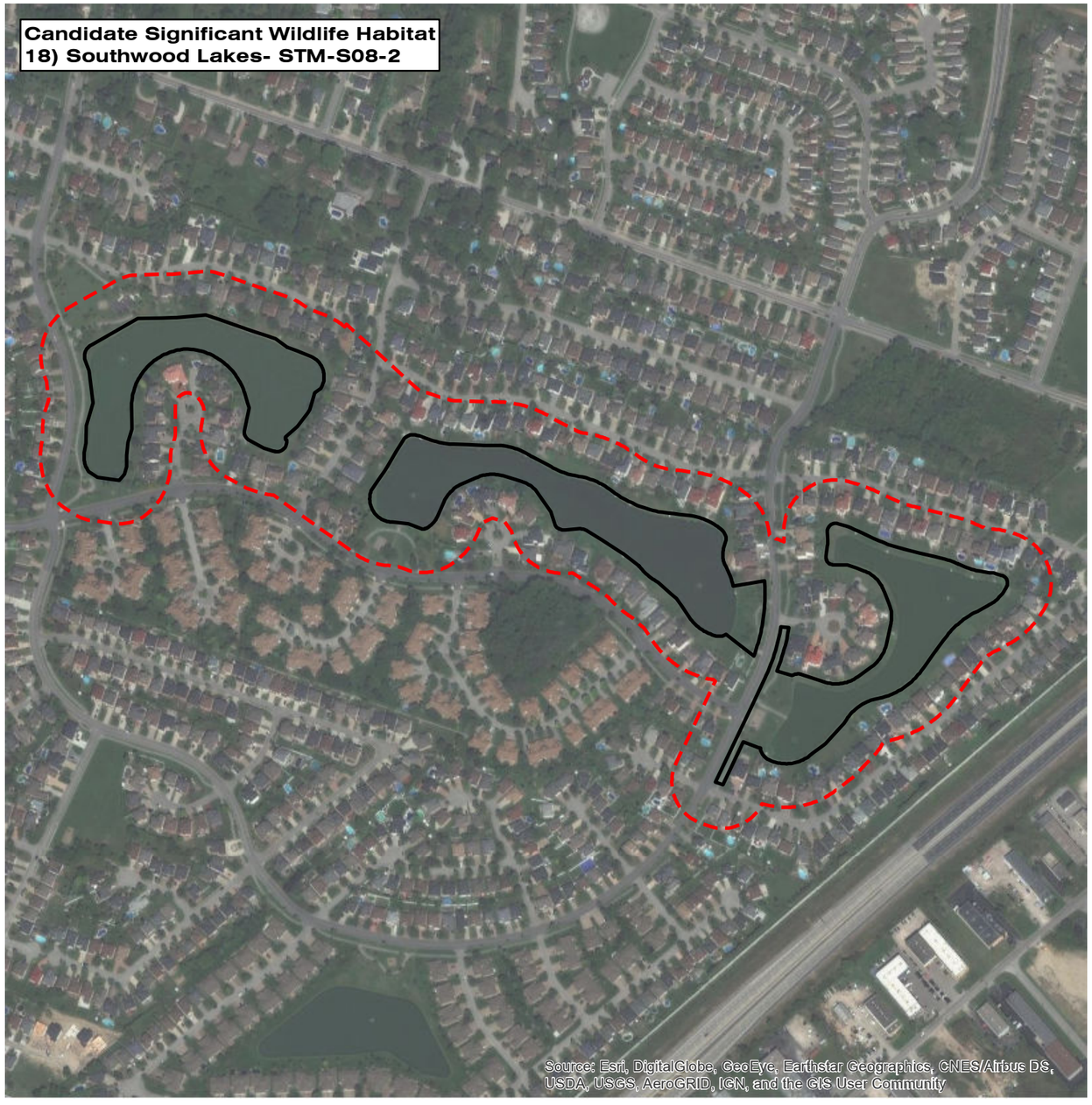

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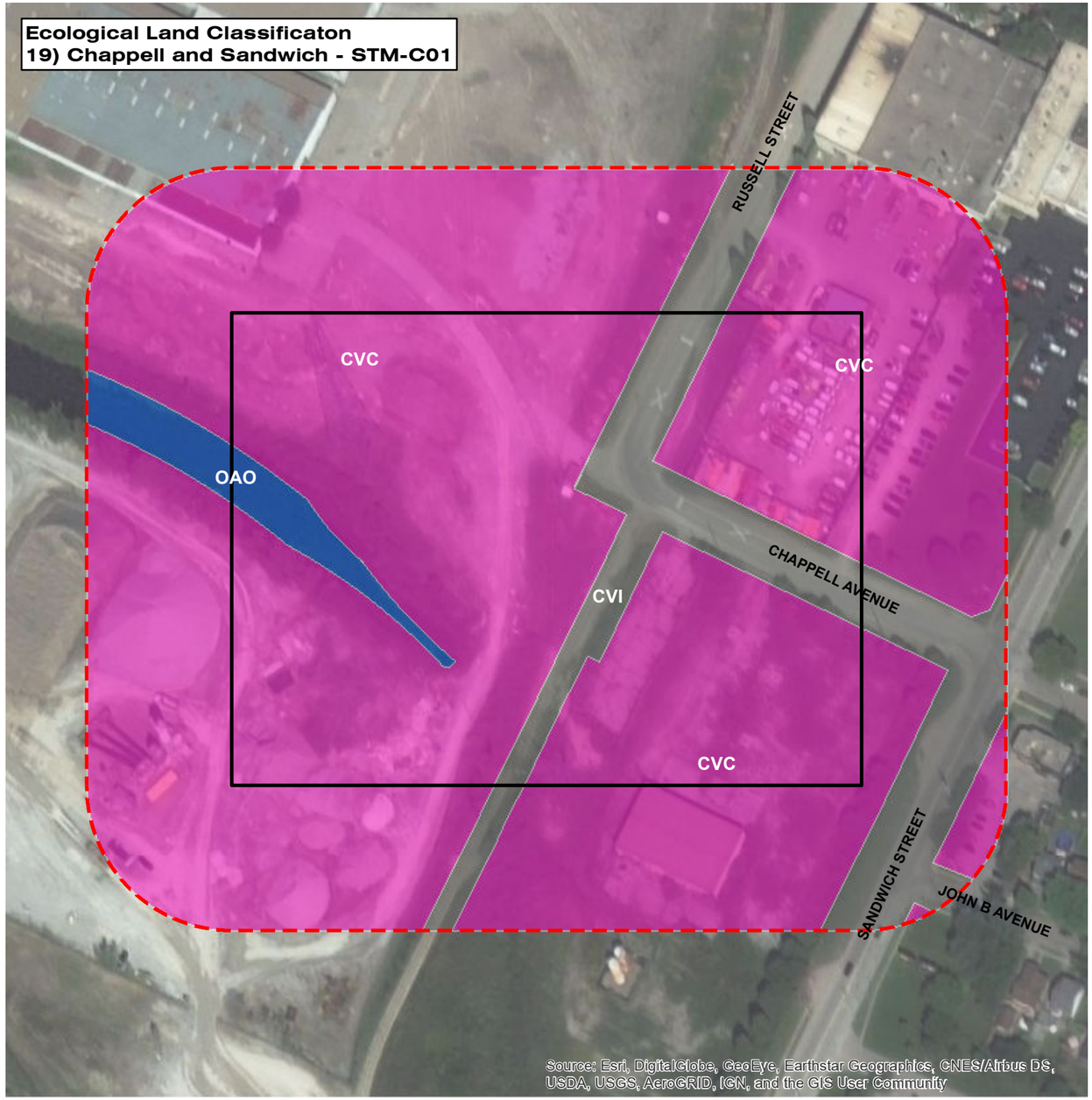

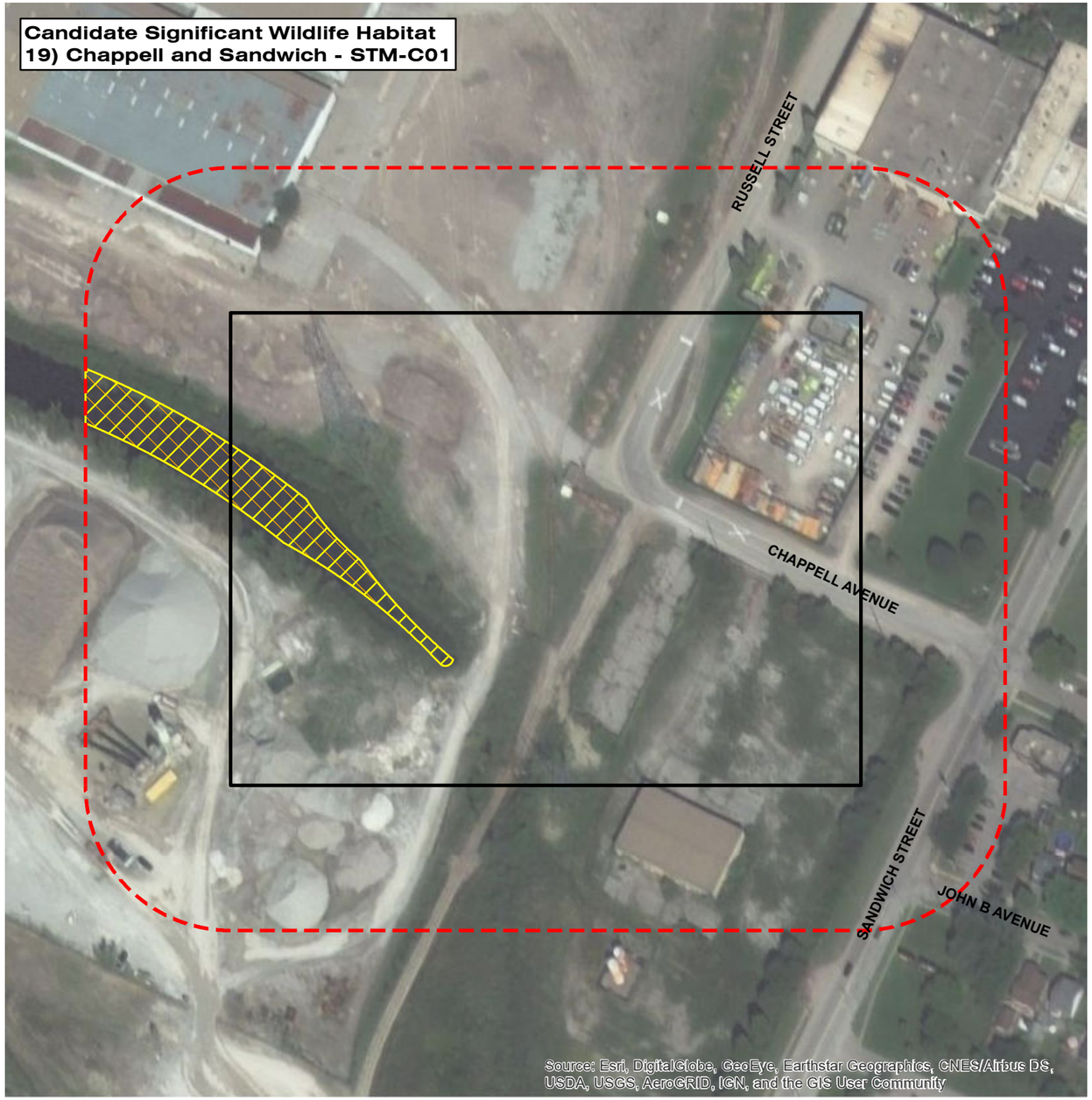

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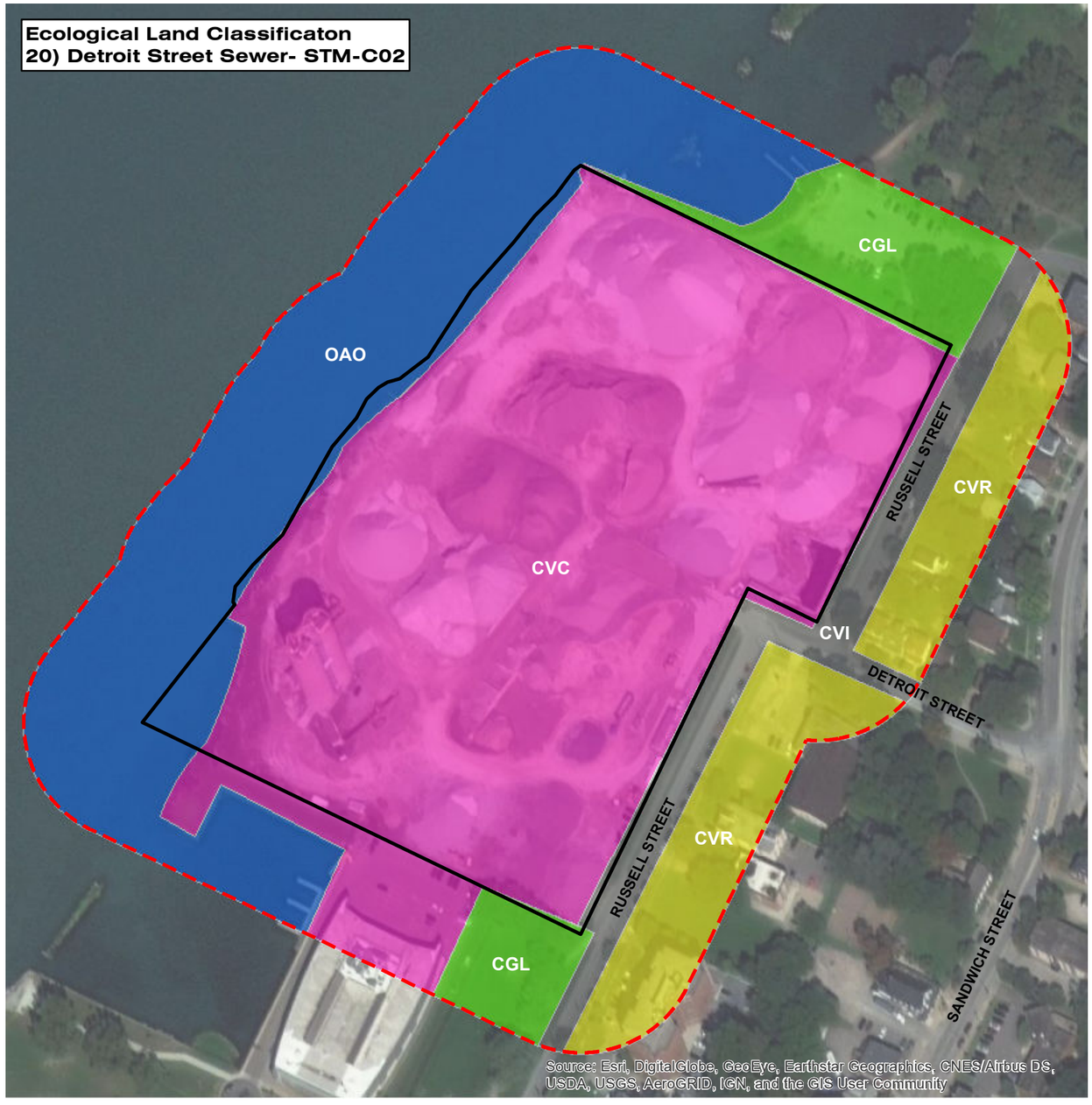

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- Amphibian Breeding Habitat (Wetlands)
- Reptile Hibernaculum

DILLON CONSULTING

MAP CREATED BY: SFG
MAP CHECKED BY: BM
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

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SCALE 1: 35,000

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FILE LOCATION: G:\cad\GIS\176638\GIS\MXDs\Reporting\Ecological Land Classification and Significant Wildlife Habitat.mxd

PROJECT: 176638 STATUS: DRAFT DATE: DECEMBER 2019

CITY OF WINDSOR
SEWER AND COASTAL FLOOD PROTECTION MASTER PLAN

ECOLOGICAL LAND CLASSIFICATION & SIGNIFICANT WILDLIFE HABITAT
FIGURE 3

THE CITY OF WINDSOR

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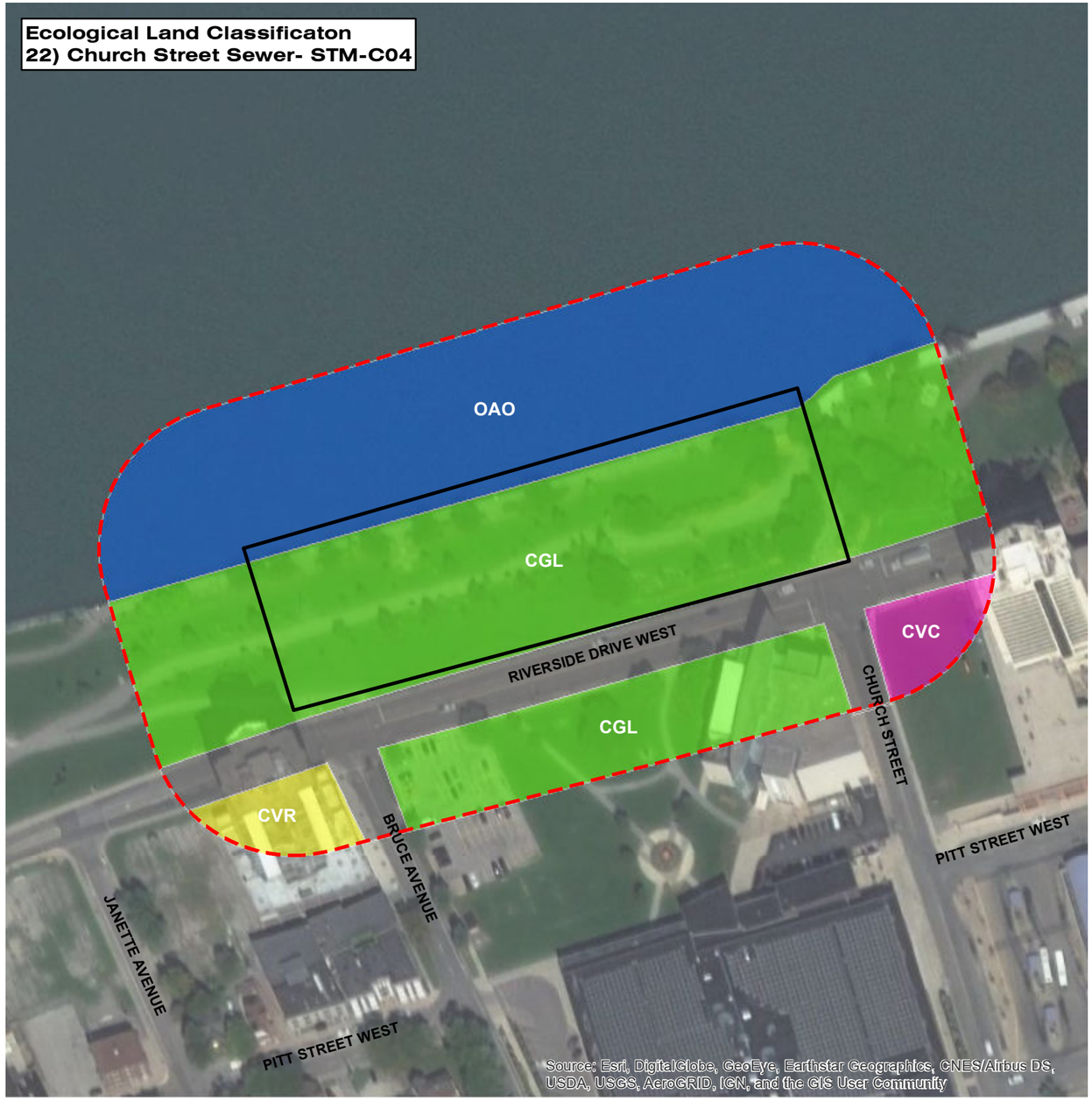
Ecological Land Classificaton
22) Church Street Sewer- STM-C04



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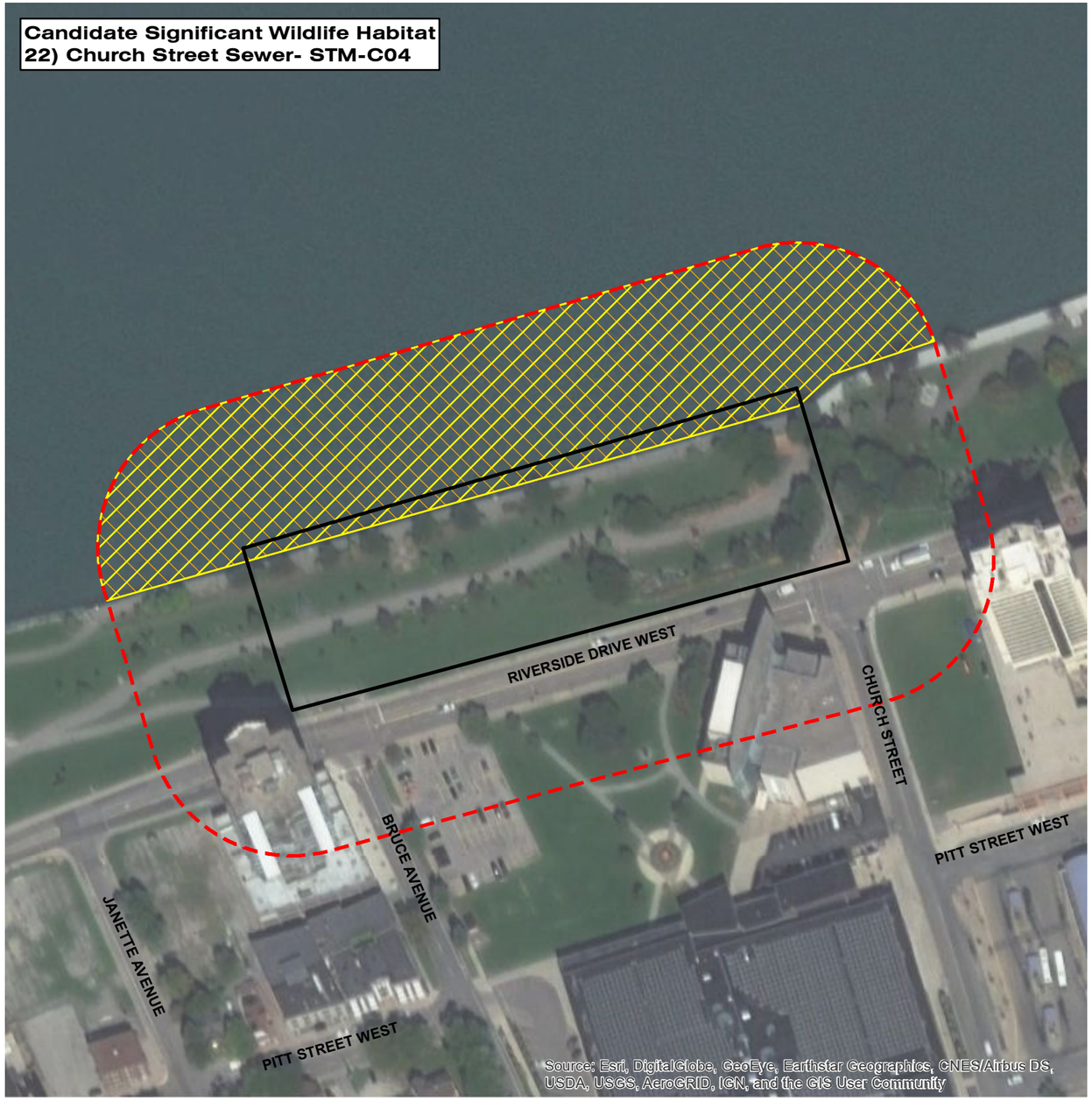

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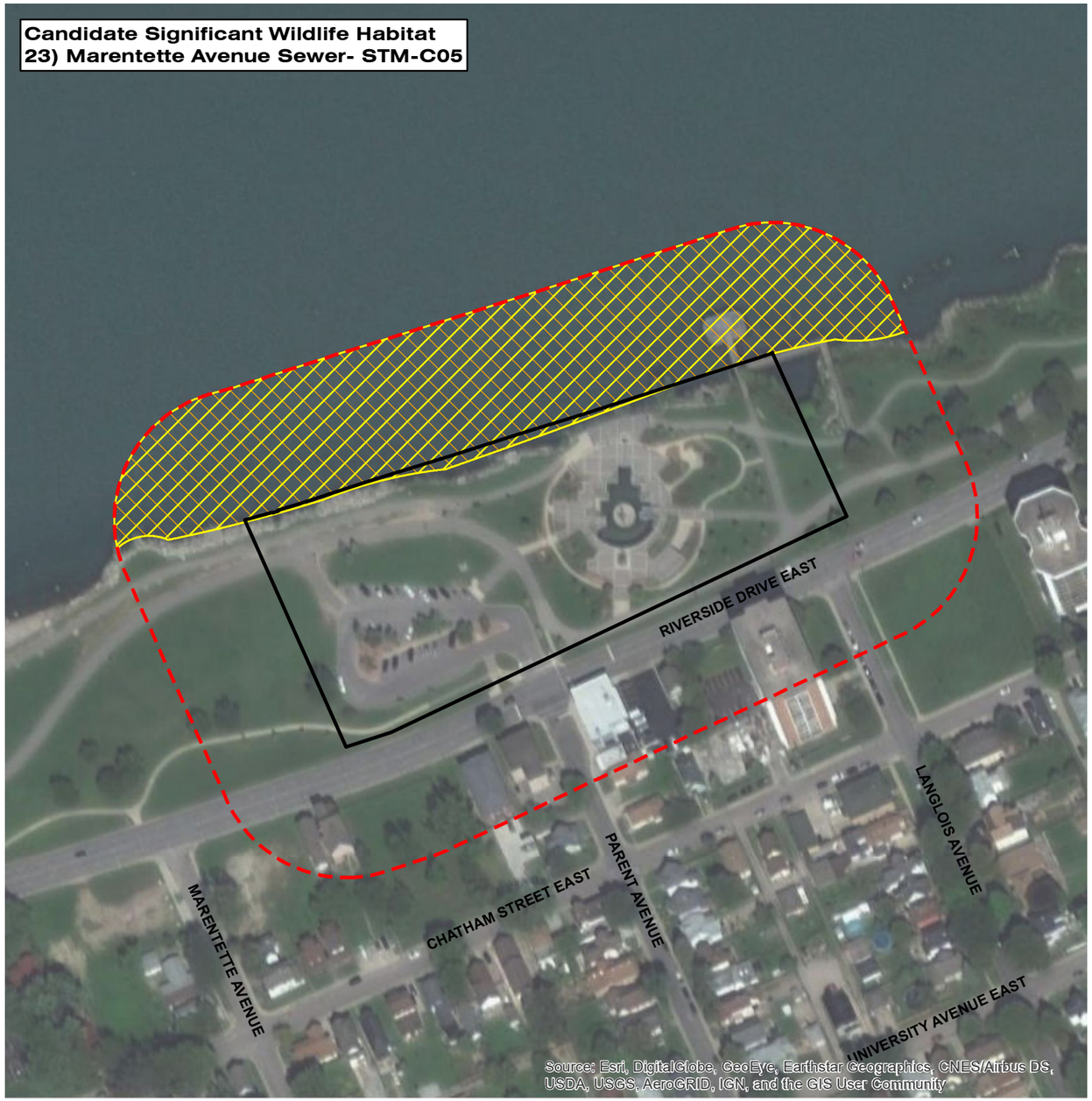

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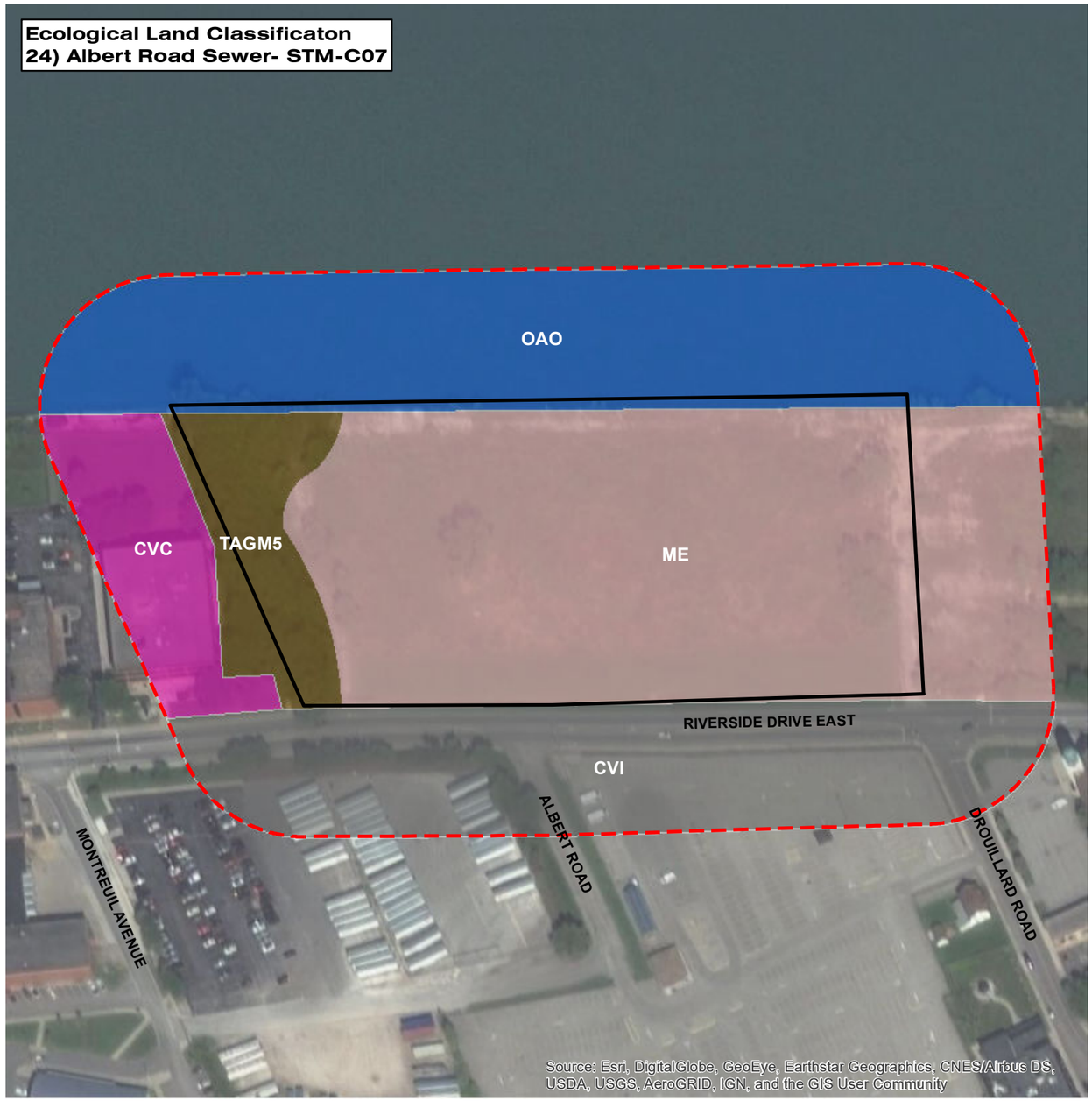

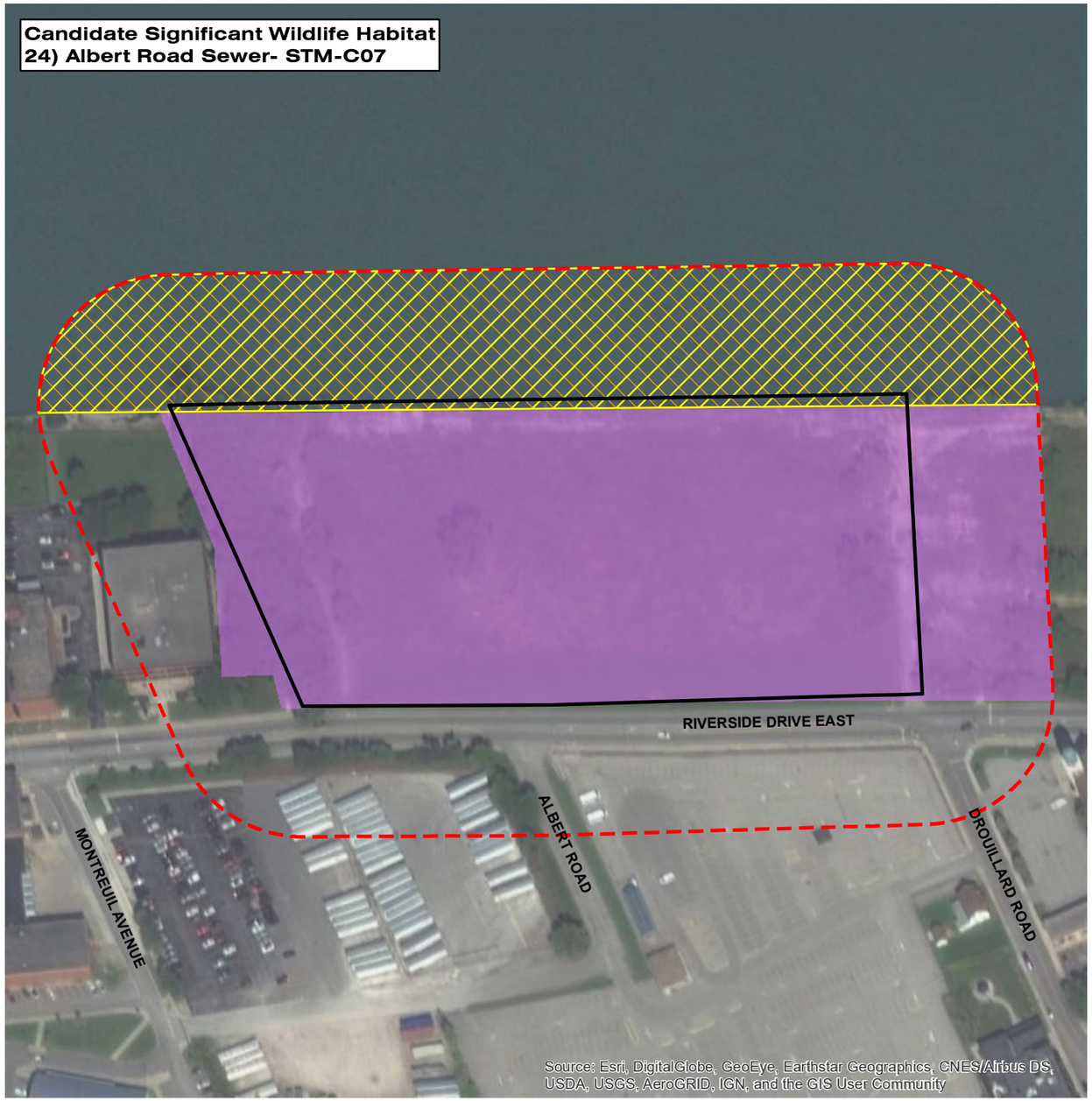

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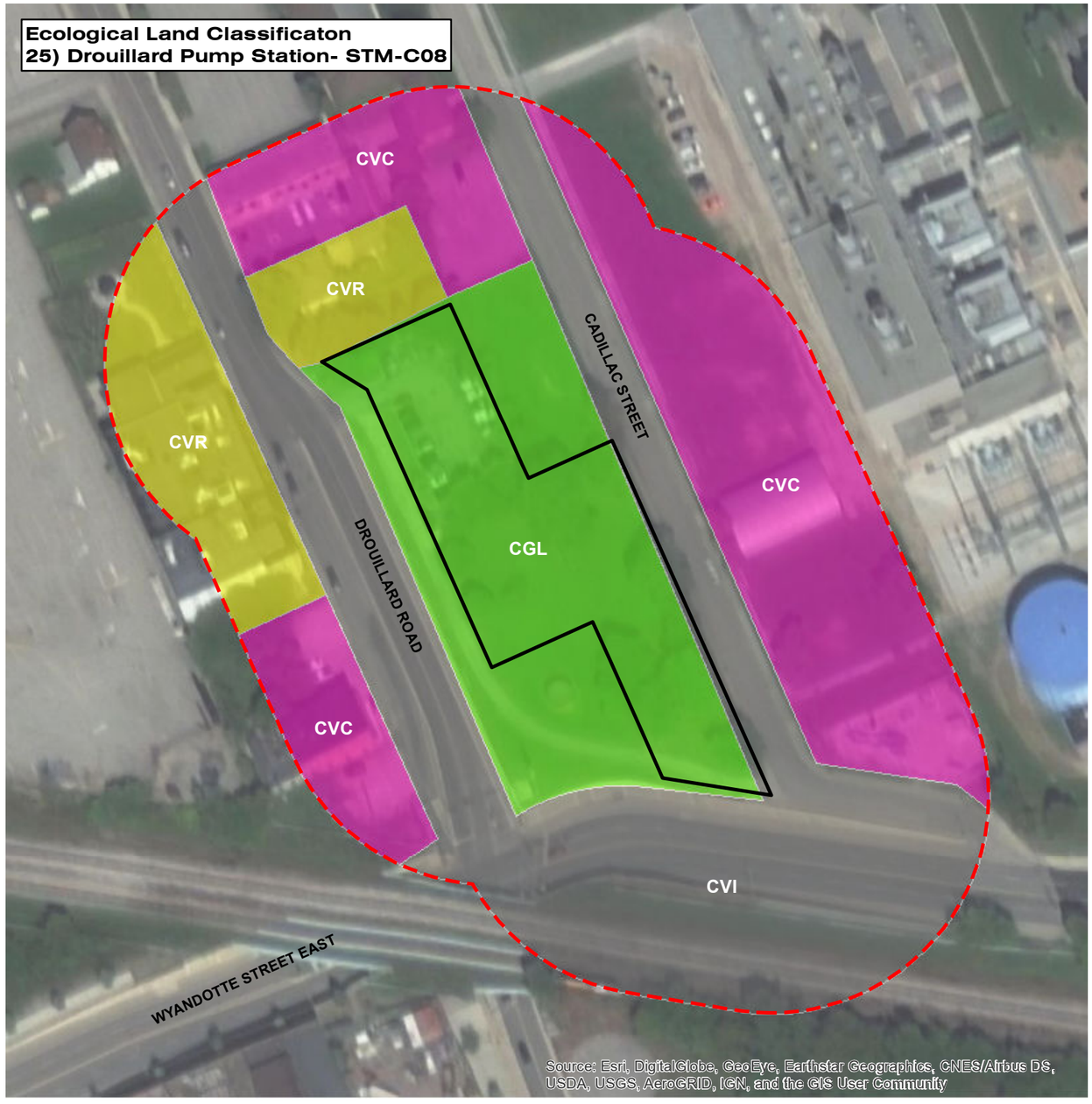

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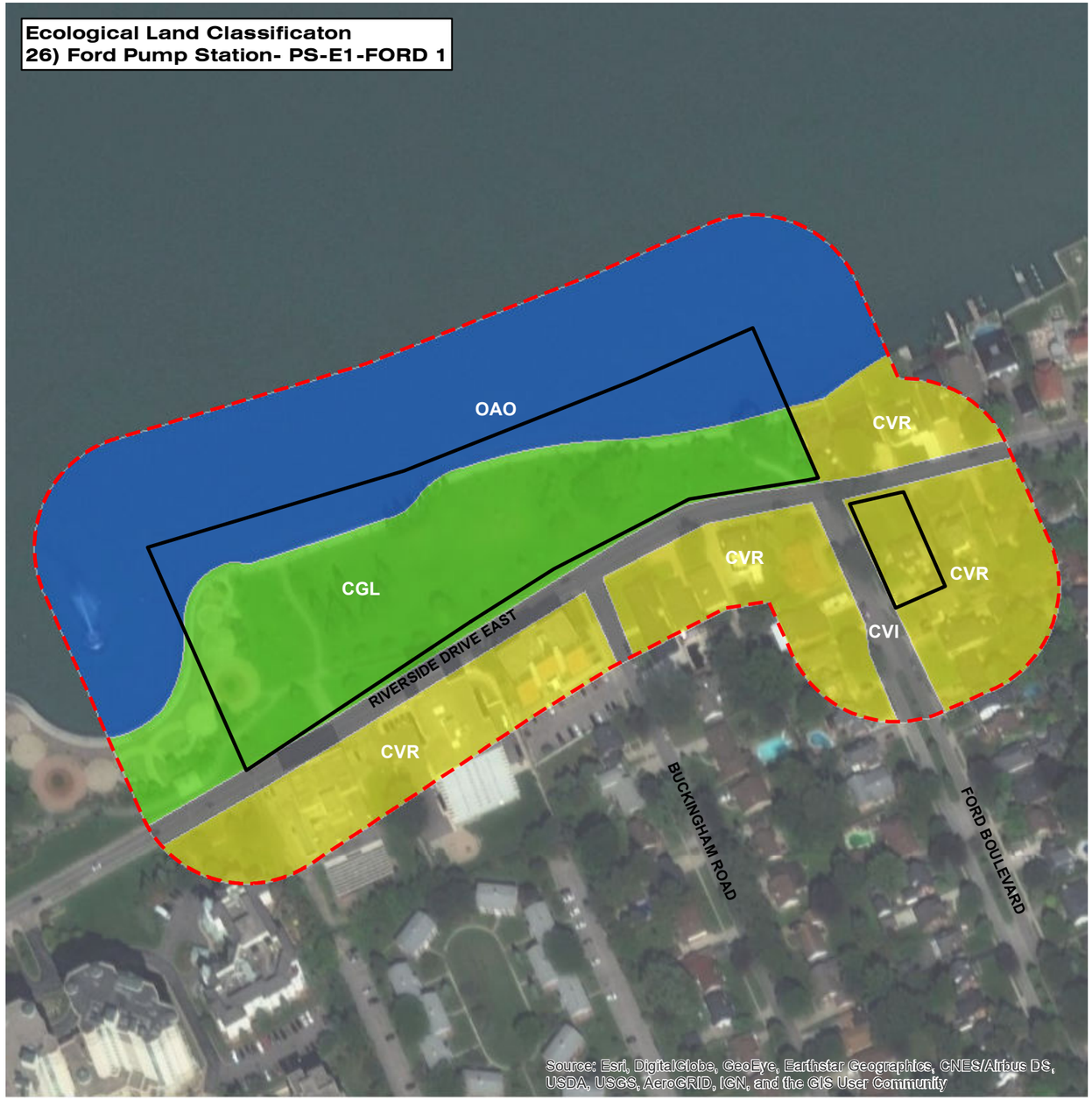

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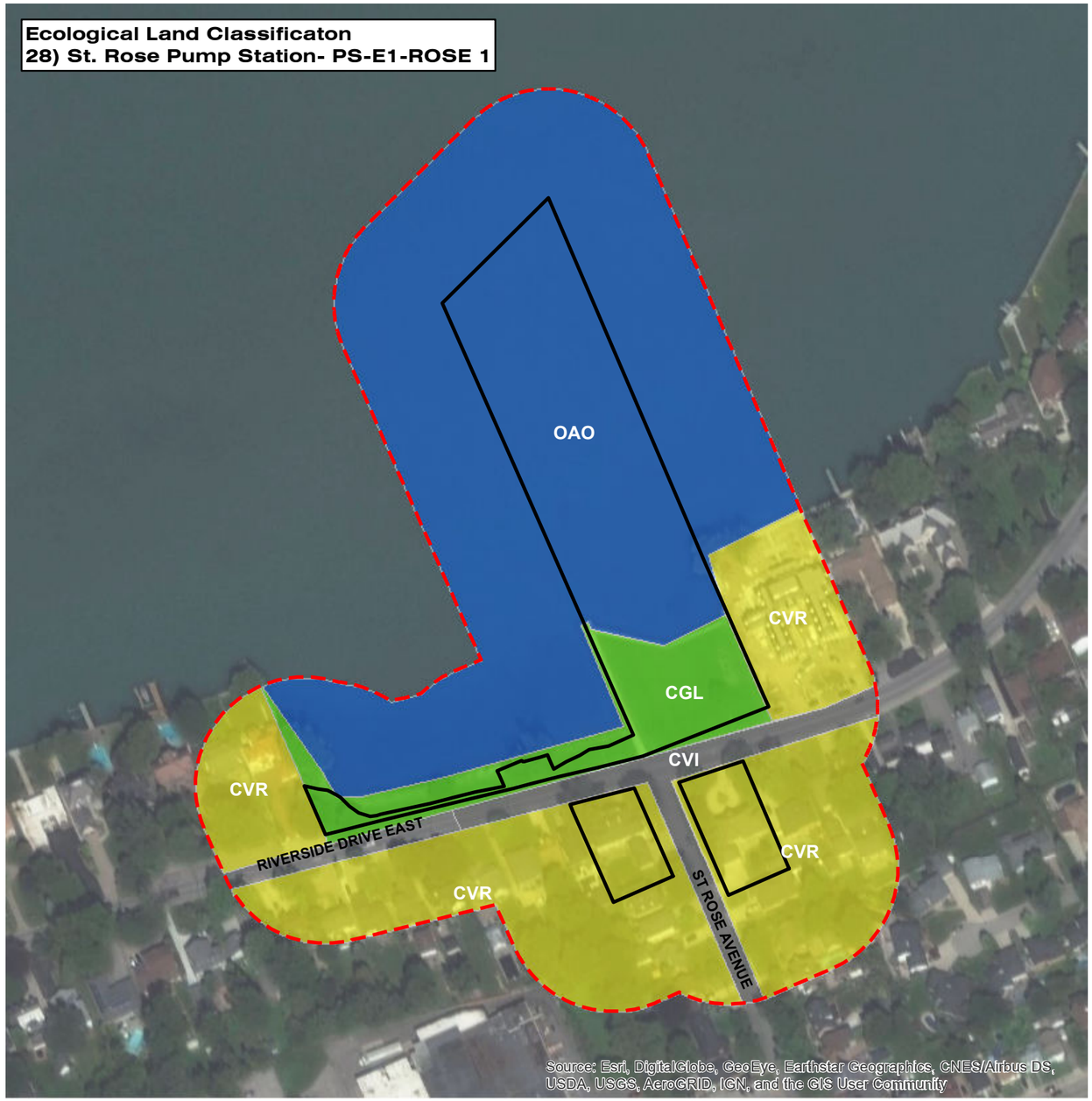

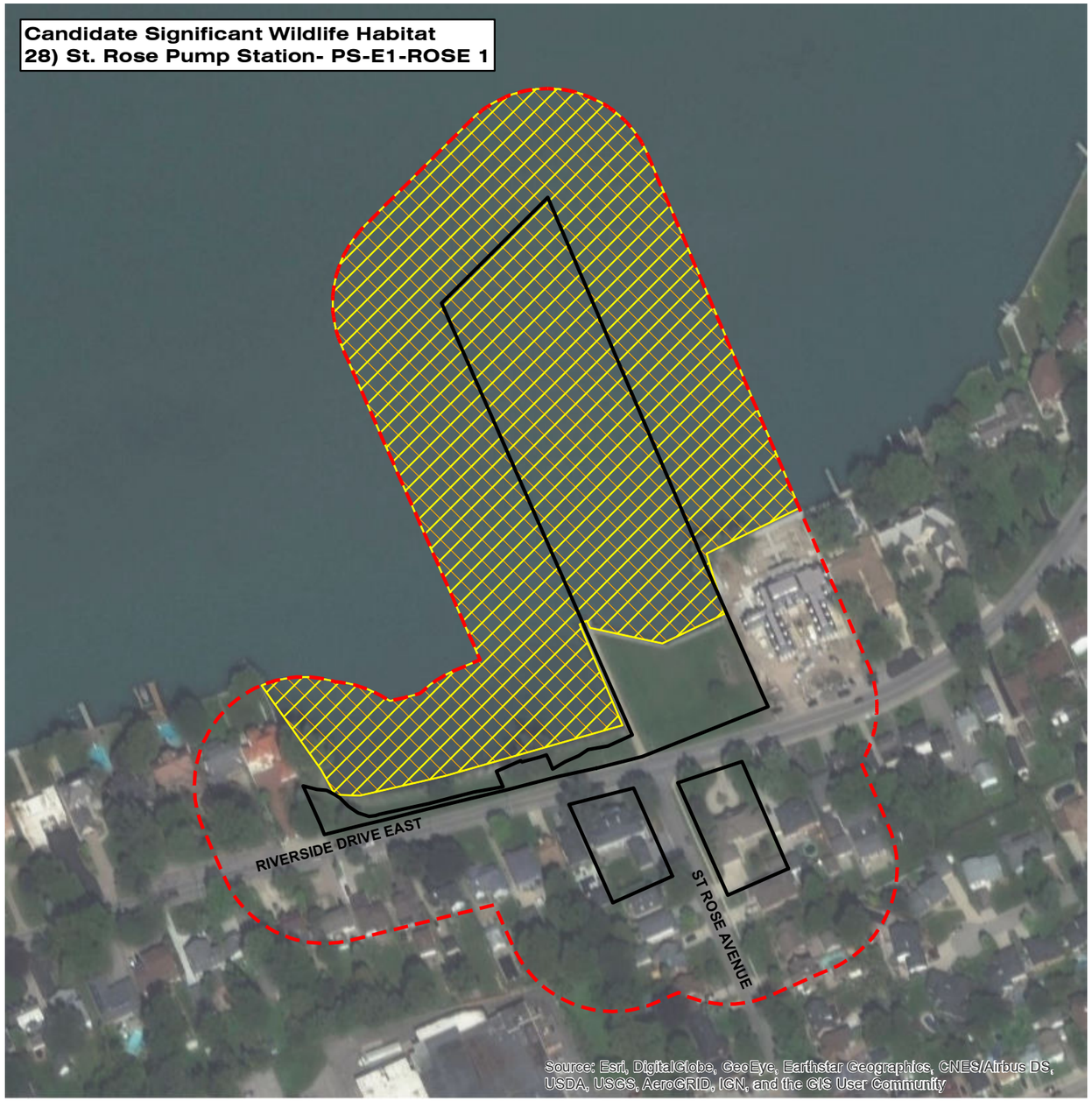

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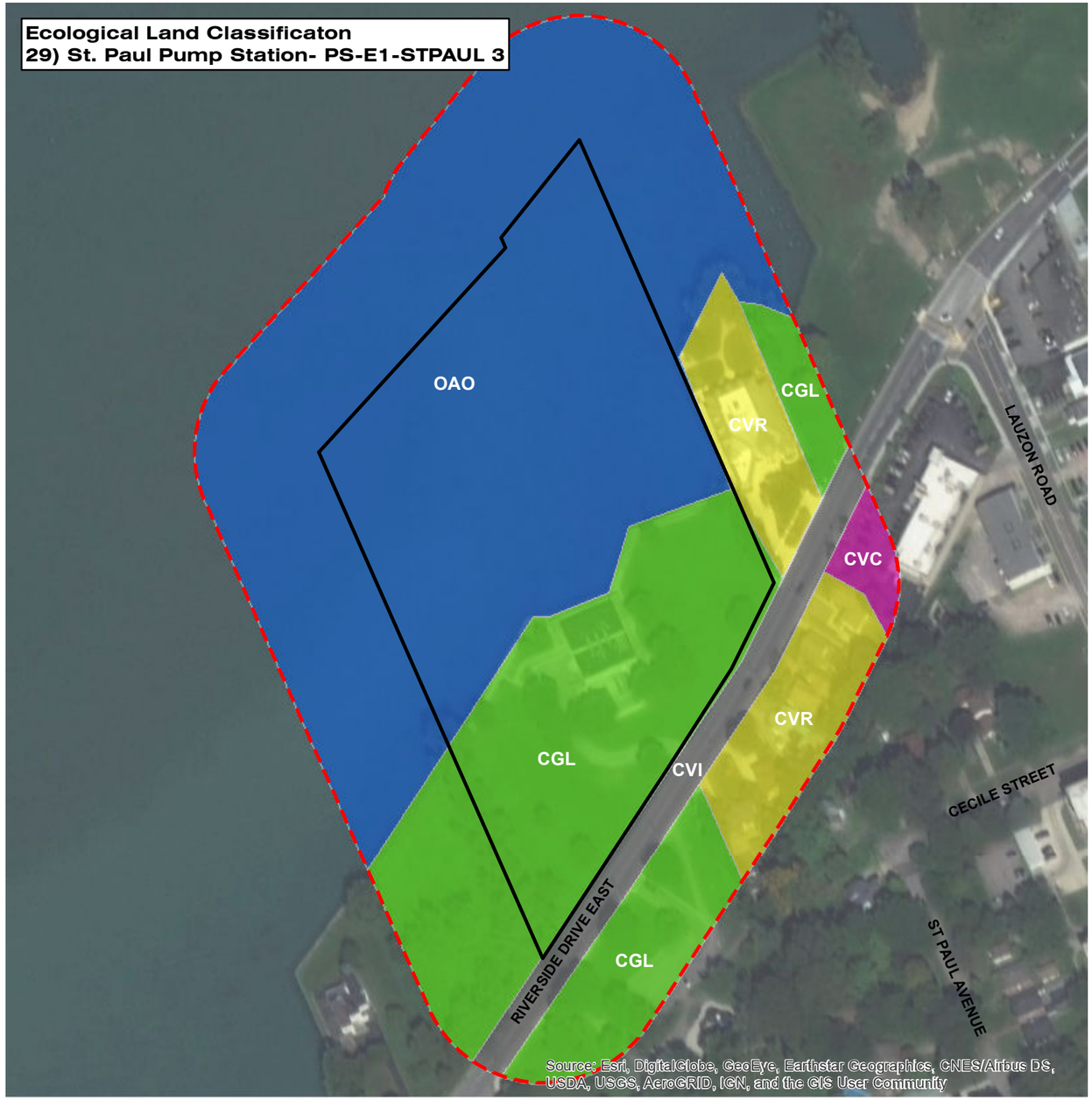

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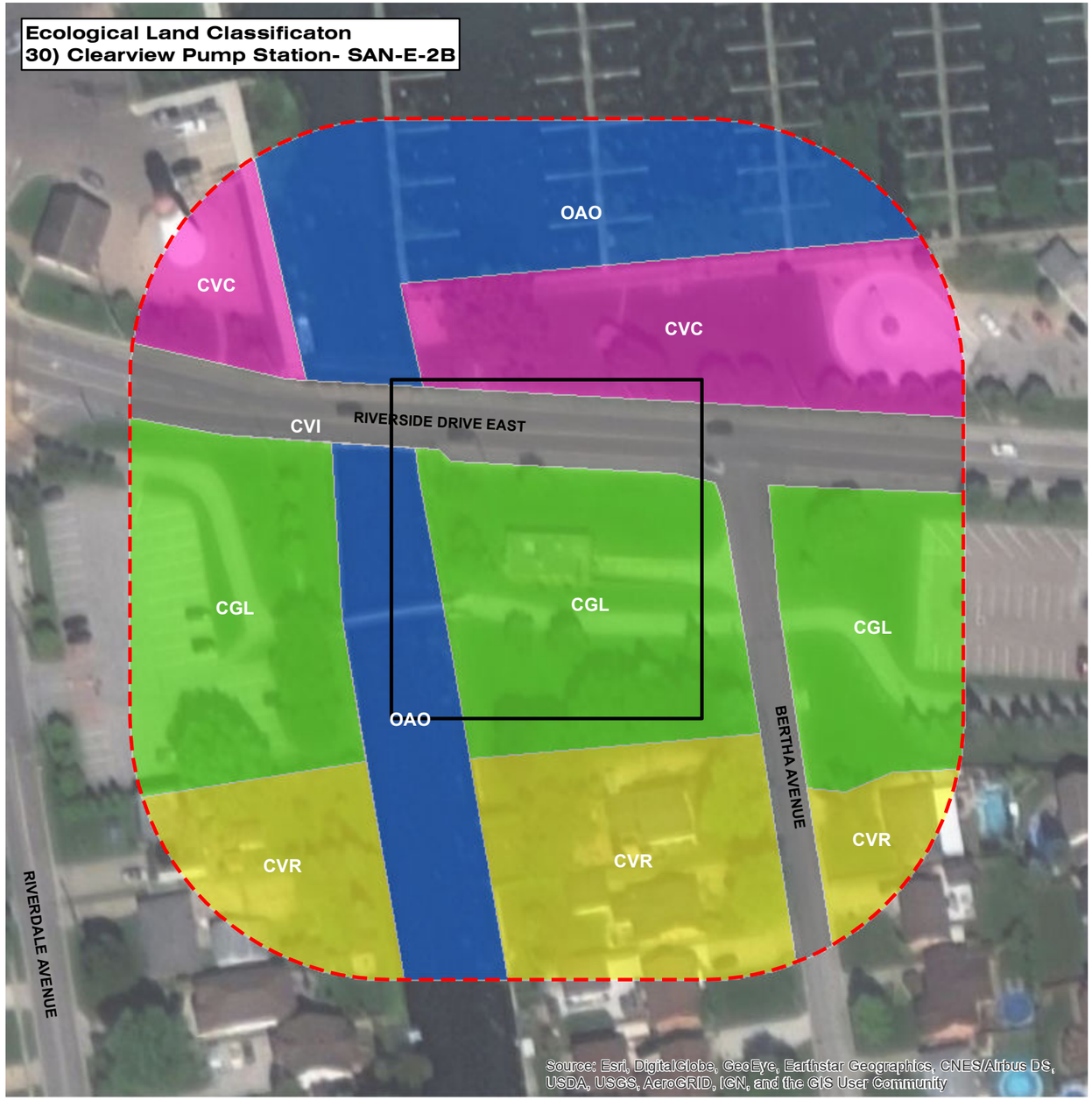

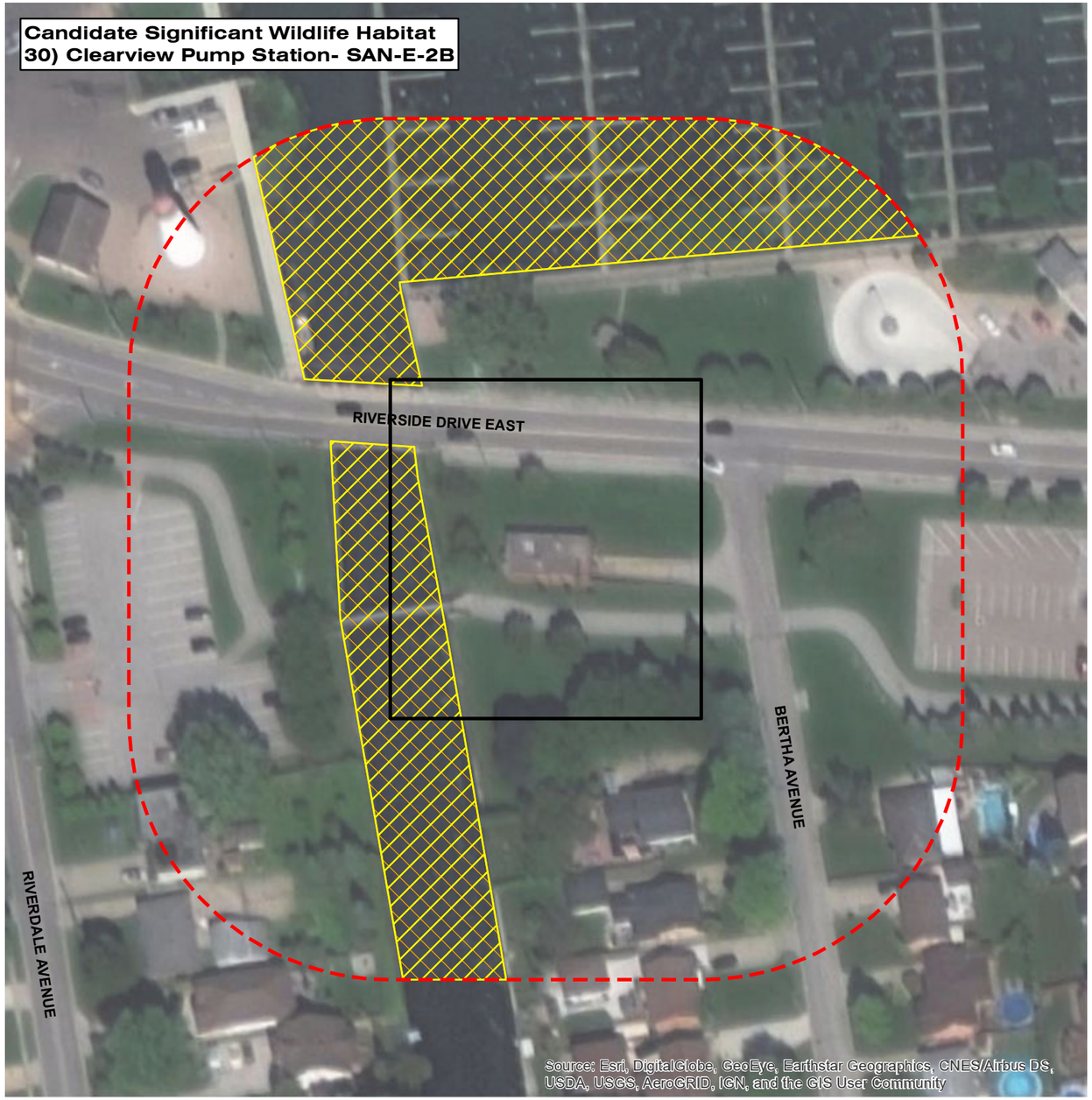

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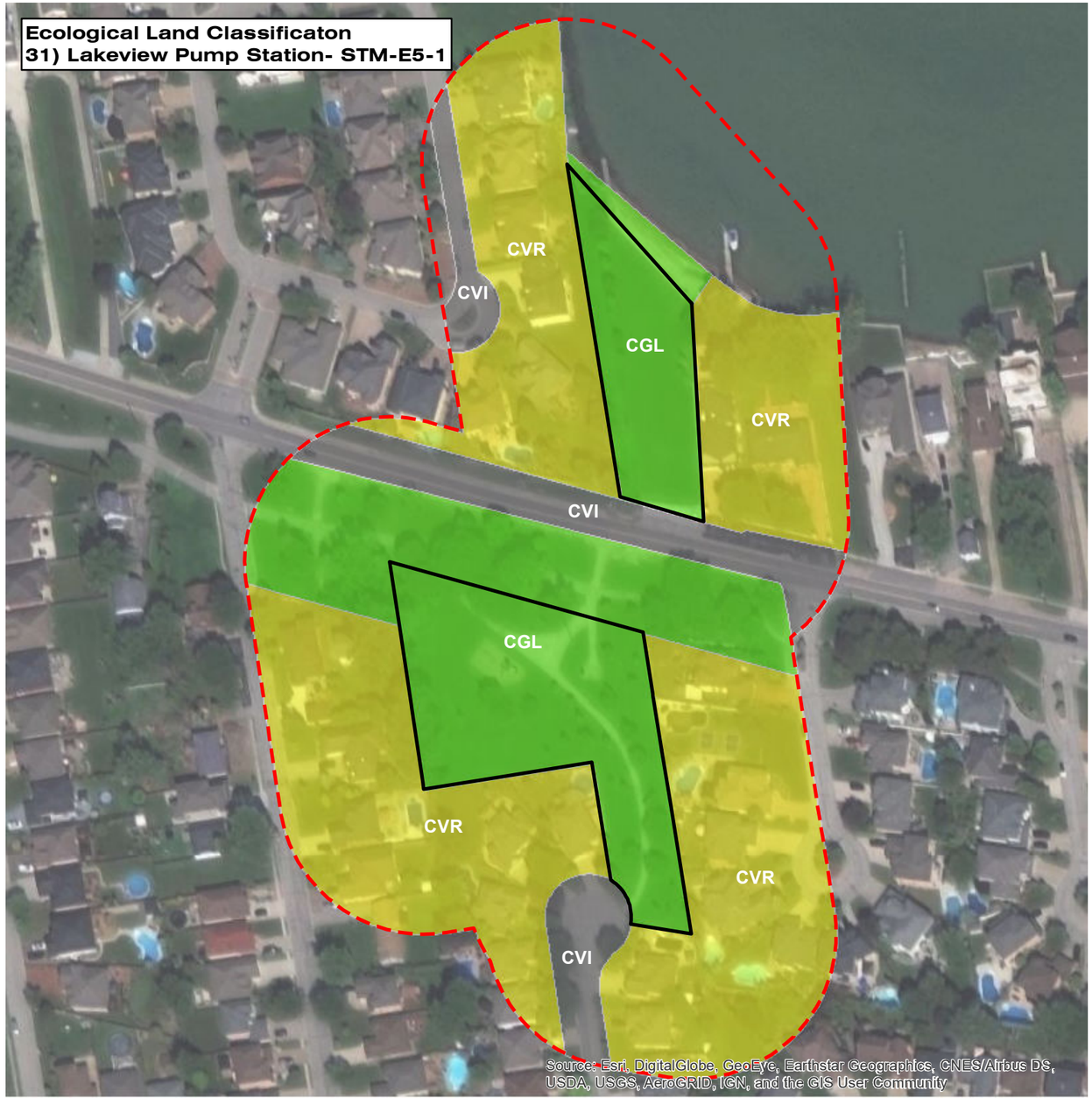

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Appendix H-2-b

Site Photographs

Photograph 1 November 20, 2019 Little River Pollution Control Plant (SAN-E-2) Looking north from the southern part of the Project Location. Note: Old Little River with a narrow treed corridor.	
Photograph 2 November 20, 2019 Little River Pollution Control Plant (SAN-E-2) Looking east from the southeastern part of the Project Location. Note: A dense stand of the non-native European Common Reed.	

Photograph 3 November 20, 2019 Little River Pollution Control Plant (SAN-E-2) Looking north from the eastern part of the Project Location. Note: Tree farm property.	
Photograph 4 November 20, 2019 Little River Pollution Control Plant (SAN-E-2) Looking north from the central part of the Project Location. Note: Old Little River with a narrow treed corridor.	

Photograph 5 November 20, 2019 Little River Pollution Control Plant (SAN-E-2) Looking northwest from the northern part of the Project Location. Note: Pedestrian pathway that winds through the property.	
Photograph 6 November 20, 2019 Little River Pollution Control Plant (SAN-E-2) Looking east from the northern part of the Project Location.	

Photograph 7 November 20, 2019 Little River Pollution Control Plant (SAN-E-2) Looking north from the central part of the Project Location. Note: Mixed Meadow community.	
Photograph 8 November 20, 2019 Pontiac Pump Station (STM-E6) Looking southwest from the northern part of the Project Location. Note: Maintained lawn.	

Photograph 9 November 20, 2019 Riverdale Pump Station (SAN-E-2A) Looking north from the eastern part of the Project Location. Note: Maintained lawn and landscape trees.	
Photograph 10 November 20, 2019 Brumpton Park (STM-E6) Looking south from the northern part of the Project Location. Note: Maintained lawn, landscape trees, and a public playground.	

Photograph 11 November 20, 2019 Riverside Plaza (ROAD-E09-2) Looking northwest from the southwestern part of the Project Location. Note: Maintained lawn.	
Photograph 12 November 20, 2019 Riverside Plaza (ROAD-E09-2) Looking northeast from the southeastern part of the Project Location. Note: Maintained lawn.	

Photograph 13 November 20, 2019 WFCU Centre (ROAD-E07) Looking southwest from the northern part of the Project Location. Note: Parking lot, maintained lawn, and landscape trees.	
Photograph 14 November 20, 2019 McHugh Street Soccer Fields (SAN-E-2) Looking south from the northwestern part of the Project Location. Note: Public soccer fields, maintained lawn, and landscape trees. Old Little River with a narrow treed corridor is to the west.	

Photograph 15 November 20, 2019 McHugh Street Soccer Fields (SAN-E-2) Looking southwest from the northeastern part of the Project Location. Note: Public soccer fields, maintained lawn, and landscape trees.	
Photograph 16 November 29, 2019 Little River Golf Course (ROAD-E01-2) Looking northeast from the northern part of the Project Location. Note: Maintained lawn (fairways) leading up to a narrow treed corridor.	

Photograph 17 November 29, 2019 Little River Golf Course (ROAD-E01-2) Looking southwest from the northern part of the Project Location. Note: Storm drain outlet.	
Photograph 18 November 29, 2019 Little River Golf Course (ROAD-E01-2) Looking north from the central part of the Project Location. Note: Snag tree with approx. 8 cavities.	

Photograph 19 November 29, 2019 Little River Golf Course (ROAD-E01-2) Looking north from the southern part of the Project Location. Note: Maintained lawn (fairways) leading up to a narrow treed corridor on both sides of Little River.	
Photograph 20 November 20, 2019 Lauzon Parkway and Meadowbrook Park (ROAD-E04-3) Looking southwest from the northeastern part of the Project Location. Note: Public soccer field, maintained lawn, and landscape trees.	

Photograph 21 November 20, 2019 Lauzon Parkway and Meadowbrook Park (ROAD-E04-3) Looking south from the western part of the Project Location. Note: Maintained lawn and landscape trees.	
Photograph 22 November 20, 2019 Lauzon Parkway and Meadowbrook Park (ROAD-E04-3) Looking south from the northwestern part of the Project Location. Note: Maintained lawn and landscape trees.	

Photograph 23 November 20, 2019 Lauzon Parkway and Meadowbrook Park (ROAD-E04-3) Looking north from the northwestern part of the Project Location. Note: Maintained lawn and landscape trees.	
Photograph 24 November 20, 2019 Roseville Public School (ROAD-E11) Looking southwest from the northeastern part of the Project Location. Note: Public baseball diamond, public playground, maintained lawn, and landscape trees.	

Photograph 25 November 20, 2019 McDonald Park (STM-S07-1) Looking southwest from the northeastern part of the Project Location. Note: Public soccer fields, public playground, maintained lawn, and landscape trees.	
Photograph 26 November 20, 2019 McDonald Park (STM-S07-1) Looking southwest from the central part of the Project Location. Note: Public baseball diamond, maintained lawn, and landscape trees.	

Photograph 27 November 20, 2019 McDonald Park (STM-S07-1) Looking southwest from the southern part of the Project Location. Note: Public basketball court, public soccer fields, maintained lawn, and landscape trees.	
Photograph 28 January 29, 2020 Central Pond (STM-S07-3) Looking north from the central part of the Project Location. Note: Thicket (left) and shallow water (right).	

Photograph 29 January 29, 2020 Central Pond (STM-S07-3) Looking south from the central part of the Project Location. Note: Long, linear communities of marsh and thicket.	
Photograph 30 November 20, 2019 Southern half of 2525 Central Avenue (STM-S07-2) Looking north from the southern part of the Project Location. Note: Maintained lawn.	

Photograph 31 November 20, 2019 Chrysler Centre (ROAD-S03-2) Looking south from the central part of the Project Location. Note: Parking lot, maintained lawn, and landscape trees.	
Photograph 32 March 6, 2020 Optimist Park (STM-C06) Looking west from the eastern part of the Project Location. Note: Paved pathways, playground, maintained lawn, and landscape trees.	

Photograph 33 March 6, 2020 Optimist Park (STM-C06) Looking south from the northern part of the Project Location. Note: Paved pathways, playground, maintained lawn, and landscape trees.	
Photograph 34 November 20, 2019 Howard Avenue (ROAD-S02-2) Looking southwest from the northeastern part of the Project Location. Note: Maintained lawn and landscape trees.	

Photograph 35 November 20, 2019 Howard Avenue (ROAD-S02-2) Looking east from the southwestern part of the Project Location. Note: Parking lot and maintained lawn.	
Photograph 36 November 20, 2019 Southwest of South Cameron Boulevard and Dougall Avenue (ROAD-S01-1) Looking east from the western part of the Project Location. Note: Agricultural land.	

Photograph 37 March 10, 2020 Chappell and Sandwich (STM-C01) Looking west from the western part of the Project Location. Note: Aquatic channel with direct access to the Detroit River.	
Photograph 38 November 29, 2019 Detroit Street Sewer (STM-C02) Looking northwest from the eastern part of the Project Location. Note: Resource extraction.	

Photograph 39 November 29, 2019 Cameron Street Sewer (STM-C03) Looking north from the southern part of the Project Location. Note: Pedestrian pathway, maintained lawn, and landscape trees.	
Photograph 40 November 29, 2019 Church Street Sewer (STM-C04) Looking north from the central part of the Project Location. Note: Pedestrian pathway and landscape gardens.	

Photograph 41 November 29, 2019 Marentette Avenue Sewer (STM-C05) Looking west from the northern part of the Project Location. Note: Rock breakwall, maintained lawn, and landscape trees.	
Photograph 42 November 29, 2019 Albert Road Sewer (STM-C07) Looking north from the southern part of the Project Location. Note: Maintained lawn and Mixed Meadow community.	

Photograph 43 March 6, 2020 Drouillard Pump Station (STM-C08) Looking north from the southern part of the Project Location. Note: Maintained lawn within a community park.	
Photograph 44 November 29, 2019 Ford Pump Station (PS-E1-FORD 1) Looking southeast from the central part of the Project Location. Note: Pedestrian pathway and maintained lawn.	

Photograph 45 November 29, 2019 Ford Pump Station (PS-E1-FORD 1) Looking west from the central part of the Project Location. Note: Pedestrian pathway, maintained lawn, and landscape trees.	
Photograph 46 January 29, 2020 David Suzuki Public School (STM-E1-2) Looking southeast from the northwestern part of the Project Location. Note: Maintained lawn (football pitch) and Public School.	

Photograph 47 November 29, 2019 St. Rose Pump Station (PS-E1-ROSE 1) Looking southeast from the central part of the Project Location. Note: Pedestrian pathway and maintained lawn.	
Photograph 48 November 29, 2019 St. Rose Pump Station (PS-E1-ROSE 1) Looking southwest from the central part of the Project Location. Note: Pedestrian pathway and maintained lawn.	

Photograph 49 November 29, 2019 St. Rose Pump Station (PS-E1-ROSE 1) Looking northeast from the central part of the Project Location. Note: Maintained lawn.	
Photograph 50 November 29, 2019 St. Paul Pump Station (PS-E1-STPAUL 3) Looking west from the central part of the Project Location. Note: Maintained lawn and landscape trees.	

Photograph 51 November 20, 2019 Clearview Pump Station (SAN-E-2B) Looking southwest from the northeastern part of the Project Location. Note: Maintained lawn and landscape trees.	
Photograph 52 January 29, 2020 Lakeview Pump Station (STM-E5-1) Looking south from the northeastern part of the Project Location. Note: Maintained lawn, landscape trees, and playground (out of frame to the right).	

Photograph 53 January 28, 2020 Little River Drain – Little River Golf Course (ROAD-E01-2) Looking north from the golf course pedestrian bridge. Note: Riparian deciduous trees and shrubs and steep banks.	
Photograph 54 January 28, 2020 Little River Drain – Little River Golf Course (ROAD-E01-2) Looking south from the golf course pedestrian bridge. Note: Turbid water conditions.	

Photograph 55 January 28, 2020 Little River Drain – Little River Golf Course (ROAD-E01-2) Facing north within the north portion of the Project Location. Note: Turbid water conditions, wide, slow moving reach.	
Photograph 56 January 28, 2020 Little River Drain – Little River Golf Course (ROAD-E01-2) Facing west within the central portion of the Project Location. Note: Typical bank conditions within the Project Location.	

Photograph 57 January 28, 2020 Pontiac Pump Station (STM-E6) Facing northeast from the northwest portion of the Project Location. Note: Pump station outlet.	
Photograph 58 January 28, 2020 Pontiac Pump Station (STM-E6) Facing east from the confluence with Little River. Note: Pump station outlet channel – wide section with little flow.	

Photograph 59 January 28, 2020 Lakeview Pump Station (STM-E5-1) Facing south toward the outlet at Lake St. Clair. Note: Riparian beachfront to the east, residential south and west.	
Photograph 60 January 28, 2020 Lakeview Pump Station (STM-E5-1) Facing northwest toward the outlet at Lake St. Clair. Note: Residential properties with rip rap to water's edge.	

Photograph 61 January 28, 2020 Lakeview Pump Station (STM-E5-1) Facing east from the dock. Note: Beachfront and maintained lawn riparian conditions.	
Photograph 62 January 28, 2020 Lakeview Pump Station (STM-E5-1) Facing north from the beachfront dock. Note: Residential riparian lands and general conditions in Lake St. Clair at the pump station outlet.	

Photograph 63 January 28, 2020 St. Paul Pump Station (PS-E1-STPAUL 3) Facing southwest toward the pump station outlet in the Detroit River. Note: Hardened concrete and steel sheet pile shoreline.	
Photograph 64 January 28, 2020 St. Paul Pump Station (PS-E1-STPAUL 3) Facing northeast at the pump station outlet. Note: Ice chunks present within the river.	

Photograph 65 January 28, 2020 St. Rose Pump Station (PS-E1-ROSE 1) Facing north toward the gravity outfall in the Detroit River. Note: Maintained parkland riparian conditions.	
Photograph 66 January 28, 2020 St. Rose Pump Station (PS-E1-ROSE 1) Facing east from the gravity outfall. Note: Typical nearshore conditions in the Detroit River.	

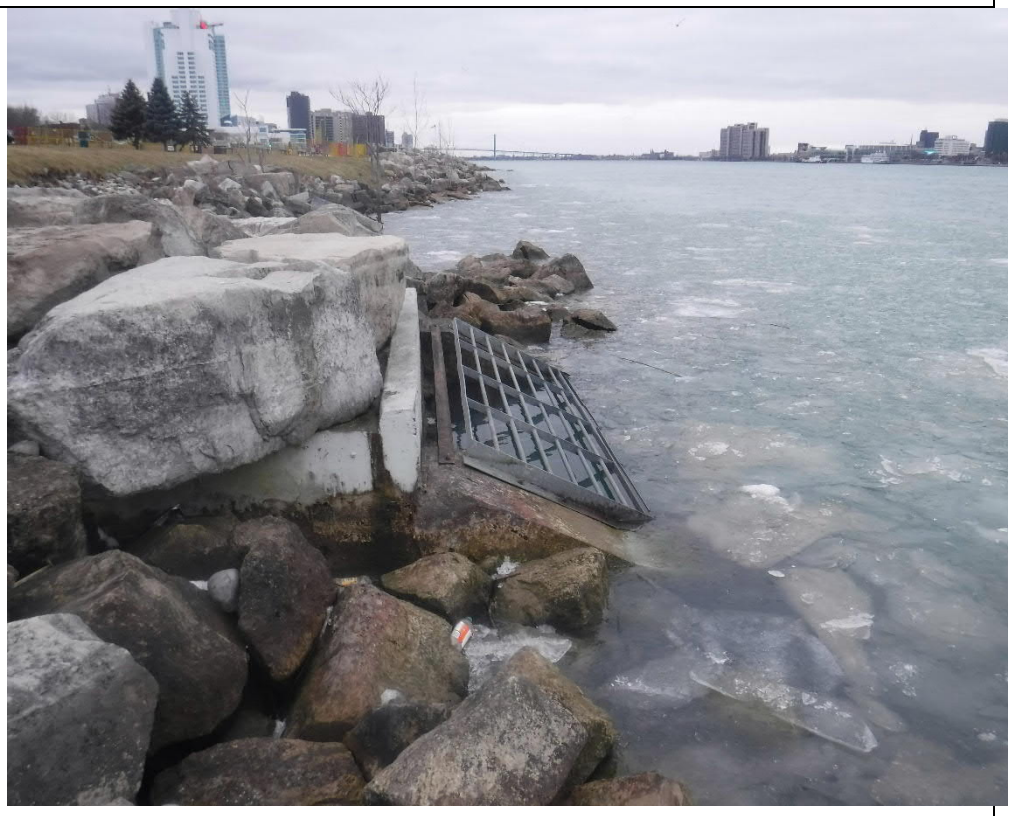
Photograph 67 January 28, 2020 St. Rose Pump Station (PS-E1-ROSE 1) Facing west from the gravity outfall. Note: Abundant waterfowl on the Detroit River in the top- right corner.	
Photograph 68 January 28, 2020 St. Rose Pump Station (PS-E1-ROSE 1) Facing south along the gravity outfall walkway. Note: Abundant ice present within the Detroit River.	

Photograph 69 January 28, 2020 Ford Pump Station (PS-E1-FORD 1) Facing west toward the pump station outlet. Note: Maintained parkland riparian conditions.	
Photograph 70 January 28, 2020 Ford Pump Station (PS-E1-FORD 1) Facing south from the pump station outlet. Note: Grates associated with the outfall.	

Photograph 71 January 28, 2020 Ford Pump Station (PS-E1-FORD 1) Facing west from the pump station outlet. Note: Concrete break wall along the Detroit River.	
Photograph 72 January 28, 2020 Ford Pump Station (PS-E1-FORD 1) Facing east from the pump station outlet. Note: Hardened concrete shoreline and residential properties upstream of the Project Location.	

Photograph 73 January 28, 2020 Albert Road Sewer (STM-C07) Facing west in the general location of the existing outlet in the Detroit River. Note: Hardened concrete shoreline.	
Photograph 74 January 28, 2020 Albert Road Sewer (STM-C07) Facing east in the general location of the existing outlet in the Detroit River. Note: Deciduous shrubs and concrete along the shoreline.	

Photograph 75 January 28, 2020 Albert Road Sewer (STM-C07) Facing west from the east portion of the Project Location. Note: Meadow riparian habitat with scattered trees and shrubs.	
Photograph 76 January 28, 2020 Albert Road Sewer (STM-C07) Facing south from north portion of the Project Location. Note: Meadow habitat and gravel area associated with previous lands use/disturbance.	

Photograph 77 January 28, 2020 Marentette Avenue Sewer (STM-C05) Facing east toward the sewer outlet in the Detroit River. Note: Hardened shoreline with rip rap and boulder.	
Photograph 78 January 28, 2020 Marentette Avenue Sewer (STM-C05) Facing west toward the second sewer outlet in the Detroit River within the Project location. Note: Abundant ice flows within the river.	

Photograph 79 January 29, 2020 Church Street Sewer (STM-C04) Facing east in the general location of a new storm sewer outfall in the Detroit River. Note: Hardened concrete/steel sheet pile shoreline.	
Photograph 80 January 29, 2020 Church Street Sewer (STM-C04) Facing west in the general location of a new storm sewer outfall in the Detroit River. Note: Maintained parkland riparian conditions.	

Photograph 81 January 29, 2020 Cameron Street Sewer (STM-C03) Facing west in the general location of a proposed storm sewer outfall in the Detroit River. Note: Hardened concrete shoreline.	
Photograph 82 January 29, 2020 Cameron Street Sewer (STM-C03) Facing east in the general location of a proposed storm sewer outfall in the Detroit River. Note: Hardened concrete shoreline and multi-use pathway.	

Photograph 83 January 29, 2020 Central Pond (STM-S07-3) SWM pond in the north portion of the Project Location. Note: Facing east toward an outlet pipe.	
Photograph 84 January 29, 2020 Central Pond (STM-S07-3) Second (larger) SWM pond within the Project Location, facing south. Note: Frozen pond surrounded by European Common Reed and deciduous shrubs.	

Photograph 85 January 29, 2020 Central Pond (STM-S07-3) Piped outlet along east bank of the second SWM pond, facing east. Note: Open water in front of and outlet pipe. Deciduous trees and shrubs along the bank.	
Photograph 86 January 29, 2020 Central Pond (STM-S07-3) Outlet pipes immediately southeast of the Central Ave. and Grand Marais Road East intersection, facing west. Note: CSP outlets from the SWM pond and piped drainage features entering Grand Marais Drain (piped) underneath Central Ave.	

Photograph 87 January 29, 2020 Central Pond (STM-S07-3) Headwall and rip rap immediately southeast of the Central Ave. and Grand Marais Road East intersection, facing south. Note: Headwall and berm between SWM pond and Grand Marais Drain inlet underneath Central Ave.	
Photograph 88 January 29, 2020 Central Pond (STM-S07-3) Headwall and CSP outlet immediately southeast of the Central Ave. and Grand Marais Road East intersection, facing west. Note: Drainage pipe (from the east) discharging into CSP outlet.	

Photograph 89 January 29, 2020 Southwood Lakes (STM-S08-2) Frozen over Lake Laguna. Note: Maintained residential lawns and parkland to the shoreline, facing northeast.	
Photograph 90 January 29, 2020 Southwood Lakes (STM-S08-2) Frozen over Lake Grande. Note: Surrounded by residential subdivision, facing north.	

Photograph 91 January 29, 2020 Southwood Lakes (STM-S08-2) Frozen over Como Lake. Note: Surrounded by residential subdivision and parkland, facing north.	

Appendix H-2-c

Summary Table

Table 1: SUMMARY TABLE

Label Code	Project Location	Windsor OP, Schedule D – Land Use	Ecological Land Classification within the Project Location	Significant Wildlife Habitat within the Project Location	Potential Species of Conservation Concern	Potential Species at Risk (including federal aquatic SAR)	Fish Habitat
SAN-E-2	Little River Pollution Control Plant	Open Space	Commercial and Institutional (CVC), Open Agriculture (OAG), Meadow (ME), Deciduous Forest (FOD), and Open Aquatic (OA)	Bat Maternity Colonies, Turtle Wintering Areas, Amphibian Breeding Habitat (Wetlands), and Reptile Hibernaculum	Common Nighthawk, Red-headed Woodpecker, Eastern Wood-pewee, Monarch, Elusive Clubtail, Snapping Turtle, Stiff Cowbane, Crowned Beggarticks, Ohio Spiderwort, Winged Loosestrife, Many-fruit Seedbox, Prairie Milkweed, Tall Tickseed, Gray-headed Prairie Coneflower, Prairie Rosinweed, Giant Ironweed, Hairy Pinweed, Yellow-fruited Sedge, Biennial Gaura, White-haired Panicgrass, Shumard Oak and Climbing Prairie Rose	Chimney Swift, Eastern Foxsnake, Butler's Gartersnake, Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat, Dense Blazing Star, Willowleaf Aster, Eastern Flowering Dogwood, Kentucky Coffee-tree and Eastern Prairie Fringed-orchid	N/A
STM-E6	Pontiac Pump Station	Open Space	Commercial and Institutional (CVC)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Brindled Madtom	Northern Madtom	<u>Pump Station Outlet Channel & Little River</u> Thermal regime: warm Flow regime: permanent DFO Drain Classification: Class 'E' Municipal Drain Fish Habitat: flat morphology with little flow; meadow and maintained residential riparian habitat; Gizzard Shad observed
N/A*	Riverdale Pump Station	Residential	Green Lands (CGL) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	N/A	Barn Swallow	N/A
STM-E6	Brumpton Park	Open Space	Green Lands (CGL)	N/A	N/A	N/A	N/A
ROAD-E9-2	Riverside Plaza	Mixed Use	Commercial and Institutional (CVC)	N/A	N/A	N/A	N/A
ROAD-E7	WFCU Centre	Industrial	Commercial and Institutional (CVC)	N/A	N/A	N/A	N/A
SAN-E-2	McHugh Street Soccer Fields	Residential	Green Lands (CGL)	N/A	Eastern Wood-pewee, Monarch, Snapping Turtle, Stiff Cowbane, Crowned Beggarticks, Ohio Spiderwort, Winged Loosestrife, Many-fruit Seedbox, Giant Ironweed, Biennial Gaura, Shumard Oak and Climbing Prairie Rose	Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat, Willowleaf Aster, Eastern Flowering Dogwood and Kentucky Coffee-tree	N/A
ROAD-E1-2	Little River Golf Course	Open Space	Green Lands (CGL)	N/A	Red-headed Woodpecker, Monarch, Elusive Clubtail, Snapping Turtle, Giant Ironweed, Shumard Oak, and Climbing Prairie Rose,	Willowleaf Aster	<u>Little River</u> Thermal regime: warm Flow regime: permanent OMAFRA: Class 'C' Municipal Drain Fish Habitat: channelized, 8 m mean wetted width; 0.6 m mean depth; clay (dominant), gravel and detritus substrate; overhanging woody debris (dominant), in-stream woody debris and undercut banks present; turbid water conditions

Label Code	Project Location	Windsor OP, Schedule D – Land Use	Ecological Land Classification within the Project Location	Significant Wildlife Habitat within the Project Location	Potential Species of Conservation Concern	Potential Species at Risk (including federal aquatic SAR)	Fish Habitat
ROAD-E4-3	Lauzon Parkway and Meadowbrook Park	Residential, Mixed Use, and Business Park	Green Lands (CGL) and Commercial and Institutional (CVC)	N/A	Common Nighthawk, Prairie Milkweed, Tall Tickseed, Gray-headed Prairie Coneflower, Prairie Rosinweed, Riddell's Goldenrod, Eastern Stiff-leaved Goldenrod, Giant Ironweed, Hairy Pinweed, Yellow-fruited Sedge, Biennial Gaura, White-haired Panicgrass and Climbing Prairie Rose	N/A	N/A
ROAD-E11	Roseville Public School	Mixed Use	Green Lands (CGL) and Commercial and Institutional (CVC)	N/A	N/A	N/A	N/A
STM-S7-1	McDonald Park	Open Space	Green Lands (CGL)	N/A	N/A	N/A	N/A
STM-S7-3	Central Pond	Industrial	SWM Ponds – Meadow (ME), Deciduous Thicket (THD), Marsh (MA), and Shallow Water (SA)	N/A	Monarch, Snapping Turtle, Stiff Cowbane, Prairie Milkweed, Crowned Beggarticks, Tall Tickseed, Gray-headed Prairie Coneflower, Compass Plant, Prairie Rosinweed, Riddell's Goldenrod, Eastern Stiff-leaved Goldenrod, Giant Ironweed, Hairy Pinweed, Ohio Spiderwort, Yellow-fruited Sedge, Winged Loosestrife, American Lotus, Many-fruit Seedbox, Biennial Gaura, White-haired Panicgrass, Climbing Prairie Rose and Culver's Root	Eastern Foxsnake, Butler's Gartersnake, Dense Blazing Star, Willowleaf Aster and Eastern Prairie Fringed-orchid	Two SWM Ponds are artificial waterbodies and considered not habitat for fish under the Fisheries Act as they are not connected to a waterbody that contains fish at any time during any given year.
STM-S7-2	Southern half of 2525 Central Avenue	Business Park	Green Lands (CGL) and Commercial and Institutional (CVC)	N/A	Common Nighthawk	Chimney Swift	N/A
ROAD-S3-2	Chrysler Centre	Industrial	Transportation and Utilities (CVI)	N/A	Common Nighthawk	Chimney Swift	N/A
STM-C6	Optimist Park	Natural Heritage	Transportation and Utilities (CVI), Green Lands (CGL, and Deciduous Forest (FOD)	Bat Maternity Colonies, Reptile Hibernaculum, and Amphibian Breeding Habitat (Woodland)	Eastern Wood-pewee, Stiff Cowbane, Crowned Beggarticks, Giant Ironweed, Ohio Spiderwort, Yellow-fruited Sedge, Shumard Oak, Biennial Gaura and Climbing Prairie Rose	Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat, Eastern Flowering Dogwood and Kentucky Coffee-tree	N/A
ROAD-S2-2	Howard Avenue	Residential and Commercial Corridor	Green Lands (CGL) and Commercial and Institutional (CVC)	N/A	Giant Ironweed and Climbing Prairie Rose	N/A	N/A
ROAD-S1-1	Southwest of South Cameron Boulevard and Dougall Avenue	Business Park	Open Agriculture (OAG)	N/A	Monarch, Snapping Turtle, Prairie Milkweed, Tall Tickseed, Gray-headed Prairie Coneflower, Compass Plant, Prairie Rosinweed, Riddell's Goldenrod, Eastern Stiff-leaved Goldenrod, Giant Ironweed, Hairy Pinweed, Yellow-fruited Sedge, Biennial Gaura, White-haired Panicgrass and Climbing Prairie Rose	Eastern Foxsnake, Butler's Gartersnake, Willowleaf Aster and Eastern Prairie Fringed-orchid	N/A
STM-S8-2	Southwood Lakes	Residential	SWM Ponds – Shallow Water (SA)	N/A	Snapping Turtle	N/A	Three SWM Ponds are artificial waterbodies and considered not habitat for fish under the Fisheries Act as they are not connected to a waterbody that contains fish at any time during any given year.
STM-C1	Chappell Avenue and Sandwich Street	Waterfront Port	Transportation and Utilities (CVI), Commercial and Institutional (CVC), and Open Aquatic (OA)	Turtle Wintering Areas	Snapping Turtle, Stiff Cowbane, Crowned Beggarticks and Winged Loosestrife	N/A	

Label Code	Project Location	Windsor OP, Schedule D – Land Use	Ecological Land Classification within the Project Location	Significant Wildlife Habitat within the Project Location	Potential Species of Conservation Concern	Potential Species at Risk (including federal aquatic SAR)	Fish Habitat
STM-C2	Detroit Street Sewer	Waterfront Recreation	Commercial and Institutional (CVC) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Elusive Clubtail, Silver Lamprey, Channel Darter, Brindled Madtom and Eastern Pondmussel	Lake Sturgeon, Northern Madtom, Eastern Sand Darter, Silver Chub andChannel Darter.	Detroit River (aquatic assessment not completed) Thermal regime: warm Flow regime: permanent Riparian Habitat: industrial property
STM-C3	Cameron Street Sewer	Waterfront Recreation	Green Lands (CGL) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Elusive Clubtail, Silver Lamprey, Channel Darter, Brindled Madtom and Eastern Pondmussel	Lake Sturgeon, Northern Madtom, Eastern Sand Darter, Silver Chub and Channel Darter	Detroit River Thermal regime: warm Flow regime: permanent Riparian Habitat: hardened concrete shoreline; parkland
STM-C4	Church Street Sewer	Waterfront Recreation	Green Lands (CGL) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Elusive Clubtail, Silver Lamprey, Channel Darter, Brindled Madtom and Eastern Pondmussel	Lake Sturgeon, Northern Madtom, Eastern Sand Darter, Silver Chub and Channel Darter	Detroit River Thermal regime: warm Flow regime: permanent Riparian Habitat: hardened steel sheet pile/concrete shoreline; parkland
STM-C5	Marentette Avenue Sewer	Waterfront Recreation	Green Lands (CGL) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Elusive Clubtail, Silver Lamprey, Channel Darter, Brindled Madtom and Eastern Pondmussel	Lake Sturgeon, Northern Madtom, Eastern Sand Darter, Silver Chub and Channel Darter	Detroit River Thermal regime: warm Flow regime: permanent Fish and Riparian Habitat: gradual slope into river, <1 m deep immediately adjacent to shoreline; hardened shoreline with rip rap and boulders; parkland riparian conditions
STM-C7	Albert Road Sewer	Waterfront Port	Meadow (ME), Fencerow (TAGM5), and Open Aquatic (OA)	Turtle Wintering Areas, Amphibian Breeding Habitat (Wetlands), and Reptile Hibernaculum	Common Nighthawk, Monarch, Elusive Clubtail, Snapping Turtle, Prairie Milkweed, Tall Tickseed, Gray-headed Prairie Coneflower, Prairie Rosinweed, Riddell's Goldenrod, Eastern Stiff-leaved Goldenrod, Giant Ironweed, Hairy Pinweed, Yellow-fruited Sedge, Biennial Gaura, White-haired Panicgrass, Climbing Prairie Rose, Silver Lamprey, Channel Darter, Brindled Madtom and Eastern Pondmussel	Eastern Foxsnake, Butler's Gartersnake, Spiny Softshell, Dense Blazing Star, Willowleaf Aster, Eastern Prairie Fringed-orchid, Lake Sturgeon, Northern Madtom, Eastern Sand Darter, Silver Chub and Channel Darter	Detroit River Thermal regime: warm Flow regime: permanent Riparian Habitat: hardened concrete shoreline; meadow riparian conditions within a vacant Ford property
STM-C8	Drouillard Pump Station	Business Park	Green Lands (CGL)	N/A	N/A	N/A	N/A
PS-E1-FORD 1	Ford Pump Station	Waterfront Recreation	Green Lands (CGL) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Elusive Clubtail, Silver Lamprey, Channel Darter, Brindled Madtom and Eastern Pondmussel	Lake Sturgeon, Northern Madtom, Eastern Sand Darter, Silver Chub and Channel Darter	Detroit River Thermal regime: warm Flow regime: permanent Riparian Habitat: hardened concrete shoreline; parkland

Label Code	Project Location	Windsor OP, Schedule D – Land Use	Ecological Land Classification within the Project Location	Significant Wildlife Habitat within the Project Location	Potential Species of Conservation Concern	Potential Species at Risk (including federal aquatic SAR)	Fish Habitat
STM-E1-2	David Suzuki Public School	Residential	Green Lands (CGL) and Commercial and Institutional (CVC)	N/A	N/A	N/A	N/A
PS-E1-ROSE 1	St. Rose Pump Station	Waterfront Residential	Green Lands (CGL) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Elusive Clubtail, Silver Lamprey, Channel Darter, Brindled Madtom and Eastern Pondmussel	Lake Sturgeon, Northern Madtom (Critical Habitat identified), Eastern Sand Darter, Silver Chub and Channel Darter	Detroit River Thermal regime: warm Flow regime: permanent Riparian Habitat: hardened steel sheet pile/concrete shoreline; parkland
PS-E1-STPAUL 3	St. Paul Pump Station	Waterfront Recreation	Green Lands (CGL) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Common Nighthawk, Elusive Clubtail, Silver Lamprey, Channel Darter, Brindled Madtom and Eastern Pondmussel.	Chimney Swift, Lake Sturgeon, Northern Madtom (Critical Habitat identified), Eastern Sand Darter, Silver Chub and Channel Darter	Detroit River Thermal regime: warm Flow regime: permanent Riparian Habitat: hardened steel sheet pile/concrete shoreline; parkland
N/A*	Clearview Pump Station	Open Space	Green Lands (CGL) and Open Aquatic (OA)	Turtle Wintering Areas and Amphibian Breeding Habitat (Wetlands)	Common Nighthawk	N/A	N/A
STM-E5-1	Lakeview Pump Station	Open Space and Residential	Green Lands (CGL)	N/A	Brindled Madtom	Northern Madtom	Lake St. Clair Thermal regime: warm Flow regime: permanent Fish Habitat: sand substrate, sandy beachfront and maintained residential riparian conditions

Notes:
`* Natural Environmental assessments have been completed for some areas that were identified as having potential infrastructure improvements earlier in the modelling process. Improvements were no longer required at these areas however information has been provided for reference.
BOLD label codes signify that solutions are part of recommended solutions identified through the master plan therefore infrastructure is proposed for these sites. Refer to the Windsor Sewer and Coastal Master Plan report for more information.

Appendix H-2-d

SAR and SCC Habitat Screening Assessment

Table 1: Species at Risk identified during the background review

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Regulated Habitat	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Birds											
Apodidae	Swifts	Chaetura pelagica	Chimney Swift	THR	THR	S4B,S4N	OBBA	NO	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; fees over open water.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Hirundinidae	Swallows	Hirundo rustica	Barn Swallow	THR	THR	S4B	OBBA, NHIC	NO	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Hirundinidae	Swallows	Riparia riparia	Bank Swallow	THR	THR	S4B	OBBA	NO	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence..	No	The Study Areas lack suitable habitat for the species.
Icteridae	Blackbirds	Dolichonyx oryzivorus	Bobolink	THR	THR	S4B	OBBA	NO	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	No	The Study Areas lack suitable habitat for the species.
Icteridae	Blackbirds	Sturnella magna	Eastern Meadowlark	THR	THR	S4B	OBBA	NO	open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	No	The Study Areas lack suitable habitat for the species.
Parulidae	Wood-Warblers	Icteria virens virens	Yellow-breasted Chat	END	END	S2B	OBBA	NO	Thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines etc..	No	The Study Areas are outside the range for the species.
Tyrannidae	Tyrant Flycatchers	Empidonax virescens	Acadian Flycatcher	END	END	S2S3B	OBBA	NO	Mature, shady, deciduous forests; heavily wooded ravines; creek bottoms or river swamps; availability of good quality habitat is limiting factor; needs at least 30 ha of forest.	No	The Study Areas lack suitable habitat for the species.
Lepidoptera											
Hesperiidae	Butterflies and Moths	Erynnis martialis	Mottled Duskywing	---	END	S2	OBA	NO	The mottled duskywing tends to live in dry habitats with sparse vegetation. These include open barrens, sandy patches among woodlands, and alvars. In Ontario, the mottled duskywing will only deposit their eggs on two closely-related plants: New Jersey Tea and Prairie Redroot.	No	The Study Areas are outside the range for the species.
Fishes											
Acipenseridae	Fish and Eels	Acipenser fulvescens pop. 3	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	---	END	S2	NHIC	NO	Larger rivers and lakes, with soft bottoms of mud, sand or gravel. They are usually found at depths of five to 20 metres. They spawn in relatively shallow, fast-flowing water (usually below waterfalls, rapids, or dams) with gravel and boulders at the bottom. However, they will spawn in deeper water where habitat is available. They also are known to spawn on open shoals in large rivers with strong currents.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Regulated Habitat	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Cyprinidae	Fish and Eels	Notropis anogenus	Pugnose Shiner	END	THR	S2	DFO	NO	Lakes and calm areas of rivers and creeks having clear water and bottoms of sand, mud, or organic matter. It prefers water bodies with plenty of aquatic vegetation.	No	The Study Areas lack suitable habitat for the species.
Ictaluridae	Fish and Eels	Noturus stigmosus	Northern Madtom	END	END	S1	DFO, NHIC	YES	Large creeks and rivers with a moderate to swift current and a sand, gravel, or mud bottom. Has also been captured in the deeper waters of Lake St. Clair and the Detroit River.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Percidae	Fish and Eels	Ammocrypta pellucida	Eastern Sand Darter (Ontario populations)	THR	END	S2	DFO	NO	Shallow habitats in lakes, streams, and rivers with clean, sandy bottoms.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Leuciscidae	Fish and Eels	Macrhybopsis storeriana	Silver Chub	END	THR	S2	DFO	NO	Sandy pools and backwaters of small to large rivers, sandy, gravelly river mouths and silt-bottomed shallows (<20 m) of lakes	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Reptiles											
Colubridae	Snakes	Heterodon platirhinos	Eastern Hog-nosed Snake	THR	THR	S3	OHA	NO	Sandy upland fields, pastures, savannahs, sandy beaches; dry open oak-pine-maple forest with sandy soils; prefer forest areas > 5ha.	No	The Study Areas are outside the range for the species.
Colubridae	Snakes	Pantherophis gloydi pop. 2	Eastern Foxsnake (Carolinian population)	END	END	S2	OHA, MNRF Reg. Habitat	YES	Old fields, marshes, along hedgerows, drainage canals, and shorelines.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Colubridae	Snakes	Regina septemvittata	Queensnake	END	END	S2	OHA, MNRF Reg. Habitat	YES	An aquatic species that is seldom found more than a few metres from the water. It prefers rivers, streams, and lakes with clear water, rocky, or gravel bottoms, lots of places to hide, and an abundance of crayfish.	No	The Study Areas are outside the range for the species.
Colubridae	Snakes	Thamnophis butleri	Butler's Gartersnake	END	END	S2	NHIC	NO	Open, moist habitats such as dense grasslands and old fields, with small wetlands where it can feed on leeches and earthworms.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Emydidae	Turtle	Emydoidea blandingii	Blanding's Turtle	THR	THR	S3	OHA	NO	Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks; surrounding natural habitat is important in summer as they frequently move from aquatic habitat to terrestrial habitats; hibernates in bogs; not readily observed.	No	The Study Areas lack suitable habitat for the species.
Scincidae	Skink	Plestiodon fasciatus pop. 1	Common Five-lined Skink (Carolinian population)	END	END	S2	OHA, MNRF Reg. Habitat	YES	The Carolinian population can be found under woody debris in clearings with sand dunes, open forested areas, and wetlands. They bask on sunny rocks and logs to maintain a preferred body temperature (28-36°C). During the winter, they hibernate in crevices among rocks or buried in the soil.	No	The Study Areas are outside the range for the species.
Trionychidae	Frogs and Toads	Apalone spinifera	Spiny Softshell	THR	END	S3	NHIC	NO	Highly aquatic turtles that rarely travel far from water. They are found primarily in rivers and lakes, but also in creeks and even ditches and ponds near rivers. Key habitat requirements are open sand or gravel nesting areas, shallow muddy or sandy areas to bury in, deep pools for hibernation, areas for basking, and suitable habitat for crayfish and other food species.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Regulated Habitat	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Viperidae	Snakes	Sistrurus catenatus pop. 2	Massasauga (Carolinian population)	END	END	S1	OHA	NO	Use upland, old field in summer; marsh, shrub swamp or bog; rivers and streams that provide sedge or low vegetative growth; in fall and winter; hibernate underground in mammal burrows, under rotting stumps, in rock crevices.	No	The Study Areas are outside the range for the species.
Mammals											
Canidae	Dogs, Foxes and Wolves	Urocyon cinereoargenteus	Gray Fox	THR	THR	S1	MWH	NO	Hardwood forests with a mix of fields and woods; swamps; wooded, brushy or rocky habitats; woodland farmland edge; old fields with thickets; dens in hollow log or tree; individual has numerous winter dens throughout its range which is > 40 ha.	No	The Study Areas are outside the range for the species.
Mustelidae	Weasels and Allies	Taxidea taxus jacksoni	American Badger (Southwestern Ontario population)	END	END	---	MWH	YES	Found in a variety of habitats, such as tallgrass prairie, sand barrens, and farmlands.	No	The Study Areas are outside the range for the species.
Vespertilionidae	Plain-nosed Bats	Myotis leibii	Eastern Small-footed Myotis	---	END	S2S3	MWH	NO	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; hunts in forests.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Vespertilionidae	Plain-nosed Bats	Myotis lucifugus	Little Brown Myotis	END	END	S4	MWH	NO	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Vespertilionidae	Plain-nosed Bats	Myotis septentrionalis	Northern Myotis	END	END	S3	MWH	NO	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Vespertilionidae	Plain-nosed Bats	Pipistrellus subflavus	Tri-colored Bat	END	END	S3?	MWH	NO	Can be found in a variety of forested habitats. They form day roosts and maternity colonies in older forest and occasionally in barns or other structures, and overwinter in caves. They forage over water and along streams in the forest.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Molluscs											
Unionidae	Molluscs	Epioblasma torulosa rangiana	Northern Riffleshell	END	END	S1	NHIC	NO	Riffle areas within rivers or stream with rocky, sand, or gravel bottoms.	No	The Study Areas are outside the range for the species.
Unionidae	Molluscs	Epioblasma triquetra	Snuffbox	END	END	S1	NHIC	NO	Small to medium-sized rivers in shallow riffle areas. They prefer clean, clear, swift-flowing water and firm, rocky, gravel, or sand river bottoms.	No	The Study Areas are outside the range for the species.
Unionidae	Molluscs	Obovaria subrotunda	Round Hickorynut	END	END	S1	NHIC	NO	Rivers with clay, sand, or gravel bottoms. It also lives in shallow areas of lakes with firm sand. It prefers moderately, fast-moving water.	No	The Study Areas are outside the range for the species.
Unionidae	Molluscs	Pleurobema sintoxia	Round Pigtoe	END	END	S1	DFO, NHIC	NO	Rivers of various sizes with deep water and sandy, rocky, or mud bottoms.	No	In Canada, only extant in the Ausable and Sydenham Rivers and Lake St. Clair. Species not identified by NHIC or DFO at the Lake St. Clair project location (Lakeview Pump Station Study Area)

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Regulated Habitat	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Unionidae	Molluscs	Ptychobranchus fasciolaris	Kidneyshell	END	END	S1	NHIC	NO	Small to medium-sized rivers. It prefers shallow, clear, swift-moving water with gravel and sand.	No	In Canada, only extant in the Grand, Thames and Sydenham Rivers and Lake St. Clair. Species not identified by NHIC or DFO at the Lake St. Clair project location (Lakeview Pump Station Study Area)
Unionidae	Molluscs	Truncilla donaciformis	Fawnsfoot	END	END	S2	NHIC	NO	Medium and large rivers with moderate to slow-flowing water. It usually inhabits shallow waters (one to five metres deep) with gravel, sand, or muddy bottoms.	No	The Study Areas are outside the range for the species.
Unionidae	Molluscs	Obliquaria reflexa	Threehorn Wartyback	THR	THR	S1	DFO	NO	Large rivers with moderate current and stable gravel, sand and mud bottoms. Likely host fish are the common shiner and longnose dace.	No	The Study Areas are outside the range for the species.
Plants											
Asteraceae	Daisies	Liatris spicata	Dense Blazing Star	THR	THR	S2	NHIC	NO	Moist prairies, grassland savannahs, wet areas between sand dunes, and abandoned fields.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asteraceae	Daisies	Symphyotrichum praealtum	Willowleaf Aster	THR	THR	S2	NHIC	NO	Openings of oak savannahs, prairie and savannah remnants, and old fields.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Cornaceae	Dogwoods	Cornus florida	Eastern Flowering Dogwood	END	END	S2?	MNRF Reg. Habitat	YES	Grows on soils varying from deep and moist along minor streams to light-textured and well-drained in the uplands. Grows well on flats and on lower or middle slopes, but not very well on upper slopes and ridges.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Fabaceae	Legumes	Gymnocladus dioicus	Kentucky Coffee-tree	THR	THR	S2	NHIC	NO	Rich woods and marsh edges, open Hackberry woods on shallow soil over limestone on the Erie Islands.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Orchidaceae	Orchids	Platanthera leucophaea	Eastern Prairie Fringed-orchid	END	END	S2	MNRF Reg. Habitat	YES	Wetlands, fens, swamps, and tallgrass prairie. It has been found in ditches and railroad rights-of-way.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.

1 – Status identified by the Committee on the Status of Endangered Wildlife in Canada under the federal SARA, 2002; 2 – SAR in Ontario List under the provincial ESA, 2007; 3 – Ontario SRank; S5 = secure; S4= apparently secure; S3 = vulnerable; S2 = imperilled; SX = Extirpated; SH = Possibly Extirpated; SNA = non-native or exotic species to Ontario; 4 – NHIC = MNRF Natural Heritage Information Centre, MNRF SAR in Area = MNRF Species at Risk in Ontario List by area of the province; MNRF Reg. Habitat = MNRF Regulated Habitat (O. Reg. 242/08); MNRF Consult. = MNR Consultation, OBBA = Ontario Breeding Bird Atlas, MWH = Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, OHA = Ontario Herpetofaunal Atlas, OOA = Ontario Odonata Atlas; OBA = Ontario Butterfly Atlas; CBC = Christmas Bird Count; 5 – MNRF Significant Wildlife Technical Guide - Appendix G (2000).

Table 2: Species of Conservation Concern identified during the background review

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Birds										
Accipitridae	Hawks, Kites, Eagles, and Allies	Haliaeetus leucocephalus	Bald Eagle	---	SC	S2N,S4B	CBC, OBBA	Require large continuous area of deciduous or mixed woods around large lakes, rivers; require area of 255 ha for nesting, shelter, feeding, roosting; prefer open woods with 30 to 50% canopy cover; nest in tall trees 50 to 200 km from shore; require tall, dead, partially dead trees within 400 m of nest for perching; sensitive to toxic chemicals.	No	The Study Areas lack suitable habitat for the species.
Anatidae	Ducks, Geese, and Swans	Aythya americana	Redhead	---	---	S2B,S4N	CBC	shallow cattail/bulrush marshes, lakes and ponds and fens; preferred nesting usually close to shallow water (most within 2 m), but can be found as far as 266 m from water's edge.	No	The Study Areas lack suitable habitat for the species.
Anatidae	Ducks, Geese, and Swans	Aythya valisineria	Canvasback	---	---	S1B,S4N	CBC	large marshes for nesting; prefer deep, permanent water- bodies for feeding and courtship.	No	The Study Areas lack suitable habitat for the species.
Calcariidae	Longspurs and Snow Buntings	Calcarius lapponicus	Lapland Longspur	---	---	S3B	CBC	Arctic tundra, wet meadows, grassy tussocks, and scrub.	No	The Study Areas are outside the range for the species.
Caprimulgidae	Goatsuckers	Chordeiles minor	Common Nighthawk	THR	SC	S4B	OBBA	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Falconidae	Caracaras and Falcons	Falco peregrinus	Peregrine Falcon	SC	SC	S3B	OBBA	rock cliffs, crags, especially situated near water; tall buildings in urban centres; threatened by chemical contamination; reintroduction efforts have been attempted in numerous locations throughout Ontario.	No	The Study Areas lack suitable habitat for the species.
Gaviidae	Loons	Gavia stellata	Red-throated Loon	---	---	S1N,S3B	CBC	Rugged tundra and taiga wetlands in both lowlands and highlands, up to about 3,500 feet elevation.	No	The Study Areas are outside the range for the species.
Icteridae	Blackbirds	Euphagus carolinus	Rusty Blackbird	SC	SC	S4B	CBC	Openings in coniferous woodlands bordering bodies of water; tree-bordered marshes, beaver ponds, muskegs, bogs, fends or wooded swamps; stream borders with alder, willow; wooded island on lakes.	No	The Study Areas are outside the range for the species.
Laridae	Gulls, Terns, and Skimmers	Larus marinus	Great Black-backed Gull	---	---	S2B	CBC	Breed in isolated places safe from predators, such as small islands, rocky islets, saltmarshes, and barrier beaches.	No	The Study Areas are outside the range for the species.
Picidae	Woodpeckers and Allies	Melanerpes erythrocephalus	Red-headed Woodpecker	THR	SC	S4B	CBC, OBBA	Open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; feeds on insects and stores nuts or acorns for winter; loss of habitat is limiting factor; requires cavity trees with at least 40cm dbh; require about 4 ha for a territory.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Podicipedidae	Grebes	Podiceps auritus	Horned Grebe	---	SC	S1B,S4N	CBC	Nests in small ponds, marshes, and shallow bays that contain areas of open water and emergent vegetation.	No	The Study Areas are outside the range for the species.
Strigidae	Typical Owls	Asio flammeus	Short-eared Owl	SC	SC	S2N,S4B	OBBA	Grasslands, open areas or meadows that are grassy or bushy; marshes, bogs or tundra; both diurnal and nocturnal habits; ground nester; destruction of wetlands by drainage for agriculture is an important factor in the decline of this species; home range 25 -125 ha; requires 75-100 ha of contiguous open habitat.	No	The Study Areas lack suitable habitat for the species.
Turdidae	Thrushes	Hylocichla mustelina	Wood Thrush	END	SC	S4B	OBBA	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12m.	No	The Study Areas lack suitable habitat for the species.
Tyrannidae	Tyrant Flycatchers	Contopus virens	Eastern Wood-pewee	SC	SC	S4B	OBBA, NHIC	Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearing, edges; farm woodlots, parks.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Lepidoptera										
Nymphalidae	Butterflies and Moths	Danaus plexippus	Monarch	SC	SC	S2N,S4B	OBA	The caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adults can be found in more diverse habitats where they feed on nectar from a variety of wildflowers.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Odonata										
Gomphidae	Dragonflies and Damselflies	Stylurus notatus	Elusive Clubtail	---	---	S2	NHIC	Large rivers and large lakes with sandy bottoms, sometimes also with silt and gravel.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Fishes										
Catostomidae	Fish and Eels	Minytrema melanops	Spotted Sucker	SC	SC	S2	DFO	Clear creeks and small to moderate-sized rivers with sand, gravel, or hard-clay bottoms, usually free of silt.	No	The Study Areas are outside the range for the species.
Esocidae	Fish and Eels	Esox americanus vermiculatus	Grass Pickerel	SC	SC	S3	DFO	Wetlands, ponds, slow-moving streams and shallow bays of larger lakes with warm, shallow, clear water and an abundance of aquatic plants.	No	The Study Areas lack suitable habitat for the species.

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Ictaluridae	Fish and Eels	Noturus miurus	Brindled Madtom	---	---	S2	NHIC	Medium-sized streams and rivers and are often found near the edge of pools in roots, leaf litter, brush piles, or other debris. Clean sand or gravel bottom and avoid areas with a soft mud, muck, or silt-covered bottom.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Percidae	Fish and Eels	Percina copelandi	Channel Darter	THR	SC	S2	DFO	Clean streams and lakes with sandy or gravel bottoms. During the breeding season in late spring, it prefers riffle areas with fairly fast moving water but spends the winter in deeper, calmer water.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Petromyzontidae	Fish and Eels	Ichthyomyzon unicuspis	Silver Lamprey	---	---	S3	DFO	Clear water so they can find fish hosts, relatively clean stream beds of sand and organic debris for larvae to live in, and unrestricted migration routes for spawning.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Molluscs										
Unionidae	Molluscs	Ligumia nasuta	Eastern Pondmussel	SC	SC	S1	NHIC	Sheltered areas of lakes and in slow-moving areas of rivers and canals with sand or mud bottoms.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Unionidae										
Chelydridae	Turtle	Chelydra serpentina	Snapping Turtle	SC	SC	S3	NHIC	Permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Colubridae	Snakes	Nerodia sipedon insularum	Lake Erie Watersnake	END	SC	S2	OHA	Rocky shorelines with good shrub and tree cover.	No	The Study Areas are outside the range for the species.
Emydidae	Turtle	Graptemys geographica	Northern Map Turtle	SC	SC	S3	OHA	Rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer.	No	The Study Areas are outside the range for the species.
Kinosternidae	Turtle	Sternotherus odoratus	Eastern Musk Turtle	SC	SC	S3	OHA	Aquatic, except when laying eggs; shallow slow moving water of lakes, streams, marshes and ponds; hibernate in underwater mud, in banks or in muskrat lodges; eggs are laid in debris or under stumps or fallen logs at waters edge; often share nest sites; sometimes congregate at hibernation sites; not readily observed.	No	The Study Areas are outside the range for the species.

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Mammals										
Cricetidae	Voles, Lemmings and New World Mice	Microtus pinetorum	Woodland Vole	SC	SC	S3?	MWH	Mature deciduous forest in the Carolinian forest zone, with loose sandy soil and deep humus; grasslands, meadows and orchards with groundcover of duff or grass.	No	The Study Areas lack suitable habitat for the species.
Talpidae	Moles	Scalopus aquaticus	Eastern Mole	SC	SC	S2	MWH	Lives in a range of habitats, including forests, open woodlands, meadows, pastures, and fields. It is also found in urban settings such as parks, cemeteries, and residential yards. Its preferred habitat is stone-free, sand and sandy loam soil with a cover of woody plants.	No	The Study Areas are outside the range for the species.
Plants										
Apiaceae	Carrots	Oxypolis rigidior	Stiff Cowbane	---	---	S2	NHIC	Moist woods, especially with Tamarack and Poison Sumac, marshes, fens, wet prairies, swampy, streamside thickets, and shores.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asclepiadaceae	Milkweeds	Asclepias sullivantii	Prairie Milkweed	---	---	S3	NHIC	Prairies, old fields, and thickets.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asteraceae	Daisies	Bidens trichosperma	Crowned Beggarticks	---	---	S2	NHIC	Moist to wet ground on shores (sandy or mucky), mudflats, mucky bottomland, depressions in forests, sedge meadows, fens and bogs, cedar swamps, streamsides, ponds, ditches, and marshes.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asteraceae	Daisies	Coreopsis tripteris	Tall Tickseed	---	---	S2	NHIC	Dry to wet prairies, meadows, marshes, oak forests, fields, roadsides, railroads.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asteraceae	Daisies	Ratibida pinnata	Gray-headed Prairie Coneflower	---	---	S3	NHIC	In or near prairie remnants (including roadsides and fencerows), at margins of swamps, and in dry open ground.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asteraceae	Daisies	Silphium laciniatum	Compass Plant	---	---	S1	NHIC	Probably adventive along railroads, although railroad rights-of-way and depauperate prairies are indeed about all we have left of its proper habitat.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Asteraceae	Daisies	Silphium terebinthinaceum	Prairie Rosinweed	---	---	S1	NHIC	Prairies and similar grassy habitats, fens, railroad embankments.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asteraceae	Daisies	Solidago riddellii	Riddell's Goldenrod	SC	SC	S3	NHIC	Fens, wet prairies, shore meadows, moist ground around lakes and along rivers.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asteraceae	Daisies	Solidago rigida ssp. rigida	Eastern Stiff-leaved Goldenrod	---	---	S3	NHIC	Prairies, dry fields and hillsides. May spread along roadsides and railroads, and from prairie plantings beyond its native range.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Asteraceae	Daisies	Vernonia gigantea	Giant Ironweed	---	---	S1?	NHIC	Meadows, floodplain forests, marshy thickets, and roadsides.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Cistaceae	Rockroses	Lechea mucronata	Hairy Pinweed	---	---	S3	NHIC	Dry prairies and open, sandy woods.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Commelinaceae	Spiderworts	Tradescantia ohiensis	Ohio Spiderwort	---	---	S2	NHIC	Along roadsides and railroads, in open oak forests or borders of forests, on sandy ridges, meadows, and wet ground.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Cuscutaceae	Dodders	Cuscuta coryli	Hazel Dodder	---	---	S1	NHIC	Moist prairies.	No	The Study Areas are outside the range for the species.
Cyperaceae	Sedges	Carex annectens	Yellow-fruited Sedge	---	---	S2	NHIC	Dry prairie, open woods, and old fields.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Cyperaceae	Sedges	Carex gravida	Heavy Sedge	---	---	S1	NHIC	Dry, sunny sites.	No	The Study Areas are outside the range for the species.
Cyperaceae	Sedges	Carex suberecta	Prairie Straw Sedge	---	---	S2	NHIC	Fens, calcareous, sedge meadows, lake shores, and wet prairies.	No	The Study Areas lack suitable habitat for the species.
Fagaceae	Beeches and Oaks	Quercus shumardii	Shumard Oak	---	SC	S3	NHIC	Rich sites that have moist, well-drained, loamy soils found on terraces, colluvial sites, and adjacent bluffs associated with large and small streams.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Lythraceae	Loosestrifes	Lythrum alatum	Winged Loosestrife	---	---	S3	NHIC	Shores and wet meadows, wet prairies, marshy ground, moist sandy openings.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Nelumbonaceae	Lotus	Nelumbo lutea	American Lotus	---	---	S2	NHIC	Shallow, open water in marshes.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Onagraceae	Willowherbs	Ludwigia polycarpa	Many-fruit Seedbox	---	---	S2S3	NHIC	Marshy and swampy ground, ditches and sandy excavations.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Onagraceae	Willowherbs	Oenothera gaura	Biennial Gaura	---	---	S3	NHIC	River banks, remnant prairies, roadsides, fields, vacant lots.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Poaceae	Grasses	Dichanthelium praecocius	White-haired Panicgrass	---	---	S3	NHIC	Prairie remants, dry, open, often sandy ground.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.

Family	Group	Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Habitat in the Study Area	Potential to Occur
Rosaceae	Roses	Rosa setigera	Climbing Prairie Rose	SC	SC	S3	NHIC	Open woods, roadsides, thickets, alvars, prairies.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.
Scrophulariaceae	Snapdragons	Veronicastrum virginicum	Culver's Root	---	---	S2	NHIC	Prairie remnants, fens, meadows, river banks, deciduous savannahs (especially with oaks), and adjacent roadsides.	Yes	Some Study Areas have the potential to provide suitable habitat for the species.

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