North Kent Wind 1 Project
Water Body Assessment

Prepared for:
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NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

North Kent Wind 1 Project
Water Body Assessment

Project Team:

Staff	Role
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Report submitted on November 18, 2015

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1.0 Project Description

Natural Resource Solutions Inc. (NRSI) was retained in March 2015 by AECOM, on behalf of North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. (North Kent Wind 1), to conduct a Water Body Assessment and Water Body Report in accordance with the Renewable Energy Approval (REA) Regulation, Ontario Regulation 359/09. The Water Body Assessment includes a records review and site investigation, while the Water Body Report, which is provided under a separate cover, includes a complete assessment of impacts to any water bodies occurring at a proposed wind energy generating facility of up to 50 permitted wind turbines, with a nameplate capacity of up to 100 megawatts (MW). The total number of operational turbines will depend on the nominal turbine power rating of each turbine.

The North Kent Wind 1 Project (Project) is being proposed by North Kent Wind 1. North Kent Wind 1 is a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada ULC (Pattern Development) and Samsung Renewable Energy Inc. (Samsung Renewable Energy). North Kent Wind 1 is proposing to develop the Project north of the City of Chatham in the Municipality of Chatham-Kent, Ontario. The Project Study Area is generally bounded by Oldfield Line to the north, Bear Line Road to the west, Pioneer Line and Pine Line / Darrell Line to the south, and Centre Sideroad and Caledonia Road to the east. The Project will be located primarily on privately owned land with some components (e.g., electrical collector lines) being placed along public right-of-ways, none of which are proposed on provincial Crown land.

According to Ontario Regulation (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) and where permanent infrastructure will be located, including the air space occupied by turbine blades. For the purpose of this report, NRSI will refer to areas within 120m of the Project Location as the 'Project Area'. See Maps 1 to 10 for an illustration of the Project Area.

In accordance with the REA Regulation, NRSI has conducted a thorough records review of available background resources to identify any potential water bodies within 120m, or lake trout (*Salvelinus namaycush*) lakes within 300m, of the Project Location, as defined by the REA Regulation. This assessment includes a detailed review of available background information from a variety of sources, including the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO), St. Clair Region Conservation Authority (SCRCA), Lower Thames Valley Conservation Authority (LTVCA), municipal files, aerial photography, and other available online and/or published resources.

Also in accordance with the REA Regulation, NRSI has conducted site investigations to identify and characterize water bodies (lakes, seepages, permanent/intermittent watercourses) within 120m of the Project Location and lake trout lakes within 300m of the Project Location. Site investigations were conducted to confirm the presence/absence of water bodies identified during the records review, determine any corrections to information received about potential water bodies identified during the records review, and document new water bodies not previously identified. Field investigations also focused on the characterization of identified potential water bodies.

2.0 REA Requirements

Ontario 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* (*EPA*), identifies the requirements for the development of renewable energy projects in Ontario. In accordance with the REA Regulation, the North Kent Wind 1 Project, classified as a Class 4 wind facility, 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 Water Body Assessment has been prepared for the North Kent Wind 1 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 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 Water Body Assessment to meet the REA requirements. A discussion of any negative environmental impacts on water bodies within the Project Area, and a review of the Design and Operations Report (AECOM 2015a), the Construction Plan Report (AECOM 2015b), and the Decommissioning Report (AECOM 2015c), prepared by AECOM are available in the Water Body Report (NRSI 2015a), under a separate cover. The proposed monitoring program in the Water Body Report has been used to develop the Environmental Effects Monitoring Plan included in the Design and Operations Report (AECOM 2015a), completed by AECOM under separate cover.

As part of this project, NRSI has considered all aspects relating to provincially Threatened and Endangered species; however, since these species are addressed through a separate permitting process under the *Endangered Species Act* (2007), they have not been discussed within the Water Body Assessment or Water Body Report. 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 the MNRF, 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 9 years of experience working on a variety of environmental projects. He has considerable experience managing Environmental Assessments, Natural Heritage Assessments, and Water Body Assessments for wind project developments across Canada, with experience including project management, report generation, data analysis, and considerable field monitoring. Andrew specializes in acoustic bat inventories and sonogram analysis, and has working experience with bat monitoring equipment and various bat analysis software. He routinely utilizes analysis software to identify bat species, and has helped create a reference call library using recorded bat calls.

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

Pamela Hammer, B.Sc.
Pamela is a Terrestrial and Wetland Biologist with more than 4 years of experience in the environmental field. She has managed several renewable energy projects, and routinely participates in and coordinates field investigations and reporting for renewable energy projects throughout Ontario. Pamela has experience mapping vegetation communities, conducting vegetation inventories and wildlife habitat assessments for birds, bats, herpetofauna and mammals. She also has experience conducting tree inventories, risk assessments, implementing integrated pest management practices, and environmental monitoring. Pamela is a Certified Arborist (2011), is qualified as a Tree Risk Assessor (2013), and is certified in the ELC System for Southern (2014) and Northeastern Ontario (2011). She also has extensive experience with client and agency liaison through her project management involvement.

Pamela's role in this project was to act as the project manager. She was a main contact point for agency staff and assisted with the review of this Water Body Assessment report.

Nyssa Clubine, M.Sc, EPt.
Nyssa is a Stream Corridor and Environmental Analyst with 5 years of experience in the environmental field. Her area of expertise includes 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. 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 has experience conducting water body assessments for wind projects in Ontario, as well as aquatic habitat assessments.

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 4 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 the 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 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 seven 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 (MOECC) (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.

Kaitlin Boddaert, Dip GIS
Kaitlin is a GIS application specialist with 5 years of experience working in spatial technology for the production and publication of various digital maps and datasets. Her project experience includes, but is not limited to, the collection and creation of various datasets, the geocoding of addresses, the use of AutoCAD with integration into GIS, and the use of hard and soft data through scanning and georeferencing into digital format. Kaitlin has produced various digital maps and datasets for publication. She also has education and experience in the field of urban planning and is familiar with municipal mapping and procedures.

Kaitlin's role in the project was as lead GIS technician responsible for map creation. She reviewed and collected all available background mapping resources to compile into project mapping.

4.0 Records Review

NRSI biologists completed a thorough records review for the proposed North Kent Wind 1 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 North Kent Wind 1 Project

Information Source	Consultation Date(s)	Consultation Type	Type of Records Reviewed/Received
Fisheries and Oceans, Canada (DFO)	April 17, 2015 July 2, 2015	Email Request	• Aquatic species reported from the North Kent Wind 1 Project Study Area
Ministry of Natural Resources and Forestry, Aylmer District	April 17, 2015	Email Request	• Aquatic Species of Conservation Concern
County of Chatham-Kent	April 6, 2015	Document Review	• Region of Chatham-Kent Official Plan (2014)
Lower Thames Valley Conservation Authority (LTVCA)	April 17, 2015	Email Request and Document Review	• Watershed Report Card (2013) • Lower Thames Valley Assessment Report in the Thames, Sydenham and Region Source Protection Region (2014)
St. Clair Region Conservation Authority (SCRCA)	April 17, 2015 April 22, 2015	Email Request and Document Review	• SCRCA Fish Community Sampling Records (2000, 2003) • Royal Ontario Museum Fish Records • Water body mapping • Municipal drainage mapping • Watershed Report Card (2013) • St. Clair Region Assessment Report in the Thames, Sydenham and Region Source Protection Region (2014)

Information Source	Consultation Date(s)	Consultation Type	Type of Records Reviewed/Received
Ministry of Natural Resources and Forestry, Natural Heritage Information Centre (NHIC) and Biodiversity Explorer	March 30, 2015	Online Database Review	• Species of Conservation Concern records
Ministry of Natural Resources, Land Information Ontario (LIO)	March 18, 2015	GIS Mapping Layer Review	• Aerial photography • Watercourse mapping

All potential water bodies located within the Project Area were identified using MNRF, LTVCA, and SCRCA watercourse and drainage mapping, and review of digital aerial photography. These potential water bodies are shown on Maps 1 to 10.

4.2 Results

For the purpose of the records review reporting, NRSI has examined available background information 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. Information obtained relating to identified water bodies is detailed in Sections 4.2.1 through 4.2.5. During the records review, it was identified through a review of background documents and through correspondence with the LTVCA that portions of the Project Area fall within High Vulnerability Aquifer sites and Significant Groundwater Recharge Areas.

4.2.1 Lakes

NRSI biologists have used available resources, including agency consultation and a variety of available mapping layers (satellite imagery, aerial photographs, and MNRF and SCRCA watercourse and drainage mapping) to identify the presence of any lakes within the North Kent Wind 1 Project Area. Findings of this review indicate that no lakes are located within the Project Area. The nearest lake, Lake St. Clair, is located approximately 6km west 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 (OMNR 2006), 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 North Kent Wind 1 Project Area.

4.2.3 Permanent or Intermittent Watercourses

NRSI biologists have used available resources, including agency consultation and a variety of available mapping layers (satellite imagery, aerial photographs, and MNRF and SCRCA watercourse and drainage mapping) to identify the presence of potential intermittent and/or permanent watercourses and municipal drains within the North Kent Wind 1 Project Area. Findings of this review indicated a total of 54 potential water bodies (permanent or intermittent watercourses and municipal drains) are located within the Project Area. These drainage features have been divided and discussed in detail below, based on their overall watershed and their respective drainage areas, which include Maxwell Creek, Little Bear Creek, Big Creek Drain, Rankin Creek, Marchand Drain, and Southwest Lower Thames River.

More information, specific to each of the drainage areas, is provided in Table 2.

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

Watershed	Drainage Area	Details	Number of Permanent or Intermittent Drainage Features Identified
Sydenham River	Maxwell Creek	Flows in a south westerly direction and drains into the Sydenham River. It originates from a combination of surface water runoff and tile drainage that consolidates to form a watercourse near Centre Side Road and Oldfield Line. The watercourse is channelized for the majority of its length. Several agricultural drains join Maxwell Creek to add to its volume and permanence. Maxwell Creek and its tributaries are found in the northern portion of the Project Area and can be seen on Maps 2 and 3.	7

Watershed	Drainage Area	Details	Number of Permanent or Intermittent Drainage Features Identified
Sydenham River	Little Bear Creek	Flows in a westerly direction and drains into the Sydenham River. It originates from a combination of runoff and tile drainage outlets that consolidate to form intermittent and permanent watercourses and municipal drains. Several agricultural drains join Little Bear Creek and add to its volume and permanence. The Little Bear Creek drainage area is the largest within the Project Area Little Bear Creek and its tributaries are found within the north and northeastern portions of the Project Area. This is the largest subwatershed within the Project Area and can be seen on Maps 5 to 9.	30
	Big Creek Drain	Flows in a westerly direction and drains into the Sydenham River. It originates from several agricultural drains that receive surface water runoff and water from tile drains. These drains consolidate to form permanent and intermittent watercourses and municipal drains. Big Creek Drain and its tributaries are found within the southeastern and southwestern portions of the Project Area and can be seen on Maps 4 to 6, 8, and 9.	6
Lake St. Clair	Rankin Creek	Flows in a westerly direction and drains into Lake St. Clair. It originates from a combination of runoff and tile drainage outlets, and smaller agricultural drains that eventually consolidate to form a permanent straightened watercourse. Rankin Creek and its tributaries are found within the southwestern portion of the Project Area and can be seen on Maps 4 and 5.	5
	Marchand Drain	Flows in a southwesterly direction and drains into Lake St. Clair. It originates as an agricultural drain before joining the Hind Relief Drain, along with several other drains. It flows into Lake St. Clair near Angler Line. Marchand Drain is found within the southwestern portion of the Study Area and can be seen on Map 5.	1

Watershed	Drainage Area	Details	Number of Permanent or Intermittent Drainage Features Identified
Lower Thames River	Southwest Lower Thames Tributaries	The tributaries flow in a westerly direction and drain into the South West Lower Thames River. The smaller tributaries originate as agricultural drains receiving water from tile drain inlets. The larger tributary originates from surface water runoff and gathers volume through tile drainage outlets and surface water runoff along its length. All of these tributaries flow into the Lower Thames River. The Southwest Lower Thames tributaries are found within the southern portion of the Project Area and can be seen on Maps 5, and 8 to 10.	5

There are 3 major drainage systems within the Project Area: the Sydenham River, Lake St. Clair, and the Lower Thames River. Maxwell Creek, Little Bear Creek, and Big Creek Drain subwatersheds all flow into the Sydenham River. Rankin Creek and Marchand Drain, which drains into the Hind Relief Drain, flow directly into Lake St. Clair. The unnamed drains and tributaries within the LTVCA jurisdiction all flow into the Lower Thames River. The majority of the drainage features within the Project Area are within the SCRCA jurisdiction, with only a few located within the LTVCA jurisdiction. Based on aerial photograph interpretation, most of the drainage features within the Project Area are expected to be highly influenced by historic and/or present agricultural activities (i.e. channelization).

There are 2 source water protection areas within the North Kent Wind 1 Project Area. The first encompasses the SCRCA jurisdiction, and the second encompasses the LTVCA jurisdiction. Surface water quality monitoring is summarized for both source protection areas using data from monitoring stations included within the *Provincial Water Quality Monitoring Network* (PWQMN). According to the map of PWQMN monitoring stations available from the MOECC (2014), these monitoring stations are located on the Sydenham River and the Lower Thames River. In both cases, the monitoring stations are located upstream of where the watercourses that drain the North Kent Wind 1 Project Area join the Sydenham and Lower Thames Rivers. This means that the water quality results summarized in the source protection Assessment Reports (Thames-

Sydenham and Region Source Protection Committee 2014) do not reflect surface water contributions that come from the North Kent Wind 1 Project Area. A review of the PWQMN monitoring stations does not provide any additional data related to surface water quality of the drainage features within the North Kent Wind 1 Project Area, as the monitoring stations are located too far upstream.

Watershed report cards prepared by the SCRCA (Lake St. Clair Tributaries) and the LTVCA (Lake St. Clair) report on surface water quality conditions within smaller subwatersheds in their jurisdiction.

The Lake St. Clair Tributaries subwatershed within the SCRCA jurisdiction encompasses Maxwell Creek, Little Bear Creek, Big Creek Drain, Rankin Creek, and Marchand Drain, all of which are within the North Kent Wind 1 Project Area. The SCRCA measures water quality based on Total Phosphorous, *E.Coli* and the benthic invertebrate community. Surface water quality within the Lake St. Clair Tributaries subwatershed is considered to be poor with Total Phosphorous and *E. coli* levels exceeding the provincial standard (SCRCA 2013).

The Lake St. Clair subwatershed within the LTVCA jurisdiction encompasses the unnamed drains and tributaries of the Southwest Lower Thames River that are within the North Kent Wind 1 Project Area. Insufficient data was available for assessing water quality within the Lake St. Clair (LTVCA) subwatershed at the time the watershed report card was published (2013).

Fish community information was requested from the SCRCA, which included records of pugnose shiner (*Notropis anogenus*), pugnose minnow (*Opsopoeodus emiliae*), blackstripe topminnow (*Fundulus notatus*), and grass pickerel (*Esox americanus vermiculatus*) known from Little Bear Creek, Maxwell Creek and their associated municipal drains. Fish community records were also requested from the LTVCA; however, no records were received by the time this report was prepared. A single species, ghost shiner (*Notropis buchanani*), was identified in the Project Area through the MNRF background information request and a query of the Natural Heritage Information Centre (NHIC) database (MNRF 2015).

4.2.4 Seepage Areas

NRSI biologists reviewed a variety of available background resources, including online resources, surficial geology mapping, elevation data, conservation authority data, and digital aerial photography. No known seepage areas were identified in the Project Area through the comprehensive records review for the North Kent Wind 1 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, due to the dense clay present at the surface. This was further examined during the site investigation phase of this project.

4.2.5 Species of Conservation Concern

Species of conservation concern include all species that have been designated as a species of Special Concern according to the provincial Species at Risk in Ontario (SARO) and/or the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC), have been given a provincial S-Rank of S1-S3, or have been designated by COSEWIC as Threatened or Endangered but have not been designated as either Endangered or Threatened within Ontario. Species of conservation concern also include those species whose populations are known to be experiencing substantial declines in Ontario and species that both have a high percentage of their global population in Ontario and are considered rare or uncommon in the planning area, even though they may not be provincially rare. Species that are subjects of recovery programs are also considered species of conservation concern (OMNR 2000).

The results of the records review identified 4 aquatic species of conservation concern within the North Kent Wind 1 Project Area. These species, including their provincial and federal statuses, have been outlined in Table 3 below.

Table 3. Aquatic Species of Conservation Concern Identified in the North Kent Wind 1 Project Area

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status	Habitat Preference
Esox americanus vermiculatus	Grass Pickerel[1,2,3]	S3	SC	SC	Lakes, backwaters and sluggish pools of creeks and small rivers with mud bottom, aquatic vegetation and clear water. Grass Pickerel is a warmwater species.[5] Habitat for Grass Pickerel may be present within Little Bear Creek, Maxwell Creek, and their associated municipal drains.
Fundulus notatus	Blackstripe Topminnow[1,3]	S2	SC	SC	Quiet surface waters near margins of sluggish perennial creeks and small rivers with clay/silt bottoms and abundant aquatic and riparian vegetation, pools in intermittent streams. Blackstripe Topminnow is a warmwater species.[5] Habitat for Blackstripe Topminnow may be present within Little Bear Creek, Maxwell Creek[2], and their associated municipal drains.
Minytrema melanops	Spotted Sucker[3]	S2	SC	SC	Nearshore of lakes and deep pools of creeks and small to medium rivers with firm sandy, gravelly or rocky substrates. Spotted Sucker is a warmwater species.[5] Habitat for Spotted Sucker may be found within Maxwell Creek and its associated municipal drains.[3]
Notropis buchanani	Ghost Shiner[3,4]	S2	--	NAR	Quiet pools and backwaters of small to large rivers or creeks near their confluence with larger rivers and lakes, with sand or clean gravel substrates and some aquatic vegetation. Ghost Shiner is a warmwater species.[5] Habitat for Ghost Shiner may be present within Maxwell Creek, Little Bear Creek, Big Creek Drain, their tributaries, and the unnamed drains within the LTVCA jurisdiction.

[1] Fisheries and Oceans, Canada Correspondence (DFO 2015)
[2] SCRCA Fish Community Records (SCRCA 2015)
[3] Royal Ontario Museum Fish Records (ROM 2015)
[4] NHIC (2015)
[5] Eakins 2015

Provincial Rank (S-Rank)
S2: Imperiled
S3: Vulnerable

COSEWIC and SARO Status
SC: Special Concern
NAR: Not at Risk

4.3 Summary

In accordance with the REA Regulation, NRSI has completed a comprehensive records review for the proposed North Kent Wind 1 Project. The Project Area was examined to ensure all drainage features within 120m of the Project Location of the proposed wind energy generating facility were assessed. This records review included correspondence with 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 4 below.

Table 4. Summary of Records Review for the North Kent Wind 1 Project

Criteria	Associated Potential Water Bodies
i. In a water body	The records review has identified 48 potential water bodies as overlapping the Project Location, including 6 within the Maxwell Creek drainage area, 27 within the Little Bear Creek drainage area, 6 within the Big Creek Drain drainage area, 3 within the Rankin Creek drainage area, 1 within the Marchand Drain drainage area, and 5 within the Southwest Lower Thames drainage area. These overlaps represent proposed crossing locations for access roads, collection lines, and/or construction disturbance areas. All of these potential water bodies may represent potential permanent or intermittent watercourses or drainage features. Within the SCRCA jurisdiction, these potential water bodies are designated as warmwater fisheries or intermittent drainage features. Marchand Drain, located within the Project Area, was not displayed on available thermal classification mapping. Thermal regime information was not available from the LTVCA at the time of this report.
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

Criteria	Associated Potential Water Bodies
iv. Within 120 m of the average annual high water mark of a permanent or intermittent stream	The records review has identified 54 potential water bodies within 120m of the Project Location, including 7 within the Maxwell Creek drainage area, 30 within the Little Bear Creek drainage area, 6 within the Big Creek Drain drainage area, 5 within the Rankin Creek drainage area, 1 within the Marchand Drain drainage area, and 5 within the Southwest Lower Thames drainage area. All of these water bodies represent potential permanent or intermittent watercourses or drainage features. Within the SCRCA jurisdiction, these water bodies are designated as warmwater fisheries or intermittent drainage features. Marchand Drain, located within the Project Area, was not displayed on available thermal classification mapping. Thermal regime information was not available from the LTVCA at the time of this report.
v. Within 120 m of a seepage area	None

5.0 Site Investigation

5.1 Methods

In accordance with the REA Regulation, comprehensive site investigations were carried out within the North Kent Wind 1 Project Area. These site investigations 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 all confirmed water bodies. Results of these site investigations will be used to identify proximity of water bodies to project components and to identify requirements for mitigation and 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 5 below. Additional weather conditions including precipitation, and precipitation within the last 48 hours, were also recorded and can be found on the completed site investigation field data forms, which are included in Appendix I. Detailed descriptions of staff roles and qualifications can be found in Section 3.0 of this report.

Table 5. Site Investigation Survey Details

Staff Name(s)	Date (2015)	Duration (hrs)	Weather Conditions		
			Temp. (°C)	Beaufort Wind	Cloud Cover (%)
Blair Baldwin	April 13	4.75	10-17	4-6	70-100
Blair Baldwin	April 14	8.5	8-9	0-3	20-40
Blair Baldwin	April 15	8.0	9-15[1]	0-4[1]	30
Blair Baldwin	April 16	9.0	9-12[1]	0-5[1]	40
Blair Baldwin	April 17	4.0	12-16[1]	2-3	0
Blair Baldwin	April 20	4.5	13-17[1]	4-7	100
Blair Baldwin	April 21*	6.75	9-10[1]	4-7	100
Blair Baldwin	April 22	9.5	4-7	3-6	100
Blair Baldwin, Steve Burgin	April 23	10.5	0-3	4-5	100
Blair Baldwin, Steve Burgin	April 24	8.0	3-7	3-4	5
Blair Baldwin	April 28	11.25	11-15	3-4	30
Blair Baldwin	April 29	1	6-11	0-1	0

Staff Name(s)	Date (2015)	Duration (hrs)	Weather Conditions		
			Temp. (°C)	Beaufort Wind	Cloud Cover (%)
Blair Baldwin	April 30	0.75	10-11	2	100
Blair Baldwin	May 7	8.5	16-23	3	5
Blair Baldwin	May 8	4.25	20-27	3	40
Nyssa Clubine Steve Burgin	June 16*	3.25	27	4	40

**Alternative site investigation date for WB-204 and NWB-233*

Legend
Beaufort Wind Scale: 0 Calm; 1 Smoke drifts; 2 Wind felt on face; 3 Leaves in motion; 4 Small branches move; 5 Small trees sway; 6 Large branches move; 7 Whole trees in motion; 8 Twigs break off, hard to walk; 9 Light structural damage.
[1]Supplemental weather data was collected from the Government of Canada Historic Weather Record for Chatham, Ontario (2015).

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.

All landowners with properties containing aquatic features within the North Kent Wind 1 Project Area were contacted by phone as an attempt to obtain site access. Where adjacent landowners were reached by phone and denied site access, or when adjacent landowners could not be reached by phone after three phone call attempts, alternative site investigations were conducted.

5.1.3 Lakes and Lake Trout Lakes

Prior to field investigations, no potential lakes and lake trout lakes were identified through review of all available natural features mapping as part of the records review. Field investigations were 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 field investigations, potential intermittent/permanent watercourses were identified through a review of all available natural features mapping as part of the records review. Field investigations were 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 2 to 10 with a water body (WB) or non-water body (NWB) number and a point, as determined through comparison with the criteria for a water body. These points may occur in areas where base mapping does not identify a feature.

Measurements to the Project components included in Tables 6 to 11 of this report are taken from the closest distance to a water body, and not necessarily from the specific survey location(s) of the site investigation.

Once a watercourse or drainage feature was identified during site investigations, 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).

All features identified during the site investigation were assessed as thoroughly as possible, collecting as much data as possible. This involved walking the entire extent of each feature (where site access permitted) that was identified within the Project Area. In some cases, a non-water body was identified upstream of, and along the same feature, as a water body. Where site access was not granted to confirm the location of this transition, NRSI took a conservative approach and identified all unobservable locations as water bodies.

Once an aquatic feature was identified as a permanent or intermittent watercourse or municipal drain, specific water body data were collected. This involved walking the entire extent of each feature (where site access permitted) that was identified within the Project Area. For each feature, NRSI biologists collected a wide range of field information, including (but not limited to):

- current stage (standing water, low flow/baseflow, moderate flow, or high flow/flood flow),
- water temperature and turbidity level,
- average wetted width and depth,
- average bankfull width and depth,
- substrate composition,
- channel bed morphology (i.e. percentage of area surveyed consisting of riffles, pools, runs, and flats),
- in-stream vegetation and habitat features present,
- riparian vegetation and canopy cover,
- adjacent land use, and
- any groundwater indicators, such as watercress (*Nasturtium officinale*) and iron staining.

At each survey location, photographs and UTM coordinates were taken to assist in visually locating and characterizing the aquatic feature. UTM coordinates identify a point along a section of channel that was surveyed. 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. 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. Alternative site investigations occurred for 2 potential water bodies, including for an offline, man-made pond, and a drainage feature that came within 120m of the Project Location where it joined a larger drainage feature that was assessed.

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 Natural Heritage Assessment (NHA) process, a search for seepage areas was conducted to confirm the results of the records review.

Assessments for seepage areas were completed in April and May 2015 (see Table 5), with the majority occurring in April when the water table was high due to snow melt. 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.

No evidence of seepage areas was identified during the site investigations.

5.2 Results

NRSI biologists completed a comprehensive site investigation of the aquatic resources within the North Kent Wind 1 Project Area. These surveys have been completed in accordance with the REA Regulation and the results have been summarized below.

A confirmed water body that overlaps with, or is present within 120m of, a Project Location triggered the need for an EIS for that particular water body. A water body has been 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.

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 confirmed that a total of 62 confirmed permanent or intermittent water bodies are located within the Project Area, 53 of which have been identified as overlapping the Project Location. These include proposed crossing locations of access roads and/or collection lines. The additional 9 confirmed permanent or intermittent water bodies range in distance from the Project Location from 0.1m to 96m, without any direct overlap with project components. For the purpose of this report, these water bodies have been discussed based on their respective drainage areas which include Maxwell Creek, Little Bear Creek, Big Creek Drain, Rankin Creek, Marchand Drain, and the Southwest Lower Thames River. 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 attributed. The identified water bodies, non-water bodies, and assessment locations are shown on Maps 2 to 10.

Site investigation field notes are provided in Appendix I, water body site investigation photographs are provided in Appendix II, and detailed habitat information specific to each water body location is provided in Appendix III.

Maxwell Creek

The records review identified a total of 7 potential water bodies associated with the Maxwell Creek drainage area, and within the Project Area. All of these potential water bodies are designated as warmwater fisheries, or intermittent drainage features based on the Conservation Authority-DFO drainage classification system (Thames-Sydenham and Region Source Protection Committee 2014).

NRSI biologists conducted site investigations at the 7 potential water bodies associated with the Maxwell Creek drainage area, as well as at 3 additional drainage features associated with Maxwell Creek that were not included in base mapping and were not visible on aerial photographs. NRSI biologists have confirmed that 6 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 6. Maps 2 and 3 show drainage features identified as part of the records review and the site investigation.

Table 6. Water Body Site Investigations Summary for the North Kent Wind 1 Project – Maxwell Creek Drainage Area

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Daly Drain	WB-007	• Intermittent • Limited definition • Channelized municipal drain • Aquatic vegetation present in the channel	WT- >120 AR- >120 CL- 4 CA- 4 SI- >120	Yes	Yes
Maxwell Creek Drain	WB-001 WB-002 WB-003 WB-004 WB-005 WB-006	• Permanent • Some sinuosity • Limited definition (WB-002) • Aquatic vegetation present in channel • Terrestrial vegetation on the banks	WT- 39 (T34) AR- >0.1* CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
13th Concession Road Drain North	WB-019 WB-013 WB-012 WB-140 WB-011 WB-010 WB-009	• Intermittent • Limited definition • Some sinuosity (WB-009) • Dense patches of aquatic vegetation (WB-009 and WB-010) • Terrestrial vegetation along channel bed	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Moore Drain	NWB-209	• Ephemeral • Limited definition • Grass lined feature	N/A	No	No
Glasgow Drain	NWB-241 NWB-208 NWB-207 NWB-206 NWB-205	• Ephemeral • Limited definition • Grass lined feature	N/A	No	No
Wells Drain	WB-014	• Intermittent • Limited definition • No vegetation present in channel due to recent clean out	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
McCallum Drain	NWB-234	• Ephemeral • Limited definition • Terrestrial grasses present along side-slopes • No evidence of substrate sorting	N/A	No	No

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Kirby Drain	WB-008	• Intermittent • Limited definition • Dense patches of aquatic vegetation	WT- >120 AR- >120 CL- 5 CA- 5 SI- >120	Yes	Yes
Unnamed Drain D	NWB-231 NWB-235 NWB-236	• Ephemeral • Limited definition • Terrestrial grasses present along feature bed	N/A	No	No
Prince Albert Drain	WB-134 WB-135 WB-136 WB-137	• Intermittent • Limited definition • Approaching Maxwell Creek (WB-137), changes to a permanent, defined water body with some aquatic vegetation	WT- 62(T4) AR- 28 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes

**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: Collection Line
CA: Construction Activity/Temporary Infrastructure/Balance of Operations
SI: Supporting Infrastructure - Building/Substation/Laydown Area/Point of Interconnect

Little Bear Creek

The records review identified a total of 30 potential water bodies associated with the Little Bear Creek drainage area, and within the Project Area. All of these potential water bodies are designated as warmwater fisheries, or intermittent drainage features based on the Conservation Authority-DFO drainage classification system (Thames-Sydenham and Region Source Protection Committee 2014) and are shown on Maps 5, 6, 8, and 9.

NRSI biologists conducted site investigations at the 30 potential water bodies associated with Little Bear Creek drainage area, as well as at 8 additional drainage features that were not included in base mapping and were not visible on aerial photographs. NRSI biologists have confirmed that 29 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

below. Maps 5, 6, 8 and 9 show drainage features identified as part of the records review and the site investigation.

Table 7. Water Body Site Investigations Summary for the North Kent Wind 1 Project – Little Bear Creek Drainage Area

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Unnamed Drain E	NWB-225 NWB-242	• Ephemeral • Channelized • Terrestrial grasses along feature bed	N/A	No	No
Prince Albert Drain	WB-132 WB-133	• Intermittent • Straightened • Limited definition • Dense aquatic vegetation present	WT- 62(T4) AR- 28 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Boynton Drain	WB-015 WB-016	• Intermittent • Defined • Aquatic vegetation present (WB-016)	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-210	• Ephemeral • Limited definition • Terrestrial grasses present on feature bed • Dry during site investigation	N/A	No	No
Townline Drain	WB-139 WB-138 WB-025 WB-144	• Intermittent • Limited definition • Abundant aquatic vegetation (WB-144) • Dense algae (WB-139) • Approaching 13th Concession Road Drain, feature becomes large permanent water body with a high degree of water turbidity (WB-025)	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
13th Concession Road Drain North	WB-024 WB-023 WB-022 WB-021 WB-020	• Intermittent • Limited definition (WB-020) in upstream portion • Downstream portion is permanent, defined water body • Floating aquatic vegetation present downstream	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Rice Drain	NWB-211	• Ephemeral • Limited definition • Presence of aquatic vegetation	N/A	No	No
Carter Drain	WB-026	• Intermittent • Limited definition • Slight meander • Floating aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Parrott Drain	WB-027	• Intermittent • Defined and channelized • No vegetation present in channel due to recent clean out	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain B	WB-141 WB-142	• Intermittent • Defined and channelized • Patches of floating aquatic vegetation	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Wells Drain Extension	WB-028	• Intermittent • Defined and channelized • Some substrate sorting • No vegetation present in the channel due to recent clean out	WT- >120 AR- >120 CL- 3 CA- 3 SI- >120	Yes	Yes
Bear Drain	WB-030 WB-031 WB-032 WB-033 WB-052	• Intermittent • Channelized • Upstream is poorly defined (WB-031, WB-032) • Closer to Little Bear Creek (WB-052) the municipal drain is a permanent defined water body with aquatic vegetation	WT- 31 (T11) AR- >0.1* CL- Overlapping CA- Overlapping SI- >120	Yes	Yes

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Watson Base Line Drain	WB-029	• Intermittent • Defined, channelized drain with some substrate sorting	WT- >120 AR- >120 CL- 4 CA- 4 SI- >120	Yes	Yes
Gray Drain	WB-034 WB-035 WB-036 WB-037 WB-038 WB-039 WB-040 WB-143	• Intermittent upstream (WB-034, WB-035) • Limited definition and channelized • Permanent, defined and channelized water body with evidence of substrate sorting downstream	WT- >120 AR- 3 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Little Bear Creek Drain and Gray Drain	WB-050	• Permanent • Well defined • *Phragmites* sp. in the channel	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Little Bear Creek Drain	WB-043 WB-154 WB-044 WB-121 WB-048 WB-049 WB-051 WB-053 WB-147 WB-148 WB-055 WB-056 WB-057	• Permanent • Well defined • Straightened municipal drain for majority of length • Large water body • High degree of turbidity • Aquatic species present	WT- 47(T3) AR- 6 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Henderson - Campbell Drain	WB-064 WB-065 WB-066	• Intermittent • Well defined and straightened • Some evidence of substrate sorting	WT- >120 AR- 76 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Sylvester Drain	WB-077 WB-076 WB-075 WB-074 WB-072 WB-073 WB-152	• Intermittent • Poorly defined in the upstream portion • Increasing definition towards downstream end (confluence with Little Bear Creek) • Dense aquatic vegetation present	WT- 102 (T38) AR- Overlapping CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-220	• Ephemeral • Limited definition • Channelized	N/A	No	No

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Pollock Drain	WB-081 WB-084 WB-078 WB-080 WB-079 WB-082	• Intermittent • Increasing definition from upstream to downstream • Aquatic vegetation present	WT- 30.2 (T14) AR- 5 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Lafferty Drain	NWB-219 NWB-218 NBW-246 NWB-247	• Ephemeral • Limited definition • Channelized	N/A	No	No
Solomon Drain	WB-041 WB-042	• Intermittent • Limited definition • Channelized, municipal drain	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-212	• Ephemeral • Limited definition • Grasses along the feature bed	N/A	No	No
Unnamed Drain A	NWB-237	• Ephemeral • Limited definition • No evidence of aquatic vegetation	N/A	No	No
Purdie Creek Drain	WB-045	• Permanent • Defined • Moderate sinuosity • Aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-248	• Ephemeral • Limited definition • Terrestrial vegetation along feature bed	N/A	No	No
Chinnick Drain	WB-122	• Permanent • Defined • Low degree of sinuosity • Dense aquatic vegetation present • Substrate sorting evident	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Cummings Drain	NWB-213 NWB-214	• Ephemeral • Limited definition • No evidence of aquatic vegetation	N/A	No	No

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Millar and Leak Drain	WB-046 WB-047 WB-153	• Permanent • Defined • Low degree of sinuosity at the upstream end • Downstream near T32, channel is altered • Limited definition • Straightened • Aquatic vegetation present throughout	WT- >120 AR- 71 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Simpson Drain	WB-058	• Intermittent • Limited definition • Channelized • Aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Campbell Drain	WB-067 WB-068 WB-069 WB-060 WB-061 WB-200 WB-201 WB-062 WB-063	• Intermittent • Limited definition upstream (WB-069 and WB-060) • Increasing definition downstream • Channelized • Low degree of sinuosity • Aquatic vegetation present	WT- >120 AR- 6 CL- Overlapping CA- Overlapping SI- 14	Yes	Yes
Catton Drain	WB-071 WB-155	• Intermittent • Limited definition • Channelized • Aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Prins Drain	NWB-215 NWB-216 NWB-217	• Ephemeral • Limited definition • Terrestrial grasses present along feature bed	N/A	No	No
McNeilage Drain	WB-059	• Intermittent • Limited definition • Dense terrestrial grasses and emergent vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Boynton Drain and Townline Drain	WB-017	• Intermittent • Limited definition • Patches of terrestrial grasses on channel bed	WT- >120 AR- >120 CL- 4 CA- 4 SI- >120	Yes	Yes

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
13th Concession Pump Works	WB-018	• Intermittent • Well defined • High water turbidity	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Baldoon Drain	WB-120	• Intermittent • Limited definition • Aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-227 NWB-226	• Ephemeral • Limited definition • Terrestrial grasses present along feature bed	N/A	No	No
Dyer Drain	WB-115 WB-116 WB-117 WB-203 WB-118 WB-119	• Intermittent • Limited definition upstream • Increasing definition downstream • High water turbidity (WB-118, WB-119)	WT- 34 (T19) AR- 4 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-224 NWB-239 NWB-240	• Ephemeral • Limited definition • Terrestrial grasses present on feature bed (NWB-224)	N/A	No	No
Porter Drain	NWB-230	• Ephemeral • Limited definition • No evidence of aquatic vegetation	N/A	No	No
Cameron Drain	NWB-244 NWB-243 NWB-245	• Ephemeral • Limited definition • Terrestrial vegetation on feature bed	N/A	No	No
McKay Drain	WB-070	• Intermittent • Limited definition • Dense filamentous algae throughout	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- 7.3	Yes	Yes
Unnamed Pond A	NWB-232	• Man-made pond • Floating and emergent aquatic vegetation	N/A	No	No

**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: Collection Line
CA: Construction Activity/Temporary Infrastructure/Balance of Operations
SI: Supporting Infrastructure - Building/Substation/Laydown Area/Point of Interconnect

Big Creek Drain

The records review identified a total of 6 potential water bodies associated with the Big Creek Drain drainage area, and within the Project Area. All of these potential water bodies are designated as warmwater fisheries, or intermittent drainage features based on the Conservation Authority-DFO drainage classification system (Thames-Sydenham and Region Source Protection Committee 2014).

NRSI biologists conducted site investigations at the 6 potential water bodies associated with Big Creek Drain drainage area, as well as at 6 additional drainage features that were not included in base mapping and were not visible on aerial photographs. NRSI biologists have confirmed that 10 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 a water body to the Project Location, is provided in Table 8 below. Maps 4, 5, 6, 8, and 9 show drainage features identified as part of the records review and the site investigation.

Table 8. Water Body Site Investigations Summary for the North Kent Wind 1 Project – Big Creek Drain

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Unnamed Drain F	NWB-221	• Ephemeral • Limited definition • Terrestrial vegetation on feature bed	N/A	No	No
Kennedy Drain	WB-112	• Intermittent • Limited definition • Dense emergent vegetation	WT- >120 AR- 114 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-238	• Ephemeral • Limited definition • Dry during site investigation	N/A	No	No
Hooker Drain	WB-111	• Intermittent • Limited definition • Dense patches of watercress sp. throughout	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Big Creek Drain	WB-086 WB-087 WB-088 WB-089 WB-090 WB-091 WB-092 WB-093 WB-094 WB-095 WB-096 WB-097 WB-098 WB-099 WB-100 WB-101 WB-102 WB-104 WB-103 WB-150 WB-105 WB-151	• Permanent • Well defined • Low degree of sinuosity • Straight between WB-093 and WB-096 • Highly turbid flow during site investigation • Fish observed within channel	WT- >120 AR- Overlapping CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Mills Drain	WB-107	• Intermittent • Limited definition • Channelized	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-222	• Ephemeral • Limited definition • Large trees along feature bed	N/A	No	No
Unnamed Drain C	WB-085 WB-106	• Intermittent • Limited definition • Channelized • Cattail sp. present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Johnson Drain	WB-109 WB-110	• Intermittent • Limited definition • Patches of emergent aquatic vegetation	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
	NWB-223	• Ephemeral • Limited definition • Terrestrial grasses on feature bed	N/A	No	No
Faubert Drain	WB-108	• Intermittent • Limited definition • Dense patches of *Phragmites* sp.	WT- 41 (T36) AR- Overlapping CL- Overlapping CA- overlapping SI- >120	Yes	Yes

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Pollock Drain	WB-083 WB-113	• Intermittent upstream • Limited definition • Emergent vegetation • Permanent downstream • Well defined • Dense aquatic vegetation present • Aquatic invertebrates observed throughout	WT- 30.2 (T14) AR- 5 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Townline Drain	WB-145 WB-146 WB-114	• Intermittent upstream • Limited definition • Dense stands of *Phragmites* sp. • Permanent downstream • Well-defined • Aquatic vegetation present	WT- >120 AR- >120 CB- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain G	WB-166 WB-167 WB-168 WB-169	• Intermittent • Limited definition • Aquatic vegetation present	WT- >120 AR- >120 CB- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Pond B	NWB-233	• Man-made pond	N/A	No	No

**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: Collection Line
CA: Construction Activity/Temporary Infrastructure/Balance of Operations
SI: Supporting Infrastructure - Building/Substation/Laydown Area/Point of Interconnect

Rankin Creek

The records review identified a total of 5 potential water bodies associated with the Rankin Creek drainage area, and within the Project Area. All of these potential water bodies are designated as warmwater fisheries, or intermittent drainage features based on the Conservation Authority-DFO drainage classification system (Thames-Sydenham and Region Source Protection Committee 2014).

NRSI biologists conducted site investigations at these 5 potential water bodies associated with the Rankin Creek drainage area. No additional drainage features were discovered during site investigations. NRSI biologists have confirmed that 4 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 below. Maps 4 and 5 show drainage features identified as part of the records review and the site investigation.

Table 9. Water Body Site Investigations Summary for the North Kent Wind 1 Project – Rankin Creek Drainage Area

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Hyatt Fryer Drain	NWB-229 NWB-228	• Ephemeral • Limited definition • Dense terrestrial grasses on feature bed	N/A	No	No
Rankin Creek Drain	WB-123 WB-149 WB-124 WB-125 WB-126 WB-127 WB-128 WB-129 WB-130	• Intermittent upstream portion (WB-123, WB-149) • Limited definition • Some aquatic vegetation present • Permanent downstream • Well defined • Some sinuosity • Abundant aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
King Drain	WB-131	• Intermittent • Limited definition • Emergent aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Montgomery Drain	WB-192	• Intermittent • Limited definition • Terrestrial grasses on channel bed • Patches of aquatic vegetation	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain T	WB-204[1]	• Intermittent • Defined • Backwater from Rankin Creek	WT- >120 AR- >120 CL- 96 CA- 96 SI- >120	Yes	Yes

[1]*Alternative site investigation conducted on April 21, 2015 due to lack of site access*

Legend
WT: Wind Turbine
AR: Access Road
CL: Collection Line
CA: Construction Activity/Temporary Infrastructure/Balance of Operations
SI: Supporting Infrastructure - Building/Substation/Laydown Area/Point of Interconnect

Marchand Drain

A small portion of the Marchand Drain drainage area is within the Project Area. The records review identified 1 potential water body associated with the Marchand Drain drainage area. This potential water body does not appear on thermal regime mapping that was reviewed as part of the records review (Thames-Sydenham and Region Source Protection Committee 2014). The portion of Marchand Drain that is within the Project Area is the upper-most headwaters of this drainage feature. Marchand Drain is shown on Map 5.

NRSI biologists conducted a site investigation at the 1 potential water body associated with the Marchand Drain drainage area. No additional drainage features were discovered during site investigations. NRSI biologists have confirmed that this 1 drainage feature has characteristics that warrant designation as a water body, as defined by the REA Regulation. A general summary of the drainage feature considered as part of the site investigation, including the closest distance to the Project Location, is provided in Table 10 below.

Table 10. Water Body Site Investigations Summary for the North Kent Wind 1 Project – Marchand Drain Drainage Area

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Marchand Drain	WB-193	• Intermittent • Limited definition • Abundant filamentous algae	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes

Legend
WT: Wind Turbine
AR: Access Road
CL: Collection Line
CA: Construction Activity/Temporary Infrastructure/Balance of Operations
SI: Supporting Infrastructure - Building/Substation/Laydown Area/Point of Interconnect

Southwest Lower Thames River

The records review identified a total of 5 potential water bodies associated with the Southwest Lower Thames River drainage area, and within the Project Area. Site investigations resulted in the discovery of 9 additional drainage features associated with the Southwest Lower Thames River that were not shown on base mapping and were not visible on aerial photographs. Thermal classification for the drainage features in the Southwest Lower Thames River drainage area was not available at the time of this report.

NRSI biologists conducted site investigations at the 5 potential water bodies associated with the Southwest Lower Thames River drainage area, as well as at 9 additional drainage features that were not included in base mapping and were not visible on aerial photographs. NRSI biologists have confirmed that 12 drainage features have characteristics that warrant designation as 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 11 below. Maps 5, 8, 9, and 10 show drainage features identified as part of the records review and the site investigation.

Table 11. Water Body Site Investigations Summary for the North Kent Wind 1 Project – Southwest Lower Thames River Drainage Area

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Unnamed Watercourse	WB-156 WB-157 WB-158 WB-159 WB-160 WB-161	• Intermittent • Well defined • Slight sinuosity • Aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- overlapping SI- >120	Yes	Yes
Hind Drain	WB-194	• Intermittent • Limited definition • Emergent and floating aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain H	WB-195 WB-196 WB-197	• Intermittent • Limited definition • Emergent and floating aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
	NWB-251 NWB-252	• Ephemeral • Limited definition • Terrestrial grasses along feature bed	N/A	No	No
Unnamed Drain I	WB-181 WB-182 WB-183 WB-184	• Intermittent • Limited definition • Aquatic vegetation present	WT- >120 AR- 12 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain J	WB-185	• Intermittent • Limited definition • Aquatic vegetation present	WT- >120 AR- 19 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain K	WB-176 WB-177 WB-178	• Intermittent upstream • Limited definition (WB-176) • Permanent downstream (WB-178) • Well defined • Aquatic vegetation present	WT- 43 (T48) AR- >0.1* CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain L	WB-170 WB-171 WB-172 WB-173 WB-198 WB-199 WB-174 WB-175	• Permanent • Well defined • Alternating between straight and slightly sinuous • Dense patches of aquatic vegetation present	WT- 34 (T72) AR- Overlapping CL- Overlapping CA- Overlapping SI- 94	Yes	Yes
Unnamed Drain M	WB-179 WB-180	• Intermittent • Limited definition • Straightened • Patches of aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain N	NWB-250 NWB-249	• Ephemeral • Limited definition	N/A	No	No
Unnamed Drain O	WB-191 WB-189**	• Intermittent • Limited definition • Aquatic vegetation present	WT- >120 AR- 2 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain P	WB-162	• Intermittent • Well defined • Aquatic vegetation present	WT- >120 AR- >120 CL- Overlapping CA- Overlapping SI- >120	Yes	Yes

Water Body	Survey Location(s)	Water Body Description	Closest Distance to Project Component (m)	Water Body (Yes/No)	EIS Required (Yes/No)
Unnamed Drain Q	WB-163 WB-164 WB-165	• Intermittent • Limited definition • Straightened • Patches of aquatic vegetation present	WT- >120 AR- Overlapping CL- Overlapping CA- Overlapping SI- >120	Yes	Yes
Unnamed Drain R	NWB-254 NWB-253	• Ephemeral • Limited definition • Terrestrial grasses on feature	N/A	No	No
Unnamed Drain S	WB-202** WB-188** WB-187** WB-186** WB-190	• Intermittent • Well defined • Straightened • Patches of aquatic vegetation present	WT- >120 AR- >0.1* CL- Overlapping CA- Overlapping SI- >0.1*	Yes	Yes

**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)*
***On the mapping, this watercourse appears to be overlapped; however, the substation and associated infrastructure will be located >30m from the watercourse.*

Legend
WT: Wind Turbine
AR: Access Road
CL: Collection Line
CA: Construction Activity/Temporary Infrastructure/Balance of Operations
SI: Supporting Infrastructure - Building/Substation/Laydown Area/Point of Interconnect

5.2.3 Seepage Areas

No seepage areas were identified during the extensive site investigations that were completed at the North Kent Wind 1 Project.

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 12.

Table 12. 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	The records review identified 48 potential water bodies to be overlapping the Project Location, including 6 within the Maxwell Creek drainage area, 27 within the Little Bear Creek drainage area, 6 within the Big Creek Drain drainage area, 3 within the Rankin Creek drainage area, 1 within the Marchand Drain drainage area, and 5 within the Southwest Lower Thames River drainage area.	Site investigations identified 53 confirmed water bodies to be overlapping the Project Location, including 4 within the Maxwell Creek drainage area, 25 within the Little Bear Creek drainage area, 9 within the Big Creek drainage area, 3 within the Rankin Creek drainage area, 1 within the Marchand Drain drainage area, and 11 within the Southwest Lower Thames River drainage area. All of these water bodies represent permanent or intermittent drainage features. Within the SCRCA jurisdiction, it is likely that these confirmed water bodies are designated as warmwater fisheries or intermittent drainage features, based on the information provided in the records review (Thames-Sydenham and Region Source Protection Committee 2014). These locations where the water bodies overlap the Project Location represent proposed crossing locations for access roads, collection lines, and/or construction disturbance areas.
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	The records review identified no lakes, not including lake trout lakes, within 120m of the Project Location.	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	The records review identified no lake trout lakes within 300m of the Project Location.	No corrections.
iv. Within 120 m of the average annual high water mark of a permanent or intermittent stream	The records review identified 54 potential water bodies located within 120m of the Project Location, including 7 within the Maxwell Creek drainage area, 30 within the Little Bear Creek drainage area, 6 within the Big Creek Drain drainage area, 5 within the Rankin Creek drainage area, 1 within the Marchand Drain drainage area, and 5 within the Southwest	Site investigations identified 62 confirmed water bodies located within 120m of the Project Location, including 6 within the Maxwell Creek drainage area, 29 within the Little Bear Creek drainage area, 10 within the Big Creek Drain drainage area, 5 within the Rankin Creek drainage area, 1 within the Marchand Drain drainage area, and 12 within the Southwest Lower Thames River drainage area. All of these water bodies represent

Criteria	Result from Records Review	Corrections Based on Site Investigations
	Lower Thames River drainage area.	permanent or intermittent drainage features. Based on information collected during the records review, it is likely that the thermal classification of these water bodies is warmwater (Region Source Protection Committee 2014).
v. Within 120 m of a seepage area	The records review identified no seepage areas within 120m of the Project Location.	No corrections.

5.4 Summary

In accordance with the REA Regulation, NRSI has completed water body site investigations for the proposed North Kent Wind 1 Project Area. Site investigations were conducted to confirm the presence/absence of water bodies 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.

The results of this site investigation have been summarized in Table 13 below.

Table 13. Summary of Site Investigations for the North Kent Wind 1 Project

Criteria	Associated Water Body
i. In a water body	Site investigations identified 53 confirmed water bodies to be overlapping the Project Location, including 4 within the Maxwell Creek drainage area, 25 within the Little Bear Creek drainage area, 9 within the Big Creek Drain drainage area, 3 within the Rankin Creek drainage area, 1 within the Marchand Drain drainage area, and 11 within the Southwest Lower Thames River drainage area. These overlaps represent proposed crossing locations for access roads, collection lines and/or construction disturbance areas. All of these water bodies represent permanent or intermittent drainage features. Based on information collected in the records review, it is likely that the confirmed water bodies within the SCRCA jurisdiction are warmwater fisheries or intermittent drainage features (Thames-Sydenham and Region Source Protection Committee 2014). Thermal classification information was not available for Marchand Drain or the drainage features within the LTVCA; however, it is likely that these are warmwater fisheries as well (Thames-Sydenham and Region Source Protection Committee 2014). Each of these water bodies will be considered in detail as part of the Water Body Report.
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

Criteria	Associated Water Body
iv. Within 120 m of the average annual high water mark of a permanent or intermittent stream	Site investigations identified 62 confirmed water bodies to be located within 120m of the Project Location, including 6 within the Maxwell Creek drainage area, 29 within the Little Bear Creek drainage area, 10 within the Big Creek Drain drainage area, 4 within the Rankin Creek drainage area, 1 within the Marchand Drain drainage area, and 12 within the Southwest Lower Thames River drainage area. All of these water bodies represent permanent or intermittent drainage features, with thermal regimes as identified in Table 13 section i. Each of these water bodies will be considered in more detail as part of the Water Body Report.
v. Within 120 m of a seepage area	None

6.0 References

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Personal Communication

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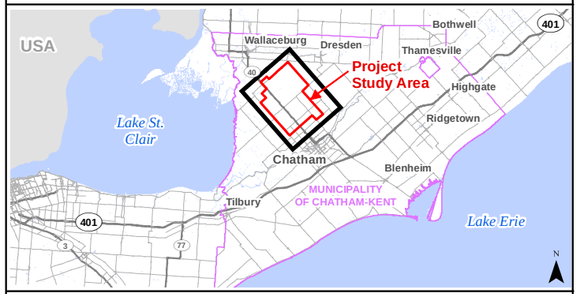
Maps

Map 1

North Kent Wind 1 Project

Project Area and Natural Features



Legend

- Utility Line
- Highway
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Meteorological Tower
- Proposed Collection Line
- Proposed Access Road
- Proposed POI/ Substation/ Laydown/ O&M Building
- Proposed Laydown Area

Natural Features

- Permanent Watercourse
- Intermittent Watercourse
- Open Water
- Woodland
- Important Bird Area (IBA)

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Aquatic, Terrestrial and Wetland Biologists

Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:55,000**

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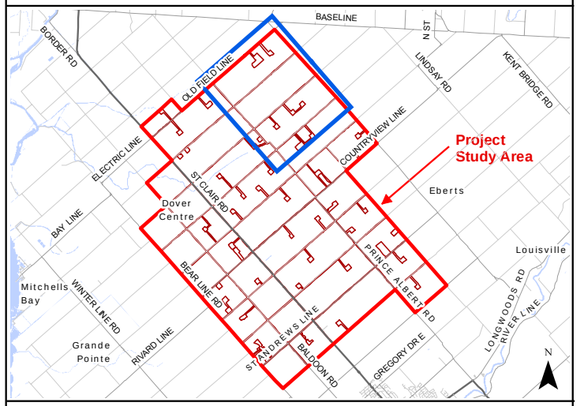
Map 2

North Kent Wind 1 Project

Water Body Assessment



Legend

- Utility Line
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Meteorological Tower
- Proposed Collection Line
- Proposed Access Road

Aquatic Features

- Permanent Watercourse
- SCRCA Watercourse
- Open Water

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

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Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

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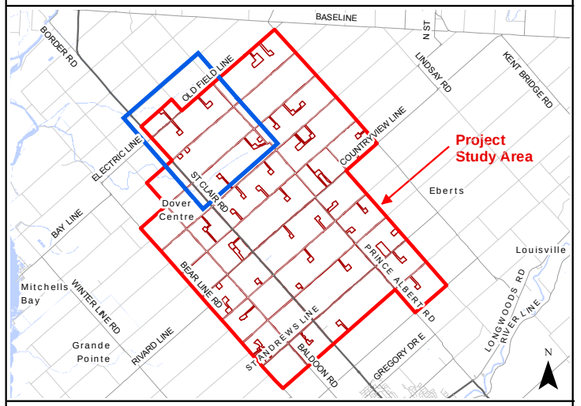
Map 3

North Kent Wind 1 Project

Water Body Assessment



Legend

- Utility Line
- Highway
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road

Aquatic Features

- Permanent Watercourse
- SCRCA Watercourse
- Open Water

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

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Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

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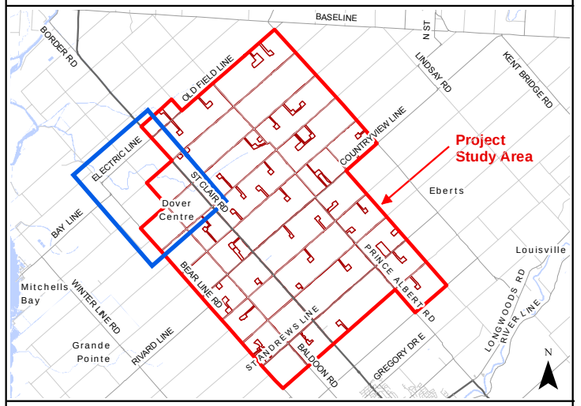
Map 4

North Kent Wind 1 Project

Water Body Assessment



Legend

- Highway
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road

Aquatic Features

- Permanent Watercourse
- Intermittent Watercourse
- SCRCA Watercourse
- Open Water

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

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Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

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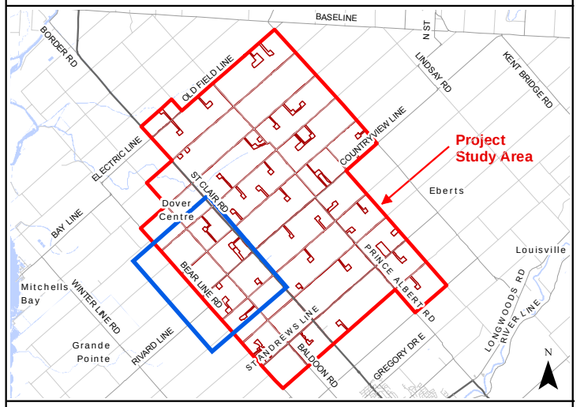
Map 5

North Kent Wind 1 Project

Water Body Assessment



Legend

- Highway
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road

Aquatic Features

- Permanent Watercourse
- Intermittent Watercourse
- SCRCA Watercourse

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

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Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

0 500 1,000 Metres

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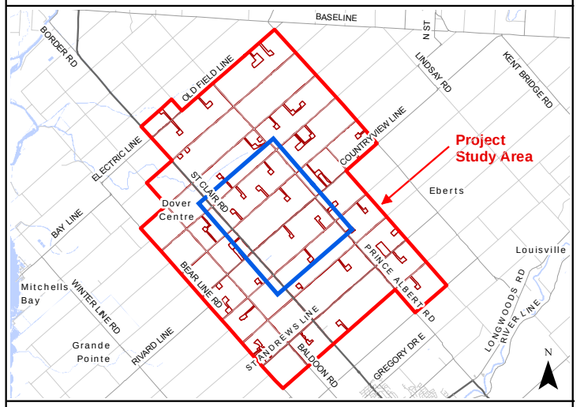
Map 6

North Kent Wind 1 Project

Water Body Assessment



Legend

- Utility Line
- Highway
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road
- Proposed POI/ Substation/ Laydown/ O&M Building

Aquatic Features

- Permanent Watercourse
- SCRCA Watercourse
- Open Water

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

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Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

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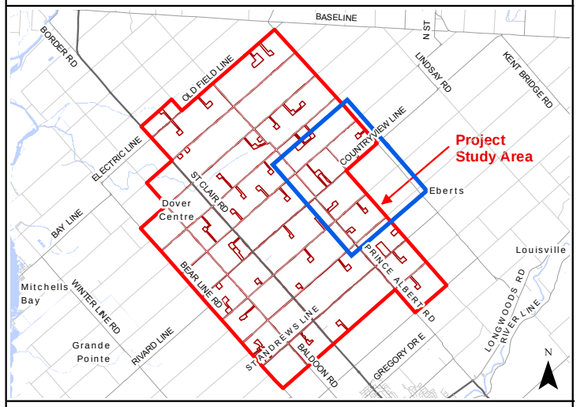
Map 7

North Kent Wind 1 Project

Water Body Assessment



Legend

- Utility Line
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road
- Proposed POI/ Substation/ Laydown/ O&M Building

Aquatic Features

- Permanent Watercourse
- SCRCA Watercourse

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

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Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

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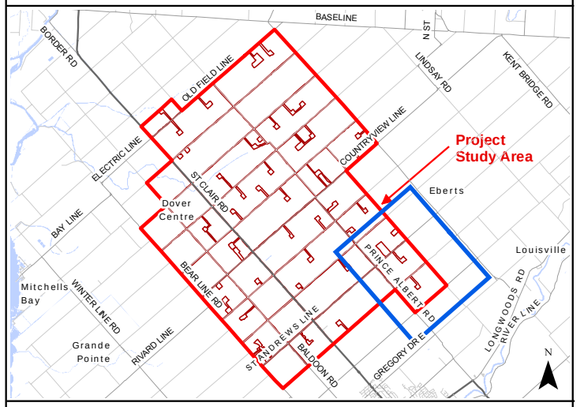
Map 8

North Kent Wind 1 Project

Water Body Assessment



Legend

- Utility Line
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road
- Proposed POI/ Substation/ Laydown/ O&M Building

Aquatic Features

- Permanent Watercourse
- SCRCA Watercourse

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

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Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

0 500 1,000 Metres

N

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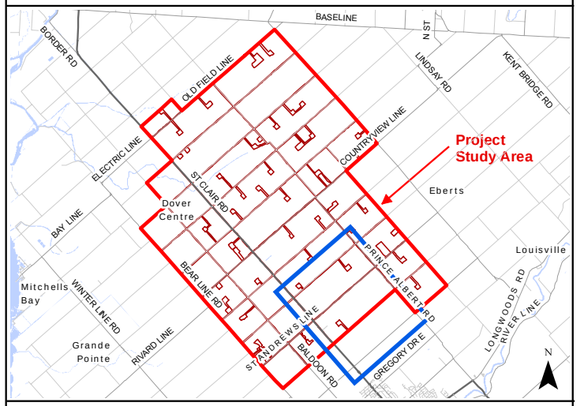
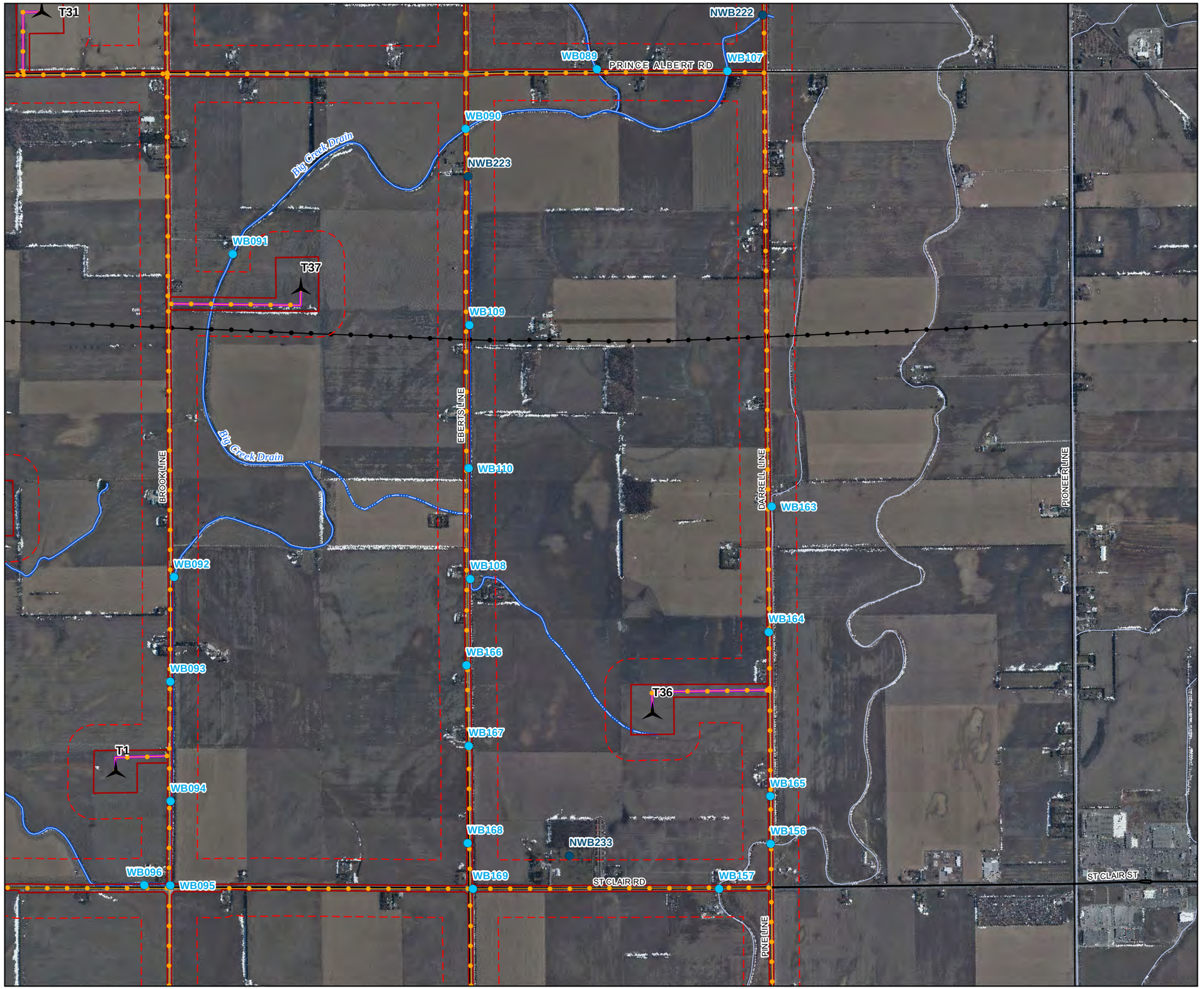
Map 9

North Kent Wind 1 Project

Water Body Assessment





Legend

- Utility Line
- Highway
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road

Aquatic Features

- Permanent Watercourse
- Intermittent Watercourse
- SCRCA Watercourse

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

0 500 1,000 Metres

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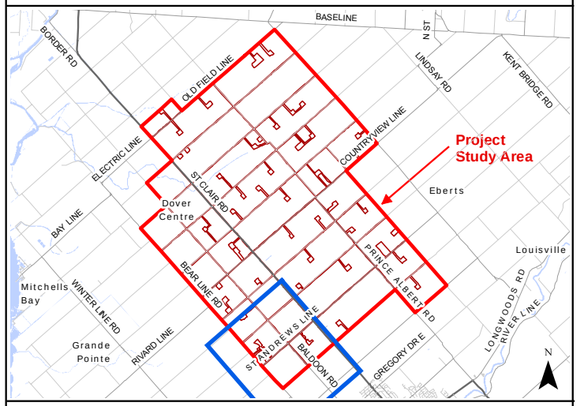
Map 10

North Kent Wind 1 Project

Water Body Assessment



Legend

- Highway
- Primary Road
- Secondary Road

Project Location

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Meteorological Tower
- Proposed Collection Line
- Proposed Access Road
- Proposed Laydown Area

Aquatic Features

- Permanent Watercourse
- SCRCA Watercourse

Water Body Assessment

- Water Body Location (WB)
- Non-Water Body Location (NWB)

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Project: 1612 Date: October 22, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:17,500**

0 500 1,000 Metres

N

Path: X:\1612_NorthKentWP\NRSI_1612_AQU_Map2toMap10_WaterBodyAssessment_18K_2015_09_20_KEB.mxd

Appendix I
Site Investigation Field Notes

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Renewable Energy Water Body Site Investigation

Office Use Only

Project (No. & Name): 1612 N. Kent **Field Staff:** BEP

Survey Date: 13-APR-15 **Weather Conditions**

Time Started: 1315 Temp (°C), Wind, Cloud Cover (%), Precipitation: 19°C, 4/SW, 70%, 0

Time Finished: 1330 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT-002 **GPS Location** **Estimated Length Assessed**

Feature Name: Maxwell Creek Dr Easting: 0394174 Upstream: 50

Drainage System: Lake St Clair Northing: 4713505 Downstream: 50

Location in System: Old field Ln *Water Body No.* 001

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☐ Straight ☑ Meandering (H/M/L Sinuosity): MEDIUM ☑ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 3.5 Avg. Water Depth (m): 0.5 Max Pool Depth (m): 0.75

Avg. Bankfull Width (m): 4 Avg. Bankfull Depth (m): 0.75

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –

Bank Slope & Stability: High slope M - stability – Feature Gradient (H/M/L): Low

Other Comments: –

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Isolated pockets of woody debris

Vegetation (with % dominant): T. Grasses (70%) Lesser Duckweed (30%)

Surface Water Quality

Temp (°C): 10 Turbidity (D/M/H): Low Colour: Brown Comments:

Riparian Habitat

Vegetation: T. Grasses

Canopy Cover (% and species): 0

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

pockets of algae / Duckweed

2.5 m open box coulvert at road crossing

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	19	S	–	Other:	–	–	–
Downstream:	20	N	–				
Feature Bed:	21	N	–				
Culvert / Bridge:	22	–	2.5 m open box coulvert				
Vegetation:	23	S	–				
Landscape Photo:	24	N	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

Soft Fine Substrate adjacent soil ~ more clay

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

no indication of sediment deposits

Presence of Hydric Soils:

Patches of

Describe Debris and / or Leaf Litter in Feature (type,amount, location):

Patches of Leaf Litter along banks

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature *(Circle any present)*

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral

Evidence of Water Body Status: Presence of Duckweed suggests Permanence

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Renewable Energy Water Body Site Investigation

Office Use Only

Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 13-APR-15 **Weather Conditions**
Time Started: 1335 Temp (°C), Wind, Cloud Cover (%), Precipitation: 19°C, 4/SW, 70%, 0
Time Finished: 1350 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT-003 **GPS Location** **Estimated Length Assessed**
Feature Name: Maxwell Cr Easting: 0394611 Upstream: 100
Drainage System: Lower St Clair Northing: 4713182 Downstream: 100
Location in System: Old field Line *Water Body No.* 002

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☐ Straight ☑ Meandering (H/M/L Sinuosity): Low ☐ Defined ☑ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 2 Avg. Water Depth (m): 0.4 Max Pool Depth (m): 0.85
Avg. Bankfull Width (m): 4.5 Avg. Bankfull Depth (m): 0.60
Substrate Composition (%) Boulder: – Cobble: 10 Gravel: 7 Fines: 90
Bed Morphology (%) Flat: 30 Riffle: – Run: 40 Pool: 30
Bank Slope & Stability: High slope / moderate stability Feature Gradient (H/M/L): Low
Other Comments:
Cobble at bridge / Stabilizing banks near Road

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Dense Leaf litter near cattail sp
Vegetation (with % dominant): Cattail sp (70%) Lesser duck weed (30%)

Surface Water Quality
Temp (°C): 10 Turbidity (L/M/H): Low Colour: Green Comments: –

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0 %
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
12m span bridge at Oldfield Ln ~ Cobble embankments with 3.5m CSP

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	24	W	–	Other:	–	–	–
Downstream:	26	E	–				
Feature Bed:	27	–	–				
Culvert / Bridge:	28	–	U/S side				
Vegetation:	29	W	–				
Landscape Photo:	30	W	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
Soft Fine substrate similar to adjacent fields
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
no indication of flood plain.
Presence of Hydric Soils:

Describe Debris and / or Leaf Litter in Feature (type, amount, location):
Dense patches of Leaf litter along banks
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
none
Attached (Algae), Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Presence of Duckweed / cattail sp suggest permanence

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 13-APR-15 **Weather Conditions**
Time Started: 1410 Temp (°C), Wind, Cloud Cover (%), Precipitation: 21°C, S/SW, 70%, 0
Time Finished: 1425 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT-004 **GPS Location** **Estimated Length Assessed**
Feature Name: Maxwell CR DR Easting: 0393290 Upstream: 50
Drainage System: Lake St Clair Northing: 4712013 Downstream: 50
Location in System: at Oldfield Ln *Water Body No.* 003

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☐ Straight ☑ Meandering (H/M/L Sinuosity): Low ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 4.6 Avg. Water Depth (m): 0.6 Max Pool Depth (m): 1.0
Avg. Bankfull Width (m): 6 Avg. Bankfull Depth (m): 0.9
Substrate Composition (%) Boulder: – Cobble: 10 Gravel: – Fines: 90
Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –
Bank Slope & Stability: High slope High stability Feature Gradient (H/M/L): –
Other Comments:
very dense areas of Cattail sp

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Patches of Leaf litter Dense patches of Cattail sp
Vegetation (with % dominant): Cattail sp (95%) duckweed (5%)

Surface Water Quality
Temp (°C): 10 Turbidity (D/M/H): Low Colour: Green Comments: –

Riparian Habitat
Vegetation: T. Grasses D. Shrubs
Canopy Cover (% and species): 5% D. Shrub
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
no fish obs
2.5 m CSP w/ Dense cobble at road crossing

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	35	S	–	Other:	–	–	–
Downstream:	36	N	–				
Feature Bed:	37	–	–				
Culvert / Bridge:	38	–	–				
Vegetation:	~~38~~ 39	–	–				
Landscape Photo:	~~39~~ 40	N	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
Soft fine substrate same as adjacent fields
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
no sediment deposits
Presence of Hydric Soils:

Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Dense Leaf litter along banks
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Presence of aquatic veg suggests permanence

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Renewable Energy Water Body Site Investigation
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Project (No. & Name): 1612 N. Kent **Field Staff:**

Survey Date: 13-APR-15 **Weather Conditions**
Time Started: 1430 Temp (°C), Wind, Cloud Cover (%), Precipitation: 21°C, S/SW, 100%, 0
Time Finished: 1445 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT-006 **GPS Location** **Estimated Length Assessed**
Feature Name: Maxwell CR DR Easting: 0392933 4711658 Upstream: 100
Drainage System: Lake st Clair Northing: Downstream: 100
Location in System: at Oldfield Ln / Prince Albert Rd *Water Body No.* 004

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☐ Straight ☑ Meandering (H/M/L Sinuosity): Low ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow
Avg. Wetted Width (m): 6.0 Avg. Water Depth (m): 0.75 Max Pool Depth (m): 1
Avg. Bankfull Width (m): 7.5 Avg. Bankfull Depth (m): 1.5
Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100
Bed Morphology (%) Flat: – Riffle: 100 Run: – Pool: –
Bank Slope & Stability: high slope / poor stability – Signs of Erosion Feature Gradient (H/M/L): LOW
Other Comments: Signs of channel clean out

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Deposits of woody debris
Vegetation (with % dominant): Phrag 100%
Surface Water Quality
Temp (°C): 8 Turbidity (L/M/H): MEDIUM Colour: Brown Comments: –

Riparian Habitat
Vegetation: PHRAG, Dogwood, D Tree
Canopy Cover (% and species): 40% D. Trees
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
12 m open box culvert crossing intersection
Shows Significant wall

Photographs	**No.**	**Direction**	**Description**		**No.**	**Direction**	**Description**
Upstream:	41	–	–	Other:	–	–	–
Downstream:	42	–	–				
Feature Bed:	43	–	–				
Culvert / Bridge:	44	–	–				
Vegetation:	45	–	–				
Landscape Photo:	46	–	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
–
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present) None

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:

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Project (No. & Name): 1612 N. Keal **Field Staff:** BEP

Survey Date: 13-APR-17 **Weather Conditions**

Time Started: 1520 Temp (°C), Wind, Cloud Cover (%), Precipitation: 17°C, S/SW, 100%, Light rain

Time Finished: 1535 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT-008 **GPS Location** **Estimated Length Assessed**

Feature Name: Maxwell Cr Drain Easting: 0391030 Upstream: 50

Drainage System: Lake St chain Northing: 4710980 Downstream: 50

Location in System: – *Water Body No.* 005

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☐ Straight ☑ Meandering (H/M/L Sinuosity): Low ☑ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 8 Avg. Water Depth (m): 0.75 Max Pool Depth (m): 0.9

Avg. Bankfull Width (m): 12 Avg. Bankfull Depth (m): 1.2

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –

Bank Slope & Stability: High slope moderate stability Feature Gradient (H/M/L): –

Other Comments: evidence of channelization through out reach

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): –

Vegetation (with % dominant): 90% Phrag 10% Duckweed

Surface Water Quality

Temp (°C): 10 Turbidity (L/M/H): MEDIUM Colour: Brown Comments: –

Riparian Habitat

Vegetation: Tame Grasses / Phrag

Canopy Cover (% and species): 0

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish obs

9m Bridge made up of 2 4.5m opn box culverts

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	55	SW	–	Other:	–	–	–
Downstream:	56	NE	–				
Feature Bed:	57	–	–				
Culvert / Bridge:	59	–	–				
Vegetation:	58	–	–				
Landscape Photo:	60	NE	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

–

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

no Sediment deposits obs

Presence of Hydric Soils:

Describe Debris and / or Leaf Litter in Feature (type,amount, location):

patches of debris along banks

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral

Evidence of Water Body Status: Presence of aquatic veg surface ponding

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Project (No. & Name): 1612 N. Tent **Field Staff:** BEB

Survey Date: 28APR15 **Weather Conditions**

Time Started: 1155 Temp (°C), Wind, Cloud Cover (%), Precipitation: 11.3°, 4 NNW, 30%, 0

Time Finished: 1240 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT173 **GPS Location** **Estimated Length Assessed**

Feature Name: Muskwell Cr Easting: 0390442 Upstream: 150

Drainage System: Lwr Sx Chan Northing: 6710628 Downstream: 150

Location in System: Near T34 *Water Body No.* 006

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☐ Straight ☑ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 5.25 Avg. Water Depth (m): unk Max Pool Depth (m): unk

Avg. Bankfull Width (m): 6.0 Avg. Bankfull Depth (m): unk

Substrate Composition (%) Boulder: Cobble: Gravel: Fines:

Bed Morphology (%) Flat: 100 Riffle: Run: Pool:

Bank Slope & Stability: High slope Low stability - Exposed soil Feature Gradient (H/M/L):

Other Comments:

Turbidity low High

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): over hanging bank woody debris

Vegetation (with % dominant): none observed

Surface Water Quality

Temp (°C): 9 Turbidity (L/M/H): H Colour: Brown Comments: –

Riparian Habitat

Vegetation: D. Trees / Shrubs

Canopy Cover (% and species): 80% D. Trees

Adjacent Land Use: NF

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish obs

well defined dr in V. High turbidity

Photographs	**No.**	**Direction**	**Description**		**No.**	**Direction**	**Description**
Upstream:	8&9	–	–	Other:	–	–	–
Downstream:	8&9	–	–				
Feature Bed:	0&28	–	–				
Culvert / Bridge:	–	–	–				
Vegetation:	–	–	–				
Landscape Photo:	0&33	–	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

–

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

–

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type,amount, location):

over hanging bank veg along edges of channel

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

None

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

well defined channel w Large channel No aquatic veg obs due to high turbidity, Slots of algae along banks

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Project (No. & Name): 1612 N. Kent **Field Staff:**

Survey Date: 13-APR-15 **Weather Conditions**
Time Started: 1250 Temp (°C), Wind, Cloud Cover (%), Precipitation: 17°, 4SW, 70%, 0
Time Finished: 1305 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT-001 **GPS Location** **Estimated Length Assessed**
Feature Name: DALY DR Easting: 0395511 Upstream: 50
Drainage System: Lake St Clair Northing: 4713966 Downstream: 10
Location in System: Oldfield Line *Water Body No.* 007

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☑ Poorly Defined
☑ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow
Avg. Wetted Width (m): 1.2 Avg. Water Depth (m): 0.1 Max Pool Depth (m): 0.2
Avg. Bankfull Width (m): 1.75 Avg. Bankfull Depth (m): 0.25
Substrate Composition (%) Boulder: — Cobble: — Gravel: — Fines: 100
Bed Morphology (%) Flat: — Riffle: — Run: — Pool: 100
Bank Slope & Stability: Highslope / High stability Feature Gradient (H/M/L): Low
Other Comments:
Channelized Dr ending at OLDFIELD Ln

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): woody debris / Leaf litter
Vegetation (with % dominant): Cattail Sp 100%
Surface Water Quality
Temp (°C): 10 Turbidity (C/M/H): Low Colour: Clear Comments: Standing water

Riparian Habitat
Vegetation: T. Grasses / Cattail Sp
Canopy Cover (% and species): 30% cattail sp
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No FISH
CHANNELIZED DR Signs of clean out
poorly defined Fish banks
0.25 m CSP Culvert crossing Oldfield Ln

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	13	NW	–	Other:	–	–	–
Downstream:	12	SE	–				
Feature Bed:	14	SE	–				
Culvert / Bridge:	15/16	—	US/DS culvert				
Vegetation:	17		–				
Landscape Photo:	18	SE	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
100% Fines Same soil as adjacent AG Field
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
Signs of high water mark / sediment Deposits along engineered channel
Presence of Hydric Soils:

Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Dense Leaf litter / Cattails
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
No
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☑ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
No signs of water flow But cattails Suggest some presence.

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 14 APR 15 **Weather Conditions**

Time Started: 1330 Temp (°C), Wind, Cloud Cover (%), Precipitation: 15°C, 2/S, 30%, R

Time Finished: 1345 *Precipitation in Prior 48hrs (mm):* 2.2 mm

Site Code: LSCT032 **GPS Location** **Estimated Length Assessed**

Feature Name: Kirby Dr Easting: 0396500 Upstream: 10

Drainage System: Lake St Clair Northing: 4713397 Downstream: 100

Location in System: ord 28 *Water Body No.* 008

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 2.5 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.2

Avg. Bankfull Width (m): 4.0 Avg. Bankfull Depth (m): 0.35

Substrate Composition (%) Boulder: — Cobble: — Gravel: 30 Fines: 70

Bed Morphology (%) Flat: 100 Riffle: — Run: — Pool: —

Bank Slope & Stability: High Slope moderate Stability Feature Gradient (H/M/L): Low

Other Comments:

heavily choked w Shrubs

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Very dense Shrubs in Channel

Vegetation (with % dominant): D. Shrubs (90%) cattail sp (10%)

Surface Water Quality

Temp (°C): 9 Turbidity (C/M/H): Low Colour: clear Comments: —

Riparian Habitat

Vegetation: T.Grasses / D. Trees

Canopy Cover (% and species): 100% U/S D. Shrubs

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish Obs

very dense T. veg within main Channel

patches of cattail/algae O/S

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	821	NE	—	Other:	—	—	—
Downstream:	822	SE	—				
Feature Bed:	823	—	—				
Culvert / Bridge:			—				
Vegetation:	824	—	—				
Landscape Photo:	825	NE	—				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

—

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

sed deposits at u/s end along banks + Shrubs

Presence of Hydric Soils:

—

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

Dry grass / Leaf Litter on edges of Channel

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

None

Attached (Algae), Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

heavy T. veg suggests flow and water for most of the year dry beds however cattail sp O/S suggests

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Project (No. & Name): 16R N. Kent **Field Staff:** BEB

Survey Date: 14 APR 15 **Weather Conditions**
Time Started: 1310 Temp (°C), Wind, Cloud Cover (%), Precipitation: 15°C, 2/S, 30%, 0
Time Finished: 1325 *Precipitation in Prior 48hrs (mm):* 2.8 mm

Site Code: LSCT-031 **GPS Location** **Estimated Length Assessed**
Feature Name: 13th Con RD DR N Easting: 0396723 Upstream: 150
Drainage System: Lake St Clair Northing: 4713148 Downstream: 150
Location in System: Both in/28 *Water Body No.* 009

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 4.0 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.35
Avg. Bankfull Width (m): 5.5 Avg. Bankfull Depth (m): 0.80
Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100
Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –
Bank Slope & Stability: moderate Slope / High Stability Feature Gradient (H/M/L): –
Other Comments:
Channelized Roadside Drain, leaning pole may suggest some instability

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Isolated patches of dry grasses
Vegetation (with % dominant): Duckweed (10%) cattail (65%) Phrag (25%)

Surface Water Quality
Temp (°C): 9 Turbidity (C/M/H): Low Colour: Green Comments: –

Riparian Habitat
Vegetation: Phrag / T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
End of Kirby Dr beginning of 13th Con RD DR N.
Dense patches of cattail sp & emergents algae
No fish obs, Benthic invert obs
2.5m CSP in cobble

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	815	N	–	Other:	–	–	–
Downstream:	816	SW	–				
Feature Bed:	817	—	–				
Culvert / Bridge:	818	N	–				
Vegetation:	819	—	–				
Landscape Photo:	820	—	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
fines similar to surrounding ag fields
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
general sed. deposit on bed of feature, deposit along bank closest to road
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
None
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
none
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Presence of algae, benthics, suggest perennial, lack of veg on channel bed will defined banks

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Renewable Energy Water Body Site Investigation
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Project (No. & Name): 162 N. Kent **Field Staff:** BEB

Survey Date: 14 APR 15 **Weather Conditions**
Time Started: 1300 Temp (°C), Wind, Cloud Cover (%), Precipitation: 15°C, 2/S, 30%, 0
Time Finished: 1330 *Precipitation in Prior 48hrs (mm):* 2.8mm

Site Code: LSCT-030 **GPS Location** **Estimated Length Assessed**
Feature Name: 13th Con Rd OR N Easting: 039626 Upstream: 150
Drainage System: Lake St Clare Northing: 4713025 Downstream: 150
Location in System: Bush In *Water Body No.* 010

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized Dr
Avg. Wetted Width (m): 3.5 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.3
Avg. Bankfull Width (m): 5.0 Avg. Bankfull Depth (m): 0.50
Substrate Composition (%) Boulder: - Cobble: - Gravel: - Fines: 100
Bed Morphology (%) Flat: 100 Riffle: - Run: - Pool: -
Bank Slope & Stability: moderate Slope High Stability Feature Gradient (H/M/L): Low
Other Comments:
Channelized Roadside Drain

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): dense cattail sp
Vegetation (with % dominant): Cattail sp 100%
Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Low Colour: Brown Comments: -

Riparian Habitat
Vegetation: Phrag / T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No fish obs
Channelized Roadside drain
dense patches of cattails
cattails line feature

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	810	NE	-	Other:	-	-	-
Downstream:	811	SW	-				
Feature Bed:	812	-	-				
Culvert / Bridge:	———		-				
Vegetation:	813	-	-				
Landscape Photo:	814	NE	-				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
similar to surrounding ag fields
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
None
Presence of Hydric Soils:
-
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
Dense Dry Grasses / cattails Throughout
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached (Algae) Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Presence of Cattails sp Suggests some degree of permanence
veg doesn't cover entire bed of feature

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 14 APR 15 **Weather Conditions**

Time Started: 1250 Temp (°C), Wind, Cloud Cover (%), Precipitation: 15°C, 2/S, 30%, 0

Time Finished: 1300 *Precipitation in Prior 48hrs (mm):* 2.8mm

Site Code: LSCT-029 **GPS Location** **Estimated Length Assessed**

Feature Name: 13th Con RD DR N Easting: 0396297 Upstream: 150

Drainage System: Lake St Clare Northing: 4712766 Downstream: 150

Location in System: Bush Ln *Water Body No.* 011

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow Channelized

Avg. Wetted Width (m): 4.0 Avg. Water Depth (m): 0.3 Max Pool Depth (m): 0.65

Avg. Bankfull Width (m): 6.5 Avg. Bankfull Depth (m): 0.45

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –

Bank Slope & Stability: High slope / moderate stability Feature Gradient (H/M/L): Low

Other Comments:

Channelized road side ditch, some bank/slope erosion

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Dense T. Grasses / veg

Vegetation (with % dominant): T. Grasses / Phrag / cattails

Surface Water Quality

Temp (°C): 9 Turbidity (L/M/H): Low Colour: Brn. Comments: oil slick

Riparian Habitat

Vegetation: T. Grasses

Canopy Cover (% and species): 0

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

Channelized Dr

Stream bed covered in T. Grasses

no substrate sorting or signs of continuous flow

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	805	–	NE	Other:	–	–	–
Downstream:	806	–	SW				
Feature Bed:	807	–	———				
Culvert / Bridge:	———	———	———				
Vegetation:	808	–	–				
Landscape Photo:	809	–	NE				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

same as surrounding ag fields

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

none obs.

Presence of Hydric Soils:

none

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

Dense t. grasses on bed

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached Algae Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☑ No ☐ Additional evidence required

Flow Regime: ☐ Permanent ☑ Intermittent ☑ Ephemeral

Evidence of Water Body Status:

Presence of algae suggests permanent however observations D/S suggest otherwise (may also suggest high phosphorus content in water)

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Project (No. & Name): 162 N. Kent **Field Staff:** BER

Survey Date: 14 APR 15 **Weather Conditions**

Time Started: 1200 Temp (°C), Wind, Cloud Cover (%), Precipitation: 14°C, 2/SE, 40%, 0

Time Finished: 1210 *Precipitation in Prior 48hrs (mm):* 0.0mm

Site Code: ESCT026 **GPS Location** **Estimated Length Assessed**

Feature Name: 13th Conc RD OR N Easting: 03943 95 Upstream: 100

Drainage System: Lake St Clair Northing: 4711093 Downstream: 100

Location in System: Bush Line *Water Body No.* 012

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow Channelized Dr

Avg. Wetted Width (m): 4 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.2

Avg. Bankfull Width (m): 5.5 Avg. Bankfull Depth (m): 0.4

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –

Bank Slope & Stability: high stability high slope Feature Gradient (H/M/L): Low

Other Comments:

Channelized roadside dr no sign of permanent water flow

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): dense channel phrag

Vegetation (with % dominant): phrag (100%)

Surface Water Quality

Temp (°C): 9 Turbidity (C/M/H): Low Colour: clear Comments: –

Riparian Habitat

Vegetation: Phrag T. Grass

Canopy Cover (% and species): 0

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish obs

Stem bed entirely Lined w phrag

Channelized drain - no indication of permanent water flow

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	791	NE	–	Other: –	–	–	–
Downstream:	792	SW	–				
Feature Bed:	793	–	–				
Culvert / Bridge:	———	–	–				
Vegetation:	794	–	–				
Landscape Photo:	795	NE	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

choked w phrag, cannot see material, fines

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

–

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type,amount, location):

dried grasses & phrag covering feature bed, low flow area where no veg or litter occurs

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present) N/A

Water Body Determination Water Body? ☑ Yes ☑ No ☐ Additional evidence required

Flow Regime: ☐ Permanent ☑ Intermittent ☑ Ephemeral

Evidence of Water Body Status:

Channelized drain entirely Lined w phrag no other aquatic veg or signs of continuous water, absence of veg on channel bed indicates intermittent flows.

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Project (No. & Name): 161 N. Road **Field Staff:** BEB

Survey Date: 14APR16 **Weather Conditions**

Time Started: 1145 Temp (°C), Wind, Cloud Cover (%), Precipitation: 14°C, 2/SE, 40%, 0

Time Finished: 1855 *Precipitation in Prior 48hrs (mm):* 2.8mm

Site Code: LSOT-025 **GPS Location** **Estimated Length Assessed**

Feature Name: 13th Concession RD DR No. Easting: 0394033 Upstream: 100

Drainage System: Lake St Clair Northing: 4710778 Downstream: 100

Location in System: Bush Ln *Water Body No.* 013

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow Channelized Dr

Avg. Wetted Width (m): 4 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.2

Avg. Bankfull Width (m): 5.5 Avg. Bankfull Depth (m): 0.4

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) % Flat: 100 Riffle: – Run: – Pool: –

Bank Slope & Stability: high slope moderate stability Feature Gradient (H/M/L): –

Other Comments:

Channelized Roadside Dmtn ends at Prince Albert DR

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Entire stream bed covered w Phrag

Vegetation (with % dominant): Phrag 100%

Surface Water Quality

Temp (°C): 9 Turbidity (C/M/H): Low Colour: Clear Comments: –

Riparian Habitat

Vegetation: Phrag

Canopy Cover (% and species): 0

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish ob.

entire channel vegetated w Phrag

Channelized dr

no indication of permanence

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	786	NE	–	Other:	–	–	–
Downstream:	787	SW	–				
Feature Bed:	788	–	–				
Culvert / Bridge:		–	–				
Vegetation:	789	–	–				
Landscape Photo:	790	NE	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

choked w phrag, cannot see bed

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

none

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type,amount, location):

entire stream bed vegetated w Phrag no additional debris

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☑ No ☐ Additional evidence required

Flow Regime: ☐ Permanent ☑ Intermittent ☑ Ephemeral

Evidence of Water Body Status:

Entire stream bed vegetated w phrag no indication of continuous water flow WB based on u/s intermittency

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 14APR15 **Weather Conditions**
Time Started: 1405 Temp (°C), Wind, Cloud Cover (%), Precipitation: 14°C, 2/SE, 30%, 0
Time Finished: 1415 *Precipitation in Prior 48hrs (mm):* 2.2 mm

Site Code: LSCT-034 **GPS Location** **Estimated Length Assessed**
Feature Name: Wells Dr Easting: 0392132 Upstream: 50
Drainage System: Lake St Clare Northing: 4712710 Downstream: 50
Location in System: ont Chr SR *Water Body No.* 01M

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized
Avg. Wetted Width (m): 2.5 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.2
Avg. Bankfull Width (m): 4.5 Avg. Bankfull Depth (m): 0.35
Substrate Composition (%) Boulder: — Cobble: — Gravel: 20 Fines: 80
Bed Morphology (%) Flat: 100 Riffle: — Run: — Pool: —
Bank Slope & Stability: Steep, moderately stable Feature Gradient (H/M/L): —
Other Comments:
Recently cleaned, veg & sed removed from drain.
Evidence that veg is present on bed typically.

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): None.
Vegetation (with % dominant): - no instream veg Recently cleaned

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Low Colour: Green Comments: —

Riparian Habitat - Recently cleaned No Veg
Vegetation: —
Canopy Cover (% and species): N/A
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish
Recnty Cleaned Channelized Drain
No visible veg
1.25 m CSP in cobble at road side

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	832	—	—	Other:	—	—	—
Downstream:	833	—	—				
Feature Bed:	834	—	—				
Culvert / Bridge:	835	—	—				
Vegetation:	836	—	—				
Landscape Photo:	837	—	—				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
Fines
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
- Recently cleaned N/A.
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
- Recently cleaned N/A.
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached (Algae) Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☑ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Though no visible Aquatic veg present of algae / parts of cattails suggest some degree of permanence

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Project (No. & Name): 1612 N.Kent **Field Staff:** BEB

Survey Date: 13-APR-15 **Weather Conditions**

Time Started: 1600 Temp (°C), Wind, Cloud Cover (%), Precipitation: 18°C, 4/SW, 100%, 0

Time Finished: 1615 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT-011 **GPS Location** **Estimated Length Assessed**

Feature Name: Boxnton Dr Easting: 0398042 Upstream: 50

Drainage System: Lake St Clair Northing: 4709861 Downstream: 50

Location in System: at Oldfield Ln *Water Body No.* 015

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☐ Straight ☑ Meandering (H/M/L Sinuosity): Low ☑ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 4.5 Avg. Water Depth (m): 0.25 Max Pool Depth (m): 0.3

Avg. Bankfull Width (m): 6.0 Avg. Bankfull Depth (m): 0.4

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) Flat: – Riffle: – Run: – Pool: 100

Bank Slope & Stability: Moderate Slope moderate Stability Feature Gradient (H/M/L): Low

Other Comments:

no evident flow

evidence of channelization

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Dense T. grasses within channel

Vegetation (with % dominant): T. Grass 100%

Surface Water Quality

Temp (°C): 10 Turbidity (L/M/H): Low Colour: Green Comments: –

Riparian Habitat

Vegetation: T. Grasses

Canopy Cover (% and species): D. Trees on NW side of Oldfield Dr

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish obs

0.25 m CSP Coulvert

no evidence of flow

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	66	SE	–	Other:	–	–	–
Downstream:	67	NW	–				
Feature Bed:	~~68~~	–	–				
Culvert / Bridge:	68	–	–				
Vegetation:	69	–	–				
Landscape Photo:	70	SE	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

Same as Surrounding area

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

none

Presence of Hydric Soils:

Describe Debris and / or Leaf Litter in Feature (type,amount, location):

dense T.Grass Throughout

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached (Algae), Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral

Evidence of Water Body Status: Presence of aquatic veg O/S suggests some degree of permanence (LSCT-012)

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Project (No. & Name): 1620 - N Kent **Field Staff:** BEB

Survey Date: 23-APR-15 **Weather Conditions**

Time Started: 1620 Temp (°C), Wind, Cloud Cover (%), Precipitation: 18°C, H/SW, 100%, 0

Time Finished: 1635 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT-012 **GPS Location** **Estimated Length Assessed**

Feature Name: Boynton Dr Easting: 0390429 Upstream: 50

Drainage System: Lake Stickleback Northing: 4709510 Downstream: 50

Location in System: at Old Field Ln *Water Body No.* 016

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☐ Straight ☑ Meandering (H/M/L Sinuosity): Low ☑ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 1.75 Avg. Water Depth (m): 0.35 Max Pool Depth (m):

Avg. Bankfull Width (m): 2.5 Avg. Bankfull Depth (m): 0.5

Substrate Composition (%) Boulder: - Cobble: 20 Gravel: - Fines: 80

Bed Morphology (%) Flat: 100 Riffle: - Run: - Pool: -

Bank Slope & Stability: High slope High Stability Feature Gradient (H/M/L): Low

Other Comments:

Evidence of channelization along length deposit of cobble near road crossing

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): patches of woody debris and dense Cattail

Vegetation (with % dominant): Cattail sp (50%) Phrag (50%)

Surface Water Quality

Temp (°C): 10 Turbidity (L/M/H): Low Colour: Brown Comments: -

Riparian Habitat

Vegetation: T. Grasses D. Shrubs / Trees

Canopy Cover (% and species): 40% D/S 0% U/S

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No fish obs

Dense cattail u/s Dense phrag d/s

1.25 m CSP culvert in concrete blocks

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	71	NE	-	Other:	-	-	-
Downstream:	72	SW	-				
Feature Bed:	73	-	-				
Culvert / Bridge:	74	-	-				
Vegetation:	75	-	-				
Landscape Photo:	76	N	-				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

Same as surrounding area

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

none

Presence of Hydric Soils:

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

Dense patches of Leaf litter / TGrasses Throughout

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature *(Circle any present)*

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☑ Permanent ☑ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

Presence of aquatic veg suggests permanence well defined banks.

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 20 APR 15 **Weather Conditions**

Time Started: 1245 Temp (°C), Wind, Cloud Cover (%), Precipitation: 13.5°, 4 SSW, 100%, 0

Time Finished: 1300 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCR 110 **GPS Location** **Estimated Length Assessed**

Feature Name: Boynton / Town Line Dr Easting: 0390175 Upstream: 20

Drainage System: Lake St Clair Northing: 4709108 Downstream: 50

Location in System: at St Clair Rd *Water Body No.* 017

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow Channelized Dr

Avg. Wetted Width (m): 6.5 Avg. Water Depth (m): 0.3 Max Pool Depth (m): 0.8

Avg. Bankfull Width (m): 8.0 Avg. Bankfull Depth (m): 0.6

Substrate Composition (%) Boulder: Cobble: Gravel: Fines: 100

Bed Morphology (%) Flat: 50 Riffle: Run: Pool: 50

Bank Slope & Stability: moderate slope high stability Feature Gradient (H/M/L):

Other Comments:

Channelized Dr

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): over hanging Bank veg through out

Vegetation (with % dominant): Duckweed (100%)

Surface Water Quality

Temp (°C): 11 Turbidity (L/M/H): Colour: Green Comments: –

Riparian Habitat

Vegetation: T. Grasses

Canopy Cover (% and species): 80% D/S Boynton Dr & Town Ln

Adjacent Land Use: Ag

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish obs

over hanging Bank veg through out

T. Grasses within Channel suggest Dry ponds

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	255	SE	–	Other:	260	NW	D/S Town Ln
Downstream:	256	NE	–				
Feature Bed:	257	–	–				
Culvert / Bridge:	—	–	–				
Vegetation:	258	–	–				
Landscape Photo:	259	–	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

–

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

–

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

–

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

None

Attached Algae Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

Presence of duck weed however T. Grasses within channel suggest some degree of permanance suggest dry ponds

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Renewable Energy Water Body Site Investigation

Office Use Only

Project (No. & Name): 162 N. Kent **Field Staff:** BEB

Survey Date: 20 APR 16
Time Started: 1305
Time Finished: 1320

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation: 13.5°, 4 SSW, 100%, 0
Precipitation in Prior 48hrs (mm): No data

Site Code: LSCT 111
Feature Name: 13th con Pump works Dam
Drainage System: Lake St Clair
Location in System: at St Clair Rd

GPS Location
Easting: 0390678
Northing: 4708500
Water Body No. 018

Estimated Length Assessed
Upstream: 50
Downstream: 10

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 5 Avg. Water Depth (m): 0.2 Max Pool Depth (m): 0.8
Avg. Bankfull Width (m): 6 Avg. Bankfull Depth (m): 0.5
Substrate Composition (%) ~~Boulder:~~ ~~Cobble:~~ ~~Gravel:~~ ~~Fines:~~
Bed Morphology (%) Flat: – Riffle: – Run: – Pool: –
Bank Slope & Stability: – Feature Gradient (H/M/L):
Other Comments:
Turbidity too High to see Channel bed
Channelized Dr

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Undercut banks w/ deposits of woody debris
Vegetation (with % dominant): none observed

Surface Water Quality
Temp (°C): 11 Turbidity (L/M/H): Colour: Green Comments:

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
Pump house / dam SW of St Clair Rd
Turbidity too high
4.6 m open box culvert at St Clair Rd

Photographs	No.	Direction	Description	No.	Direction	Description
Upstream:	266	SE	U/S Town Ln Dr	Other: –	–	–
Downstream:	261	SW	D/S 13th con Pump works			
Feature Bed:	262	–	–			
Culvert / Bridge:	265	–	–			
Vegetation:	263	–	–			
Landscape Photo:	264	–	–			

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
–
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present) –

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Size of WB and presence of pump house suggests permanence

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Renewable Energy Water Body Site Investigation
Office Use Only

Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 14APR16
Time Started: 1050
Time Finished: 1100

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation: 14°C, 2/NE, 40%, 0
Precipitation in Prior 48hrs (mm): 2.0 mm

Site Code: LSCT-021
Feature Name: 13th conc RD DR
Drainage System: Lake St clair
Location in System: ext Bush RD / Prince Albert RD

GPS Location
Easting: 0393856
Northing: 4710625
Water Body No. 019

Estimated Length Assessed
Upstream: 10
Downstream: 100

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized Dr

Avg. Wetted Width (m): 2.5 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.2
Avg. Bankfull Width (m): 3.5 Avg. Bankfull Depth (m): 0.5
Substrate Composition (%) Boulder: - Cobble: - Gravel: - Fines: 100
Bed Morphology (%) Flat: 100 Riffle: - Run: - Pool: -
Bank Slope & Stability: High Slope High Stability Feature Gradient (H/M/L): -
Other Comments: 13th conc RD DR ends at Prince Albert RD
channelized Drain

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Dense patches of dry grasses
Vegetation (with % dominant): T. Grasses 50% Duckweed 50%

Surface Water Quality
Temp (°C): 8 Turbidity (C/M/H): LOW Colour: Brown Comments: -

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
Channelized Road side drain Signs of clean out
T. Grasses along stream bed

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	766	NE	-	Other: -	-	-	-
Downstream:	767	SW	-				
Feature Bed:	768	-	-				
Culvert / Bridge:	-	-	-				
Vegetation:	769	-	-				
Landscape Photo:	770	N	-				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
-
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
-
Presence of Hydric Soils:
-
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Dry grasses . Through out bed
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
none
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
T. Grasses sugest channel is dry at some portion of the year however presence of duckweed suggests permanent

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Renewable Energy Water Body Site Investigation
Office Use Only

Project (No. & Name): 162 N. Kent **Field Staff:** BEB

Survey Date: 14 APR 16 **Weather Conditions**
Time Started: 1030 Temp (°C), Wind, Cloud Cover (%), Precipitation: 9°C, No wind, 40%, 0
Time Finished: 1045 *Precipitation in Prior 48hrs (mm):* 2.2 mm

Site Code: LSCT-020 **GPS Location** **Estimated Length Assessed**
Feature Name: 13th Concession RD DR Easting: 0393478 Upstream: 100
Drainage System: Lake St Clair Northing: 4710300 Downstream: 100
Location in System: online Rush RD *Water Body No.* 020

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 5.5 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.25
Avg. Bankfull Width (m): 8.5 Avg. Bankfull Depth (m): 0.35
Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100
Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –
Bank Slope & Stability: High Slope High Stability Feature Gradient (H/M/L): Low
Other Comments: Channelized Road side Drain

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): very Isolated patches of dry grasses
Vegetation (with % dominant): 100% Duckweed

Surface Water Quality
Temp (°C): 10 Turbidity (C/M/H): Low Colour: Green Comments: –

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
Channelized Road side Drain No Fish obs
Evidence of T. veg along some portions of stream Bed

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	115	NE	–	Other: –	–	–	–
Downstream:	116	SW	–				
Feature Bed:	117	–	–				
Culvert / Bridge:	–	–	–				
Vegetation:	764	–	–				
Landscape Photo:	765	N	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
few isolated patches of dry grasses along edges of channel
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached ~~Algae~~, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
evidence of T. veg along portions of stream bed suggests that the channel is dry for some periods.

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Project (No. & Name): 1612 Wilkent **Field Staff:** BEB

Survey Date: 14 APR 15 **Weather Conditions**
Time Started: 1010 Temp (°C), Wind, Cloud Cover (%), Precipitation: 9°, 0, 40%, 0
Time Finished: 1026 *Precipitation in Prior 48hrs (mm):* 8.0 mm

Site Code: LSCT-019 **GPS Location** **Estimated Length Assessed**
Feature Name: 13th Concession RD DR Easting: 0392831 Upstream: 100
Drainage System: Lake St Clair Northing: 4709829 Downstream: 100
Location in System: Bush RD *Water Body No.* 021

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 6of5 Avg. Water Depth (m): 0.4 Max Pool Depth (m): 0.5
Avg. Bankfull Width (m): 8 Avg. Bankfull Depth (m): 0.75
Substrate Composition (%) Boulder: – Cobble: – Gravel: 20 Fines: 80
Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –
Bank Slope & Stability: High slope / moderate stability Feature Gradient (H/M/L): LOW
Other Comments: Channelized Road side Drain

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Patches of woody debris w dense dry grass
Vegetation (with % dominant): 100% Duckweed
Surface Water Quality
Temp (°C): .8 Turbidity (L/M/H): MEDIUM Colour: Green Comments: –

Riparian Habitat
Vegetation: T.Grasses / Phrag
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish Obs., Channelized Drain w dense duckweed cover
Recently cleaned

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	110	NE	–	Other:	–	–	–
Downstream:	111	SW	–				
Feature Bed:	112	–	–				
Culvert / Bridge:	–	–	–				
Vegetation:	113	–	–				
Landscape Photo:	114	N	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Dense Patches of Dry grasses
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
no evidence
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status: Size of WB and presence of Duckweed Suggest Permanent

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 14 APR 15 **Weather Conditions**

Time Started: 0930 Temp (°C), Wind, Cloud Cover (%), Precipitation: 12°C, 2/NE, 20%, 0

Time Finished: 0945 *Precipitation in Prior 48hrs (mm):* 0.2mm

Site Code: LSCT-017 **GPS Location** **Estimated Length Assessed**

Feature Name: 13th Concession DR Easting: 0392500 Upstream: 100

Drainage System: Lake St Clair Northing: 4709450 Downstream: 100

Location in System: At Bush Line *Water Body No.* 022

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 6.5 Avg. Water Depth (m): 0.4 Max Pool Depth (m): 0.5

Avg. Bankfull Width (m): 8.0 Avg. Bankfull Depth (m): 0.7

Substrate Composition (%) Boulder: - Cobble: - Gravel: 30 Fines: 70

Bed Morphology (%) Flat: 100 Riffle: - Run: - Pool: -

Bank Slope & Stability: High steep moderate Stability Feature Gradient (H/M/L): Low

Other Comments:

Channelized Drain

Recently cleaned

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Patches of woody debris / dry grass

Vegetation (with % dominant): 100% duck weed

Surface Water Quality

Temp (°C): 8 Turbidity (L/M/H): MEDIUM Colour: Brown Comments: -

Riparian Habitat

Vegetation: T. Grass / Phragmites

Canopy Cover (% and species): 0

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish

Channelized Drain w Duckweed

Signs of Recent cleanout

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	99	NE	-	Other:	-	-	-
Downstream:	100	SW	-				
Feature Bed:	101	-	-				
Culvert / Bridge:	-	-	-				
Vegetation:	102	-	-				
Landscape Photo:	103	N	-				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

Presence of Hydric Soils:

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

Dense patches of Dry grass / Isolated woody debris

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

Presence of Duck weed suggests permanence

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 14 APR 15 **Weather Conditions**
Time Started: 0840 Temp (°C), Wind, Cloud Cover (%), Precipitation: 11°C, 2/N, 20%, 0
Time Finished: 0855 *Precipitation in Prior 48hrs (mm):* 0.2 mm

Site Code: LSCT-016 **GPS Location** **Estimated Length Assessed**
Feature Name: 13th Concession RD DR Easting: 0391896 Upstream: 200
Drainage System: Lk St Clair Northing: 4708831 Downstream: 200
Location in System: other than RD *Water Body No.* 023

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☐ Freshet Flow

Avg. Wetted Width (m): 6 Avg. Water Depth (m): 0.3 Max Pool Depth (m): 0.4
Avg. Bankfull Width (m): 8.5 Avg. Bankfull Depth (m): 0.6
Substrate Composition (%) Boulder: – Cobble: – Gravel: 20 Fines: 80
Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –
Bank Slope & Stability: High Slope moderate Stability Feature Gradient (H/M/L): –
Other Comments: Signs of erosion
Channelized Drain
Signs of recent clean out

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Patches of woody debris
Vegetation (with % dominant): 100% Duckweed

Surface Water Quality
Temp (°C): 8 Turbidity (L/M/H): MEDIUM Colour: Green Comments: –

Riparian Habitat
Vegetation: T Grasses / Phrag
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
Channelized Drain feature
Signs of recent clean out
phrag on Roots Banks

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	88	NE	–	Other:	–	–	–
Downstream:	89	SW	–				
Feature Bed:	90	–	–				
Culvert / Bridge:	–	–	–				
Vegetation:	91	–	–				
Landscape Photo:	92	N	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
non
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
woody debris / Dry grass throughout
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Presence of Aquatic Veg Suggests Permanent

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Project (No. & Name): 162 N. Kent **Field Staff:**

Survey Date: 14-APR-15 **Weather Conditions**

Time Started: 0820 Temp (°C), Wind, Cloud Cover (%), Precipitation: 8, 2 NW, 20, 0

Time Finished: 0835 *Precipitation in Prior 48hrs (mm):* 2.2 mm

Site Code: LSCT-014 **GPS Location** **Estimated Length Assessed**

Feature Name: 13TH Concession RD OR Easting: 0391532 Upstream: 200

Drainage System: Big Creek Northing: 4708613 Downstream: 200

Location in System: Bush RD *Water Body No.* 024

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow Channelized Dr

Avg. Wetted Width (m): 6 Avg. Water Depth (m): 0.35 Max Pool Depth (m): 0.5

Avg. Bankfull Width (m): 8.5 Avg. Bankfull Depth (m): 0.6

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –

Bank Slope & Stability: High Slope / Mod. Stability Feature Gradient (H/M/L): –

Other Comments:

Channelized Drain Signs of recent clean out Signs of erosion

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Deposits of woody debris Throughout

Vegetation (with % dominant): 100% Duck weed

Surface Water Quality

Temp (°C): 8 Turbidity (L/M/H): MEDIUM Colour: Green Comments: –

Riparian Habitat

Vegetation: T. Grasses / Phrag

Canopy Cover (% and species): 0

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish obs

Recently cleaned

Channelized Drainage feature

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	83	NE	–	Other:	–	–	–
Downstream:	84	SW	–				
Feature Bed:	85	–	–				
Culvert / Bridge:	–	–	–				
Vegetation:	86	–	–				
Landscape Photo:	87	N	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

–

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

None

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

woody debris / Leaf litter in dense patches Throughout

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

None

Attached (Algae), Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

Presence of Duck weed Suggests permanence

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 014 APR 15 **Weather Conditions**

Time Started: 0800 Temp (°C), Wind, Cloud Cover (%), Precipitation: 8° 3NW 20% Ø

Time Finished: 0814 *Precipitation in Prior 48hrs (mm):* 2.0 mm

Site Code: LSCTO13 **GPS Location** **Estimated Length Assessed**

Feature Name: Townline Dr Easting: 0391006 Upstream: 150

Drainage System: Lake St Clair Northing: 4708173 Downstream: 200

Location in System: Bush RD / St Clair RD *Water Body No.* 025

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 7.0 Avg. Water Depth (m): 0.7 Max Pool Depth (m): 1

Avg. Bankfull Width (m): 10.5 Avg. Bankfull Depth (m): 1.25

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –

Bank Slope & Stability: High slope moderate stability Feature Gradient (H/M/L): Low

Other Comments:

Channel: 2'd drain ☑ Signs of clean out

Signs of erosion

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Isolated patches of woody debris

Vegetation (with % dominant): Cattail sp 100% only on banks

Surface Water Quality

Temp (°C): 8 Turbidity (L/M/H): MEDIUM Colour: Green Comments: –

Riparian Habitat

Vegetation: T. Grasses / Cattails

Canopy Cover (% and species): Ø

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish Observed

2.5 m open box culvert at Bush RD

Signs of recent clean out

Very low Flow

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	~~77~~	SE	–	Other:	–	–	–
Downstream:	~~78~~	NW	–				
Feature Bed:	~~79~~	–	–				
Culvert / Bridge:	80	NW	–				
Vegetation:	81	–	–				
Landscape Photo:	82	N	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

–

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

None

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

None in main channel Signs of clean out

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

None

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature *(Circle any present)*

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

Significant WB, Algae and aquatic veg Suggest permanent

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Aquatic, Terrestrial and Wetland Biologists

Renewable Energy Water Body Site Investigation
Office Use Only

Project (No. & Name): 162 N. Kent **Field Staff:** BER

Survey Date: 14 APR 15 **Weather Conditions**
Time Started: 0950 Temp (°C), Wind, Cloud Cover (%), Precipitation: 12°C, 2/NE, 20%, 0
Time Finished: 1005 *Precipitation in Prior 48hrs (mm):* 2.0 mm

Site Code: LSCI-018 **GPS Location** **Estimated Length Assessed**
Feature Name: Curtis Dr Easting: 0392669 Upstream: 20
Drainage System: Lake Stellako Northing: 5709593 Downstream: 0
Location in System: at Bush RD *Water Body No.* 026

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☐ Straight ☑ Meandering (H/M/L Sinuosity): MEDIUM ☐ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 3.0 Avg. Water Depth (m): 0.3 Max Pool Depth (m): 0.45
Avg. Bankfull Width (m): 4.0 Avg. Bankfull Depth (m): 0.65
Substrate Composition (%) Boulder: — Cobble: — Gravel: 30 Fines: 70
Bed Morphology (%) Flat: 100 Riffle: — Run: — Pool: —
Bank Slope & Stability: moderate Slope moderate Stability Feature Gradient (H/M/L): LOW
Other Comments:
mostly natural channel w some degree of bank stabilization / clean out

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Dense patches of dry grasses
Vegetation (with % dominant): Duckweed 100%

Surface Water Quality
Temp (°C): 10 Turbidity (L/M/H): MEDIUM Colour: Brown Comments: —

Riparian Habitat
Vegetation: T. Grasses / D. Shrubs
Canopy Cover (% and species): 20% Dogwood
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish, evidence of channel cleaning along w/ 1.25m CSP culvert at Bush RD.

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	104	SE	—	Other: —	—	—	—
Downstream:	105	NW	—				
Feature Bed:	106	—	—				
Culvert / Bridge:	108	—	—				
Vegetation:	107	—	—				
Landscape Photo:	109	E	—				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
—
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
—
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Dense patches of dry grasses
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Presence of duckweed suggests permanence however dense T. Grasses suggest that the WB may be dry at some point no evidence of flow

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Renewable Energy Water Body Site Investigation

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Project (No. & Name): 162 N. Kent **Field Staff:** BED

Survey Date: 14 APR 15
Weather Conditions
Time Started: 1425
Temp (°C), Wind, Cloud Cover (%), Precipitation: 14°C, 2/SE, 30%, 0
Time Finished: 1435
Precipitation in Prior 48hrs (mm): 2.8mm

Site Code: LSCT-035
GPS Location
Estimated Length Assessed
Feature Name: Parrott Drain
Easting: 0397683
Upstream: 100
Drainage System: Lake St Claire
Northing: 4712120
Downstream: 100
Location in System: at 28
Water Body No. 027

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 4.20 Avg. Water Depth (m): 0.25 Max Pool Depth (m): 0.25
Avg. Bankfull Width (m): 6 Avg. Bankfull Depth (m): 0.70
Substrate Composition (%) Boulder: – Cobble: – Gravel: 10 Fines: 90
Bed Morphology (%) Flat: 90 Riffle: 10 Run: – Pool: –
Bank Slope & Stability: High slope Low stability Feature Gradient (H/M/L): Low
Other Comments:
Channelized Dr recently cleaned
evidence of erosion on banks & around culvert

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Isolated patches of dry grasses
Vegetation (with % dominant): no veg - Recently cleaned

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Low Colour: clear Comments: –

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No fish obs
4.5 m CSP culvert at road crossing
no aquatic veg
well defined flow patterns

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	838	NW	–	Other:	–	–	–
Downstream:	843	SE	–				
Feature Bed:	839	–	–				
Culvert / Bridge:	840	–	–				
Vegetation:	841	–	–				
Landscape Photo:	842	NW	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
fines w/ some gravels, may be from roadside
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
N/A recent clean out.
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
N/A recent clean out
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present) N/A.

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Recently cleaned Drain however presence of cattails and channel definition suggest permanence

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Renewable Energy Water Body Site Investigation

Office Use Only

Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 16APR15 **Weather Conditions**

Time Started: 0955 Temp (°C), Wind, Cloud Cover (%), Precipitation: 13°C, 3/E, 30%, 0

Time Finished: 1010 *Precipitation in Prior 48hrs (mm):* 0.2 mm

Site Code: LSCF-041 **GPS Location** **Estimated Length Assessed**

Feature Name: Wells Dr Ext Easting: 0397199 Upstream: 150

Drainage System: Lake St Clair Northing: 4711686 Downstream: 50

Location in System: at Green Valley Ln *Water Body No.* 028

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow - Channelized

Avg. Wetted Width (m): 1.2 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.3

Avg. Bankfull Width (m): 3.5 Avg. Bankfull Depth (m): 0.30

Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100

Bed Morphology (%) Flat: – Riffle: 30 Run: 70 Pool: –

Bank Slope & Stability: High slope / High instability Feature Gradient (H/M/L): LOW

Other Comments:

Channelized Recently cleaned

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): - Recently cleaned -

Vegetation (with % dominant): no instream veg

Surface Water Quality

Temp (°C): 9 Turbidity (L/M/H): LOW Colour: clear Comments: –

Riparian Habitat

Vegetation: T. Emmons / Phrag

Canopy Cover (% and species): 0

Adjacent Land Use: Ag

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No fish obs

well defined channel width channel

no instream veg but signs of recent clean out

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	871	NE	–	Other:	–	–	–
Downstream:	872	S	–				
Feature Bed:	873	–	–				
Culvert / Bridge:			–				
Vegetation:	874	–	–				
Landscape Photo:	875	E	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

fine sed similar to ag fields adjacent

Describe Sediment Deposits in Feature and on Floodplain - (Recent) / Historic:

sed deposits along toe of banks + feature bed

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

none Recently cleaned

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

none

Attached (Algae), Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

well defined low flow channel, presence of phrag / ~~submergent~~ algae suggest permanence

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Renewable Energy Water Body Site Investigation
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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 15 APR 15 **Weather Conditions**
Time Started: 1035 Temp (°C), Wind, Cloud Cover (%), Precipitation: 18°C, 3/E, 30%, 0
Time Finished: 1045 *Precipitation in Prior 48hrs (mm):* 2.2 mm

Site Code: LSCT043 **GPS Location** **Estimated Length Assessed**
Feature Name: Watson Beer Line Dr Easting: 0297921 Upstream: 25
Drainage System: Lake St Clair Northing: 4711944 Downstream: 100
Location in System: at 28 *Water Body No.* 029

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized Recently Cleaned
Avg. Wetted Width (m): 3.5 Avg. Water Depth (m): 0.12 Max Pool Depth (m): 0.2
Avg. Bankfull Width (m): 4.5 Avg. Bankfull Depth (m): 0.35
Substrate Composition (%) Boulder: — Cobble: — Gravel: — Fines: 100
Bed Morphology (%) Flat: 30 Riffle: — Run: 70 Pool: —
Bank Slope & Stability: High Slope Low Stability Feature Gradient (H/M/L): Low
Other Comments:
Channelized Dr w/ signs of recent cleaning, evidence of bank erosion

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Patches of dry grasses
Vegetation (with % dominant): Cattail (100%) only on edges
Surface Water Quality
Temp (°C): 9 Turbidity (0/M/H): Low Colour: Green Comments: —

Riparian Habitat — Banks mostly Bare
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No fish obs
well defined channel — signs of substrate sorting
Cattail sp suggests permanence

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	882	NE	—	Other:	—	—	—
Downstream:	883	SE	—				
Feature Bed:	884	—	—				
Culvert / Bridge:	—		—				
Vegetation:	885	—	—				
Landscape Photo:	886	NE	—				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
—
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
—
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
—
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present) extensive algae on bed

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Presence of cattail / Algae suggests permanence

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Renewable Energy Water Body Site Investigation

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Project (No. & Name): 1612 N. Kent **Field Staff:** P&B

Survey Date: 15 APR 15 **Weather Conditions**

Time Started: 1015 Temp (°C), Wind, Cloud Cover (%), Precipitation: 13°C, 3/E, 30%, 0

Time Finished: 1030 *Precipitation in Prior 48hrs (mm):* 0.2 mm

Site Code: LSCT 042 **GPS Location** **Estimated Length Assessed**

Feature Name: Bear Dr Easting: 0398132 Upstream: 100

Drainage System: Lake St Clair Northing: 4711583 Downstream: 50

Location in System: on 28 *Water Body No.* 030

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow Channelized DR

Avg. Wetted Width (m): 2 Avg. Water Depth (m): 0.25 Max Pool Depth (m): 0.3

Avg. Bankfull Width (m): 2.5 Avg. Bankfull Depth (m): 0.5

Substrate Composition (%) Boulder: – Cobble: – Gravel: 10 Fines: 90

Bed Morphology (%) Flat: 50 Riffle: 50 Run: – Pool: –

Bank Slope & Stability: High slope High stability Feature Gradient (H/M/L): Low

Other Comments:

Channelized Dr

well defined channel

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): isolated patches of dry grass

Vegetation (with % dominant): Cattail sp (100%)

Surface Water Quality

Temp (°C): 9 Turbidity (L/M/H): Low Colour: clear Comments: –

Riparian Habitat

Vegetation: T. Grasses

Canopy Cover (% and species): 0

Adjacent Land Use: Ag

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No Fish obs

well defined channel ☑ Substrate Sorting

Dense dry grasses along banks

2.5m CSP Culvert in cobble embankment

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	876	NW	–	Other:	–	–	–
Downstream:	877	SW	–				
Feature Bed:	878	–	–				
Culvert / Bridge:	879	–	–				
Vegetation:	880	–	–				
Landscape Photo:	881	SW	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

Similar to surrounding ag fields

Describe Sediment Deposits in/Feature and on Floodplain - Recent / Historic:

None

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type,amount, location):

lack of veg / leaf litter in centre of feature

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

None

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature

(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

Presence of cattail / channel definition suggest permanence

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Renewable Energy Water Body Site Investigation
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Project (No. & Name): 1618 N. Kent **Field Staff:** BER

Survey Date: 07 May 13 **Weather Conditions**
Time Started: 1720 Temp (°C), Wind, Cloud Cover (%), Precipitation: 23.3°, 3 SE, 5, 0
Time Finished: 1755 *Precipitation in Prior 48hrs (mm):* 11.0mm

Site Code: LSCT 192 **GPS Location** **Estimated Length Assessed**
Feature Name: BEAR Dr Easting: 0397071 Upstream: 150
Drainage System: Lake St Clair Northing: 4710652 Downstream: 150
Location in System: New *Water Body No.* 031

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☐ Freshet Flow Channelized Dr
Avg. Wetted Width (m): 1.2 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.15
Avg. Bankfull Width (m): 2.0 Avg. Bankfull Depth (m): 0.60
Substrate Composition (%) Boulder: - Cobble: - Gravel: - Fines: 100
Bed Morphology (%) Flat: - Riffle: - Run: 100 Pool: -
Bank Slope & Stability: Lt. Slope L-Stability Feature Gradient (H/M/L):
Other Comments:
Channelized
Exposed soil, Recently cleaned

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): none
Vegetation (with % dominant): Pond weed sp (100%)

Surface Water Quality
Temp (°C): 14 Turbidity (L/M/H): Colour: Brown Comments: -

Riparian Habitat
Vegetation: T Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
Poorly defined channelized dr E Signs of cleanout

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	NE	926	-	Other:	-	-	-
Downstream:	SW	927	-				
Feature Bed:	-	928	-				
Culvert / Bridge:	———	-	-				
Vegetation:	-	929	-				
Landscape Photo:	SW	930	-				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
-
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
-
Presence of Hydric Soils:
-
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
none
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Based on presence of pond weed sp, Based on conditions at LSCT-042, clean out may obscure evidence of permanence

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEG

Survey Date: 07 May 15 **Weather Conditions**
Time Started: 1800 Temp (°C), Wind, Cloud Cover (%), Precipitation: 22.3°, 3 SE, 5, 0
Time Finished: 1825 *Precipitation in Prior 48hrs (mm):* 11.0 mm

Site Code: LSC7-093 **GPS Location** **Estimated Length Assessed**
Feature Name: Beau Dr. Easting: 0396880 Upstream: 150
Drainage System: Lake St. Clair Northing: 4710491 Downstream: 150
Location in System: Near T *Water Body No.* 032

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☑ Moderate Flow ☐ High / Flood Flow
☐ Freshet Flow Channelized Dr

Avg. Wetted Width (m): 1.2 Avg. Water Depth (m): 0.1 Max Pool Depth (m): 0.1
Avg. Bankfull Width (m): 1.5 Avg. Bankfull Depth (m): 0.5
Substrate Composition (%) Boulder: Cobble: Gravel: Fines: 100
Bed Morphology (%) Flat: 100 Riffle: Run: Pool:
Bank Slope & Stability: Mod steep L. Stability Feature Gradient (H/M/L):
Other Comments:
Channelized Dr
Signs of recent clean out

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): none - Recently cleaned
Vegetation (with % dominant): Pond weed Sp. (100%)

Surface Water Quality
Temp (°C): 14 Turbidity (L/M/H): Colour: Brown Comments: —

Riparian Habitat
Vegetation: Grass
Canopy Cover (% and species): 0
Adjacent Land Use: Ag

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
poorly defined channel - Signs of recent clean out

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	0931	NE	-	Other:	-	-	-
Downstream:	932	SW	-				
Feature Bed:	933	-	-				
Culvert / Bridge:	—	-	-				
Vegetation:	934	-	-				
Landscape Photo:	935	SW	-				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
-
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
-
Presence of Hydric Soils:
-
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Recently cleaned
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Based on presence of aquatic Veg, Based on conditions at LSC7-042
clean out may obscure evidence of permanence

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Project (No. & Name): 162 N. Kent **Field Staff:** BEB

Survey Date: 28APR15 **Weather Conditions**
Time Started: 1110 Temp (°C), Wind, Cloud Cover (%), Precipitation: 11.3°, 4 NNW, 30%, 0
Time Finished: 1150 *Precipitation in Prior 48hrs (mm):* No data

Site Code: LSCT172 **GPS Location** **Estimated Length Assessed**
Feature Name: W Bear Dr Easting: 0395774 Upstream: 150
Drainage System: So. Lake St Clair Northing: 4709626 Downstream: 150
Location in System: Mid T11 *Water Body No.* 033

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized Dr
Avg. Wetted Width (m): 3.0 Avg. Water Depth (m): 0.1 Max Pool Depth (m): 0.16
Avg. Bankfull Width (m): 4.5 Avg. Bankfull Depth (m): 0.45
Substrate Composition (%) Boulder: - Cobble: - Gravel: - Fines: 100
Bed Morphology (%) Flat: 100 Riffle: - Run: - Pool: -
Bank Slope & Stability: High Slope High Stability Feature Gradient (H/M/L):
Other Comments:
Channelized

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Over Phrag Debris
Vegetation (with % dominant): no instream veg
Surface Water Quality
Temp (°C): 11 Turbidity (L/M/H): Colour: Brown Comments: -

Riparian Habitat
Vegetation: Phrag
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
poorly defined Channel W Over Phrag debris

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	816	NE	-	Other:	-	-	-
Downstream:	816	SW	-				
Feature Bed:	817	-	-				
Culvert / Bridge:	—	-	-				
Vegetation:	818	-	-				
Landscape Photo:	819	NE	-				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
-
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
-
Presence of Hydric Soils:
-
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Over Phrag debris Through out
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Based on wb size and presence of Phrag

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Renewable Energy Water Body Site Investigation

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Project (No. & Name): 162 N Kent **Field Staff:** BEB

Survey Date: 15 APR 18
Time Started: 1055
Time Finished: 1110

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation: 14°C, 2/NE, 20%, 0
Precipitation in Prior 48hrs (mm): 0.8 mm

Site Code: LSCT-044
Feature Name: Gray Dr
Drainage System: Into St Clair
Location in System: at 28/ Union Ln

GPS Location
Easting: 0398618
Northing: 4711070
Water Body No. 034

Estimated Length Assessed
Upstream: 100
Downstream: 100

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

- ☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined
- ☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
- ☑ Freshet Flow Channelized Dr

Avg. Wetted Width (m): 4.5 Avg. Water Depth (m): 0.3 Max Pool Depth (m): 0.35
Avg. Bankfull Width (m): 6.0 Avg. Bankfull Depth (m): 0.45
Substrate Composition (%) Boulder: – Cobble: – Gravel: 20 Fines: 80
Bed Morphology (%) Flat: – Riffle: – Run: 100 Pool: –
Bank Slope & Stability: moderate slope / moderate stability Feature Gradient (H/M/L): Low
Other Comments:
Channelized dr, erosion around culverts

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): T. Grasses
Vegetation (with % dominant): T. Grasses ~100% no aquatic veg

Surface Water Quality
Temp (°C): 11 Turbidity (L/M/H): Low Colour: Brown Comments: –

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
poorly defined channel w/ T. veg with in main channel
4.5m open box culvert at 28
Areas where T veg not present on bed - low flow channel present

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	887	NE	–	Other:	–	–	–
Downstream:	888	SW	–				
Feature Bed:	889	–	–				
Culvert / Bridge:	890	–	–				
Vegetation:	891	–	–				
Landscape Photo:	892	NE	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
Some gravels w/ Fines
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
N/A
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
Isolated clumps of dry grasses
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present) N/A

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
poorly defined channel w/ T. Veg across stream bed Signs of dry period

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Renewable Energy Water Body Site Investigation
Office Use Only

Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 15APR15
Time Started: 1115
Time Finished: 1125

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation: 14°C, 2/NE, 20%, 0
Precipitation in Prior 48hrs (mm): 0.2 mm

Site Code: LSCT-045
Feature Name: Gray Dr
Drainage System: Lake St Clair
Location in System: along Union Ln

GPS Location
Easting: 0398359
Northing: 4710846
Water Body No. 035

Estimated Length Assessed
Upstream: 100
Downstream: 100

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight	☐ Meandering (H/M/L Sinuosity):	☐ Defined	☑ Poorly Defined
☐ Standing Water	☐ Low Flow / Baseflow	☐ Moderate Flow	☐ High / Flood Flow
☑ Freshet Flow	Channelized		

Avg. Wetted Width (m): 3.5 Avg. Water Depth (m): 0.35 Max Pool Depth (m): 0.4
Avg. Bankfull Width (m): 5 Avg. Bankfull Depth (m): 0.55
Substrate Composition (%) Boulder: – Cobble: – Gravel: 30 Fines: 70
Bed Morphology (%) Flat: – Riffle: – Run: 100 Pool: –
Bank Slope & Stability: High slope / low stability Feature Gradient (H/M/L): Low
Other Comments:
Signs of erosion and under cutting along channel

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): undercutting / erosion on banks
Vegetation (with % dominant): T. Grasses (100%)

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Low Colour: Brown Comments: –

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
T. Veg along stream bed
Poorly defined Channel

Photographs	No.	Direction	Description	Other:	No.	Direction	Description
Upstream:	893	NE	–	–	–	–	–
Downstream:	894	SW	–				
Feature Bed:	895	–	–				
Culvert / Bridge:	–	–	–				
Vegetation:	896	–	–				
Landscape Photo:	897	E	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
Similar to surrounding Ag. fields
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
None.
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
dense T. veg on bed no Leaf litter
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature (*Circle any present*) N/A

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Size of wb suggests permanence however T. veg suggests dry periods

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Renewable Energy Water Body Site Investigation
Office Use Only

Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 15 APR 15
Time Started: 1130
Time Finished: 1140

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation:
Precipitation in Prior 48hrs (mm): 2-2 mm

Site Code: LSCT046
Feature Name: Gray Dr
Drainage System: Lake St Clair
Location in System: along Union Ln

GPS Location
Easting: 0399144
Northing: 4710658
Water Body No. 036

Estimated Length Assessed
Upstream: 150
Downstream: 150

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

- ☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
- ☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
- ☑ Freshet Flow Channelized

Avg. Wetted Width (m): 3.5 Avg. Water Depth (m): 0.35 Max Pool Depth (m): 0.4
Avg. Bankfull Width (m): 5 Avg. Bankfull Depth (m): 0.55
Substrate Composition (%) Boulder: — Cobble: — Gravel: 30 Fines: 70
Bed Morphology (%) Flat: — Riffle: — Run: 100 Pool: —
Bank Slope & Stability: High slope / Low stability - Signs of erosion Feature Gradient (H/M/L):
Other Comments:
defined channel w signs of substrate sorting

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Over hanging T. Grasses
Vegetation (with % dominant): T. Grasses (20%) pond weed sp (80%)

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Colour: Clear Comments: —

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish
Dense patches of pond weed sp along Stream bed
exposed soil along edges of banks

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	898	NE	—	Other:	—	—	—
Downstream:	899	SW	—				
Feature Bed:	900	—	—				
Culvert / Bridge:	—	—	—				
Vegetation:	901	—	—				
Landscape Photo:	902	E	—				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
Similar to surrounding Ag fields
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
None
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
dense t. grasses, some bare spots & no veg No leaf litter
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
presence of pond weed sp. Suggests permanence

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 15 APR 15
Time Started: 1442
Time Finished: 1155

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation: 14°C, 2/NE, 20%, 0
Precipitation in Prior 48hrs (mm): 2.8 mm

Site Code: LSCT047
Feature Name: Gray Dr
Drainage System: Lake St Clair
Location in System: along Union Line

GPS Location
Easting: 0397911
Northing: 4710450
Water Body No. 037

Estimated Length Assessed
Upstream: 150
Downstream: 150

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized dr

Online/Offline

Avg. Wetted Width (m): 4.0 Avg. Water Depth (m): 0.5 Max Pool Depth (m): 0.5
Avg. Bankfull Width (m): 6.0 Avg. Bankfull Depth (m): 0.79
Substrate Composition (%) Boulder: — Cobble: 5 Gravel: 10 Fines: 85
Bed Morphology (%) Flat: 50 Riffle: 50 Run: — Pool: —
Bank Slope & Stability: High slope / moderate stability Feature Gradient (H/M/L): —
Other Comments:
Channelized dr
Signs of recent clean out

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): patches of dry T. Grasses
Vegetation (with % dominant): 100% T. Grasses

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): LOW Colour: Brown Comments: —

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No fish obs
well defined channel w signs of substrate sorting
no aquatic veg obs

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	903	NE	—	Other:	—	—	—
Downstream:	904	SW	—				
Feature Bed:	905	—	—				
Culvert / Bridge:	—		—				
Vegetation:	906	—	—				
Landscape Photo:	907	E	—				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
similar to surrounding Ag. Fields
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
deposits at base of banks where erosion is depositing material
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
dense t. grasses, no leaf litter
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
well defined channel w signs of continuous water flow

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 15 APR 15
Time Started: 1155
Time Finished: 1205

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation: 15°C, 3/E, 20%, 0
Precipitation in Prior 48hrs (mm): 2.0 mm

Site Code: LSCT-048
Feature Name: Gray Dr
Drainage System: Lake St Clair
Location in System: along Gray Ln

GPS Location
Easting: 0397651
Northing: 4710021
Water Body No. 038

Estimated Length Assessed
Upstream: 150
Downstream: 150

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized

Avg. Wetted Width (m): 3.5 Avg. Water Depth (m): 0.3 Max Pool Depth (m): 0.34
Avg. Bankfull Width (m): 5.0 Avg. Bankfull Depth (m): 0.75
Substrate Composition (%) Boulder: — Cobble: — Gravel: 20 Fines: 80
Bed Morphology (%) Flat: — Riffle: 50 Run: 50 Pool: —
Bank Slope & Stability: High slope / High stability Feature Gradient (H/M/L): —
Other Comments:
Channelized dr w signs of recent cleaning

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): over hanging T. Grasses
Vegetation (with % dominant): T. Grasses (100%)

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): LOW Colour: Brown Comments: —

Riparian Habitat
Vegetation: T. Grasses / D. Shrubs
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
well defined channel w algae and signs of continuous water flow
Substrate sorting evident

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	NE	908	—	Other:	—	—	—
Downstream:	SW	909	—				
Feature Bed:	—	910	—				
Culvert / Bridge:			—				
Vegetation:	—	911	—				
Landscape Photo:	E	912	—				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
Slightly coarser than surrounding Ag. Fields
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
None
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
Deposits of Leaf litter along edges of stream bed, dense J. grasses on bed.
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Substrate sorting / algae Suggest permanence

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Project (No. & Name): 1612 N. Kent **Field Staff:** BB

Survey Date: 15 APR 15
Time Started: 1205
Time Finished: 1212

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation: 15°C, 3/E, 20%, 0
Precipitation in Prior 48hrs (mm): 0.2 mm

Site Code: LSCT049
Feature Name: Gray Dr
Drainage System: Lake St Clair
Location in System: 02 Union Ln

GPS Location
Easting: 0396982
Northing: 4709647
Water Body No. 039

Estimated Length Assessed
Upstream: 150
Downstream: 150

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond

- ☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
- ☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
- ☑ Freshet Flow Channelized dr

Online/Offline

Avg. Wetted Width (m): 3.5 Avg. Water Depth (m): 0.4 Max Pool Depth (m): 0.5
Avg. Bankfull Width (m): 5.0 Avg. Bankfull Depth (m): 0.75
Substrate Composition (%) Boulder: — Cobble: — Gravel: 30 Fines: 70
Bed Morphology (%) Flat: 30 Riffle: — Run: 70 Pool: —
Bank Slope & Stability: High slope / High stability Feature Gradient (H/M/L): Low
Other Comments:
Channelized Dr

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): drop hanging T. Grasses
Vegetation (with % dominant): T. Grasses (100%)

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Low Colour: Brown Comments: —

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: Ag

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
no aquatic veg
well defined channel & substrate sorting

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	913	NE	—	Other:	—	—	—
Downstream:	914	SW	—				
Feature Bed:	915	—	—				
Culvert / Bridge:			—				
Vegetation:	916	—	—				
Landscape Photo:	917	E	—				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
Slightly coarser than surrounding
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
N/A
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
dense T. grasses on bed, debris along toe of banks
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Substrate sorting / channel definition suggests stream permanence

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Renewable Energy Water Body Site Investigation

Office Use Only

Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 15 APR 15
Time Started: 1217
Time Finished: 1230

Weather Conditions
Temp (°C), Wind, Cloud Cover (%), Precipitation: 15°C, 3/E, 20%, 0
Precipitation in Prior 48hrs (mm): 2.0 mm

Site Code: LSCTO50
Feature Name: Gray Dr
Drainage System: Lake St Clair
Location in System: along Union Ln

GPS Location
Easting: 0396198
Northing: 4708953
Water Body No. 040

Estimated Length Assessed
Upstream: 150
Downstream: 150

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized

Avg. Wetted Width (m): 3.5 Avg. Water Depth (m): 0.25 Max Pool Depth (m): 0.3
Avg. Bankfull Width (m): 4.5 Avg. Bankfull Depth (m): 0.75
Substrate Composition (%) Boulder: – Cobble: – Gravel: 45 Fines: 55
Bed Morphology (%) Flat: 80 Riffle: – Run: 20 Pool: –
Bank Slope & Stability: High Stability High Slope Feature Gradient (H/M/L): Low
Other Comments:
Channelized Dr

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Dry Grasses / over hanging Bank Veg, undercut banks may be present
Vegetation (with % dominant): T. Grasses 100%

Surface Water Quality
Temp (°C): 9 Turbidity (O/M/H): Low Colour: Brown Comments: –

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): 0
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
good channel definition w substrate sorting
T. veg suggests dry periods low flow area present w no veg

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	918	NE	–	Other:	–	–	–
Downstream:	919	SW	–				
Feature Bed:	920	–	–				
Culvert / Bridge:			–				
Vegetation:	921	–	–				
Landscape Photo:	922	E	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
–
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature (Circle any present) None

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Substrate sorting / channel definition suggests continuous flow

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 16 APR 15
Weather Conditions
Time Started: 0940
Temp (°C), Wind, Cloud Cover (%), Precipitation: 9°C, 4/SE, 40%, 0
Time Finished: 0955
Precipitation in Prior 48hrs (mm): 0.0 mm

Site Code: LSCT 073
Feature Name: Solomon Dr
Drainage System: Lake St clair
Location in System: ext Arden Hedge / Caledonia Rd
GPS Location
Easting: 0398146
Northing: 4708813
Water Body No. 041
Estimated Length Assessed
Upstream: 150
Downstream: 150

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 1.5 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.2
Avg. Bankfull Width (m): 2.25 Avg. Bankfull Depth (m): 0.5
Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100
Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –
Bank Slope & Stability: moderate stability moderate slope Feature Gradient (H/M/L): Low
Other Comments:
Channelized dr

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Isolated patches of dry grasses / algae
Vegetation (with % dominant): deposits of duckweed (60%)
Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Low Colour: Brown Comments: –

Riparian Habitat
Vegetation: T. Grasses horse tail sp
Canopy Cover (% and species): 0
Adjacent Land Use: Ag

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No fish obs
Channelized dr w poor channel definition
horse tail suggests permanence

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	41	NE	–	Other:	–	–	–
Downstream:	42	SW	–				
Feature Bed:	43	–	–				
Culvert / Bridge:	–	–	–				
Vegetation:	44	–	–				
Landscape Photo:	45	NE	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Traces of dry grasses along edges
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae (circled), Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
duckweed and horse tail sp suggest some degree of permanence

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 16APR15 **Weather Conditions**
Time Started: 0925 Temp (°C), Wind, Cloud Cover (%), Precipitation: 9°C, 4/SE, 40%, Ø
Time Finished: 0935 *Precipitation in Prior 48hrs (mm):* 0.0 mm

Site Code: LSCT072 **GPS Location** **Estimated Length Assessed**
Feature Name: Solomon Drain Easting: 0397516 Upstream: 150
Drainage System: Lake St. Clair Northing: 4708268 Downstream: 150
Location in System: along Cedar Hedge Ln *Water Body No.* 0412

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☐ Defined ☑ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized dr

Avg. Wetted Width (m): 1.5 Avg. Water Depth (m): 0.15 Max Pool Depth (m): 0.15
Avg. Bankfull Width (m): 2 Avg. Bankfull Depth (m): 0.6
Substrate Composition (%) Boulder: – Cobble: – Gravel: 25 Fines: 75
Bed Morphology (%) Flat: – Riffle: – Run: 100 Pool: –
Bank Slope & Stability: High slope High stability Feature Gradient (H/M/L): Low
Other Comments:
Channelized Dr

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Dense T-veg along stream bed
Vegetation (with % dominant): T. Grasses (100%)

Surface Water Quality
Temp (°C): 11 Turbidity (L/M/H): Low Colour: clear Comments: –

Riparian Habitat
Vegetation: T. Grasses
Canopy Cover (% and species): Ø
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No fish obs in stream T-Veg
Dense Bank Veg
no sign of substrate sorting 2.5 m CSP in Loop cement
no indication of permanence

Photographs	**No.**	**Direction**	**Description**		**No.**	**Direction**	**Description**
Upstream:	35	NE	–	Other:	–	–	–
Downstream:	36	SW	–				
Feature Bed:	37	–	–				
Culvert / Bridge:	38	–	–				
Vegetation:	39	–	–				
Landscape Photo:	40	NE	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Deposits of T-Grasses and Leaf litter along stream bed
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature *(Circle any present)*

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☐ Permanent ☑ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
poorly defined channel, no sign of substrate sorting Based on u/s intermittent flow.
Dense T. Grasses suggest dry periods

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Renewable Energy Water Body Site Investigation
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Project (No. & Name): 160 N. Kent **Field Staff:** BEB

Survey Date: 16APR15 **Weather Conditions**
Time Started: 1045 Temp (°C), Wind, Cloud Cover (%), Precipitation: 10°C, 4/SE, 40%, D
Time Finished: 1100 *Precipitation in Prior 48hrs (mm):* 0.0mm

Site Code: LSCT076 **GPS Location** **Estimated Length Assessed**
Feature Name: Little Bear Cr Or Easting: 0400002 Upstream: 50
Drainage System: Lake St Clair Northing: 4709487 Downstream: 50
Location in System: at Cth Side Rd *Water Body No.* 043

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☐ Straight ☑ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow
Avg. Wetted Width (m): 6.5 Avg. Water Depth (m): 0.45 Max Pool Depth (m): 0.6
Avg. Bankfull Width (m): 8.5 Avg. Bankfull Depth (m): 0.70
Substrate Composition (%) Boulder: – Cobble: – Gravel: – Fines: 100
Bed Morphology (%) Flat: 80 Riffle: 10 Run: – Pool: –
Bank Slope & Stability: High slope / moderate stability Feature Gradient (H/M/L): Low
Other Comments:
Sig WB signs of erosion

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): Dense portions of woody debris/fallen trees
Vegetation (with % dominant): Trees or duckweed (100%)

Surface Water Quality
Temp (°C): 11 Turbidity (L/M/H): MEDIUM Colour: Brown Comments: –

Riparian Habitat
Vegetation: T. Grasses D. Trees
Canopy Cover (% and species): D. Trees 70%
Adjacent Land Use: AG / Forest

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
Large WB, well defined channel w build up of algae and dense woody debris
7.5m open box culvert w Gabion baskets at road crossing

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	58	NE	–	Other:	–	–	–
Downstream:	59	SW	–				
Feature Bed:	60	–	–				
Culvert / Bridge:	62	–	–				
Vegetation:	61	–	–				
Landscape Photo:	63	NW	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
Very dense patches of woody debris throughout WB clustered around fallen trees
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Sig WB w traces of duck weed and a high degree of channelization

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Renewable Energy Water Body Site Investigation

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Project (No. & Name): 162. N Kent **Field Staff:** BEB

Survey Date: 16APR15 **Weather Conditions**
Time Started: 1250 Temp (°C), Wind, Cloud Cover (%), Precipitation: 11°C, WS, 30%, 0
Time Finished: 1300 *Precipitation in Prior 48hrs (mm):* 0.0mm

Site Code: LSCT083 **GPS Location** **Estimated Length Assessed**
Feature Name: Little Bear Cr Ds Easting: 0398643 Upstream: 50
Drainage System: Lake St Clair Northing: 4708217 Downstream: 50
Location in System: at Caledonia Rd *Water Body No.* 044

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☐ Straight ☐ Meandering (H/M/L Sinuosity): Low ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 4.5 Avg. Water Depth (m): 0.35 Max Pool Depth (m): 0.5
Avg. Bankfull Width (m): 7.0 Avg. Bankfull Depth (m): 0.75
Substrate Composition (%) Boulder: – Cobble: 25 Gravel: 35 Fines: 40
Bed Morphology (%) Flat: 70 Riffle: – Run: 30 Pool: –
Bank Slope & Stability: High slope High stability Feature Gradient (H/M/L): Low
Other Comments: numerous Fallen trees / over hanging veg

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): dense woody debris / Fallen trees
Vegetation (with % dominant): T.Grasses - over hanging from banks (100%)

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): MEDIUM Colour: Green Comments: –

Riparian Habitat
Vegetation: T.Grasses, Dogwood, D. Trees
Canopy Cover (% and species): 40% U/S D. Trees
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
Historic account of N. Pike spawning
Well defined channel w over hanging bank veg
35m Span bridge w cobble embankments

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	99	E	–	Other:	–	–	–
Downstream:	100	W	–				
Feature Bed:	101	–	–				
Culvert / Bridge:	102	–	–				
Vegetation:	103	–	–				
Landscape Photo:	104	E	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type,amount, location):
Dense over hanging Bank veg and Fallen Trees
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached (Algae) Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Size of WB, Channel definition, and presence of Fish Supports permanence

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Project (No. & Name): 1612 Nicol **Field Staff:** MEG

Survey Date: 16APR15 **Weather Conditions**
Time Started: 1105 Temp (°C), Wind, Cloud Cover (%), Precipitation: 11°C, 4/SE, 40%, 0
Time Finished: 1120 *Precipitation in Prior 48hrs (mm):* 0.0 mm

Site Code: LSCT077 **GPS Location** **Estimated Length Assessed**
Feature Name: Purdie Cr Dr Easting: 0400503 Upstream: 50
Drainage System: Lake St Clair Northing: 4708955 Downstream: 100
Location in System: at Centre SR *Water Body No.* 045

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☐ Straight ☑ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 5 Avg. Water Depth (m): 0-35 Max Pool Depth (m): 0.55
Avg. Bankfull Width (m): 7.5 Avg. Bankfull Depth (m): 0.75
Substrate Composition (%) Boulder: – Cobble: – Gravel: 30 Fines: 70
Bed Morphology (%) Flat: 60 Riffle: – Run: 40 Pool: –
Bank Slope & Stability: moderate slope high stability Feature Gradient (H/M/L): LOW
Other Comments:
well defined channel ~ Broken concrete on embankments

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): dense dry cattail build up
Vegetation (with % dominant): cattail sp (80%) Duckweed (20% - Trace)

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): LOW Colour: Brown Comments: –

Riparian Habitat
Vegetation: T. Grasses / D. Shrubs
Canopy Cover (% and species): 5% > D. Shrubs
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
well defined channel ~ dense cattail patches along edges
7.5 m half CSP Bridge

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	64	E	–	Other:	–	–	–
Downstream:	65	W	–				
Feature Bed:	66	–	–				
Culvert / Bridge:	67	–	–				
Vegetation:	68	–	–				
Landscape Photo:	69	E	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
Traces of Leaf litter and dense cattail patches Throughout
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
presence of dense cattails and well defined channel suggest permanent

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Renewable Energy Water Body Site Investigation
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Project (No. & Name): 1612 N. Kent **Field Staff:** YSE B

Survey Date: 16 APR 15 **Weather Conditions**
Time Started: 1230 Temp (°C), Wind, Cloud Cover (%), Precipitation: 12°C, 4/S, 40%, Ø
Time Finished: 1230 *Precipitation in Prior 48hrs (mm):* 0.0 mm

Site Code: LSCT081 **GPS Location** **Estimated Length Assessed**
Feature Name: Millar and Leak Dr Easting: 039940 Upstream: 50
Drainage System: Lake St Clair Northing: 4707841 Downstream: 50
Location in System: off country view *Water Body No.* 046

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☐ Straight ☑ Meandering (H/M/L Sinuosity): Low ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow

Avg. Wetted Width (m): 4.5 Avg. Water Depth (m): 0.35 Max Pool Depth (m): 0.5
Avg. Bankfull Width (m): 6.5 Avg. Bankfull Depth (m): 0.70
Substrate Composition (%) Boulder: – Cobble: – Gravel: 25 Fines: 75
Bed Morphology (%) Flat: 80 Riffle: – Run: 20 Pool: –
Bank Slope & Stability: high slope / high stability Feature Gradient (H/M/L): Low
Other Comments:
well defined channel w dense algae

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): deposits of cattail sp along edge of banks
Vegetation (with % dominant): T. Grasses (80%) water cress (20%)

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Low Colour: Brown Comments: –

Riparian Habitat
Vegetation: T. Grasses / C. Trees
Canopy Cover (% and species): 15% C. Trees U/S
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No Fish obs
well defined channel w signs of sub sorting and water cress
over hanging bank veg
4.5m open box Culvert

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	86	SE	–	Other:	87	NE	U/S Cummings Dr
Downstream:	88	NW	–				
Feature Bed:	89	–	–				
Culvert / Bridge:	90	–	–				
Vegetation:	91	–	–				
Landscape Photo:	92	SE	–				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
–
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
–
Presence of Hydric Soils:
–
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
over hanging bank veg w deposits of dry grasses
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
evidence of water cress
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
presence of water cress and well defined channel imply permanance

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Renewable Energy Water Body Site Investigation

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 16 APR 15 **Weather Conditions**

Time Started: 0932 Temp (°C), Wind, Cloud Cover (%), Precipitation: 12°C, 4/6, 40%, 0

Time Finished: 1242 *Precipitation in Prior 48hrs (mm):* 0.0mm

Site Code: LSCT082 **GPS Location** **Estimated Length Assessed**

Feature Name: Millard and Lark Dr Easting: 0398920 Upstream: 50

Drainage System: Lake St Clair Northing: 4707910 Downstream: 50

Location in System: at Caledonia dd *Water Body No.* 047

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline

☐ Straight ☑ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined

☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow

☑ Freshet Flow

Avg. Wetted Width (m): 4.5 Avg. Water Depth (m): 0.25 Max Pool Depth (m): 0.35

Avg. Bankfull Width (m): 6.0 Avg. Bankfull Depth (m): 0.6

Substrate Composition (%) Boulder: – Cobble: – Gravel: 15 Fines: 85

Bed Morphology (%) Flat: 100 Riffle: – Run: – Pool: –

Bank Slope & Stability: High slope High Stability Feature Gradient (H/M/L): LOW

Other Comments: –

Instream Aquatic Habitat

Features (e.g. woody debris, undercut banks): Dense patches of cattail sp

Vegetation (with % dominant): Cattails (90%) w traces of duckweed (10%)

Surface Water Quality

Temp (°C): 9 Turbidity (L/M/H): MEDIUM Colour: Brown Comments: –

Riparian Habitat

Vegetation: T. Grasses

Canopy Cover (% and species): 0

Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)

No fish obs

dense patches of cattails

1.5m open box culvert w cobble embankments

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	93	E	–	Other:	–	–	–
Downstream:	94	W	–				
Feature Bed:	95	–	–				
Culvert / Bridge:	96	–	–				
Vegetation:	97	–	–				
Landscape Photo:	98	E	–				

Additional Characteristics

Describe Bed Material and Soil Conditions in and around Feature:

–

Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:

–

Presence of Hydric Soils:

–

Describe Debris and / or Leaf Litter in Feature (type, amount, location):

dense patches of cattails u/s and d/s along the edges of stream

Seepage Areas / Springs / Evidence of High Water Table in or near Feature:

None

Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature *(Circle any present)*

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required

Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral

Evidence of Water Body Status:

well defined channel w dense patches of cattails suggest permanence

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Renewable Energy Water Body Site Investigation

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Project (No. & Name): 16A Mckeen **Field Staff:** BEN

Survey Date: 16APR15 **Weather Conditions**
Time Started: 0820 Temp (°C), Wind, Cloud Cover (%), Precipitation:
Time Finished: 0930 *Precipitation in Prior 48hrs (mm):* 0.0mm

Site Code: LSCT068 **GPS Location** **Estimated Length Assessed**
Feature Name: Little Bear Cr Easting: 0396345 Upstream: 50
Drainage System: Lake St. Clair Northing: 4708013 Downstream: 160
Location in System: off Prince Albert Rd *Water Body No.* 048

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight Downstream ☑ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Upstream
Avg. Wetted Width (m): 6.5 Avg. Water Depth (m): unk ~1m Max Pool Depth (m): unk
Avg. Bankfull Width (m): 7.25 Avg. Bankfull Depth (m): unk ~2m.
Substrate Composition (%) Boulder: unk Cobble: unk Gravel: unk Fines: unk
Bed Morphology (%) Flat: 100 Riffle: — Run: — Pool:
Bank Slope & Stability: High slope / High stability Feature Gradient (H/M/L):
Other Comments:
Channelized OR down stream
Turbidity too high for substrate

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): dense patches of woody debris
Vegetation (with % dominant): none observed

Surface Water Quality
Temp (°C): 10 Turbidity (L/M/H): Colour: Green Comments: cant see bed

Riparian Habitat
Vegetation: T.Grasses / Phrag
Canopy Cover (% and species): 60% U/S D. Trees
Adjacent Land Use: AG - Downstream Forest - U/S

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
No fish obs
Large WB - areas of erosion along banks
Signs of recent clean out D/S

Photographs	No.	Direction	Description		No.	Direction	Description
Upstream:	016	NE		Other:			
Downstream:	017	NW					
Feature Bed:	018	—					
Culvert / Bridge:							
Vegetation:	019	—					
Landscape Photo:	020	—					

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
N/A can't see
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
N/A can't see bed, none on banks or F.P.
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
Dense woody debris along edges of stream bed
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Sig wb, size and channel definition suggest permanance

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Project (No. & Name): 1612 N. Kent **Field Staff:** BEB

Survey Date: 16APR15 **Weather Conditions**
Time Started: 0835 Temp (°C), Wind, Cloud Cover (%), Precipitation:
Time Finished: 0845 *Precipitation in Prior 48hrs (mm):* 0.0mm

Site Code: LSCT069 **GPS Location** **Estimated Length Assessed**
Feature Name: Little Bear Cr Dr Easting: 0396213 Upstream: 100
Drainage System: Lake St Clair Northing: 4708174 Downstream: 100
Location in System: at Prince Albert Rd *Water Body No.* 0419

Channel Characteristics and Morphology N/A ☐ Lake ☐ Pond ☐ Man-made pond Online/Offline
☑ Straight ☐ Meandering (H/M/L Sinuosity): ☑ Defined ☐ Poorly Defined
☐ Standing Water ☐ Low Flow / Baseflow ☐ Moderate Flow ☐ High / Flood Flow
☑ Freshet Flow Channelized Dr
Avg. Wetted Width (m): 6.5 Avg. Water Depth (m): unk >1m Max Pool Depth (m): unk
Avg. Bankfull Width (m): 8.5 Avg. Bankfull Depth (m): unk >2m
Substrate Composition (%) Boulder: unk Cobble: unk Gravel: unk Fines: unk
Bed Morphology (%) Flat: 100 Riffle: — Run: — Pool: —
Bank Slope & Stability: High Slope Low Stability Feature Gradient (H/M/L):
Other Comments:
Channelized Dr erosion on banks & toe of slope
Turbidity too high for substrate

Instream Aquatic Habitat
Features (e.g. woody debris, undercut banks): dense patches of woody debris along edges
Vegetation (with % dominant): Mats of duckweed (100%)

Surface Water Quality
Temp (°C): 9 Turbidity (L/M/H): Colour: Green Comments:

Riparian Habitat
Vegetation: Dense Phrag, T. Grasses and Dog wood
Canopy Cover (% and species): 5% Dogwood
Adjacent Land Use: AG

General Comments (Fish observed, unusual conditions, culvert/bridge description, groundwater indicators and description)
Fish obs in wb
dense patches of woody debris
Signs of active erosion

Photographs	No.	Direction	Description	No.	Direction	Description
Upstream:	021	SE		Other:		
Downstream:	022	NW				
Feature Bed:	023					
Culvert / Bridge:	—					
Vegetation:	024					
Landscape Photo:	025	SE				

Additional Characteristics
Describe Bed Material and Soil Conditions in and around Feature:
N/A can't see.
Describe Sediment Deposits in Feature and on Floodplain - Recent / Historic:
~~N/A~~ Some along banks, can't see bed.
Presence of Hydric Soils:
—
Describe Debris and / or Leaf Litter in Feature (type, amount, location):
Dense deposits of woody debris / dry phrag along edges of wb
Seepage Areas / Springs / Evidence of High Water Table in or near Feature:
None.
Attached Algae, Clam or Mussel Shells, Crayfish Chimneys or Exoskeltons, or Aquatic Insect Larvae in or near Feature
(Circle any present)

Water Body Determination Water Body? ☑ Yes ☐ No ☐ Additional evidence required
Flow Regime: ☑ Permanent ☐ Intermittent ☐ Ephemeral
Evidence of Water Body Status:
Channel definition and algae suggest permanence