WATER ASSESSMENT REPORT

Southgate Solar Project

April 2015

DILLON
CONSULTING

Table of Contents

List of Figures

List of Tables

List of Appendices

1. INTRODUCTION

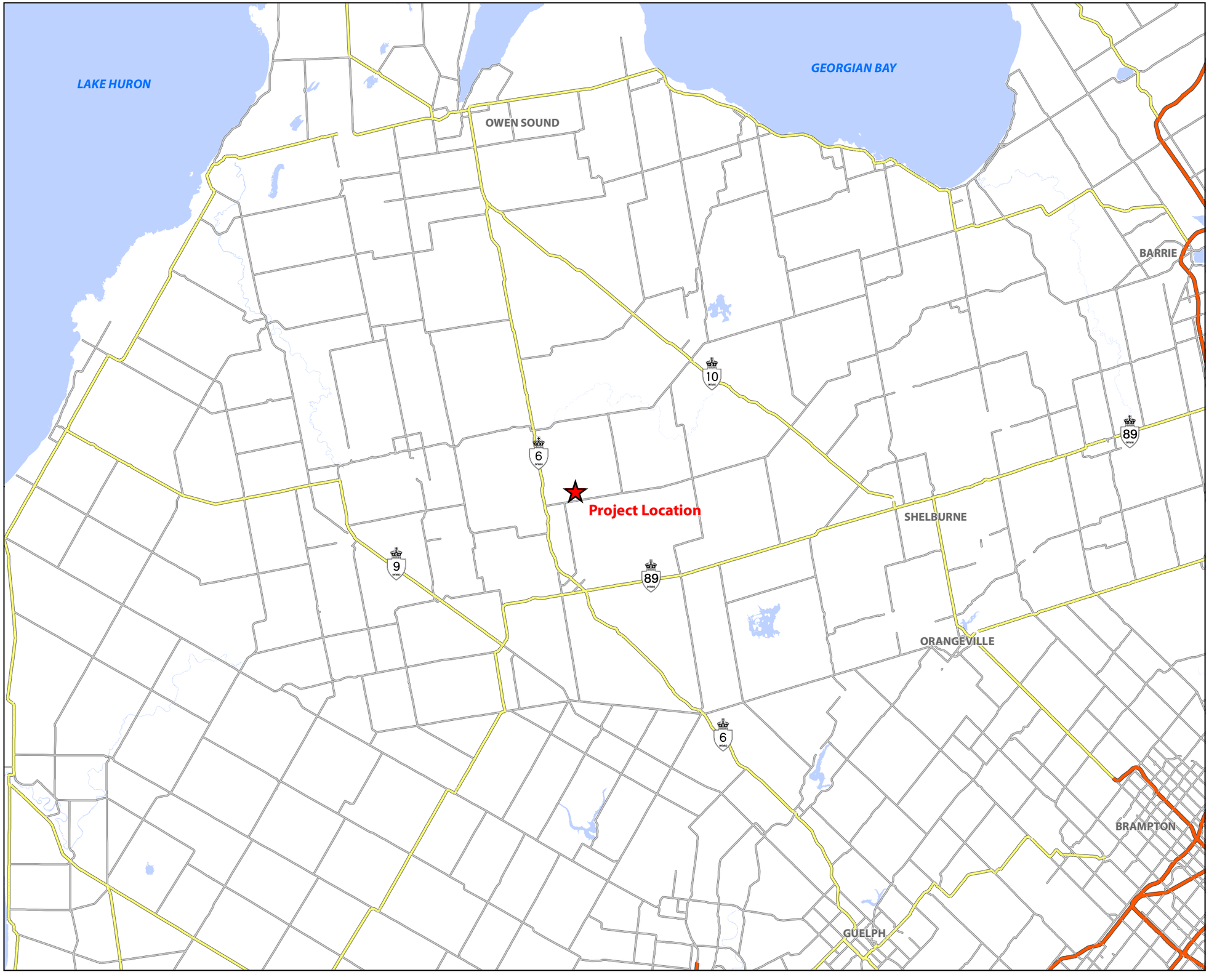
Southgate Solar LP proposes to develop a solar facility with a maximum name plate capacity of 50 megawatts alternating current (MWac), located near Mount Forest, in the Township of Southgate, County of Grey, Ontario (Figure 1). The renewable energy facility will be known as the Southgate Solar Project ("the Project").

Southgate Solar LP has initiated the Project through a Power Purchase Agreement (PPA) with the Ontario Power Authority and will require approval under *Ontario Regulation 359/09 (O. Reg. 359/09) – Renewable Energy Approval (REA)* under Part V.0.1 of the *Ontario Environmental Protection Act*.

Ontario Regulation 359/09 requires that all renewable energy projects conduct a records review and site investigation for water bodies that fall within the Project Location or the prescribed setback area (Section 29 of *O. Reg. 359/09*). This *Water Assessment Report* was completed in partial fulfillment of the regulatory requirements for the REA process. Additional details regarding the potential impacts and mitigation measures required to protect these features will be provided in a separate *Water Body Report*, as required. These reports will be submitted to the Ministry of Environment and Climate Change (MOECC) for review and comment, as required in *Ontario Regulation 359/09*, and will provide for the protection of water bodies within and adjacent to the Project Location.

Table 1: Checklist for Requirements under O.Reg. 359/09 - Water Assessment - Records Review

Required Documentation	Location in Report
Search for and analysis of the records set out in Column 1 of the Table to section 30 of O. Reg. 359/09 was conducted in respect of the Project Location for the purpose of making the determinations set out opposite the records in Column 2 of the Table.	*Water Assessment Report* Section 5, *Records Review Results*
Report was prepared setting out a summary of the records searched and the results of the analysis conducted above.	*Water Assessment Report* Section 6, *Summary of Records Review*



SOUTHGATE SOLAR PROJECT

FIGURE 1
GENERAL PROJECT LOCATION

1:500,000

0 5 10 20 km

N
W E
S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION: I:\GIS\149154 - Samsung Southgate\mxd\PDR\

DILLON CONSULTING

PROJECT: 149154
STATUS: DRAFT
DATE: 11/12/2014

2. THE PROPONENT

In the course of developing renewable energy projects, Southgate Solar LP strives to satisfy various environmental approval requirements and obtains regulatory approvals that vary depending on the jurisdiction, project capacity and site location. In addition, Southgate Solar LP aims to build long-term relationships with the communities that host its projects. Southgate Solar LP is committed to the health and welfare of the residents of the Township of Southgate, and to ensure that the Southgate Solar Project is successful for stakeholders.

Contact information for the Proponent is as follows:

Full Name of Company:	*Southgate Solar LP*
Prime Contacts:	*- Simon Kim, Project Manager* *- A. José De Armas, Manager, Project Development*
Address:	2050 Derry Road West 2nd Floor, Mississauga, ON, L5N 0B9
Telephone:	*1-866-234-7094*
Email:	*ssp@samsungrenewableenergy.ca*

Dillon Consulting Limited is the prime contractor for the preparation of this report. The contact at Dillon is:

Full Name of Company:	*Dillon Consulting Limited*
Prime Contact:	*Michael Enright, Project Manager*
Address:	*1155 North Service Road West, Unit 14, Oakville, Ontario, L6M 3E3*
Telephone:	*(905) 901-2912 ext. 3401*
Email:	*menright@dillon.ca*

3. PROJECT LOCATION

The proposed Class 3 Solar Facility is to be located within the Township of Southgate, in the County of Grey, approximately 11 kilometres north of the community of Mount Forest. The proposed Project Location is contained within an area bounded in the north by Southgate Road 24, Southgate Road 14 to the south, Southgate 47 to the east and Highway 6 to the west. The proposed Project Location, consisting of multiple privately-owned parcels, is to be leased by Southgate Solar LP. It has an approximate centroid at the following geographic coordinates:

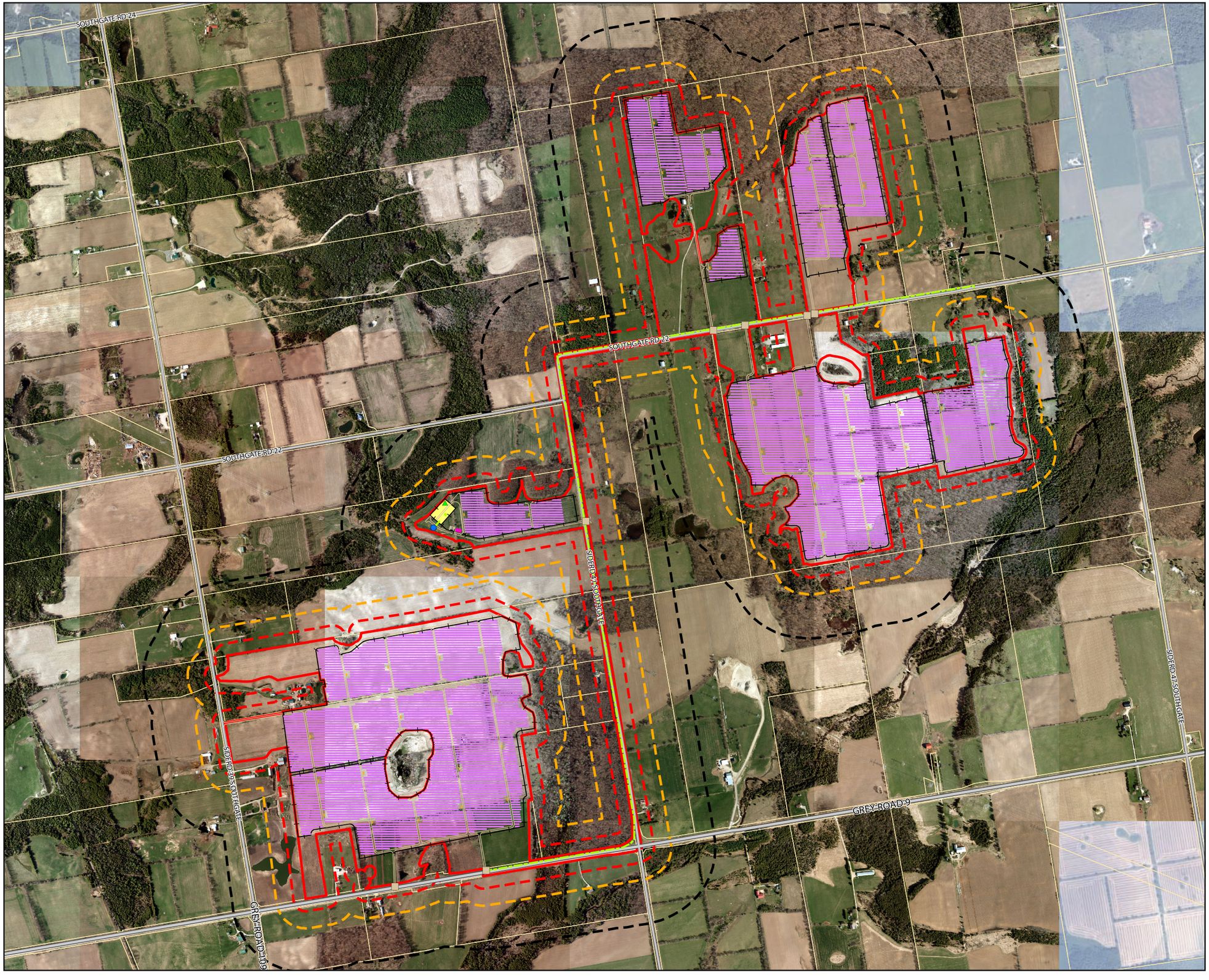
- Latitude: 44° 6' 07.78" N
- Longitude: 80° 44' 49.91" W

Figure 1 shows the general location of the Project in Ontario. The Project Location is defined in *Ontario Regulation 359/09* to be "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".

Figure 2 shows the Project Location as defined by *Ontario Regulation 359/09*. Project components, including solar modules and electrical facilities such as Medium Voltage (MV) Stations, main high-voltage (HV) substation transformer and electrical lines, will be located on private land. Areas within the Project Location but outside of the perimeter fence are "Areas of Operational Flexibility". These areas have been reserved to accommodate other Project requirements (ex. stormwater measures, temporary laydown areas, etc.). This is discussed in greater detail in Section 4 of the *Project Description Report*. Figure 2 also includes the 50 m, 120 m and 300 m setbacks from the Project Location. Each setback distance is applicable to various components of the REA process. The 120 m setback is applicable to the *Water Assessment Report*. The 50 m setback is only applicable to the *Natural Heritage Assessment* for the Project. The 300 m setback is shown in the mapping for reference in the *Construction Plan Report.* Setback development prohibitions for solar facilities are outlined in Part V, Sections 39 and 40 of *Ontario Regulation 359/09* (last amended May 2, 2014).

Figure 3 shows the water bodies that were identified in the records review, and that have potential to occur within the Project Location or within the surrounding 120 m.

Figure 4 identifies natural features and water bodies based on the Water Assessment Site Investigation and the Natural Heritage Assessment.



SOUTHGATE SOLAR PROJECT

FIGURE 2
PROJECT LOCATION

- Site Entrance
- Point of Common Coupling
- Communications Tower
- Overhead Cable
- Fence
- Access Road
- Solar Panel
- Project Location
- Project Location 50 m Setback
- Project Location 120 m Setback
- Project Location 300 m Setback
- Inverter
- Substation Transformer
- Substation
- Operations and Maintenance Building
- Parking Lot
- Parcel Boundary

The area between the fence line and the Project Location is the Area of Operational Flexibility.

1:15,000

0 100 200 400 600 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 17N

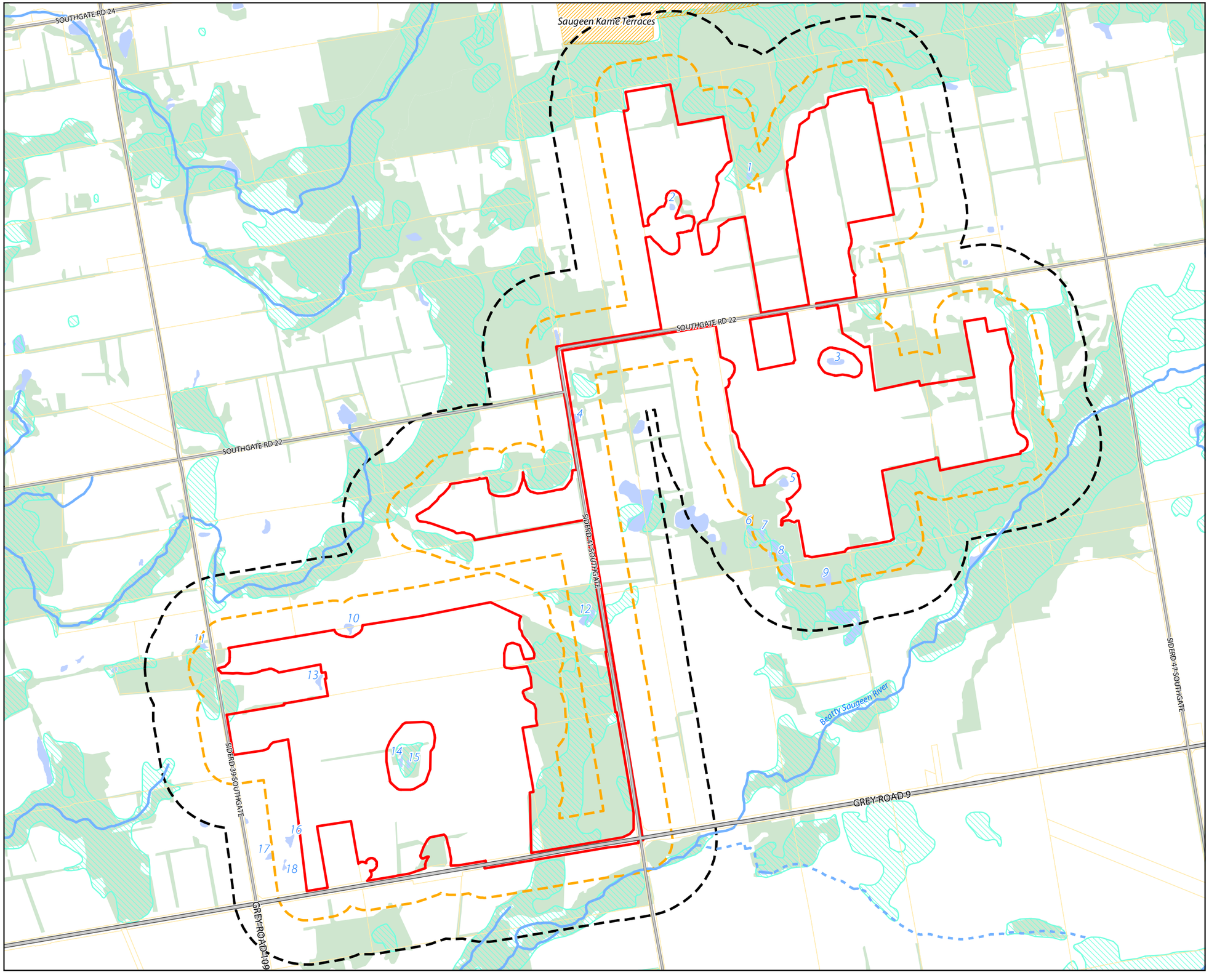
FILE LOCATION: I:\GIS\149154 - Samsung Southgate\mxd\Records Review

DILLON CONSULTING

PROJECT: 149154
STATUS: DRAFT
DATE: 12/2/2014

SOUTHGATE SOLAR PROJECT
WATER ASSESSMENT REPORT

FIGURE 3
RECORDS REVIEW



- Potential Permanent Stream
- Potential Intermittent Stream
- Project Location
- Project Location 120 m Setback
- Project Location 300 m Setback
- Parcel Boundary
- ANSI, Earth Science
- Unevaluated Wetland
- 1 Potential Water Body
- Woodland

1:15,000

0 100 200 400 600 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION: I:\GIS\149154 - Samsung Southgate\mxd\Water Assessment

DILLON CONSULTING

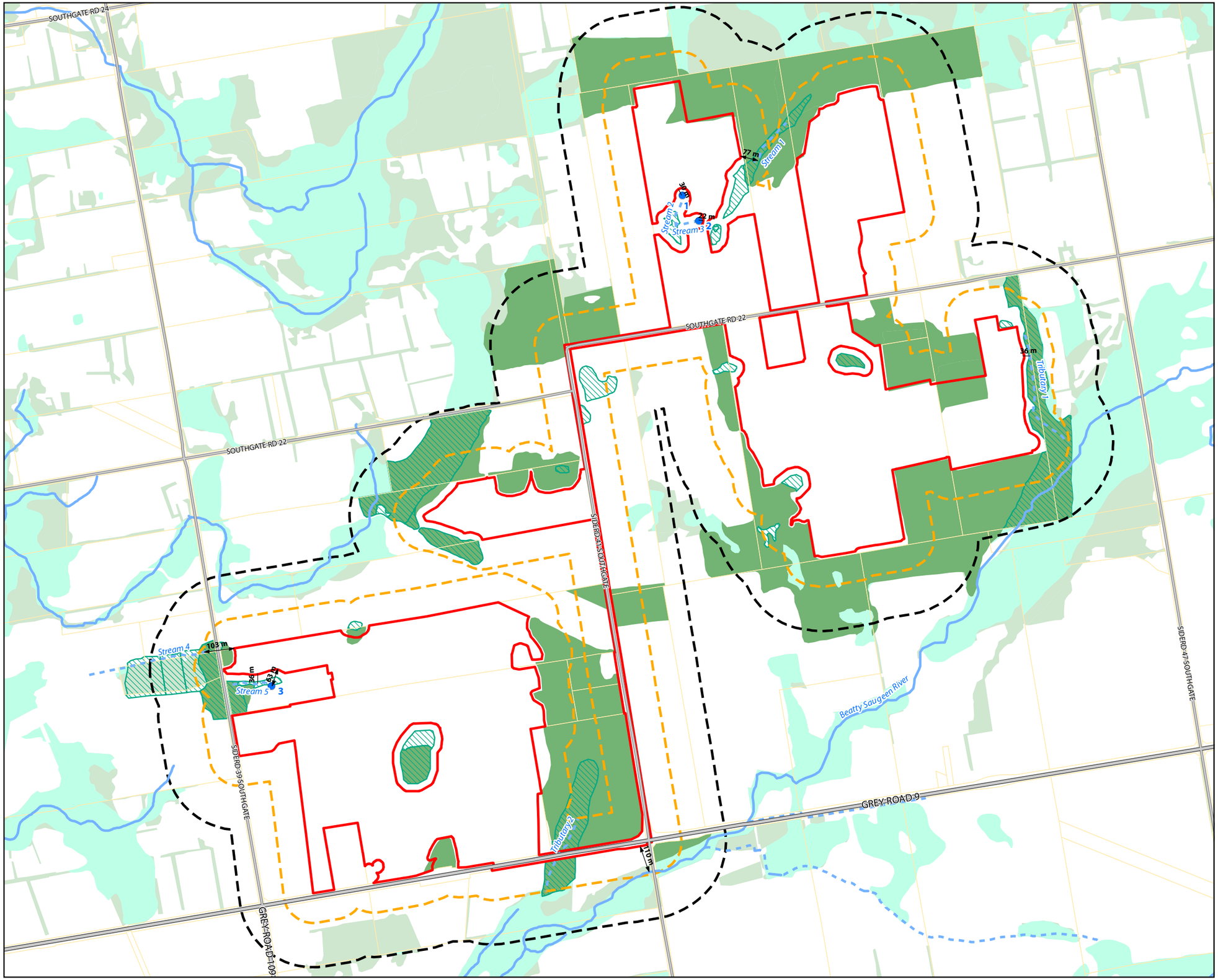
PROJECT: 149154

STATUS: DRAFT

DATE: 11/28/2014

SOUTHGATE SOLAR PROJECT
WATER ASSESSMENT REPORT

FIGURE 4
WATER ASSESSMENT
SITE INVESTIGATION



- Seepage Area
- Permanent Stream
- Intermittent Stream
- Project Location
- Project Location 120 m Setback
- Project Location 300 m Setback
- Parcel Boundary
- Dillon Delineated Wetland
- Unevaluated Wetland
- Dillon Delineated Woodland
- Woodland

1:15,000

0 100 200 400 600 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR, GREY COUNTY

MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION: I:\GIS\149154 - Samsung Southgate\mxd\Water Assessment

DILLON CONSULTING

PROJECT: 149154
STATUS: DRAFT
DATE: 11/28/2014

4. RECORDS REVIEW PURPOSE

As shown on Figure 3, a records review was completed in accordance with Section 30 of *Ontario Regulation 359/09* using secondary source information.

Section 30 of *Ontario Regulation 359/09* states a water assessment for a renewable energy facility includes a records review to search for and determine whether the Project Location is:

a) In a water body
b) 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
c) Within 300 m of the average annual high water mark of a Lake Trout lake that is at or above development capacity
d) Within 120 m of the average annual high water mark of a permanent or intermittent stream
e) Within 120 m of a seepage area

Under *Ontario Regulation 359/09*, the definition of a water body includes lakes, permanent and intermittent streams and seepage areas, 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
g) Artificial bodies of water intended for the storage, treatment or recirculation of runoff from farm animal yards, manure storage facilities and site and outdoor confinement areas

Table 2 outlines the secondary sources of information used to conduct the water assessment records review.

Table 2: Records and Resources Searched and Analyzed During Records Review

Record Source		Records Requested and/or Reviewed
Ministry of Natural Resources		
District Office: Midhurst		Main Contact: Megan Eplett, A/ District Planner (April - August 2014) ▪ Records received from MNRF Midhurst District relating to provincial parks, conservation reserves, natural features, wildlife species, and Species at Risk
Date of Request: May 26, 2014	Date of Data Receipt: June 4, 2014	
Date of Request: September 19, 2014	Date of Data Receipt: September 25, 2014	Main Contact: Kim Benner, A/ District Planner (Current) ▪ Follow up email sent to Midhurst District to confirm no other records were available ▪ Received email from Jodi Benvenuti, Management Biologist, with Species at Risk and other wildlife species to consider
Manuals/Guidelines		Ecological Land Classification for Southern Ontario, First Approximation and its Application, 1998
		Natural Heritage Reference Manual, Second Edition, March 2010
		Natural Heritage Assessment Guide for Renewable Energy Projects, Second Edition, November 2012
		Ontario Wetland Evaluation System, Southern Manual, Third Edition, November 2012
		Significant Wildlife Habitat Technical Guide (2000), Appendices and Decision Support Tool
		Significant Wildlife Habitat Eco-regional Criteria Schedules, February 2002
Land Information Ontario (LIO), data requested/accessed April 2014		▪ Interactive Online Mapping Tool ▪ Warehouse Data (see Appendix A for data layers obtained)
Ontario Crown Land Use Policy Atlas, online data accessed April 2014		▪ Crown Land areas
Federal Government		
Canadian Wildlife Service/ Environment Canada		Contact: Denise Fell, Environmental Assessment Officer, via email ▪ Records relating to natural features and wildlife species
Date of Request: May 28, 2014	Date of Data Receipt: N/A. CWS has previously noted it does not have files of relevance	
Fisheries and Oceans Canada online mapping		Distribution of Fish Species at Risk mapping for Saugeen Valley Conservation Authority (valid May 2014- May 2015)
Conservation Authority		
Saugeen Valley Conservation Authority		Contact: Erik Downing, Manager, Environmental Planning and Regulations
Date of Meeting #1: July 4, 2014 Date of Meeting #2: November 12, 2014	Date of Data Receipt: May 22, 2014	
Date of Request: July 18, 2014	Date of Receipt: July 31, 2014	Contact: Jo-Anne Harbinson, Manager of Water Resources and Stewardship Services ▪ Records of locations and mapping for watercourses and water bodies within SVCA jurisdiction

Record Source		Records Requested and/or Reviewed
Date of Request: October 28, 2014	Date of Receipt: October 29, 2014	Contact: Rene Kleinecke, GIS Coordinator ▪ Records of locations and mapping for watercourses and water bodies within SVCA jurisdiction
Sub-watershed Report Cards for the Beatty Saugeen River subwatershed (SVCA, 2013a) and the Upper Main Saugeen River subwatershed (SVCA, 2013b)		Information related to aquatic systems and land cover in each of these sub-watersheds.
Municipality		
Upper-Tier Municipality: Grey County (2013)		▪ Official Plan and mapping Schedules reviewed
Lower-Tier Municipality: Township of Southgate (2009)		▪ Official Plan and mapping Schedules reviewed
Planning Authorities and Local Boards		
Municipal Planning Authority		See Above
Local Planning Board		Not applicable in Project Location
Local Roads Board		Not applicable in Project Location
Local Services Board		Not applicable in Project Location
Other Resources		
Great Lakes Conservation Blueprint for Aquatic Biodiversity. Volume 2: Ecodistrict Summaries; Saugeen Tertiary Watershed 2FC (Phair *et al.*, 2005)		Produced by the Nature Conservancy of Canada. A summary of statistics and land use relating to water bodies in the tertiary watershed.
Provincial Plan Area Records		
Niagara Escarpment Plan, 2014. (Niagara Escarpment Commission, June 2014)		Project Location does not fall within the Niagara Escarpment Plan Area
Oak Ridges Moraine Conservation Plan, 2001. (Ontario Ministry of Municipal Affairs and Housing, 2001)		Project Location does not fall within the Oak Ridges Moraine Conservation Plan Area
Greenbelt Plan, 2005. (Ontario Ministry of Municipal Affairs and Housing, 2005)		Project Location does not fall within the Greenbelt Plan Area
Lake Simcoe Protection Plan, 2009. (Ontario Ministry of the Environment, July 2009)		Project Location does not fall within the Lake Simcoe Protection Plan Area

5. RECORDS REVIEW RESULTS

As stated in Section 3of this report, the Project Location is near the community of Mount Forest and is within Ecodistrict 6E-5 (Mount Forest).

The Project Location is within the Saugeen River watershed, as defined by the jurisdictional boundaries of the Saugeen Valley Conservation Authority (SVCA). Specifically, the Project falls within the Saugeen Tertiary Watershed 2FC, as defined by the Great Lakes Conservation Blueprint for Aquatic Biodiversity (Phair *et al*., 2005). Aquatic areas within this tertiary watershed are dominantly stream systems (368,263 ha), followed by wetland systems (29,928 ha), which are mostly deciduous or coniferous swamps (Phair *et al*., 2005).

Within the tertiary watershed, the Project is subdivided between the Beatty Saugeen River sub-watershed in the south (SVCA, 2013a), while northern portions of the Project Location are further located within the Upper Main Saugeen River sub-watershed (SVCA, 2013b).

The Beatty Saugeen River sub-watershed has an area of 274 km^2. Of this, 65% is in agriculture and 32% is forested cover. 23% of the area is wetland, which in some areas coincides with forested cover. The primary watercourse in the sub-watershed is the Beatty Saugeen River, which is mapped approximately 110 m from the Project Location south of Grey Road 9.

The Upper Main Saugeen River sub-watershed has an area of 782 km^2. Of this, 58% is in agriculture and 36% is forested cover. 24% of the area is wetland, which in some areas coincides with forested cover. The primary watercourse in the sub-watershed is the main branch of the Saugeen River, located approximately 8.8 km northwest of the Project Location.

5.1 Water Bodies

Based on our review and analysis of the records and resources outlined in Table 2, and in accordance with *Ontario Regulation 359/09*, determinations were made whether the Project Location is in a water body or within 120 m of the average annual high water mark of a water body (see Figure 3). All mapping used for the records review is based on agency data (see *Appendix A*) and is not necessarily reflective of site conditions. In consideration of potential Lake Trout lakes and to meet the requirements of the *Construction Plan Report*, water bodies within 300 m are also noted. The *Construction Plan Report* will be included as part of the REA Application.

5.1.1 Average Annual High Water Mark Determination

For the purposes of this REA reporting, the average annual high water mark for streams and lakes is defined as the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters, this refers to the “active channel/ bankfull level” which is often the one-to two-year flood flow return level (MOE, 2013).

5.1.2 Lakes

A search and analysis of the records and resources outlined in Table 2 did not identify any lakes, as defined by *Ontario Regulation 359/09*, in the Project Location or within the surrounding 300 m. Eighteen small potential water bodies through the records review within 120 m of the Project Location (see Figure 3). Given the rural nature of the landscape, it is expected that some or all of these potential water bodies are either stormwater ponds or livestock ponds. Some of these potential water bodies are mapped at locations adjacent to or within wetlands mapped by the MNRF (see *Appendix A*), and therefore may be areas of open water associated with the wetland feature. These features were characterized during the water body site investigation to assess if they met the definition of water body as defined under *Ontario Regulation 359/09*. They are mapped on Figure 3 with number identifiers for ease of reference during the site investigation.

5.1.3 Lake Trout Lakes

A search and analysis of the records and resources outlined in Table 2 did not identify any mapped Lake Trout lakes under management by the MNR (2006), in the Project Location or within the surrounding 300 m.

5.1.4 Permanent and/or Intermittent Streams

A search and analysis of records and resources outlined in Table 2 did not identify any mapped streams within the Project Location. One potential permanent stream is mapped within 120 m of the Project Location (Figure 3). The Beatty Saugeen River has been mapped by the MNRF as a permanent stream (see Figure 3 and *Appendix A*) approximately 120 m south of the southern boundary of the Project Location near the intersection of Grey Road 9 and Southgate Side Road 41 (Figure 3).

5.1.5 Seepage Areas

A search and analysis of the records and resources outlined in Table 2 did not identify any mapped seepage areas in the Project Location or within the surrounding 300 m.

5.2 Aquatic Species at Risk

Species at Risk listed under the federal *Species at Risk Act* and provincial *Endangered Species Act, 2007*, with the potential to interact with the Project Location and/or adjacent lands, are being considered in consultation with the appropriate agency. Reporting related to the protection of Species at Risk will be provided to the appropriate agency under separate cover as required. This reporting format meets the requirements as set out in *Ontario Regulation 359/09*, and is consistent with the direction provided by the MNRF and the MOECC.

5.3 Provincial Plan Areas

Under *Ontario Regulation 359/09*, if any part of the Project Location falls within a provincial plan area the Project may be subject to different criteria to evaluate the applicable water bodies. In addition, should development occur within the prescribed setback area of a water body, it may be subject to a different set of prohibitions under *Ontario Regulation 359/09*. Table 3 outlines the provincial plan areas that should be considered when planning a renewable energy project and indicates that no provincial plan areas are applicable to the Project Location.

Table 3: Summary of Provincial Plan Areas and Applicability to the Project Location

Provincial Plan Area	Applicability to Project
Oak Ridges Moraine Conservation Plan Area	None
Niagara Escarpment Plan Area	None
Greenbelt - Natural Heritage System	None
Greenbelt – Protected Countryside	None
Lake Simcoe Protection Plan	None

5.4 Regulated Areas

Portions of the lands within the Project Location are regulated by SVCA under *Ontario Regulation 169/06, Saugeen Valley Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. Where required, applicable permitting from the SVCA will be obtained prior to the commencement of construction. Consultation with the SVCA has been ongoing throughout the duration of the Project to date. For more information regarding this consultation, please see the *Consultation* Report. Confirmation of permit and approval requirements is also further outlined in the *Project Description Report.*

6. SUMMARY OF RECORDS REVIEW

This report is intended to fulfill the requirements for the water assessment records review under Section 30 of *Ontario Regulation 359/09*. Table 4 summarizes the determinations made during this records review. All previously mapped features that may be potential water bodies are outlined on Figure 3.

Table 4: Summary of the Water Assessment Records Review

Water Body ID	Source of Information	Distance Relative to Project Location
Lakes		
No known features identified within the Project Location or adjacent lands within 300 m		
Lake Trout Lakes		
No known features identified within the Project Location or adjacent lands within 300 m		
Permanent and/or Intermittent Streams		
Beatty Saugeen River	MNRF LIO Data	Within 120 m setback
Seepage Areas		
No known features identified within the Project Location or adjacent lands within 300 m		
Provincial Plan Areas		
None applicable within the Project Location or adjacent lands within 300 m		

7. SITE INVESTIGATION PURPOSE

The water body site investigation was completed to verify the accuracy of the determinations made during the water body records review. It is consistent with Section 31 of *Ontario Regulation 359/09*, which states that a person who proposes to engage in a renewable energy project shall ensure that a physical investigation of the land and water within 120 m of the Project Location is conducted for the purpose of determining:

- Whether the results of the analysis summarized in the [records review] report are correct or require correction, and identifying any required corrections.
- Whether any additional water bodies exist, other than those identified in the records review.
- The boundaries, located within 120 m of the Project Location, of any water body that was identified in the records review or the site investigation.
- The distance from the Project Location to the boundaries of the water body.

8. SITE INVESTIGATION METHODOLOGY

Based on the determinations made during the records review, all water bodies that were mapped within the Project Location and surrounding 120 m were the subject of a site investigation. The Project Location was assessed by site investigators in order to document the presence of applicable water bodies, if any, within the Project Location. The Project Location was traversed on foot to search for applicable water bodies. Documentation of applicable and accessible water bodies included a record of qualitative and quantitative observations including type and location of water body, average annual high water mark, habitat types, surrounding riparian composition and taking of representative photographs. Efforts were co-ordinated with the team of site investigators conducting the natural heritage assessment of the Project Location to locate any potential water bodies not identified during the records review, and streams were marked using GPS devices in the field to verify locations on mapping.

8.1 Names and Qualifications of Site Investigators

The names and qualifications of all site investigators that participated in the water body assessment field work are outlined in Table 5 below. The site investigators listed below have been involved with the project since it began and have been involved in numerous other renewable energy projects that have received approval under *Ontario Regulation 359/09*.

Table 5: Names and Qualifications of Site Investigators

Name	Degrees and Professional Designations	Years of Experience	Certifications
Trevor Goulet	B.Sc. (Env.), Natural Resources Management; Environmental Professional in-training (EPt)	4	▪ MNRF Ecological Land Classification (ELC)
Ben Gottfried	Adv. Dip. (Fish and Wildlife Technician)	6	▪ Certified Inspector of Sediment and Erosion Control ▪ OMNR Class 1 Electrofishing
Kelly McLean	M.Sc., Geography; B.Sc., Environmental Biology; T.Dip., Aquaculture	8	▪ OMNR Class 1 Electrofishing ▪ Royal Ontario Museum Fish Identification Certification
Natalie Doerr	B.Sc., Biology; G.Dip., Ecosystem Restoration	4	▪ OMNR Class 2 Electrofishing ▪ OBBN Certification
Jonathan Harris	Adv. Dip. (Fish and Wildlife Technologist)	8	▪ MNRF Ecological Land Classification (ELC) ▪ MNRF Ontario Wetland Evaluation System (OWES)
Richard Baxter	B.Sc., Fish and Management; Adv. Dip. (Fish and Wildlife Technologist)	13	▪ MNRF Ecological Land Classification (ELC) ▪ MNRF Ontario Wetland Evaluation System (OWES)

8.2 Site Investigation Dates, Time, Duration, and Weather Conditions

As outlined in Table 6, multiple site investigations of the Project Location were undertaken at various times over a period of approximately four months. The details of each site investigation completed in accordance with REA Section 31(3) are provided in Table 6 and should be read concurrently with Table 5. Field notes that are part of the Natural Heritage Assessment (*i.e.,* ELC) are included in the *Natural Heritage Assessment Site Investigation Report*.

Table 6: Site Investigation Dates, Times, Duration and Weather Conditions

Date (2014)	Site Investigators	Start Time	Duration (hours)	Weather Conditions (Field Observations)			Weather Conditions (EC Station*)		
				Air Temp. (°C)[1]	Wind[2]	Cloud Cover (%)	Average Air Temp. (°C)	Wind[3]	Precipitation (mm)
Jun. 19	RB	15:00	1.5	n/a	n/a	n/a	22.6	60, 13	0.0
Jun. 27	JH	11:00	1.5	n/a	n/a	n/a	22.2	340, 10	0.0
Jul. 2	BG, TG	13:00	7.0	15	4	70	18.5	280, 37	1.6
Jul. 3	BG, TG	08:00	9.5	18	1	100	12.2	n/a	0.0
Jul. 4	BG, TG	09:00	7.0	20	2	10	13.8	n/a	0.0
Jul. 29	TG, KM	09:00	11.0	15	2	100	13.1	n/a	0.3
Jul. 30	TG, KM	07:30	9.0	14	1	10	14.3	n/a	0.9
Aug. 20	TG, ND	09:00	9.0	19	2	40	19.6	n/a	n/a
Sept. 30	RB	08:30	1.0	n/a	n/a	n/a	16.3	190, 7	10.6
Total Field Work Duration			56.5						

*Data from closest Environment Canada (EC) weather station, in Mount Forest, Ontario (43° 59' 00" N, 80° 45' 00" W). All EC data refer to daily values; n/a indicates the information was not available from the EC weather station for the date of site investigation, or from site investigation information. [1]Air temperature measured at the start of daily site investigation. [2] Wind measured by the Beaufort Scale at the start of daily site investigation. [3] Maximum wind gusts - direction in degrees, speed in km/h.

8.3 Access to Adjacent Lands

As outlined in *Ontario Regulation 359/09*, all lands within 120 m of a project component are required to be assessed for water bodies. In the case of the Southgate Solar Project, access was not available to some lands located within 120 m of the Project Location. Lands in several areas adjacent to the Project Location were not accessible as landowner permission was not provided. Water bodies located on adjacent lands where access was not available were assessed from property lines and road rights-of-way, where applicable. These areas where an alternative site investigation was undertaken are mapped in *Appendix B.* This alternative site investigation was conducted in accordance with *Ontario Regulation 359/09*.

9. SITE INVESTIGATION RESULTS

Based on the site investigation, the occurrence of water bodies within the Project Location or within 120 m of the Project Location is documented below. In addition, to assess if the results of the records review were correct or required corrections and/or amendments, information related to each water body within the Project Location and surrounding 120 m was collected. This included the type of water body, plant and animal composition and the ecosystem of the land and water investigation. In consideration of potential Lake Trout lakes and to meet the requirements of the *Construction Plan Report*, water bodies within 300 m were also noted. The *Construction Plan Report* will be included as part of the REA Application.

9.1 Lakes

As outlined in Table 4, a search and analysis of the records and resources did not identify any named lakes in the Project Location or within the surrounding 300 m. However, 18 potential water bodies (potentially lakes), were mapped within 120 m of the Project Location on the reviewed records (Figure 3). The results of the site investigation determined that none of these potential water bodies met the definition of an applicable water body. Each is discussed in the following sections. Field notes from the site investigation are available in *Appendix C*, and Appendix D contains representative site photographs.

9.1.1 Potential Water Body 1

Potential Water Body 1 was determined during the site investigation to be a dugout pond (see Photograph 1 in *Appendix D*).

9.1.2 Potential Water Body 2

Potential Water Body 2 was determined during the site investigation to be a dugout pond (see Photograph 2 in *Appendix D*). The pond is in-line with the feature identified as “Stream 2” on Figure 4 (see Section 9.3.5 for more information).

9.1.3 Potential Water Body 3

Potential Water Body 3 was determined during the site investigation to be an area of shallow open water that is part of a wetland (see Photograph 3 in *Appendix D*).

9.1.4 Potential Water Body 4

Potential Water Body 4 was determined during the site investigation to be an area of shallow open water that is part of a wetland (see Photograph 4 in *Appendix D*).

9.1.5 Potential Water Body 5

Potential Water Body 5 was determined during the site investigation to be an area of shallow open water that is part of a wetland (see Photograph 5 in *Appendix D*).

9.1.6 Potential Water Body 6

Potential Water Body 6 was determined during the site investigation to be an area of shallow open water that is part of a wetland. It was observed to be connected to Potential Water Body 7, and collectively this area is part of the same wetland (see Photograph 6 in *Appendix D*).

9.1.7 Potential Water Body 7

Potential Water Body 7 was determined during the site investigation to be an area of shallow open water that is part of a wetland. It was observed to be connected to Potential Water Body 6, and collectively this area is part of the same wetland (see Photograph 6 in *Appendix D*).

9.1.8 Potential Water Body 8

Potential Water Body 8 was determined during the site investigation to be an area of open water that is part of a wetland (see Photograph 7 in *Appendix D).*

9.1.9 Potential Water Body 9

Potential Water Body 9 was determined during the site investigation to be an area of open water that is part of a wetland (see Photograph 8 in *Appendix D*).

9.1.10 Potential Water Body 10

Potential Water Body 10 was determined during the site investigation to be an area of open water that is part of a wetland (see Photograph 9 in *Appendix D*).

9.1.11 Potential Water Body 11

Potential Water Body 11 was determined during the site investigation to be a dugout pond (see Photograph 10 in *Appendix D*).

9.1.12 Potential Water Body 12

Potential Water Body 12 was determined during the site investigation to be a temporary channel for surface drainage that can be tilled and driven through, located within an agricultural field containing a row crop of canola planted within the right-of-way of a recently constructed electrical transmission line (see Photograph 11 in *Appendix D*).

9.1.13 Potential Water Body 13

Potential Water Body 13 was determined during the site investigation to be a dugout pond (see Photograph 12 in *Appendix D*) intended for the storage, treatment or recirculation of runoff from a farm animal yard located approximately 50 m west of the dugout pond (see Photograph 13 in *Appendix D*).

9.1.14 Potential Water Body 14

Potential Water Body 14 was determined during the site investigation to be an area of shallow open water that is part of a wetland. It was observed to be connected to Potential Water Body 15, and collectively this area is part of the same wetland (see Photograph 14 in *Appendix D*).

9.1.15 Potential Water Body 15

Potential Water Body 15 was determined during the site investigation to be an area of shallow open water that is part of a wetland. It was observed to be connected to Potential Water Body 14, and collectively this area is part of the same wetland (see Photograph 14 in *Appendix D*).

9.1.16 Potential Water Body 16

Potential Water Body 16 was determined during the site investigation to be a dugout pond intended for the storage, treatment or recirculation of runoff from a farm animal yard, and was observed to be connected to Potential Water Body 17 and Potential Water Body 18 (see Photograph 15 in *Appendix D*).

9.1.17 Potential Water Body 17

Potential Water Body 17 was determined during the site investigation to be a dugout pond intended for the storage, treatment or recirculation of runoff from a farm animal yard, and was observed to be connected to Potential Water Body 16 and Potential Water Body 18 (see Photograph 15 in *Appendix D*).

9.1.18 Potential Water Body 18

Potential Water Body 18 was determined during the site investigation to be a dugout pond intended for the storage, treatment or recirculation of runoff from a farm animal yard, and was observed to be connected to Potential Water Body 16 and Potential Water Body 17 (see Photograph 15 in *Appendix D*).

9.2 Lake Trout Lakes

As outlined in Table 4, a search and analysis of the records and resources did not identify any lakes that had potential to support a managed population of Lake Trout in the Project Location or within the surrounding 120 m. The results of the site investigation confirmed this determination for lands within 300 m of the Project Location.

9.3 Permanent and/or Intermittent Streams

As outlined in Table 4, a search and analysis of the records and resources identified one potential permanent stream mapped within the 120 m setback area (Figure 3). The results of the site investigation confirmed that this stream, the Beatty Saugeen River, is a permanent stream and occurred generally as mapped by the MNRF. It is further described below.

The site investigation also found that seven additional unevaluated streams occurred within 120 m of the Project Location. Each of these was found to be a permanent and/or intermittent stream and therefore met the definition of an applicable water body. Each is described further below. Field notes from the site investigation are available in *Appendix C*, and *Appendix D* contains representative site photographs.

9.3.1 Beatty Saugeen River

The site investigation found the Beatty Saugeen River (hereafter referred to as "the River") occurred as mapped by the MNRF and presented in the records review (Figure 3). It originates northeast of the Project Location, flows generally in a south-west direction, enters the 120 m setback at a location approximately 120 m south of the southern boundary of the Project Location near the intersection of Grey Road 9 and Southgate Side Road 41, flows westward, crosses under Southgate Side Road 41 via a bridge, then exits the 120 m setback approximately 50 m west of Southgate Side Road 41 (Figure 4).

The River was assessed from Southgate Side Road 41 within the 120 m setback, with the assessed areas extending approximately 50 m upstream and 50 m downstream of the bridge, thus covering the portion of the River occurring within the 120 m setback. Within this area, the River was observed to be a natural permanent stream. Habitat type was dominantly run morphology with occasional areas of pools and riffles, and a steady water flow at the time of assessment (Photograph 16 in *Appendix D*). Substrates were pre-dominantly cobbles, with occasional boulders, gravel and sand (Photograph 17 in *Appendix D*). Mean wetted width was 6.0 m, mean wetted depth was 0.2 m, mean bankfull width was 7.0 and mean bankfull depth was 0.5 m (widths and depths are approximate). Banks showed no significant evidence of erosion or vulnerability to erosion. In-stream cover was pre-dominantly from cobbles and over-hanging vegetation, with sparse cover from boulders, woody debris (both in-stream and over-hanging), and in-stream vegetation, comprised of emergent terrestrial grasses. The River surface was approximately 30 – 60% shaded by shore cover.

No obstructions to fish migration or spawning were observed, and no evidence of groundwater was observed in the assessed area. The riparian vegetation community was forest on the north bank. On the south bank, the riparian vegetation community was scrubland in the 10 m immediately adjacent to the bank, and was meadow further south of the scrubland. One fish from the family Cyprinidae was observed in the River, approximately 3 m upstream of the bridge.

The Beatty Saugeen River was also assessed at two other locations; both of which were upstream of Southgate Side Road 41, and were outside the 120 m setback. The first was at the

River's crossing with Grey Road 9, located approximately 400 m upstream and northeast of Southgate Side Road 41 (approximately 420 m east of the Project Location; Photograph 18 in *Appendix D*). The second location was approximately 2.1 km upstream and northeast of Southgate Side Road 41 (250 m south of the Project Location; Photograph 19 in *Appendix D*). The River conditions observed at these two additional locations were comparable to the conditions observed near Southgate Side Road 41.

9.3.2 Tributary 1 to the Beatty Saugeen River

Tributary 1 to the Beatty Saugeen River (hereafter referred to as "Tributary 1") was not shown on the reviewed records (Table 2, Figure 3). It was found during the site investigation to originate approximately 30 m east of the Project Location and 250 m south of Southgate Township Road 22 (44° 06' 28" N, 80° 43' 37" W). From its origin, it flows generally southward for approximately 370 m, then turns south-eastward and exits the 120 m setback (Figure 4). From here, Tributary 1 is suspected to continue southeast and empty into the Beatty Saugeen River, based on interpretation of aerial photographs and topographic maps. However, from the point where Tributary 1 turns southeast, it was assessed only 120 m from the Project Location boundary. It was not assessed further because there it was located on a property for which access permission was not provided by the landowner. The site investigators attempted to make further assessment of the stream using alternative site investigation methods (*i.e.*, from property lines and road rights-of-way), but site lines were obstructed by dense treed vegetation. Therefore, the downstream location and path of Tributary 1 could not be confirmed beyond 120 m from the Project Location, and only the portion of the stream within the 120 m setback is mapped on Figure 4.

Tributary 1 was observed to be a natural intermittent stream within an associated wetland. Habitat type was a flat morphology type near the origin (Photograph 20 in *Appendix D*), and transitioned to a run morphology type downstream of the origin (Photograph 21 in *Appendix D*). Water flow was steady in the area of run morphology at the time of assessment. Substrates were organic muck and detritus. Mean wetted width was 0.5 m, mean wetted depth was 0.2 m, mean bankfull width was 0.6 m and mean bankfull depth was 0.7 m (widths and depths are approximate).

Stream cover was pre-dominantly from dense in-stream and over-hanging vegetation and woody debris. The stream surface was approximately 60 – 90% shaded by shore cover. The surrounding wetland extended approximately 30 m west of and 50 m east of the stream.. No obstructions to fish migration or spawning were observed along the assessed portion of the stream. From the west bank, the riparian vegetation community was cedar swamp wetland within 30 m, and was a cultivated hayfield further west. From the east bank, the riparian vegetation community was a cedar swamp wetland.

9.3.3 Tributary 2 to the Beatty Saugeen River

Tributary 2 to the Beatty Saugeen River (hereafter referred to as "Tributary 2") was not shown on the reviewed records (Table 2, Figure 3). It was found during the site investigation to occur

within the Project Location and the 120 m setback. Within the project location it crosses under Grey Road 9 where the collector line will connect the various areas of the Project. Tributary 2 flows generally southward and is within 120 m of the Project Location approximately 330 m west of Southgate Side Road 41(Figure 4). The portion of Tributary 2 south of Grey Road 9 was assessed using an alternative site investigation (*i.e.*, from property lines and road rights-of-way, as described in Section 8.3 of this report; see *Appendix B*).

Tributary 2 was observed to be a natural intermittent stream within an associated wetland. Habitat type was a flat morphology type with minimal observable flow at the time of site investigation (Photograph 22 and Photograph 23 in *Appendix D*). Substrates were pre-dominantly organic detritus overlying gravel and sand. Mean wetted width was 0.2 m, mean wetted depth was 0.1 m, mean bankfull width was 0.3 m and mean bankfull depth was 0.2 m (widths and depths are approximate). Banks showed no significant evidence of erosion or vulnerability to erosion. Stream cover was pre-dominantly from dense in-stream and over-hanging vegetation and woody debris. The vegetation was pre-dominantly aquatic grasses and cattails (*Typha sp*). The stream surface was approximately 90 – 100% shaded by shore cover. The stream crossed under Grey Road 9 via a corrugated steel pipe (CSP) culvert with a diameter of 1.2 m (Photograph 24 in *Appendix D*). Water depth in the culvert at its upstream end was approximately 0.05 m (Photograph 25 in *Appendix D*), and at its downstream end was approximately 0.1 m. No obstructions to fish migration or spawning were observed along the assessed portion of the stream. The riparian vegetation community surrounding the stream was a cedar swamp wetland.

9.3.4 Unnamed Stream 1

Unnamed Stream 1 (hereafter referred to as “Stream 1”) was not shown on the reviewed records reviewed (Table 2, Figure 3). It was found during the site investigation to originate within the 120 m setback north of the Project Location within an associated wetland. From its origin, it flows generally in a south-west direction for approximately 170 m, then dissipates near the south-western perimeter of the associated wetland (Figure 4).

Stream 1 was observed to be a natural intermittent stream. Habitat type was a flat morphology type with minimal observable flow at the time of site investigation (Photograph 26 in *Appendix D*). Substrates were pre-dominantly organic detritus. Mean wetted width was 0.7 m, mean wetted depth was 0.2 m, mean bankfull width was 0.9 m and mean bankfull depth was 0.3 m (widths and depths are approximate). Stream cover was pre-dominantly from dense over-hanging vegetation, with sparse areas of woody debris. The vegetation was pre-dominantly Touch-me-not species (*Impatiens sp*).

Vegetation in the area where the stream dissipates near the south-western perimeter of the wetland was pre-dominantly Ash species (*Fraxinus sp*; Photograph 27 in *Appendix D*). The stream surface was approximately 60 - 90% shaded by shore cover. The riparian vegetation community surrounding the stream was a swamp wetland.

9.3.5 Unnamed Stream 2

Unnamed Stream 2 (hereafter referred to as "Stream 2") was not shown on the reviewed records (Table 2, Figure 3). It was found during the site investigation to occur within the 120 m setback. It originates from a groundwater seepage area (Seepage Area 1; Figure 4; see Photograph 28 in *Appendix D*) near a pasture. Stream 2 flows south-westward for approximately 10 m into a dugout pond (Potential Water Body 2; see Photograph 2 in *Appendix D*), empties from the pond over a concrete weir (approximately 1 m wide; Photograph 29 in Appendix D), continues generally southward for 70 m, forms a confluence with Unnamed Stream 3 from the east (see Section 9.3.6), continues generally southward for 60 m, then empties into and dissipates within an area of shallow water (approximately 30 m x 30 m) in a meadow marsh wetland (Photograph 30 in *Appendix D*; Figure 4).

Excluding the in-line dugout pond, Stream 2 was observed to be a natural intermittent stream. Habitat type was a run morphology type with riffles, and with a steady observable flow at the time of site investigation. Substrates were pre-dominantly boulders, cobbles, and gravel, with sparse areas of organic detritus. Mean wetted width was 0.8 m, mean wetted depth was 0.1 m, mean bankfull width was 1.2 m and mean bankfull depth was 0.2 m (widths and depths are approximate). In the portion of the stream upstream of the dugout pond, stream cover was from over-hanging trees. In the portion downstream of the dugout pond, stream cover was from over-hanging grasses and cattails. The stream surface was approximately 30 - 60% shaded by vegetation cover. The dominant riparian vegetation community surrounding the stream was a meadow marsh wetland.

9.3.6 Unnamed Stream 3

Unnamed Stream 3 (hereafter referred to as "Stream 3") was not shown on the reviewed records (Table 2, Figure 3). It was found during the site investigation to occur within the 120 m setback. It originates from a groundwater seepage area (Seepage Area 2,Figure 4; see Photograph 31 in *Appendix D*) located approximately 120 m southeast of Seepage Area 1 in the same pasture. Stream 3 flows generally westward for approximately 100 m (Photograph 32 in Appendix D) and then forms a confluence with Stream 2 (Figure 4).

Stream 3 was observed to be a natural intermittent stream. Habitat type was pre-dominantly riffle morphology type with a steady flow at the time of site investigation. Substrates were pre-dominantly boulders, cobbles, and gravel, with sparse areas of organic detritus. Mean wetted width was 1.8 m, mean wetted depth was 0.1 m, mean bankfull width was 2.2 m and mean bankfull depth was 0.2 m (widths and depths are approximate).

The stream surface was approximately 30 - 60% shaded by vegetation cover; pre-dominantly grasses. The dominant riparian vegetation community surrounding the stream was a meadow marsh wetland.

9.3.7 Unnamed Stream 4

Unnamed Stream 4 (hereafter referred to as "Stream 4") was not shown on the reviewed records (Table 2, Figure 3). It was found during the site investigation to occur within the 120 m setback. It originates from a dugout pond (Potential Water Body 11; see Figure 3 and Photograph 10 in *Appendix D*), located approximately 5 m west of Southgate Side Road 39, flows from an outlet on the southwest corner of the pond (Photograph 33 and Photograph 34 in *Appendix D*), flows generally westward for approximately 30 m through a cedar swamp wetland, exits the 120 m setback, continues westward for approximately 360 m, then dissipates below the ground surface in an agricultural field (Figure 4).

On the east side of the dugout pond, the pond was observed to be connected to an upstream roadside ditch on the west side of Southgate Side Road 39. The ditch contained standing water with no observable flow at the time of site investigation, and was determined to not contain an intermittent or permanent stream. The pond and ditch were also connected to another roadside ditch on the eastside of Southgate Side Road 39 by a CSP culvert (0.3 m diameter) crossing under the road directly east of the pond. The culvert and the ditch on the east side of the road contained standing water with no observable flow at the time of site investigation, and were determined to not contain an intermittent or permanent stream.

Stream 4 was observed to be a natural intermittent stream. At the origin of the stream (at the point of outflow from the dugout pond), water flow rate and volume was minimal at the time of assessment, and habitat morphology type was flat. As the stream proceeded through the swamp wetland, water flow rate and volume increased and habitat morphology type transitioned to a run (Photograph 35 in *Appendix D*).

Within the swamp wetland and along the tree row, substrates were pre-dominantly dense boulders and cobbles, mixed with sand, silt and organic detritus. Mean wetted width was 2.4 m, mean wetted depth was 0.1 m, mean bankfull width was 2.8 m and mean bankfull depth was 0.7 m (widths and depths are approximate). Banks were heavily eroded and undercut. Stream cover was pre-dominantly from dense over-hanging vegetation and woody debris. The stream surface was approximately 90 – 100% shaded by shore cover. In the agricultural field, stream cover was less than 30%, the stream flow rate slowed and morphology transitioned to a flat morphology type (Photograph 36 in *Appendix D*) where the stream dissipated below the ground surface, outside the 300 m setback (Photograph 37 in *Appendix D*). Mean wetted width narrowed to 0.6 m and mean wetted depth was 0.1 m.

9.3.8 Unnamed Stream 5

Unnamed Stream 5 (hereafter referred to as "Stream 5") was not shown on the reviewed records (Table 2, Figure 3). It was found during the site investigation to occur within the 120 m setback. It originates from a groundwater seepage area (Seepage Area 3, Figure 4) on a residential property (Photograph 38 in *Appendix D*), flows generally westward approximately 180 m through a channelized ditch within the residential property, then dissipates in a wetland located immediately east of Southgate Side Road 39 (Figure 4).

Stream 5 was observed to be an intermittent stream within a channelized ditch. The ditch was located along the side of a residential driveway. From the stream origin, the ditch was located on the south side of the driveway (Photograph 39 in *Appendix D*), crossed northward under the driveway via a CSP culvert (0.3 m diameter), continued westward on the north side of the driveway, crossed southward under the driveway via a second CSP culvert (0.3 m diameter; Photograph 40 and Photograph 41 in *Appendix D*), then continued westward into the wetland. The habitat type was a run morphology type with steady observable flow at the time of site investigation. Substrates were pre-dominantly gravel and cobbles. Mean wetted width and mean bankfull width was 0.4 m, mean wetted depth was 0.1 m, and mean bankfull depth was 0.2 m (widths and depths are approximate). In the upper south portion of the ditch, the stream banks were lined with concrete railroad ties. The stream was flowing near the bankfull capacity of the channelized ditch. Banks showed minimal evidence of erosion or vulnerability to erosion. Stream cover was sparse and was provided by emergent cobbles and occasional over-hanging and in-stream vegetation. Shaded shore cover was less than 30%.

9.4 Seepage Areas

As indicated in Table 4, a search and analysis of applicable records and resources of the Project Location did not identify any seepage areas, as defined by *Ontario Regulation 359/09*, in the Project Location or within the surrounding 300 m. However, three seepage areas were observed during the site investigation. Each is described in the sections below.

9.4.1 Seepage Area 1

Seepage Area 1 was found during the site investigation to occur within the 120 m setback, near the northwest area of the Project Location (44° 06’ 49.15” N, 80° 44’ 39.63” W, Figure 4). It occurred as a point source of groundwater emerging from the ground near a fence line adjacent to a cattle pasture (Photograph 28 in Appendix D). The Seepage Area was surrounded by a horizontal circular steel cylinder with an approximate diameter of 1 m, set into a substrate base of sand, gravel and organic soil (Photograph 42 in Appendix D). Groundwater was emerging from the substrates, filling the cylinder, flowing over its wall and feeding Stream 2.

9.4.2 Seepage Area 2

Seepage Area 2 was found during the site investigation to occur within 120 m setback, near the northwest area of the Project Location (44° 06’ 45.89” N, 80° 44’ 37.83” W, Figure 4), approximately 120 m southeast of Seepage Area 1. It occurred as a point source of groundwater emerging from the ground in a cattle pasture (Photograph 31 in *Appendix D*). The Seepage Area was surrounded by a horizontal circular steel cylinder with an approximate diameter of 1 m, set into a substrate base of sand, gravel and organic soil (Photograph 43 in *Appendix D*). Groundwater was emerging from the substrates, filling the cylinder, flowing over its wall and feeding Stream 3.

9.4.3 Seepage Area 3

Seepage Area 3 was found during the site investigation to occur within the 120 m setback, near the western portion of the Project Location (44° 05' 44.26" N, 80° 45' 56.72" W, Figure 4). It occurred as a single point source of groundwater emerging from a west-facing hillside on a residential lawn, approximately 30 m west of a house (Photograph 38 in *Appendix D*). The Seepage Area was surrounded by a horizontal circular concrete cylinder with an approximate diameter of 1.0 m, set into a substrate base of sand and gravel (Photograph 44 in *Appendix D*). Groundwater was emerging from the substrates, filling the concrete cylinder, flowing over its wall and feeding Stream 5. The Seepage Area and concrete cylinder were covered by a constructed wood roof. A drainage pipe (0.1 m diameter) was also contained under the roof, emerging from the hillside and from the direction of the house, and was suspected to be a sump pump outlet drain from the house. It was not flowing at the time of site investigation.

10. SUMMARY OF AMENDMENTS TO THE RECORDS REVIEW

Based on the results of the site investigations, ten previously unidentified water bodies were identified within the Project Location or surrounding 120 m. They include seven permanent and/or intermittent streams and three seepage areas. The one identified water body (the Beatty Saugeen River) was confirmed as present. All potential water bodies identified during the records review under "lakes" were determined to be dug-out ponds or open water areas associated with wetlands. Each potential and/or applicable water body is described in Section 9 of this report and mapped on Figure 4 if it was determined to be an applicable water body.

11. CONCLUSIONS

This report is intended to fulfill the requirements for the *Water Assessment Report* under *Ontario Regulation 359/09*. Based on the results of the site investigations, there is one applicable water body within the Project Location and ten applicable water bodies within 120 m. Based on this, an Environmental Impact Study (i.e., a *Water Body Report*) as outlined under Sections 39 and 40 of *Ontario Regulation 359/09* is required for this project.

Table 7 summarizes the results of the site investigation in the context of the proposed project.

Table 7: Summary of the Water Assessment Site Investigation Report

Water Body ID	Does the project location overlap the water body?	Is the project location within 120 m of the water body?	Distance to nearest project components	Project Components within 120 m of the water body (nearest project component is listed first).	EIS Required?
Lakes					
None identified within the Project Location or adjacent lands within 300 m					
Lake Trout Lakes					
None identified within the Project Location or adjacent lands within 300 m					
Permanent and/or Intermittent Streams					
Beatty Saugeen River	No	Yes	110 m	▪ Collector Line	Yes
Tributary 1 to the Beatty Saugeen River	No	Yes	36 m	▪ Fence ▪ Solar Panel ▪ Inverter	Yes
Tributary 2 to the Beatty Saugeen River	Yes	Yes	0 m	▪ Collector Line ▪ Area of Operational Flexibility	Yes
Unnamed Stream 1	No	Yes	77 m	▪ Fence ▪ Solar Panel ▪ Access Road	Yes
Unnamed Stream 2	No	Yes	30 m	▪ Fence ▪ Solar Panel ▪ Access Road ▪ Area of Operational Flexibility	Yes

Water Body ID	Does the project location overlap the water body?	Is the project location within 120 m of the water body?	Distance to nearest project components	Project Components within 120 m of the water body (nearest project component is listed first).	EIS Required?
Unnamed Stream 3	No	Yes	22 m	▪ Access Road ▪ Area of Operational Flexibility	Yes
Unnamed Stream 4	No	Yes	103 m	▪ Area of Operational Flexibility	Yes
Unnamed Stream 5	No	Yes	36 m	▪ Area of Operational Flexibility ▪ Access Road ▪ Fence ▪ Solar Panels	Yes
Seepage Areas					
Seepage Area 1	No	Yes	30 m	▪ Fence ▪ Solar Panels ▪ Access Road ▪ Area of Operational Flexibility	Yes
Seepage Area 2	No	Yes	22 m	▪ Access Road ▪ Area of Operational Flexibility	Yes
Seepage Area 3	No	Yes	63 m	▪ Area of Operational Flexibility ▪ Access Road ▪ Fence ▪ Solar Panels	Yes

12. REFERENCES

Fisheries and Oceans Canada. May 2014. Distribution of Fish and Mussel Species at Risk. Saugeen Valley Conservation Authority. Valid May 2014 to May 2015.

Grey County. Official Plan and Schedules. 2013.

Niagara Escarpment Commission. June 2014. Niagara Escarpment Plan, 2014. Toronto: Queen's Printer for Ontario. 145 pp.

Ontario Ministry of the Environment. June 2009. Lake Simcoe Protection Plan. Toronto: Queen's Printer for Ontario. 93 pp.

Ontario Ministry of the Environment. 2013. Technical Guide to Renewable Energy Approvals. Toronto: Queen's Printer for Ontario. 267 pp.

Ontario Ministry of Municipal Affairs and Housing. 2001. Oak Ridges Moraine Conservation Plan, 2001. Toronto: Queen's Printer for Ontario. 72 pp.

Ontario Ministry of Municipal Affairs and Housing. 2005. Greenbelt Plan, 2005. Toronto: Queen's Printer for Ontario. 57 pp.

Ontario Ministry of Natural Resources. Crown Land Use Policy Atlas. http://crownlanduseatlas.mnr.gov.on.ca/clupa.html. Accessed April 2014.

Ontario Ministry of Natural Resources. Land Information Ontario. http://www.giscoeapp.lrc.gov.on.ca/web/MNRF/NHLUPS/NaturalHeritage/Viewer/Viewer.html. Accessed April 2014.

Ontario Ministry of Natural Resources. March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248pp.

Ontario Ministry of Natural Resources. May 2006. Inland Ontario Lakes Designated for Lake Trout Management. Fisheries Section, Fish and Wildlife Branch. Peterborough, Ontario. 53pp.

Ontario Ministry of Natural Resources. March, 2012. Significant Wildlife Habitat Eco-regional Criteria Schedules. http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTE1ODc5&statusId=MTczNDgy. Accessed April 2014.

Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. 151pp.

Ontario Ministry of Natural Resources. 2012. Natural Heritage Assessment Guide for Renewable Energy Projects. Second Edition. 109pp.

Phair, C., Henson, B.L., Brodribb, K.E. 2005. Great Lakes Conservation Blueprint for Aquatic Biodiversity: Volume 2: Tertiary Watershed Summaries. Nature Conservancy of Canada. 454 pp.

Saugeen Valley Conservation Authority. 2013a. Sub-watershed Report Card for the Beatty Saugeen River.

Saugeen Valley Conservation Authority. 2013b. Sub-watershed Report Card for the Upper Main Saugeen River.

Township of Southgate. Official Plan and Schedules. 2009.

APPENDIX A

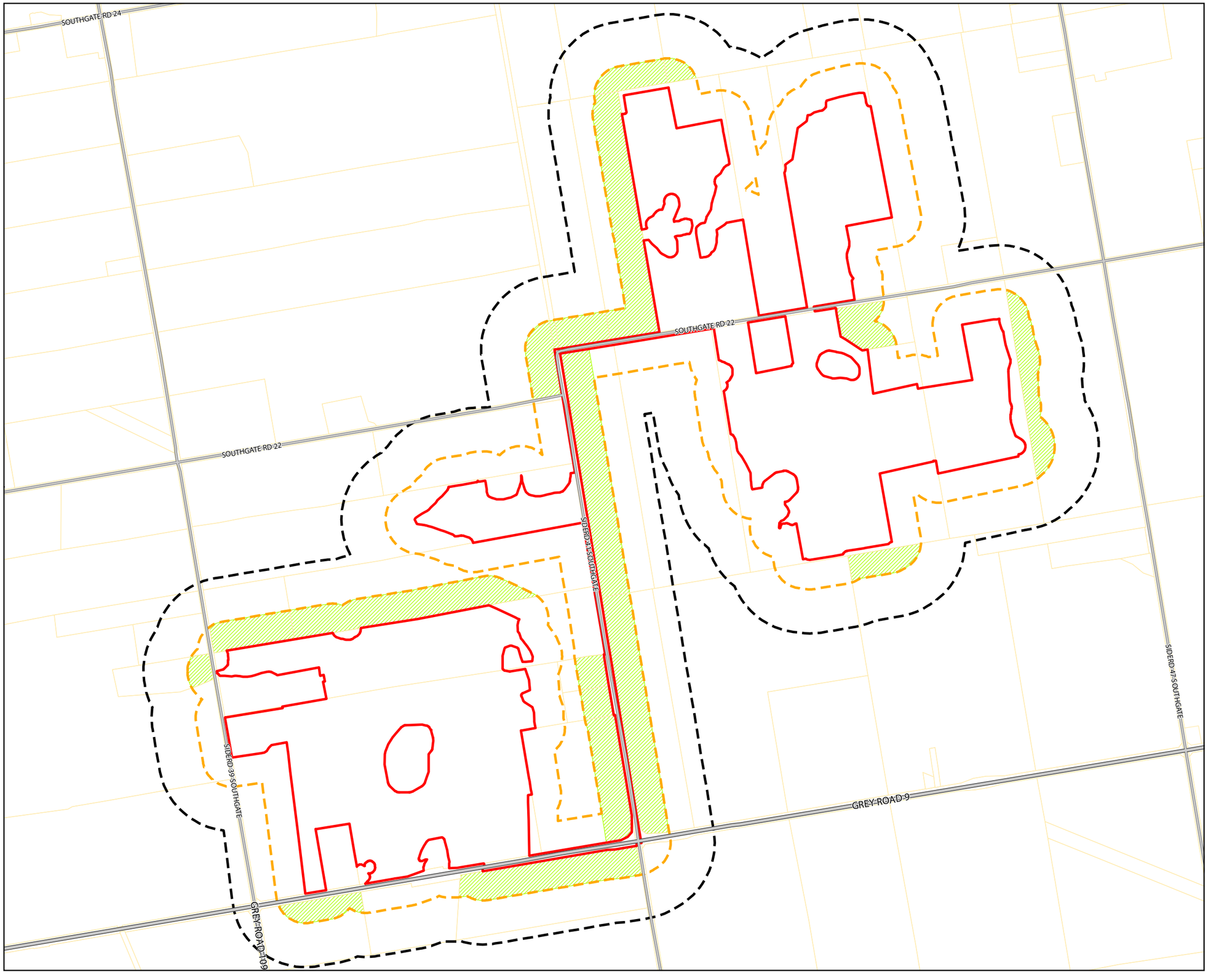
GIS Data Layer Information

Table A1: GIS Data Layer Information for the Southgate Solar Project

Title of Data Set	Data Layers	Vintage of Data or Date Info/Searched/Collected	Ownership of Information	Project Site
Wetland	Wetlands	2014	MNR	Southgate
LRO16_selected_PINs_14-9154	Parcel Boundaries	2014	First Base Solutions	Southgate
Woodland	Woodlands	2014	MNR	Southgate
Watercourse	Watercourse Features **Note: This information has been updated to reflect the results of the water assessment field investigations.**	2014	MNR	Southgate
5mContour	5 m Contour Intervals	2014	MNR	Southgate
Lots_Concesssions	Lot and Concessions	2014	MNR	Southgate
Railway	Railway centrelines	2014	MNR	Southgate
Roads	Hwy/Local/Secondary/Primary Roads	2014	MNR	Southgate
Utility_Line	Utility Lines	2014	MNR	Southgate
Water_Body	Ontario Water Bodies **Note: This information has been updated to reflect the results of the water assessment field investigations.**	2014	MNR	Southgate
Airport	Ontario Airports and Airfields	2014	MNR	Southgate
Ansi	Area of Natural and Scientific Interest	2104	MNR	Southgate

APPENDIX B

Access to Adjacent Lands



SOUTHGATE SOLAR PROJECT

FIGURE B1
ACCESS TO ADJACENT LANDS

- Project Location
- Project Location 120 m Setback
- Project Location 300 m Setback
- Parcel Boundary
- Area of Alternative Site Investigation

1:15,000

0 100 200 400 600 m

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION: I:\GIS\149154 - Samsung Southgate\mxd\Site Investigation

DILLON CONSULTING

PROJECT: 149154
STATUS: DRAFT
DATE: 11/13/2014

APPENDIX C

Field Notes

DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
149154	Southgate Solar	13:30	13:45

COLLECTORS:	STREAM ID #:	DATE:
B. Gottfried, T. Goulet	WB 1	July 2

WEATHER: Overcast, 70% - light rain. Wind SW 15°C

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:
WB1 on D	Southgate

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE: Side Road 41 @ Bridge. Property D @ Bridge

GPS COORDINATES (UTM):

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Meadow	None observed

EXISTING STRUCTURE TYPE (IF ANY)

Bridge ✓	Box Culvert O	Open Foot Culvert O	CSP O	N/A O

Other O Describe:

Size (w x h) m^2: 8.0 x 2.5 m

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	✓	O	✓	O	O	

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Riffle, Run, Pool	Co, Bo, Gr, Sa	6.0	0.2	7.0	0.5	

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D
		I						

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	✓	O
Right Upstream Bank	O	O	✓	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	✓	10%	50%	Instream 5% Overhanging 5%	✓	Instream <5% Overhanging 20%	5%

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	O	✓	O	O

VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent	None
	D	D	—	
Predominant Species			fesr. grasses	

MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary	Permanent
	—	—	—

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
	—	—	

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m					—				—	
10-30 m					—		NA	—		
30+ m					—		NA	—		

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:	LEFT UPSTREAM BANK PHOTO #:
DOWNSTREAM PHOTO #:	RIGHT UPSTREAM BANK PHOTO #:

OTHER PHOTO #S: see maps

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- moderate - fast flow.
- small fish (20-30 mm) observed

Additional Notes Appended? O No ✓ Yes number of pages _____ DESCRIPTION Maps

DETAILED STREAM ASSESSMENT

(#2)

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
149154	Southgate Solar	13:50	14:05

COLLECTORS:	STREAM ID #:	DATE:
B. Gottfried / T. Goulet	WB1	July 2

WEATHER: Overcast, light rain 70% cloud. wind 84 15°C

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:
WB1 @ D	Southgate

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE: Between properties 20 & D Bridge @ Grey Road 9

GPS COORDINATES (UTM):

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
white pine plantation R.U/S Bank Grey Road 9	None observed

EXISTING STRUCTURE TYPE (IF ANY)

Bridge ✓	Box Culvert O	Open Foot Culvert O	CSP O	N/A O

Other O Describe:

Size (w x h) m^2: 10.0m x 2.0m 20m^2

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	✓	O	✓	O	O	N/A

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Run, riffle, flat	Co, Bo, Gr, Sa	6.0	0.2	7.0	0.5	

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	✓	O
Right Upstream Bank	O	O	✓	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	✓	10%	50%	Instream 5% Overhanging 5%	✓	Instream <5% Overhanging 20%	

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	O	✓	O	O

VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent	None
Predominant Species	✓	✓	terr. grasses	

MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary	Permanent
	✓	✓	✓

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
	✓	✓	

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m	Road		✓	✓					✓	
10-30 m			✓	✓						✓
30+ m			✓	✓						✓

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:	LEFT UPSTREAM BANK PHOTO #:
DOWNSTREAM PHOTO #:	RIGHT UPSTREAM BANK PHOTO #:
OTHER PHOTO #S:	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- Similar characteristics to location @ Bridge on S.R. 41, except:
- Bank stabilization ~ large boulders on R. U/s Bank.
- More prominent riffles d/s of Road 9.
- upstream of Bridge @ Grey Road 9: morphology is more flat
- Water level monitoring station on South side of road, west side of bank.

Additional Notes Appended? ~~No~~ ✓ Yes number of pages _____ DESCRIPTION See maps

DETAILED STREAM ASSESSMENT

(6)

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
149154	SOUTHGATE	14:25	5:15

COLLECTORS:	STREAM ID #:	DATE:
B. COTTFRIED / T. COULET	WB#1 on 19	July 2

WEATHER: Sunny, ~70% cloud cover.

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:
WB1 @ 19	SOUTHGATE TOWNSHIP

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE: South corner of property 19 east

GPS COORDINATES (UTM):

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
hay fields, forest, trails.	none observed.

EXISTING STRUCTURE TYPE (IF ANY)

Bridge O	Box Culvert O	Open Foot Culvert O	CSP O	N/A Q

Other O Describe:

Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	Q	O	Q	O	O	

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Run 100%	Co, Bo, Gr, Sa	~10m	~0.20	~15m.	0.40m.	

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	O	O
Right Upstream Bank	O	O	O	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	/	25	50	Instream 5 Overhanging 10		Instream / Overhanging 5	5

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	O	O	✓	O

VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent	None
Predominant Species				100

MIGRATORY OBSTRUCTIONS:	None ✓	Seasonal/Temporary	Permanent
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m					✓					✓
10-30 m					✓					✓
30+ m					✓					✓

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:	LEFT UPSTREAM BANK PHOTO #:
DOWNSTREAM PHOTO #:	RIGHT UPSTREAM BANK PHOTO #:

OTHER PHOTO #S: See Map Markup.

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- characteristics similar to other locations, except slightly wider w.w. i.e ~8.0-9.0m
  - more Boulders, i.e. ~~[illegible]~~ 30% surface area.
- wider w.w. ~~[illegible]~~ to the S.W. i.e. 12-18m. (photo 1000) w undefined b.f.w.
- riparian veg'n = cedars, hemlock @ 1.5-10 m, 10-30m
  black spruce
- banks are protected from erosion, but have some vulnerable areas.
- fish observed.

Additional Notes Appended? ~~No~~ ✓ Yes number of pages _____ DESCRIPTION See maps

- talked w land owner, Jo-Anne ~~[illegible]~~ Chisolm. She reported that one butternut tree was once found in the woodlot, but it died due to canker. She also reported that property along east boundary is primarily wetland but no watercourses; and that wooded area in S.E. of property is wetland w areas of small open water, but no watercourses.

DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
149154	Southgate	16:45	17:30

COLLECTORS:	STREAM ID #:	DATE:
B. Gottfried / T. Goulet	WB 13	July 3

WEATHER: Overcast 15°C and B3

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE:
@ Property 12, 100m west of house.

GPS COORDINATES (UTM):

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Row crop (corn), cattle paddock up hill Barns	

EXISTING STRUCTURE TYPE (IF ANY)

Bridge O	Box Culvert O	Open Foot Culvert O	CSP ~~O~~ XZ	N/A O

Other O Describe:

Size (w x h) m^2 30 cm diam.

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	O	~~O~~	~~O~~	~~O~~	O	

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Run	Gr, Co	0.3	0.05	NA	NA	

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	~~O~~	O
Right Upstream Bank	O	O	~~O~~	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	Ø	Ø	✓	Instream Overhanging Ø	Ø	Instream ✓ Overhanging ✓	

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	O	O	O	O

VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent	None
Predominant Species	ϕ	ϕ	terrestrial grasses	

MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary	Permanent
	~~ϕ~~ ✓	ϕ	ϕ

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
	ϕ	ϕ	

RIPARIAN COMMUNITY

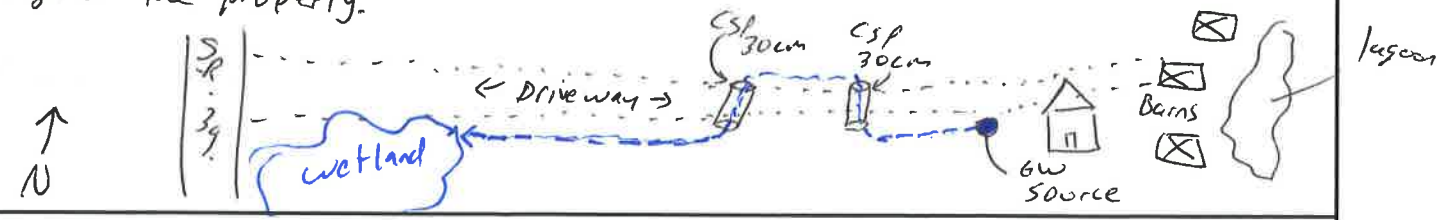
	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m	✓					✓				
10-30 m	✓					✓				
30+ m		✓ corn					✓ corn			

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:	LEFT UPSTREAM BANK PHOTO #:
DOWNSTREAM PHOTO #:	RIGHT UPSTREAM BANK PHOTO #:
OTHER PHOTO #S:	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- watercourse originates from an apparent GW spring on a hill 100m west of the house. A concrete collar, horizontal, 1.0m diameter is set around the spring source. A 10cm diam. tile pipe also emerges from the hill, coming from the house. Flow along the ditch along S. side of driveway is lined w railroad ties. 30 m dls from source, stream crosses driveway & heads north via 30cm CSP, flows west 30m, then crosses driveway again ~~to~~ to head on south side of driveway, via a 30cm perched CSP, then flows west into the wetland on the far west edge of the property.



Additional Notes Appended? O No O Yes number of pages _____ DESCRIPTION See photo map

DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #: 14954	NAME OF PROJECT: Southgate Ph III	TIME STARTED: 18:50	TIME FINISHED: 19:10
COLLECTORS: TDG KM		STREAM ID #:	DATE: July 29, 14
WEATHER: Overcast, 16°c Wind BZ			

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE:
Culvert @ S. side of Grey Rd. 9, S.E. of Prop. 13.

GPS COORDINATES (UTM):

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Road.	

EXISTING STRUCTURE TYPE (IF ANY)

Bridge O	Box Culvert O	Open Foot Culvert O	CSP O ✓	N/A O

Other O Describe:

Size (w x h) m² 120cm dia

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	O ✓	O	O ✗	O ✓	O	Yes.

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Flat	D = Debris	0.2	0.1	0.25	0.2	

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	O ✓	O
Right Upstream Bank	O	O	O ✓	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	✓	X	X	Instream X Overhanging X	✓	Instream ✓ Overhanging ✓	

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 % ✓	90 – 60% O	60- 30% O	30 – 1% O	None O

VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent Cattails on banks/wetland.	None
Predominant Species	X	X	X	

MIGRATORY OBSTRUCTIONS:	None ~~X~~	Seasonal/Temporary X	Permanent X
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning ✓	Evidence of Groundwater Yes; wetland	Other

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m				wetland	✓				wetland	✓
10-30 m				wetland	✓				wetland	✓
30+ m				wetland	✓				wetland	✓

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:	**LEFT UPSTREAM BANK PHOTO #:**
DOWNSTREAM PHOTO #:	**RIGHT UPSTREAM BANK PHOTO #:**
OTHER PHOTO #S:	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- WC is within 120m of Property 13.
- narrow channel w no observed flow, just standing water, surrounded by wetland, cattails, grasses (aquatic),
- depth in CSP on dls side = 10cm. photo 858-61
- depth in CSP on uls side = 2-5 cm.
- channel on uls side is wet muck w 2-5 cm water, cattails, aquatic grasses, ferns w wetland photo 862-864
- Assessment was done ~7 m from road side

Additional Notes Appended? O No O Yes number of pages _____ DESCRIPTION_____

DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
149154		12:15 pm	1:00 pm

COLLECTORS:	STREAM ID #:	DATE:
		July 30 2014

WEATHER: Sunny and partly cloudy.

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE: Property 4 - west of pond SE corner.

GPS COORDINATES (UTM):

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Residential + Agricultural	

EXISTING STRUCTURE TYPE (IF ANY)

Bridge O	Box Culvert O	Open Foot Culvert O	CSP O	N/A ✓

Other O Describe:

Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	✓	O	O	✓	O	

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Run	Sa	0.7	> 0.1	1.9	0.4	

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D
	(Bo)	(Co)	(Gr)	(Sa)	(Si)			(D)

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	✓	O
Right Upstream Bank	O	O	✓	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	✓	X	✓	Instream ✓ Overhanging ✓	✓	Instream ✓ Overhanging ✓	

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 % ✓	90 – 60% O	60- 30% O	30 – 1% O	None O

VEGETATION TYPE (D for dominant):	Submergent X	Floating X	Emergent ✓	None ✓
Predominant Species	X	X	Aquatic grasses	

MIGRATORY OBSTRUCTIONS:	None ✓	Seasonal/Temporary X	Permanent X
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning X	Evidence of Groundwater X	Other X

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m			✓		✓			✓		✓
10-30 m			✓							✓
30+ m		✓ residential								✓

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #: (E) 965 - u/s - emerging from forest	LEFT UPSTREAM BANK PHOTO #:
DOWNSTREAM PHOTO #: (W) 966 - d/s in meadow	RIGHT UPSTREAM BANK PHOTO #:
OTHER PHOTO #S:	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- watercourse meanders in and out of wetland cedar forest + wetland meadow forest.
- water is clear and cold
- recorded data is for wetland meadow conditions.

Conditions in cedar forest wetland:

Substrates also include detritus + muck - dominant substrate

w/w = 2.4m

w/d = 0.1m

~~BFW~~ BFW = 2.8m

BFD = 0.7m

- Dominant undercut banks
- Heavy overhanging woody debris

967 - looking E (u/s)

968 - looking W (d/s)

300m d/s w/c in w/l meadow. - cobble + boulders.

- u/s narrow (w/w = 0.6m
- Habitat = flat

969 - u/s (E)

970 - d/s (W)

Additional Notes Appended? O No O Yes number of pages _____ DESCRIPTION_____

Pond + d/s

- landowner reports w/c is intermittent to pond.
- 971 w/c entering pond (looking W)
  972 d/s of pond looking d/s (W)
- W/O conditions similar to d/s assessment form.

DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
14 9154	Southgate Ph III	2:20 pm	1500

COLLECTORS:	STREAM ID #:	DATE:
TDG KM		July 30, 2014

WEATHER: Sunny. 18°C wind B2

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:

CHAINAGE OR OTHER IDENTIFYING ATTRIBUTE:

Property 19 - East boundary.

GPS COORDINATES (UTM):

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Agricultural	

EXISTING STRUCTURE TYPE (IF ANY)

Bridge O	Box Culvert O	Open Foot Culvert O	CSP O	N/A ✓

Other O Describe:

Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	✓	O	✗	✓	O	

HYDRAULIC HEAD (mm):

Habitat Type Run, Pool, Riffle, Flat?	Substrate	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Other
Run	Mu	0.5	>0.1	N/A	N/A	

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D
							✓	✓

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	O	O	✓	O
Right Upstream Bank	O	O	✓	O

HABITAT

IN-STREAM COVER (check all that apply; D is for dominant cover):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	✗	✗	✗	Instream ✓ Overhanging ✓	✓	Instream ✓ Overhanging ✓	✗

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	✓	O	O	O

VEGETATION TYPE (D for dominant):	Submergent	Floating	Emergent	None
	X	X	✓	X
Predominant Species	X	X	Unknown see photo 978	

MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary	Permanent
	X	X	X
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
	X	X	w/c may direct underground

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m				wetland	✓				wetland	✓
10-30 m		✓			✓					✓ w/L
30+ m		✓			✓					✓ w/L

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #:	LEFT UPSTREAM BANK PHOTO #:
DOWNSTREAM PHOTO #: 979 (S)	RIGHT UPSTREAM BANK PHOTO #:
OTHER PHOTO #S:	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- w/c mapped on grey county map
- No w/c observed NE corner of prop.
- No culvert/crossing beneath road from prop. 17
- water cold + clear, light-moderate flow
- Defined w/c channel originates unk. distance u/s in wetland area likely from GW discharge.

General area of origin from GW discharge: 984
- Area N no defined channel.

Additional Notes Appended? O No O Yes number of pages _____ DESCRIPTION _____

Site: Southgate Sola Property 12-13 Observer (s): RLB Date: Sept 12 2014

Field No: ____ Wetland Type: Isolated Site Type: M Dominant Form: Ne
% Open Water: none Water Depth (cm): ____ Depth of Organics (cm): ____
Soil: A ____ Depth to Mottles (cm): ____ Gley (cm): ____
B ____ Depth to Mottles (cm): ____ Gley (cm): ____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	CORNSTO[2], RUBUIDA[P]
ls	
gc	ONOSEN[1], SALADUL[1]
(ne)	PHALARU[1], Woolgrass[P]
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial): pic 6867

Wildlife Notes:

Field No: ____ Wetland Type: Isolated Site Type: M Dominant Form: Ne
% Open Water: 10 % Water Depth (cm): 10 cm Depth of Organics (cm): ____
Soil: A mineral Depth to Mottles (cm): ____ Gley (cm): ____
B ____ Depth to Mottles (cm): ____ Gley (cm): ____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	POPUTRE[P]
c	
dc, dh, ds	
(ts)	SALIERI[2], POPUTRE[P], SALIPET[P], SALIBEB[P]
ls	
gc	BIDECER[P], EUPMAC[P], ASTEPUN[P]
(ne)	PHALARU[1], Woolgrass[P]
be	
re	TYPLAT[P] PHRAAUS[P]
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial): pics 6882-6883, 6884

Wildlife Notes: GRUE

Site: Southgate Solar Observer (s): RLR Date: Sept 12 2014

Small Mixed Meadow Marsh on property 11

Field No: ____ Wetland Type: Palustrine Site Type: M Dominant Form: Ne
% Open Water: 0 Water Depth (cm): ____ Depth of Organics (cm): ____
Soil: A Mineral Depth to Mottles (cm): ____ Gley (cm): ____
B ____ Depth to Mottles (cm): ____ Gley (cm): ____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐
Forms % (Circle those ≥25%) Species (dominant species[1], secondary species[2], present species[P])
h
c
dc, dh, ds
ts
ls
gc ASTEPUN[2], ASTELAN[2], SOLIRUG, EUTHGRA, LOBEKAL, Common boneset, Silverweed[1]
ne Juncus sp.[1], Eleocharis sp.[2], Carex flava[2], Canada blue joint[2], Scirati[P], Fringed Brome[P]
be
re
ff
f
su
m
Rare Species (Local, Regional, Provincial): pic 6845
Wildlife Notes:

Field No: ____ Wetland Type: ____ Site Type: ____ Dominant Form: ____
% Open Water: ____ Water Depth (cm): ____ Depth of Organics (cm): ____
Soil: A ____ Depth to Mottles (cm): ____ Gley (cm): ____
B ____ Depth to Mottles (cm): ____ Gley (cm): ____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐
Forms % (Circle those ≥25%) Species (dominant species[1], secondary species[2], present species[P])
h
c
dc, dh, ds
ts
ls
gc
ne
be
re
ff
f
su
m
Rare Species (Local, Regional, Provincial):
Wildlife Notes:

Site: Southgate Sola Property 12-13 Observer (s): RLB Date: Sept 12 2014

Field No: ____ Wetland Type: Isolated Site Type: M Dominant Form: Ne
% Open Water: none Water Depth (cm): ____ Depth of Organics (cm): ____
Soil: A ____ Depth to Mottles (cm): ____ Gley (cm): ____
B ____ Depth to Mottles (cm): ____ Gley (cm): ____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	CORNSTO[2], RUBUIDA[P]
ls	
gc	ONOSEN[1], SALADUL[1]
(ne)	PHALARU[1], Woolgrass[P]
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial): pic 6867

Wildlife Notes:

Field No: ____ Wetland Type: Isolated Site Type: M Dominant Form: Ne
% Open Water: 10 % Water Depth (cm): 10 cm Depth of Organics (cm): ____
Soil: A mineral Depth to Mottles (cm): ____ Gley (cm): ____
B ____ Depth to Mottles (cm): ____ Gley (cm): ____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	POPUTRE[P]
c	
dc, dh, ds	
(ts)	SALIERI[2], POPUTRE[P], SALIPET[P], SALIBEB[P]
ls	
gc	BIDECER[P], EUPMAC[P], ASTEPUN[P]
(ne)	PHALARU[1], Woolgrass[P]
be	
re	TYPLAT[P] PHRAAUS[P]
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial): pics 6882-6883, 6884

Wildlife Notes: GRUE

Site: Southgate Solar Observer (s): RLB Date: Sept 12 2014

Field No: _____ Wetland Type: Isolated Site Type: M Dominant Form: gc
% Open Water: _____ Water Depth (cm): _____ Depth of Organics (cm): _____
Soil: A Mineral Depth to Mottles (cm): _____ Gley (cm): _____
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☑ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
(gc)	SOLRUG EUPAMAC EUTHORA, ASTELA
(ne)	SCIATR, Carex sp
be	
(re)	TYPHLAT
ff	
f	
su	
(m)	

Rare Species (Local, Regional, Provincial): pics 6922-6927

Wildlife Notes:

Small Mixed Meadow Marsh on Property 19

Field No: _____ Wetland Type: _____ Site Type: _____ Dominant Form: _____
% Open Water: _____ Water Depth (cm): _____ Depth of Organics (cm): _____
Soil: A _____ Depth to Mottles (cm): _____ Gley (cm): _____
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
gc	
ne	
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

1/43

Site: SC Property Observer (s): Jonathan Harris Date: Jul. 26. 14

Field No: M1 Wetland Type: Marsh Site Type: P Dominant Form: ne
% Open Water: 5-10 Water Depth (cm): ~50cm Depth of Organics (cm): 20cm
Soil: A sandy loam. Depth to Mottles (cm): _____ Gley (cm): 20cm.
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
gc	sens. fern[P]
(ne)	Phalaris[1], scirpes, carex[2]
(be)	water sweet weed[P], water plantain[P]
re	
ff	
f	
su	
(m)	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:
NLFR.
GRFR
pics - 292/293.

Field No: M2 Wetland Type: Marsh Site Type: PI Dominant Form: NE
% Open Water: 5 Water Depth (cm): ~30cm. Depth of Organics (cm): 20
Soil: A Sandy loam Depth to Mottles (cm): _____ Gley (cm): 20
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
gc	
(ne)	carex sp[2], Phalaris[P]
(be)	
re	
ff	lesser duckweed.
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:
NLFR.
GRFR.
pics 294/295

2/3

Site: _____ Observer (s): _____ Date: _____

Field No: S1 Wetland Type: Swamp Site Type: P Dominant Form: C
% Open Water: 5 (creek) Water Depth (cm): _____ Depth of Organics (cm): 1
Soil: A Silty Sand. Depth to Mottles (cm): 25 Gley (cm): 999
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
(h)	Yellow birch, Acersac
(c)	Thuocc Abibal
dc, dh, ds	
ts	
ls	
(gc)	wood fern, sensitive fern, ostrich fern
ne	
be	
re	
ff	
f	
su	
(m)	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

Field No: M3 Wetland Type: Marsh Site Type: I Dominant Form: : RE
% Open Water: 5 Water Depth (cm): >50cm Depth of Organics (cm): _____
Soil: A _____ Depth to Mottles (cm): _____ Gley (cm): _____
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	Maple sp.
ts	
ls	cornsto[P]
(gc)	water horsetail
(ne)	phal arv.[P], carex[L]
be	
(re)	Typh lat[1], blue flag
(ff)	lesser duckweed
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:
RWBL
GRGR.
P.C 303

rocks along the shore, can't get soil core presumed to be similar to MAM.

3/3

Site: _____ Observer (s): _____ Date: _____

Field No: M4 Wetland Type: Marsh Site Type: I Dominant Form: NE
% Open Water: 10 Water Depth (cm): >50cm Depth of Organics (cm): ~20cm
Soil: A LVFS. Depth to Mottles (cm): _____ Gley (cm): 20cm
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
gc	
(ne)	phalaris[1]
be	
re	
ff	
(f)	yellow pond lily
su	
(m)	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:
GRFR
PIC-304

Field No: M5 Wetland Type: Marsh Site Type: I Dominant Form: NE
% Open Water: 5 Water Depth (cm): >50 Depth of Organics (cm): ~20
Soil: A LVFS. Depth to Mottles (cm): _____ Gley (cm): 20
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
gc	
(ne)	phalaris[1], carex[P]
be	
re	blue flag[P]
ff	
(f)	water smartweed[P]
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:
GRFR.
PICS-305

Site: _____ Observer (s): _____ Date: _____

Field No: _____ Wetland Type: _____ Site Type: ____ Dominant Form: _____
% Open Water: _____ Water Depth (cm): _____ Depth of Organics (cm): _____
Soil: A _____ Depth to Mottles (cm): _____ Gley (cm): _____
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
gc	
ne	
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

Field No: _____ Wetland Type: _____ Site Type: ____ Dominant Form: _____
% Open Water: _____ Water Depth (cm): _____ Depth of Organics (cm): _____
Soil: A _____ Depth to Mottles (cm): _____ Gley (cm): _____
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
gc	
ne	
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

1/2

Site: SG Property C Observer (s): Jonathan Morris Date: June 27, 14

Field No: M7 Wetland Type: Marsh Site Type: I Dominant Form: Ne
% Open Water: 20 Water Depth (cm): >50cm Depth of Organics (cm): 10
Soil: A SiVfS Depth to Mottles (cm): 10 Gley (cm): 10
B Depth to Mottles (cm): Gley (cm):
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	Emvame
c	
dc, dh, ds	
ts	
ls	Comsto[P], Salix sp[P]
gc	
(ne)	Phalar[2], creeping bent grass[1]
be	
re	
ff	
f	
su	
(m)	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:
GRFR RWBL
duck sp.
Pics: 309 to 311

Field No: M6 Wetland Type: Marsh Site Type: I Dominant Form: Ne
% Open Water: 5 Water Depth (cm): >50cm Depth of Organics (cm): 10
Soil: A SiVfS Depth to Mottles (cm): 10 Gley (cm): 10
B Depth to Mottles (cm): Gley (cm):
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	Comsto
gc	
(ne)	creeping bent grass, Phalar[1]
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:
GRFR

Pic: 314.

2/2

Bn Seedlings (x 9) 520255 4883574

Bn Sapling & tree (x3) 0520261 4883546

Site: SG Property C Observer (s): JWH Date: June 27.14

Field No: M8 Wetland Type: Marsh Site Type: I Dominant Form: Ne
% Open Water: 70 Water Depth (cm): >50 Depth of Organics (cm): ~ 10
Soil: A LVFS Depth to Mottles (cm): 999 Gley (cm): 999
B Depth to Mottles (cm): Gley (cm):
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%) Species (dominant species[1], secondary species[2], present species[P])

h
c
dc, dh, ds
ts
ls comsto
gc sensitive fern
(ne) creeping bent grass, phalaru[1]
be
re
ff
f
su
u (m)

Rare Species (Local, Regional, Provincial):

Wildlife Notes:
pic: 316.
NLFR
COYE
wood duck

Field No: M9 Wetland Type: Marsh Site Type: I P Dominant Form: RE
% Open Water: 1 Water Depth (cm): 10 Depth of Organics (cm): n/a
Soil: A Silt Depth to Mottles (cm): 999 Gley (cm): 999
B Depth to Mottles (cm): Gley (cm):
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%) Species (dominant species[1], secondary species[2], present species[P])

h
c
dc, dh, ds
ts
ls
gc impacap, bittersweet nightshade, solidago sp.
(ne) phalaru[2], carex
(be) marsh marigold.
(re) typhlat[1]
ff
f
su
m

Rare Species (Local, Regional, Provincial):
drainage from to the east, water has oily sheen.

Wildlife Notes:
GRFR
RWBL
COYE
pic: 317.

Bn tree
0521082 4883865

Site: SE Property 18 Observer (s): DWH Date: June. 27. 14

Field No: 9852 Wetland Type: Swamp Site Type: I Dominant Form: h
% Open Water: 30 Water Depth (cm): >50cm Depth of Organics (cm): ~10
Soil: A w/t Depth to Mottles (cm): 999 Gley (cm): 999
B Depth to Mottles (cm): Gley (cm):
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
(h)	Populus tremuloides[P], Salix sp.[2]
c	
dc, (dh), ds	Populus tremuloides[P]
ts	red-berried elderberry[1], cornalt[1]
(ls)	Cornsto[1], V. trilobum[2]
(gc)	sensitive fern[1], bittersweet nightshade[2]
ne	Carex sp.
be	
re	
(ff)	Lesser Duckweed[2]
f	
su	
(m)	

Rare Species (Local, Regional, Provincial):
Help hitting rock at bottom, use soil auger.

Wildlife Notes:
RWBL
pic. 320

Field No: Wetland Type: Site Type: Dominant Form:
% Open Water: Water Depth (cm): Depth of Organics (cm):
Soil: A Depth to Mottles (cm): Gley (cm):
B Depth to Mottles (cm): Gley (cm):
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%)	Species (dominant species[1], secondary species[2], present species[P])
h	
c	
dc, dh, ds	
ts	
ls	
gc	
ne	
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

Site: _____ Observer (s): _____ Date: _____

Field No: _____ Wetland Type: _____ Site Type: ____ Dominant Form: _____
% Open Water: _____ Water Depth (cm): _____ Depth of Organics (cm): _____
Soil: A _____ Depth to Mottles (cm): _____ Gley (cm): _____
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%) Species (dominant species[1], secondary species[2], present species[P])

h _____
c _____
dc, dh, ds _____
ts _____
ls _____
gc _____
ne _____
be _____
re _____
ff _____
f _____
su _____
m _____

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

Field No: _____ Wetland Type: _____ Site Type: ____ Dominant Form: _____
% Open Water: _____ Water Depth (cm): _____ Depth of Organics (cm): _____
Soil: A _____ Depth to Mottles (cm): _____ Gley (cm): _____
B _____ Depth to Mottles (cm): _____ Gley (cm): _____
Presence of Seepage: ☐ Presence of Iron Precipitates: ☐

Forms % (Circle those ≥25%) Species (dominant species[1], secondary species[2], present species[P])

h _____
c _____
dc, dh, ds _____
ts _____
ls _____
gc _____
ne _____
be _____
re _____
ff _____
f _____
su _____
m _____

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

0 50 100 200 m

SOUTHGATE SOLAR PROJECT

INITIAL CONSTRAINTS
Property 12

- Watercourse
- Leased Property
- Possible Leased Property
- Parcel Boundary
- Water Body

1:5,400

N
W E
S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 17N

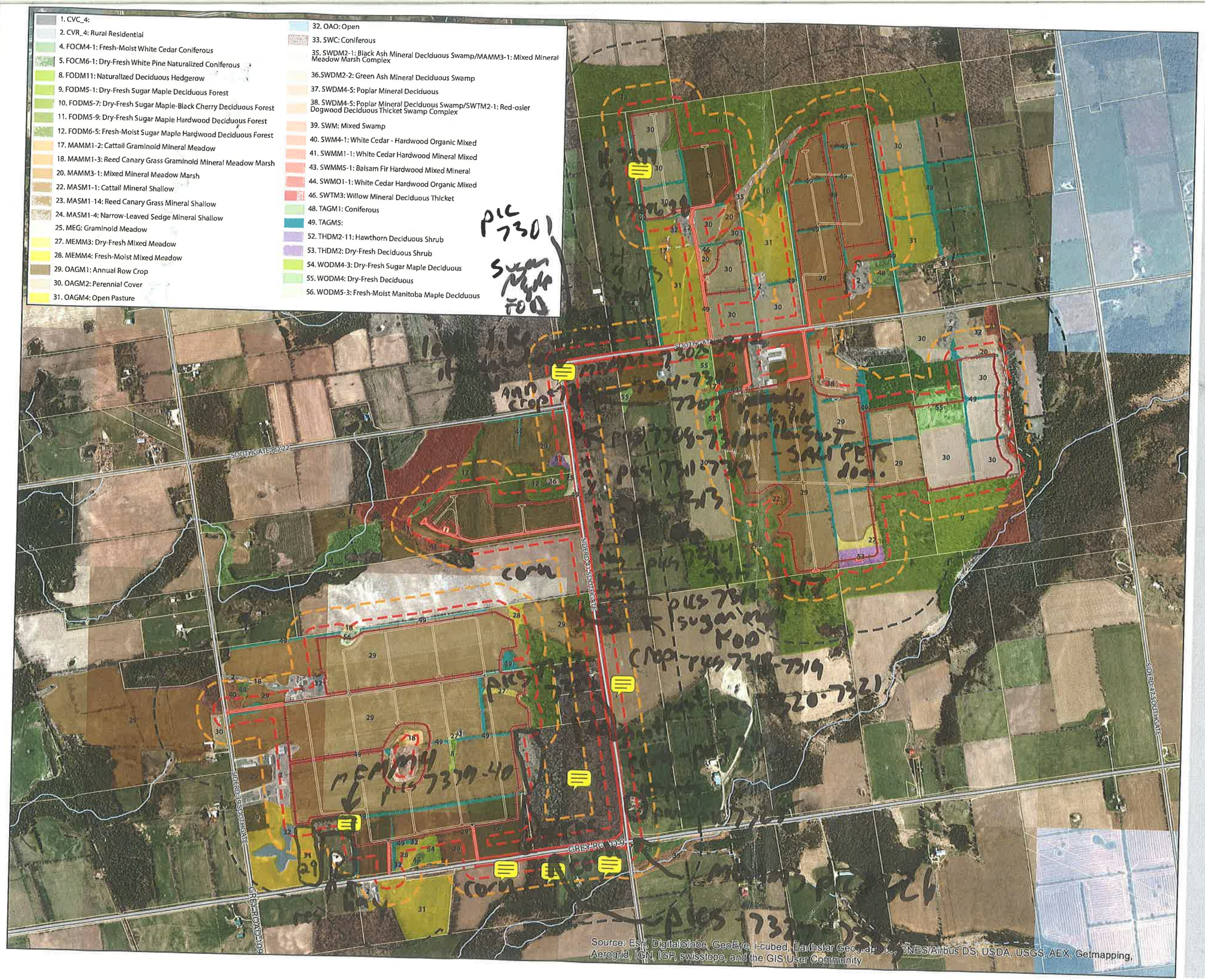
FILE LOCATION: I:\GIS\149154 - Samsung Southgate\mxd

DILLON CONSULTING

PROJECT: 149154
STATUS: DRAFT
DATE: 7/28/2014

SOUTHGATE SOLAR PROJECT

FIGURE 4
ECOLOGICAL LAND CLASSIFICATION



- Access Road
- Fence
- Permanent Watercourse
- Intermittent Watercourse
- Project Location
- Project Location 50 m Setback
- Project Location 120 m Setback
- Project Location 300 m Setback
- Parcel Boundary

Sticky Note
20JLP 9/29/2014 4:06 PM
need this all along here within 50 m- looks mostly agricultural?

1:15,000
0 100 200

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION: I:\GIS\149154 - Samsung Southgate\mxd\Records Review

DILLON CONSULTING

PROJECT: 149154
STATUS: DRAFT
DATE: 9/29/2014

July 30 (cont'd).

Stop 14 - 50 m S of house:
Gw seep area, discharging & flowing W. to E the Norton west of the 2 ponds
Photo 1006 (W)
1007 (S)

A well (1 m diam) is inset into ground (photo 1007)

A defined channel which flows west.
w/w = 1.2 m mud = <10 cm
BF = N/A
Sub = bo > co > gr > D
Run w riffles
No i/s vegn
No shore cover
Flows into cattail wtld 150 m west
possibly fed sub-surficially by pond on E side of driveway, assessed with [illegible]

Rite in the Rain

Pop 14 Cont'd: GW fed?

Pond 30 m W of house is natural w clear water, sub'med veg'n. Concrete weir located @ S.W. corner. Very old ~1 m wide, 4 m long w 2 x 2 m long boxes.

steady flow 10-15 L/min

Flows over wooden lock wall 60 cm high.

Water then flows S.W. into Cattail wlnd 60 m S to Confluence w WC from GW Seep @ 50 m S of house

photos 1007, 8, 9, 10, 11

photo 1012: N. side of N. pond

~~[illegible] sign of [illegible]~~

Photo 1013: 10 m N. of N. pond: Another GW seep w 1 m diam well inset and 10 cm steel drainage pipe outlet (Photos 1014: facing S.)

- Also GW seepage from side of hill 30 m W of Barn near seep #2

Pop 14: Photo 1015 (W): No sign of inflow to GW pond west of house.

200 m east of Barn: Dry, no sign of wetland. (Photo 1016) or in/outflow

Pop 15 NW corner, into woodland wet ground, but no [illegible]
photos 1018 (S), 19 (N) on trail.
Pond: (see aerial): wet, natural pond ~~[illegible]~~ lillies.
Signs of ephemeral drainage to the west across the trail ~~[illegible]~~ @
Photos 1018-9;
See ~~[illegible]~~ 1022
1020: (E) @ N side of pond
1021: (S) @ E side of pond

Rite in the Rain

Prop 16: photo 33 (NW corner) (W)
34 (E) along tree Row

@ west boundary: steep bank to the west w/ mixed dec-conif forest, Roams to cropped w.L.
35 (N)
36 (S)

@ NW corner: same
37 (NE)
38 (S)

@ along N edge of E field:
photo 39 (E)

SSP Aug 20 0900 TG, N.D.

20°C overcast, B3

Property 15 - central area
GPS pt. 178

ephemeral cum W.L. ~~[illegible]~~ substrates → 1 main intermittent channel

@ ephemeral channels are sparsely scattered throughout the W.L.
photos: 51-56. ww = 0.7m, wd = 0.2.

channels dissipate near the pond (cropped) @ S. end of woodland. No defined banks

---

Prop 15 S.W. corner. see photos 63-67 for extent of W.L.
No W.L. in S.W corner.

Prop 17 NE. corner. Pond is natural mostly ~~[illegible]~~ treed w/ willow bushes. Some open water in small areas.

APPENDIX D

Site Photos

Photograph 1, facing south. Location of Potential Water Body 1, determined to be a dugout pond.

Photograph 2, facing north. Location of Potential Water Body 2, determined to be a dugout pond. The pond is in-line with Unnamed Stream 2, which enters at the north end of the pond (upper right side of photograph), and flows out of the pond over a concrete weir (lower left side of photograph).

Photograph 3, facing east. Location of Potential Water Body 3, determined to be an area of shallow water that is part of a wetland.

Photograph 4, facing east. Location of Potential Water Body 4, determined to be an area of shallow water that is part of a wetland.

Photograph 5, facing west. Location of Potential Water Body 5, determined to be an area of shallow water that is part of a wetland.

Photograph 6, facing east. Location of Potential Water Body 6 and Potential Water Body 7, determined to collectively be an area of shallow water that is part of a wetland.

Photograph 7, facing south. Location of Potential Water Body 8, determined to be an area of shallow water that is part of a wetland.

Photograph 8, facing south. Location of Potential Water Body 9, determined to be an area of shallow water that is part of a wetland.

Photograph 9, facing south. Location of Potential Water Body 10, determined to be an area of shallow water that is part of a wetland.

Photograph 10, facing east. Location of Potential Water Body 11, determined to be a dugout pond.

Photograph 11, facing south. Location of Potential Water Body 12, determined to be a temporary channel for surface drainage that can be tilled and driven through.

Photograph 12, facing east. Location of Potential Water Body 13, determined to be a dugout pond intended for the storage, treatment or recirculation of runoff from a farm animal yard.

Photograph 13, facing west. Channel of runoff from a farm animal yard located approximately 50 m west of and flowing into Potential Water Body 13, determined to be a dugout pond.

Photograph 14, facing west. Location of Potential Water Body 14 and Potential Water Body 15, determined to collectively be an area of shallow water that is part of a wetland.

Photograph 15, facing east. Location of Potential Water Body 16, Potential Water Body 17 and Potential Water Body 18, determined to collectively be a dugout pond intended for the storage, treatment or recirculation of runoff from a farm animal yard.

Photograph 16, facing east. The Beatty Saugeen River observed from the bridge at Southgate Side Road 41, flowing westward.

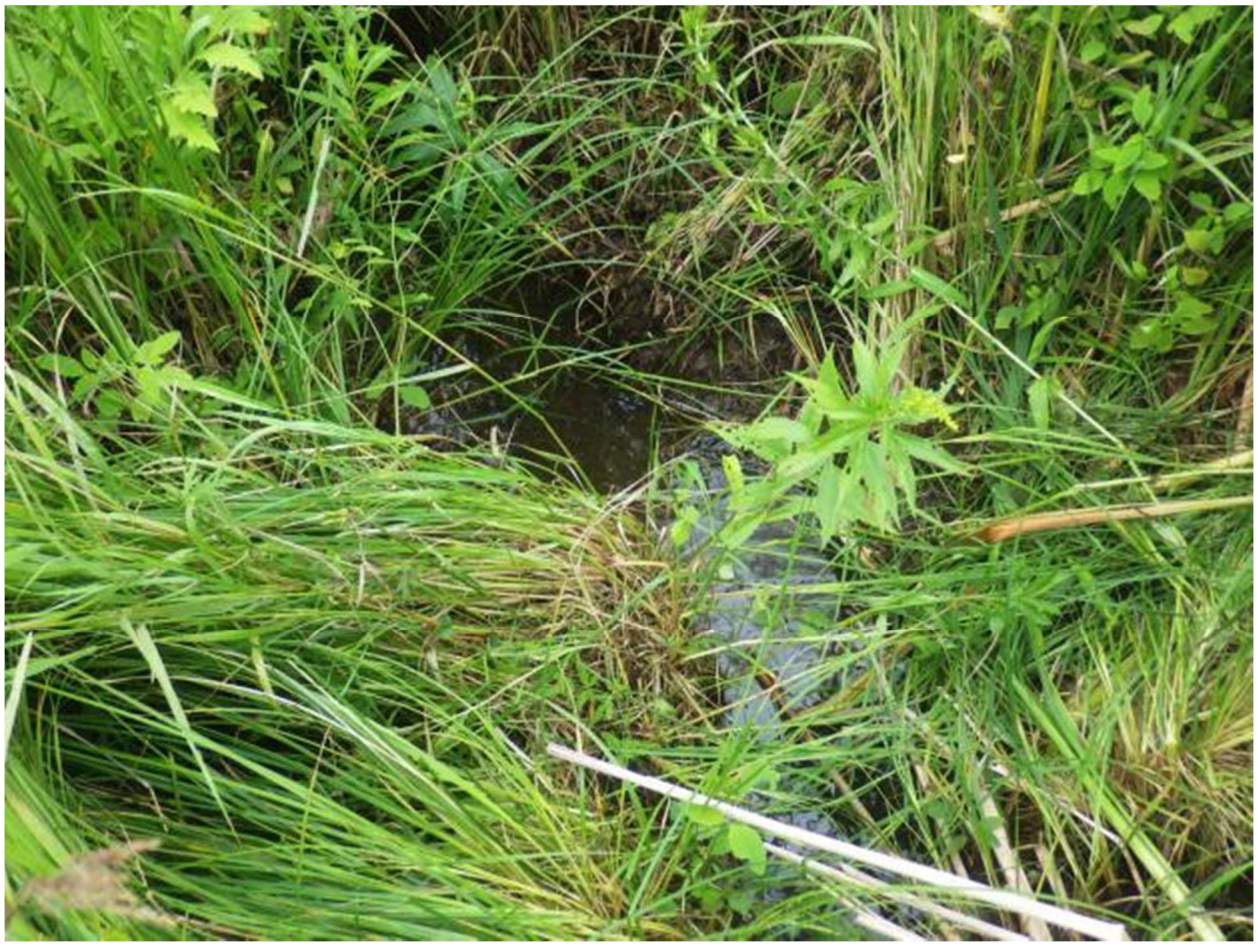
Photograph 17. The Beatty Saugeen River observed near the bridge at Southgate Side Road 41, showing substrates of boulders, cobbles gravel and sand, and with riffles.

Photograph 18, facing west. Beatty Saugeen River immediately south of the bridge on Grey Road 9, located approximately 420 m east of the project location.

Photograph 19, facing southwest. Beatty Saugeen River flowing southwest approximately 250 m south of the project location.

Photograph 20, facing south. Tributary 1 to the Beatty Saugeen River, near its origin.

Photograph 21, facing south. Tributary 1 to the Beatty Saugeen River, approximately 100 m south of its origin, near where its morphology type transitioned from a flat to a run type.



Photograph 22. Tributary 2 to the Beatty Saugeen River, immediately south of Grey Road 9 within the project location 120 m setback.

Photograph 23, facing east. Tributary 2 to the Beatty Saugeen River, immediately north of Grey Road 9 within the project location 120 m setback.

Photograph 24, facing north. Tributary 2 to the Beatty Saugeen River, flowing southward within the project location, under Grey Road 9 via a CSP culvert.

Photograph 25, facing southeast. Tributary 2 to the Beatty Saugeen River, immediately north of Grey Road 9.

Photograph 26, facing southeast. Unnamed Stream 1.

Photograph 27, facing south. Unnamed Stream 1 at the south-western perimeter of the surrounding wetland, where the stream dissipates.

Photograph 28, facing southwest. Unnamed Stream 2 originating from Seepage Area 1 (contained within the circular steel ring in the foreground) and flowing south-westward approximately 10 m into a dugout pond (Potential Water Body 2; background of photograph).

Photograph 29, facing northeast. Unnamed Stream 2 flowing from a dug pond and over a concrete weir.

Photograph 30, facing west. Meadow marsh wetland containing an area of shallow open water into which Unnamed Stream 2 flows and in which it dissipates.

Photograph 31, facing west. Unnamed Stream 3 originating from Seepage Area 2 and flowing westward.

Photograph 32, facing west. Unnamed Stream 3 flowing westward toward its confluence with Unnamed Stream 2 (approximately 60 m into the foreground of the photograph).

Photograph 33, facing south. Dugout pond (Potential Water Body 11), with an outlet on the southwest corner of the pond being the origin of Unnamed Stream 4.

Photograph 34, facing northeast. The origin of Unnamed Stream 4, located at the southwest corner of a dugout pond (Potential Water Body 11).

Photograph 35, facing east. Unnamed Stream 4 flowing through a forested wetland, approximately 100 m west of its origin.

Photograph 36, facing east. Unnamed Stream 4 emerging from a forested wetland and into an agricultural field.

Photograph 37, facing east. The location at which Unnamed Stream 4 dissipates below the ground surface.

Photograph 38, facing east. Origin of Unnamed Stream 5 from Seepage Area 3 located on a west-facing hillside west of a house.

Photograph 39, facing west. Unnamed Stream 5 flowing west within a channelized ditch lined with concrete railroad ties on the south side of a residential driveway.

Photograph 40, facing west. Location where Unnamed Stream 5 turns northward and crosses under the residential driveway (foreground), then turns and flows westward in a ditch along the north side of the residential driveway (right side of photograph), then turns southward and crosses under the driveway and turns westward and dissipates in a forested wetland (upper left side of photograph).

Photograph 41. Unnamed Stream 5 flowing through a CSP culvert crossing under the residential driveway.

Photograph 42. Seepage Area 1 flowing from a horizontal circular steel cylinder (approximate diameter 1 m).

Photograph 43, facing south. Seepage Area 2 flowing from a horizontal steel cylinder (below the water surface, approximate diameter 1 m).

Photograph 44, facing east. Seepage Area 3 filling and over flowing from a concrete cylinder and feeding Unnamed Stream 5.