



**DRAFT**

***Romney Wind Energy Centre***  
**Water Body Assessment**

Prepared for:  
DNV-GL  
Suite 806, 151 Slater Street  
Ottawa, Canada  
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Project No. 1736E | February 2017



**NATURAL RESOURCE SOLUTIONS INC.**

Aquatic, Terrestrial and Wetland Biologists

**DRAFT**

**Romney Wind Energy Centre  
Water Body Assessment**

**Project Team:**

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Report submitted on February 24, 2017

*Charlotte Teat*

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Charlotte Teat  
Terrestrial & Wetland Biologist

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## 1.0 Project Description

Natural Resource Solutions Inc. (NRSI) was retained in April 2016 by DNV-GL, on behalf of Romney Energy Centre Limited Partnership (“the Proponent”), to conduct a Water Body Assessment (WBA) and Water Body Report (WBR) in accordance with the Renewable Energy Approval (REA) Regulation, Ontario Regulation (O. Reg.) 359/09. The WBA includes a records review and site investigation, while the WBR, which is provided under a separate cover, includes a complete assessment of impacts to any water bodies occurring at the proposed wind energy generating facility of up to 18 permitted wind turbine locations. The final number of operational turbines will depend on the nominal turbine power rating of each turbine.

The Proponent is proposing to develop the Romney Wind Energy Centre (the “Project”). This Project, with a total nameplate capacity of up to 60 megawatts (MW), is considered to be a Class 4 wind facility.

The Romney Wind Energy Centre is located in southwestern Ontario, Town of Lakeshore and the Municipality of Chatham Kent, Ontario. More specifically, the Project is located south of Highway 401, and extends along Richardson Side Road and Wheatley Road near the community of Wheatley, ON.

Project components will be installed primarily on privately-owned agricultural lots within this area. It is anticipated that the electrical collector lines will be partially located within public road allowances. The Project is being planned to connect to the existing Hydro One Networks Inc. (HONI) 230 kV transmission line located within the Town of Lakeshore, near Richardson Side Road. A small section of transmission line (less than 1km) is proposed for the Project, to be built by HONI from the Point of Common Coupling (PCC) to the Point of Interconnect (POI).

According to O. Reg. 359/09, as amended, and as per the Technical Guide to Renewable Energy Approvals (MOE 2013), the Project Location is defined as “...a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposes to engage in the project”. As described therein, the Project

Location boundary is the outer limit of where site preparation and construction activities will occur (i.e. disturbance areas described below) and where permanent infrastructure will be located, including the air space occupied by turbine blades.

For the purposes of this report, NRSI will refer to the areas within 120m of the Project Location as the 'Project Area'. This includes areas within 120m of proposed wind turbines, measured from blade tip, as well as within 120m of any areas that may be used as temporary lay-down areas, crane pads, access roads, PCC, Operations and Maintenance (O&M) building, a meteorological tower, substation and electrical collector lines. Junction boxes may also be installed below or above ground where more than one circuit must be connected together. See Map 1 for an illustration of the Project Area and natural features.

This report has been prepared in accordance with the REA Regulation, O. Reg. 359/09.

## 2.0 REA Requirements

The REA Regulation, O. Reg. 359/09 – *Renewable Energy Approvals* under *Part V.0.1 of the Act* (herein referred to as the REA Regulation), made under the *Environmental Protection Act*, identifies the requirements for the development of renewable energy projects in Ontario. In accordance with the REA Regulation the Project is classified as a Class 4 wind facility and is required to complete a REA submission.

Section 29 of the REA Regulation requires proponents of Class 4 wind projects to undertake a water body assessment which involves a records review to identify whether the Project Location is:

1. in a water body;
2. within 120m of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity;
3. within 300 meters of the average annual high water mark of a lake trout lake that is at or above development capacity;
4. within 120 meters of the average annual high water mark of a permanent or intermittent stream; or
5. within 120 meters of a seepage area.

Section 39, subsection (1) of the REA Regulation states, in relation to Class 4 wind facilities with no turbines or transformers within 30m of a water body, that “no person shall construct, install or expand a renewable energy generation facility as part of a renewable energy project at a project location that is in any of the following locations”:

1. A lake or within 30 meters of the average annual high water mark of a lake.
2. A permanent or intermittent stream or within 30 meters of the average annual high water mark or a permanent or intermittent stream.
3. A seepage area or within 30 meters of a seepage area.

Section 40, subsection (1) of the REA Regulation states, in relation to any proposed facility, that “no person shall construct, install or expand a renewable energy generation facility as part of a renewable energy project at a project location that is in any of the following locations”:

1. within 120 meters of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity;
2. within 300 meters of the average annual high water mark of a lake trout lake that is at or above development capacity;
3. within 120 meters of the average annual high water mark of a permanent or intermittent stream; or
4. within 120 meters of a seepage area.

However, Sections 39(1) and 40(1) do not apply if the applicant submits a report that:

1. identifies and assesses any negative environmental effects of the project on a water body referred to in paragraphs 1 to 3 of Section 39 (1) and 1 to 4 of Section 40 (1) (above) and on land within 30 meters of the water body;
2. identifies mitigation measures in respect of any negative environmental effects mentioned in clause (i);
3. describes how the environmental effects monitoring plan addresses any negative environmental effects mentioned in clause (i); and describes how the construction plan report prepared in accordance with Table 1 of the REA Regulation addresses any negative environmental effects mentioned in clause (i).

Section 1.1 of the REA Regulations defines a “water body” as a lake, a permanent stream, an intermittent stream, and a seepage area but does not include:

- a) grassed waterways;
- b) temporary channels for surface drainage, such as furrows or shallow channels that can be tilled and driven through;
- c) rock chutes and spillways;
- d) roadside ditches that do not contain a permanent or intermittent stream;
- e) temporary ponded areas that are normally farmed;
- f) dugout ponds; and
- g) artificial bodies of water intended for storage, treatment or recirculation of runoff from animal yards, manure storage facilities and sites and outdoor confinement areas.

Subsection 2 of Section 30 of the REA Regulation requires the proponent to prepare a report “setting out a summary of the records searched and the results of the analysis” (O. Reg. 359/09). This WBA has been prepared for the Project to meet these requirements.

Section 31 (1) subject to subsection (2) of the REA Regulation requires proponents of Class 4 wind projects to undertake a water body site investigation for the purpose of determining:

- a) whether the results of the analysis summarized in the report prepared under subsection 30(2) are correct or require correction, and identifying any required corrections;
- b) whether any additional water bodies exist, other than those identified in the records review;
- c) the boundaries, located within 120m of the project location, of any water body that was identified in the records review or the site investigation; and
- d) the distance from the project location to the boundaries determined under clause (c).



Subsection (4) of Section 31 of the REA Regulation requires the proponent to prepare a report setting out the following:

1. A summary of any corrections to the report prepared under subsection 30 (2) and the determinations made as a result of conducting the site investigation under subsection (1).
2. Information relating to each water body identified in the records review and in the site investigation, including the type of water body, plant and animal composition and the ecosystem of the land and water investigated.
3. A map showing
  - i. The boundaries mentioned in clause (1) (c) or (2) (c) and (d),
  - ii. The location and type of each water body identified in relation to the project location, and
  - iii. The distances mentioned in clause (1) (d) or (2) (e).
4. The dates and times of the beginning and completion of the site investigation.
5. The duration of the site investigation.
6. The weather conditions during the site investigation.
7. A summary of methods used to make observations for the purpose of the site investigation.
8. The name and qualifications of any person conducting the site investigation.
9. Field notes kept by the person conducting the site investigation.

The site investigation details and results have been included in this WBA to meet the REA requirements. A discussion of any negative environmental impacts on water bodies within the Project Area, and a summary of the applicable components of the *Design and Operations Report* (DNV-GL 2017a), the *Construction Plan Report* (DNV-GL 2017b), and the *Decommissioning Report* (DNV-GL 2017c) which have been prepared by DNV-GL, are available in the WBR (NRSI 2017a) which has been prepared by NRSI under a separate cover. The proposed monitoring program in the WBR has been used to develop the Environmental Effects Monitoring Plan included in the *Design and Operations Report* (DNV-GL 2017a), completed by DNV-GL under separate cover.

As part of this project, all aspects relating to provincially Threatened and Endangered species, Species of Conservation Concern, and other aquatic species and their habitats are addressed through a separate permitting process under the *Fisheries Act* (1985), the *Endangered Species Act* (2007), and *Development, Interference of Wetlands and Alterations to Shorelines and Watercourses* (O.Reg. 152/06) under the *Conservation Authorities Act* (R.S.O. 1990). Therefore, they have not been discussed within the WBA or WBR. These species will be addressed in full detail, including a description and results of field assessments, potential impacts, and recommended mitigation measures,

as part of a separate reporting process to be addressed with Fisheries and Oceans Canada (DFO), the Ministry of Natural Resources and Forestry (MNR), and the Lower Thames Valley Conservation Authority (LTVCA), as required.

### 3.0 Staff Roles

The requirements of the REA Regulation indicate that the name and qualifications of key staff participating in the site investigation should be included, and are thus provided below.

Andrew G. Ryckman, B.Sc.

Andrew is a Senior Terrestrial and Wetland Biologist at NRSI with more than 11 years of experience working on a variety of environmental projects. He has considerable experience managing Environmental Assessments, Natural Heritage Assessments (NHAs), and WBA for proposed wind project developments across Canada, including experience with project management, report generation, data analysis, and considerable field monitoring. Andrew has coordinated the environmental monitoring on more than 120 proposed, or operational, wind energy facilities across Canada, overseeing the field assessments, data analysis, impact assessments, and recommendation of mitigation measures for projects in a wide range of landscapes, and relative to a variety of species and species groups.

Andrew's role in this project was to act as the project advisor, overseeing all aspects of the WBA, including all associated field work and reporting.

Charlotte Teat, M.E.S.

Charlotte is a Terrestrial and Wetland Biologist with more than 6 years of experience in the environmental field. Charlotte has completed her Bachelor of Environmental Studies and has a Master of Environmental Studies from the University of Waterloo. Charlotte has managed a variety of environmental projects, and has coordinated numerous types of surveys, including vegetation community delineations, bat surveys, mammal studies, breeding bird surveys and herpetofauna studies. She is certified in the Ontario Wetland Evaluation System (OWES) (2012) and in the Ecological Land Classification (ELC) system for southern Ontario (2013). Charlotte has managed the biological monitoring and reporting for numerous wind power projects throughout Ontario and Saskatchewan, and has extensive experience with client and agency liaison through her project management role on similar projects.

Charlotte's role in this project was to act as the project manager, overseeing all aspects of the WBA. She was a main contact point for agency staff and assisted with the review of this WBA.

Nyssa Hardie, M.Sc, E.Pt.

Nyssa is a Stream Corridor and Environmental Analyst with more than 6 years of experience in the environmental field. Her areas of expertise include the assessment of headwater drainage features, watercourses, and stream corridors. She is experienced in identifying the function and connectivity of surface water drainage features with other environmental features such as wetlands, woodlands, and seepage areas. Nyssa frequently assesses watercourses and identifies flow regime, as well as identifies impacts to surface drainage features including changes in water balance due to land use change. She is certified in

the Ontario Stream Assessment Protocol (OSAP) headwater drainage feature and stream barriers assessment modules, and has participated in workshops for headwater identification, assessment and classification. Nyssa is a member of the Ontario Headwater Steering Committee and frequently gives presentations on the implementation of headwater assessments and field surveys. Nyssa has experience conducting water body assessments for numerous wind projects in Ontario.

Nyssa was responsible for conducting the records review, coordinating water body site investigations, analysis of field data, and for the technical components of this report.

Blair Baldwin, B.Sc.

Blair has over 5 years of experience as an Aquatic Biologist. His areas of expertise include fish habitat surveys, habitat mapping, fish community assessments, and species identification. He has experience conducting benthic invertebrate surveys and species identification. Blair is certified in freshwater mussel identification (2014) through Fisheries and Oceans Canada (DFO), and benthic invertebrate identification (2013) through the Society of Freshwater Science. He has also completed the fish (2012) and Species at Risk (2013) identification courses through the Royal Ontario Museum. Blair has extensive experience conducting water body site investigations for numerous wind projects across Ontario.

Blair was responsible for conducting water body site investigations and data compilation for this report.

Steve Burgin, B.Sc., F.W.T

Steve is an Aquatic Biologist with over 8 years of experience. His areas of expertise include fish (Royal Ontario Museum 2011-2012), mussel (DFO 2012), and benthic (Society of Freshwater Science 2014) identification, aquatic habitat characterization, and pre-, during and post- development monitoring of aquatic systems. Steve is a member of the American Fisheries Society (Southern Ontario Chapter) and the Greg Clark Chapter of Trout Unlimited Canada. He has also received training from the Ministry of the Environment and Climate Change (MOE 2011) in the preparation of Water Assessment and Water Body Reports for renewable energy projects.

Steve was responsible for conducting water body site investigations and data compilation for this report.

## 4.0 Records Review

NRSI biologists completed a thorough records review for the proposed Project. Information sources reviewed, records obtained, and a summary of the findings are provided in the following sections of this report.

### 4.1 Information Sources

In accordance with the REA Regulation, NRSI biologists consulted several information sources and agencies for the purposes of assessing water bodies within 120m (and 300m for lake trout lakes) of the Project Location. The results of this consultation process have been documented throughout the following report, and have been summarized in Table 1 below.

**Table 1. Summary of Information Sources Consulted for the Project**

Information Source	Consultation Date(s)	Consultation Type	Relevant Water Body Records Reviewed/Received
Fisheries and Oceans Canada (DFO)	August 5, 2016	Email Request	<ul style="list-style-type: none"> <li>• Thermal regime data</li> </ul>
Ministry of Natural Resources and Forestry, Aylmer District	August 5, 2016	Email Request	<ul style="list-style-type: none"> <li>• Thermal regime data</li> </ul>
Ministry of Natural Resources and Forestry	August 5, 2016	Document Review	<ul style="list-style-type: none"> <li>• Inland Ontario Lakes Designated for Lake Trout Management (MNRF 2015)</li> </ul>
County of Chatham-Kent	August 5, 2016	Document Review	<ul style="list-style-type: none"> <li>• Region of Chatham-Kent Official Plan (2014)</li> </ul>
Rural Municipality of Lakeshore	August 5, 2016	Document Review	<ul style="list-style-type: none"> <li>• Town of Lakeshore Official Plan (2010)</li> </ul>
Lower Thames Valley Conservation Authority (LTVCA)	August 5, 2016 August 18, 2016	Email Request and Document Review	<ul style="list-style-type: none"> <li>• Watershed Report Card (2013)</li> <li>• Lower Thames Valley Assessment Report in the Thames, Sydenham and Region Source Protection Region (2014)</li> </ul>
Ministry of Natural Resources and Forestry, Land Information Ontario (LIO)	August 4, 2016	GIS Mapping Layer Review	<ul style="list-style-type: none"> <li>• Aerial photography</li> <li>• Watercourse mapping</li> <li>• Constructed drains</li> <li>• Municipal drains</li> </ul>

## 4.2 Results

For the purpose of the records review reporting, NRSI has used available resources, including agency consultation and a variety of available mapping layers (satellite imagery, aerial photographs, and MNRF and Lower Thames Valley Conservation Authority (LTVCA) watercourse and drainage mapping), to identify any lakes, intermittent or permanent watercourses and municipal drains, and seepage areas within 120m of the Project Location, as well as lake trout lakes within 300m of the Project Location. All potential water bodies identified during the records review are shown on Maps 3-1 to 3-5. Information obtained relating to identified water bodies is detailed in Section 5.2. During the records review, it was identified that several potential water bodies within the southwest portion of the Project Area fall within the Event Based Area for the Wheatley Source Water Intake Protection Zone (LTVCA 2017). All aspects relating to the Wheatley Source Water Intake Protection Zone will be dealt with through a separate permitting process with the LTVCA, where required, and have not been discussed further in the WBA or WBR.

### 4.2.1 Lakes

NRSI biologists reviewed available background information to identify potential lakes within the Project Area. Findings of this review indicate that no lakes are located within the Project Area. The nearest lake, Lake Erie, is located approximately 1km south of the Project Area.

### 4.2.2 Lake Trout Lakes

NRSI biologists have reviewed available background information, including the Inland Ontario Lakes Designated for Lake Trout Management (MNRF 2015), and have confirmed that no lake trout lakes are present within the jurisdiction of the Aylmer District MNRF. Therefore, no lake trout lakes are present within the Project Area.

### 4.2.3 Permanent or Intermittent Watercourses

NRSI biologists have used available resources, and background information to identify the presence of potential intermittent and/or permanent watercourses and municipal drains within the Project Area. Findings of this review indicated that 57 potential water bodies, including 3 ponds, are located within the Project Area. These features are situated within the Lower Thames River watershed, the Cedar Creek watershed, and the

Lake Erie watershed, and can be sub-divided into 4 major drainage areas, Big Creek, East Two Creeks, Yellow Creek and Lake Erie. Each of these major drainage areas encompass features that overlap with, or are within 120m of, the Project Location. The potential water bodies have been divided into their respective drainage areas and discussed in detail in Section 5.2 of this report. The results of the records review are summarized below in Table 2.

**Table 2. Summary of Potential Permanent or Intermittent Drainage Features Identified in the Project Area during the Records Review**

Watershed	Drainage Area	Details	In a water body	Within 120 m of the average annual high water mark of a permanent or intermittent stream	Map(s)
Lower Thames River	Big Creek	Within this watershed, water flows north through the Project Area turning northeast near the Town of Tilbury. Big Creek drains into Baptiste Creek 1.5km from its outlet to the Lower Thames River. Baptiste Creek joins the Lower Thames River approximately 1km east of its outlet to Lake St. Clair. It originates from a combination of surface water runoff and municipal drains that consolidate to form a watercourse near Concession Road 10 and Gracey Side Road, just west of the Project Area. Within the Project Area, several tributaries and municipal drains are present that drain north towards Big Creek. These features are channelized and straightened for the majority of their length through the Project Area. Big Creek and East Two Creeks are the largest drainage areas within the Project Area.	Yes	Yes	Maps 3-1 3-2 3-3
Cedar Creek	East Two Creeks	East Two Creeks is a short watercourse that flows in a southwesterly direction through the Project Area. It originates as tile drainage and municipal drains from the middle of the Project Area. East Two Creeks forms a large drainage feature near the southwestern extent of the Project Area, flowing through the Town of Wheatley before discharging into Lake Erie. Several municipal drains within the Project Area join East Two Creeks and contribute to its volume and flow. East Two Creeks and Big Creek are the largest drainage areas within the Project Area.	Yes	Yes	Maps 3-2 3-3 3-4 3-5
Cedar Creek	Yellow Creek	Yellow Creek is a small drainage area located in the southern portion of the Project Area. It originates as tile drainage and municipal drains that consolidate to form a permanent watercourse that empties into Lake Erie east of the Town of Wheatley. Several municipal drains within the Yellow Creek drainage area are located in the southern portion of the Project Area.	Yes	Yes	Maps 3-4 3-5
Lake Erie	Lake Erie	Within the Project Area a few small municipal drains flow directly into	Yes	Yes	Maps



**Table 2. Summary of Potential Permanent or Intermittent Drainage Features Identified in the Project Area during the Records Review**

Watershed	Drainage Area	Details	In a water body	Within 120 m of the average annual high water mark of a permanent or intermittent stream	Map(s)
		Lake Erie. These drains are located in the southeastern corner of the Project Area. The municipal drains originate as surface and road runoff, and tile drainage, flowing southwest towards Lake Erie. This is the smallest drainage area within the Project Area.			3-4 3-5

There are 3 major watersheds within the Project Area: Lower Thames River, Cedar Creek, and Lake Erie. The Big Creek drainage area flows into Baptiste Creek, which empties into the Lower Thames River. The East Two Creeks and Yellow Creek drainage areas, which are within the Cedar Creek watershed, empty directly into Lake Erie, along with a few municipal drains. Several municipal drains discharge directly to Lake Erie and are located in the Lake Erie watershed. All of the drainage features within the Project Area are within the LTVCA jurisdiction. Based on aerial photograph interpretation and a review of available mapping, most of the drainage features within the Project Area are municipal drains and are expected to be highly impacted features.

The LTVCA Watershed Report Card (2013) indicates that surface water quality throughout the LTVCA jurisdiction is poor, with a grade of 'D' identified. The LTVCA measures water quality based on Total Phosphorous and *E.coli* (LTVCA 2013).

Correspondence with the LTVCA indicated that the majority of municipal drains and watercourses within the Project Area are Class F drains, with the exception of portions of Yellow Creek and Big Creek, which are Class C. These classifications are based on the DFO drain classification system (1999). Class F is assigned to intermittent features and requires that in-water work is done in dry conditions and all disturbed soils are stabilized upon completion of the work. Class C is assigned to permanent warmwater features that contain baitfish species (e.g. *Cyprinids*). In-water work within Class C features must be done when water levels are not elevated, and specific timing restrictions related to warmwater spawning periods are required. For more information on the specific requirements for in-water work within Class C and Class F features see the Water Body Report (NRSI 2017a), which has been prepared under separate cover.

#### 4.2.4 Seepage Areas

NRSI biologists reviewed a variety of available background resources, including online resources, surficial geology mapping, elevation data, and digital aerial photography. No known seepage areas were identified in the Project Area through the comprehensive records review for the Project. Based on an examination of surficial geology mapping within the Project Area, conditions are not likely to be appropriate for the creation of seepage areas. This will be further examined during the site investigation phase of the Project.

### 4.3 Summary

In accordance with the REA Regulation, NRSI has completed a comprehensive records review for the proposed Project. The Project Area was examined to ensure all drainage features within 120m of the Project Location were assessed. This records review included correspondence with federal and provincial agency staff, conservation authority staff, and a review of available online and published resources. The results of this records review have been summarized in Table 3 below.

**Table 3. Summary of Records Review for the Project**

Criteria	Associated Potential Water Bodies
i. In a water body	<p>The records review has identified 33 potential water bodies as overlapping the Project Location, within the following drainage areas:</p> <ul style="list-style-type: none"> <li>• Big Creek (n=11)</li> <li>• East Two Creeks (n=13)</li> <li>• Yellow Creek (n=8)</li> <li>• Lake Erie (n=1)</li> </ul> <p>These potential overlaps represent proposed crossing locations for access roads, collection lines, and/or construction disturbance areas. All of these potential water bodies may represent permanent or intermittent watercourses, drainage features or ponds. Within the LTVCA jurisdiction, these potential water bodies are designated as warmwater fisheries or intermittent drainage features based on the DFO drain classification system (LTVCA 2016).</p>
ii. Within 120 m of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity	None
iii. Within 300 m of the average annual high water mark of a lake trout lake that is at or above development capacity	None
iv. Within 120 m of the average annual high water mark of a permanent or intermittent stream	<p>The records review has identified 24 potential water bodies within 120m of, but not overlapping, the Project Location, within the following drainage areas:</p> <ul style="list-style-type: none"> <li>• Big Creek (n=9)</li> <li>• East Two Creeks (n=8)</li> <li>• Yellow Creek (n=3)</li> <li>• Lake Erie (n=4)</li> </ul> <p>All of these water bodies represent potential permanent or intermittent watercourses, drainage features or ponds. Within the LTVCA jurisdiction, these water bodies are designated as warmwater fisheries or intermittent drainage features based on the DFO drain classification system.</p>
v. Within 120 m of a seepage area	None

## 5.0 Site Investigation

### 5.1 Methods

In accordance with the REA Regulation, a comprehensive site investigation was carried out within the Project Area. The site investigation focused on confirming the presence, absence and extent of potential water bodies identified during the records review, identifying any corrections that need to be made to water body mapping, including the identification of any previously unidentified water bodies, and characterizing site-specific conditions of all confirmed water bodies to inform the WBR. The results of this site investigation will be used to identify proximity of water bodies to project components, requirements for mitigation, and to conduct an impact assessment.

#### 5.1.1 Survey Dates

In accordance with the REA Regulation, NRSI recorded dates, times, duration, and weather conditions during each site investigation. This information has been summarized in Table 4 below. Additional weather conditions including precipitation, and precipitation within the last 48 hours, were also recorded and can be found in the field data summary table (Appendix I). The Windsor meteorological station (Government of Canada 2016) was used to identify the amount of precipitation that occurred over a 48-hour period prior to field surveys, as the closer Kingsville meteorological station did not have available data. During the week prior to the site investigation a large rain event occurred in the area, totaling 128mm between September 28 and October 2, 2016 (Government of Canada 2016). As a result, flow conditions were high and some ephemeral features (i.e. non-water bodies) contained standing water during the site investigation. Detailed descriptions of staff roles and qualifications can be found in Section 3.0 of this report.

**Table 4. Site Investigation Survey Details**

Staff Name(s)	Date (2016)	Duration (hrs)	Weather Conditions*		
			Temp. (°C)	Beaufort Wind	Cloud Cover (%)
Blair Baldwin Steve Burgin	October 4	12	20-24	0-4	0-10
	October 5	20	15-25	0-1	0
	October 6	8	17-20	0-1	30

\*Windsor meteorological station recorded 128mm of rain during the week prior to the site investigation (Government of Canada 2016).

### 5.1.2 Alternative Site Investigations

As identified in Section 31 (3) of the REA Regulation, an alternative site investigation may be conducted if the applicant determines that it is not reasonable to visit a site to conduct a site investigation. The denial of site access by adjacent landowners and unsafe site conditions, such as natural hazards, steep slopes and unstable soils, and/or high water conditions, are examples of suitable situations where conducting a site investigation would not be reasonable.

Several alternative site investigations were required for drainage features and ponds within the Project Area. Where possible, information for these locations was collected from the closest vantage point (e.g. roadside, neighbouring properties where access was granted). Several sites were added to the Project Area after a reasonable time period to complete site investigations. As such, desktop assessments were completed and a conservative approach was taken to assessing the permanence of these drainage features. Where it was unclear if the feature was a water body based on the REA Regulation, it was identified as an intermittent feature, and therefore as a water body. Features where alternative site investigations were conducted are identified in Tables 5-12. The photographic inventory (Appendix II) identifies these features by the ID used throughout this report and indicates that no photographs are available.

### 5.1.3 Lakes and Lake Trout Lakes

Prior to the site investigation, no potential lakes and lake trout lakes were identified through review of all available natural features mapping as part of the records review. The site investigation was focused on confirming the absence of these features as well as identifying any features that were not identified during the records review.

#### 5.1.4 Permanent and Intermittent Watercourses

Prior to the site investigation, potential intermittent/permanent watercourses were identified through a review of all available natural features mapping as part of the records review. The site investigation was focused on confirming the presence/absence of these features, identifying any additional watercourses or drainage features that were not shown on existing mapping, and documenting the characteristics of these features. Drainage features that were assessed during the site investigation are identified on Maps 3-1 to 3-5 with a water body (WB) or non-water body (NWB) number and a survey location point, as determined through a comparison of site conditions and the REA criteria for a water body. In addition, ponds that were identified during the records review were investigated to determine if they met the definition of a water body. The REA regulation indicates that temporary ponded areas, dugout ponds or artificial bodies of water intended for the storage, treatment or recirculation of runoff for agriculture are considered non-water bodies.

All features identified during the site investigation were assessed thoroughly, by walking the entire extent of each feature (where site access permitted) that was identified within the Project Area. The mapped survey points identify a single location along a length of the drainage feature that was surveyed. Where a non-water body point is identified upstream of a water body point, the non-water body point identifies the location, within the Project Area, where the feature changes to a non-water body.

Measurements to the Project components included in Tables 5-11 of this report are taken from the closest distance of each component to the annual high water mark (i.e. bankfull level or top of bank) of a water body, and not necessarily from the mapped survey points. These measurements therefore represent the closest distance of the project component to the water body at any location.

Once a watercourse or drainage feature was identified during the site investigation, it was further assessed to determine if it met the definition of a “water body” within the REA Regulation. Under this definition, a water body includes intermittent/permanent watercourses only, and does not include grassed waterways, temporary channels for surface drainage, such as furrows or shallow channels that can be tilled and driven

through, rock chutes and spillways, or roadside ditches (that do not contain a permanent or intermittent stream).

If the drainage feature was identified as a permanent or intermittent watercourse or municipal drain, specific water body data were collected. For each feature, NRSI biologists collected a wide range of field information, including (but not limited to):

- flow conditions (high, medium, low, or freshet),
- water temperature and turbidity level,
- average wetted width and depth,
- average bankfull width and depth,
- substrate composition,
- in-stream vegetation and habitat features present,
- bank vegetation,
- presence of hydric soils, and
- groundwater indicators, such as watercress (*Nasturtium officinale*) or iron staining.

At each survey location, photographs and UTM coordinates were taken to assist in visually locating and characterizing each drainage feature. UTM coordinates identify a point along a section of channel that was surveyed, however an area of the feature is surveyed both upstream and downstream of the UTM coordinates, the length of which is dependent on site access and visibility. The typical distance surveyed upstream and downstream of the UTM coordinates is 40m, but is largely dependent on site access. For potential water bodies where site access could not be granted, biologists collected as much information as possible from the next closest vantage point, such as a property line or municipal road, or through a more comprehensive desktop analysis. Alternative site investigations occurred for 11 potential water bodies, 4 of which are ponds and 7 of which are drainage features.

#### 5.1.5 Seepage Areas

No seepage areas were identified as part of the records review. In conjunction with water body site investigations and various field assessments that are required for the NHA process, area searches were conducted for seepage areas to confirm the results of the records review.

Assessments for seepage areas were completed in October 2016 during the water body site investigation (see Table 4). Field surveys conducted for the NHA were completed in

May and September, 2016. Observations of groundwater upwelling, groundwater indicator plants (e.g. watercress, dense patches of jewelweed (*Impatiens* spp.), scouring rush (*Equisetum hyemale* ssp. *affine*) and skunk cabbage (*Symplocarpus foetidus*)), and iron staining of soils or substrate within the channel or along the banks were recorded, if present.

## 5.2 Results

NRSI biologists completed a comprehensive site investigation of potential water bodies within the Project Area. These surveys have been completed in accordance with the REA Regulation and the results have been summarized below. A water body is confirmed based on the results of the site investigation and in accordance with the definition of a water body under Section 1.1 of the REA Regulation. A confirmed water body that overlaps with, or is present within 30m of, a Project Location triggered the need for an assessment of impacts. The WBR, under separate cover, addressed potential negative effects, mitigation measures, and monitoring for these water bodies (NRSI 2017a).

### 5.2.1 Lakes and Lake Trout Lakes

Site investigations confirmed the absence of any lakes within the Project Area. Additionally, site investigations confirmed the absence of any lake trout lakes within 300m of the Project Location.

### 5.2.2 Permanent or Intermittent Drainage Features

NRSI biologists have identified that 32 confirmed permanent or intermittent water bodies are located within the Project Area, 18 of which have been identified as overlapping the Project Location. The additional 14 permanent or intermittent water bodies occur within 120m of the Project Location at least once along their length, without any direct overlap with Project Components at any point along the water body. For the purpose of this report, these water bodies have been further discussed based on their respective drainage areas, including Big Creek, East Two Creeks, Yellow Creek and Lake Erie. Where specific assessment locations are discussed, a unique identifier ('WB' for a confirmed water body and 'NWB' for a confirmed non-water body) has been assigned. The identified water bodies, non-water bodies, and assessment locations are shown on Maps 3-1 to 3-5.



In addition, 5 ponds were identified during the site investigation. Alternative site investigations were conducted at 4 of the 5 ponds due to site access restrictions. All of these ponds were found to be dugout, man-made features for agricultural purposes and therefore are not considered water bodies.

The detailed field data collected during the site investigation is provided in Appendix I.

**Big Creek Drainage Area**

NRSI biologists conducted site investigations at 23 locations along the 20 potential water bodies that were identified within the Big Creek drainage area during the records review. In addition, site investigations were conducted at 4 locations along 3 additional potential drainage features that were not previously identified through background information. Alternative site investigations occurred for 2 additional potential ponds located within the Big Creek drainage area and the Project Area.

NRSI biologists have confirmed that 13 of these drainage features have characteristics that warrant designation as a water body, as defined by the REA Regulation. A summary of the drainage features considered as part of the site investigation, including the closest distance from the water body to the Project Location, is provided in Table 5 (confirmed water bodies) and Table 6 (non-water bodies) below. Maps 3-1 to 3-5 show drainage features identified as part of the records review and the site investigation.

**Table 5. Site Investigations Summary for Confirmed Water Bodies at the Project – Big Creek Drainage Area**

Drainage Feature Name	Survey Location(s)	Closest Distance to Project Component (m)
<b>Confirmed Permanent Water Bodies</b>		
East Branch of Big Creek Drain	WB-059	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120
<b>Confirmed Intermittent Water Bodies</b>		
18-19 Side Road & Hill Drain	WB-056 WB-057 WB-058	WT- >120 AR- >120 CL- 5 CA- 5 SI- >120

**Table 5. Site Investigations Summary for Confirmed Water Bodies at the Project – Big Creek Drainage Area**

Drainage Feature Name	Survey Location(s)	Closest Distance to Project Component (m)
18-19 Side Road Drain	WB-053	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120
Big Creek	WB-047	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120
Cottingham Relief Drain	WB-033	WT- 85 (TA1) AR- >120 CL- >120 CA- 85 SI- >120
Drain to Hyatt Drain	WB-054	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120
Drain To Tilbury Creek	WB-043	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120
Hill Drain	WB-049	WT- >120 AR- >120 CL- 10 CA- 10 SI- >120
Hyatt Drain	WB-044 WB-045	WT- >120 AR- >120 CL- 10 CA- 10 SI- >120
Scott Drain	WB-023 WB-027	WT- >120 AR- >120 CL- 5 CA- 5 SI- >120
Scott Drain Beattie Bridge	WB-024	WT- >120 AR- >120 CL- 5 CA- 5 SI- >120
Unnamed Drain F	WB-055	WT- 65 (T17) AR- 28 CL- >120 CA- >0.1* SI- >120

**Table 5. Site Investigations Summary for Confirmed Water Bodies at the Project – Big Creek Drainage Area**

Drainage Feature Name	Survey Location(s)	Closest Distance to Project Component (m)
Unnamed Drain G	WB-046	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120

\*On the mapping, this watercourse appears to be overlapped; however, all Project components, including the disturbance area, will be located adjacent to the watercourse (>0.1m).

**Legend**

WT: Wind Turbine

AR: Access Road

CL: Collector Lines

CA: Construction Activity/Temporary Infrastructure

SI: Supporting Infrastructure - Building/Substation/Meteorological Tower/Point of Interconnect

**Table 6. Site Investigations Summary for Confirmed Non-Water Bodies at the Project – Big Creek Drainage Area**

Drainage Feature Name	Survey Location(s)	Rationale
<b>Confirmed Non-Water Bodies</b>		
18-19 Side Road & Hill Drain	NWB-040	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Dense terrestrial grasses throughout</li> </ul>
Brosseau Drain	NWB-028	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Dense phragmites throughout</li> </ul>
DBW Drain	NWB-026	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Low area between two fields with no channel definition</li> <li>• Terrestrial grasses throughout</li> </ul>
Pond A	NWB-039	<ul style="list-style-type: none"> <li>• Unconnected dugout pond</li> </ul>
Pond B*	NWB-030	<ul style="list-style-type: none"> <li>• Unconnected dugout pond</li> </ul>
Pond C*	NWB-031	<ul style="list-style-type: none"> <li>• Unconnected dugout pond</li> </ul>
Pond D*	NWB-032	<ul style="list-style-type: none"> <li>• Unconnected dugout pond</li> </ul>
Unnamed Drain A	NWB-024	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Dense phragmites throughout</li> </ul>
Unnamed Drain B	NWB-023	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Terrestrial grasses line feature</li> </ul>
Unnamed Drain C	NWB-022	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Limited definition</li> <li>• Terrestrial grasses throughout</li> </ul>
Unnamed Drain D	NWB-027	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with limited definition</li> <li>• Dense terrestrial grasses, shrubs and trees throughout</li> <li>• No feature present downstream of road</li> </ul>
Unnamed Drain H	NWB-025	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Terrestrial grasses line feature</li> </ul>

\*Alternative site investigations were conducted at these locations due to site access restrictions

East Two Creeks Drainage Area

NRSI biologists conducted site investigations at 40 locations along the 21 potential water bodies that were identified within the East Two Creeks drainage area during the records review. One additional potential drainage feature was identified during the site investigation that was not previously identified through background information. A site investigation was conducted at 1 location along this additional potential drainage feature. NRSI biologists have confirmed that 9 of these drainage features have characteristics that warrant designation as a water body, as defined by the REA Regulation. A general summary of the drainage features considered as part of the site investigation, including the closest distance from the water body to the Project Location, is provided in Table 7 (water bodies) and Table 8 (non-water bodies) below. Maps 3-1 to 3-5 show drainage features identified as part of the records review and the site investigation.

**Table 7. Site Investigations Summary for Confirmed Water Bodies at the Project – East Two Creeks Drainage Area**

Drainage Feature Name	Survey Location(s)	Closest Distance to Project Component (m)
<b>Confirmed Permanent Water Bodies</b>		
East Two Creeks	WB-016	WT- >120 AR- >0.1* CL- 9 CA- >0.1* SI- >0.1*
<b>Confirmed Intermittent Water Bodies</b>		
Charles Simpson Drain	WB-017 WB-039 WB-040	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120
Cottingham Drain A	WB-019 WB-020 WB-021 WB-022 WB-025	WT- >120 AR- Overlapping CL- Overlapping CA- Overlapping SI- >120
Drain to Jacobs Drain	WB-018	WT- >120 AR- Overlapping CL- Overlapping CA- Overlapping SI- >120
Gahan Drain	WB-031 WB-036 WB-032	WT- >120 AR- Overlapping CL- Overlapping CA- Overlapping SI- >120

**Table 7. Site Investigations Summary for Confirmed Water Bodies at the Project – East Two Creeks Drainage Area**

Drainage Feature Name	Survey Location(s)	Closest Distance to Project Component (m)
Holland Drain	WB-037 WB-038	WT- >120 AR- Overlapping CL- Overlapping CA- >0.1* SI- >120
Jacobs Drain	WB-034 WB-035 WB-042	WT- >120 AR- 17 CL- Overlapping CA- Overlapping SI- >120
Stobbs Drain	WB-008 WB-009 WB-010	WT- >120 AR- 20 CL- Overlapping CA- Overlapping SI- >120
Travis Drain	WB-026 WB-028 WB-030	WT- >120 AR- Overlapping CL- Overlapping CA- Overlapping SI- >120

\*On the mapping, this watercourse appears to be overlapped; however, all Project components, including the disturbance area, will be located adjacent to the watercourse (>0.1m).

**Legend**

- WT: Wind Turbine
- AR: Access Road
- CL: Collector Lines
- CA: Construction Activity/Temporary Infrastructure
- SI: Supporting Infrastructure - Building/Substation/Meteorological Tower/Point of Interconnect

**Table 8. Site Investigations Summary for Non-Water Bodies at the Project – East Two Creeks Drainage Area**

Drainage Feature Name	Survey Location(s)	Rationale
Confirmed Non-Water Bodies		
Cottingham Drain A	NWB-011	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Terrestrial grasses line feature</li> </ul>
Cottingham Drain B	NWB-012	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Dense terrestrial grasses throughout</li> </ul>
Drain to Cottingham Drain	NWB-014	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Terrestrial grasses throughout</li> </ul>
Drain to Two Creeks Drain	NWB-007 NWB-009	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Dense terrestrial grasses, trees, and shrubs throughout</li> </ul>
Drummel Smith Drain	NWB-013	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Dense terrestrial grasses throughout</li> </ul>
Drummel Smith Drain Extension	NWB-016 NWB-017 NWB-018	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Terrestrial grasses throughout</li> <li>• Wheat growing in feature at upstream extent</li> </ul>
Holland Drain Extension	NWB-020 NWB-021	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Mostly bare soil with patches of terrestrial grasses</li> </ul>
Jacobs Drain Extension	NWB-019	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Terrestrial grasses throughout</li> </ul>
Stobbs Drain	NWB-035	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Terrestrial grasses and herbaceous vegetation throughout</li> </ul>

**Table 8. Site Investigations Summary for Non-Water Bodies at the Project – East Two Creeks Drainage Area**

Drainage Feature Name	Survey Location(s)	Rationale
Travis Drain Extension	NWB-015	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Terrestrial grasses throughout</li> </ul>
Two Creeks Drain	NWB-036 NWB-037	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Dense phragmites throughout</li> </ul>
Unnamed Drain I	NWB-010	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Dense terrestrial grasses, trees, and shrubs throughout</li> </ul>
Unnamed Drain K	NWB-008	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Dense terrestrial grasses, trees, and shrubs throughout</li> </ul>
Unnamed Drain L	NWB-029	<ul style="list-style-type: none"> <li>• No feature present</li> <li>• No evidence of water flow</li> </ul>
Unnamed Drain R*	NWB-043	<ul style="list-style-type: none"> <li>• No feature present</li> <li>• No evidence of water flow</li> </ul>

\*Alternative site investigations were conducted at these locations due to site access restrictions

### Yellow Creek

NRSI biologists conducted site investigations at 16 locations along the 11 potential water bodies associated with the Yellow Creek drainage area. One additional potential feature, a pond, was identified during the site investigation that was not previously identified through background information. An alternative site investigation occurred for this pond, due to site access restrictions; however it was not visible from the roadside due to local topography and vegetation. As such, a thorough desktop review of the pond was conducted using aerial photographs. NRSI biologists have confirmed that 7 drainage features have characteristics that are consistent with the designation of a water body as defined by the REA Regulation. A summary of site conditions associated with all drainage features considered during the site investigation, including distances from a water body to the Project Location, is provided in Table 9 (confirmed water bodies) and Table 10 (non-water bodies) below. Maps 3-1 to 3-5 show drainage features identified as part of the records review and the site investigation.



**Table 9. Water Body Site Investigations Summary for the Project – Yellow Creek Drainage Area**

Drainage Feature Name	Survey Location(s)	Closest Distance to Project Component (m)
Confirmed Permanent Water Bodies		
Yellow Creek	WB-004 WB-005 WB-006 WB-013 WB-015	WT- 40 (T13) AR- 30 CL- Overlapping CA- Overlapping SI- >120
Confirmed Intermittent Water Bodies		
Albert E. Metcalf Drain	WB-002 WB-003	WT- >120 AR- Overlapping CL- Overlapping CA- Overlapping SI- >120
Coatsworth-Robinson Drain	WB-001 WB-011	WT- 34 (T15) AR- 100 CL- Overlapping CA- Overlapping SI- >120
Derbyshire Drain	WB-007	WT- >120 AR- 40 CL- 40 CA- 40 SI- >120
Lowe Drain	WB-041 WB-060	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120
Nevills Drain	WB-012	WT- >120 AR- >120 CL- 100 CA- 100 SI- >120
Wright Drain	WB-014	WT- >120 AR- >120 CL- >120 CA- 110 SI- >120

**Legend**

WT: Wind Turbine

AR: Access Road

CL: Collector Lines

CA: Construction Activity/Temporary Infrastructure

SI: Supporting Infrastructure - Building/Substation/Meteorological Tower/Point of Interconnect

**Table 10. Site Investigations Summary for Non-Water Bodies at the Project – Yellow Creek Drainage Area**

Drainage Feature Name	Survey Location(s)	Rationale
<b>Confirmed Non-Water Bodies</b>		
Albert E. Metcalf Drain	NWB-002	<ul style="list-style-type: none"> <li>• No feature present</li> <li>• No evidence of water flow</li> </ul>
Ditches Along Talbot Trail	NWB-005	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Terrestrial grasses line feature</li> </ul>
Liddle Drain	NWB-038	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Channelized drain with no channel definition</li> <li>• Terrestrial grasses throughout</li> </ul>
Nevills Drain	NWB-004	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Terrestrial grasses line feature</li> </ul>
Pond E*	NWB-045	<ul style="list-style-type: none"> <li>• Unconnected dugout pond</li> </ul>
Unnamed Drain M*	NWB-033	<ul style="list-style-type: none"> <li>• No feature present</li> <li>• No evidence of water flow</li> </ul>
Wright Drain*	NWB-041	<ul style="list-style-type: none"> <li>• No feature present</li> <li>• No evidence of water flow</li> </ul>

\*Alternative site investigations were conducted at these locations due to site access restrictions

Lake Erie Drainage Area

NRSI biologists conducted site investigations at 3 locations along 1 potential water body within the Lake Erie drainage area. An additional 4 potential drainage features were examined using alternate site investigations as they were added to the Project Area after a reasonable time period to complete site investigations. No additional drainage features were identified during site investigations. NRSI biologists have confirmed that 3 of these drainage features have characteristics that warrant designation as a water body, as defined by the REA Regulation, and based on a conservative approach. A summary of the drainage features considered as part of the site investigation, including the closest distance from the water body to the Project Location, is provided in Table 11 (confirmed water bodies) and Table 12 (non-water bodies). Maps 3-1 to 3-5 show drainage features identified as part of the records review and the site investigation.

**Table 11. Site Investigations Summary for Confirmed Water Bodies at the Project – Lake Erie Drainage Area**

Drainage Feature Name	Survey Location(s)	Closest Distance to Project Component (m)
<b>Confirmed Intermittent Water Bodies</b>		
Unnamed Drain O*	WB-061	WT- >120 AR- >120 CL- >120 CA- 20 SI- >120
Unnamed Drain P*	WB-062	WT- >120 AR- >120 CL- >120 CA- 25 SI- >120
Unnamed Drain Q*	WB-063	WT- >120 AR- >120 CL- >120 CA- 40 SI- >120

\*Alternative site investigations were conducted at these locations due to site access restrictions

**Legend**

WT: Wind Turbine

AR: Access Road

CL: Collector Lines

CA: Construction Activity/Temporary Infrastructure

SI: Supporting Infrastructure - Building/Substation/Meteorological Tower/Point of Interconnect

**Table 12. Site Investigations Summary for Non-Water Bodies at the Project – Lake Erie Drainage Area**

Drainage Feature Name	Survey Location(s)	Rationale
<b>Confirmed Non-Water Bodies</b>		
Auxiliary Robinson Drain	NWB-001 NWB-006 NWB-034	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition or no feature present</li> <li>• Terrestrial grasses line feature</li> </ul>
Unnamed Drain N*	NWB-042	<ul style="list-style-type: none"> <li>• Ephemeral</li> <li>• Roadside drain with no channel definition</li> <li>• Terrestrial grasses line feature</li> </ul>

\*Alternative site investigations were conducted at these locations due to site access restrictions

### 5.2.3 Seepage Areas

No seepage areas were identified during any of the site investigations that were completed within the Project Area.

### 5.3 Modifications to the Records Review

Results of the site investigation led to the classification of several aquatic features based on the site-specific conditions observed during site investigations. The modifications to the records review results are discussed further in Table 13.

**Table 13. Modifications to the Records Review Based on Site Investigation Results**

Criteria	Result from Records Review	Corrections Based on Site Investigations
i. In a water body	<p>The records review has identified 33 potential water bodies as overlapping the Project Location, within the following drainage areas:</p> <ul style="list-style-type: none"> <li>• Big Creek (n=11)</li> <li>• East Two Creeks (n=13)</li> <li>• Yellow Creek (n=8)</li> <li>• Lake Erie (n=1)</li> </ul> <p>These potential overlaps represent proposed crossing locations for access roads, collection lines, and/or construction disturbance areas. All of these potential water bodies may represent permanent or intermittent watercourses, drainage features or ponds. Within the LTVCA jurisdiction, these potential water bodies are designated as warmwater fisheries or intermittent drainage features based on the DFO drain classification system (LTVCA 2016).</p>	<p>Site investigations identified 18 confirmed water bodies to be overlapping the Project Location, within each drainage areas as follows:</p> <ul style="list-style-type: none"> <li>• Big Creek (n=6)</li> <li>• East Two Creeks (n=8)</li> <li>• Yellow Creek (n=4)</li> <li>• Lake Erie (n=0)</li> </ul> <p>All of these water bodies represent permanent or intermittent drainage features.</p> <p>These locations where the water bodies overlap the Project Location represent proposed crossing locations for access roads, collection lines, and/or construction disturbance areas.</p>
ii. Within 120 m of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity	None	No corrections.
iii. Within 300 m of the average annual high water mark of a lake trout lake that is at or above development capacity	None	No corrections.

**Table 13. Modifications to the Records Review Based on Site Investigation Results**

Criteria	Result from Records Review	Corrections Based on Site Investigations
iv. Within 120 m of the average annual high water mark of a permanent or intermittent stream	<p>The records review has identified 24 potential water bodies within 120m of, but not overlapping, the Project Location, within the following drainage areas:</p> <ul style="list-style-type: none"> <li>• Big Creek (n=9)</li> <li>• East Two Creeks (n=8)</li> <li>• Yellow Creek (n=3)</li> <li>• Lake Erie (n=4)</li> </ul> <p>All of these water bodies represent potential permanent or intermittent watercourses, drainage features or ponds. Within the LTVCA jurisdiction, these water bodies are designated as warmwater fisheries or intermittent drainage features based on the DFO drain classification system (LTVCA 2016).</p>	<p>The site investigations identified 14 confirmed water bodies located within 120m of, but not overlapping, the Project Location, within each of the drainage areas, as follows:</p> <ul style="list-style-type: none"> <li>• Big Creek (n=7)</li> <li>• East Two Creeks (n=1)</li> <li>• Yellow Creek (n=3)</li> <li>• Lake Erie (n=3)</li> </ul> <p>All of these water bodies represent permanent or intermittent drainage features.</p>
v. Within 120 m of a seepage area	None	No corrections.

#### 5.4 Summary

In accordance with the REA Regulation, NRSI has completed water body site investigations for the proposed Project Area. Site investigations were conducted to confirm the presence, absence and extent of water bodies that were identified during the records review, determine any corrections to potential water bodies identified during the records review, and document any new water bodies that were not previously identified. Site investigations also focused on the characterization of each drainage feature identified in the records review, as well as additional drainage features identified in the field. This characterization was completed in order to determine whether each drainage feature satisfies the criteria to be identified as a water body.

The water bodies that were identified during the site investigation and confirmed as water bodies as per the REA definition will be carried forward to the Water Body Report, where the potential impacts and mitigation measures to these water bodies will be discussed in relation to the phases of the Project.

## 6.0 References

### *Publications*

- DNV-GL. 2017a. Romney Wind Energy Centre: Construction Plan Report. February 2017.
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conservation.on.ca/about-us/fees-publications/watershed-report-card/ (Accessed November 9, 2016).

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***Personal Communication***

DFO Staff, pers. Comm. 2016. Email correspondence to N. Clubine. August 26, 2016. Fisheries Protection Program, Fisheries and Oceans Canada (DFO).

LTVCA Staff, pers. comm. 2016. Email correspondence to N. Hardie. November 8, 2016. Water Resources and Regulations Technician, Lower Thames Valley Conservation Authority. Chatham, Ontario.

**Map 1**  
Project Area and Natural Features

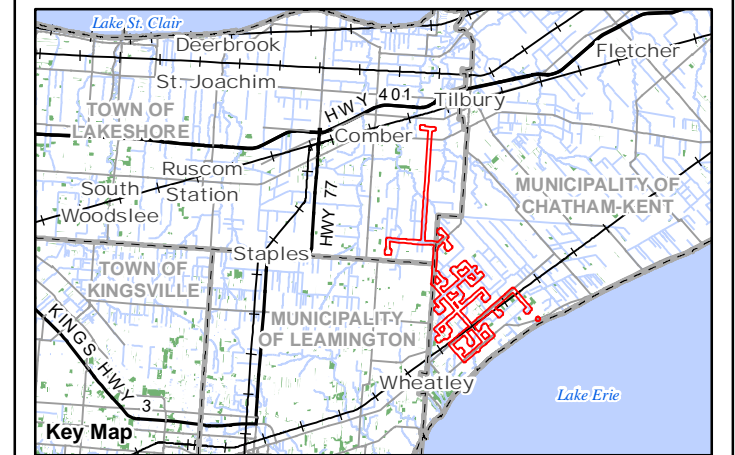
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# Romney WEC Project Area and Natural Features

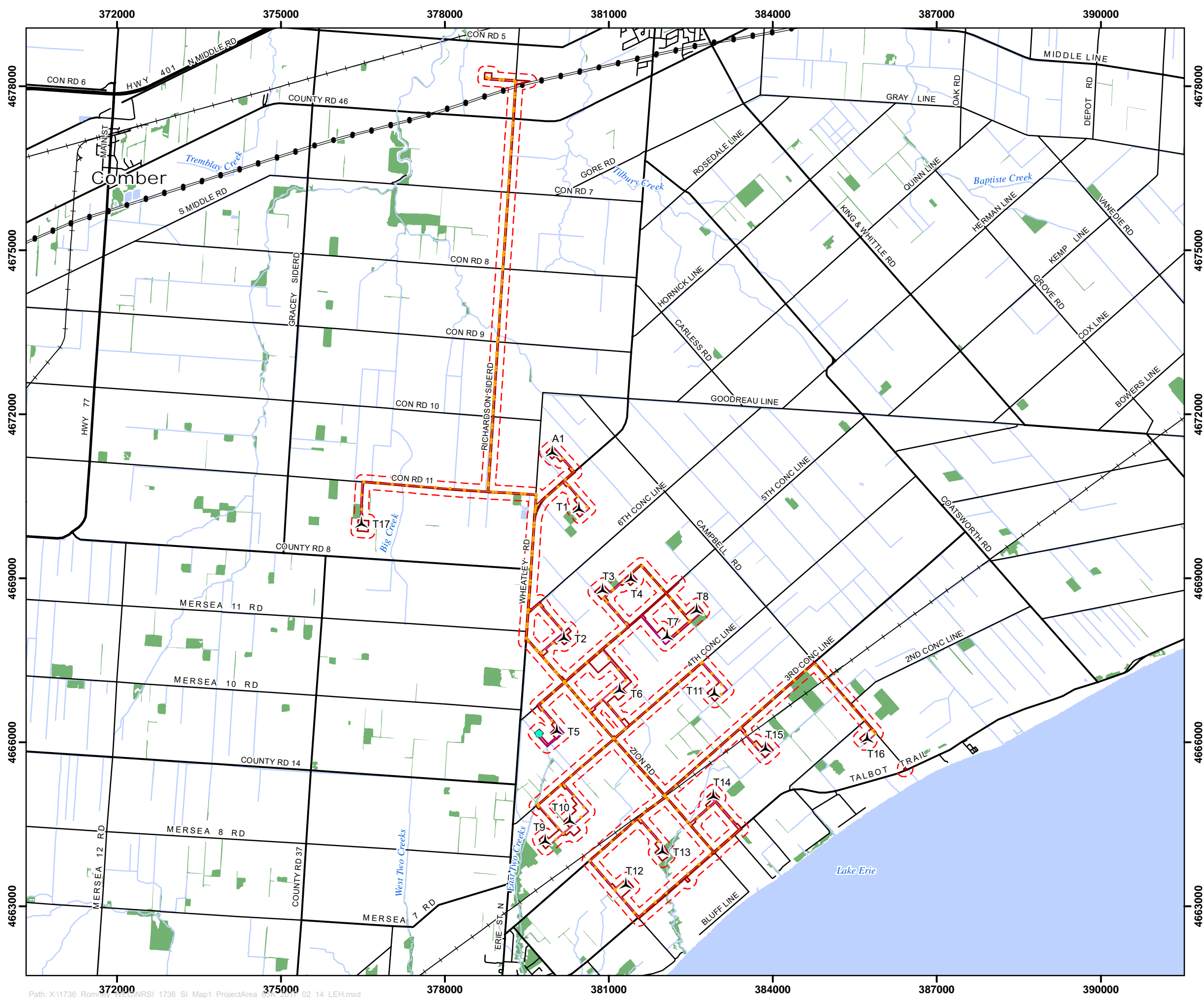
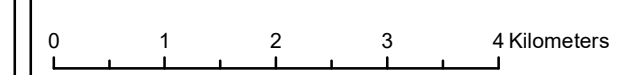
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- Utility Line
- + Railway
- Highway
- Primary Road
- Secondary Road
- Project Components**
- ▭ Project Area
- ▭ Project Location
- ▲ Proposed Turbine
- ◆ Proposed Meteorological Tower
- Proposed Collection Line
- Proposed Access Road
- ▭ Proposed O&M Building
- Natural Features**
- Permanent Watercourse
- Intermittent Watercourse
- Open Water
- Wooded Area



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Project: 1736C Date: February 14, 2017	NAD83 - UTM Zone 17 Size: 11x17" 1:68,000
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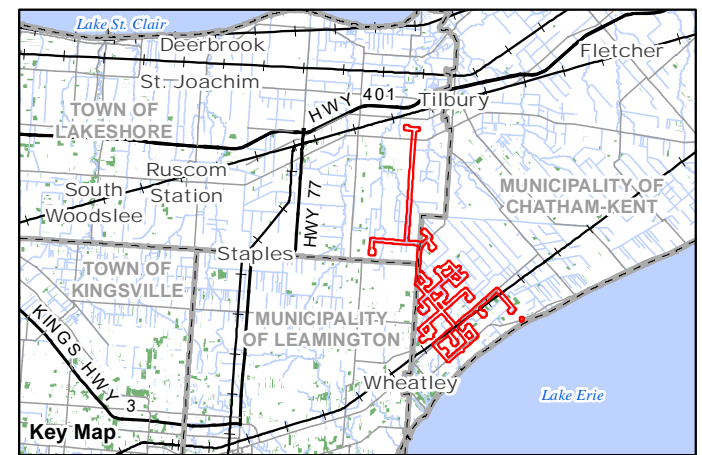
**Map 2**  
Water Body Assessment Key Map

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# Romney WEC Key Map

### Legend

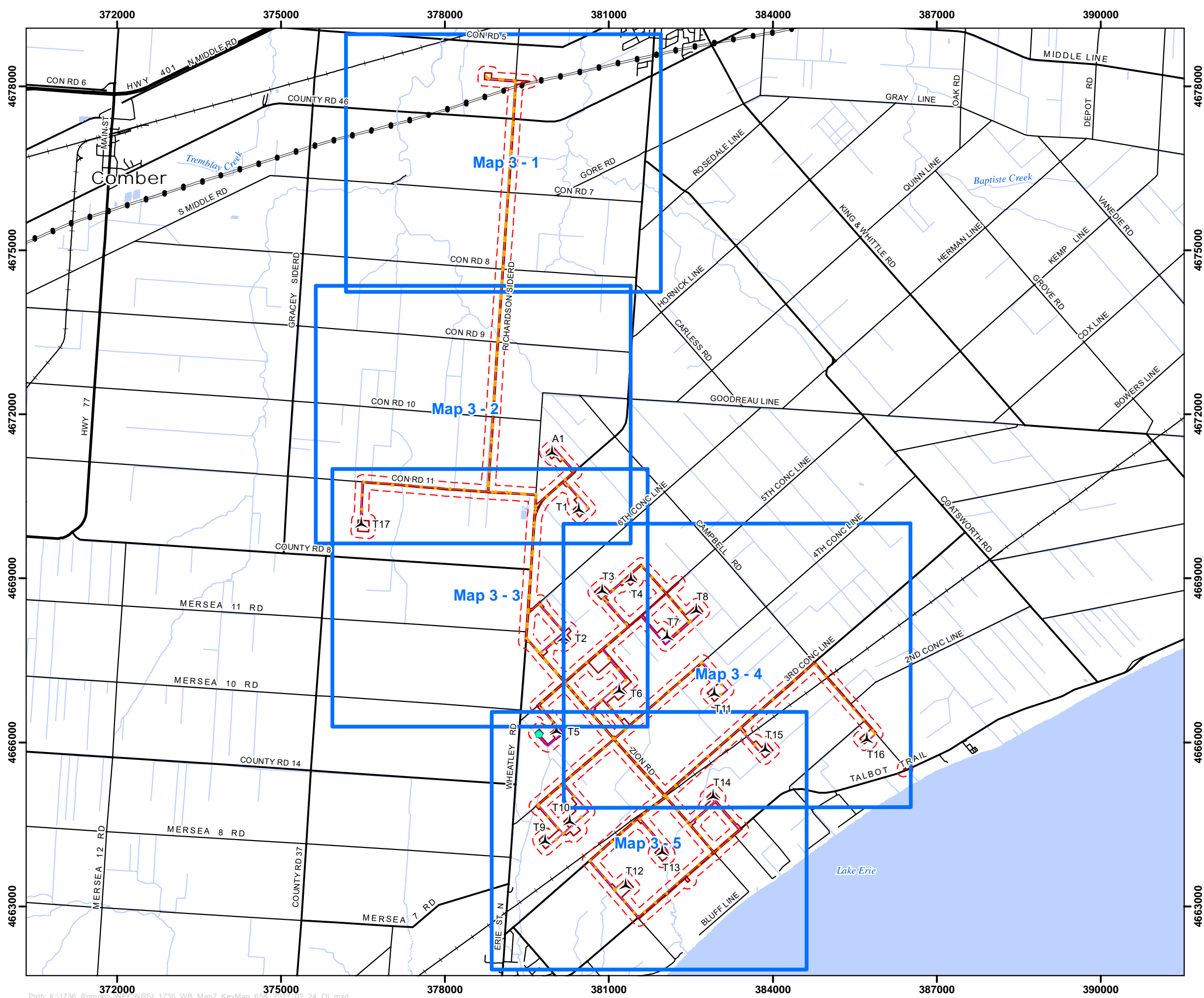
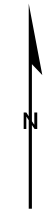
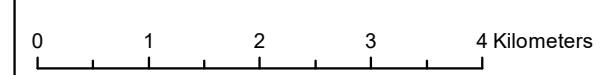
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- Utility Line
- Railway
- Highway
- Primary Road
- Secondary Road
- Project Area
- Project Location
- Proposed Turbine
- Proposed Meteorological Tower
- Proposed Collection Line
- Proposed Access Road
- Proposed O&M Building
- Natural Features**
- Permanent Watercourse
- Intermittent Watercourse
- Open Water



**NATURAL RESOURCE SOLUTIONS INC.**  
 Aquatic, Terrestrial and Wetland Biologists

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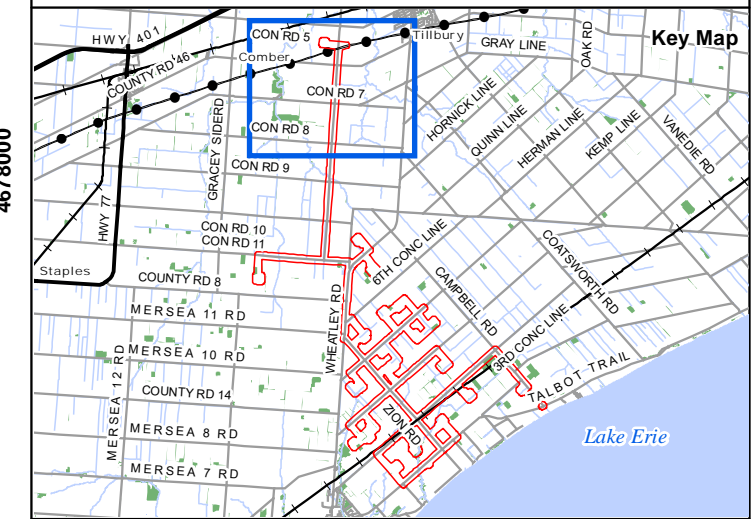
**Maps 3-1 to 3-5**  
Water Body Assessment Maps

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# Romney WEC

## Water Body Assessment

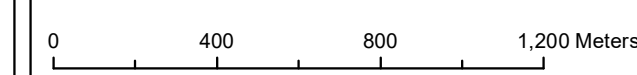


- Legend**
- Utility Line
  - Railway
  - Primary Road
  - Secondary Road
- Project Components**
- ▭ Project Area
  - ▭ Project Location
  - Proposed Collection Line
  - Proposed Access Road
- Aquatic Features**
- ~ Permanent Watercourse
  - ~ Constructed Drain
  - ~ Open Water
- Water Body Assessment**
- Water Body Location (WB)
  - Non-Water Body Location (NWB)



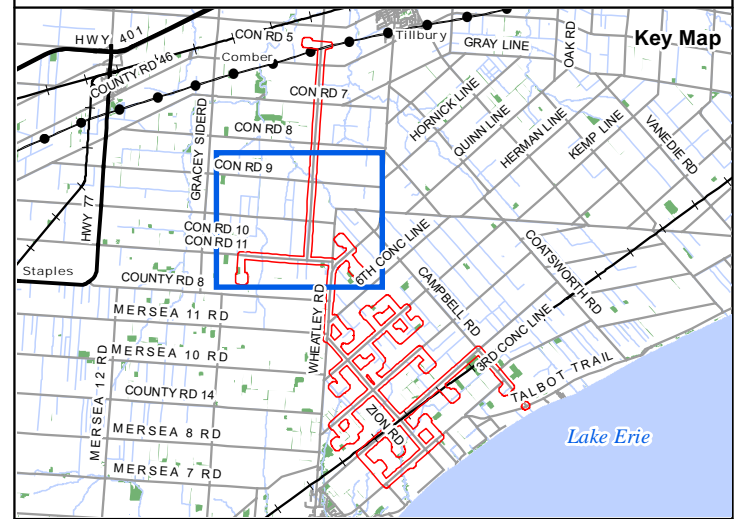
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Project 1736 Date: February 24, 2017	NAD83 - UTM Zone 17 Size: 11x17" 1:18,500
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# Romney WEC Water Body Assessment



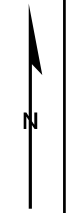
### Legend

- Primary Road
- Secondary Road
- Project Area
- Project Location
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road
- Aquatic Features**
- Permanent Watercourse
- Municipal Drain
- Constructed Drain
- Open Water
- Water Body Assessment**
- Water Body Location (WB)
- Non-Water Body Location (NWB)



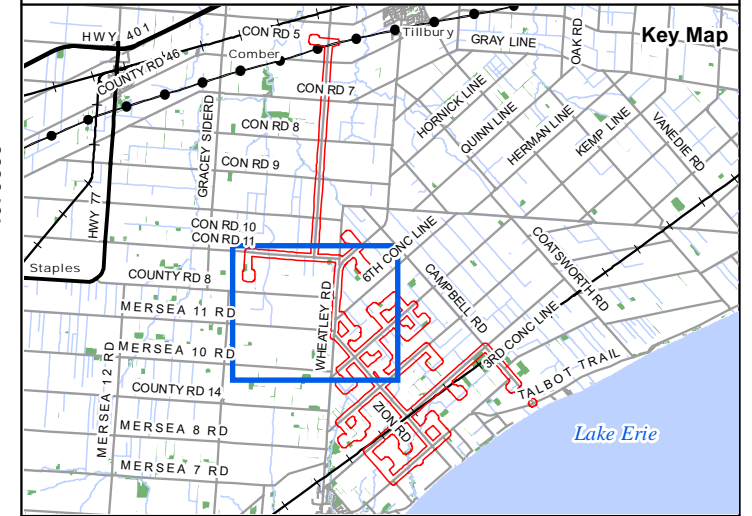
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# Romney WEC Water Body Assessment



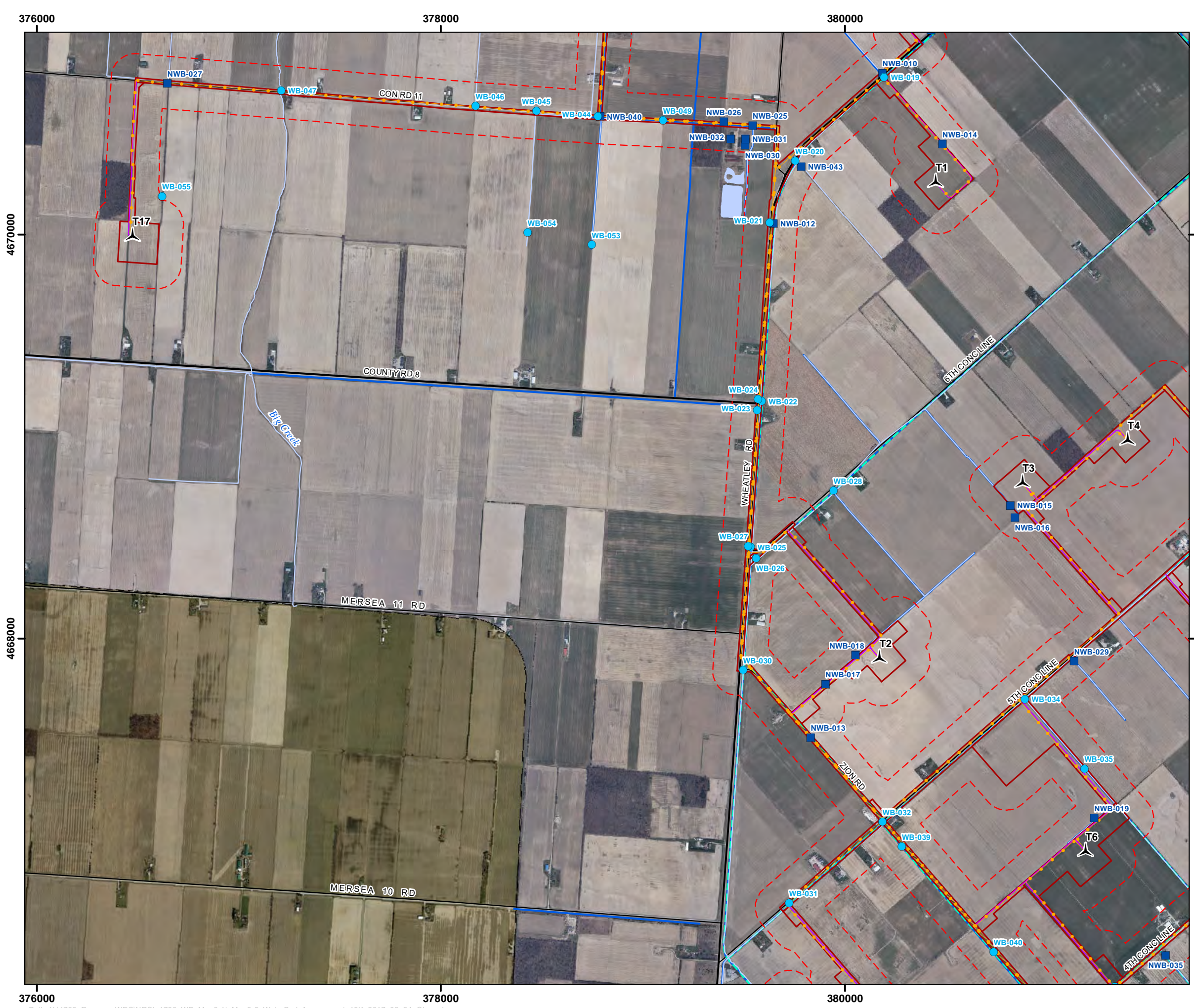
### Legend

- Primary Road
- Secondary Road
- Project Components**
- - - Project Area
- ▭ Project Location
- ▲ Proposed Turbine
- - - Proposed Collection Line
- - - Proposed Access Road
- Aquatic Features**
- ~ Permanent Watercourse
- ~ Municipal Drain
- ~ Constructed Drain
- ~ Open Water
- Water Body Assessment**
- Water Body Location (WB)
- Non-Water Body Location (NWB)



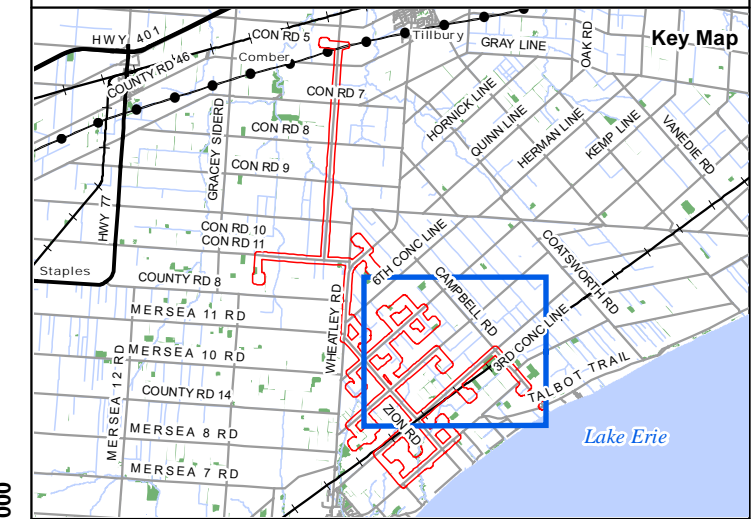
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Project 1736 Date: February 24, 2017	NAD83 - UTM Zone 17 Size: 11x17" 1:18,500
0 400 800 1,200 Meters	





# Romney WEC Water Body Assessment



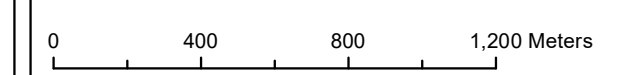
### Legend

- Railway
- Primary Road
- Secondary Road
- Project Area
- Project Location
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road
- Aquatic Features**
  - Permanent Watercourse
  - Municipal Drain
  - Constructed Drain
  - Open Water
- Water Body Assessment**
  - Water Body Location (WB)
  - Non-Water Body Location (NWB)



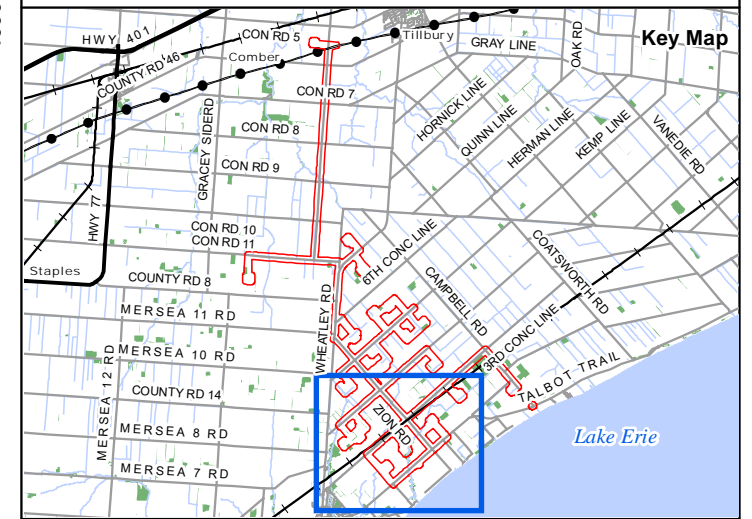
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# Romney WEC Water Body Assessment

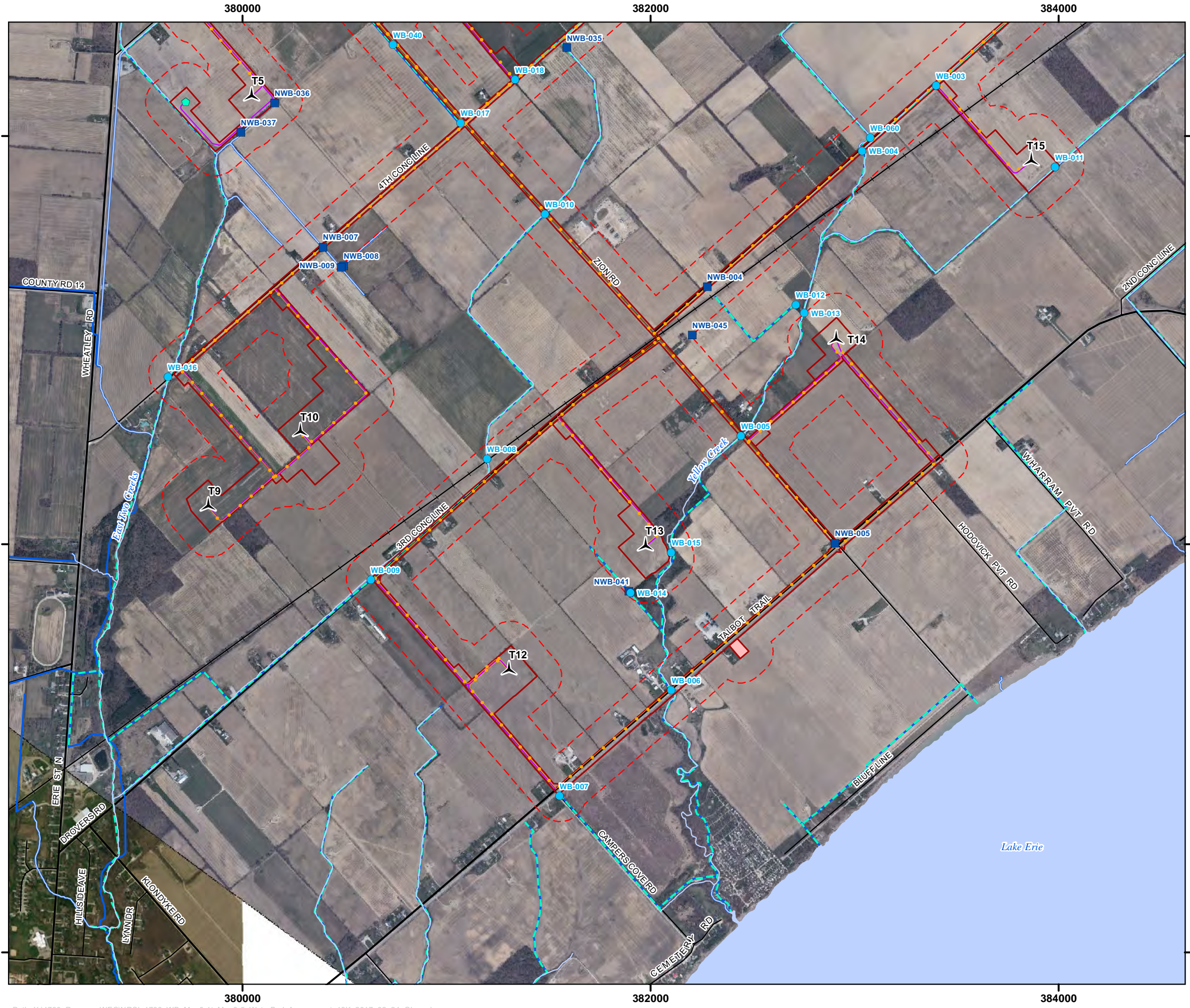
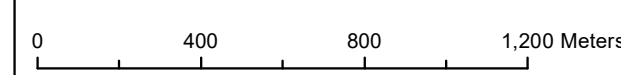


- Legend**
- Railway
  - Primary Road
  - Secondary Road
  - Project Components**
    - Project Area
    - Project Location
    - Proposed Turbine
    - Proposed Meteorological Tower
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    - Non-Water Body Location (NWB)



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Project: 1736 Date: February 24, 2017	NAD83 - UTM Zone 17 Size: 11x17" 1:18,500
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**Appendix I**  
Site Investigation Field Data Summary Table

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Watershed	Drainage Area	Watercourse Name	Report ID	UTM Coordinates (17T)	Site Investigation Date	Precip. in Prior 48hrs	Wind	Cloud Cover (%)	Air Temp (°C)	Precip. at Time of Survey	Straight or Meandering (H/M/L)	Channel Definition	Flow Conditions (H/M/L Freshet)	Avg. Wetted Width (m)	Avg. Bankfull Width (m)	Max Pool Depth (m)	Avg. Water Depth (m)	Avg. Bankfull Depth (m)	Substrate Composition	Bank Vegetation	Bank Slope & Stability	Channel Gradient (H/M/L)	Habitat Features (Woody debris, undercutting ect.)	Instream Vegetation (% and Dominance)	Water Temp. (°C)	Turbidity (L/M/H)	Colour	Bed material and Soil condition surrounding feature	Evidence of floodplain sediment deposits	Hydric soils	Leaf Litter within Feature	Seepage Areas or Groundwater Indicators	Algae, Fish, Crayfish, Shellfish, Aquatic Invert Larvae, or Evidence	Water Body (Y/N)	Flow Regime Based on field Observations	Culvert Observations	Feature Description		
Lower Thames River	Big Creek	Unnamed Drain C	NWB-022	379048	4674671	42649	0.4	1	0	20	None	Straight	Defined	L	NA	1	0.02	0.1	0.3	Clay, Silt, Sand	Terrestrial Grasses And Forbs	Low Slope High Stability	L	Terrestrial Grasses And Herbaceous Plants	Terrestrial Grasses And Herbaceous Plants	NA	N/A	N/A	Clay, Silt, Sand	None	Saturated Soil	None	None	None	N	Ephemeral	None	Roadside drain with limited definition and terrestrial grasses throughout	
Lower Thames River	Big Creek	Unnamed Drain B	NWB-023	379163	4676102	42649	0.4	1	0	20	None	Straight	Defined	L	Dry	0.5	NA	Dry	0.3	Clay, Silt, Sand	Terrestrial Grasses And Forbs	Low Slope High Stability	L	Terrestrial Grasses And Herbaceous Plants	Terrestrial Grasses And Herbaceous Plants	Dry	Dry	Dry	Clay, Silt, Sand	None	No	Yes	None	None	N	Ephemeral	None	Roadside drain, with no evidence of channel forming processes. Water in channel remains from previous high rain event.	
Lower Thames River	Big Creek	Unnamed Drain A	NWB-024	379314	4678084	42649	0.4	1	0	20	None	Straight	Defined	L	Dry	1.5	Dry	Dry	0.5	Clay, Silt, Sand	Terrestrial grasses	Low Slope High Stability	L	Phragmites	Phragmites Dominant, Some Planted Trees	Dry	Dry	Dry	Clay, Silt, Sand	None	No	Yes	None	None	N	Ephemeral	None	Roadside drain, with no evidence of channel forming processes with dense phragmites.	
Lower Thames River	Big Creek	Unnamed Drain H	NWB-025	379543	4670539	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	1.5	Dry	Dry	0.5	Silt/Sand	Dense Overhanging Bank Vegetation, Terrestrial Grasses And Deciduous Shrubs	Low Slope High Stability	L	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	None	None	None	None	N	Ephemeral	None	Terrestrial grass lined channelized drain. No evidence of channel forming processes. No feature present south of the road.	
Lower Thames River	Big Creek	DBW Drain	NWB-026	379401	4670559	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	1.5	Dry	Dry	0.5	Silt/Sand	Sparse Terrestrial Grasses	Low Slope High Stability	L	Sparse Patches Of Terrestrial Grasses	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	None	None	None	None	N	Ephemeral	None	Terrestrial grass lined channelized drain. No evidence of channel forming processes.	
Lower Thames River	Big Creek	Unnamed Drain D	NWB-027	376646	4670749	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	0.4	3.5	0.2	0.1	0.8	Silt/Sand with some Cobble	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	19	M	Grey	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	None	N	Ephemeral	None	Terrestrial grass lined channelized drain. No evidence of channel forming processes. No feature present downstream of the road.	
Lower Thames River	Big Creek	Brosseau Drain	NWB-028	378867	4671955	42649	0.4	0	0	17	None	Straight	Poorly Defined	L	Dry	0.9	Dry	Dry	0.5	Sand/Silt	Terrestrial grasses	High Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation Throughout	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	Dry Cracked Soil	None	None	None	N	Ephemeral	None	Roadside drain, with no evidence of channel forming processes with dense phragmites.	
Lower Thames River	Big Creek	Pond B	NWB-030	379506	4670440	42765	N/A	NA	NA	NA	N/A	N/A	N/A	NA	22.8	NA	NA	Unknown	NA	Unknown	Terrestrial grasses	High Slope Moderate Stability	N/A	Terrestrial grasses	None	Unknown	Unknown	Unknown	Unknown	N/A	Unknown	None	Duckweed observed from air photos	N	Permanent	None	Dug pond for agricultural		
Lower Thames River	Big Creek	Pond C	NWB-031	379509	4670472	42765	N/A	NA	NA	NA	N/A	N/A	N/A	NA	23.5	NA	NA	Unknown	NA	Unknown	Terrestrial grasses	High Slope Moderate Stability	N/A	Terrestrial grasses	None	Unknown	Unknown	Unknown	Unknown	N/A	Unknown	None	Duckweed observed from air photos	N	Permanent	None	Dug pond for agricultural		
Lower Thames River	Big Creek	Pond D	NWB-032	379434	4670472	42765	N/A	NA	NA	NA	N/A	N/A	N/A	NA	17.5	NA	NA	Unknown	NA	Unknown	Terrestrial grasses and deciduous trees	High Slope Moderate Stability	N/A	Terrestrial grasses	None	Unknown	Unknown	Unknown	Unknown	N/A	Unknown	None	Duckweed observed from air photos	N	Permanent	None	Dug pond for agricultural		
Lower Thames River	Big Creek	Pond A	NWB-039	379330	4677480	42649	0.4	1	0	20	None	N/A	N/A	NA	NA	NA	NA	NA	NA	Clay, Silt, Sand	Terrestrial Grasses And Forbs	Low Slope High Stability	N/A	Littoral Vegetation	None	19	H	Cloudy	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Tadpole	N	Permanent	None	Unconnected dug pond
Lower Thames River	Big Creek	18-19 Side Road & Hill Drain	NWB-040	378789	4670584	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	0.4	3.5	0.4	0.1	0.8	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Slope	L	Very Dense Terrestrial Grasses Throughout	95% Terrestrial Grasses With 5% Traces Of Phragmites	18	M	Brown	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	None	N	Ephemeral	2.5 M Open Box	Roadside drain, with no evidence of channel forming processes with dense phragmites. Dense terrestrial grasses throughout feature with a small pocket of water at the road crossing. No downstream connection.	
Lower Thames River	Big Creek	Scott Drain	WB-023	379567	4669130	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	3	Dry	Dry	0.7	Silt/Sand	Dense Phragmites Throughout	Moderate Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	100% Phragmites	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	None	None	None	None	Y	Intermittent	None	Channelized roadside drain with cattails present upstream which suggests a degree of permanence. Dense phragmites present on streambed.	
Lower Thames River	Big Creek	Scott Drain Beattie Bridge	WB-024	379570	4669185	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	0.1	1.5	0.1	0.1	0.7	Silt/Sand	Sparse Terrestrial Grasses	Low Slope High Stability	L	Sparse Patches Of Terrestrial Grasses	100% Terrestrial Grasses	21	L	Green	Clay, Silt, Sand, Gravel	Recent sediment deposits on edges of feature covering terrestrial grasses	Saturated Soil	None	None	None	Patches Of Algae Throughout	Y	Intermittent	None	Roadside drain with recent sediment deposits on side slopes. Algae present on streambed suggests a degree of permanence, while terrestrial grasses on streambed suggests periods of dry conditions.
Lower Thames River	Big Creek	Scott Drain	WB-027	379521	4668457	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	1.3	3	0.1	0.1	0.9	Silt/Sand	Sparse Terrestrial Grasses Throughout	Moderate Slope Moderate Stability	L	Dense Instream Vegetation	85% Narrow Leaved Cattail 15% Phragmites	19	L	Green	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	Patches Of Algae Throughout	Y	Intermittent	None	Channelized roadside drain. Cattails and algae present on streambed suggests a degree of permanence. Channel flow periodically interrupted by extended dry portions with raised bed material.	
Lower Thames River	Big Creek	Cottingham Relief Drain	WB-033	379817	4671212	42648	0.4	0	30	15	None	Straight	Poorly Defined	L	0.8	4	0.1	0.1	0.9	Silt/Sand	Sparse Terrestrial Grasses	High Slope Low Stability	L	Dense Instream Vegetation	100% Dry Broad Leaved Cattail	19	L	Green	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized drain with some bank erosion. Cattails present on streambed suggests a degree of permanence, as well as a defined low flow channel where no vegetation growth was observed. No water present during site investigation; however evidence of recent flow was observed.	
Lower Thames River	Big Creek	Drain To Tilbury Creek	WB-043	379222	4676728	42649	0.4	1	0	20	None	Straight	Defined	L	0.6	1	0.1	0.1	0.8	Clay, Silt, Sand	Terrestrial Grasses And Forbs	Low Slope High Stability	L	Terrestrial Grasses And Herbaceous Plants	None	17	L	Clear	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	0.4m Csp Under Richardson	Poorly defined channelized drain. Feature has no instream vegetation and a bare streambed which indicates a degree of permanence.	
Lower Thames River	Big Creek	Hyatt Drain	WB-044	378777	4670584	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	3	Dry	Dry	0.8	Silt/Sand with some Cobble	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Slope	L	Dense Instream Terrestrial Vegetation	40% Terrestrial Grasses, 40% Narrow Leaved Cattail 20% Phragmites	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	None	None	None	None	Y	Intermittent	None	Channelized roadside drain. Cattails present on streambed suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions.	
Lower Thames River	Big Creek	Hyatt Drain	WB-045	378472	4670611	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	0.7	4	0.2	0.1	0.75	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Slope	L	Dense Instream Terrestrial Vegetation	50% Terrestrial Grasses 50% Broad Leaved And Narrow Leaved Cattails (Mixed)	19	L	Brown	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized roadside drain with dense cattails in the feature. Terrestrial grasses present on streambed suggests periods of dry conditions. Channel connectivity periodically interrupted by areas of dense terrestrial grasses and raised bed material.	
Lower Thames River	Big Creek	Unnamed Drain G	WB-046	378171	4670636	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	3.5	Dry	Dry	0.5	Silt/Sand with some Cobble	Dense Overhanging Bank Vegetation Terrestrial Grasses/ Milkweed	Moderate Slope High Stability	L	Dense Instream Terrestrial Vegetation	50% Terrestrial Grasses 50% Broad Leaved Cattails	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	None	None	None	None	Y	Intermittent	None	Channelized roadside drain with cattails present on streambed which suggests a degree of permanence. Terrestrial grasses present on streambed suggests periods of dry conditions. Channel connectivity periodically interrupted by areas of dense terrestrial grasses and raised bed material.	
Lower Thames River	Big Creek	Big Creek	WB-047	377209	4670713	42647	1.2	0	10	20	None	Meander L	Defined	L	2.5	6.5	0.4	0.3	0.8	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Stability	M	Dense Instream Vegetation	100% Narrow Leaved Cattail	18	H	Brown	Clay, Silt, Sand, Gravel	Small Traces Of Silt At High Flow Line	Saturated Soil	None	None	None	None	Y	Intermittent	4.5M Open Box Culvert	Well defined naturalized drain with slight meander and dense cattails throughout. Small ephemeral roadside ditch joins the feature at the road.
Lower Thames River	Big Creek	Unnamed Drain E	WB-048	376345	4670774	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	3	Dry	Dry	0.8	Sand/Silt	Dense Overhanging Bank Vegetation Terrestrial Grasses	Moderate Slope High Stability	L	Dense Instream Vegetation	50% Terrestrial Grasses 50% Broad Leaved Cattails	Dry	Dry	Dry	Tile Fed Channelized Drain No Flow Indicators	None	None	None	None	None	Y	Intermittent	None	Channelized roadside drain with cattails present on streambed which suggests a degree of permanence. Terrestrial grasses present on streambed suggests periods of dry conditions. Channel connectivity periodically interrupted by areas of dense terrestrial grasses and raised bed material.	
Lower Thames River	Big Creek	Hill Drain	WB-049	379101	4670566	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	3.3	Dry	Dry	0.5	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	90% Terrestrial Grasses 10% Narrow Leaved Cattail	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	None	None	None	None	Y	Intermittent	None	Channelized roadside drain with cattails present on streambed which suggests a degree of permanence. Terrestrial grasses present on streambed suggests periods of dry conditions. Channel connectivity periodically interrupted by areas of dense terrestrial grasses and raised bed material.	
Lower Thames River	Big Creek	Scott Drain	WB-050	378678	4669216	42647	1.2	0	10	20	None	Straight	Defined	L	2.5	5	0.2	0.2	0.8	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation	Moderate Slope Moderate Stability	L	Dense Instream Vegetation	75% Dry Broad Leaved Cattail 25% Duckweed	18	L	Green	Tile Fed Channelized Drain No Flow Indicators	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized roadside drain with dense cattails and duckweed present throughout. Standing water present during site investigation.	

Watershed	Drainage Area	Watercourse Name	Report ID	UTM Coordinates (17T)		Site Investigation Date	Precip. In Prior 48hrs	Wind	Cloud Cover (%)	Air Temp (C)	Precip. at Time of Survey	Straight or Meandering (H/M/L)	Channel Definition	Flow Conditions (H/M/L Freshet)	Avg. Wetted Width (m)	Avg. Bankfull Width (m)	Max Pool Depth (m)	Avg. Water Depth (m)	Avg. Bankfull Depth (m)	Substrate Composition	Bank Vegetation	Bank Slope & Stability	Channel Gradient (H/M/L)	Habitat Features (Woody debris, undercutting ect.)	Instream Vegetation (% and Dominance)	Water Temp. (°C)	Turbidity (L/M/H)	Colour	Bed material and Soil condition surrounding feature	Evidence of floodplain sediment deposits	Hydric soils	Leaf Litter within Feature	Seepage Areas or Groundwater Indicators	Algae, Fish, Crayfish, Shellfish, Aquatic Invert Larvae, or Evidence	Water Body (Y/N)	Flow Regime Based on field Observations	Culvert Observations	Feature Description
Lower Thames River	Big Creek	Unnamed Drain J	WB-051	376366	4669381	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	0.1	1.5	0.1	0.1	0.7	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation	Low Slope High Stability	L	Dense Instream Vegetation	60% Broad Leaved Cattail 40% Terrestrial Grasses	21	L	Brown	Tile Fed Channelized Drain No Flow Indicators	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized roadside drain. Cattails present on streambed suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions.
Lower Thames River	Big Creek	Unnamed Drain Z	WB-052	376363	4669360	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	0.7	3.2	0.2	0.2	0.7	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation	Moderate Slope Moderate Stability	L	Dense Instream Vegetation	85% Narrow Leaved Cattail 15% Phragmites	18	L	Green	Tile Fed Channelized Drain No Flow Indicators	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized roadside drain. Cattails present on streambed suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions.
Lower Thames River	Big Creek	18-19 Side Road Drain	WB-053	378747	4669949	42648	0.4	0	30	15	None	Straight	Poorly Defined	L	Dry	1.5	Dry	Dry	0.3	Silt/Sand	Mostly Bare Soil With Patches Of Terrestrial Grasses	Low Slope Moderate Stability	L	Sparse Patches Of Dry Grass	100% Terrestrial grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	Dry Cracked Soil	None	None	Algae present	Y	Intermittent	None	Recently cleaned out channelized drain through agricultural field. Presence of algae suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions.
Lower Thames River	Big Creek	Drain to Hyatt Drain	WB-054	378430	4670009	42648	0.4	0	30	15	None	Straight	Poorly Defined	L	0.4	2.3	0.1	0.1	1.5	Silt/Sand	Mostly Bare Soil With Patches Of Terrestrial Grasses	High Slope Low Stability	L	Patches Of Sparse Aquatic Vegetation Throughout	30% Broad Leaved Cattail 40% Horse Tail Sp. 30% Phragmites	17	L	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	Algae present	Y	Intermittent	None	Channelized drain with multiple tile outlets along the surveyed length. Presence of cattails and horsetail suggests a degree of permanence. Feature is disconnected from downstream watercourse by deposit of sediment that has raised the channel bed.
Lower Thames River	Big Creek	Unnamed Drain F	WB-055	376619	4670189	42648	0.4	0	30	15	None	Straight	Poorly Defined	L	Dry	2.5	Dry	Dry	1	Silt/Sand	Dense Overhanging Bank Veg. Mostly Terrestrial Grasses	High Slope Low Stability	L	Dense Instream Vegetation	10% Broad Leaved Cattail 5% Phragmites 85% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	Dry Cracked Soil	None	None	None	Y	Intermittent	None	Channelized roadside drain. Cattails present on streambed suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions.
Lower Thames River	Big Creek	18-19 Side Road & Hill Drain	WB-056	378884	4671956	42649	0.4	0	0	17	None	Straight	Defined	L	1.2	4.5	0.2	0.1	1.5	Sand/Silt	Overhanging Bank Veg. Mostly Terrestrial Grasses	Moderate Slope High Stability	L	Dense Instream Phragmites And Terrestrial Grasses	50% Phragmites 30% Terrestrial Grasses 20% Duckweed	18	L	Green	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	None	Y	Intermittent	4.5M Open Box Culvert	Channelized roadside drain. Duckweed present in feature suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions.
Lower Thames River	Big Creek	18-19 Side Road & Hill Drain	WB-057	378923	4672649	42649	0.4	0	0	17	None	Straight	Defined	L	0.9	4	0.1	0.1	0.9	Sand/Silt	Dense Overhanging Bank Veg. Mostly Terrestrial Grasses	Moderate Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	90% Terrestrial Grasses 10% Duckweed	18	L	Green	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized roadside drain. Duckweed present in feature suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions. Riprap erosion protection where ephemeral feature connects to roadside drain.
Lower Thames River	Big Creek	18-19 Side Road & Hill Drain	WB-058	378970	4673319	42649	0.4	0	0	17	None	Straight	Poorly Defined	L	0.8	4.3	0.2	0.1	0.9	Silt/Sand with some Cobble	Dense Overhanging Bank Vegetation Terrestrial Grasses/Phragmites	High Slope Moderate Stability	L	Dense Instream Phragmites And Terrestrial Grasses	50% Phragmites 50% Terrestrial Grasses	18	L	Green	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	None	Y	Intermittent	1.5M Csp In Cobble Embankments	Channelized roadside drain with low flow channel present that lacks instream vegetation. Downstream of road crossing feature meanders slightly within a naturalized corridor.
Lower Thames River	Big Creek	East Branch Of Big Creek Drain	WB-059	378988	4673445	42649	0.4	0	0	17	None	Meander L	Defined	L	7.9	14.3	0.6	0.4	1.6	Sand/Silt with some Gravel and large concrete rubble at road crossing	Dense Terrestrial Grasses And Deciduous Shrubs Along Length	High Slope Low Stability	M	Dense Instream Woody Debris, And Overhanging Bank Vegetation	None	16	H	Brown	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	None	Y	Permanent	25 M Span Bridge At Road Crossing, Currently Being Restored	Well defined watercourse within a natural riparian corridor and floodplain. Substantial water depth present during site investigation. No instream vegetation present, some coarse substrates present. Riprap erosion protection present where roadside drain joins watercourse.
Cedar Creek	East Two Creeks	Drain To Two Creeks Drain	NWB-007	380395	4665456	42648	0.4	4	25	23	None	Straight	Poorly Defined	L	Dry	0.5	Dry	Dry	0.5	Clay, Silt, Sand	Mature Deciduous With Juniper, Grasses And Forbs	Low Slope Moderate Stability	L	None	90% Terrestrial grasses 10% Deciduous trees and shrubs	Dry	Dry	Dry	Clay, Silt, Sand	None	No	Yes	None	None	N	Ephemeral	Approx. 0.5M Csp Under 4Th Conc.	Tile drain outlet in hedgerow with small pool of standing water on south side of road.
Cedar Creek	East Two Creeks	Unnamed Drain K	NWB-008	380496	4665364	42648	0.4	4	25	23	None	Straight	Poorly Defined	L	Dry	1.5	Dry	Dry	1.5	Clay, Silt, Sand	Mature Deciduous With Juniper, Grasses And Forbs	N/A	L	None	90% Terrestrial grasses 10% Deciduous trees and shrubs	Dry	Dry	Dry	Clay, Silt, Sand	None	Saturated Soil	Yes	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Dense terrestrial grasses, trees and shrubs line the drain.
Cedar Creek	East Two Creeks	Drain To Two Creeks Drain	NWB-009	380485	4665356	42648	0.4	4	25	23	None	Straight	Poorly Defined	L	Dry	2.5	Dry	Dry	2.5	Clay, Silt, Sand	Mature Deciduous With Juniper, Grasses And Forbs	Low Slope Moderate Stability	L	None	90% Terrestrial grasses 10% Deciduous trees and shrubs	Dry	Dry	Dry	Clay, Silt, Sand	None	No	Yes	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Dense terrestrial grasses, trees and shrubs line the drain.
Cedar Creek	East Two Creeks	Unnamed Drain I	NWB-010	380187	4670800	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	1.2	Dry	Dry	0.3	Silt/Sand	Dense Overhanging Bank Vegetation, Terrestrial Grasses And Deciduous Shrubs	High Stability Moderate Slope	M	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	No	None	None	None	N	Ephemeral	3 M Open Box Culvert At Road Crossing	Channelized drain with no evidence of channel forming process. Dense terrestrial grasses, trees and shrubs line the drain.
Cedar Creek	East Two Creeks	Cottingham Drain A	NWB-011	380427	4671012	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	0.2	3.5	0.2	0.2	0.5	Silt/Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	Low Slope High Stability	L	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	18	L	Brown	Clay, Silt, Sand, Gravel	None	Saturated Soil	None	None	None	N	Ephemeral	None	Roadside terrestrial grass lined drain. Feature not connected to downstream. No evidence of channel forming processes.
Cedar Creek	East Two Creeks	Cottingham Drain B	NWB-012	379647	4670055	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	Dry	3.3	Dry	Dry	0.5	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	Moderate Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	No	None	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Dense terrestrial grasses present throughout.
Cedar Creek	East Two Creeks	Drummel Smith Drain	NWB-013	379831	4667511	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	Dry	2.5	Dry	Dry	0.7	Silt/Gravel	Terrestrial grasses	High Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand, Gravel	None	No	None	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Dense terrestrial grasses present throughout.
Cedar Creek	East Two Creeks	Drain to Cottingham Drain	NWB-014	380484	4670448	42648	0.4	3	30	23	None	Straight	Poorly Defined	L	0.5	1.8	0.1	0.1	0.7	Sand/Silt	Dense Overhanging Bank Vegetation Terrestrial Grasses	Low Slope High Stability	L	Dense Instream Vegetation	50% Terrestrial Grasses 50% Phragmites	20	L	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Terrestrial grasses line the feature.
Cedar Creek	East Two Creeks	Travis Drain Extension	NWB-015	380820	4668659	42648	0.4	3	30	23	None	Straight	Poorly Defined	L	Dry	0.4	Dry	Dry	0.2	Silt/Sand	Dense Overhanging Bank Veg. Mostly Terrestrial Grasses	Low Slope High Stability	L	Dense Instream Terrestrial Vegetation Throughout	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	No	None	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Terrestrial grasses line the feature.
Cedar Creek	East Two Creeks	Drummel Smith Drain Extension	NWB-016	380843	4668598	42648	0.4	3	30	23	None	Straight	Poorly Defined	L	Dry	NA	Dry	Dry	NA	Silt/Sand with some Cobble	Terrestrial grasses	N/A	L	Dense Terrestrial Grasses Throughout	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	No	None	None	None	N	Ephemeral	None	Shallow drain with no evidence of water flow or channel forming processes. Terrestrial grasses and wheat line the feature.
Cedar Creek	East Two Creeks	Drummel Smith Drain Extension	NWB-017	379904	4667774	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	1.8	Dry	Dry	0.7	Sand/Silt	Dense Overhanging Bank Veg. Mostly Terrestrial Grasses	Low Slope High Stability	L	Dense Terrestrial Grasses Throughout	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	No	None	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Terrestrial grasses line the feature. Standing water present during site investigation, no signs of flow.
Cedar Creek	East Two Creeks	Drummel Smith Drain Extension	NWB-018	380053	4667918	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	2	Dry	Dry	0.7	Sand/Silt	Dense Overhanging Bank Veg. Mostly Terrestrial Grasses	Low Slope High Stability	L	Dense Terrestrial Grasses Throughout	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	No	None	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Terrestrial grasses line the feature. Standing water present during site investigation, no signs of flow.
Cedar Creek	East Two Creeks	Jacobs Drain Extension	NWB-019	381235	4667112	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	1.1	Dry	Dry	0.5	Silt/Sand	Dense Overhanging Bank Vegetation Terrestrial Grasses	Low Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation Throughout	100% Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	No	None	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Terrestrial grasses line the feature. No signs of flow.
Cedar Creek	East Two Creeks	Holland Drain Extension	NWB-020	382473	4668187	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	1.5	Dry	Dry	0.3	Sand/Silt	None, Bare Soil	Low Slope Moderate Stability	L	Woody Debris Throughout	100% Isolated Patches Of Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	No	Yes	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Isolated patches of terrestrial grasses throughout. Mostly dry bare soil.

Watershed	Drainage Area	Watercourse Name	Report ID	UTM Coordinates (17T)	Site Investigation Date	Precip. in Prior 48hrs	Wind	Cloud Cover (%)	Air Temp (C)	Precip. at Time of Survey	Straight or Meandering (H/M/L)	Channel Definition	Flow Conditions (H/M/L Freshet)	Avg. Wetted Width (m)	Avg. Bankfull Width (m)	Max Pool Depth (m)	Avg. Water Depth (m)	Avg. Bankfull Depth (m)	Substrate Composition	Bank Vegetation	Bank Slope & Stability	Channel Gradient (H/M/L)	Habitat Features (Woody debris, undercutting ect.)	Instream Vegetation (% and Dominance)	Water Temp. (°C)	Turbidity (L/M/H)	Colour	Bed material and Soil condition surrounding feature	Evidence of floodplain sediment deposits	Hydric soils	Leaf Litter within Feature	Seepage Areas or Groundwater Indicators	Algae, Fish, Crayfish, Shellfish, Aquatic Invert Larvae, or Evidence	Water Body (Y/N)	Flow Regime Based on field Observations	Culvert Observations	Feature Description		
Cedar Creek	East Two Creeks	Holland Drain Extension	NWB-021	382329	4668084	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	1.3	Dry	Dry	0.3	Sand/Silt	None, Bare Soil	Low Slope Moderate Stability	L	Woody Debris Throughout	100% Isolated Patches Of Terrestrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	No	Yes	None	None	N	Ephemeral	None	Channelized drain with no evidence of channel forming process. Isolated patches of terrestrial grasses throughout. Mostly dry bare soil.	
Cedar Creek	East Two Creeks	Unnamed Drain L	NWB-029	381136	4667888	42648	0.4	5	25	25	None	N/A	N/A	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A	N/A	No	None	None	None	N	No feature present	None	No feature present.		
Cedar Creek	East Two Creeks	Stobbs Drain	NWB-035	381589	4666432	42648	0.4	5	10	22	None	Straight	Defined	L	0.3	2	NA	0.1	0.5	Clay, Silt, Sand	Terrestrial Grasses And Forbs	Low Slope High Stability	L	Terrestrial Grasses And Herbaceous Plants	Terrestrial Grasses And Herbaceous Plants	19	L	Clear	Clay, Silt, Sand	Sediment deposits within bankfull channel	Saturated Soil	None	None	None	None	N	Ephemeral	None	Channelized drain with dense terrestrial grasses throughout and herbaceous vegetation lining feature. No evidence of channel forming processes or water flow.
Cedar Creek	East Two Creeks	Two Creeks Drain	NWB-036	380158	4666161	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	5.5	Dry	Dry	1.2	Sand/Silt	Dense Phragmites Throughout	Low Slope Moderate Stability	L	Dense Instream Phragmites	100% Phragmites	Dry	Dry	Dry	Clay, Silt, Sand	None	No	None	None	None	N	Ephemeral	None	Channelized drain with dense phragmites throughout. No evidence of channel forming processes.	
Cedar Creek	East Two Creeks	Two Creeks Drain	NWB-037	379992	4666018	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	5.5	Dry	Dry	1.5	Sand/Silt	Dense Phragmites Throughout	Low Slope Moderate Stability	L	Dense Instream Phragmites	100% Phragmites	Dry	Dry	Dry	Clay, Silt, Sand	None	No	None	None	None	N	Ephemeral	None	Channelized drain with dense phragmites throughout. No evidence of channel forming processes.	
Cedar Creek	East Two Creeks	Unnamed Drain R	NWB-043	379784	4670335	42770	N/A	NA	NA	NA	N/A	N/A	N/A	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	NA	NA	NA	NA	N/A	N/A	N/A	None	None	N	No feature present	None	No feature present.			
Cedar Creek	East Two Creeks	Drain to Travis Drain	NWB-044	380166	4668985	42770	N/A	NA	NA	NA	N/A	N/A	N/A	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	NA	NA	NA	NA	N/A	N/A	N/A	None	None	N	No feature present	None	No feature present.			
Cedar Creek	East Two Creeks	Stobbs Drain	WB-008	381199	4664418	42647	1.2	5	0	22	None	Straight	Defined	L	1.5	2.5	0.3	0.2	1.3	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod)	Low Slope High Stability	L	Overhanging Vegetation	100% Terrestrial grasses	21	H	Cloudy	Clay, Silt, Sand	Sediment deposits within bankfull channel	Saturated Soil	None	None	None	None	Y	Intermittent	1.5M Under Ditch Crossing	Channelized drain with naturalized riparian corridor. Terrestrial grasses on streambed suggests periods of dry conditions. Bare low flow channel through drain suggests a degree of permanence. Tile drain outlet present.
Cedar Creek	East Two Creeks	Stobbs Drain	WB-009	380629	4663825	42647	1.2	5	0	22	None	Straight	Defined	L	1.5	2.5	0.3	0.2	1.3	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod)	Low Slope High Stability	L	Overhanging Vegetation	100% Terrestrial grasses	21	H	Cloudy	Clay, Silt, Sand	Sediment deposits within bankfull channel	Saturated Soil	None	None	None	None	Y	Intermittent	1.5M Under Ditch Crossing	Roadside with terrestrial grasses on streambed suggests periods of dry conditions. Bare low flow channel through drain suggests a degree of permanence. Standing water present during site investigation.
Cedar Creek	East Two Creeks	Stobbs Drain	WB-010	381482	4665617	42647	1.2	5	0	22	None	Straight	Defined	L	1.5	2.5	0.3	0.1	1	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod), Sumac, Small Shrubs	Low Slope High Stability	L	Overhanging Vegetation	50% Terrestrial grasses 50% Broad leaved cattails	17.5	L	Slightly Cloudy	Clay, Silt, Sand	None	Saturated Soil	None	None	None	None	Y	Intermittent	3M Concrete Box Culvert	Channelized drain with naturalized riparian corridor. Terrestrial grasses on streambed suggests periods of dry conditions and cattails present upstream suggests a degree of permanence. Bare low flow channel through drain suggests a degree of permanence. Standing water present during site investigation.
Cedar Creek	East Two Creeks	East Two Creeks	WB-016	379635	4664820	42648	0.4	5	25	25	None	Straight	Defined	L	3	4	Unknown	0.2	1.5	Clay, Silt, Sand, Some Gravel, Cobble	Grasses, Forbs, Stinging Nettle	Low Slope High Stability	L	Undercut Banks, Overhanging Vegetation	None	19	H	Cloudy	Clay, Silt, Sand	None	Yes	Unknown	None	School Of YOY Cypripids (Approx. 20) Observed.	Y	Permanent	Approx. 10M Concrete Box Culvert	Well defined natural channel incised into riparian corridor. Substantial flow observed during site investigation. Bank erosion and channel forming processes evident. Terrestrial grasses present along banks and on lumped material at toe of banks.	
Cedar Creek	East Two Creeks	Charles Simpson Drain	WB-017	381069	4666064	42648	0.4	4	25	23	None	Straight	Defined	L	Dry	1.5	0.1	Dry	0.5	Clay, Silt, Sand	Terrestrial grasses	Low Slope High Stability	L	None	100% Terrestrial grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	Saturated Soil	None	None	None	None	Y	Intermittent	Approx. 0.5M Csp Under Zion Rd.	Channelized roadside drain with terrestrial grasses on streambed which suggests periods of dry conditions. Tile drain outlets present throughout.
Cedar Creek	East Two Creeks	Drain to Jacobs Drain	WB-018	381337	4666277	42648	0.4	5	10	22	None	Straight	Defined	L	1	2	NA	0.1	0.5	Clay/Silt	Terrestrial Grasses And Forbs	Low Slope High Stability	L	Dead Vegetation, Cattail	100% Narrow Leaved Cattail	23.5	L	Clear	Clay, Silt, Sand	None	Saturated Soil	Yes	None	Filamentous algae	Y	Intermittent	Tile Drains From Fields To The North	Channelized roadside drain with cattails throughout and algae along banks suggests a degree of permanence. Standing water present during site investigation.	
Cedar Creek	East Two Creeks	Cottingham Drain A	WB-019	380195	4670779	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	2	3.5	0.5	0.4	0.7	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Stability Moderate Slope	M	Dense Instream Terrestrial Vegetation	50% Terrestrial Grasses 35% Phragmites 15% Duckweed Sp.	17	M	Brown	Clay, Silt, Sand, gravel	None	Saturated Soil	None	None	None	None	Y	Intermittent	3 M Open Box Culvert At Road Crossing	Poorly defined channelized drain with terrestrial grasses on streambed which suggests periods of dry conditions. Duckweed present throughout suggests a degree of permanence.
Cedar Creek	East Two Creeks	Cottingham Drain A	WB-020	379755	4670365	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	0.8	4.2	0.2	0.1	0.7	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Stability Moderate Slope	L	Dense Instream Terrestrial Vegetation	75% Terrestrial Grasses 25% Phragmites	17	L	Brown	Clay, Silt, Sand, gravel	None	Saturated Soil	None	None	None	None	Y	Intermittent	None	Poorly defined channelized drain with terrestrial grasses on streambed which suggests periods of dry conditions. Duckweed present upstream suggests a degree of permanence.
Cedar Creek	East Two Creeks	Cottingham Drain A	WB-021	379628	4670059	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	0.1	2.5	0.1	0.1	0.7	Sand/Silt	Sparse Terrestrial Grasses	Moderate Slope Moderate Stability	L	Sparse Patches Of Terrestrial Grasses	100% Terrestrial Grasses	19	L	Brown	Clay, Silt, Sand, gravel	None	No	None	None	Algae present	Y	Intermittent	None	Channelized roadside drain with sparse instream vegetation and algae present which suggests a degree of permanence. Patches of terrestrial grasses on streambed suggests periods of dry conditions.	
Cedar Creek	East Two Creeks	Cottingham Drain A	WB-022	379589	4669175	42647	1.2	0	10	20	None	Straight	Poorly Defined	L	1.5	2.8	0.2	0.1	0.7	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	Moderate Slope Moderate Stability	L	Dense Instream Terrestrial/Aquatic Vegetation Throughout	75% Terrestrial 25% Broad Leaved Cattail	19	L	Brown	Clay, Silt, Sand, gravel	None	Saturated Soil	None	None	None	None	Y	Intermittent	None	Channelized roadside drain. Cattails present on streambed suggests a degree of permanence, while terrestrial grasses on streambed suggests periods of dry conditions.
Cedar Creek	East Two Creeks	Cottingham Drain A	WB-025	379535	4668453	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	Dry	2	Dry	Dry	1.1	Silt/Sand with some Cobble	Dense Overhanging Bank Vegetation	Moderate Slope Moderate Stability	L	Dense Instream Vegetation	100% Broad Leaved Cattail	Dry	Dry	Dry	Clay, Silt, Sand, gravel	None	No	None	None	None	Y	Intermittent	None	Channelized roadside drain with cattails present on streambed.	
Cedar Creek	East Two Creeks	Travis Drain	WB-026	379561	4668398	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	2.5	4.5	0.5	0.3	1.5	Silt/Sand with some Cobble	Dense Overhanging Bank Vegetation	Moderate Slope Moderate Stability	L	Isolated Patches Of Overhanging Bank Vegetation	100% Duckweed	18	H	Brown	Clay, Silt, Sand, gravel	None	Yes	None	None	None	Y	Intermittent	None	Well defined channelized drain with limited instream vegetation. Patches of duckweed present within feature.	
Cedar Creek	East Two Creeks	Travis Drain	WB-028	379944	4668732	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	1.5	3.5	0.2	0.2	0.5	Silt/Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	Moderate Slope High Stability	L	Isolated Patches Of Overhanging Bank Vegetation	50% Duckweed 50% Terrestrial Grasses	18	L	Green	Clay, Silt, Sand, gravel	None	Saturated Soil	None	None	None	None	Y	Intermittent	None	Channelized roadside drain with duckweed present. Channel flow periodically interrupted by extended dry portions with raised bed material.
Cedar Creek	East Two Creeks	Travis Drain	WB-029	380392	4669140	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	2	4.5	0.3	0.2	0.8	Silt/Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	70% Terrestrial Grasses 30% Narrow Leaved Cattail	18	H	Brown	Tile Fed Channelized Drain No Flow Indicators	None	Saturated Soil	None	None	None	None	Y	Intermittent	None	Channelized roadside drain. Cattails present on streambed suggests a degree of permanence, while terrestrial grasses on streambed suggests periods of dry conditions. Channel flow periodically interrupted by extended dry portions with raised bed material.
Cedar Creek	East Two Creeks	Travis Drain	WB-030	379497	4667845	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	Dry	4.5	Dry	Dry	0.9	Silt/Sand	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	18	H	Brown	Clay, Silt, Sand, gravel	None	Saturated Soil	None	None	None	None	Y	Intermittent	4.5 Open Box Culvert At Road Crossing	Poorly Defined channelized drain with terrestrial grasses present on streambed. Cattails and duckweed located upstream suggest a degree of permanence. Isolated pool of water located at roadcrossing.
Cedar Creek	East Two Creeks	Gahan Drain	WB-031	379725	4666690	42647	1.2	0	10	24	None	Straight	Defined	L	0.9	4.5	0.4	0.2	0.9	Silt/Gravel	Terrestrial grasses	High Slope Moderate Stability	L	Abundant Instream Terrestrial Vegetation	90% Terrestrial Grasses 10% Phragmites	18	L	Brown	Clay, Silt, Sand, gravel	None	Saturated Soil	None	None	Filamentous Algae Throughout	Y	Intermittent	4.5 Open Box Culvert At Road Crossing	Channelized roadside drain with filamentous algae and low flow channel with no instream vegetation present suggests a degree of permanence. Terrestrial grasses within bankfull channel and adjacent to low flow channel suggest periods of dry conditions.	
Cedar Creek	East Two Creeks	Gahan Drain	WB-032	380187	4667093	42647	1.2	0	10	24	None	Straight	Poorly Defined	L	1.2	3.8	0.2	0.1	1.2	Silt/Gravel	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	18	L	Brown	Clay, Silt, Sand, gravel	None	Saturated Soil	None	None	None	None	Y	Intermittent	None	Channelized roadside drain and low flow channel with no instream vegetation present suggests a degree of permanence. Terrestrial grasses on streambed suggests periods of dry conditions.

Watershed	Drainage Area	Watercourse Name	Report ID	UTM Coordinates (17T)		Site Investigation Date	Precip. in Prior 48hrs	Wind	Cloud Cover (%)	Air Temp (°C)	Precip. at Time of Survey	Straight or Meandering (H/M/L)	Channel Definition	Flow Conditions (H/M/L Freshet)	Avg. Wetted Width (m)	Avg. Bankfull Width (m)	Max Pool Depth (m)	Avg. Water Depth (m)	Avg. Bankfull Depth (m)	Substrate Composition	Bank Vegetation	Bank Slope & Stability	Channel Gradient (H/M/L)	Habitat Features (Woody debris, undercutting ect.)	Instream Vegetation (% and Dominance)	Water Temp. (°C)	Turbidity (L/M/H)	Colour	Bed material and Soil condition surrounding feature	Evidence of floodplain sediment deposits	Hydric soils	Leaf Litter within Feature	Seepage Areas or Groundwater Indicators	Algae, Fish, Crayfish, Shellfish, Aquatic Invert Larvae, or Evidence	Water Body (Y/N)	Flow Regime Based on field Observations	Culvert Observations	Feature Description		
Cedar Creek	East Two Creeks	Jacobs Drain	WB-034	380891	4667701	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	2.7	3.5	0.3	0.1	0.9	Silt/Sand	Dense Overhanging Bank Veg. Mostly Terrestrial Grasses	High Slope Low Stability	L	Dense Instream Terrestrial Vegetation	100% Terrestrial Grasses	17	L	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Roadside drain with standing water. Low flow channel present with no instream vegetation within it and some coarse sediments suggests a degree of permanence. Terrestrial grasses present within bankfull channel and adjacent to low flow channel suggests periods of dry conditions. Channel connectivity periodically interrupted by raised bed material.		
Cedar Creek	East Two Creeks	Jacobs Drain	WB-035	381186	4667355	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	0.7	3.5	0.1	0.1	0.9	Silt/Gravel	Very Sparsely Vegetated Channel With Patches Of Overhanging Bank Vegetation	High Slope Low Stability	L	Isolated Patches Of Overhanging Bank Vegetation	100% Terrestrial Grasses	18	L	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	Encrusting algae present	Y	Intermittent	None	Channelized drain with algae present and low flow channel with no instream vegetation. Evidence of bank erosion observed. Terrestrial grasses present within bankfull channel and adjacent to low flow channel suggests periods of dry conditions.		
Cedar Creek	East Two Creeks	Gahan Drain	WB-036	382037	4668716	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	2	5	0.3	0.1	1.5	Silt/Sand	Dense Overhanging Bank Vegetation Terrestrial Grasses	High Slope Low Stability	L	Dense Instream Terrestrial/Aquatic Vegetation Throughout	100% Terrestrial Grasses	19	H	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized drain and low flow channel with no instream vegetation. Evidence of bank erosion observed. Terrestrial grasses present within bankfull channel and adjacent to low flow channel suggests periods of dry conditions.		
Cedar Creek	East Two Creeks	Holland Drain	WB-037	382325	4668381	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	4	Dry	Dry	0.5	Sand/Silt	Dense Overhanging Bank Vegetation Terrestrial Grasses	Moderate Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation Throughout	75% Terrestrial Grasses, 25% Narrow Leaved Cattail	Dry	Dry	Dry	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized drain with tile drain outlets throughout. Presence of cattails on streambed suggests a degree of permanence, while terrestrial grasses on streambed suggests periods of dry conditions.		
Cedar Creek	East Two Creeks	Holland Drain	WB-038	382095	4668665	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	3.5	Dry	Dry	0.7	Sand/Silt	Dense Overhanging Bank Vegetation Terrestrial Grasses	Moderate Slope Moderate Stability	L	Dense Instream Terrestrial Vegetation Throughout	75% Terrestrial Grasses, 25% Narrow Leaved Cattail	Dry	Dry	Dry	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized drain with tile drain outlets throughout. Presence of cattails on streambed suggests a degree of permanence, while terrestrial grasses on streambed suggests periods of dry conditions.		
Cedar Creek	East Two Creeks	Charles Simpson Drain	WB-039	380283	4666971	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	2.3	7.5	0.1	0.1	1.5	Silt/Gravel	Sparse Terrestrial Grasses With Extended Areas Of Bare Soil	Moderate Slope Very Low Stability	L	Dense Instream Terrestrial Vegetation Throughout	100% Terrestrial Grasses	18	L	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized roadside drain and low flow channel present with no instream vegetation. Terrestrial grasses present within bankfull channel and adjacent to low flow channel suggest periods of dry conditions		
Cedar Creek	East Two Creeks	Charles Simpson Drain	WB-040	380738	4666448	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	2.5	7.5	0.1	0.1	1.5	Silt/Gravel	Sparse Terrestrial Grasses With Extended Areas Of Bare Soil	Moderate Slope Very Low Stability	L	Dense Instream Terrestrial Vegetation Throughout	80% Terrestrial Grasses 20% Broad Leaved Cattails	18	L	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized roadside drain with cattails present on streambed. Terrestrial grasses present on streambed suggests periods of dry conditions. Evidence of bank erosion observed throughout.		
Cedar Creek	East Two Creeks	Jacobs Drain	WB-042	381785	4666665	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	0.8	4.3	0.3	0.2	1.4	Silt/Sand with some Cobble	Dense Overhanging Bank Vegetation Terrestrial Grasses	Moderate Slope Moderate Stability	L	Dense Instream Narrow Leaved Cattail	100% Narrow Leaved Cattail	19	L	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized drain through hedgerow. Cattails present on streambed and evidence of bank erosion suggests a degree of permanence. Defined low flow channel present.		
Lake Erie	Lake Erie	Auxiliary Robinson Drain	NWB-001	385887	4666146	42647	1.2	3	0	20	None	Straight	Defined	L	0.5	1	NA	0.1	0.2	Clay, Silt, Sand	Terrestrial grasses and wheat	Moderate Slope High Stability	L	Terrestrial Vegetation	100% Terrestrial grasses	17	L	Clear	Clay, Silt, Sand	None	Saturated soil	None	None	None	N	Ephemeral	0.4 M Csp. Dry	Terrestrial grass lined roadside drain.		
Lake Erie	Lake Erie	Auxiliary Robinson Drain	NWB-006	385741	4666003	42648	0.4	5	25	18	None	N/A	N/A	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A	N/A	N/A	N/A	None	None	N	No feature present	None	No feature present.			
Lake Erie	Lake Erie	Auxiliary Robinson Drain	NWB-034	385676	4666378	42647	1.2	5	0	20	None	Straight	Defined	L	1.8	3	NA	0.1	0.8	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod)	Low Slope High Stability	L	Terrestrial Vegetation	100% Terrestrial Grasses	17	L	Slightly Tea Stained	Clay, Silt, Sand	None	Saturated Soil	None	None	None	None	N	Ephemeral	None	Terrestrial grass lined roadside drain.	
Lake Erie	Lake Erie	Unnamed Drain N	NWB-042	386421	4665500	42767	N/A	NA	NA	NA	N/A	N/A	N/A	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	NA	NA	NA	NA	N/A	N/A	None	None	N	Ephemeral	None	Grass lined roadside ditch.				
Lake Erie	Lake Erie	Unnamed Drain O	WB-061	386450	4665527	42768	N/A	NA	NA	NA	N/A	Straight	Poorly Defined	NA	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Terrestrial grasses	Low Slope Moderate Stability	L	None	100% Broad Leaved Cattail	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Y	Intermittent	Unknown	Roadside drain with algae present based on air photo review, suggests a degree of permanence. Location added to Project Area after the appropriate field season for conducting site investigations. A conservative approach is taken for this feature
Lake Erie	Lake Erie	Unnamed Drain P	WB-062	386454	4665493	42768	N/A	NA	NA	NA	N/A	Straight	Poorly Defined	NA	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Terrestrial grasses	Low Slope High Stability	L	None	80% Broad Leaved Cattail 20% Terrial Grasses	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Y	Intermittent	Unknown	Roadside drain with cattails and algae present based on air photo review, suggests a degree of permanence. Location added to Project Area after the appropriate field season for conducting site investigations. A conservative approach is taken for this feature	
Lake Erie	Lake Erie	Unnamed Drain Q	WB-063	386478	4665491	42768	N/A	NA	NA	NA	N/A	Straight	Poorly Defined	NA	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Terrestrial grasses	Unknown	L	None	Unknwon	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Y	Intermittent	Unknown	Channelized drain with algae present at upstream extent near County Road 3 based on air photo review, suggests a degree of permanence. Location added to Project Area after the appropriate field season for conducting site investigations. A conservative approach is taken for this feature		
Cedar Creek	Yellow Creek	Albert E. Metcalf Drain	NWB-002	384760	4667452	42647	1.2	5	10	22	None	Straight	Defined	L	1	2.5	NA	0.1	1	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod)	Low Slope High Stability	L	Terrestrial Vegetation	Terrestrial Grasses And Forbs	18	L	Clear	Clay, Silt, Sand	None	Saturated Soil	None	None	None	None	N	No feature present	None, Tile Drains With Flow Draining South Field	No feature present.	
Cedar Creek	Yellow Creek	Nevills Drain	NWB-004	382278	4665261	42647	1.2	5	0	22	None	Straight	Poorly Defined	L	Dry	0.5	Dry	Dry	0.2	Clay, Silt, Sand	Terrestrial grasses	Moderate Slope High Stability	L	N/A	100% Terrestrial grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	Saturated Soil	None	None	None	None	N	Ephemeral	None	Terrestrial grass lined roadside drain.	
Cedar Creek	Yellow Creek	Ditches Along Talbot Trail	NWB-005	382903	4664005	42647	1.2	5	0	22	None	Straight	Poorly Defined	L	0.3	0.5	NA	0.1	0.3	Clay, Silt, Sand	Terrestrial grasses	Moderate Slope High Stability	L	Terrestrial Grasses And Cattail Near Road	100% Terrestrial grasses	18	L	Clear	Clay, Silt, Sand	None	No	None	None	None	N	Ephemeral	Approx 0.4M Corrugated Plastic Pipe	Terrestrial grass lined roadside drain. Isolated area of cattails present in low area near culvert where tile drain outlets occur and standing water is present.		
Cedar Creek	Yellow Creek	Unnamed Drain M	NWB-033	384057	4666874	42765	N/A	NA	NA	NA	N/A	N/A	N/A	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	NA	N/A	N/A	N/A	N/A	Saturated Soil	N/A	None	None	N	No feature present	None	No feature present.			
Cedar Creek	Yellow Creek	Liddle Drain	NWB-038	383102	4666901	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	0.7	2.1	0.2	0.1	0.5	Silt/Sand with some Cobble	Dense Overhanging Bank Vegetation Terrestrial Grasses	Low Slope High Stability	L	Dense Instream Phragmites And Terrestrial Grasses	50% Phragmites 50% Terrestrial Grasses	21	L	Brown	Clay, Silt, Sand	None	Saturated Soil	None	None	None	N	Ephemeral	None	Channelized drain with tile drain outlets throughout. Dense terrestrial grasses present throughout. Standing water observed during site investigation. No evidence of channel forming processes.		
Cedar Creek	Yellow Creek	Wright Drain	NWB-041	381895	4663769	42767	N/A	NA	NA	NA	N/A	N/A	N/A	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	NA	NA	NA	NA	N/A	N/A	N/A	None	None	N	No feature present	None	No feature present.			
Cedar Creek	Yellow Creek	Pond E	NWB-045	382204	4665025	42770	N/A	NA	NA		N/A	N/A	N/A	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	NA	NA	NA	NA	N/A	N/A	N/A	None	None	N	Permanent	None	Unconnected dug pond			
Cedar Creek	Yellow Creek	Coatsworth-Robinson Drain	WB-001	385230	4666935	42647	1.2	3	0	22	None	Straight	Defined	L	1.3	4	0.4	0.2	1.3	Silt/Sand with some Rip Rap	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod)	Low Slope High Stability	L	Rip Rap, Flooded Terrestrial Vegetation, Some Duckweed	Some Duckweed, Mainly Terrestrial Grasses And Forbs	17	H	Heavily Tea Stained	Silt, Sand And Rip Rap	Silt Deposits On Vegetation In Channel Only	Saturated Soil	None	None	None	None	Y	Intermittent	2M Csp Under Road. At Least 3 Tile Drains With Some Flow Upstream And Downstream Of Road	Channelized drain with naturalized riparian corridor. Duckweed within feature and low flow channel present with no instream vegetation suggests a degree of permanence. Terrestrial grasses present within bankfull channel and adjacent to low flow channel suggests periods of dry conditions.	



Watershed	Drainage Area	Watercourse Name	Report ID	UTM Coordinates (17T)		Site Investigation Date	Precip. In Prior 48hrs	Wind	Cloud Cover (%)	Air Temp (C)	Precip. at Time of Survey	Straight or Meandering (H/M/L)	Channel Definition	Flow Conditions (H/M/L Freshet)	Avg. Wetted Width (m)	Avg. Bankfull Width (m)	Max Pool Depth (m)	Avg. Water Depth (m)	Avg. Bankfull Depth (m)	Substrate Composition	Bank Vegetation	Bank Slope & Stability	Channel Gradient (H/M/L)	Habitat Features (Woody debris, undercutting ect.)	Instream Vegetation (% and Dominance)	Water Temp. (°C)	Turbidity (L/M/H)	Colour	Bed material and Soil condition surrounding feature	Evidence of floodplain sediment deposits	Hydric soils	Leaf Litter within Feature	Seepage Areas or Groundwater Indicators	Algae, Fish, Crayfish, Shellfish, Aquatic Invert Larvae, or Evidence	Water Body (Y/N)	Flow Regime Based on field Observations	Culvert Observations	Feature Description
Cedar Creek	Yellow Creek	Albert E. Metcalf Drain	WB-002	384084	4666852	42647	1.2	4	0	22	None	Straight	Defined	L	1.5	2.5	NA	0.1	1	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Goldenrod)	Low Slope High Stability	L	Terrestrial Vegetation	Terrestrial Grass/Cattail	18	M	Slightly Cloudy	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None, Tile Drains With Flow Draining South Field	Channelized roadside drain. Cattails present on streambed suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions.
Cedar Creek	Yellow Creek	Albert E. Metcalf Drain	WB-003	383400	4666247	42647	1.2	4	0	22	None	Straight	Defined	L	1.8	2.8	NA	0.1	0.5	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod)	Low Slope High Stability	L	Terrestrial Vegetation	Terrestrial Grass, Plantain, Phragmites	18	M	Cloudy	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None, Tile Drains With Flow Draining South Field	Channelized roadside drain. Cattails present upstream suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions.
Cedar Creek	Yellow Creek	Yellow Creek	WB-004	383037	4665927	42647	1.2	5	0	22	None	Meander L	Defined	L	1.5	4	0.4	0.3	1.5	Clay, Silt, Sand	Terrestrial Grasses And Forbs	Low Slope High Stability	L	Grasses, Plainain, Sedge Sp., Rip Rap Around Bridge	Grasses Dominant, Remaining Aquatic Vegetation Low Abundance	18	H	Cloudy	Clay, Silt, Sand	Silt Deposits On Vegetation In Channel And Within Bank Full Only	Saturated Soil	None	None	School Of YOY Cyprinids (Approx. 20) Observed At Bridge	Y	Permanent	3.4M Concrete Box Culvert, Smaller Cap And Plastic Culverts Also Observed Directing Ditch Flow To Water Body	Defined channelized drain within a naturalized corridor. Defined low flow channel with no instream vegetation present. Terrestrial grasses present within drain. Fish observed at road crossing.
Cedar Creek	Yellow Creek	Yellow Creek	WB-005	382444	4664530	42647	1.2	4	0	22	None	Meander L	Defined	L	2	4.5	0.5	0.3	1.8	Clay, Silt, Sand, Gravel, Some Cobble	Terrestrial Grasses And Forbs, Sumac, Mature Trees	Low Slope Low Stability	M	Woody Debris, Overhanging Vegetation	None	18	H	Cloudy	Clay, Silt, Sand	Sediment deposits within bankfull channel	Saturated Soil	None	None	None	Y	Permanent	Approx. 4.3M Concrete Box Culvert, Greatly Undersized Evidenced By Heavy Erosion Upstream And Downstream	Well defined natural watercourse within well vegetated riparian corridor. Meandering feature with riffles and pools. No instream vegetation present.
Cedar Creek	Yellow Creek	Yellow Creek	WB-006	382102	4663284	42647	1.2	4	0	22	None	Meander L	Defined	L	1	2.5	0.4	0.2	1.3	Clay, Silt, Sand, Gravel, Some Cobble and Rip Rap	Terrestrial Grasses And Forbs, Sumac, Cedar And Deciduous Trees	Moderate Slope Moderate Stability	M	Overhanging Vegetation	None	18	H	Cloudy	Clay, Silt, Sand	Sediment deposits within bankfull channel	Saturated Soil	None	None	None	Y	Permanent	Approx. 4M Csp	Well defined natural watercourse within well vegetated riparian corridor. Meandering feature with riffles and pools. No instream vegetation present.
Cedar Creek	Yellow Creek	Derbyshire Drain	WB-007	381555	4662768	42647	1.2	5	10	22	None	Straight	Defined	L	0.4	1.5	NA	0.1	0.5	Gravel At Culvert Changing To Clay, Silt And Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod)	Low Slope High Stability	L	Overhanging Vegetation	100% Terrestrial Grasses	18	L	Clear	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	1M Csp Under Talbot	Roadside drain with terrestrial grasses present adjacent to low flow channel which suggests periods of dry conditions. Low flow channel with no instream vegetation present suggests a degree of permanence.
Cedar Creek	Yellow Creek	Coatsworth-Robinson Drain	WB-011	383982	4665848	42648	0.4	5	25	18	None	Straight	Defined	L	1.8	2.5	NA	0.4	1.3	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod)	Low Slope Low Stability	L	Terrestrial Vegetation	100% Terrestrial grasses	17	M	Slightly Cloudy	Clay, Silt, Sand	Silt Deposits On Vegetation In Channel And Within Bank Full Only	Saturated Soil	No	None	None	Y	Intermittent	None, Tile Drains With Flow Draining Adjacent Fields	Channelized drain that is highly incised within naturalized corridor. No instream vegetation in low flow channel suggests a degree of permanence. Terrestrial grasses present adjacent to low flow channel suggests periods of dry conditions.
Cedar Creek	Yellow Creek	Nevills Drain	WB-012	382711	4665173	42648	0.4	4	25	19	None	Straight	Defined	L	0.4	2	NA	0.1	0.8	Clay, Silt, Sand	Forbs, Shrubs, Ash Sp., Spruce Sp.	Low Slope High Stability	L	None	Phragmites And Some Terrestrial Vegetation	17.5	L	Clear	Clay, Silt, Sand	Silt Deposits On Vegetation In Channel And Within Bank Full Only	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized drain within naturalized riparian corridor. No instream vegetation within low flow channel and evidence of channel forming processes suggests a degree of permanence. Terrestrial grasses adjacent to low flow channel suggests periods of dry conditions. Naturalized corridor present, particularly downstream.
Cedar Creek	Yellow Creek	Yellow Creek	WB-013	382754	4665133	42648	0.4	5	0	20	None	Straight	Defined	L	2	5	0.4	0.2	1	Gravel, Silt, Sand	Mature Deciduous, Forbs	Low Slope Low Stability	M	Woody debris	None	17	H	Cloudy	Clay, Silt, Sand	Sediment deposits within bankfull channel	Saturated Soil	No	None	None	Y	Permanent	None	Natural watercourse within well defined riparian corridor. Some bank erosion and development of riffles and pools. Terrestrial grasses present along toe of banks.
Cedar Creek	Yellow Creek	Wright Drain	WB-014	381902	4663761	42648	0.4	4	25	25	None	Straight	Defined	L	1.5	2	0.2	Unknown	0.3	Clay, Silt, Sand	Grasses, Ash, Cedar, Forbs	Low Slope High Stability	L	None	100% Terrestrial grasses	NA	L	Clear	Clay, Silt, Sand	None	Saturated Soil	Yes, recently deposited	None	None	Y	Intermittent	None	Channelized drain begins at surveyed location. Non-WB located immediately upstream. Feature originates at tile drain outlet with low flow channel present downstream. Terrestrial grasses adjacent to low flow channel suggest periods of dry conditions.
Cedar Creek	Yellow Creek	Yellow Creek	WB-015	382102	4663960	42648	0.4	4	25	25	None	Meander L	Defined	L	2.5	4.5	0.2	0.1	1	Gravel, Silt, Sand	Mature Deciduous, Limited Understory	Low Slope Low Stability	M	Some woody debris, riffles and pools, exposed tree roots.	None	17.5	H	Cloudy	Clay, Silt, Sand	Yes, Along North Bank	Saturated Soil	None	None	None	Y	Permanent	None	Natural watercourse within well defined riparian corridor. Bank erosion and development of riffles and pools. Well defined banks and channel bed with some coarse sediment present.
Cedar Creek	Yellow Creek	Lowe Drain	WB-041	382248	4667057	42648	0.4	4	30	25	None	Straight	Poorly Defined	L	Dry	5.5	Dry	Dry	1.2	Silt/Sand with some Gravel	Dense Overhanging Bank Vegetation, Terrestrial Grasses And Deciduous Shrubs	High Slope Moderate Stability	L	Dense Instream Vegetation	80% Broad Leaved Cattail 20% Terrial Grasses	Dry	Dry	Dry	Clay, Silt, Sand	None	Saturated Soil	None	None	None	Y	Intermittent	None	Channelized drain within naturalized corridor. Presence of cattails on streambed suggests a degree of permanence, while terrestrial grasses present on streambed suggests periods of dry conditions. No feature present north of 4th Concession.
Cedar Creek	Yellow Creek	Lowe Drain	WB-060	383076	4665991	42647	1.2	4	0	22	None	Straight	Defined	L	1	3.8	NA	0.2	1.3	Clay, Silt, Sand	Terrestrial Vegetation (Grasses And Forbs Incl. Aster Spp. And Goldenrod, Red Osier Dogwood, Sumac)	Low Slope High Stability	L	Terrestrial Vegetation	100% Terrestrial grasses	17	M	Cloudy	Clay, Silt, Sand	Silt Deposits On Vegetation In Channel And Within Bank Full Only	Saturated Soil	None	None	None	Y	Intermittent	None, Tile Drain Outlets Observed	Channelized drain within naturalized and well vegetated corridor. Defined low flow channel with no instream vegetation. Presence of terrestrial grasses adjacent to low flow channel suggests periods of dry conditions.

**Appendix II**  
Site Investigation Photographs





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# **LOWER THAMES RIVER WATERSHED**

Big Creek Drainage Area





# Big Creek Drainage Area





Drainage Feature	Water Body Point	Description	Photographs
18-19 Side Road Drain	WB-053	Downstream, North	
		Upstream, South	
18-19 Side Road and Hill Drain	NWB-040	Downstream, North	
		Upstream, South	





Drainage Feature	Water Body Point	Description	Photographs
18-19 Side Road and Hill Drain	WB-056	Downstream, North	
		Upstream, South	
	WB-057	Downstream, North	
		Upstream, South	

Drainage Feature	Water Body Point	Description	Photographs
18-19 Side Road and Hill Drain	WB-058	Downstream, North	
		Upstream, South	
Big Creek	WB-047	Downstream, North	
		Upstream, South	







Drainage Feature	Water Body Point	Description	Photographs
Brosseau Drain	NWB-028	Downstream, North	
		Upstream, South	
Cottingham Relief Drain	WB-033	Downstream, South-East	
		Upstream, North-West	





Drainage Feature	Water Body Point	Description	Photographs
DBW Drain	NWB-026	Downstream, South	
		Upstream, North	
Drain to Hyatt Drain	WB-054	Downstream, North	
		Upstream, South	





Drainage Feature	Water Body Point	Description	Photographs
Drain to Tilbury Creek	WB-043	Downstream, East	
East Branch of Big Creek Drain	WB-059	Downstream, North-West	
		Upstream, South-East	
Hill Drain	WB-049	Downstream, West	







Drainage Feature	Water Body Point	Description	Photographs
Hill Drain		Upstream, East	
Hyatt Drain	WB-044	Downstream, West	
		Upstream, East	
	WB-045	Downstream, West	











Drainage Feature	Water Body Point	Description	Photographs
Hyatt Drain		Upstream, East	
Scott Drain Beattie Bridge	WB-024	Downstream, East	
		Upstream, North	
Scott Drain	WB-027	Downstream, North	


Drainage Feature	Water Body Point	Description	Photographs
Scott Drain		Upstream, South	
	WB-023	Downstream, East	
		Upstream, South	
Unnamed Drain A	NWB-024	Downstream, East	

Drainage Feature	Water Body Point	Description	Photographs
Unnamed Drain B	NWB-023	Downstream, South	
		Upstream, North	
Unnamed Drain C	NWB-022	Downstream, North	
		Upstream, South	



Drainage Feature	Water Body Point	Description	Photographs
Unnamed Drain D	NWB-027	Downstream, South	
		Upstream, North	
Unnamed Drain F	WB-055	Downstream, South	
		Upstream, North	

Drainage Feature	Water Body Point	Description	Photographs
Unnamed Drain G	WB-046	Downstream, West	
		Upstream, North	
Unnamed Drain H	NWB-025	Downstream, East	
		Upstream, West	

Drainage Feature	Water Body Point	Description	Photographs
Pond A	NWB-039	North-East	
Pond B	NWB-030	Feature assessed via alternative access no photographs available	
Pond C	NWB-031	Feature assessed via alternative access no photographs available	
Pond D	NWB-032	Feature assessed via alternative access no photographs available	





**CEDAR CREEK WATERSHED**

East Two Creeks Drainage Area


Yellow Creek Drainage Area











## East Two Creeks Drainage Area

Drainage Feature	Water Body Point	Description	Photographs
Charles Simpson Drain	WB-017	Downstream, North	
		Upstream, South	
	WB-039	Downstream, North	
		Upstream, South	











Drainage Feature	Water Body Point	Description	Photographs
Charles Simpson Drain	WB-040	Downstream, North-West	
		Upstream, South-East	
Cottingham Drain A	NWB-011	Downstream, South-West	
		Upstream, North-East	





Drainage Feature	Water Body Point	Description	Photographs
Cottingham Drain A	WB-019	Downstream, South-West	
		Upstream, North-East	
	WB-020	Downstream, South-West	
		Upstream, North-East	

Drainage Feature	Water Body Point	Description	Photographs
Cottingham Drain A	WB-021	Downstream, South	
		Upstream, North	
	WB-022	Downstream, South	
		Upstream, North	












Drainage Feature	Water Body Point	Description	Photographs
Cottingham Drain A	WB-025	Downstream, South	
		Upstream, North	
Cottingham Drain B	NWB-012	Downstream, South	
		Upstream, North	

Drainage Feature	Water Body Point	Description	Photographs
Drain to Cottingham Drain	NWB-014	Downstream, North-East	
		Upstream, South-West	
Drummel Smith Drain	NWB-013	Downstream, North-West	
		Upstream, South-East	





Drainage Feature	Water Body Point	Description	Photographs
Drummel Smith Drain Extension	NWB-016	Downstream, North-East	
		Upstream, South-West	
Drummel Smith Drain Extension	NWB-017	Downstream, South-West	
		Upstream, North-East	











Drainage Feature	Water Body Point	Description	Photographs
	NWB-018	Downstream, South-West	
		Upstream, North-East	
East Two Creeks	WB-016	Downstream, South-West	
		Upstream, North-East	
Gahan Drain	WB-031	Downstream, South-West	

Drainage Feature	Water Body Point	Description	Photographs
		Upstream, North-East	
	WB-036	Downstream, South-West	
Gahan Drain		Upstream, North-East	
	WB-032	Downstream, North-East	







Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-West	
Holland Drain	WB-037	Downstream, North-West	
Holland Drain		Upstream, South-East	
	WB-038	Downstream, North-West	

Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-East	
Holland Drain Extension	NWB-020	Downstream, North-West	
Holland Drain Extension		Upstream, South-West	
	NWB-021	Downstream, North-East	






Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-West	
Jacobs Drain	WB-034	Downstream, North-East	
Jacobs Drain		Upstream, South-East	
	WB-035	Downstream, North-West	











Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-East	
	WB-042	Downstream, South-West	
Jacobs Drain		Upstream, North-West	
Jacobs Drain Extension	NWB-019	Downstream, North-East	

Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-West	
Stobbs Drain	WB-008	Downstream, South-West	
		Upstream, North	
Stobbs Drain	WB-009	Downstream, South-West	
		Upstream, North-East	












Drainage Feature	Water Body Point	Description	Photographs
	WB-010	Downstream, South-West	
		Upstream, North-East	
	NWB-035	Downstream, South-East	
Stobbs Drain		Upstream, North-West	
Drain to Jacob's Drain	WB-018	Downstream, South-West	






Drainage Feature	Water Body Point	Description	Photographs
		Upstream, North-East	
Travis Drain	WB-026	Downstream, North-East	
		Upstream, South-West	
Travis Drain	WB-028	Downstream, North-East	

Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-West	
	WB-030	Downstream, South	
		Upstream, North	
Tavis Drain Extension	NWB-015	Downstream, North-West	




Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-East	
Two Creeks Drain	NWB-036	Downstream, South-West	
		Upstream, North-East	
Two Creeks Drain	NWB-037	Downstream, South-West	






Drainage Feature	Water Body Point	Description	Photographs
		Upstream, North-East	
Drain to Two Creeks Drain	NWB-007	Downstream, South-West	
		Upstream, North-East	
	NWB-009	Downstream, South-West	
Drain to Two Creeks Drain		Upstream, North-East	




Drainage Feature	Water Body Point	Description	Photographs
Unnamed Drain I	NWB-010	Downstream, South-East	
		Upstream, North-West	
Unnamed Drain K	NWB-008	Downstream, North-West	
		Upstream, South-East	
Unnamed Drain L	NWB-029	Downstream, North-West	








Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South	
Unnamed Drain R	NWB-043	Feature assessed via alternative access no photographs available	





## Yellow Creek Drainage Area




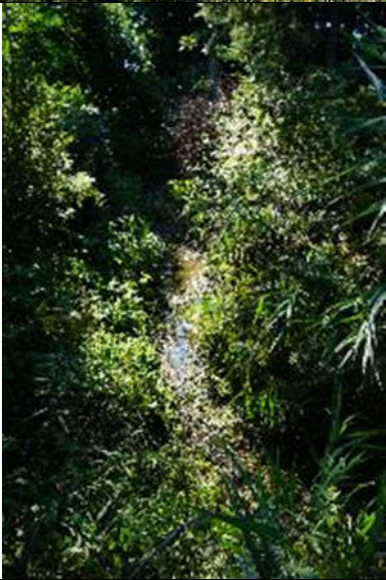
Drainage Feature	Water Body Point	Description	Photographs
Albert E. Metcalf Drain	WB-002	Downstream, North-West	
		Upstream, North-East	
	WB-003	Downstream, South-West	
		Upstream, North-East	
	NWB-002	Downstream, South-West	

Drainage Feature	Water Body Point	Description	Photographs
Albert E. Metcalf Drain		Upstream, North-East	
Coatsworth-Robinson Drain	WB-001	Downstream, South-West	
		Upstream, South-East	










Drainage Feature	Water Body Point	Description	Photographs
Coatsworth-Robinson Drain	WB-011	Downstream, South-West	
		Upstream, North-East	
Derbyshire Drain	WB-007	Downstream, South	
		Upstream, North	
Drain at Talbot Trail	NWB-005	Downstream, North-East	

Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-West	
Liddle Drain	NWB-038	Downstream, South-West	
		Upstream, North-East	
Lowe Drain	WB-041	Downstream, South-West	




Drainage Feature	Water Body Point	Description	Photographs
		Upstream, North-East	
	WB-060	Downstream, South-West	
		Upstream, North-East	
Nevills Drain	WB-012	Downstream, West	








Drainage Feature	Water Body Point	Description	Photographs
		Upstream, South-East	
	NWB-004	Downstream, South-East	
Nevills Drain		Upstream, North-East	
Pond E	NWB-045	Feature assessed via alternative access no photographs available	
Unnamed Drain M	NWB-033	Feature assessed via alternative access no photographs available	

Drainage Feature	Water Body Point	Description	Photographs
Wright Drain	WB-014	Downstream, South-East	
		Drain Origin	
		Feature assessed via alternative access no photographs available	
Yellow Creek	WB-004	Downstream, South	
Yellow Creek		Upstream, North-East	



Drainage Feature	Water Body Point	Description	Photographs
	WB-005	Downstream, South-West	
		Upstream, North-East	
Yellow Creek	WB-006	Downstream, South	

Drainage Feature	Water Body Point	Description	Photographs
		Upstream, North	
	WB-013	Downstream, South-West	
		Upstream, North-East	
	WB-015	Downstream, South	






Drainage Feature	Water Body Point	Description	Photographs
Yellow Creek		Upstream, North	


# **LAKE ERIE WATERSHED**

Lake Erie Drainage Area



## Lake Erie Drainage Area

Drainage Feature	Water Body Point	Description	Photographs
Auxiliary Robinson Drain	NWB-034	Downstream, South-West	
		Upstream, South-East	
	NWB-001	Downstream, North-West	
		Upstream, South-West	
	NWB-006	Downstream, South-West	

Drainage Feature	Water Body Point	Description	Photographs
Auxiliary Robinson Drain		Upstream, North-East	
Unnamed Drain N	WB-042	Feature assessed via alternative access no photographs available	
Unnamed Drain O	WB-061	Feature assessed via alternative access no photographs available	
Unnamed Drain P	WB-062	Feature assessed via alternative access no photographs available	
Unnamed Drain Q	WB-063	Feature assessed via alternative access no photographs available	