



LOYALIST SOLAR LP

Natural Heritage Assessment Environmental Impact Study Report

Loyalist Solar Project

Table of Contents

1.0	Introduction	1
2.0	The Proponent	4
3.0	Project Location	5
4.0	Summary of Natural Heritage Assessment	7
5.0	Environmental Impact Study Purpose	23
6.0	Rationale for Development within a Setback to a Natural Feature	24
7.0	Project Activities	25
7.1	Construction.....	25
7.1.1	Surveying of Project Location.....	26
7.1.2	Clearing, Levelling, Compacting and Grading.....	26
7.1.3	Drainage and Erosion Control.....	26
7.1.4	Installation of Perimeter Fence and Security Lighting.....	27
7.1.5	Construction of Access Roads.....	27
7.1.1	Installation of Water Crossings for Access Roads.....	28
7.1.2	Temporary Storage, Construction Areas and Installation of Temporary Facilities.....	28
7.1.3	Construction of Foundations.....	28
7.1.4	Installation of Supports, Racking and PV Modules.....	29
7.1.5	Installation of Collector Line and Inverter Stations.....	29
7.1.6	Installation of Connection Line System.....	29
7.1.7	Communications & SCADA.....	30
7.1.8	Substation.....	30
7.1.9	Operations & Maintenance Building.....	30
7.1.10	Remediation and Clean-up of Work Areas.....	30
7.1.11	Site Landscaping and Vegetation.....	30
7.1.12	Testing and Commissioning.....	31
7.2	Operations and Maintenance.....	31

7.3	Decommissioning.....	33
7.3.1	Site Restoration	33
7.3.2	Managing Excess Materials and Waste	33
8.0	Existing Environmental Conditions of Relevant Natural Features	34
8.1	Overview	34
8.2	Description of Significant Natural Features	34
8.2.1	Wetlands.....	34
8.2.2	Woodlands.....	58
8.2.3	Wildlife Habitat.....	63
9.0	Environmental Effects of the Project	94
10.0	Environmental Effects Mitigation and Monitoring Plan	108
11.0	Negative Environmental Effects, Design and Operations	114
12.0	Negative Environmental Effects, Construction	115
13.0	Conclusion	116
14.0	References	118

Figures

Figure 1: General Project Location.....	3
Figure 2: Project Location	6
Figure 3: Significant Wetlands	35
Figure 4: Significant Woodlands	59
Figure 5: Significant Wildlife Habitat	64

Tables

Table 1: Checklist for Requirements under <i>Ontario Regulation 359/09</i> – Natural Heritage Assessment Environmental Impact Study.....	2
Table 2: Summary of Natural Heritage Assessment for the Loyalist Solar Project.....	7
Table 3: Anticipated Duration of Construction Activities	25
Table 4: Operations and Maintenance Activities.....	31
Table 5: [Assumed] Provincially Significant Southern Wetlands within the Project Location and Surrounding 50 m.....	36
Table 6: Significant Woodlands within the Project Location and Surrounding 50 m	60
Table 7: Evaluation of Significance Significant Wildlife Habitat Located in the Project Location and 50 m Setback.....	79
Table 8: Summary of Key Features and Attributes that may serve as Indicator of Negative Environmental Effects.....	95
Table 9: Summary of Potential Negative Effects and Mitigation Measures for Significant Natural Features	101
Table 10: Environmental Effects Mitigation and Monitoring Plan	109

Appendices

A	Pre-Construction Survey Methodology
---	-------------------------------------

1.0

Introduction

Loyalist Solar LP, a limited partnership between the Mohawks of the Bay of Quinte and BluEarth Renewables Inc. (together the “Proponent”), proposes to develop a non-rooftop solar facility with a maximum name plate capacity of 54 megawatts alternating current (“MW_{AC}”), in the Township of Stone Mills, County of Lennox & Addington, Ontario (**Figure 1**). The renewable energy facility will be known as the Loyalist Solar Project (the “Project”).

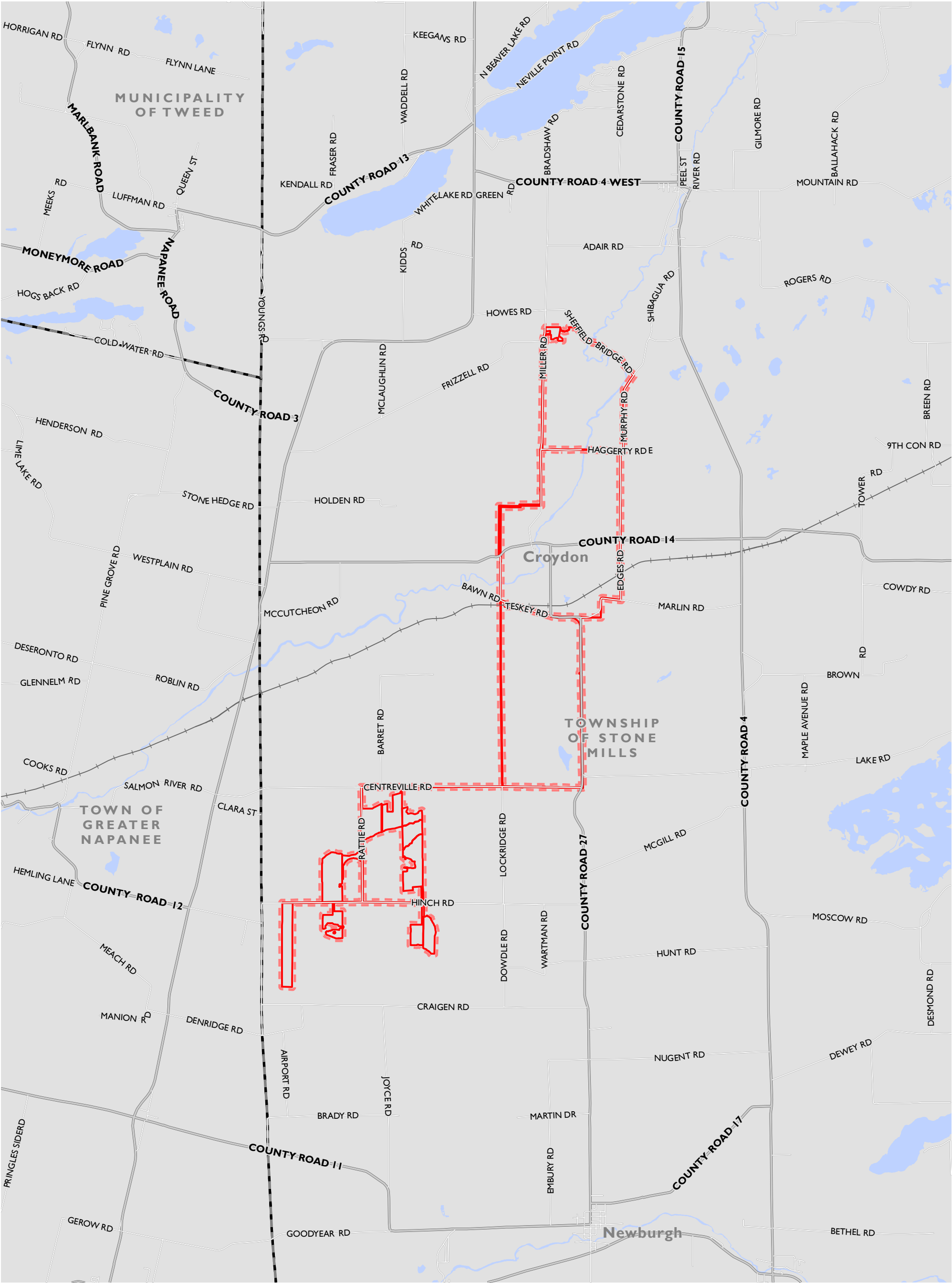
The Proponent submitted a proposal to the Independent Electricity System Operator (“IESO”) under the Large Renewable Procurement I (“LRP”) process and was subsequently awarded a LRP contract by the IESO to generate electricity. The Project will now be subject to a number of approvals including, among others *Ontario Regulation 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 an environmental impact study for all natural heritage features that fall within the Project Location or the prescribed setback area (REA Section 26). This *Natural Heritage Assessment (“NHA”) Environmental Impact Study Report (“EIS”)* was completed to address the regulatory requirements for the REA process and is the fourth and final report in a series that fulfills the requirements of the NHA as required by *Ontario Regulation 359/09*. The *NHA EIS Report* will detail the potential impacts, mitigation and monitoring requirements to protect natural features within and adjacent to the Project Location. These reports will be submitted to the Ministry of Natural Resources and Forestry (“MNRF”) for review and comment, as required in *Ontario Regulation 359/09*. Discussion of Species at Risk, fish habitat and other information needs, as outlined in the MNRF’s *Approval and Permitting Requirements Document (“APRD”)* for Renewable Energy (MNRF 2009), are discussed in separate reports, under direction from the MNRF and in compliance with the REA and other applicable legislation.

Table 1: Checklist for Requirements under *Ontario Regulation 359/09* – Natural Heritage Assessment Environmental Impact Study

Required Documentation	Location in Report
¹ Prohibitions restricting development in listed significant natural features do not apply if the applicant submits an environmental impact study report prepared in accordance with the Natural Heritage Assessment Guide, that,	
Identifies and assesses any negative environmental effects of the project on a natural feature, provincial park or conservation reserve	Section 9, Table 9; Section 10, Table 10
Identifies mitigation measures in respect of any negative environmental effects	Table 9 and Table 10
Describes how the environmental effects monitoring plan set out in paragraph 4 of item 4 of Table 1 (in <i>Ontario Regulation 359/09</i>) addresses any negative environmental effects	Section 10, Table 10; Section 11
Describes how the construction plan report prepared in accordance with Table 1 addresses any negative environmental effects	Section 10, Table 10; Section 12

¹ This description has been modified from what is provided in Sections 37 and 38 of *Ontario Regulation 359/09* and outlined in the Natural Heritage Assessment Guideline for Renewable Energy Projects (MNRF 2012). For a full description, please refer to the regulation.



BluEarth Renewables Inc.

LOYALIST SOLAR LP

General Project Location

FIGURE 1

- Railway
- Project Location Boundary
- Project Location 50 m Setback
- Municipal Boundary



MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/27/2016

2.0 The Proponent

The Proponent is coordinating and managing the approvals process for the Project. The contact is:

Full Name of Company:	<i>Loyalist Solar LP, c/o BluEarth Renewables Inc.</i>
Prime Contact:	<i>Tom Bird, Director, Regulatory</i>
Address:	<i>34 Harvard Road, Guelph, ON, N1G 4V8</i>
Telephone:	<i>1-844-214-2578</i>
Email:	projects@bluearth.ca

Dillon Consulting Limited ("Dillon") has been retained by the Proponent to prepare the REA application for the Project. The contact at Dillon is:

Full Name of Company:	<i>Dillon Consulting Limited</i>
Prime Contact:	<i>Megan Bellamy, Project Manager</i>
Address:	<i>235 Yorkland Boulevard, Suite 800, Toronto, ON, M2J 4Y8</i>
Telephone:	<i>(416) 229-4646 ext. 2423</i>
Fax:	<i>(416) 229-4692</i>
Email:	MBellamy@dillon.ca

3.0

Project Location

This Class 3 Solar Facility is to be located within the Township of Stone Mills, in the County of Lennox and Addington, approximately nine kilometres north of Napanee, Ontario. The Project Location, situated on multiple privately owned parcels, consists of approximately 200 hectares (494 acres) and is contained within an area generally bounded on the north by Howe's Road, Craigen Road to the south, County Road 27 and Murphy road to the east and County Road 41 to the west (described as the "Project Location" on **Figure 2**). Project Location has an approximate centroid at the following geographic coordinates:

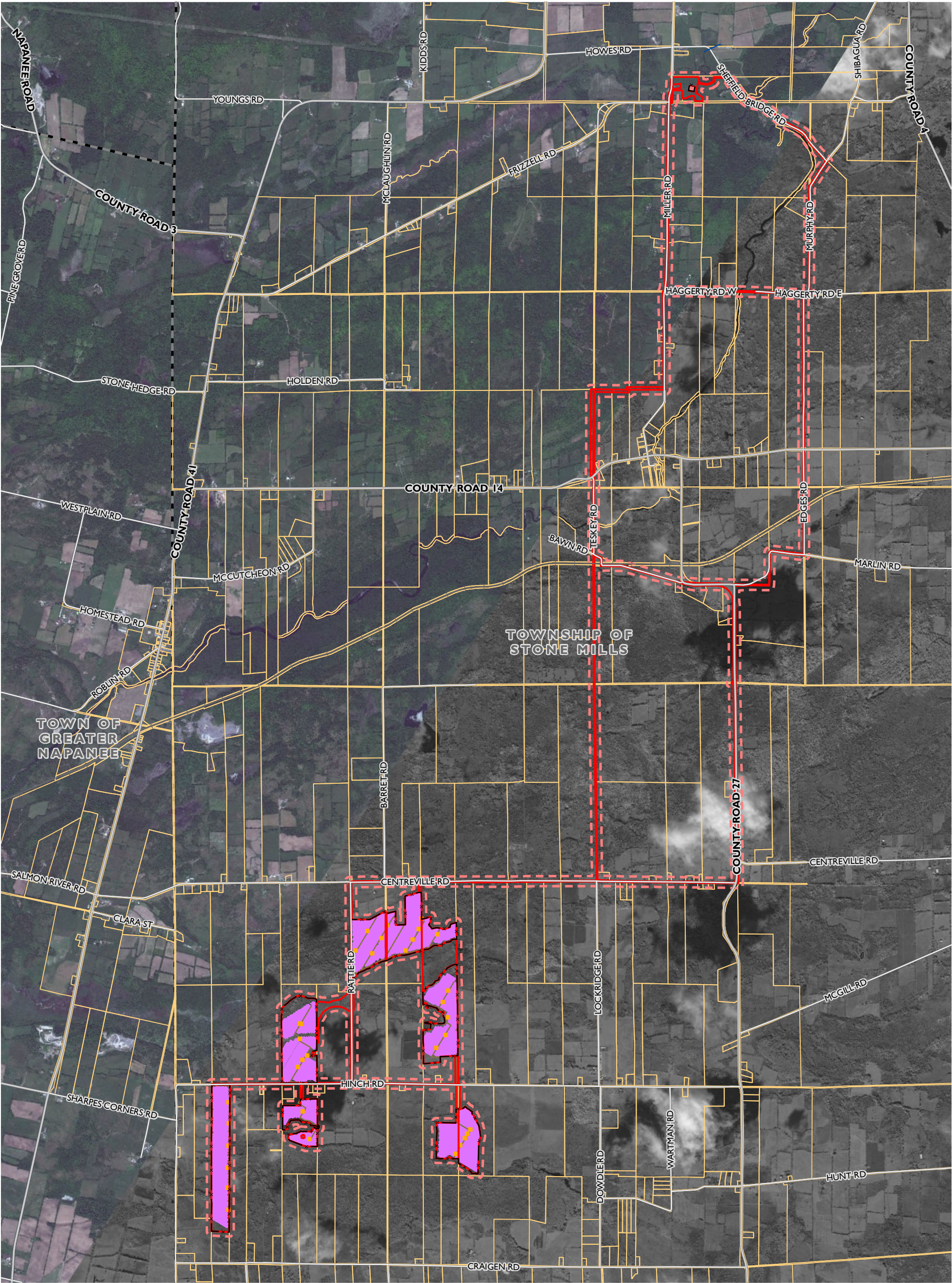
- Latitude: 44°22'3.382" N
- Longitude: 76°58'19.534" W

Figure 2 overviews the maximum extent of the Project Location for the purposes of this *NHA Environmental Impact Study Report*. The term "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 and any air space in which a person is engaging in or proposes to engage in the Project". The specific Project components making up the Project Location and their exact locations within the overall Project Location may be refined during detailed design following issue of the REA; for the purposes of this *NHA EIS Report*, those Project components that have the potential to be located within a significant² natural feature have been listed but may change based on the final detailed design of the Project. Project components, including photovoltaic ("PV") panels and electrical facilities such as inverters, transformers, a substation and Project access roads will be located on private land. Some Project components, such as electrical collector lines and the connection line route to the substation will be located in open and unopened road right-of-ways, or on private lands. The Project Location identified on **Figure 2** represents the maximum limits of the disturbed area for this Project. Locations of Project components on **Figure 2** are to be considered conceptual only and do not represent the final detailed design.

Figure 2 also includes the 50 m prescribed setback area for solar facilities. This area was required to be assessed for natural features as per *Ontario Regulation 359/09*. Setback development prohibitions for solar facilities are outlined in Part V, Sections 37 and 38 of *Ontario Regulation 359/09* (amended May 1, 2016).

For a more comprehensive overview of where Project components are proposed, please refer to the Site Plan – Conceptual Component Layout located in the *Design and Operations Report*.

² For the purposes of this *NHA EIS Report*, the term "significant" implies provincially significant, assumed provincially significant and/or treated as significant.



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

PROJECT LOCATION
FIGURE 2

- Railway
- Fence*
- Project Location Boundary
- 50 m Setback
- Inverter Station*
- Access Road*
- PV Panel*
- Substation*
- Parcel Boundary
- Municipal Boundary

Note: * indicates the proposed locations for Project components and are subject to change.



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/31/2016

4.0

Summary of Natural Heritage Assessment

An evaluation of significance was completed according to Section 27 of *Ontario Regulation 359/09*. This evaluation was preceded by a records review and site investigation, as per Sections 25 and 26 of *Ontario Regulation 359/09*, respectively. A summary of natural features detailed in previous reports is outlined in **Table 2**. This table summarizes the results of all NHA work completed for the Project and identifies all natural features within the Project Location and surrounding 50 m, including those that have been identified as significant, during the NHA process and require an EIS.

Table 2: Summary of Natural Heritage Assessment for the Loyalist Solar Project

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Wetlands					
4	5	Yes	Boundary Revised	Provincially Significant	Y
11	0	Yes	Boundary Revised	Provincially Significant	Y
18	Within	Yes	Boundary Revised	Assumed Provincially Significant	Y
26	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
31	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
34	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
40	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
43	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
44	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
45	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
49	Within	Yes	Boundary Revised	Assumed Provincially Significant	Y
54	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
61	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
62	0	Yes	Boundary Revised	Assumed Provincially Significant	Y

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
71	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
72	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
73	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
75	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
77	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
78	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
83	0	No	Identified	Assumed Provincially Significant	Y
85	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
86	5	Yes	Boundary Revised	Assumed Provincially Significant	Y
88	0	Yes	Boundary Revised	Provincially Significant	Y
92	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
94	0	Yes	Boundary Revised	Provincially Significant	Y
96	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
99	5	No	Identified	Not Significant	N
100	5	No	Identified	Not Significant	N
101	5	No	Identified	Not Significant	N
102	0	No	Identified	Provincially Significant	Y
103	5	No	Identified	Provincially Significant	Y
104	Within	Yes	Boundary Revised	Provincially Significant	Y
105	0	No	Identified	Not Significant	N
106	0	No	Identified	Not Significant	N
108	0	No	Identified	Not Significant	N
109	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
114	Within	No	Identified	Assumed Provincially Significant	Y

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
115	25	No	Identified	Not Significant	N
116	0	No	Identified	Not Significant	N
117	9	Yes	Boundary Revised	Assumed Provincially Significant	Y
118	0	No	Identified	Assumed Provincially Significant	Y
119	0	No	Identified	Not Significant	N
120	0	No	Identified	Not Significant	N
121	0	No	Identified	Not Significant	N
122	0	No	Identified	Assumed Provincially Significant	Y
123	0	No	Identified	Assumed Provincially Significant	Y
124	0	Yes	Boundary Revised	Not Significant	N
125	0	No	Identified	Assumed Provincially Significant	Y
126	0	Yes	Boundary Revised	Assumed Provincially Significant	Y
127	12	Yes	Boundary Revised	Assumed Provincially Significant	Y
Woodlands					
AB	0	Yes	Boundary Revised	Significant	Y
AD	Within	Yes	Boundary Revised	Significant	Y
AE	Within	Yes	Boundary Verified	Significant	Y
AP	Within	Yes	Boundary Verified	Significant	Y
AQ	0	Yes	Boundary Verified	Significant	Y
B	Within	Yes	Boundary Verified	Significant	Y
BC	0	Yes	Boundary Verified	Significant	Y
BD	Within	Yes	Boundary Verified	Significant	Y
BH	Within	Yes	Boundary Refined	Significant	Y
BI	Within	Yes	Boundary Verified	Significant	Y
BM	Within	Yes	Boundary Revised	Significant	Y
BP	0	Yes	Boundary Verified	Not Significant	N
BS	Within	Yes	Boundary Verified	Not Significant	N
BT	Within	Yes	Boundary Verified	Not Significant	N

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
BU	0	Yes	Boundary Verified	Not Significant	N
CA	0	Yes	Boundary Verified	Significant	Y
CN	0	Yes	Boundary Verified	Not Significant	N
CW	1	Yes	Boundary Verified	Significant	Y
CX	0	Yes	Boundary Verified	Significant	Y
CY	Within	Yes	Boundary Verified	Not Significant	N
CZ	0	Yes	Boundary Verified	Not Significant	N
DB	Within	Yes	Boundary Verified	Significant	Y
DD	Within	No	Identified	Not Significant	N
DF	Within	No	Identified	Not Significant	N
DI	Within	No	Identified	Not Significant	N
DL	Within	No	Identified	Not Significant	N
DM	5	No	Identified	Not Significant	N
DN	0	No	Identified	Not Significant	N
DO	0	No	Identified	Not Significant	N
DP	0	No	Identified	Not Significant	N
DQ	0	No	Identified	Not Significant	N
DR	0	No	Identified	Not Significant	Y
DT	30	No	Identified	Not Significant	N
DU	0	No	Identified	Not Significant	N
DX	31	No	Identified	Not Significant	N
DY	0	No	Identified	Not Significant	N
DZ	Within	No	Identified	Not Significant	N
EA	Within	No	Identified	Significant	Y
F	Within	Yes	Boundary Revised	Not Significant	N
I	Within	Yes	Boundary Revised	Significant	Y
L	Within	Yes	Boundary Revised	Significant	Y
Wildlife Habitat					
Seasonal Concentration Areas					
Waterfowl Stopover and Staging Areas (Terrestrial) WSST1	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Terrestrial) WSST2	Within	No	Identified	Treated as Significant	Y

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Waterfowl Stopover and Staging Areas (Terrestrial) WSST3	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Terrestrial) WSST4	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Terrestrial) WSST5	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Terrestrial) WSST6	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Terrestrial) WSST7	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Terrestrial) WSST8	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Terrestrial) WSST9	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Terrestrial) WSST10	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Aquatic) WSSA1	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Aquatic) WSSA2	Within	No	Identified	Treated as Significant	Y
Waterfowl Stopover and Staging Areas (Aquatic) WSSA4	Within	No	Identified	Treated as Significant	Y
Turtle Wintering Areas (TWA1)	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH1	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH2	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH3	Within	No	Identified	Treated as Significant	Y

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Reptile Hibernaculum RH4	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH5	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH7	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH8	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH9	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH10	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH11	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH12	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH13	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH14	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH15	Within	No	Identified	Treated as Significant	Y
Reptile Hibernaculum RH16	Within	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT1	5	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT2	5	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT3	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT4	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT5	Within	No	Identified	Not Significant	N

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT6	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT9	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT10	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT11	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT15	Within	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT16	Within	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT17	Within	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT18	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT19	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT20	Within	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT21	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT22	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT23	0	No	Identified	Treated as Significant	Y

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT24	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT25	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT26	Within	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT27	5	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) CNT28	0	No	Identified	Treated as Significant	Y
Colonially Nesting Bird Breeding Habitat (Ground) CNG1	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG3	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG4	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG5	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG6	0	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG7	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG8	0	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG9	0	No	Identified	Not Significant	N

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Colonially Nesting Bird Breeding Habitat (Ground) CNG10	0	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG11	0	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG12	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG13	Within	No	Identified	Not Significant	N
Colonially Nesting Bird Breeding Habitat (Ground) CNG16	Within	No	Identified	Not Significant	N
Rare Vegetation Communities					
Alvar ALV1	Within	No	Identified	Not Significant	N
Alvar ALV2	Within	No	Identified	Not Significant	N
Alvar ALV3	Within	No	Identified	Not Significant	N
Alvar ALV4	Within	No	Identified	Not Significant	N
Alvar ALV5	Within	No	Identified	Not Significant	N
Alvar ALV6 (Other Rare Vegetation Community)	Within	No	Identified	Significant	Y
Alvar ALV7	Within	No	Identified	Not Significant	N
Alvar ALV8	Within	No	Identified	Not Significant	N
Alvar ALV11 (Carolina Whitlow Grass Habitat)	Within	No	Identified	Significant	Y
Alvar ALV12	Within	No	Identified	Not Significant	N
Alvar ALV13	Within	No	Identified	Not Significant	N
Alvar ALV14	Within	No	Identified	Not Significant	N
Alvar ALV15	Within	No	Identified	Not Significant	N
Alvar ALV16	Within	No	Identified	Not Significant	N
Alvar ALV17	Within	No	Identified	Not Significant	N
Alvar ALV18	Within	No	Identified	Not Significant	N
Alvar ALV19	Within	No	Identified	Not Significant	N
Alvar ALV20	Within	No	Identified	Not Significant	N

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Alvar ALV21(Other Rare Vegetation Community)	Within	No	Identified	Significant	Y
Old Growth Forest (OG1)	Within	No	Identified	Not Significant	N
Old Growth Forest (OG2)	Within	No	Identified	Not Significant	N
Old Growth Forest (OG3)	0	No	Identified	Not Significant	N
Old Growth Forest (OG4)	Within	No	Identified	Not Significant	N
Old Growth Forest (OG5)	Within	No	Identified	Not Significant	N
Old Growth Forest (OG6)	Within	No	Identified	Not Significant	N
Old Growth Forest (OG7)	Within	No	Identified	Not Significant	N
Specialised Wildlife Habitat					
Waterfowl Nesting Area WNA1	Within	No	Identified	Not Significant	N
Waterfowl Nesting Area WNA2	Within	No	Identified	Treated as Significant	Y
Waterfowl Nesting Area WNA3	Within	No	Identified	Not Significant	N
Waterfowl Nesting Area WNA4	Within	No	Identified	Treated as Significant	Y
Waterfowl Nesting Area WNA5	Within	No	Identified	Not Significant	N
Waterfowl Nesting Area WNA6	Within	No	Identified	Not Significant	N
Waterfowl Nesting Area WNA7	Within	No	Identified	Treated as Significant	Y
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS1	Within	No	Identified	Not Significant	N
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS2	Within	No	Identified	Not Significant	N

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS3	Within	No	Identified	Not Significant	N
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS4	Within	No	Identified	Not Significant	N
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS5	Within	No	Identified	Not Significant	N
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS6	Within	No	Identified	Not Significant	N
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS7	Within	No	Identified	Not Significant	N
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS8	Within	No	Identified	Not Significant	N
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat BEOS9	Within	No	Identified	Not Significant	N
Woodland Raptor Nesting Area WRN1	Within	No	Identified	Not Significant	N
Woodland Raptor Nesting Area WRN2	Within	No	Identified	Not Significant	N
Woodland Raptor Nesting Area WRN3	Within	No	Identified	Not Significant	N
Turtle Nesting Areas	Within	No	Identified	Treated as Significant	Y
Amphibian Breeding Habitat (Wetland) ABHWE1	5	No	Identified	Not Significant	N
Amphibian Breeding Habitat (Woodland) ABHWO1	Within	No	Identified	Significant	Y

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Amphibian Breeding Habitat (Woodland) ABHWO2	Within	No	Identified	Significant	Y
Amphibian Breeding Habitat (Woodland) ABHWO3	Within	No	Identified	Treated as Significant	Y
Amphibian Breeding Habitat (Woodland) ABHWO4	Within	No	Identified	Not Significant	N
Amphibian Breeding Habitat (Woodland) ABHWO5	Within	No	Identified	Not Significant	N
Amphibian Breeding Habitat (Woodland) ABHWO6	Within	No	Identified	Significant	Y
Amphibian Breeding Habitat (Woodland) ABHWO7	Within	No	Identified	Not Significant	N
Amphibian Breeding Habitat (Woodland) ABHWO8	Within	No	Identified	Not Significant	N
Amphibian Breeding Habitat (Woodland) ABHWO9	Within	No	Identified	Treated as Significant	Y
Amphibian Breeding Habitat (Woodland) ABHWO10	Within	No	Identified	Significant	Y
Amphibian Breeding Habitat (Woodland) ABHWO11	Within	No	Identified	Not Significant	N
Woodland Area-Sensitive Bird Breeding Habitat ASBB1	Within	No	Identified	Significant	Y
Woodland Area-Sensitive Bird Breeding Habitat ASBB2	Within	No	Identified	Significant	Y

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Woodland Area-Sensitive Bird Breeding Habitat ASBB3	Within	No	Identified	Significant	Y
Woodland Area-Sensitive Bird Breeding Habitat ASBB4	Within	No	Identified	Not Significant	N
Woodland Area-Sensitive Bird Breeding Habitat ASBB5	Within	No	Identified	Not Significant	N
Habitat of Species of Conservation Concern					
Marsh Breeding Bird Habitat General MBBH1	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat General MBBH2	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat General MBBH3	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat General MBBH5	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat Green Heron GRHE1	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat Green Heron GRHE2	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat Green Heron GRHE3	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat Green Heron GRHE6	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat Green Heron GRHE7	Within	No	Identified	Not Significant	N

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Marsh Breeding Bird Habitat Green Heron GRHE9	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat Green Heron GRHE10	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat Green Heron GRHE11	Within	No	Identified	Not Significant	N
Marsh Breeding Bird Habitat Green Heron GRHE12	Within	No	Identified	Not Significant	N
Terrestrial Crayfish (TC1)	Within	No	Identified	Treated as Significant	Y
Common Nighthawk CN1	Within	No	Identified	Significant	Y
Common Nighthawk CN3	Within	No	Identified	Not Significant	N
Common Nighthawk CN4	Within	No	Identified	Significant	Y
Common Nighthawk CN5	Within	No	Identified	Not Significant	N
Common Nighthawk CN6	Within	No	Identified	Not Significant	N
Common Nighthawk CN7	Within	No	Identified	Not Significant	N
Common Nighthawk CN8	Within	No	Identified	Not Significant	N
Common Nighthawk CN9	Within	No	Identified	Not Significant	N
Common Nighthawk CN10	Within	No	Identified	Not Significant	N
Common Nighthawk CN11	Within	No	Identified	Not Significant	N
Common Nighthawk CN12	Within	No	Identified	Significant	Y
Common Nighthawk CN13	Within	No	Identified	Not Significant	N

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Woodland Specific Bird Species of Special Concern (RHWO1)	Within	No	Identified	Not Significant	N
Woodland Specific Bird Species of Special Concern (RHWO2)	Within	No	Identified	Significant	Y
Woodland Specific Bird Species of Special Concern (RHWO3)	Within	No	Identified	Not Significant	N
Woodland Specific Bird Species of Special Concern (RHWO 4)	Within	No	Identified	Not Significant	N
Woodland Specific Bird Species of Special Concern (RHWO 5)	Within	No	Identified	Not Significant	N
Woodland Specific Bird Species of Special Concern (RHWO 6)	Within	No	Identified	Not Significant	N
Woodland Specific Bird Species of Special Concern (RHWO 7)	Within	No	Identified	Not Significant	N
Woodland Specific Bird Species of Special Concern (EAWP 1)	Within	No	Identified	Significant	Y
Woodland Specific Bird Species of Special Concern (EAWP 2)	Within	No	Identified	Significant	Y
Woodland Specific Bird Species of Special Concern (EAWP 3)	Within	No	Identified	Significant	Y
Woodland Specific Bird Species of Special Concern (EAWP 4)	Within	No	Identified	Significant	Y
Woodland Specific Bird Species of Special Concern (EAWP 5)	Within	No	Identified	Not Significant	N
Woodland Specific Bird Species of Special Concern (EAWP 6)	Within	No	Identified	Not Significant	N

Natural Feature	Distance Between Natural Feature and Project Location (m)	Summary of Natural Heritage Assessment			EIS Required?
		Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Woodland Specific Bird Species of Special Concern (EAWP 7)	Within	No	Identified	Not Significant	N
Wood Thrush WOTH1	Within	No	Identified	Significant	Y
Wood Thrush WOTH2	Within	No	Identified	Not Significant	N
Wood Thrush WOTH3	Within	No	Identified	Not Significant	N
Wood Thrush WOTH4	Within	No	Identified	Significant	Y
Wood Thrush WOTH5	Within	No	Identified	Not Significant	N
Yellow Pond Lily	Within	No	Identified	Significant	Y
Juniper Hairstreak	Within	No	Identified	Treated as Significant	Y
Animal Movement Corridors					
Amphibian Movement Corridors	Within	No	Identified	Not Significant	N
Other					
Generalized Candidate Significant Wildlife Habitat*	0 m-50 m	No	Identified	N/A	Y

*For a list of wildlife habitat identified as part of the Generalized Candidate Significant Wildlife Habitat, please refer to the NHA Site Investigation Report.

5.0

Environmental Impact Study Purpose

The completion of an *NHA EIS Report* in accordance with procedures established by the MNRF and Sections 37 and 38 of *Ontario Regulation 359/09* may permit project components to be constructed and installed within a significant or provincially significant feature or in the prescribed setback (i.e., the surrounding 50 m). This report is consistent with Sections 37 and 38 of *Ontario Regulation 359/09*, which details that an EIS report must include the following:

- Identification and assessment of negative environmental effects of the Project on a natural feature, provincial park or conservation reserve.
- Identification of mitigation measures in respect of negative environmental effects.
- Description of how the environmental effects mitigation and monitoring plan in the *Design and Operations Report* addresses negative environmental effects.
- Description of how the *Construction Plan Report* addresses negative environmental effects.

The focus of this *NHA EIS Report* will be to fulfill the requirements of Sections 37 and 38 for the significant natural features identified in **Table 2** as being within the Project Location or surrounding 50 m setback.

6.0 Rationale for Development within a Setback to a Natural Feature

The location of the Project has been subject to numerous field investigations and a thorough review of constraints to development was undertaken prior to delineating the Project Location. Based on the natural environment information collected, the Project Location was refined to avoid impacts to significant natural heritage features, where possible. The layout of the Project has been developed to prioritize the protection of sensitive features and minimize environmental effects.

7.0 Project Activities

The following subsections outline the Project activities during the construction, operations and decommissioning phases. **Table 3** outlines the construction schedule and expected operational date for this Project. It is expected that the Project will remain operational for a period of at least 20 years. However, it is possible that the Project would remain operational for longer period of time due to the lifecycle of facility components along with repowering of the generating equipment and/or receiving a subsequent form of power purchase agreement.

Table 3: Anticipated Duration of Construction Activities

Construction Activity	Estimated Timing
Site Preparation	Q4/2017-Q2/2018
Installation of solar components (structural supports, racking, modules, collection system)	Q1/2018-Q3/2018
Installation of substation and Operations & Maintenance building	Q1/2018-Q4/2018
Commissioning, site clean-up and restoration	Q4/2018

7.1 Construction

It is anticipated that construction would last approximately 10 to 12 months. Pending receipt of all necessary approvals and permits, construction is tentatively scheduled to begin in fall 2017. The sections below provide general descriptions for the various phases of construction for the Project. This information has been summarized from the Project *Construction Plan Report*. Additional details are provided in the *Construction Plan Report*.

Construction activities will be conducted by licensed contractors in accordance with required standards and codes and all activities will abide by local laws and requirements. Construction-related activities will be conducted within the Project Location boundary outlined in **Figure 2**. Testing and commissioning of the facility will occur over the last few weeks of construction. During construction, if hazardous materials, including fuel, oils or grease will be stored on site, these materials will be stored away from sensitive features and secondary containment used. Disposal of hazardous wastes will only be required in the case of accidental spills and will follow the procedures outlined in the Spills Response Plan. Decisions on waste disposal or recycling during, and immediately after, construction will be made by the on-site contractor who will refer to the *Environmental Protection Act*.

7.1.1 Surveying of Project Location

Prior to the construction phase, the site will be surveyed and staked to delineate the Project Location boundary. The survey will identify the location of underground utilities and/or infrastructure as well as the location of Project infrastructure.

Significant or provincially significant environmental features and their applicable setbacks (e.g., water bodies, significant wildlife habitat, etc.) will also be clearly demarcated by the Proponent or their construction contractor. Areas to be avoided will be fenced and/or flagged, as appropriate.

7.1.2 Clearing, Levelling, Compacting and Grading

Clearing activities will take place prior to the start of other major construction works and will consist of vegetation removal, grubbing and large surface rock removal. Following any clearing activities, and as necessary, the Project Location will be graded to facilitate construction activities. As noted in **Table 3**, graders, bulldozers, scrapers, soil compactors, dump trucks, wheel loaders and backhoes, among other equipment, will be used to generally prepare the site. Appropriate grading techniques will be used to prevent increased runoff potential and maintain desired drainage patterns.

Major excavation works or fill placement are not expected for the Project. The primary excavation work is likely to be limited to grading and soil removal and/or replacement for various foundations, access roads, and trenches for underground electrical cables. Topsoil removed for the construction of permanent access roads will be distributed across the Project Location. Excess topsoil may be used to infill low-lying areas, if appropriate. Any temporarily stockpiled topsoil will be stored and will be covered to minimize erosion from wind and precipitation.

7.1.3 Drainage and Erosion Control

An Erosion and Sediment Control (“ESC”) plan will be implemented during construction to avoid sedimentation and other deleterious substances from being conveyed to the surrounding landscape. Routine inspections of ESC installations will be conducted during construction to ensure they remain effective.

While a detailed ESC plan cannot be completed until the final site grading plan, the phasing of construction, and construction methodology have all been confirmed, the following measures will be considered when developing the ESC plan. These measures will then be included/ linked to the Stormwater Management Plan, as appropriate:

- Identifying and protecting all trees and plants not shown for removal that are contained within the construction area.
- Installing silt fences and other necessary erosion control measures prior to commencing construction activities.
- Phasing construction, where possible, to limit areas with exposed soils, and limit duration of soil exposure.
- Implementing proper dewatering techniques to ensure the water within the site is properly managed.

- Using appropriate grading techniques to prevent increased run-off potential and maintain pre-construction drainage patterns.
- Using sedimentation basins or sediment traps to treat relatively large drainage areas.
- Re-vegetation of disturbed areas after construction has been completed (either through natural re-growth or planting, as necessary, where appropriate).

7.1.4 Installation of Perimeter Fence and Security Lighting

For the safety of the public and wildlife, and for security purposes, a perimeter fence will be installed. This will be a chain link fence of standard height (approximately 1.8 m) that will be installed around those areas of the Project Location where PV panels, inverter station and the substation are located. The fencing is a requirement of the Electrical Safety Authority ("ESA") and will be built to required specifications. Gated entrances will be installed at the site entrances off of Hinch Road, Centreville Road, Rattie Road, and Miller Road. Temporary entrances may be in place during construction.

The perimeter fencing is to have contact with the ground surface to prevent entry of wildlife. Where is not feasible for the fence to contact the ground, other measures will be installed to prevent wildlife access under the fence. During the construction phase, in areas appropriate to protect turtle hatchlings, the spacing in the chain link should be of sufficient size to prevent entry from the ground surface to a height of approximately 0.5 m.

During construction, the site will be monitored by the supervising construction staff. For security and maintenance purposes, lights will be installed near the substation and site entrances to the facility and task-specific lights will be installed where necessary.

7.1.5 Construction of Access Roads

A series of internal gravel access roads will be needed for construction vehicles and equipment transport. They will also provide long-term access to the site for on-going maintenance and will allow a service vehicle to access each inverter station directly. The main entrances to the solar facility will be located off Hinch Road, Centreville Road, Rattie Road, and Miller Road.

Row to row rack spacing will be sufficient such that service vehicles can access modules and wiring for maintenance. The location of the internal access roads and their nature may change during construction, but it is expected that the majority will remain as permanent roads during operations to provide access for maintenance vehicles.

The depth of the roadbed will be constructed as required to transport loads associated with the construction and on-going operation and maintenance needs of the Project. Geo-grid and geotextile fabric may be used, as needed, to improve the structural integrity of the road base and to preserve the granular. As necessary, culverts will be installed beneath the access roads to provide greater stability and at locations where conveyance of surface water drainage is required.

7.1.1 Installation of Water Crossings for Access Roads

It is not anticipated that the design of the Project will require the installation of new water crossings for access roads. Where the Project Location has been determined to occur “within” a water body, this relates to a crossing location where a collector line or connection line is proposed. Where these locations occur, the existing municipal road right-of-way will be used. Upgrades to culvert crossings on municipal roads are not anticipated. Should new or upgraded water crossings be required, permitting or approvals that may be required for work within or adjacent to water bodies will be obtained.

7.1.2 Temporary Storage, Construction Areas and Installation of Temporary Facilities

Temporary laydown and construction staging areas will be located within the Project Location boundary as shown on **Figure 2**. During the construction phase, any part of the Project Location may be used as temporary storage, which will be dependent upon how construction will be staged. Areas will be designated for the use of the construction office trailers, portable washrooms, first aid stations, vehicle parking, construction equipment parking, storage sheds, truck unloading/loading, waste disposal pick-up areas, and equipment and material laydown, among other uses.

After site grading is completed (discussed above), a layer of granular material will be installed to provide an adequate base for construction vehicles, heavy equipment, and material laydown.

Temporary facilities will be removed when the construction period is finished, however, as discussed in **Section 5.3**, a portion of the construction laydown area(s) may be maintained after construction for operational and maintenance purposes.

7.1.3 Construction of Foundations

Engineered foundations will be constructed for the solar PV racking systems, inverter stations, substation components, and the Operations & Maintenance building (if located within the Project Location). The substation area and up to 34 inverter stations will be prepared and/or excavated as needed and foundations for the equipment that will be installed. The soil conditions are such that several foundation types may be installed, including:

- Concrete pre-cast pads which are transported to the site by truck and subsequently put into position with a crane.
- Concrete cast-in-place pads constructed on-site by pouring ready-mix concrete into forms. A mixer truck would deliver ready-mix concrete to the site and pour it into forms.

Ground screws, plate-mounted steel beams, or round steel posts which would be either installed using a vibratory pile hammer, driven (screwed) into the ground, or rock drilled and grouted into place. The final foundation selection(s) will occur during the Project's detailed design stage.

7.1.4 Installation of Supports, Racking and PV Modules

Approximately 190,000 to 290,000 PV panels of 320 (or higher) watts (DC) each will be installed for the Project. The PV panels are anticipated to be arranged in lines and strings in parallel. The PV panels will be mounted to a racking system that is aligned in rows approximately 5 to 12 m apart, and will use racking structures that are either fixed in place or track the movement of the sun. Each of the racking structures will be constructed on a support, and will undergo final assembly on site. The final racking and support selection will occur during the Project's detailed design stage, including the exact method of installation, and number of supports and racks required. Additional detail is provided in the *Design and Operations Report*.

7.1.5 Installation of Collector Line and Inverter Stations

Collection lines within the generation portion of the site will either installed above ground on poles and/or placed in excavated trenches. It is anticipated that the majority of electrical collector lines installed in road rights-of-way will be located above ground on poles, anticipated to be between 60 and 70 feet tall. Poles will be equipped with monitoring structures and electrical insulators and ancillary equipment such as grounding wire, communications cables, and others as necessary. Where lines are buried, the lines will be placed on a sand-bedding or similar material and capped with marking tape to serve as a warning for future excavators, as per ESA requirements.

Inverter stations will require support foundations. The type and depth of foundation will vary depending upon geotechnical characteristics of the subsurface area at each location. Typically, inverter station foundations are either pre-cast concrete pads which are transported on site or cast-in-place concrete pads.

7.1.6 Installation of Connection Line System

The connection line will be constructed to connect the Project to the Project substation located adjacent to the existing HONI 230 kV line, as shown in **Figure 2**. This figure depicts four connection line options to connect the Project to the substation. A final route will be selected based upon consultation with the public, HONI, the IESO, and other regulatory agencies. The connection line options have been routed to minimize or avoid sensitive environmental features.

Dependent on the preferred connection line route, it is anticipated that the connection line will be mostly overhead and be located within municipal road ROWs. Poles are anticipated to be between 65 and 80 feet tall and be equipped with mounting structures and electrical insulators and ancillary equipment such as grounding wire, communications cables, and others as necessary. Above ground poles will be supported by anchored guy wires where necessary. Some sections of the ROWs way may require clearing, while other sections may lend themselves to underground installation to avoid impacts to sensitive natural features. The specifications (pole height, material, anchor locations) and construction method will be finalized at the Project's detailed design stage.

Should engineering constraints identify the need for underground installation of either electrical collector or connection line systems due to the potential to negatively affect sensitive environmental features, a directional boring (i.e., horizontal directional drilling (HDD)) construction method may be used. This is a trenchless method of installing piping or cabling that uses a drill rig to bore along a predetermined path below the surface. The creation of temporary jack and bore pits may be required for this operation. The detailed design phase of the Project will determine if this type of installation would be required.

7.1.7 Communications & SCADA

A communications tower and SCADA system including fibre-optic cabling will be constructed to allow for remote communication and transfer of Project operational data (including fibre-optic cable runs). The SCADA system will be housed inside a Control building to be located in the substation area.

Both the communications tower and Control building will be constructed on an appropriate foundation to be determined during detailed design.

7.1.8 Substation

The Project substation will be located within leased lands on private property northeast of the intersection of Miller Road and Frizzell Road, adjacent to the HONI corridor. While the exact make and model of the substation is in the process of being determined, it will be sized appropriately for a 54 MW_{AC} facility. The foundation for the substation will be determined during detailed design and will be compliant with MOECC spill containment requirements.

7.1.9 Operations & Maintenance Building

An Operations and Maintenance building may be constructed within the Project Location. The exact location of this building, if required, will be determined during detailed design, but is anticipated to be east of Rattie Road and north of Hinch Road. The building is anticipated to be pre-fabricated, and will be placed on a concrete foundation.

7.1.10 Remediation and Clean-up of Work Areas

After all major construction activities are completed, and the Project has been commissioned, work areas will be rehabilitated as needed. Construction-related waste and excess materials brought to the site will be removed and reused, recycled, or disposed of in accordance with provincial guidelines.

7.1.11 Site Landscaping and Vegetation

Site restoration and reclamation is planned for the Project Location where necessary, including along access roads. The restoration and reclamation strategy may include re-contouring of the land to suitable drainage patterns (in accordance with the Stormwater Management Plan), management and replacement of subsoil (if applicable), and topsoil and re-vegetation.

Disturbed areas may be seeded or allowed to re-vegetate naturally as needed, to help stabilize soil conditions, enhance soil structure, and/or increase soil fertility. In some locations, vegetation will be retained or planted to provide visual screening from neighbouring properties.

7.1.12 Testing and Commissioning

Prior to connection to the IESO transmission grid, components will be tested to ensure safe and proper operation.

7.2 Operations and Maintenance

The following activities, outlined in **Table 4**, are associated with the operation and maintenance of the solar facility. It will operate year round and generate electricity during daylight hours only. The amount of daily power generated will depend on the available resource. The Project will be monitored and managed remotely; therefore, minimal on-site activity is required.

This information has been summarized from the Project *Design and Operations Report*. For additional details, please refer to that report.

Table 4: Operations and Maintenance Activities

Activity	Description
Monitoring and meter calibrations	The solar facility will be monitored remotely twenty-four hours a day to ensure proper power output and to alert the operations staff to potential issues. Most issues can be remotely diagnosed so that staff can be dispatched to the solar facility to correct any problems.
Routine periodic maintenance and inspection of Project components	Regularly scheduled site visits will occur to inspect the solar facility to ensure all equipment is in proper working order. Activities that will occur during these visits may include data collection, regular maintenance (as described below) and any necessary minor repairs such as replacement of weathered electrical components. Facility security measures (fencing, locks) will also be checked. Transformers, inverters, PV panels, racking and above ground cabling will be inspected during scheduled visits.
Access road maintenance	Routine inspections of access roads may indicate the need for the addition of granular material and/or minor levelling and grading activities. The work is normally accomplished by small-scale equipment such as a skid steer.
Lighting	For security and maintenance purposes, lighting may be installed near the entrances of the solar facility and task-specific lights will be provided as necessary. These will be appropriately shielded or directed to avoid impacts to neighbours and will be inspected for burned/broken bulbs. Perimeter lighting is not anticipated.

Cleaning of PV panels	Rain fall is generally sufficient for cleaning the solar PV panels; however, depending on the quantity and frequency of rain at the Project location, the modules may require periodic cleaning. If required, water trucks may be utilized to bring water to the site. It is not anticipated that chemical detergents will be used to clean PV panels. During the winter, maintenance and operations crews may be dispatched to the site to remove snow from the PV panels using mechanical means (e.g., blowers affixed to mobile equipment).
Periodic landscape maintenance	Vegetation may be planted once construction activities are complete. It will be necessary to maintain the land in such a way that vegetation does not shade or in other ways impact the PV panels. Regular scheduled maintenance will also occur to manage weed growth as required. Other than in limited targeted applications, it is not anticipated that herbicides will be used to manage vegetation. In most cases, vegetation will be managed by mechanical means.
Major maintenance	Unforeseen, large repairs are not anticipated. Should major maintenance or equipment replacement be required it will be performed using existing roads and site access points.
Third party inspections and testing	Activities will be carried out as required by the local utility and other governing bodies in addition to any regularly scheduled inspections and testing.
Traffic	No major deliveries are anticipated for maintenance. Minimal vehicle traffic is associated with regular maintenance.
Drainage and erosion control	Water drainage from the Project Location will be managed as per a Stormwater Management Plan to be developed at the detailed design stage prior to the start of construction. This will be done with consideration to maintaining pre-construction drainage patterns and fulfilling the recommendations outlined in the <i>Natural Heritage Assessment</i> or <i>Water Reports</i> .
Drainage and erosion control (con'd)	Stormwater management features such as drainage ditches, culverts, rip rap, rock check dams, and retention ponds (if installed) will be regularly inspected. Minor clean-up of accumulated sediment and debris removal may be required and will be accomplished using small-scale equipment e.g. skid-steer.
Waste	The operation of the system does not produce any appreciable waste. All debris as a result of maintenance or cleaning will be removed from the site immediately by the operator. An exception is sewage disposal from the washrooms and kitchen facilities (if an Operations and Maintenance building is located on site), which would be directed to a septic tank, holding tank, or held in portable toilets designed to building code requirements.

During the operation phase, no hazardous materials will be stored on-site with the exception of oil for transformers and small quantities required for facility maintenance. Transformer oil will be adequately contained and accompanied by a Spills Response Plan, which will be developed prior to the start of construction.

7.3 Decommissioning

Through the decommissioning phase of the Project, the site will be returned to a state similar to its pre-construction condition. The installed components will be removed and reused/recycled, where possible.. Any remaining materials will be removed and disposed of off-site at an appropriate location.

The following activities are associated with the decommissioning of the solar facility. These activities will take place approximately 20 years after commissioning, or at the end of the power purchase agreement. Decommissioning activities are expected to take between 10-12 months and will occur in the relative order in which they are presented below:

- Disconnection and removal of above and below-ground wiring. Where safe to do so, below-ground wiring may be left in place.
- Removal of PV modules, steel/aluminum structures and electrical equipment.
- Removal of foundations and any maintenance buildings or other structures.
- Removal of access roads.
- Topsoil replacement as necessary.
- Site grading and rehabilitation as necessary.
- Removal of waste from the Project Location.

The final decision on waste disposal or recycling will be the responsibility of the on-site contractor who will refer to the *Environmental Protection Act*, or the applicable standards of the day before submitting a Generator Registration Report, or other applicable report, for each type of waste produced at the solar facility.

This information has been summarized from the Project *Decommissioning Plan Report*. Additional details are provided in that report related to decommissioning.

7.3.1 Site Restoration

Once the on-site solar equipment is removed, it is expected that the site will be returned to its former use. Some minor site grading may be required. Site restoration activities will be undertaken in consultation of the landowner where applicable. Where appropriate, vegetation will be re-established.

7.3.2 Managing Excess Materials and Waste

During the decommissioning phase, waste materials will be removed in accordance with applicable local requirements, at a minimum; however the goal will be to recycle all Project materials where possible and to work with local subcontractors and waste firms to segregate material to be recycled. For example, since the mounting racks are made of manufactured metal, it is anticipated that nearly 100% of the above grade metal structures are salvageable.

8.0 Existing Environmental Conditions of Relevant Natural Features

Existing environmental conditions for the Project Location and surrounding areas were determined through the records review, site investigation, and evaluation of significance, which comply with Section 25, 26 and 27 of *Ontario Regulation 359/09*. Below, a summary of the natural environment associated with the Project Location is provided with a specific focus on natural features of significance that required an EIS. The function, composition, attributes and characteristics that make natural features significant, contribute to their persistence, may be sensitive to development and serve as a good indicator of negative environmental effects are described below.

8.1 Overview

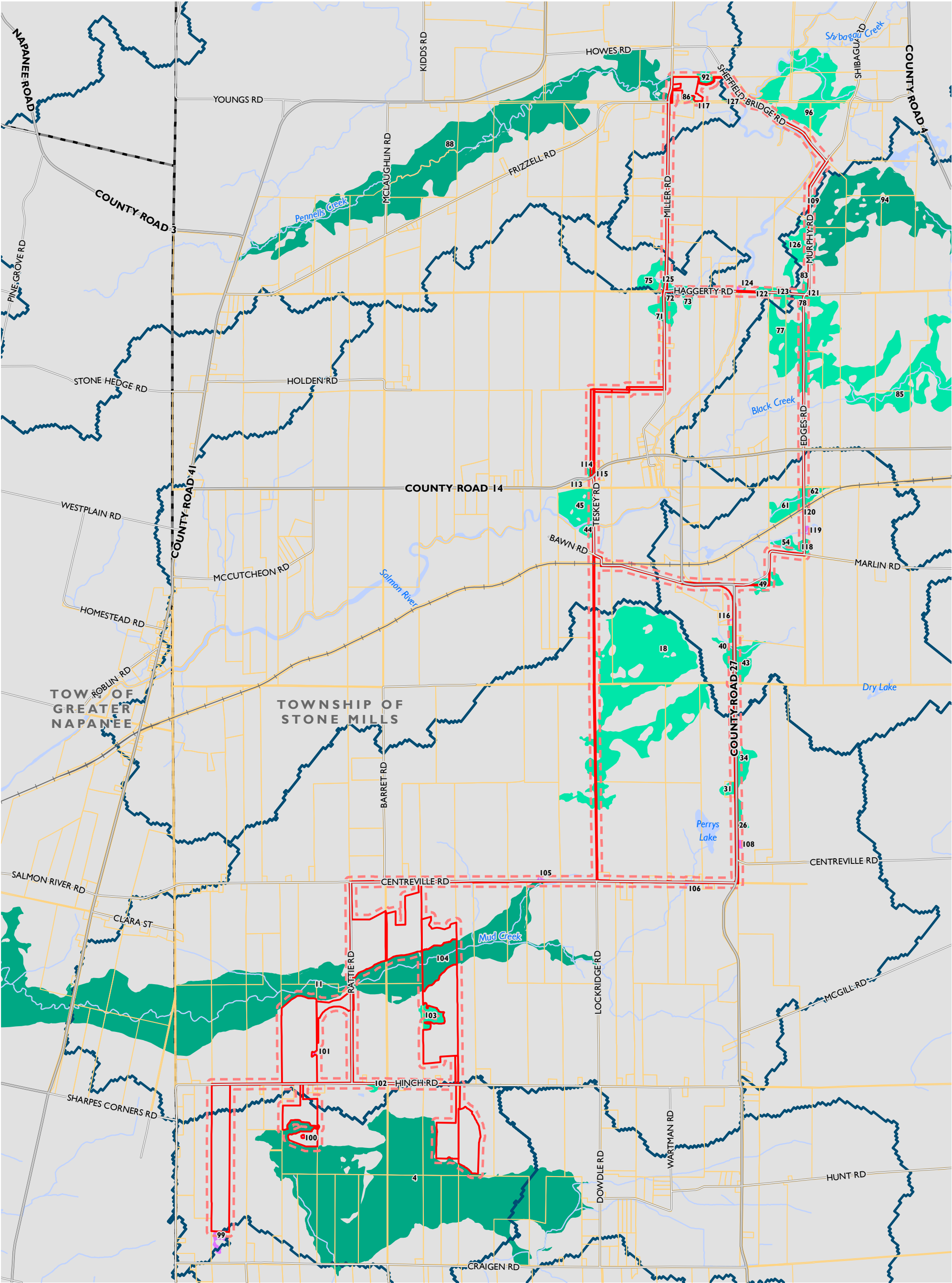
Through the records review, site investigation and evaluation of significance work, it was confirmed that the following natural features either did not occur in the Project Location or prescribed 50 m setback.

- Provincial Parks and Conservation Reserves
- ANSI, Life Science
- ANSI, Earth Science

8.2 Description of Significant Natural Features

8.2.1 Wetlands

The boundaries of southern wetland units in or within 50 m of the Project Location were delineated using the Ontario Wetland Evaluation System ("OWES) protocol (see the *NHA Site Investigation Report*) during the site investigation work and are shown on **Figure 3**. **Table 5** outlines the key attributes, composition and function of each assumed provincially significant or provincially significant wetland unit identified during the site investigation to be within the Project Location and/or surrounding prescribed 50 m setback. Characteristics that contribute to wetland persistence, may be sensitive to development and serve as a good indicator of negative environmental effects are described below in **Table 8**.



LOYALIST SOLAR PROJECT

LOYALIST SOLAR LP

SIGNIFICANT WETLANDS

FIGURE 3

Railway

Project Location Boundary (subject to refinement)

50 m Setback

Parcel Boundary

Municipal Boundary

Catchment Area

Mapped Watercourse

Mapped Water Body

Provincially Significant Wetland

Assumed Provincially Significant Wetland

Non Significant Wetland

Thunder Bay

Sault Ste. Marie

Timmins

Sudbury

North Bay

Ottawa

Peterborough

Barrie

Toronto

Kingston

London

Windsor

W

N

E

S

0

0.5

1

2 km

MAP CREATED BY: GM

MAP CHECKED BY: JP

DATA PROVIDED BY: MNRF

MAP PROJECTION: NAD 1983 UTM Zone 18N

PROJECT: 163674

STATUS: DRAFT

DATE: 10/25/2016

FILE LOCATION: I:\GIS\163674 - Loyalist Solar\mxd\EOS\Figure 3 Significant Wetlands.mxd

Table 5: [Assumed] Provincially Significant Southern Wetlands within the Project Location and Surrounding 50 m

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
4 Hinch Swamp PSW	306.3 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 17.49 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Swamp (94%) with deciduous trees as the dominant form and Marsh (6%) with narrow-leaved emergent species as the dominant species. The individual units within this wetland make up the Hinch Swamp Complex PSW . The ELC communities present in the wetland unit include: Swamp Maple Organic Deciduous Swamp (SWDO2-3) Reed Canary Grass Graminoid Mineral Meadow Marsh (MAMM1-3) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This palustrine wetland doesn't appear to be connected to other wetlands within 50 m of the Project Location but has outflows that cross Craigen Road. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Swamp Maple (<i>Acer x freemanii</i>), Green Ash (<i>Fraxinus pennsylvanica</i>), Black Ash (<i>Fraxinus nigra</i>), White Elm (<i>Ulmus americana</i>), Eastern Cottonwood (<i>Populus deltoides</i>), Ts - Willow species (<i>Salix</i> sp.), Ls - Red-osier Dogwood (<i>Cornus sericea</i> ssp. <i>sericea</i>), Bristly Dewberry (<i>Rubus hispida</i>), Gc - Sensitive Fern (<i>Onoclea sensibilis</i>), Marsh Fern (<i>Thelypteris palustris</i> var. <i>pubescens</i>), Wild Sarsaparilla (<i>Aralia nudicaulis</i>), Marsh Bedstraw (<i>Galium palustre</i>), Ne - Hop Sedge (<i>Carex lupulina</i>), Fox Sedge (<i>Carex vulpinoidea</i>), Be - Smartweed species (<i>Persicaria</i> sp.) FF - Lesser Duckweed (<i>Lemna minor</i>) 2. Ne* - Reed Canary Grass (<i>Phalaris arundinacea</i>), Hop Sedge, Fox Sedge, Re - Narrow-leaved Cattail (<i>Typha angustifolia</i>)	48.1 m to Wetland 100	Interspersion count of 92 intersections.	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1597.77 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine meaning the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed in this wetland unit including Snapping Turtle and Olive-sided Flycatcher. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs); Woodland Area-Sensitive Bird Breeding Habitat; Waterfowl Nesting Habitat; Wood Thrush Habitat	Fish spawning or migration/staging habitat is present in the south portion of the wetland unit

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
11 Mud Creek PSW	286.18 Wetland boundaries were delineated during fieldwork and it was found that the wetland occurs within 50 m of the Project Location.	This wetland is comprised of Marsh (29%) with robust emergent species as the dominant form and Swamp (71%) with deciduous trees/tall shrubs as the dominant form. The individual units within this wetland make up the Mud Creek PSW . The ELC communities present in the wetland unit include: Willow Mineral Deciduous Thicket Swamp (SWTM3) Willow Organic Deciduous Thicket Swamp (SWTO2) Cattail Graminoid Organic Shallow Marsh (MASO1-1) Reed Canary Grass Graminoid Mineral Meadow Marsh (MAMM1-3) Swamp Maple Organic Deciduous Swamp (SWDO2-3) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This palustrine wetland likely experiences seasonal overland drainage towards the watercourse that flows through it. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Willow species 2. Ts* - Willow species H - White Elm, Swamp Maple Ls - White Meadowsweet (<i>Spiraea alba</i>), Red-osier Dogwood Gc - Sensitive Fern, Common Boneset (<i>Eupatorium perfoliatum</i>), Canada Anemone (<i>Anemone canadensis</i>), Ne - Canada Mannagrass (<i>Glyceria canadensis</i>), Fox Sedge, sedge species (<i>Carex</i> sp.) 3. Re* - Narrow-leaved Cattail, Broad-leaved Cattail (<i>Typha latifolia</i>), Sweet Flag (<i>Acorus americanus</i>), Harlequin Blue Flag (<i>Iris versicolor</i>), American Burreed (<i>Sparganium americanum</i>) Dh - dead hardwoods Be - Greater Water Dock (<i>Rumex orbiculatus</i>), Marsh Marigold (<i>Caltha palustris</i>) Ne - Reed Canary Grass Gc - Swamp Milkweed (<i>Asclepias incarnata</i>), Marsh Bedstraw, Sensitive Fern, Spotted-joe Pyeweed (<i>Eutrochium maculatum</i>), Marsh Horsetail (<i>Equisetum palustre</i>) 4. Ne* - Reed Canary Grass 5. H* - Swamp Maple, Green Ash, Black Ash, White Elm Ls - Red-osier Dogwood, White Meadowsweet Dh - Swamp Maple Ne - Lake-bank Sedge (<i>Carex lacustris</i>), Porcupine Sedge (<i>Carex hystericina</i>) Re - Narrow-leaved Cattail Gc - Common Boneset, Water Loosestrife (<i>Lysimachia thyrsiflora</i>), Spotted-joe Pyeweed, Marsh Horsetail, Sensitive Fern	1.7 m to unevaluated wetland beyond Project Location	Interspersion count of 121 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 11, 104, 107, 103	Type 3 (5-25% is open water, occurring in various sized ponds) The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3417.21 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	This wetland unit contains a permanent watercourse. Shoreline vegetation is treed providing strong shoreline erosion control.	The wetland unit is palustrine meaning the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed within this wetland including avian Species at Risk. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Waterfowl Nesting Area^.	A permanent watercourse (Mud Creek) is present in this wetland that may provide spawning and migration/staging habitat. This permanent watercourse is located outside of the 50 m setback and will not be impacted by the development of the Loyalist Solar Project.

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
26	1.94 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.54 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of a Swamp /Marsh complex with narrow-leaved emergent and tall shrub species as the dominant forms. The ELC community present in the wetland unit includes: Reed Canary Grass Mineral Meadow Marsh (MAMM1-3)/Willow Mineral Deciduous Thicket Swamp (SWTM3) Complex This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. *Ne/Ts – Reed Canary Grass, Willow species	43.5 m to Wetland 31	Interspersion count of 94 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 18, 26, 31, 34,	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3417.21 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed within this unit and in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Reptile Hibernaculum^	N/A – no fish spawning or migration/staging habitat is present
31	1.99 Wetland boundaries were delineated during fieldwork and it was found that the wetland does occur within Project Location. 0.70 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Swamp (86%) with coniferous tree species as the dominant form and Marsh (14%) with robust emergent as the dominant form. The ELC communities present in the wetland unit include: White Cedar Organic Coniferous Swamp (SWCO1-1) Cattail Mineral Meadow Marsh (MAMM1-2) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 34. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. C* - Eastern White Cedar 2. Re* - Broad-leaved Cattail	11.3 m to unevaluated wetland beyond the Project Location	Interspersion count of 94 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 18, 26, 31, 34,	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3417.21 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Reptile Hibernaculum^; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Red-headed Woodpecker Habitat	Fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
34	5.41 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.92 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Swamp (100%) with coniferous tree species as the dominant form. The ELC community present in the wetland unit includes: White Cedar Organic Coniferous Swamp (SWCO1-1) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 31. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. C* - Eastern White Cedar H – Trembling Aspen Re – Broad-leaved Cattail	26 m to Wetland 31	Interspersion count of 94 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 18, 26, 31, 34,	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3417.21 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Reptile Hibernaculum^;	Fish spawning or migration/staging habitat is present
40	4.24 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 2.32 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Swamp (80%) with deciduous tree species as the dominant form and Marsh (20%). The ELC community present in the portion of the wetland unit within 50 m of the Project Location includes: Mineral Deciduous Swamp (SWDM4) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 43. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* – Trembling Aspen, Green Ash, Swamp Maple, White Elm C - Eastern White Cedar Ts – Willow species	25.9 m to Wetland 43	Interspersion count of 61 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 40, 43, 49, 54, 118, 61, 62	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 754.56 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs); Woodland Area-Sensitive Bird Breeding Habitat; Red-headed Woodpecker Habitat.	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
43	6.92 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.73 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Mineral Deciduous Swamp (SWDM4) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 40. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* – Trembling Aspen, Green Ash, Swamp Maple, White Elm C - Eastern White Cedar Ts – Willow species	25.9 m to Wetland 40	Interspersion count of 61 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 40, 43, 49, 54, 118, 61, 62	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 754.56 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs);	N/A – no fish spawning or migration/staging habitat is present
44	2.15 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.25 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Riverine This riverine wetland likely experiences fluctuating water levels associated with the Salmon River. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* – Green Ash	18.5 m to Wetland 45	Interspersion count of 116 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 33, 41, 44, 45, 112, 113, 114	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 65850.7 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	This swamp contains a permanent watercourse. Shoreline vegetation is treed providing strong shoreline erosion control.	The wetland unit is riverine and as such the unit may be a moderate source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs)	Fish spawning or migration/staging habitat is present in the Salmon River

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
45	13.4 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.16 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Riverine This riverine wetland likely experiences fluctuating water levels associated with the Salmon River. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* – Green Ash	7.4 m to Wetland 113	Interspersion count of 116 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 33, 41, 44, 45, 112, 113, 114	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 65850.7 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	This swamp contains a permanent watercourse. Shoreline vegetation is treed providing strong shoreline erosion control.	The wetland unit is riverine and as such the unit may be a moderate source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs)	Fish spawning or migration/staging habitat is present in the Salmon River
54	3.56 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.11 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Marsh (31%) with robust emergent species as the dominant form and Swamp (69%). The ELC community present in the portion of the wetland unit within the 50 m setback includes: Cattail Mineral Meadow Marsh (MAMM1-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 49, 61, 62, 118, 119 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Re*- Broad-leaved Cattail	12.2 m to Wetland 119	Interspersion count of 61 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 40, 43, 49, 54, 118, 61, 62	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 754.56 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
61	7.3 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.16 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub and deciduous tree species as the dominant forms. The ELC communities present in the wetland unit include: Willow Mineral Deciduous Thicket Swamp (SWTM3) Green Ash Mineral Deciduous Swamp (SWDM2-2) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 49, 54, 62, 118, 119 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Tall Shrubs 2. H* - Green Ash	12.1 m to Wetland 62	Interspersion count of 61 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 40, 43, 49, 52, 118, 61, 62	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 754.56 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat	N/A – no fish spawning or migration/staging habitat is present
62	3.04 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.04 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Swamp (72.94%) with tall shrub and deciduous tree species as the dominant forms and Marsh (27.06%). The ELC communities present in the wetland unit include: Willow Mineral Deciduous Thicket Swamp (SWTM3) Green Ash Mineral Deciduous Swamp (SWDM2-2) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 49, 54, 61, 118, 119 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Tall Shrubs 2. H* - Green Ash	12.1 m to Wetland 61	Interspersion count of 61 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 40, 43, 49, 52, 118, 61, 62	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 754.56 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
71	2.61 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.32 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub species as the dominant form. The ELC community present in the wetland unit includes: Willow Mineral Deciduous Thicket Swamp (SWTM3) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 72, 75, 125 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Tall Shrubs	15.3 m to Wetland 72	Interspersion count of 100 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 71, 72, 73, 75, 125	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 65850.7 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs); Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat	Fish spawning or migration/staging habitat is present
72	3.63 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.73 ha of the wetland unit occurs within 50 m of the Project Location. The remainder of the wetland occurs more than 50 m from the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC communities present in the wetland unit include: Willow Mineral Deciduous Thicket Swamp (SWTM3) Swamp Maple Mineral Deciduous Swamp (SWDM3-3) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 71, 125, 75 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Tall Shrubs 2. H* - Green Ash, Swamp Maple	15.3 m to Wetland 71	Interspersion count of 100 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 71, 72, 73, 75, 125	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 65850.7 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	Fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
73	1.73 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.33 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Swamp Maple	12.2 m to Wetland 125	Interspersion count of 100 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 71, 72, 73, 75, 125	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 65850.7 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	N/A – no fish spawning or migration/staging habitat is present
75	6.28 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.99 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub species as the dominant form. The ELC community present in the wetland unit includes: Willow Mineral Deciduous Thicket Swamp (SWTM3) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 72, 71, 125 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Tall Shrubs	19.7 m to Wetland 128	Interspersion count of 100 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 71, 72, 73, 75, 125	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 65850.7 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	Fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
77	21.71 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 2.51 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Trembling Aspen, Swamp Maple	12.2 m to Wetland 85	Interspersion count of 261 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 77, 78, 83, 85, 94, 109, 122, 123, 126	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed in this wetland unit and within the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs); Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat	N/A – no fish spawning or migration/staging habitat is present
78	3.11 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 2.26 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Trembling Aspen, Swamp Maple	12.2 m to Wetland 83	Interspersion count of 261 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 77, 78, 83, 85, 94, 109, 122, 123, 126	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed in this wetland unit and within the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs); Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
83	1.19 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.54 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Trembling Aspen, Swamp Maple	12.2 m to Wetland 78	Interspersion count of 261 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 77, 78, 83, 85, 94, 109, 122, 123, 126	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed in this wetland unit and within the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat	N/A – no fish spawning or migration/staging habitat is present
85	92.2 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 5.06 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Swamp Maple, Trembling Aspen	7.3 m to Wetland 121	Interspersion count of 100 intersections. The interspersion value used was for wetlands in the entire 1924.83 ha catchment this wetland unit is part of, which form a wetland complex. This interspersion value will persist with the development of the Loyalist Solar Project.	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs); Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
86	0.58 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within the Project Location. The wetland occurs within 50 m of the Project Location	This wetland is comprised of Swamp (59%) with deciduous and coniferous tree species as the dominant form and Marsh (41%) with narrow-leaved emergent species as the dominant form. The ELC communities present in the wetland unit include: Black Ash Mineral Deciduous Swamp (SWDM2-1) Reed Canary Grass Mineral Meadow Marsh (MAMM1-3) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Riverine This riverine wetland likely experiences fluctuating water levels associated with the Pennell's Creek. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ne* - Reed Canary Grass Be - Northern Water-plantain (<i>Alisma triviale</i>), 2. H* - Black Ash, Green Ash Ne - Reed Canary Grass Gc - Slender Stinging Nettle (<i>Urtica dioica</i> ssp. <i>gracilis</i>), Smartweed species	9.5 m to Wetland 117	Interspersion count of 127 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 88, 86, 92, 117	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3340.35 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	This swamp contains a permanent watercourse. Shoreline vegetation is treed providing strong shoreline erosion control.	The wetland unit is riverine meaning the unit may be a moderate source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Colonially Nesting Bird Breeding Habitat^ (Tree & Shrubs); Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat	A permanent watercourse is present in this wetland that may provide spawning and migration/staging habitat. This permanent watercourse is located within the Project Location.
88 Pennell's Creek PSW	185.24 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.74 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Swamp (78%) with deciduous and coniferous tree species as the dominant form and Marsh (20%) with narrow-leaved emergent species as the dominant form. The individual units within this wetland make up the Pennell's Creek PSW . The ELC communities present in the wetland unit include: Green Ash Mineral Deciduous Swamp (SWDM2-2) Reed Canary Grass Mineral Meadow Marsh (MAMM1-3) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Riverine This riverine wetland likely experiences fluctuating water levels associated with the Pennell's Creek. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ne* - Reed Canary Grass Be - Northern Water-plantain 2. H* - Black Ash, Green Ash Ne - Reed Canary Grass	39.7 m to unevaluated wetland beyond 50 m of the Project Location	Interspersion count of 127 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 88, 86, 92, 117	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3340.35 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	This swamp contains a permanent watercourse. Shoreline vegetation is treed providing strong shoreline erosion control.	The wetland unit is riverine meaning the unit may be a moderate source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Colonially Nesting Bird Breeding Habitat (Trees & Shrubs^); Waterfowl Nesting Area.	A permanent watercourse is present in this wetland that may provide spawning and migration/staging habitat. This permanent watercourse is located within the Project Location.

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
94 Biddy's Lake PSW	80.63 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.90 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The individual units within this wetland make up the Biddy's Lake PSW . The ELC communities present in the wetland unit include: Willow Mineral Deciduous Thicket Swamp (SWTM3) Green Ash Mineral Deciduous Swamp (SWDM2-2) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a seasonal surface water connection with Wetland 109 and 126 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Tall Shrubs 2. H* - Green Ash, Swamp Maple	12.2 m to Wetland 126	Interspersion count of 261 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 77, 78, 83, 85, 94, 109, 122, 123, 126	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat; Amphibian Breeding Habitat (Woodland).	Fish spawning or migration/staging habitat is present
96	40.84 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.13 ha of the wetland unit occurs within the Project Location.	This wetland is comprised of Swamp (52%) with tall shrub or deciduous tree species as the dominant form and Marsh (39%). The ELC community present within the portion of the wetland unit in 50 m of the Project Location includes: Cattail Mineral Meadow Marsh (MAMM1-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Riverine This riverine wetland likely experiences fluctuating water levels associated with the Salmon River. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	2. Re – Broad-leaved Cattail H – Green Ash, Swamp Maple	16.3 m to unevaluated wetland beyond 50 m of the Project Location	Interspersion count of 100 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 96 and 127.	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Waterfowl Nesting Area; Wood Thrush Habitat; Woodland Area-Sensitive Bird Breeding Habitat	Fish spawning or migration/staging habitat is present in the Salmon River

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
102	0.79 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.51 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100% Swamp with tall shrub species as the dominant form. The ELC community present in the wetland unit includes: Willow Mineral Deciduous Thicket Swamp (SWTM3) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland may have seasonal overland flow connection with Wetland 11. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. *Ts – Willow species	219.5 m to Wetland 4	Interspersion count of 121 intersections. The interspersion value used was for wetlands in the entire 3417.21 ha catchment this wetland unit is part of, which form a wetland complex. This interspersion value will persist with the development of the Loyalist Solar Project.	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3417.21 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed within this unit and in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Waterfowl Nesting Habitat.	N/A – no fish spawning or migration/staging habitat is present
103	4.71 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 4.01 ha of the wetland unit occurs within the Project Location.	This wetland is comprised of Swamp (70.46%) with deciduous tree species as the dominant form and Marsh (29.54%) with robust/ narrow-leaved emergent species as the dominant forms. The ELC communities present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) Cattail Graminoid Organic Meadow Marsh (MAMO1-2) Bedrock Meadow Marsh (MAMR3) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has intermittent inflow but no observed outflow. The construction of the solar facility will not significantly change the inputs of water to or from the wetland unit.	1. H* - Green Ash, White Elm, Trembling Aspen, Swamp White Oak (<i>Quercus bicolor</i>) Ts - Willow species Ls - Red-osier Dogwood C - Eastern White Cedar Ne - Bebb's Sedge, Lake-bank Sedge, Tussock Sedge, Tuckerman's Sedge (<i>Carex tuckermanii</i>), Northeastern Sedge, Porcupine Sedge, Canada Mannagrass, Reed Canary Grass Gc - Marsh Bedstraw, Marsh Horsetail, Common Boneset, Swamp Milkweed, Harlequin Blue Flag 2. Re* - Narrow-leaved Cattail, Harlequin Blue Flag Ne – Tussock Sedge, Reed Canary Grass H – Green Ash, White Elm Ts – Willow species 3. Ne* - Tussock Sedge, Reed Canary Grass Re – Harlequin Blue Flag Ts – Willow species Ls – Red-osier Dogwood Gc – Common Boneset	127 m to Wetland 104	Interspersion count of 121 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 11, 104, 107, 103	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3417.21 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine, as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Waterfowl Nesting Habitat.	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
104 Mud Creek PSW	85.47 Wetland boundaries were delineated during fieldwork and it was found that the wetland does occur within Project Location. 2.63 ha of the wetland unit occurs within the Project Location.	This wetland is comprised of Marsh (64%) with robust emergent species as the dominant form and Swamp (36%) with deciduous trees/tall shrubs as the dominant form. The individual units within this wetland make up the Mud Creek PSW . The ELC communities present in the wetland unit include: Willow Mineral Deciduous Thicket Swamp (SWTM3) Willow Organic Deciduous Thicket Swamp (SWTO2) Cattail Graminoid Organic Shallow Marsh (MASO1-1) Reed Canary Grass Graminoid Mineral Meadow Marsh (MAMM1-3) Swamp Maple Organic Deciduous Swamp (SWDO2-3) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This palustrine wetland likely experiences seasonal overland drainage towards the watercourse that flows through it. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Willow species 2. Ts* - Willow species H - White Elm, Swamp Maple Ls - White Meadowsweet (<i>Spiraea alba</i>), Red-osier Dogwood Gc - Sensitive Fern, Common Boneset (<i>Eupatorium perfoliatum</i>), Canada Anemone (<i>Anemone canadensis</i>), Ne - Canada Mannagrass (<i>Glyceria canadensis</i>), Fox Sedge, sedge species (<i>Carex</i> sp.) 3. Re* - Narrow-leaved Cattail, Broad-leaved Cattail (<i>Typha latifolia</i>), Sweet Flag (<i>Acorus americanus</i>), Harlequin Blue Flag (<i>Iris versicolor</i>), American Burreed (<i>Sparganium americanum</i>) Dh - dead hardwoods Be - Greater Water Dock (<i>Rumex orbiculatus</i>), Marsh Marigold (<i>Caltha palustris</i>) Ne - Reed Canary Grass Gc - Swamp Milkweed (<i>Asclepias incarnata</i>), Marsh Bedstraw, , Sensitive Fern, Spotted-joe Pyeweed (<i>Eutrochium maculatum</i>), Marsh Horsetail (<i>Equisetum palustre</i>) 4. Ne* - Reed Canary Grass 5. H* - Swamp Maple, Green Ash, Black Ash, White Elm Ls - Red-osier Dogwood, White Meadowsweet Dh - Swamp Maple Ne - Lake-bank Sedge (<i>Carex lacustris</i>), Porcupine Sedge (<i>Carex hystericina</i>) Re - Narrow-leaved Cattail Gc - Common Boneset, Water Loosestrife (<i>Lysimachia thyrsiflora</i>), Spotted-joe Pyeweed, Marsh Horsetail, Sensitive Fern	8.2 m to Wetland 11	Interspersion count of 121 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 11, 104, 107, 103	Type 3 (5-25% is open water, occurring in various sized ponds) The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3417.21 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	This swamp contains a permanent watercourse. Shoreline vegetation is treed providing strong shoreline erosion control.	The wetland unit is palustrine meaning the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed within this wetland including avian Species at Risk. The development of the Loyalist Solar Project is not expected to impact rare species.	Colonially Nesting Bird Breeding Habitat (Trees & Shrubs^); Waterfowl Nesting Habitat; Turtle Overwintering Habitat^; Turtle Nesting Area^; Amphibian Breeding Habitat (Woodland); Terrestrial Crayfish^; Large Yellow Pond Lily Habitat^.	A permanent watercourse (Mud Creek) is present in this wetland that may provide spawning and migration/staging habitat. This permanent watercourse is located outside of the 50 m setback and will not be impacted by the development of the Loyalist Solar Project.

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
109	0.52 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.52 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC communities present in the wetland unit include: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a seasonal surface water connection with Wetland 109 and 126 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Swamp Maple	12.3 m to Wetland 94	Interspersion count of 261 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 77, 78, 83, 85, 94, 109, 122, 123, 126	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	N/A – no fish spawning or migration/staging habitat is present
117	0.08 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within the Project Location. 0.06 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Marsh (100%) with narrow-leaved emergent species as the dominant form. The ELC community present in the wetland unit includes: Reed Canary Grass Mineral Meadow Marsh (MAMM1-3) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Riverine This riverine wetland likely experiences fluctuating water levels associated with the Salmon River. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ne* - Reed Canary Grass Be - Northern Water-plantain, Smartweed species	9.5 m to Wetland 86	Interspersion count of 127 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 88, 86, 92, 117	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3340.35 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	This swamp contains a permanent watercourse. Shoreline vegetation is treed providing strong shoreline erosion control.	The wetland unit is riverine meaning the unit may be a moderate source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	A permanent watercourse is present in this wetland that may provide spawning and migration/staging habitat. This permanent watercourse is located within the Project Location.

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
118	0.83 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.83 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub species as the dominant form. The ELC community present in the wetland unit includes: Willow Mineral Deciduous Thicket Swamp (SWTM3) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 49, 54, 61, 62, 119 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Tall Shrubs	12.2 m to Wetland 54	Interspersion count of 61 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 40, 43, 49, 52, 118, 61, 62	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 754.56 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat	N/A – no fish spawning or migration/staging habitat is present
122	0.54 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 0.54 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Trembling Aspen, Swamp Maple	12.2 m to Wetland 123	Interspersion count of 261 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 77, 78, 83, 85, 94, 109, 122, 123, 126	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed in this wetland unit and within the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
123	1.57 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.57 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC community present in the wetland unit includes: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Trembling Aspen, Swamp Maple	12.2 to Wetland 122	Interspersion count of 261 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 77, 78, 83, 85, 94, 109, 122, 123, 126	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	Rare species were observed in this wetland unit and within the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	N/A – no fish spawning or migration/staging habitat is present
125	2.19 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 2.19 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC communities present in the wetland unit include: Willow Mineral Deciduous Thicket Swamp (SWTM3) Green Ash Mineral Deciduous Swamp (SWDM2-2) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 71, 75 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ts* - Tall Shrubs 2. H* - Green Ash, Swamp Maple	12.2 m to Wetland 73	Interspersion count of 100 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 71, 72, 73, 75, 125	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 65850.7 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	Fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
126	9.38 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within Project Location. 1.23 ha of the wetland unit occurs within 50 m of the Project Location	This wetland is comprised of 100 % Swamp with tall shrub or deciduous tree species as the dominant form. The ELC communities present in the wetland unit include: Green Ash Mineral Deciduous Swamp (SWDM2-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a seasonal surface water connection with Wetland 109 and 94 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. H* - Green Ash, Swamp Maple	12.2 m to Wetland 94	Interspersion count of 261 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 77, 78, 83, 85, 94, 109, 122, 123, 126	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 1924.83 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% forested or other natural vegetation. The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Wood Thrush Habitat.	N/A – no fish spawning or migration/staging habitat is present
127	0.86 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within the Project Location. 0.27 ha of the wetland unit occurs within the Project Location.	This wetland is comprised of Swamp (56%) with deciduous tree and tall/low shrub species as the dominant form and Marsh (44%) with narrow-leaved emergent species as the dominant form. The ELC communities present in the wetland unit include: Reed Canary Grass Graminoid Organic Meadow Marsh (MAMO1-3) Organic Deciduous Thicket Swamp (SWTO5) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Riverine This riverine wetland likely experiences fluctuating water levels associated with the Salmon River. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ne* - Reed Canary Grass, Lake-bank Sedge, Hop Sedge, Tussock Sedge (<i>Carex stricta</i>) Fox Sedge H - Green Ash, Swamp Maple Ls - White Meadowsweet, Red-osier Dogwood Ts - Willow species Re - Harlequin Blue Flag Gc - Marsh Fern, Marsh Horsetail, Water Loosestrife, Swamp Milkweed, Spotted-joe Pyeweed, Sensitive Fern, Canada Anemone 2. H* - Green Ash, Swamp Maple Ls – Red-osier Dogwood Ne - Reed Canary Grass, Lake-bank Sedge, Hop Sedge, Tussock Sedge (<i>Carex stricta</i>) Fox Sedge Re - Harlequin Blue Flag Gc - Marsh Fern, Marsh Horsetail, Water Loosestrife, Swamp Milkweed, Spotted-joe Pyeweed, Sensitive Fern, Canada Anemone	2 m to an unevaluated wetland beyond Project Location	Interspersion count of 100 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 96 and 127.	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3340.35 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine meaning the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Waterfowl Nesting Area; Wood Thrush Habitat.	N/A – no fish spawning or migration/staging habitat is present

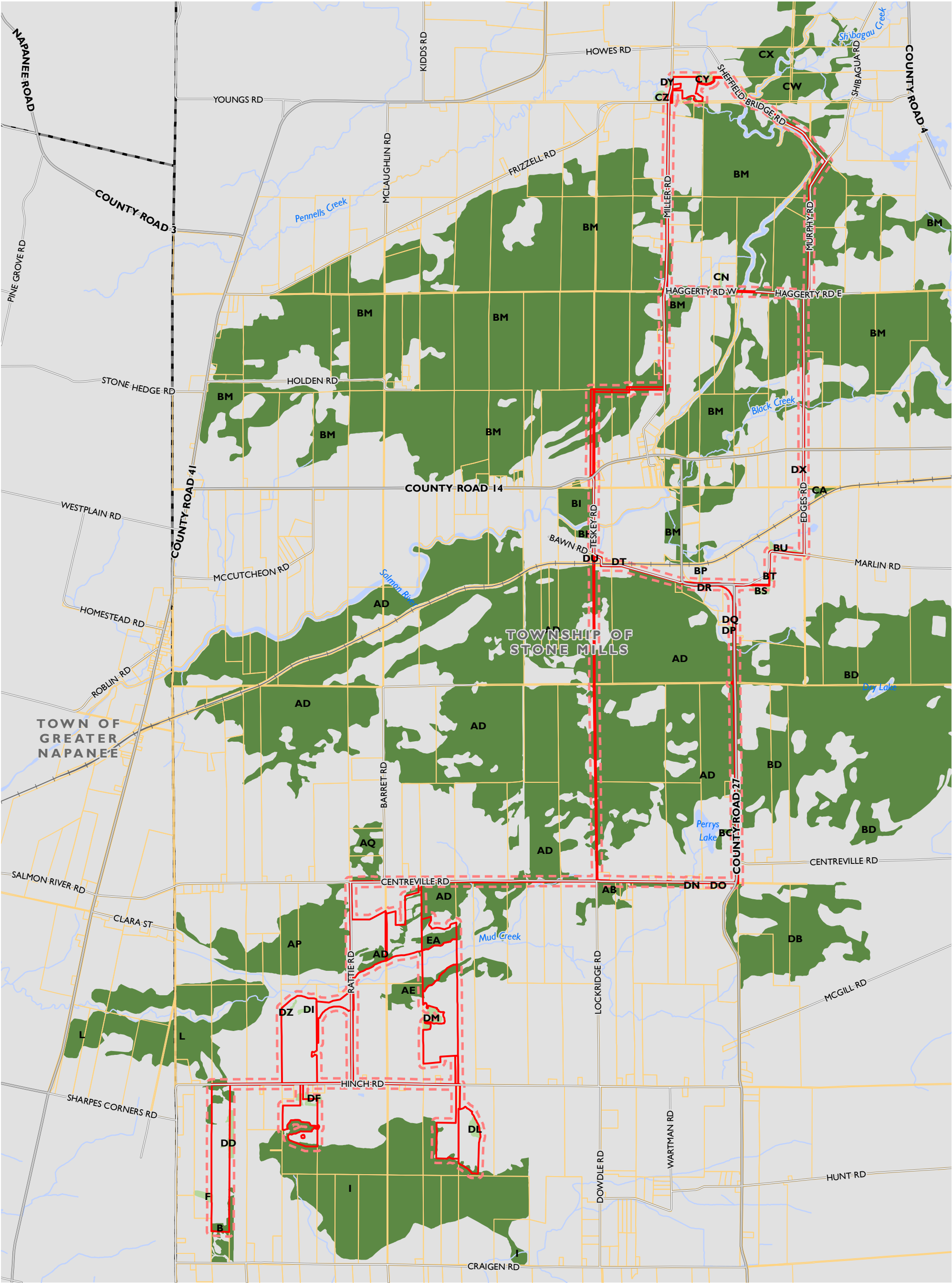
Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
18 (within the Mud Creek PSW area)	131.03 Wetland boundaries were delineated during fieldwork and it was found that the wetland does occur within the Project Location. 0.81 ha of the wetland unit occurs within the Project Location.	<p>This wetland is comprised of Marsh (1%) with narrow-leaved emergent species as the dominant form and Swamp (99 %) with deciduous trees as the dominant form. The ELC communities present in the wetland unit include: Swamp Maple Organic Deciduous Swamp (SWDO 2-3) White Cedar Organic Coniferous Swamp (SWCO1-1)</p> <p>Poplar Mineral Deciduous Swamp (SWDM4-5) Swamp Maple Mineral Deciduous Swamp (SWDM3-3) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.</p>	<p>Palustrine This wetland appears to have seasonal overland flow connection to wetland 21.</p> <p>The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.</p>	<p>1. H* - Swamp Maple, Black Ash, Green Ash, White Elm, C - Eastern White Cedar (<i>Thuja occidentalis</i>) Ls -Bristly Dewberry, Red-osier Dogwood Ne - Reed Canary Grass, Canada Mannagrass Re - Harlequin Blue Flag Gc - Wild Sarsaparilla, Marsh Fern, Canada Clearweed (<i>Pilea pumila</i>) 2. C* - Eastern White Cedar (<i>Thuja occidentalis</i>) H - Swamp Maple, Black Ash, Green Ash, White Elm, Ls -Bristly Dewberry, Red-osier Dogwood Ne - Reed Canary Grass, Canada Mannagrass Re - Harlequin Blue Flag Gc - Wild Sarsaparilla, Marsh Fern, Canada Clearweed (<i>Pilea pumila</i>) 3. *H – Trembling Aspen, Green Ash, Black Ash, Swamp Maple Ne – Northeastern Sedge 4.*H – Swamp Maple, Green Ash, Black Ash, Trembling Aspen, White Elm C - Eastern White Cedar Ls - Grey Dogwood (<i>Cornus racemosa</i>), Silky Dogwood (<i>Cornus obliqua</i>), Ne - Hop Sedge, Reed Canary Grass Gc - Swamp Milkweed, Smartweed species, Canada Anemone</p>	30.5 m to an unevaluated wetland beyond Project Location	Interspersion count of 94 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 18, 26, 31, 34,	Type 1 (less than 5% is open water) The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3417.21 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine meaning the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Waterfowl Stopover & Staging Area^ (Aquatic); Red-headed Woodpecker Habitat	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
49	3.38 Wetland boundaries were delineated during fieldwork and it was found that the wetland does occur within Project Location. 0.25 ha of the wetland unit occurs within the Project Location.	This wetland is comprised of Marsh (88%) with robust emergent species as the dominant form and Swamp (12%). The ELC community present in the portion of wetland unit within the Project Location includes: Cattail Mineral Meadow Marsh (MAMM1-2) This ELC community is considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a surface water connection with Wetland 54, 61, 62, 118, 119 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Re*- Broad-leaved Cattail	274.4 m to Wetland 54	Interspersion count of 61 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 40, 43, 49, 52, 118, 61, 62	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 754.56 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Butterfly Species of Conservation Concern	N/A – no fish spawning or migration/staging habitat is present
92	1.9 Wetland boundaries were delineated during fieldwork and it was found that the wetland does not occur within the Project Location. 1.9 ha of the wetland unit occurs within 50 m of the Project Location.	This wetland is comprised of Swamp (78%) with deciduous tree and tall/low shrub species as the dominant form and Marsh (22%) with narrow-leaved emergent species as the dominant form. The ELC communities present in the wetland unit include: Reed Canary Grass Graminoid Organic Meadow Marsh (MAMO1-3) Organic Deciduous Thicket Swamp (SWTO5) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland likely has seasonal overland flow connection with Wetland 88 The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1. Ne* - Reed Canary Grass Be - Northern Water-plantain 2. H* - Black Ash, Green Ash Ne - Reed Canary Grass Gc -Slender Stinging Nettle, Smartweed species	172.2 m to Wetland 130	Interspersion count of 127 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 88, 86, 92, 117	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 3340.35 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine, meaning the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	Generalized Candidate Significant Wildlife Habitat; Amphibian Breeding Habitat^ (Woodland); Colonially Nesting Bird Breeding Habitat^ (Tree/Shrubs) Waterfowl Nesting Area.	N/A – no fish spawning or migration/staging habitat is present

Wetland ID Number	Wetland Size (ha)	Wetland Type	Site Type	Vegetation Communities (* denotes dominant vegetation form)	Proximity to Other Wetlands	Interspersion	Open Water Type	Flood Attenuation	Water Quality Improvement	Shoreline Erosion Control	Groundwater Recharge	Species Rarity	Significant Features and Habitat	Fish Habitat
114	0.70 Wetland boundaries were delineated during fieldwork and it was found that the wetland does occur within Project Location. 0.24 ha of the wetland unit occurs within the Project Location.	This wetland is comprised of Swamp (86%) with coniferous tree species as the dominant form and Marsh (14%) with robust emergent as the dominant form. The ELC communities present in the wetland unit include: Reed Canary Grass Organic Meadow Marsh (MAMO1-3) Willow Organic Thicket Swamp (SWTO2) These ELC communities are considered common in Ontario based on the SRank designated by the NHIC.	Palustrine This wetland has a seasonal surface water connection with Wetland 115. The construction of the solar facility will not significantly change the flow of water to or from the wetland unit.	1.Ne*- Reed Canary Grass, Fox Sedge, Re-Harlequin Blue Flag, Narrow-leaved Cattail, Gc -Canada Anemone, Marsh Marigold,	21.6 m to Wetland 115	Interspersion count of 116 intersections. The interspersion value used was for wetlands in a wetland complex made up of Wetland 33, 41, 44, 45, 112, 113, 114	Type 1 (less than 5% of wetland area). The construction of a solar facility on adjacent lands will not decrease or increase the value of the wetland unit's open water.	Wetland unit is small in comparison to its upstream catchment area of 65850.7 ha, which was determined using topographic and drainage mapping. Since no part of the wetland unit will be removed the unit will still attenuate flood peaks.	Catchment area determined to be >50% agricultural (cropland, hayfield, and pasture). The quality of water entering the wetland unit adjacent to the Project Location should remain unchanged or improved with the development of a solar facility. The solar facility will not result in the input of chemicals into adjacent lands.	N/A – no shoreline is present in the wetland	The wetland unit is palustrine and as such the unit may be valuable as a source of groundwater recharge. Since there will be no change to the wetland, the unit's ability to recharge groundwater will remain the same.	No rare species were observed in this wetland unit. Rare species were observed in the general larger study area. The development of the Loyalist Solar Project is not expected to impact rare species.	None	N/A – no fish spawning or migration/staging habitat is present

8.2.2 Woodlands

The boundaries of woodland units in the Project Location or within 50 m of the Project Location were delineated using ELC protocol during the site investigation work and shown on **Figure 4**. **Table 6** outlines the attributes, composition and function of each applicable significant woodland unit identified during the site investigation and confirms if the woodland was included in the records review or was identified as a result of these site investigations. Characteristics that contribute to woodland persistence, may be sensitive to development and serve as a good indicator of negative environmental effects are described below in **Table 8**.



LOYALIST SOLAR PROJECT

LOYALIST SOLAR LP

SIGNIFICANT WOODLANDS

FIGURE 4

Railway

Project Location Boundary (subject to refinement)

50 m Setback

Parcel Boundary

Municipal Boundary

Mapped Watercourse

Mapped Water Body

Significant Woodland

Non Significant Woodland

1:40,000

0

0.5

1

2 km

N

S

E

W

MAP CREATED BY: GM

MAP CHECKED BY: JP

DATA PROVIDED BY: MNRF

MAP PROJECTION: NAD 1983 UTM Zone 18N

PROJECT: 163674

STATUS: DRAFT

DATE: 10/27/2016

DILLON CONSULTING

FILE LOCATION: I:\GIS\163674 - Loyalist Solar\mxd\EOS\Figure 4 Significant Woodlands.mxd

Table 6: Significant Woodlands within the Project Location and Surrounding 50 m

Woodland ID	Size Criterion		Ecological Function Criteria				Woodland Uncommon Characteristics (0.5 – 2 ha)
	Woodland Size (ha) (≥20 ha)	Woodland Interior (ha) (2 ha)	Proximity to Other Significant Woodlands or Habitats (Within 30 m)^ (4 ha)	Linkages (4 ha)	Water Protection (2 ha)	Woodland Diversity Representation (4 ha)	
AB	14.16	0	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat 	Woodland AB is small with no interior habitat. Woodland AB is not between two other significant features within 120 m.	Woodland does not contain any notable surface water and is not identified as a source water protection area.	Identified as Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest (FODM5-7). Dominant canopy species include Sugar Maple (<i>Acer saccharum</i>) and Black Cherry (<i>Prunus serotina</i>).	No uncommon characteristics.
AD	1131.19	463.82	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat Waterfowl Stopover and Staging Area (Aquatic) Reptile Hibernaculum Colonially Nesting Bird Breeding Habitat (Tree/Shrubs)* Alvar Waterfowl Nesting Area Amphibian Breeding Habitat (Woodland) Woodland Area-Sensitive Bird Breeding Habitat Common Nighthawk Habitat Red-headed Woodpecker Habitat 	Woodland AD is large and provides direct connectivity to multiple woodlands within the Lennox and Addington County as well as Mud Creek Provincially Significant Swamp (PSW) and Roblin Swamp.	Woodland AD contains unevaluated wetlands. Woodland AD contains Dillon delineated wetlands. Woodland AD is within 50m of Mud Creek PSW, Perry's Lake, Salmon River Tributary and Roblin Swamp.	Identified as: Fresh-Moist White Cedar Coniferous Forest Type (FOCM4-1); Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FODM5); Dry-Fresh White Cedar Coniferous Forest Ecosite (FOCM2-2); Dry-Fresh White Cedar Calcareous Bedrock Coniferous Forest Type (FOCS3-1); Swamp Maple Mineral Deciduous Swamp (SWDM3-3); Poplar Mineral Deciduous Swamp (SWDM4-5); White Cedar Organic Coniferous Swamp (SWCO1-1); Swamp Maple Organic Deciduous Swamp (SWDO2-3); Mineral Deciduous Swamp Ecosite (SWDM4); Fresh-moist Green Ash-Hardwood Lowland Deciduous Forest (FODM7-2); Dry-Fresh Sugar Maple-Ironwood Deciduous Forest Type (FODM5-4); Dry Sugar Maple-White Ash Deciduous Forest (FODM5-8); Green Ash Mineral Deciduous Swamp (SWDM2-2); Dry-Fresh White Ash-Hardwood Deciduous Forest Type (FODM4-2); Dry-Fresh Ironwood Deciduous Forest Type (FODM4-4); Dry-Fresh White Cedar-Hardwood Mixed Forest Type (FOMM4-3). Dry-fresh Red Cedar Coniferous Forest Type (FOCM2-1). Dominant canopy species include Eastern White Cedar (<i>Thuja occidentalis</i>) and Sugar Maple.	No uncommon characteristics
AE	21.59	0.05	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat Reptile Hibernaculum Colonially Nesting Bird Breeding Habitat (Tree/Shrubs) Waterfowl Nesting Area Amphibian Breeding Habitat (Woodland) 	Woodland AE is not between two other significant features within 120m.	Woodland AE contains unevaluated wetlands. Woodland AE is within 50 m of Mud Creek PSW.	Identified as: Swamp Maple Organic Deciduous Swamp (SWDO2-3); Fresh-moist Oak-Maple-Hickory Deciduous Forest (FODM9); Green Ash Mineral Deciduous Swamp (SWDM2-2); Fresh-Moist White Cedar Coniferous Forest Type (FOCM4-1). Dominant canopy species include Eastern White Cedar and Freeman's Maple (<i>Acer x freemannii</i>).	No uncommon characteristics
AP	83.92	34.25	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat Reptile Hibernaculum Colonially Nesting Bird Breeding Habitat (Tree/Shrubs) Waterfowl Nesting Area 	Woodland AP is large and provides direct connectivity to other woodlands to west within the Lennox & Addington County as well as the Mud Creek PSW.	Woodland AP is within 50 m of Mud Creek PSW.	Identified as Dry-Fresh Poplar Mixed Forest Type (FOMM5-2). Dominant canopy species include Trembling Aspen (<i>Populus tremuloides</i>), with Eastern Red Cedar (<i>Juniperus virginiana</i>), American Elm and Sugar Maple.	No uncommon characteristics
AQ	15.31	0	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat 	Woodland AQ is located within 120 m of Woodland AP and AD.	Woodland does not contain any notable surface water and is not identified as a source water protection area.	Identified as Dry-Fresh Poplar Mixed Forest Type (FOMM5-2). Dominant canopy species include Trembling Aspen, with Eastern Red Cedar, American Elm and Sugar Maple.	No uncommon characteristics.

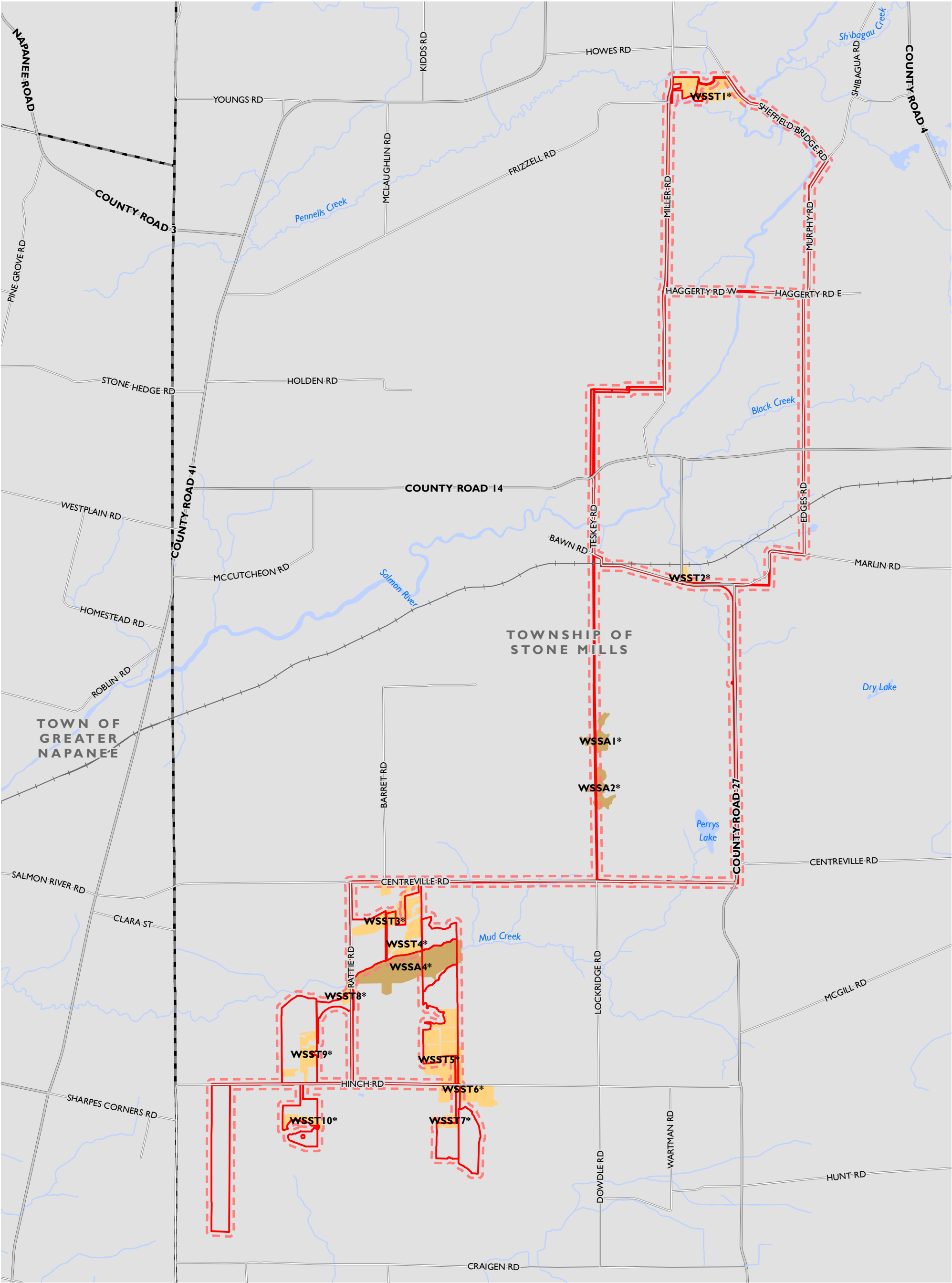
Woodland ID	Size Criterion		Ecological Function Criteria				Woodland Uncommon Characteristics (0.5 – 2 ha)
	Woodland Size (ha) (≥20 ha)	Woodland Interior (ha) (2 ha)	Proximity to Other Significant Woodlands or Habitats (Within 30 m)^ (4 ha)	Linkages (4 ha)	Water Protection (2 ha)	Woodland Diversity Representation (4 ha)	
B	10.38	0	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat 	Woodland B is not between two other significant features within 120 m.	Woodland B does not contain any notable surface water and is not identified as a source water protection area. Woodland B contains Dillon delineated wetlands.	Identified as: Dry-Fresh Oak-Hardwood Non-calcareous Shallow Deciduous Forest Ecosite (FODR2); Dry-Fresh White Cedar Calcareous Bedrock Coniferous Forest Type (FOCS3-1); Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FODM5). Dominant canopy species include Eastern Red Cedar, Eastern White Cedar and Bur Oak (<i>Quercus macrocarpa</i>).	No uncommon characteristics.
BC	2.34	0	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat 	Woodland BC is between two other significant features (Woodland BD & AD) within 120 m.	Woodland BC is adjacent to Perry's Lake.	Identified as Fresh-moist Green Ash-Hardwood Lowland Deciduous Forest (FODM7-2). Dominant canopy species include Green Ash (<i>Fraxinus pennsylvanica</i>).	No uncommon characteristics
BD	539.45	247.84	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat 	Woodland BD is not between two other significant features within 120 m.	Woodland BD contains unevaluated wetlands. Woodland BD contains Dry Lake.	Identified as : White Cedar Organic Coniferous Swamp (SWCO1-1); Fresh-Moist White Cedar Coniferous Forest Type (FOCM4-1); Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FODM5); Mineral Deciduous Swamp Ecosite (SWDM4). Dominant canopy species include Eastern White Cedar and Sugar Maple.	No uncommon characteristics
BH	3.88	0	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat Reptile Hibernaculum Colonially Nesting Bird Breeding Habitat (Tree/Shrubs) 	Woodland BH provides direct connectivity to multiple Woodlands with the Lennox and Addington Country.	Woodland BH contains unevaluated wetlands. Woodland BH is within 50 m of Salmon River.	Identified as Green Ash Mineral Deciduous Swamp (SWDM2-2). Dominant canopy species include Green Ash.	No uncommon characteristics
BI	15.81	0	<ul style="list-style-type: none"> Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) 	Woodland BI provides direct connectivity to multiple Woodlands with the Lennox and Addington Country.	Woodland BI contains unevaluated wetlands. Woodland BI is within 50 m of Salmon River.	Identified as Green Ash Mineral Deciduous Swamp (SWDM2-2). Dominant canopy species include Green Ash.	No uncommon characteristics
BM	1774.24	893.57	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat Colonially Nesting Bird Breeding Habitat (Trees & Shrubs) Waterfowl Nesting Habitat Amphibian Breeding Habitat (Woodland) Woodland Area-Sensitive Bird Breeding Habitat Wood Thrush Habitat 	Woodland BM is large and provides direct connectivity to other woodlands within the Lennox & Addington County.	Woodland BM is directly adjacent to Pennell's Creek PSW, Biddy's Lake PSW and a Salmon River tributary. Woodland BM contains unevaluated wetland.	Identified as : Dry-Fresh White Pine-Hardwood Mixed Forest Type (FOMM2-3); Fresh-moist Green Ash-Hardwood Lowland Deciduous Forest (FODM7-2); Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FODM5); Dry-Fresh White Cedar-Hardwood Mixed Forest Type (FOMM4-3); Dry-Fresh Ironwood Deciduous Forest Type (FODM4-4); Dry-Fresh White Cedar Coniferous Forest Ecosite (FOCM2-2); Fresh-Moist White Cedar Coniferous Forest Type (FOCM4-1); Green Ash Mineral Deciduous Swamp (SWDM2-2); Fresh-moist Poplar Deciduous Forest (FODM8-1); Swamp Maple Mineral Deciduous Swamp (SWDM3-3); Coniferous Forest (FOC); Dry-Fresh Sugar Maple-Beech Deciduous Forest Type (FODM5-2); Dry-Fresh White Ash-Hardwood Deciduous Forest Type (FODM4-2); Fresh - Moist Lowland Deciduous Forest (FODM7). Dominant canopy species include Green Ash, Sugar Maple, Black Maple (<i>Fraxinus nigra</i>), White Ash <i>Fraxinus americana</i> , and Trembling Aspen (<i>Populus tremuloides</i>).	No uncommon characteristics

Woodland ID	Size Criterion		Ecological Function Criteria				Woodland Uncommon Characteristics (0.5 – 2 ha)
	Woodland Size (ha) (≥20 ha)	Woodland Interior (ha) (2 ha)	Proximity to Other Significant Woodlands or Habitats (Within 30 m)^ (4 ha)	Linkages (4 ha)	Water Protection (2 ha)	Woodland Diversity Representation (4 ha)	
CA	2.63	0	N/A	Woodland CA is not between two other significant features within 120 m.	Woodland CA is within 50 m a Salmon River tributary.	Identified as Green Ash Mineral Deciduous Swamp (SWDM2-2). Dominant canopy species includes Green Ash.	No uncommon characteristics
CW	72.95	7.85	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat 	Woodland CW is between two significant natural features (Woodland BM and CX) within 120 m.	Woodland CW contains unevaluated wetland. Woodland CW is adjacent to the Pennell's Creek PSW tributary.	Identified as Fresh-moist Green Ash-Hardwood Lowland Deciduous Forest (FODM7-2). Dominant canopy species include Green Ash.	No uncommon characteristics
CX	38.21	4.17	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat Waterfowl Nesting Area 	Woodland CX is not between two other significant features within 120 m.	Woodland CX contains unevaluated wetland. Woodland CX is adjacent to the Pennell's Creek PSW tributary.	Identified as Fresh-moist Green Ash-Hardwood Lowland Deciduous Forest (FODM7-2). Dominant canopy species include Green Ash.	No uncommon characteristics
DB	101.41	32.81	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat 	Woodland DB is not between two other significant features within 120m.	Woodland CN does not contain any notable surface water and is not identified as a source water protection area.	Identified as Fresh-moist Green Ash-Hardwood Lowland Deciduous Forest (FODM7-2). Dominant canopy species include Green Ash.	No uncommon characteristics
EA	7.24	0	<ul style="list-style-type: none"> Reptile Hibernaculum Alvar Waterfowl Nesting Area Amphibian Breeding Habitat (Woodland) 	Woodland EA is between Woodland AD and Mud Creek PSW.	Woodland EA is within 50 m of Mud Creek PSW.	Identified as Dry – Fresh Ironwood Deciduous Forest (FODR1-1), Dry – Fresh White Cedar – Hardwood Mixed Forest Type. Dominant canopy species include Ironwood and White Cedar.	No uncommon characteristics
L	132.37	29.31	<ul style="list-style-type: none"> Waterfowl Nesting Area 	Woodland L is between two other significant features within 120 m.	Woodland L contains Mud Creek PSW.	Identified as: Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FODM5); Dry-Fresh Ironwood Deciduous Forest Type (FODM4-4); Dry-Fresh White Cedar Calcareous Bedrock Coniferous Forest Type (FOCS3-1); Fresh-moist Green Ash-Hardwood Lowland Deciduous Forest (FODM7-2). Dominant species include Sugar Maple, Ironwood, Eastern White Cedar and Green Ash.	No uncommon characteristics.
I	261.96	167.79	<ul style="list-style-type: none"> Generalized Candidate Significant Wildlife Habitat Colonially Nesting Bird Breeding Habitat (Trees & Shrubs) Waterfowl Nesting Area Amphibian Breeding Habitat (Woodland) Reptile Hibernaculum Habitat Woodland Area-Sensitive Bird Breeding Habitat Wood Thrush 	Woodland I is not between two other significant natural features within 120 m.	Woodland I contain Hinch Swamp Complex PSW. Woodland I contain unevaluated wetlands. Woodland I contains Dillon delineated wetland.	Identified as: Swamp Maple Deciduous Swamp (SWDO2-3); White Cedar Coniferous Forest (FOCM2-2); Poplar Mixed Forest (FOMM5-2); Poplar Deciduous Forest (FODM8-3); Green Ash – Hardwood Lowland Deciduous Forest (FODM7-2).	No uncommon characteristics.

8.2.3 Wildlife Habitat

The occurrence and boundaries of significant wildlife habitat in the Project Location or within the prescribed setback of 50 m from the Project Location were delineated using information collected during the site investigation (e.g. ELC, observation of suitable site characteristics, etc.) and evaluation of significance (e.g., area search surveys, etc.) following criteria outlined in the Significant Wildlife Habitat Technical Guide (MNRF 2000) and Ecoregion 6E Criteria Schedule (MNRF 2015). Wildlife habitats requiring inclusion in this *NHA EIS Report* are shown in **Figures 5A- 5O**.

Table 7 outlines the attributes, composition and function of each identified significant/ treated as significant wildlife habitat. Characteristics that contribute to wildlife habitat persistence, may be sensitive to development and serve as a good indicator of negative environmental effects are described below in **Table 8**. For “Generalized Candidate Significant Wildlife Habitat” outlined in the *NHA Site Investigation Report*, general mitigation measures proposed in **Table 9** and **Table 10** will address effects due to construction activities. Where required, wildlife habitats treated as significant, on lands in which access has been granted and/or the wildlife habitat can be safely accessed, will be evaluated pre-construction following the methodology outlined in **Appendix A**.



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

**WATERFOWL STOPOVER
AND STAGING AREA**
FIGURE 5A

- Railway
- Project Location Boundary (subject to refinement)
- 50 m Setback
- Significant Waterfowl Stopover and Staging Area (Aquatic) (WSSA)
- Significant Waterfowl Stopover and Staging Area (Terrestrial) (WSST)
- Municipal Boundary
- Mapped Watercourse
- Mapped Water Body

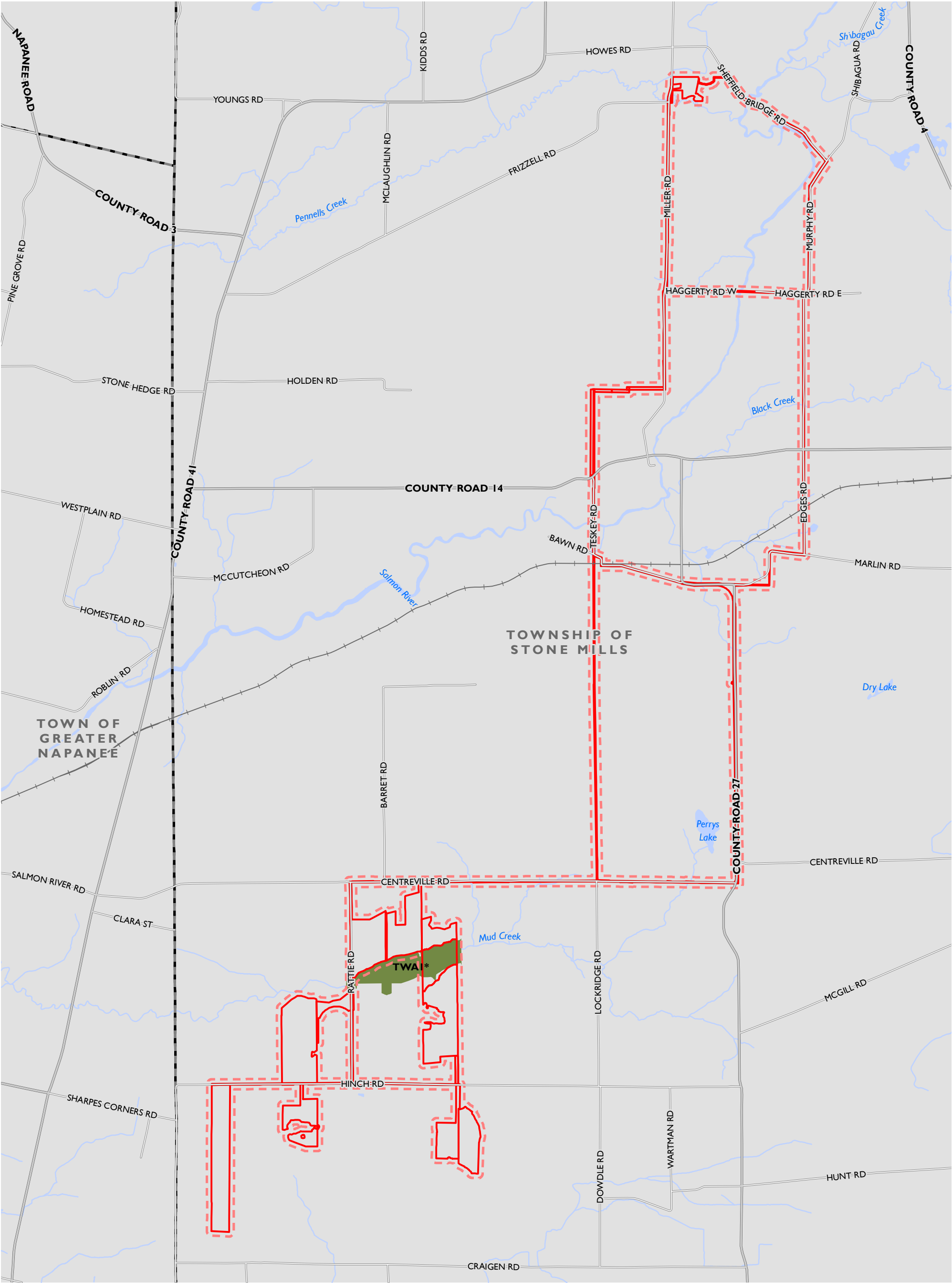
*Treated as Significant



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 11/25/2016



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

TURTLE WINTERING AREA
FIGURE 5B

- Railway
- Project Location Boundary (subject to refinement)
- 50 m Setback
- Significant Turtle Wintering Area (TWA)
- Municipal Boundary
- Mapped Watercourse
- Mapped Water Body

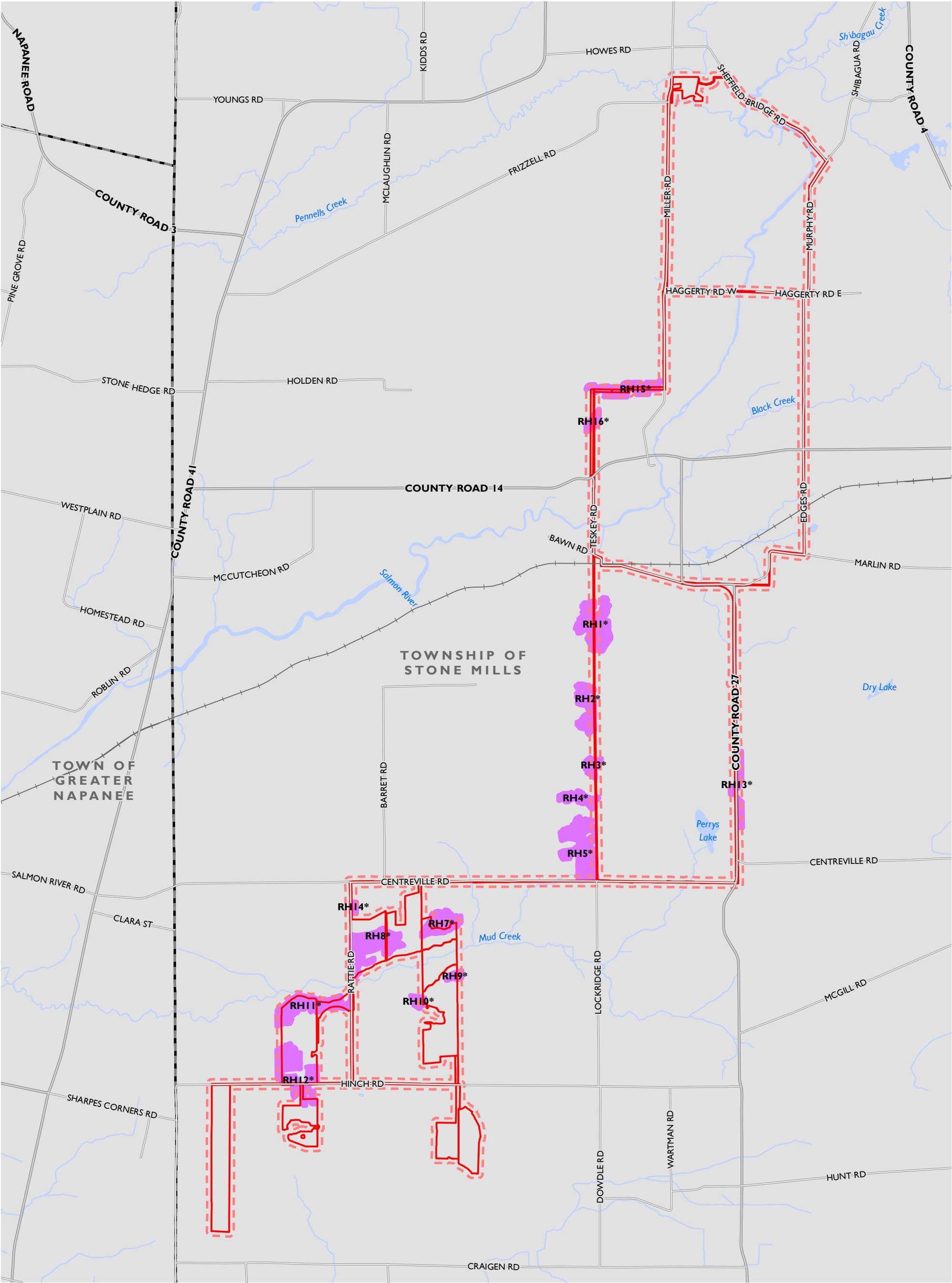
*Treated as Significant



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/25/2016



LOYALIST SOLAR PROJECT

LOYALIST SOLAR LP

REPTILE HIBERNACULUM

FIGURE 5C

Railway

Project Location Boundary (subject to refinement)

50 m Setback

Municipal Boundary

Significant Reptile Hibernaculum (RH)

Mapped Watercourse

Mapped Water Body

*Treated as Significant

MAP CREATED BY: GM

MAP CHECKED BY: JP

DATA PROVIDED BY: MNRF

MAP PROJECTION: NAD 1983 UTM Zone 18N

1:40,000

0

0.5

1

2 km

W

N

E

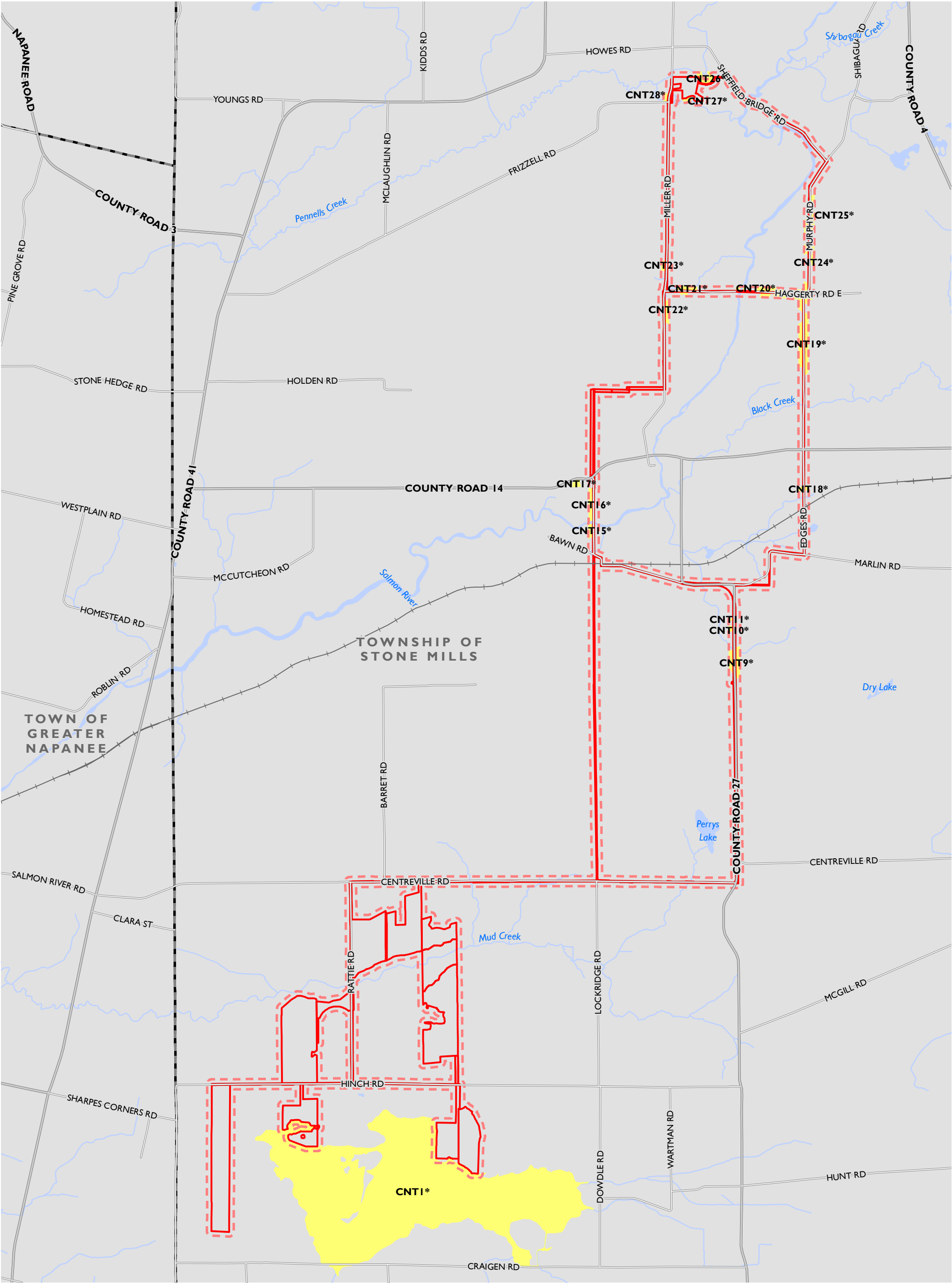
S

PROJECT: 163674

STATUS: DRAFT

DATE: 10/25/2016

FILE LOCATION: I:\GIS\163674 - Loyalist Solar\mxd\EOS\Figure 5C Reptile Hibernaculum.mxd



LOYALIST SOLAR PROJECT

LOYALIST SOLAR LP

COLONIALY NESTING BIRD BREEDING HABITAT (TREES/SHRUBS)

FIGURE 5D

Railway

Project Location Boundary (subject to refinement)

50 m Setback

Significant Colonially Nesting Bird Breeding Habitat (Trees/Shrubs) (CNT)

Municipal Boundary

Mapped Watercourse

Mapped Water Body

* Treated as Significant

Thunder Bay

Sault Ste. Marie

Sudbury

Peterborough

Barrie

Toronto

Windsor

Temmins

North Bay

Ottawa

Kingston

London

DILLON CONSULTING

MAP CREATED BY: GM

MAP CHECKED BY: JP

DATA PROVIDED BY: MNRF

MAP PROJECTION: NAD 1983 UTM Zone 18N

1:40,000

0

0.5

1

2 km

N

S

E

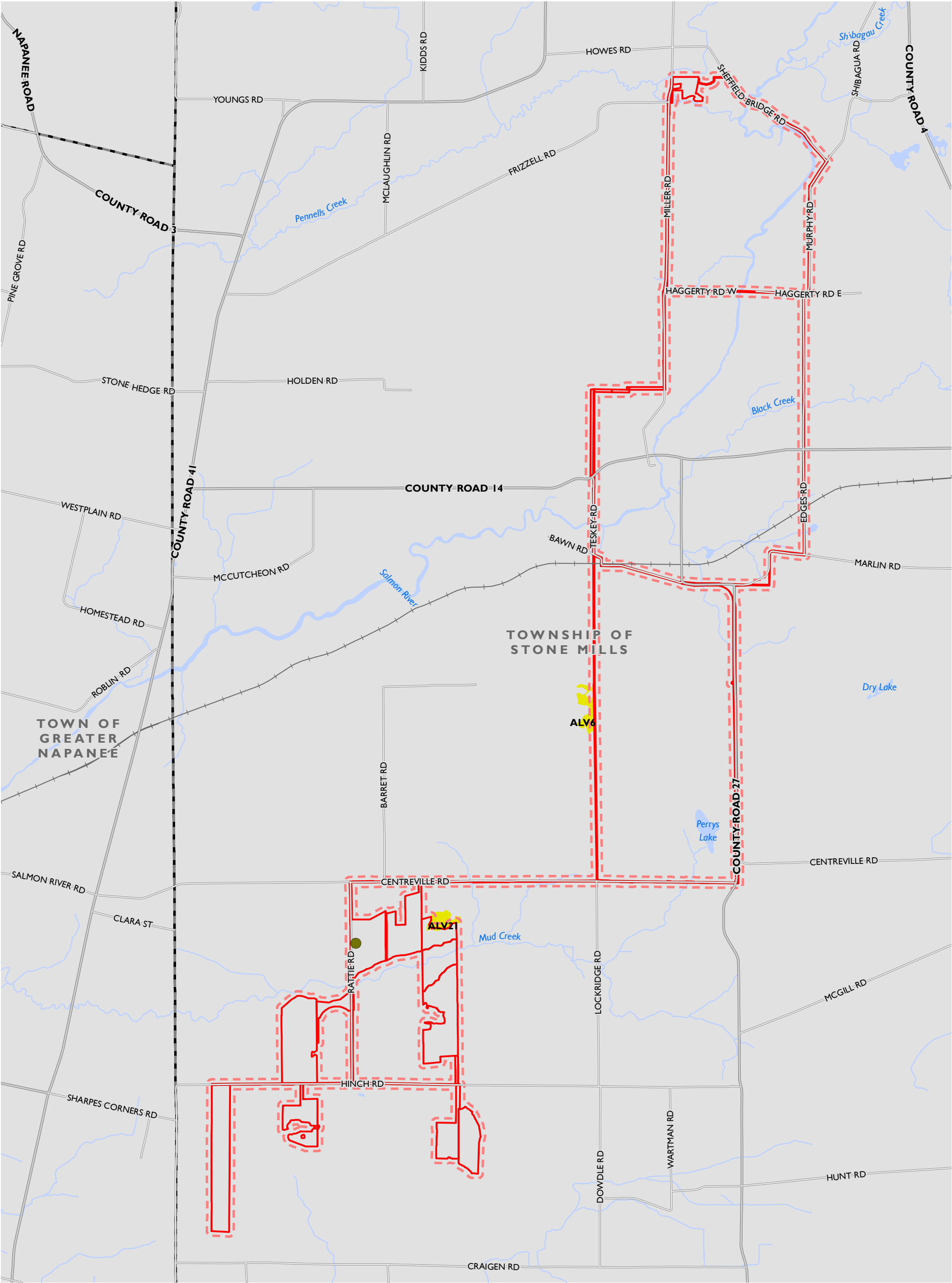
W

PROJECT: 163674

STATUS: DRAFT

DATE: 10/25/2016

FILE LOCATION: I:\GIS\163674 - Loyalist Solar\mxd\EOS\Figure 5D Colonially Nesting Bird Breeding Habitat (Trees_Shrubs).mxd



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

ALVAR
FIGURE 5E

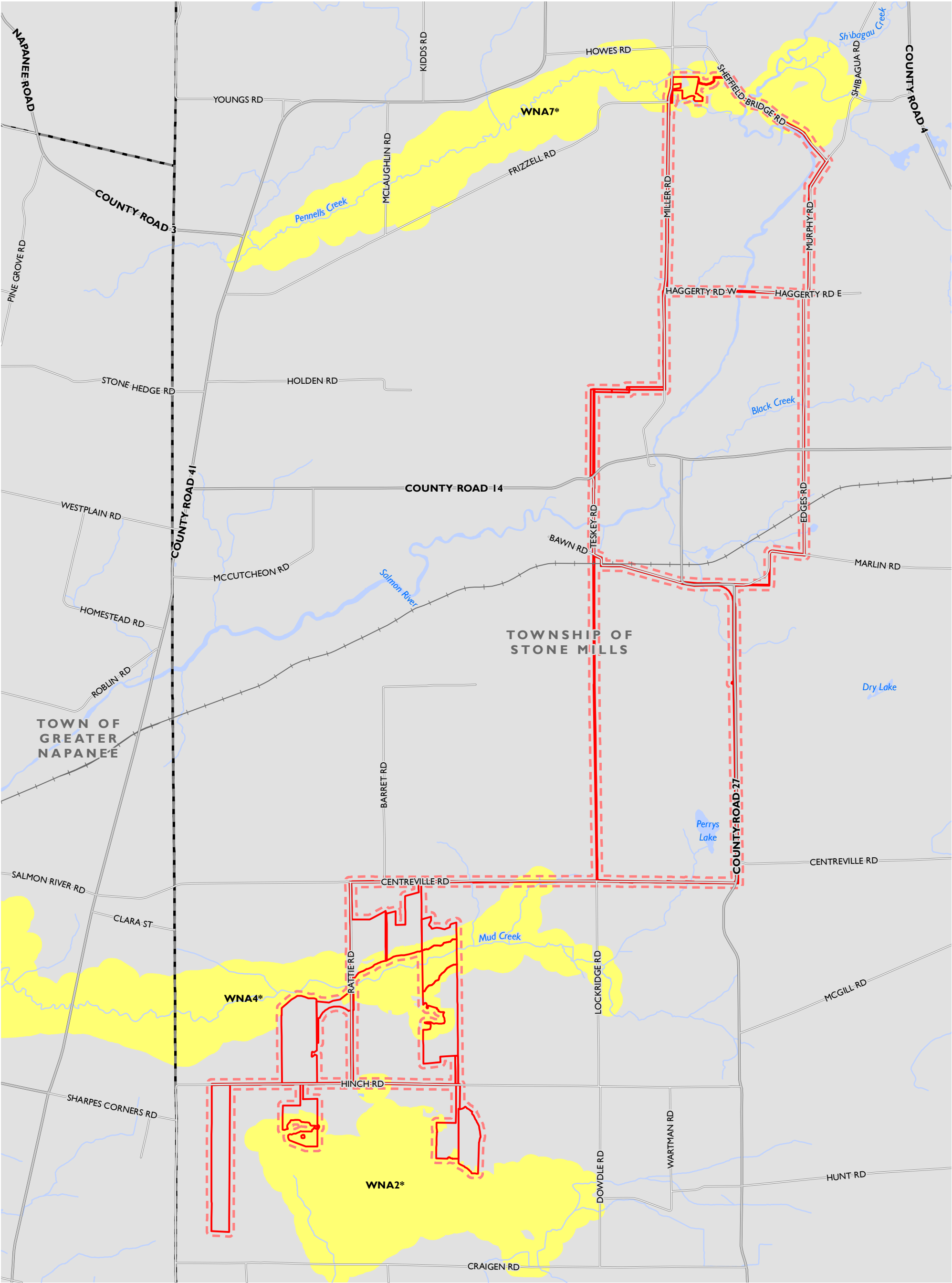
- Significant Carolina Whitlow Grass Habitat (Location is not to Scale)
- Railway
- Project Location Boundary (subject to refinement)
- - - 50 m Setback
- Alvar (ALV) (or Significant Other Rare Vegetation Community)
- ▭ Municipal Boundary
- Mapped Watercourse
- Mapped Water Body



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/27/2016



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

WATERFOWL NESTING AREA
FIGURE 5F

- Railway
- Project Location Boundary (subject to refinement)
- 50 m Setback
- Municipal Boundary
- Mapped Watercourse
- Mapped Water Body
- Significant Waterfowl Nesting Area (WNA)

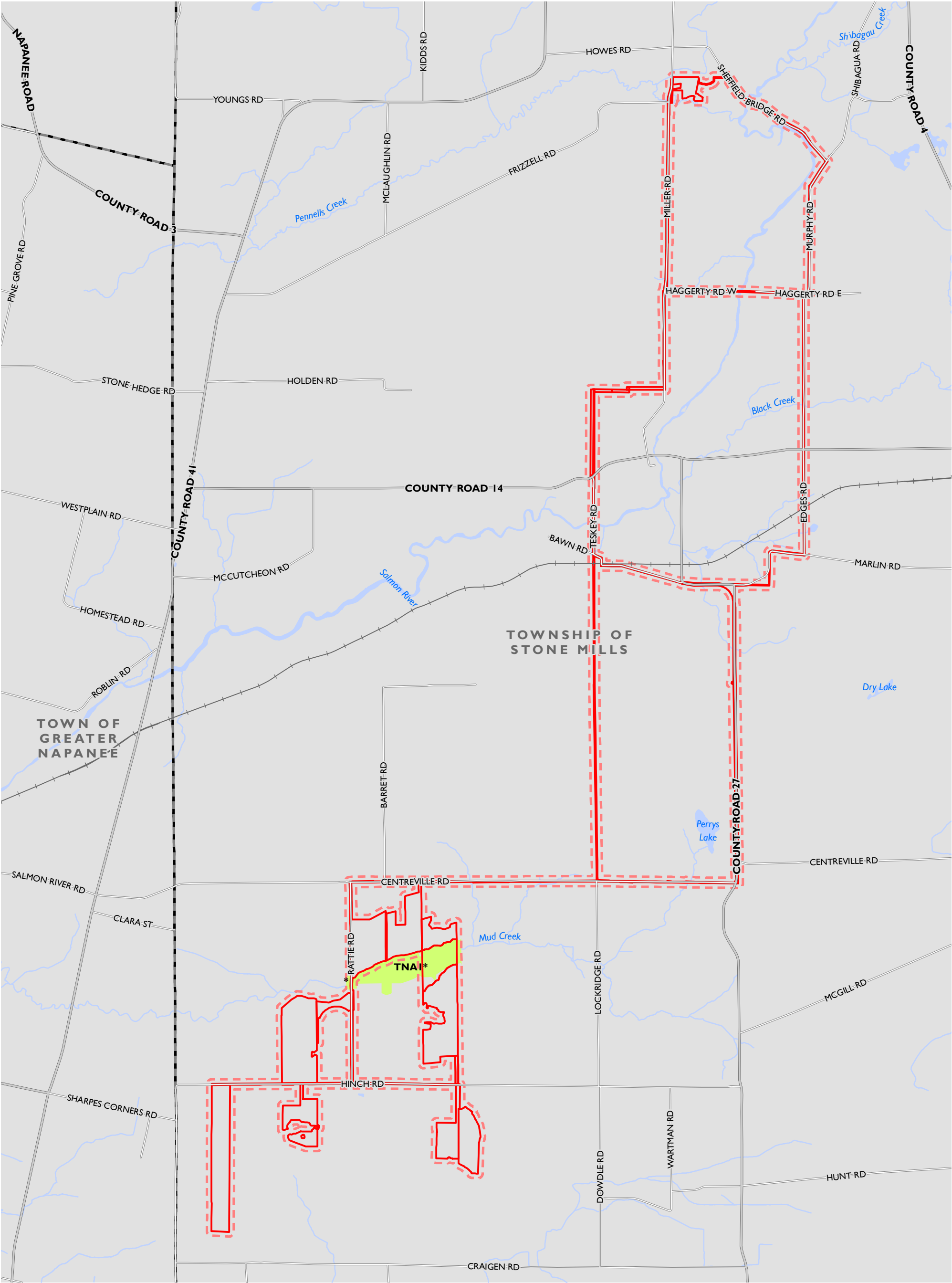
*Treated as Significant



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/25/2016



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

TURTLE NESTING SITE
FIGURE 5G

- Railway
- Project Location Boundary (subject to refinement)
- 50 m Setback
- Significant Turtle Nesting Area (TNA)
- Municipal Boundary
- Mapped Watercourse
- Mapped Water Body

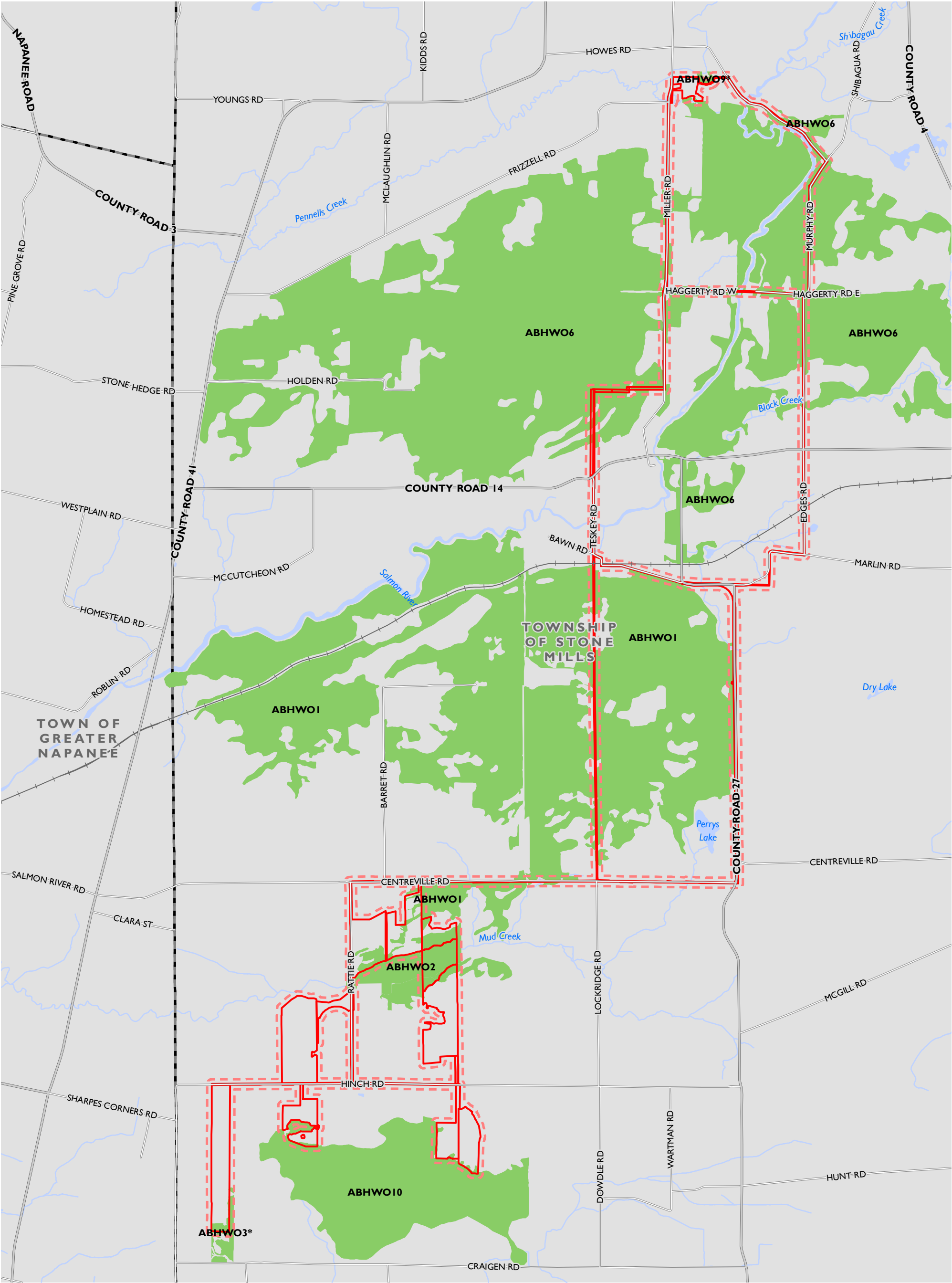
*Treated as Significant



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/25/2016



LOYALIST SOLAR PROJECT

LOYALIST SOLAR LP

AMPHIBIAN BREEDING HABITAT (WOODLAND)

FIGURE 5H

Railway

Project Location Boundary (subject to refinement)

50 m Setback

Significant Amphibian Breeding Habitat (Woodland) (ABHWO)

Municipal Boundary

Mapped Watercourse

Mapped Water Body

* Treated as Significant

MAP CREATED BY: GM

MAP CHECKED BY: JP

DATA PROVIDED BY: MNRF

MAP PROJECTION: NAD 1983 UTM Zone 18N

1:40,000

0

0.5

1

2 km

W

N

E

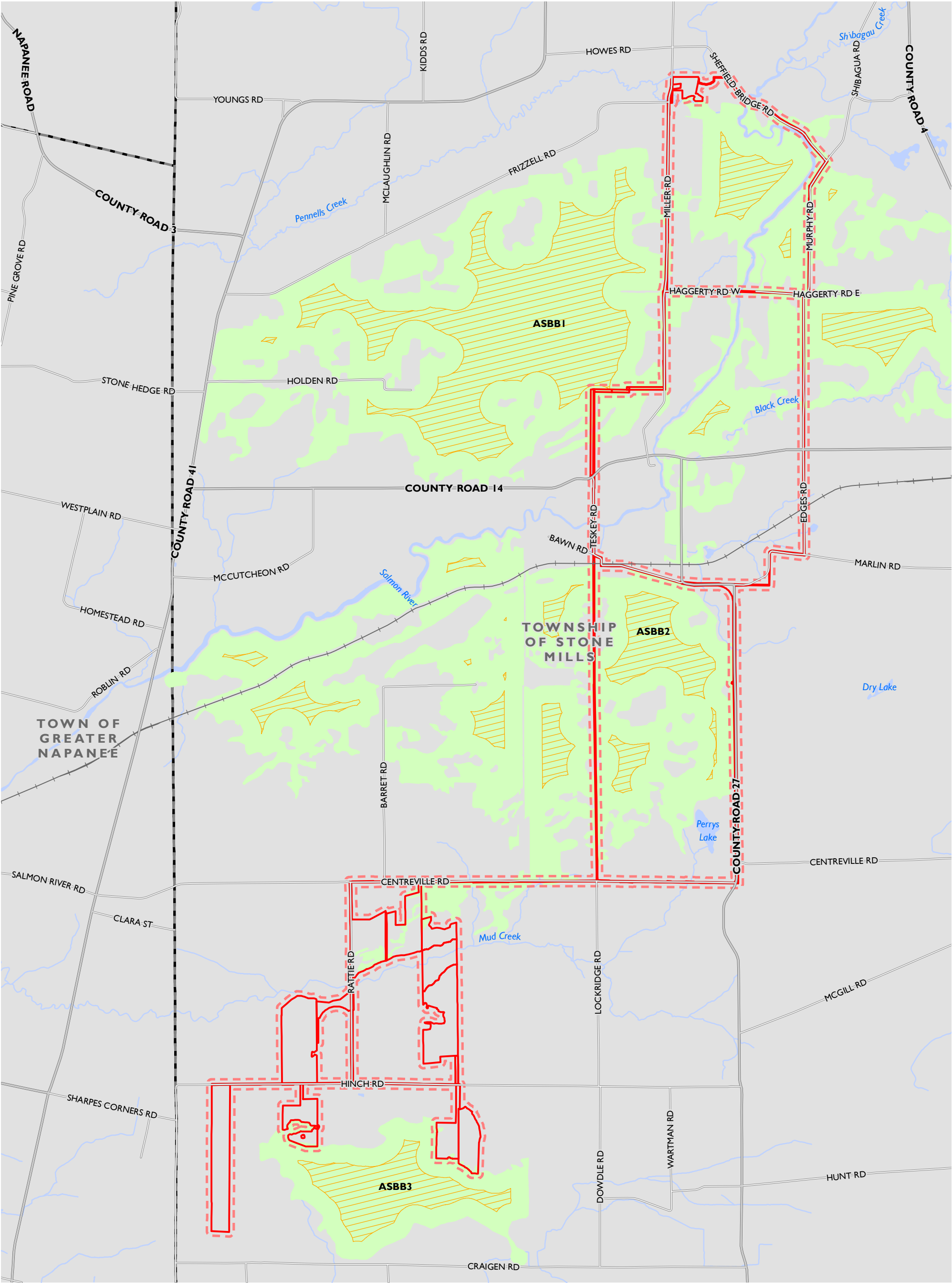
S

PROJECT: 163674

STATUS: DRAFT

DATE: 10/25/2016

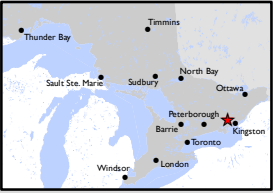
FILE LOCATION: I:\GIS\163674 - Loyalist Solar\mxd\EOS\Figure 5H Amphibian Breeding Habitat (Woodland).mxd



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

**WOODLAND
AREA-SENSITIVE
BIRD BREEDING HABITAT**
FIGURE 5I

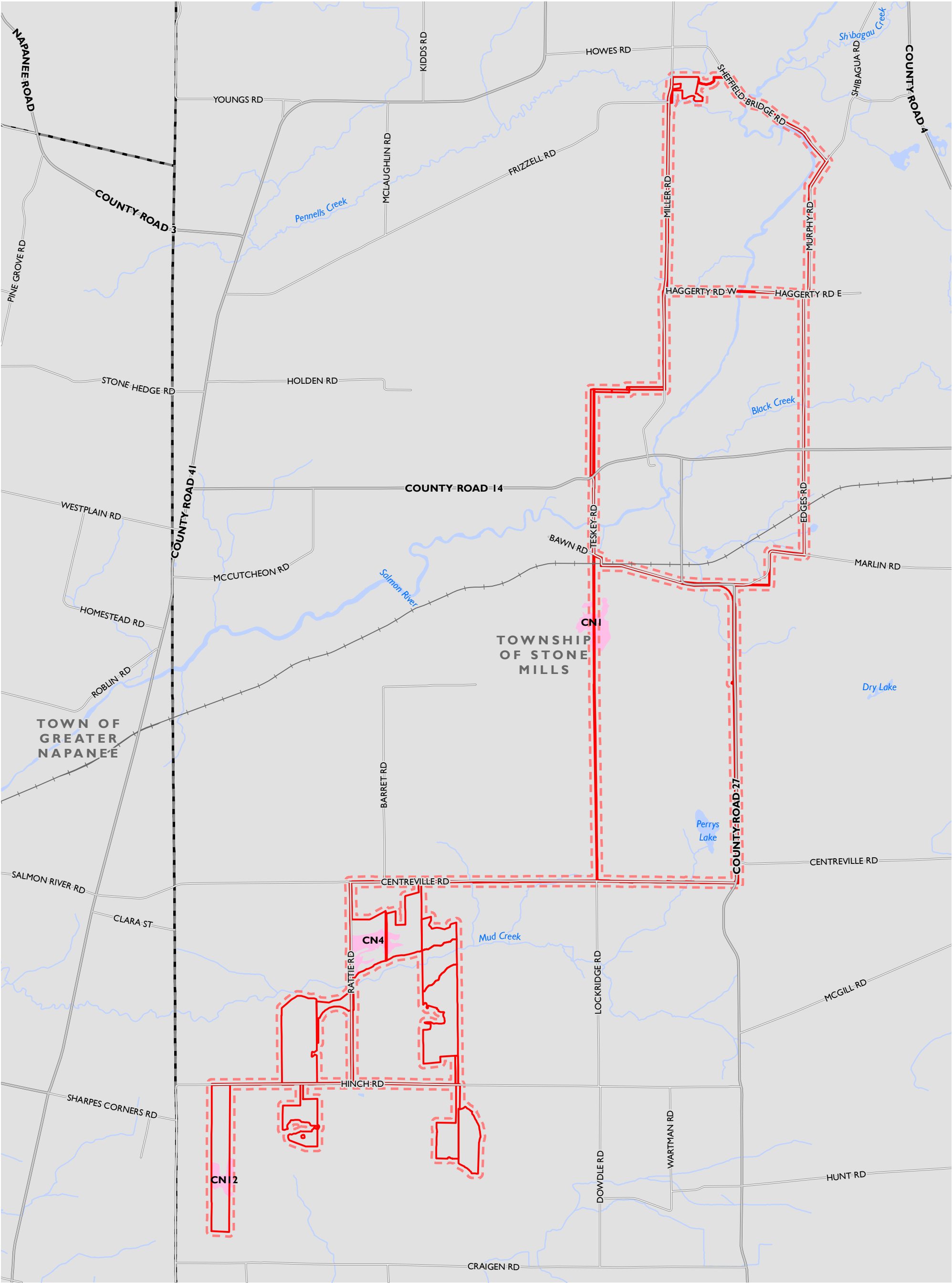
- Railway
- Project Location Boundary (subject to refinement)
- 50 m Setback
- 200 m Woodland Interior Habitat
- Significant Woodland Area-Sensitive Bird Breeding Habitat (ASBB)
- Municipal Boundary
- Mapped Watercourse
- Mapped Water Body



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/25/2016



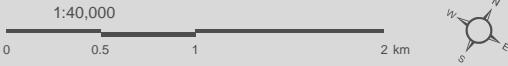
LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

COMMON NIGHTHAWK
FIGURE 5K

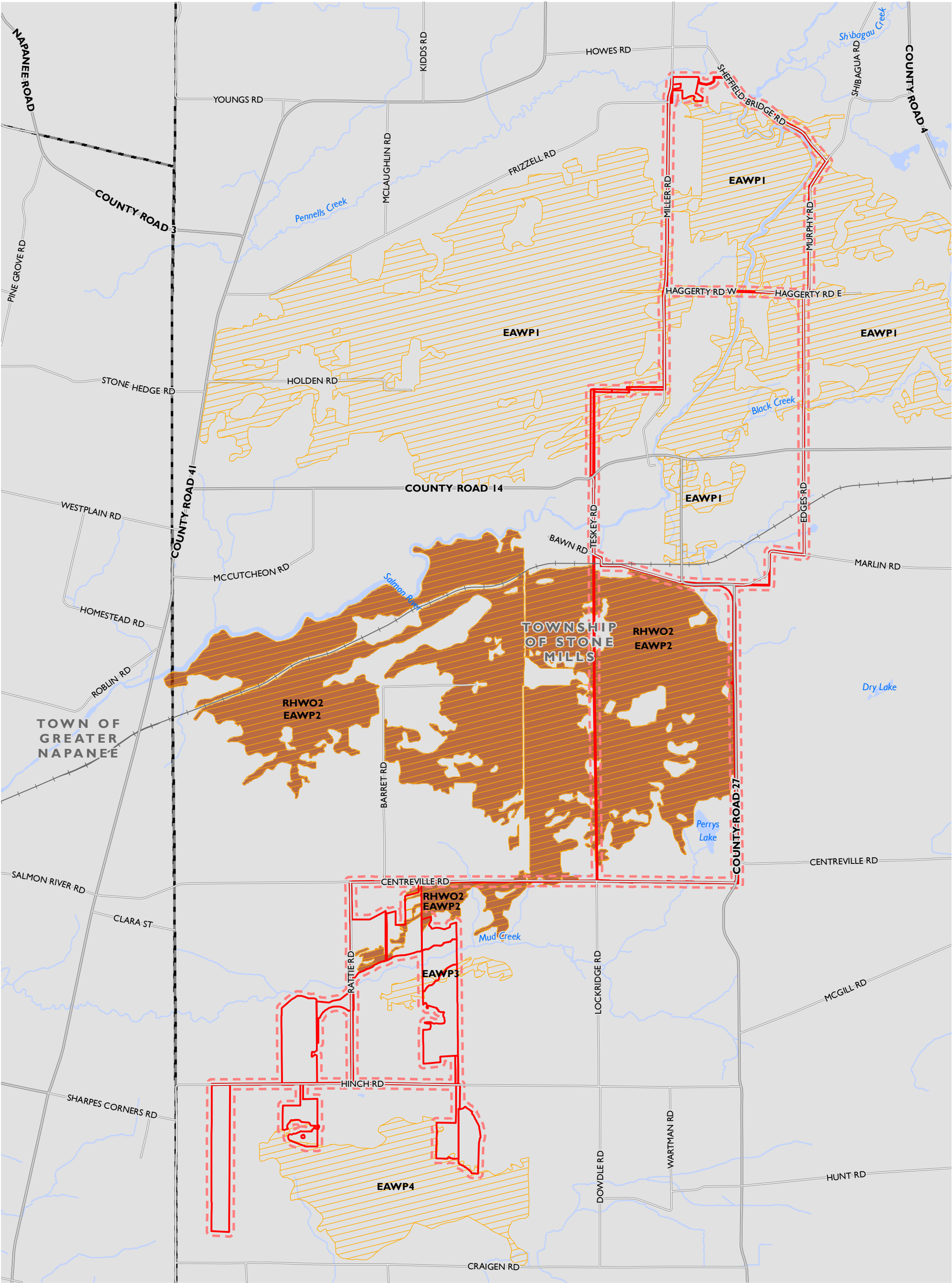
- Railway
- Project Location Boundary (subject to refinement)
- 50 m Setback
- Significant Common Nighthawk (CN)
- Municipal Boundary
- Mapped Watercourse
- Mapped Water Body



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/25/2016



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

**WOODLAND SPECIFIC
BIRD SPECIES OF
SPECIAL CONCERN**
FIGURE 5L

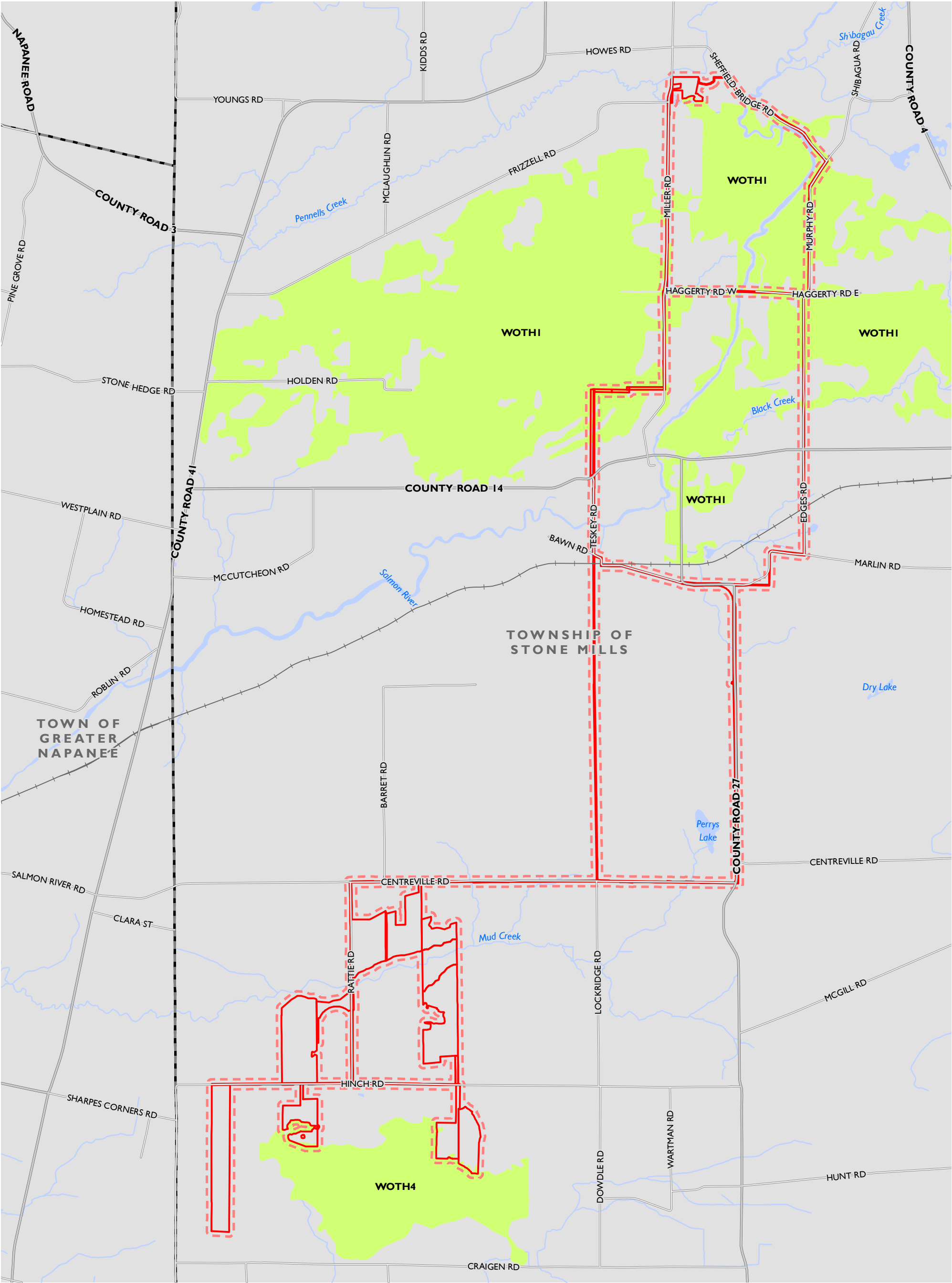
- Railway
- Project Location Boundary (subject to refinement)
- 50 m Setback
- Significant Eastern Wood-Pewee Habitat (EAWP)
- Significant Red-headed Woodpecker (RHWO)
- Municipal Boundary
- Mapped Watercourse
- Mapped Water Body



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 12/1/2016



LOYALIST SOLAR PROJECT
LOYALIST SOLAR LP

WOOD THRUSH
FIGURE 5M

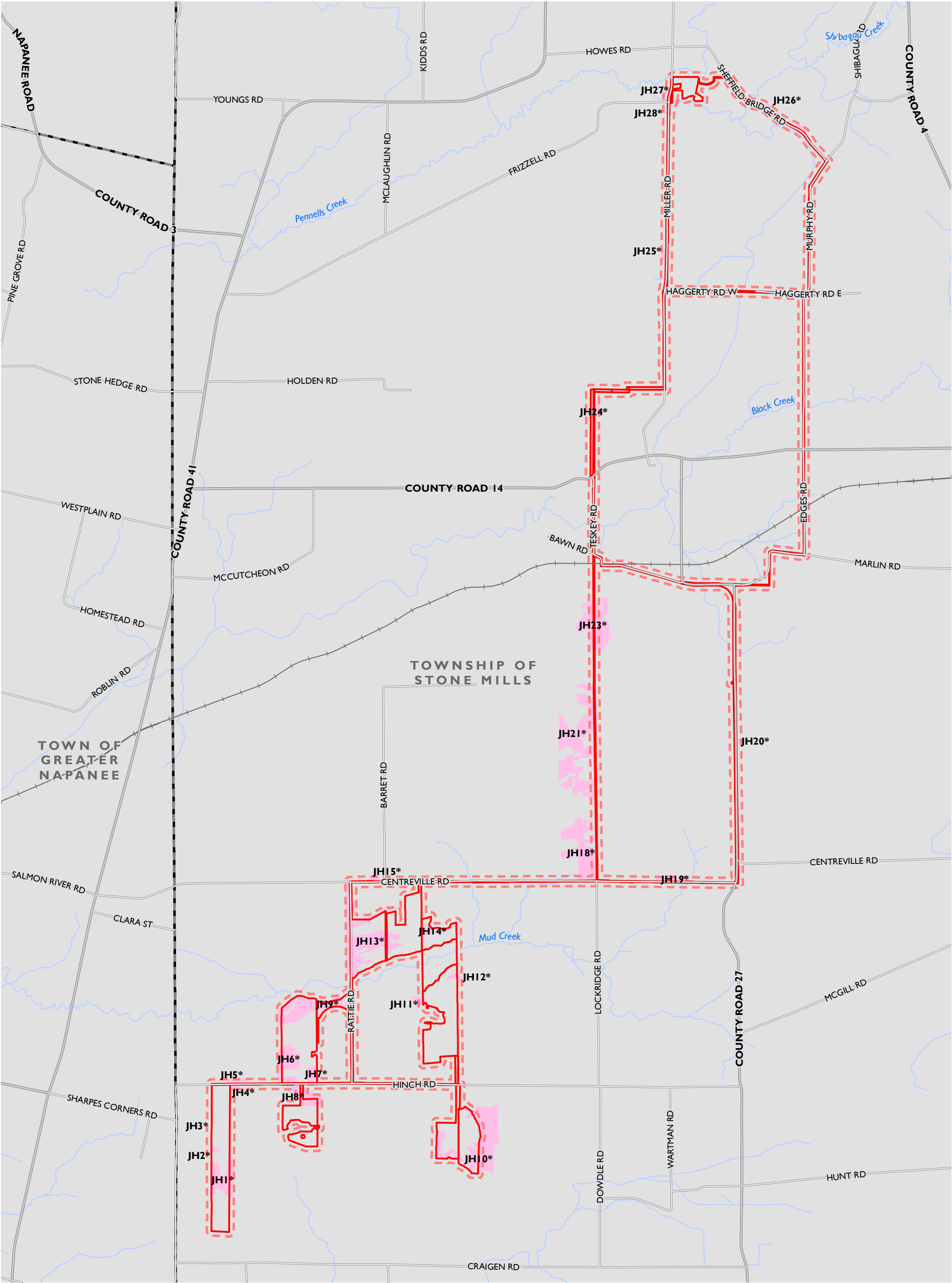
- Railway
- Project Location Boundary (subject to refinement)
- 50 m Setback
- Significant Wood Thrush (WOTH)
- Municipal Boundary
- Mapped Watercourse
- Mapped Water Body



MAP CREATED BY: GM
MAP CHECKED BY: JP
DATA PROVIDED BY: MNRF
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 10/25/2016



LOYALIST SOLAR PROJECT

LOYALIST SOLAR LP

BUTTERFLY SPECIES OF CONSERVATION CONCERN

FIGURE 50

Railway

Project Location Boundary (subject to refinement)

50 m Setback

Significant Juniper Hairstreak Habitat (JH)

Municipal Boundary

Mapped Watercourse

* Treated as Significant

MAP CREATED BY: GM

MAP CHECKED BY: JP

DATA PROVIDED BY: MNRF

MAP PROJECTION: NAD 1983 UTM Zone 18N

1:40,000

0

0.5

1

2 km

N

W

E

S

PROJECT: 163674

STATUS: DRAFT

DATE: 11/25/2016

FILE LOCATION: I:\GIS\163674 - Loyalist Solar\mxd\EOS\Figure 50 Butterfly Species of Conservation Concern.mxd

Table 7: Evaluation of Significance Significant Wildlife Habitat Located in the Project Location and 50 m Setback

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function	Location		Status			Relevant Evaluation Criteria Determining Status		
			Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant			
Seasonal Concentration Areas										
Waterfowl Stopover and Staging Areas (Terrestrial)	<p>Fields with sheet water from spring melt and run-off which provide invertebrate foraging habitat for migrating waterfowl. Can be found in any Meadow (ME) (or CUM communities in the ELC first approximation codes) or Thicket (TH) (or CUT communities in the ELC first approximation codes) that are maintained through anthropogenic disturbances (i.e., planting or agriculture, clearing, recreation, soil movement, grazing or mowing). Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH.</p> <p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none">Any mixed species aggregations of 100 or more individuals required.Annual use of habitatArea of habitat is the flooded field ecosite plus a 100-300 m radius area <p><u>Wildlife Species to be Considered</u></p> <table><tr><td><ul style="list-style-type: none">American Black DuckWood DuckGreen-winged TealBlue-winged TealGadwall</td><td><ul style="list-style-type: none">MallardNorthern PintailNorthern ShovelerAmerican Widgeon</td></tr></table>	<ul style="list-style-type: none">American Black DuckWood DuckGreen-winged TealBlue-winged TealGadwall	<ul style="list-style-type: none">MallardNorthern PintailNorthern ShovelerAmerican Widgeon	ID	ELC*	Figure 5A				
		<ul style="list-style-type: none">American Black DuckWood DuckGreen-winged TealBlue-winged TealGadwall	<ul style="list-style-type: none">MallardNorthern PintailNorthern ShovelerAmerican Widgeon							
		WSST1	Perennial Cover Crop (44); Open Pasture (45); Mixed Meadow (40)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey stations BBS105-109 were surveyed on June 1, 15 & 30, 2016. One Wood Duck was observed at BBS105 on June 1, 2016. Habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.	
		WSST2	Perennial Cover Crop (44)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the 2016 field season. However, habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.	
		WSST3	Perennial Cover Crop (44); Open Pasture (45)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey stations BBS47-49 were surveyed on May 27, June 14 and June 28, 2016. Mallards were observed at BBS49 and 48 on May 27 and June 14, 2016, respectively. Habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.	
		WSST4	Open Pasture (45); Perennial Cover Crop (44)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey stations BBS42-44 were surveyed on May 27, June 14 and June 28, 2016. No waterfowl species were observed. However, habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.	
		WSST5	Open Pasture (45); Perennial Cover Crop (44)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey stations BBS31-33, 39 & 40 were surveyed on May 23, June 8 and June 20, 2016. Mallards were observed at BBS31 on June 8, 2016. Habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.	
		WSST6	Open Pasture (45)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey stations BBS23 & 30 were surveyed on May 23, June 8 and June 20, 2016. No waterfowl species were observed during the 2016 field season. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.	

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Waterfowl Stopover and Staging Areas (Terrestrial) (con'd)		WSST7	Open Pasture (45); Perennial Cover Crop (44)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey stations BBS24 were surveyed on May 23, June 8 and June 20, 2016. No waterfowl species were observed during the 2016 field season. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.
		WSST8	Open Pasture (45)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the 2016 field season. Habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.
		WSST9	Perennial Cover Crop (44)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey stations BBS24 were surveyed on May 23, June 7 and June 17, 2016. A Mallard was observed at BBS16 on June 17, 2016. Habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction. Incidental observations of Mallards and Wood Ducks at station BBS18, 19 & 20 were recorded throughout the field season. These observations did not meet the minimum requirements to be considered significant.
		WSST10	Perennial Cover Crop (44)	✓	✓	---	✓	---	Surveys within this habitat did not occur during the 2016 field season. Habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.
Waterfowl Stopover and Staging Areas (Aquatic)	Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration can be significant wildlife habitat for local and migrant waterfowl populations during migration. Sewage treatment ponds and stormwater ponds do not qualify as a significant wildlife habitat; however, a reservoir managed as a large wetland or pond/lake does qualify. These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). Can be found in the following community types: Shallow Marsh (MAS), Shallow Aquatic (SA), and Deciduous Swamp (SWD). <u>Significant wildlife habitat defining criteria:</u> <ul style="list-style-type: none">• Aggregations of 100 or more listed species for 7 days, resulting in >700 waterfowl use days• Areas of annual staging of ruddy ducks, canvasbacks, and redheads	ID	ELC*						Figure 5A
		WSSA1	This candidate habitat is made up of SWDM4-5: Poplar Deciduous Swamp.	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey station BBS62 was surveyed on May 30, June 09 and June 27. No waterfowl species were observed. However, habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.
		WSSA2	This candidate habitat is made up of SWDO2-3: Swamp Maple Organic Deciduous Swamp.	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey station BBS60 surveyed on May 30, June 09 and June 27. No waterfowl species were observed. However, habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.
		WSSA4	This candidate habitat is made up of MASO1-1 : Cattail Organic Meadow Marsh	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring migration period in 2016. Diurnal breeding bird survey stations BBS41, 42, 43, 53, 36, 37 & 38 surveyed on May 27, June 08, 14, 20 & 28. One waterfowl species, Mallard, was observed at BBS41 on June 28, 2016. Habitat may be available during early spring or fall. Therefore, this habitat is treated as significant and surveys are to be completed prior to construction.

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Waterfowl Stopover and Staging Areas (Aquatic) (con'd)	<u>Wildlife species to be considered:</u> <ul style="list-style-type: none">Canada GooseCackling GooseSnow GooseAmerican Black DuckNorthern PintailNorthern ShovelerAmerican WidgeonGreater ScaupLong-tailed DuckSurf ScoterWhite-winged ScoterBlack ScoterRing-necked DuckCommon Goldeneye								
Turtle Wintering Areas	For most turtles, wintering areas are in the same general areas as their core habitat. Over-wintering sites are permanent water bodies, large wetlands, and bogs and fens with adequate dissolved oxygen. Water has to be deep enough not to freeze and have soft mud substrates. These habitats are found in the following Community Types: Swamp (SW), Marsh (MA), Open Water (OA), Shallow Water (SA), Open Fen (FEO), Open Bog (BOO). <u>Significant wildlife habitat defining criteria:</u> <ul style="list-style-type: none">Presence of 5 over-wintering Midland Painted TurtlesOne or more Northern Map or Snapping turtles overwintering in a wetland <u>Indicator/ Species of Conservation Concern:</u> <ul style="list-style-type: none">Midland Painted TurtleCommon Snapping TurtleNorthern Map Turtle	ID*	ELC*						Figure 5B
		TWA1	This candidate habitat is made up of MASO1-1 : Cattail Organic Meadow Marsh	✓	✓	---	✓	---	Surveys within this habitat did not occur during the spring basking period between March and May or fall basking period between September and October in 2016. Therefore, this habitat is treated as significant. Incidental observations of Painted Turtles were observed during other surveys. Ten and five Painted Turtles were observed from a vantage point on Rattie Road where Mud Creek crosses on May 12 and 27, 2016, respectively.
Reptile Hibernaculum	Hibernation occurs in sites located below frost lines in burrows, rock crevices, broken and fissured rock, wetlands such as conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Hibernacula can be found in any ecosite in central Ontario other than very wet ones. The following Community Types may be directly related to snake hibernacula: Talus (TA), Rock Barren (RB), Crevice (CCR), Cave (CCA), and Alvar (RBOA1, RBSA1, and RBTA1).	ID	ELC*						Figure 5C.
		RH1	This candidate habitat is made up of RBTA1-7: Red Cedar Alvar Woodland.	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. This habitat will be treated as significant. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH2	This candidate habitat is made up of RBSA1-1: Common Juniper Shrub Alvar.	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH3	This candidate habitat is made up of SWCO1-1: White Cedar Organic Coniferous Swamp.	✓	✓	---	✓	---	Deep fractures and fissures were not observed in this habitat during 2016 field surveys. However, fractures could be present that were undetected during the 2016 field season. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Reptile Hibernaculum (con'd)	<p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none"> • Presences of snake hibernacula used by a minimum of five individuals of snake's sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two of more snake spp. near potential hibernacula (e.g. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) • If there is a Special Concern Species present, then site is SWH <p><u>Wildlife species to be considered:</u></p> <ul style="list-style-type: none"> • Eastern Gartersnake • Northern Brownsnake • Northern Watersnake • Smooth Green Snake • Northern Red-bellied Snake • Northern Ring-necked Snake <p><u>Species of Conservation Concern:</u></p> <ul style="list-style-type: none"> • Eastern Ribbonsnake • Five-line Skink 	RH4	This candidate habitat is made up of SWCO1-1: White Cedar Organic Coniferous Swamp.	✓	✓	---	✓	---	Deep fractures and fissures were not observed in this habitat during 2016 field surveys. However, fractures could be present that were undetected during the 2016 field season. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH5	This candidate habitat is made up of RBTA1-7: Red Cedar Alvar Woodland.	✓	✓	---	✓	---	Deep fractures and fissures were not observed in this habitat during 2016 field surveys. However, fractures could be present that were undetected during the 2016 field season. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH6	This candidate habitat is made up of RBTA1-7: Red Cedar Alvar Woodland.	N/A	N/A	N/A	N/A	N/A	The Project Location boundary has been revised. This habitat no longer occurs within the Project Location boundary or 50 m setback distance.
		RH7	This candidate habitat is made up of RBTA1-7: Red Cedar Alvar Woodland; RBOA1-1: Dry Lichen – Moss Open Alvar Pavement; RBOA1-4: Dry – Fresh Poverty Grass Open Alvar Meadow	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH8	This candidate habitat is made up of RBOA1: Open Alvar Rock Barren; RBTA1-7 : Red Cedar Alvar Woodland; RBTB1-1: Red Cedar Treed Alvar.	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH9	This candidate habitat is made up of RBSA1: Alvar Shrub Rock Barren.	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH10	This candidate habitat is made up of RBSA1: Alvar Shrub Rock Barren.	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Reptile Hibernaculum (con'd)	<p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none"> • Presences of snake hibernacula used by a minimum of five individuals of snake's sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two of more snake spp. near potential hibernacula (e.g. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) • If there is a Special Concern Species present, then site is SWH <p><u>Wildlife species to be considered:</u></p> <ul style="list-style-type: none"> • Eastern Gartersnake • Northern Brownsnake • Northern Watersnake • Smooth Green Snake • Northern Red-bellied Snake • Northern Ring-necked Snake <p><u>Species of Conservation Concern:</u></p> <ul style="list-style-type: none"> • Eastern Ribbonsnake • Five-line Skink 	RH11	This candidate habitat is made up of RBTA1-7 : Red Cedar Alvar Woodland; RBSA1 : Alvar Shrub Rock Barren	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH12	This candidate habitat is made up of RBTA1-7: Red Cedar Alvar Woodland; RBSA1: Alvar Shrub Rock Barren.	✓	✓	---	✓	---	Deep fractures and fissures were not observed in this habitat during 2016 field surveys. However, fractures could be present that were undetected during the 2016 field season. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH13	This candidate habitat is made up of RBTA1-7 : Red Cedar Alvar Woodland.	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 alternative field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH14	This candidate habitat is made up of RBTA1-7: Red Cedar Alvar Woodland.	✓	✓	---	✓	---	Deep fractures and fissures were not observed in this habitat during 2016 alternative field surveys. However, fractures could be present that were undetected during the 2016 field season. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH15	This candidate habitat is made up of FOCM2-2: White Cedar Coniferous Forest	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .
		RH16	This candidate habitat is made up of FOCM2-2: White Cedar Coniferous Forest	✓	✓	---	✓	---	Deep fractures and fissures were observed in this habitat during 2016 field surveys. Given the numerous entrance and access features within this habitat unit, surveys prior to construction are not recommended and the habitat is treated as significant for the purposes of the <i>NHA EIS Report</i> .

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs)	<p>Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 m from ground, near the top of the tree. This habitat can be found in any of the following community types: Mixed Swamp (SWM); Deciduous Swamp (SWD), Coniferous Swamp (SWC).</p> <p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none">• Presence of 5 of more active nests of Great Blue Heron or other listed species <p><u>Wildlife species to be considered:</u></p> <ul style="list-style-type: none">• Great Blue Heron• Black-crowned Night-heron• Great Egret• Green Heron	ID	ELC*						Figure 5D
		CNT1	This candidate habitat is made up of SWDO2-3: Swamp Maple Organic Deciduous Swamp.	---	✓	---	✓	---	This habitat consists of diurnal breeding bird survey stations BBS13, 14, 24, 26, 27 & 110 surveyed on May 23, June 7, 8, 17 & 20 2016. No wildlife species to be considered were observed during the 2016 field surveys. One incidental observation of a fly-over Great Blue Heron was made at BBS40 on May 23, 2016. As permission was not attainable for CNT1 (Hinch Swamp Complex PSW), it is assumed that habitat could exist for Great Blue Heron nesting and therefore this habitat will be treated as significant. PSW's provide optimal foraging habitat. Most breeding colonies are located within 3 to 6 km of foraging areas. Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant in the <i>NHA EIS Report</i> .
		CNT9	This candidate habitat is made up of SWDM2-1: Black Ash Deciduous Swamp.	---	✓	---	✓	---	No diurnal breeding bird surveys were conducted in this habitat due to a lack of access permission. Therefore this habitat will be treated as significant and carried forward to the <i>NHA EIS Report</i> . Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.
		CNT10	This candidate habitat is made up of SWDM4: Deciduous Swamp.	---	✓	---	✓	---	No diurnal breeding bird surveys were conducted in this habitat due to a lack of access permission. Therefore this habitat will be treated as significant and carried forward to the <i>NHA EIS Report</i> . Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.
		CNT11	This candidate habitat is made up of SWDM4: Deciduous Swamp.	---	✓	---	✓	---	No diurnal breeding bird surveys were conducted in this habitat due to a lack of access permission. Therefore this habitat will be treated as significant and carried forward to the <i>NHA EIS Report</i> . Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.
		CNT15	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	✓	✓	---	✓	---	No diurnal breeding bird surveys were conducted in habitats identified as CNT15 and CNT16 due to a lack of access permission. Therefore this habitat will be treated as significant and carried forward to the <i>NHA EIS Report</i> . Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.
		CNT16	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	✓	✓	---	✓	---	

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) (con'd)	<p>Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 m from ground, near the top of the tree. This habitat can be found in any of the following community types: Mixed Swamp (SWM); Deciduous Swamp (SWD), Coniferous Swamp (SWC).</p> <p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none">• Presence of 5 or more active nests of Great Blue Heron or other listed species <p><u>Wildlife species to be considered:</u></p> <ul style="list-style-type: none">• Great Blue Heron• Great Egret• Black-crowned Night-heron• Green Heron	CNT17	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	✓	✓	---	✓	---	<p>No diurnal breeding bird surveys were conducted in habitats identified as CNT17-25 due to a lack of access permission. Therefore this habitat will be treated as significant and carried forward to the <i>NHA EIS Report</i>.</p> <p>Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.</p>
		CNT18	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	---	✓	---	✓	---	
		CNT19	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	---	✓	---	✓	---	
		CNT20	This candidate habitat is made up of SWDM3-3: Swamp Maple Deciduous Swamp	✓	✓	---	✓	---	
		CNT21	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	---	✓	---	✓	---	
		CNT22	This candidate habitat is made up of SWDM3-3: Swamp Maple Deciduous Swamp	---	✓	---	✓	---	
		CNT23	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	---	✓	---	✓	---	
		CNT24	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	---	✓	---	✓	---	
		CNT25	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	---	✓	---	✓	---	
		CNT26	This candidate habitat is made up of SWDM2-1: Black Ash Deciduous Swamp.	✓	✓	---	✓	---	<p>No diurnal breeding bird surveys were conducted in this habitat due to a lack of access permission. As this habitat is located on Pennell's Creek, it is assumed that habitat could exist for Great Blue Heron nesting and therefore this habitat will be treated as significant.</p> <p>Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.</p>

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) (con'd)		CNT27	This candidate habitat is made up of SWDM2-1: Black Ash Deciduous Swamp.	---	✓	---	✓	---	No diurnal breeding bird surveys were conducted in this habitat due to a lack of access permission. As this habitat is located on Pennell’s Creek, it is assumed that habitat could exist for Great Blue Heron nesting and therefore this habitat will be treated as significant. Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.
		CNT28	This candidate habitat is made up of SWDM2-2: Green Ash Deciduous Swamp.	---	✓	---	✓	---	No diurnal breeding bird surveys were conducted in this habitat due to a lack of access permission. Therefore this habitat will be treated as significant and carried forward to the <i>NHA EIS Report</i> . Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.
Rare Vegetation Communities									
Alvar	An Alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of Alvar is complex, with alternating periods of inundation and drought. This habitat is associated with any of the following ELC communities: ALO1(Open Alvar Rock Barren Ecosite), ALS1 (Alvar Shrub Rock Barren Ecosite), ALT1 (Treed Alvar Rock Barren Ecosite), FOC1 (Dry Pine Calcareous Shallow Coniferous Forest Ecosite), FOC2 (Dry Cedar Calcareous Shallow Coniferous Forest Ecosite), CUM2 (Bedrock Cultural Meadow Ecosite), CUS2 (Bedrock Cultural Savannah Ecosite), CUT2-1 (Common Juniper Cultural Alvar Thicket Type), CUW2 (Bedrock Cultural Woodland Ecosite) that are >0.5 ha in size. <u>Significant wildlife habitat defining criteria:</u> <ul style="list-style-type: none">Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site are Significant.Site must not be dominated by exotic or introduced species (<50% vegetative cover area exotic sp.)The Alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses	ID	ELC*						Figure 5E. A Provincially Rare Vegetation Community of Special Concern (listed in Appendix M of the SWHTG) ALS1-1 exists within this habitat (specifically ELC polygon 49-1: See Figure 4 in the <i>NHA Site Investigation Report</i>). As such this habitat has been refined to include only this rare community and has been evaluated as significant as an “Other Rare Vegetation Community” as per the Ecoregion 6E Criteria Schedule (MNRF 2015). Within the remainder of the delineated candidate habitat, no alvar indicators or species of conservation concern were observed during the 2016 field surveys and therefore is not considered significant.
		ALV6	This candidate habitat is made up of FOCS3-1: White Cedar Bedrock Coniferous Forest; RBSA1-1: Common Juniper Shrub Alvar.	✓	✓	✓	---	---	

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Alvar (con'd)	<u>Alvar Indicator Plants:</u> 1. <i>Carex crawei</i> 2. <i>Panicum philadelphicum</i> 3. <i>Eleocharis compressa</i> 4. <i>Scutellaria parvula</i> 5. <i>Trichostema brachiatum</i>	ALV11 <i>Revised to Carolina Whitlow Grass Habitat</i>	This candidate habitat is made up of RBTA1-7: Red Cedar Alvar Woodland; RBTB1-1: Red Cedar Calcareous Treed Alvar; Cultural Alvar.	✓	✓	---	---	✓	A Provincially Rare Species of Special Concern (listed in Appendix G of the SWHTG) Carolina Whitlow-grass was reported to occur in this habitat (specifically ELC polygon 51-17: See Figure 4 in the <i>NHA Site Investigation Report</i>). This observation was not verified by the biologists identified in Table 3 when a return field visit occurred with the original observer. However, the small area of ALV11 (approximately 5 m * 5 m) where this species (up to five individual plants) was observed will be considered significant for "Species of Conservation Concern Habitat" and carried forward into the <i>NHA EIS Report</i> . The entire alvar polygon is not determined to be significant as it is heavily disturbed by cattle and agricultural practices as well as a high concentration of invasive species were present during spring and fall surveys.
	<u>Provincially Rare Vegetation Communities of Special Concern listed in Appendix M of the SWHTG:</u> <ul style="list-style-type: none">• Dry Lichen – Moss Open Alvar Pavement Type (ALO1-1)• Red Cedar Early Buttercup Treed Alvar Type (ALT1-5)• Common Juniper Shrub Alvar Type (ALS1-1)• Dry-Fresh Poverty Grass Open Alvar Meadow (ALO1-4) <u>Species of Conservation Concern:</u> <ul style="list-style-type: none">• Tiny Mouse-tail• Second Rush/ One-sided Rush• Few-fruited Sedge• Carolina Whitlow-grass/ Creeping Draba	ALV21	This candidate habitat is made up of RBOA1-4 : Poverty Oat Grass Alvar; RBTA1-7: Red Cedar Alvar Woodland; RBOA1-1: Lichen-Moss Alvar Pavement	✓	✓	✓	---	---	Three Provincially Rare Vegetation Communities of Special Concern (listed in Appendix M of the SWHTG) exists within this habitat. ALO1-1, ALO1-4 and ALT1-5 (see ELC polygon 47-1 [includes ALT1-5 as an inclusion] & 73-1 on Figure 4d in the <i>NHA Site Investigation Report</i>). As such these portions of the habitat are considered significant and will be carried forward into the <i>NHA EIS Report</i> (see "Other Rare Vegetation Communities" in the Ecoregion 6E Criteria Schedule (MNRF 2015)).
Specialized Habitat for Wildlife									
Waterfowl Nesting Area	Upland habitats of any kind located adjacent to a wetland. The upland areas should be at least 120 m wide so predators have difficulty finding nests. The extent of the habitat extends 120 m from a wetland >0.5 ha or any small wetland within 120 m of a cluster of 3 or more smaller wetlands (<0.5 ha) within 120 m of each other where waterfowl nesting occurs. Wood ducks and hooded mergansers utilize large diameter trees (>40 cm dB) in woodlands for cavity nest sites.	ID							Figure 5F
		WNA2	This candidate habitat is made up of Deciduous Swamp, Coniferous Forest, and Cultural Meadow.	✓	✓	---	✓	---	Diurnal breeding bird surveys were conducted at point count stations BBS13, 14, 24, 26, 27 & 110 on May 23, June 7, 8, 17 & 20 2016. One Wood Duck was observed on May 23, 2016, at BBS14. As permission was not attainable for the full extent of WNA2 (Hinch Swamp Complex PSW), it is assumed that habitat could exist for Waterfowl nesting and therefore this habitat will be treated as significant. Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Waterfowl Nesting Area (con'd)	<p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none"> • Presence of 3 or more nesting pairs for listed species excluding Mallard, or; • Presence of 10 or more nesting pair for listed species including Mallard; • Any active nesting site of an American Black Duck is considered significant; <p><u>Wildlife species to be considered:</u></p> <ul style="list-style-type: none"> • American Black Duck • Northern Pintail • Northern Shoveler • Gadwall • Blue-winged Teal • Green-winged Teal • Wood Duck • Hooded Merganser • Mallard <p><u>Species of Conservation Concern:</u></p> <ul style="list-style-type: none"> • Canvasback • Redhead 	WNA4	This candidate habitat is made up of Cultural Woodland, Coniferous Woodland, and Deciduous Swamp.	✓	✓	---	✓	---	<p>This habitat consists of diurnal breeding bird survey stations BBS36, 37 & 38 surveyed on May 23, June 8 and 20; BBS41, 42, 43 & 53 on May 27, June 14 & 28. As well as BBS18 & 19 on May 23, June 7 and 17. One observation of a Mallard and Wood Duck was recorded on June 17 at BBS18. Additionally, eight incidental observations of Mallards (7) and Wood Ducks (1) were recorded in close proximity to WNA4 (Mud Creek PSW) during the 2016 field season. As permission was not attainable for the full extent of WNA4 (Mud Creek PSW), it is assumed that habitat could exist for Waterfowl nesting and therefore this habitat will be treated as significant.</p> <p>Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.</p>
		WNA7	This candidate habitat is made up of Deciduous Forest, Cultural Meadow, and Deciduous Swamp.	---	✓	---	✓	---	<p>Diurnal breeding bird surveys were conducted at point count stations BBS104-108 on June 1, 15 & 30. Two Wood Duck fly-overs were observed on June 1 at BBS105. As permission was not attainable for the full extent of WNA7 (Pennell's Creek PSW), it is assumed that habitat could exist for Waterfowl nesting and therefore this habitat will be treated as significant.</p> <p>Note: Based on access permissions, this habitat will not be further evaluated prior to construction and the habitat will be treated as significant.</p>
Turtle Nesting Areas	<p>For an area to function as a turtle nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not significant wildlife habitat. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes and rivers are most frequently used. Exposed mineral soil (sand or gravel) areas <100 m from or within the following Community Types: Mineral or Organic Meadow Marsh (MAM or MAO), Shallow Marsh (MAS), Shallow Aquatic (SA), Open Bog (BOO), Open Fen (FEO).</p> <p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none"> • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map or Snapping Turtle nesting • The area or collection of sites within nesting area plus a radius of 30-100 m around the nesting area, depending on habitat condition. <p><u>Indicator/Species of Conservation Concern:</u></p> <ul style="list-style-type: none"> • Midland Painted Turtle • Northern Map Turtle • Common Snapping Turtle 	ID	ELC*						Figure 5G
		TNA1	This candidate habitat is made up of MASO1-1: Cattail Shallow Marsh.	✓	✓	---	✓	---	<p>During Turtle Surveys in 2016, Mud Creek PSW was surveyed from Rattie Road on May 12, 27 and June 1, 2016. A total of 10 Painted turtles were observed basking on May 12 and 5 were observed on May 27, 2016. Although the entire area was not surveyed for nesting characteristics due to lack of access permission and safety concerns in the wetland areas, potential nesting habitat is assumed to occur at TNA1. Based on this and the observations of sufficient numbers of turtles, this habitat is therefore treated as significant for the purposes of the NHA EIS Report...</p>

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Amphibian Breeding Habitat (Woodland)	<p>The presence of a wetland, pond or woodland pool (including vernal pools) > 500 m2 within or adjacent to (within 120 m) a woodland. Woodlands that contain permanent ponds or contain water in most years until mid-July are most likely to be used as breeding habitat</p> <p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none">• Presence of breeding population of 1 or more of the listed newt/salamander species• Two or more of the listed frog species with at least 20 individuals (adults, juveniles, eggs/larval masses)• Two or more of the listed frog species with Call Level Code 3 <p><u>Wildlife species to be considered:</u></p> <ul style="list-style-type: none">• Eastern Newt• Blue-spotted Salamander• Spotted Salamander• Gray Treefrog• Spring Peeper• Wood Frog• Western Chorus Frog	ID							Figure 5H
		ABHWO1	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland AD	✓	✓	✓	---	---	This woodland consisted of eight amphibian breeding survey station (ABH17, 18, 34, 36, 37, 38, 42 & 43). These stations were surveyed three times between April 27 and June 16, 2016. During each visit, >20 individuals were recorded of Gray Treefrog and Spring Peeper. This habitat is considered significant.
		ABHWO2	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland AE & EA	✓	✓	✓	---	---	This woodland consists of one amphibian breeding survey station; ABH23. This station was surveyed April 28, May 24 & June 16, 2016. More than 20 individuals of Spring Peeper and two Gray Treefrog and a Northern Leopard Frog were recorded, meaning at least 20 individuals were observed. As such, this habitat is considered significant.
		ABHWO3	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland B	✓	✓	---	✓	---	This woodland did not consist of an amphibian breeding survey station. This woodland was composed of Red Cedar Coniferous Woodland; White Cedar Calcareous Bedrock and Oak-Hardwood Deciduous Forest. This woodland surrounds a Willow Deciduous Thicket Swamp. Due to the lack of amphibian information, this woodland will be treated as significant.
									Note: as the wetland area that may support amphibian breeding is located wholly outside the Project Location boundary (and therefore not accessible for evaluation), this habitat will not be further evaluated prior to construction.
		ABHWO6	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland BM	✓	✓	✓	---	---	This woodland consisted of seven amphibian breeding survey stations; ABH09, 08, 14, 15, 16, 32 & 33. These stations were surveyed on April 27, 28, May 23 and June 15, 2016. There were more than 20 individual Gray Treefrogs on May 23 and June 15, 2016, surveys and Spring Peepers on April 27 and May 23, 2016, surveys. Additionally, 6 individual Bullfrogs were observed during the June 13, 2016, survey. Therefore this habitat is considered significant.
		ABHWO9	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland CY	✓	✓	---	✓	---	This woodland did not consist of an amphibian breeding survey station. This woodland is composed of Black Ash Deciduous swamp and border a Reed Canary Grass Meadow Marsh. As habitat is available for breeding amphibians, this woodland will be treated as significant.
							Note: as the wetland area that may support amphibian breeding is located wholly outside the Project Location boundary (and therefore not accessible for evaluation), this habitat will not be further evaluated prior to construction.		

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Woodland Area-Sensitive Bird Breeding Habitat	<p>This habitat includes all ecosites associated with Forest (FOC, FOM & FOD) and Swamp (SWC, SWM & SWD). The habitat where interior forest breeding birds are breeding, typically mature (>60 years old) forest stands or woodlots (>30 ha).</p> <p><u>Significant wildlife habitat determining criteria:</u></p> <ul style="list-style-type: none">• Presence of nesting to breeding pair of three or more of the listed wildlife species• Any site with breeding Cerulean Warbler or Canada Warblers is to be considered SWH. <p><u>Wildlife species to be considered:</u></p> <ul style="list-style-type: none">• Yellow-bellied Sapsucker• Red-breasted Nuthatch• Veery• Blue-headed Vireo• Northern Parula• Black-throated Green Warbler• Blackburnian Warbler• Black-throated Blue Warbler• Ovenbird• Scarlet Tanager• Winter Wren <p><u>Species of Conservation Concern:</u></p> <ul style="list-style-type: none">• Canada Warbler	ID							Figure 51
		ASBB1	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland BM	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS95- 101; 104 & 105. These stations were surveyed on June 1, 3, 14, 15, 24, 28 and 30, 2016. Species observed at these survey stations included Blackburnian Warbler, Black-throated Green Warbler, Ovenbird, Red-breasted Nuthatch, Scarlet Tanager and Veery. This habitat is considered significant.
		ASBB2	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland AD	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS54-BBS90. These stations were surveyed on May 30, 31, June 2, 3, 9, 10, 14, 16, 21, 27, 28, and 30 2016. Species observed at these survey stations included Blackburnian Warbler, Black-throated Green Warbler, Ovenbird, Red-breasted Nuthatch, Scarlet Tanager, Veery, Winter Wren and Yellow-bellied Sapsucker. This habitat is considered significant.
		ASBB3	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland I	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS13, 14, 110, 24, 26 & 27. These stations were surveyed on May 23, June 7, 8, 17 and 20, 2016. Species observed at these survey stations included Ovenbird, Scarlet Tanager, Veery and Yellow-bellied Sapsucker. This habitat is considered significant.

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function	Location		Status			Relevant Evaluation Criteria Determining Status	
			Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant		
Habitat of Species of Conservation Concern									
Terrestrial Crayfish	<p>Terrestrial crayfish are typically found within south-western Ontario in Canada and their habitats are very rare. In general, crayfish are known to construction burrows in wet meadows and the edges of shallow marshes. These species can often be found far from water in soil that isn’t too moist and allows for tunnels/burrows to be be formed.</p> <p><u>Significant wildlife habitat defining criteria:</u></p> <ul style="list-style-type: none">• Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable habitat <p><u>Wildlife Species to be considered:</u></p> <ul style="list-style-type: none">• Chimney or Digger Crayfish• Devil or Meadow Crayfish	ID	ELC*						<p>Figure 5J</p> <p>This habitat was not surveyed during the 2016 field season due to health and safety concerns associated with accessing the full wetland area. As such, habitat will be treated as significant and will be carried forward into the <i>NHA EIS Report</i>.</p> <p>Note: Given the safety considerations associated with surveying this area of the wetland, this habitat will not be further evaluated prior to construction.</p>
		TC1	This habitat is composed of MAMO1-3: Cattail Organic Meadow Marsh	✓	✓	---	✓	---	
		Common Nighthawk	<p>Traditional Common Nighthawk habitat consists of open areas with little to no ground vegetation, such as logged or burned-over areas, forest clearings, rock barrens, peat bogs, lakeshores, and mine tailings. Although the species also nests in cultivated fields, orchards, urban parks, mine tailings and along gravel roads and railways, they tend to occupy natural sites.</p>	ID	ELC*				
CN1	This habitat is composed of RBTA1-7: Red Cedar Alvar Woodland.			✓	✓	✓	---	---	On June 16, 2016, a Common Nighthawk nest containing two eggs was observed 30 m south of BBS station 79. This habitat is considered significant.
CN4	This habitat is composed of RBOA1 : Open Alvar Rock Barren			✓	✓	✓	---	---	Crepuscular surveys were conducted on the nights of May 26, 2016, and June 13, 2016, from point count BBS44, 47 & 48. Auditory surveys typically cover an area of 400- 500 m in radius. One Common Nighthawk was heard during May 26, 2016 in the community that had been delineated at candidate Significant Wildlife Habitat (CN4) for Common Nighthawk. Additionally, during diurnal breeding bird surveys on June 28, 2016, one Common Nighthawk was observed from BBS47 approximately 300 m south in the habitat considered candidate Significant Wildlife Habitat for Common Nighthawk. Therefore, this habitat is considered Significant Wildlife Habitat for Common Nighthawk.
		CN12	This habitat is composed of FODM3-1: Bedrock Mixed Meadow.	✓	✓	✓	---	---	Crepuscular surveys were conducted on the nights of June 1, 2016, and June 27, 2016, from point count BBS04, 05, 06 & 07. Auditory surveys typically cover an area of 400- 500 m in radius. One Common Nighthawks was heard during June 1, 2016, a survey in the direction of community CN12 that had been delineated at candidate Significant Wildlife Habitat (CN12) for Common Nighthawk. Therefore, this habitat is considered Significant Wildlife Habitat for Common Nighthawk.

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function		Location		Status			Relevant Evaluation Criteria Determining Status
				Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Woodland Specific Bird Species of Special Concern	<p><u>Species of Special Concern:</u></p> <p>Red-headed Woodpecker (RHWO): The Red-headed Woodpecker lives in open deciduous woodland and woodland edges with oak, oak-hickory, and maple. They are often found in parks, golf courses, and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching. They require cavity trees with at least a 40 cm dbh and 4 ha for a territory.</p> <p>Eastern Wood-Pewee (EAWP) The Eastern Wood-Pewee lives in forst clearings and forest edges predominated by oak with little understory including mature woodlands, roadsides, woodlots, farm woodlots and orchards.</p>	ID							Figure 5L
		RHWO2	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland AD	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS54 – BBS90 on May 30, 31, June 2, 3, 7, 9, 10, 16, 21, 27 & 30. A Red-headed Woodpecker was heard calling during the June 30, 3016 survey from station BBS63. Therefore, this habitat is considered Significant Wildlife Habitat for Redheaded Woodpecker.
		EAWP1	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland BM	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS94-101 &104 on June 1, 3, 14, 15, 24, 28 & 30. Eastern Wood-Pewees were heard calling during the June 1 & 3, 2016 surveys from station BBS104 & 95, respectively. Therefore, this habitat is considered Significant Wildlife Habitat for Eastern Wood-Pewee.
		EAWP2	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland AD	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS54 – BBS90 on May 30, 31, June 2, 3, 7, 9, 10, 16, 21, 27 & 30. A total of 27 auditory observations of Eastern Wood-Pewee were recorded during the 2016 field surveys, specifically at stations BBS56, 60, 64, 65, 66, 67, 69, 70, 71, 72, 76, 77, 85, 90 & 95. Therefore, this habitat is considered Significant Wildlife Habitat for Eastern Wood-.
		EAWP3	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland AE	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS36, 37 & 38 on May 23, June 8 & 20, 2016. Two Eastern Wood-Pewees were heard from station BBS37 on June 7 & 17, 2016. Therefore, this habitat is considered Significant Wildlife Habitat for Eastern Wood-Pewee.
		EAWP4	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland I	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS13, 14, 24, 26, 27 & 110 on May 23, June 7, 8, 17 & 20 2016. A total of seven auditory observations were made of Eastern Wood-Pewee during the 2016 field season, specifically at stations BBS 13, 14, 26 & 110. Therefore, this habitat is considered Significant Wildlife Habitat for Eastern Wood-Pewee.
Wood Thrush	The Wood Thrush lives in Carolinian and Great Lakes-St. Lawrence forest zones with undisturbed moist mature deciduous or mixed forest with deciduous sapling growth. Habitat is generally near ponds or swamps along hardwood forest edges.	ID							Figure 5M
		WOTH1	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland BM	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS94-101 & 104 on June 1, 3, 14, 15, 24, 28 & 30. A total of 13 Wood Thrush observations were made during the surveys. Therefore, this habitat is considered Significant Wildlife Habitat for Wood Thrush.
		WOTH4	Please refer to Table 6 in the <i>NHA EoS¹ Report</i> for Vegetation Communities associated with Woodland I	✓	✓	✓	---	---	Diurnal breeding bird surveys were conducted at point count stations BBS13, 14, 24, 26, 27 & 110 on May 23, June 7, 8, 17 & 20 2016. Two Wood Thrush observations were made on May 23, 2016, at station BBS13 and BBS14. Therefore, this habitat is considered Significant Wildlife Habitat for Wood Thrush and will be carried forward into the <i>NHA EIS Report</i> .

Wildlife Habitat	Defining Criteria for Significant Wildlife Habitat	Habitat Composition: Attributes, Condition, and Function	Location		Status			Relevant Evaluation Criteria Determining Status
			Within Project Location	Within 50 m of Project Location	Significant	Treated as Significant	Not Significant	
Yellow Pond Lily	The habitat of this species includes alkaline and neutral water 0.5 to 2 m deep. Blooming occurs from May to October, particularly opening in the morning and closing at night	The habitat of this species includes alkaline and neutral water 0.5 to 2 m deep. Blooming occurs from May to October, particularly opening in the morning and closing at night	✓	✓	✓	---	---	Yellow Pond Lily was observed in watercourses where access was permitted. For those areas where access was not permitted, but the watercourse is connected to where observations were recorded, the full extent of the habitat is considered significant. See Figure 5N
Juniper Hairstreak	The habitat of this species includes old fields, bluffs, barrens, juniper and cedar breaks. This species prefers juniper species during the breeding season as their caterpillar host.	Potential habitat for this species exists ubiquitously throughout the Project Location and 50 m setback	✓	✓	---	✓	---	There are several areas within Project Location where applicable habitat was recorded. Given that surveys for butterfly species were not conducted in 2016, these habitats will be treated as significant. Note: JH16, 17 & 22 are no longer within the Project Location boundary. See Figure 5O .

*ELC as per Table 6 in the NHA Site Investigation Report; ¹refers to the Final Natural Heritage Assessment (NHA) Evaluation of Significance (EoS) Report for the Loyalist Solar Project dated December 2016

9.0

Environmental Effects of the Project

A summary of the attributes, features, and/or ecological functions that may be sensitive to development for the identified significant natural features is described below in **Table 8**. The features and attributes identified are anticipated to serve as good indicators of negative environmental effects and are to be used as part of the impact analysis.

The evaluation of potential impacts, mitigation and residual effects are discussed in **Table 9** and include consideration for the mitigation measures provided by the MNRF for Solar Power Facilities (MNRF 2014). In many cases, Project activities during the construction phase overlap (e.g. clearing and equipment lay-down). Where activities overlap, the first activity in the Project construction sequence or which has the broadest impact is evaluated in **Table 9**.

In general, the mitigation measures have been designed to minimize or eliminate, where possible, the impacts of construction, operations, and decommissioning to the significant natural features.

Table 8: Summary of Key Features and Attributes that may serve as Indicator of Negative Environmental Effects

Natural Feature	Indicator Species	Features/Attributes Necessary for Persistence (Physical and Functional)	Features/Attributes Potentially Sensitive to Development	Good Indicator Features/Species
Wetlands				
4, 11, 18, 26, 31, 34, 40, 43, 44, 45, 49, 54, 61, 62, 71, 72, 73, 75, 77, 78, 83, 85, 86, 88, 92, 94, 96, 102, 103, 104, 109, 114, 117, 118, 122, 123, 125, 126, 127,	Amphibians, wetland breeding birds, native wetland flora	Physical: adjacent wetlands, overland flow, localized water retention, water quality, vegetation, vegetation cover Functional: connection with other natural features, species richness, wildlife habitat diversity	Water quality (wetlands and riverine), vegetation along the edge of feature, species richness, wildlife habitat diversity	Vegetation along the edge of feature acting as a natural buffer between the wetland and the project location. Species richness (amphibians, colonial nesting birds, marsh breeding birds, waterfowl).
Woodlands				
AB, AD, AE, AP, AQ, B, BC, BD, BH, BI, BM, CA, CW, CX, DB, EA, I, L	Native woodland flora	Physical: occurrence of large contiguous forest unit with low disturbance Functional: provides interior habitat, is adjacent to other significant wildlife habitat, provides habitat for woodland species	Vegetation along the edge of the feature, interior habitat, woodland species richness	Woody vegetation along the edge of feature. Persistence/dominance of tree species. Persistence of interior woodland area and interior woodland habitat.
Wildlife Habitat				
Seasonal Concentration Areas				
Waterfowl Stopover and Staging Areas (Terrestrial) WSST1*, WSST2*, WSST3*, WSST4*, WSST5*, WSST6*, WSST7*, WSST8*, WSST9*, WSST10*	Mallard Northern Pintail Northern Shoveler American Widgeon American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Gadwall	Physical: occurrence of large flooded areas in association with fields during the spring melt and run-off. Functional: provides areas for large aggregations of waterfowl stopover and staging.	Food supply and volume of water.	Species abundance and richness Long term use of habitat

Natural Feature	Indicator Species	Features/Attributes Necessary for Persistence (Physical and Functional)	Features/Attributes Potentially Sensitive to Development	Good Indicator Features/Species
Waterfowl Stopover and Staging Areas (Aquatic) WSSA1*, WSSA2*, WSSA4*	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Widgeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	Physical: occurrence of large flooded areas in association with wetlands during the spring melt and run-off. Functional: provides areas for large aggregations of waterfowl stopover and staging.	Food supply and volume of water.	Species abundance and richness Long term use of habitat
Turtle Wintering Area TWA1*	Midland Painted Turtle Northern Map Turtle Snapping Turtle	Physical: permanent water body with a depth of at least 1 m to prevent freezing. Must have adequate dissolved oxygen and soft mud substrates Functional: area that will provide winter refuge	Depth of water	Depth/quality of water Turtle species diversity and abundance Occurrence of quality wetland vegetation cover

Natural Feature	Indicator Species	Features/Attributes Necessary for Persistence (Physical and Functional)	Features/Attributes Potentially Sensitive to Development	Good Indicator Features/Species
Reptile Hibernaculum RH1*, RH2*, RH3*, RH4*, RH5*, RH7*, RH8*, RH9*, RH10*, RH11*, RH12*, RH13*, RH14*, RH15*, RH16*	Reptile Species (including Northern Ribbon Snake and Five- lined Skink)	Physical: presence of cracks and fissures and other openings which extend below the frost line. Ability for reptiles to access hibernaculum entrances/exits Functional: provides microhabitat for winter cover for hibernating reptiles, is adjacent to other significant wildlife habitat	Cracks, fissures and other openings acting as entrances/exits to hibernacula are sensitive to grading Hibernating reptiles sensitive to fluctuations in water table levels	Presence of snake species on or near potential hibernacula during warm days in spring/fall
Colonially Nesting Bird Breeding Habitat (Trees & Shrubs) CNT1*, CNT9*, CNT10*, CNT11*, CNT15*, CNT16*, CNT17*, CNT18*, CNT19*, CNT20*, CNT21*, CNT22*, CNT23*, CNT24*, CNT25*, CNT26*, CNT27*, CNT28*	Great Blue Heron Black-crowned Night- Heron Great Egret Green Heron	Physical: Live or dead standing trees in wetlands capable of supporting nests Functional: wetland areas of sufficient size to provide nesting habitat and associated suitable foraging habitat	Nesting habitat for herons or egret	Presence of nesting herons/egret.
Rare Vegetation Communities				
Alvar ALV6 (Other Rare Vegetation Community), ALV11(Carolina Whitlow-Grass Habitat), ALV21 (Other Rare Vegetation Community)	Carolina Whitlow-Grass Dominant species in Common Juniper Shrub Alvar and Dry Lichen- Moss Open Alvar Pavement Communities	Physical: Level, mostly unfractured calcareous bedrock with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. Lack of shading of vegetation. Function: supports phyto- and zoogeographically diverse species, as well as many uncommon or relict plant and animal species.	Habitat for rare vegetation or rare vegetation communities	Carolina Whitlow-Grass. Presence of rare vegetation community from Appendix M of the Significant Wildlife Habitat Technical Guide.

Natural Feature	Indicator Species	Features/Attributes Necessary for Persistence (Physical and Functional)	Features/Attributes Potentially Sensitive to Development	Good Indicator Features/Species
Specialised Habitat for Wildlife				
Waterfowl Nesting Area WNA2*, WNA4*, WNA7*	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	Physical: wide continuous upland area near wetlands >0.5ha. Presence of large trees important for Wood Ducks and Hooded Mergansers. Functional: protection of nests from predators such as raccoons, skunks, and foxes; and cavity for nest sites.	Nesting habitat for waterfowl species (e.g., large trees and continuous upland areas)	Species abundance and richness Presence of American Black Duck
Turtle Nesting Areas TNA1	Midland Painted Turtle Northern Map Turtle Snapping Turtle	Physical: exposed mineral soil areas adjacent to wetland communities Functional: areas that can function as turtle nesting area; These areas will provide substrate in which turtles can dig, and are located in open, sunny areas	Nesting habitat for turtles	Species richness and abundance Presence of areas of appropriate nesting substrate where turtles can nest
Amphibian Breeding Habitat (Woodland) ABHWO1, ABHWO2, ABHWO3*, ABHWO6, ABHWO9*, ABHWO10,	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	Physical: occurrence of wetland community with seasonally-inundated open water area(s) Functional: water quality to support breeding; connection to upland habitat	Breeding habitat for amphibians (e.g., wetlands, fringes of open water areas), water quality of breeding ponds	Water quality of breeding ponds within 30 m of project components Amphibian species richness and abundance Occurrence of quality wetland vegetation cover Western Chorus Frog (in habitat where species was previously observed in pre-construction surveys)

Natural Feature	Indicator Species	Features/Attributes Necessary for Persistence (Physical and Functional)	Features/Attributes Potentially Sensitive to Development	Good Indicator Features/Species
Habitat of Species of Conservation Concern				
Woodland Area-Sensitive Bird Breeding habitat ASBB1, ASBB2, ASBB3	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren	Physical: forest stands or woodlots 30ha with interior forest Functional: interior forest habitats for interior forest breeding birds to breed	Interior forest habitat for breeding birds	Species richness and abundance Persistence of interior forest habitat
Terrestrial Crayfish TC1*	Terrestrial Crayfish Chimneys	Physical: wet meadow marsh that is not too moist Functional: provides habitat for Terrestrial Crayfish	Edge of meadow marsh	Presence of Terrestrial crayfish or evidence of crayfish chimneys
Common Nighthawk CN1, CN4, CN12,	Common Nighthawk	Physical: open areas with little to no ground vegetation Functional: provides breeding habitat for Common Nighthawk	Open habitat that serves as breeding habitat for Common Nighthawk	Presence of Common Nighthawk
Woodland Specific Bird Species of Special Concern RHW02, EAWP1-4	Redheaded Woodpecker; Eastern Wood Pewee	Physical: Open woodland and woodland edges Functional: provides breeding habitat for Redheaded Woodpecker	Woodland habitat that serves as breeding habitat for Redheaded Woodpecker	Presence of Redheaded Woodpecker and/or Eastern Wood Pewee
Wood Thrush WOTH1, WOTH4	Wood Thrush	Physical: Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth Functional: provides breeding habitat for Wood Thrush	Woodland habitat that serves as breeding habitat for Wood Thrush	Presence of Wood Thrush

Natural Feature	Indicator Species	Features/Attributes Necessary for Persistence (Physical and Functional)	Features/Attributes Potentially Sensitive to Development	Good Indicator Features/Species
Yellow Pond Lily	Yellow Pond Lily	Physical: alkaline and neutral water 0.5 to 2 m deep Functional: ability to provide habitat for flora and persistence of water quality and quantity.	Aquatic habitat that serves as Yellow Pond Lily Habitat.	Presence of Yellow Pond Lily
Juniper Hairstreak	Juniper Hairstreak	Physical: Old Fields, bluffs, barrens, juniper species and cedar breaks Functional: provides breeding habitat for their caterpillar host	Juniper species used as caterpillar hosts	Presence of Juniper Hairstreak

*indications that wildlife habitat is treated as significant

Table 9: Summary of Potential Negative Effects and Mitigation Measures for Significant Natural Features

Significant or Provincially Significant Natural Feature Affected by Activity^	Project Phase & Activity within 50 m of Natural Feature	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
		Physical Impact (Direct)	Functional Effect (Indirect)					
<p>Hinch Swamp (Wetlands 4, 100)</p> <p>Wetlands associated with PV panel area and substation location (4, 11, 103, 102, 104, 88, 86, 117, 92)</p> <p>Woodlands associated with PV panel area and substation location (I, B, L, AE, AD, EA, BM)</p> <p>Wildlife Habitat Associated with PV panel area and substation location:</p> <ul style="list-style-type: none"> Waterfowl Stopover and Staging (Terrestrial) WSST1~, WSST3~ to WSST10~ Waterfowl Stopover and Staging (Aquatic) WSSA4* Turtle Wintering Area TWA1* Reptile Hibernaculum RH7*, RH8*, RH9*, RH10*, RH11*, RH12*, RH14* Colonially Nesting Bird Breeding Habitat CNT1*, CNT26*, CNT27*, CNT28* Other Rare Vegetation Community ALV21 Carolina Whitlow-Grass Habitat Waterfowl Nesting Area WNA2*, WNA4*, WNA7* Turtle Nesting Area TNA1 Amphibian Breeding Habitat (Woodland) ABHWO1, ABHWO2, ABHWO3*, ABHWO9*, ABHWO6, ABHWO10 Woodland Area-Sensitive Bird Breeding Habitat ASBB1, ASBB3 Terrestrial Crayfish TC1* Common Nighthawk CN4, CN12 Red-headed Woodpecker 	<p>Vegetation Clearing, Grading and Grubbing</p> <p>Installation of perimeter fencing, access roads inside of perimeter fencing, PV panels, inverter stations and substation components</p>	<p>No direct impacts as no vegetation clearing is to occur within wetland boundaries.</p> <p>Loss of 13.47 ha of woodland area from Woodland AD; Loss of 3.95 ha from Woodland AE; Loss of 2.26 ha from Woodland B; Loss of 4.59 ha of woodland area from Woodland BM; Loss of 2.57 of woodland area from Woodland I; Loss of 2.73 ha of woodland area from Woodland L; Loss of 6.26 ha of woodland area from Woodland EA; Loss of 0.65 ha of Other Rare Vegetation Community (ALV21)</p> <p>Partial loss of buffer area surrounding wetland habitat</p> <p>Displacement of species inhabiting the natural features</p> <p>Mortality of animal species travelling to/from and/or inhabiting the natural features during season utilization</p>	<p>Decreased wetland buffer (wetland buffers will be at least 5 m).</p> <p>Increased surface runoff from exposed soils.</p> <p>Short-term hydrological changes: Potential short-term changes to surface water hydrology and drainage to/ from natural features.</p> <p>Potential increase in surface water runoff due to grading, soil compaction, or ditching associated with access roads. Loss of ecological function in cleared areas.</p> <p>Loss of potential linear connectivity along treed area to adjacent treed areas where hedgerows are being removed.</p> <p>Disruptions of species from utilizing habitat.</p> <p>Declines in animal populations and species richness due to disturbance to breeding.</p> <p>Animal avoidance of habitat.</p> <p>Decreased water quantity and quality.</p> <p>Habitat and sensory disturbance to species utilizing the habitat.</p>	<p>LOW</p> <p>Wetlands and Significant Wildlife Habitat (SWH) associated with wetland features only have the potential to be indirectly affected and buffers on the applicable wetlands will be at least 5m.</p> <p>35.82 ha total woodland areas to be removed; no interior habitat will be removed. Woodland features will retain significance.</p>	<p>Once, during construction</p>	<p>For wetlands and associated wildlife habitat, the effect is temporary during the construction phase until vegetative cover in the Project Location is established.</p> <p>For woodland and associated wildlife habitat that is removed – effect is permanent</p>	<p>Where required (see Table 7 in this <i>NHA EIS Report</i>), pre-construction wildlife surveys to be completed prior to construction to evaluate the significance of wildlife habitat treated as significant and update mitigate measures as appropriate.</p> <p>Limits of construction work to be staked in the field in order to minimize disturbance to the wetland, woodland and wildlife habitat.</p> <p>Maintain a clearly demarcated boundary where no works occur within 5 m of a wetland boundary.</p> <p>When woodland clearing is taking place the area will be staked and monitored to ensure that no additional woodland is cleared during tree removal. For trees/woodland areas that will be retained, follow the ISA Arborists' Standards for tree protection (general tree protection zone should be 0.3 m diameter for each 2.5 cm of trunk diameter). Given the dominant size class of trees in the Woodlands is >25 cm, the minimum tree protection distance will generally be the greater of the drip line or 3.0 m from the trunk. Woodland removal and/or removal of sensitive natural features to be minimized, if possible, during detail design. Snags and trees with quality wildlife cavities are to be removed following dusk and before dawn if during the bat active season, or anytime during the winter hibernation period for bat species. Where snags and trees with quality wildlife cavities are removed, an equal number of bat boxes will be installed in similar habitat in the general area of the Project.</p> <p>Prior to clearing vegetation in the area of Carolina Whitlow-Grass Habitat, the area should be searched by a qualified biologist for the target plant species and each located plant flagged and transplanted to appropriate alternative habitat outside of the Project Location.</p> <p>Where possible, alvar indicator plants will be collected from the areas of ALV21 that occurs within the Project Location during an appropriate time of year and transplanted out of the Project Location.</p> <p>Develop a Stormwater Management Plan and sediment and erosion control plan to be implemented prior to and during construction. It is anticipated that the Stormwater Management Plan will include requirements to be implemented for the operations phase of the project. Once implemented, this plan will mitigate the effects of significant changes in water flows to natural features where the Project is operational.</p> <p>As part of the Project planning, hydrogeological work will be completed to verify that no significant changes to the groundwater table are anticipated as a result of the Project. This mitigation measure is to protect potential reptile hibernacula, among other habitat, that occurs in the general area of the Project.</p> <p>If possible, avoid clearing vegetation during the breeding bird season to minimize impacts on breeding birds. Should clearing be required during the breeding bird season (from April 1 to September 15; March 15 to September 15 for areas where waterfowl nesting may occur), nest searches conducted by a qualified person must be completed</p>	<p>No adverse effects on natural features are anticipated with implementation of mitigation measures</p> <p>Erosion effects are not anticipated during the operations phase as the Project Location will be have permanent vegetation groundcover on all disturbed areas.</p> <p>Removal of significant woodland area represents less than 1% decrease in total significant woodland area. All woodlands will remain significant post-clearing as all criteria met to establish significance (i.e., total size, interior habitat, significant wildlife habitat, etc.) will remain unchanged. Removal of a portion of a Significant Other Rare Vegetation Community (ALV21)</p>

Significant or Provincially Significant Natural Feature Affected by Activity^	Project Phase & Activity within 50 m of Natural Feature	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
		Physical Impact (Direct)	Functional Effect (Indirect)					
RHW02 <ul style="list-style-type: none"> Eastern Wood Pewee EAWP1, EAWP2, EAWP3, EAWP4 Wood Thrush WOTH1, WOTH4 Juniper Hairstreak JH1*, JH2*, JH3*, JH4*, JH5*, JH6*, JH7*, JH8*, JH9*, JH10*, JH11*, JH12*, JH13*, JH14*, JH27* Large Yellow Pond Lily Generalized Candidate Significant Wildlife Habitat 			Mortality of species inhabiting the natural feature during seasonal utilization of the feature.				<p>48 hours in advance of clearing. If nests are found and the species protected by the <i>Migratory Bird Convention Act</i>, work within a minimum of 10 m of the nest (species status dependent) will cease until the nest has fledged.</p> <p>If there are no nests, then clearing can occur. Construction may occur on cleared lands during the breeding season once vegetation has been removed (if applicable).</p> <p>The construction workforce will be educated on local wildlife that may be encountered on the Project Location and will be instructed to take measures for avoiding wildlife. A protocol will be provided to contractors to follow in the event that wildlife is encountered. This is to include routine engine checks for snakes before use of machinery during construction. Wildlife located within the Project Location will be relocated to an area outside the Project Location (and into an area of appropriate habitat) as necessary. This will be completed by a professional trained in the safe handling of wildlife.</p> <p>Maximize the distance of all construction equipment used from the wetland/ woodland edge; operate machinery in the areas disturbed for construction only.</p> <p>A plan to address/mitigate soil compaction throughout the Project Location to be developed as part of the detailed design to promote infiltration and to be specified in the Stormwater Management Plan.</p> <p>Soil stabilization (e.g. re-vegetation) to occur as soon as practical to stabilize soil upon completion of work activities to attenuate runoff.</p> <p>Where there is a potential entrance/exit to a reptile hibernaculum, efforts should be made to minimize disturbance effects and maintain the structural integrity of the entrance/exit (i.e., avoid grading/compacting soil over it).</p> <p>ESC measures (i.e. silt fence) installed for construction purposes will be monitored regularly to ensure that they are functional and issues identified are resolved in a timely fashion.</p> <p>The perimeter fencing is to have contact with the ground surface to prevent entry of wildlife. Where it is not feasible for the fence to contact the ground, other measures will be installed to prevent wildlife access under the fence. During the construction phase, in areas appropriate to protect hatchling turtles, the spacing in the chain link should be of sufficient size to prevent entry from the ground surface to a height of approximately 0.5 m. Where feasible, the perimeter fencing is to be constructed outside of the turtle active season (i.e., March- May to avoid turtles emerging from wintering habitats; May-June for nesting; September- October window to avoid turtles moving to wintering habitat). Where it is not feasible to construct perimeter fencing in its entirety during the turtle overwintering period, fencing to be temporarily supplemented with silt fencing to act as a barrier/exclusionary measure.</p>	<p>represents a marginal decrease in the total area of the overall community (loss of 0.65 ha or 0.13% of the total area).</p> <p>Removal of Common Nighthawk Habitat (CN2) is not anticipated to impact the species as habitat is not limiting in the general area of the Project.</p>

Significant or Provincially Significant Natural Feature Affected by Activity^	Project Phase & Activity within 50 m of Natural Feature	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
		Physical Impact (Direct)	Functional Effect (Indirect)					
							<p>In the vicinity of the Project Location (e.g. sections of Rattie Road, Hinch Road and Centreville Road) where traffic volumes exceed normal volumes due to construction activities, exclusion fencing shall be installed adjacent to natural habitats and wetlands areas to minimize road mortality of wildlife. Signage will be installed beyond the extents of the exclusion fencing to warn construction traffic of the potential for wildlife to be crossing the road and to indicate a speed limit of 20 km/hr.</p> <p>An environmental monitor shall regularly inspect the exclusion fencing to ensure it is properly installed (keyed-in) and to observe for wildlife that may be attempting to travel around the ends of the fencing, An environmental monitor or designated personnel will monitor construction traffic speed and have the authority to direct, slow or halt construction traffic accordingly to protect against road mortality.</p> <p>Following the completion of the perimeter fencing, wildlife located within the Project Location is to be relocated to an area outside the Project Location (and into an area of appropriate habitat) as necessary. This should be completed by a professional trained in the safe handling of wildlife.</p>	
<p>Wildlife Habitat:</p> <ul style="list-style-type: none"> Turtle Nesting Area TNA1* Turtle Wintering Area TWA1* Reptile Hibernaculum RH7*, RH8*, RH9*, RH10*, RH11*, RH12*, RH14* 	Installation of Access Roads outside of Perimeter Fence	<p>Nesting turtles may utilize constructed access roads for nesting</p> <p>Mortality of species (including eggs in nests)</p> <p>Obstruction of access to habitat</p>	<p>Compaction of access road material may decrease nesting success</p> <p>Increased predation during sensitive nesting period</p>	Low	During construction and operations phase	<p>Access roads will remain in place for the lifespan of the Project.</p> <p>After construction is complete, access road usage will be brief and frequency will reduce to one to two times per week</p>	<p>Where there is a potential entrance/exit to a reptile hibernaculum, efforts should be made to minimize disturbance effects and maintain the structural integrity of the entrance/exit (i.e., avoid grading/compacting soil over it).</p> <p>Speeds restricted to 15 km/hr or less when travelling within the Project Location where PV panels and the substation are proposed. Visual monitoring and avoidance of wildlife species encountered during activity.</p> <p>Increase staff awareness of periods where reptiles may be migrating into/out of hibernacula/ overwintering habitat and moving across or basking on access roads.</p> <p>Access roads located outside of the perimeter fence are to be designed to discourage turtle nesting (e.g. use of hardeners, at-grade access roads on bedrock, etc.). Regular visual inspection by trained personnel to check for nesting turtles will occur.</p> <p>During construction, trained personnel to conduct regular sweeps of the Project Location perimeter nearest to TNA1* and TWA1* as well as in Project Location around TNA1* and TWA1* during seasonal times of turtle activity to search for turtles that may be moving between habitat features. If a turtle is identified, relocation to appropriate habitat outside of the Project Location and handling to be undertaken by staff trained in appropriate handling techniques and the species' habitat requirements.</p>	No residual effects

Significant or Provincially Significant Natural Feature Affected by Activity^	Project Phase & Activity within 50 m of Natural Feature	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
		Physical Impact (Direct)	Functional Effect (Indirect)					
Mud Creek Wetland (104) Wildlife Habitat associated with Wetland: <ul style="list-style-type: none">Waterfowl Stopover and Staging Area WSSA4*Waterfowl Nesting Area WNA4*Turtle Nesting Area TNA1*Turtle Wintering Area TWA1*Terrestrial Crayfish TC1*Eastern Wood Pewee EAWP3Large Yellow Pond Lily Habitat	Directional Boring/ Horizontal Directional Drilling	Potential frac-out (inadvertent release of drilling fluid or a release of sediment laden groundwater into the wetland or watercourse). There is also the potential for sediment laden water or other deleterious substance to enter a surface water feature as the result of grading, drilling, excavations, equipment washing, or other construction related activities during directional boring.	Water quality and quantity	LOW	Single event; potential during directional boring activities	Potential during directional boring activities	<ul style="list-style-type: none">Maintaining existing riparian vegetation buffers around wetland. The boring entry and exit points are to be far enough from the wetland to have minimal impact.Develop a sediment and erosion control plan to be implemented prior to and during drillingProper geotechnical assessment practices, drilling planning and execution to be followed. Design the drill path to an appropriate depth below the water body/wetland to minimize the risk of frac-out. Develop an emergency frac-out response plan prior to undertaking directional boring activities.Equipment should not be operated within the limits of the wetland area.Should frac-out occur, the extent can be limited by careful monitoring during the boring activities and having appropriate response equipment available on-site and ready for use. Monitor the wetland and associated water body to observe signs of surface migration (frac-out) of drilling mud during boring activities.Following directional drilling activities, disturbed areas are to be re-vegetated as soon as practical to match the surrounding landscape.	No residual effect. If a frac-out does occur, the emergency frac-out response plan will remediate the exposure to drilling mud in the surrounding area.
Hinch Swamp (Wetlands 4, 100) Wetlands associated with PV panel area and substation location (4, 11, 103, 102*, 104, 88, 86*, 117*, 92*) Woodlands associated with PV panel area and substation location (I, B, L, AE, AD, EA, BM) Wildlife Habitat Associated with PV panel area and substation location: <ul style="list-style-type: none">Waterfowl Stopover and Staging (Terrestrial) WSST1~, WSST3~ TO WSST10~Waterfowl Stopover and Staging (Aquatic) WSSA4*Turtle Wintering Area TWA1*Reptile Hibernaculum RH7*, RH8*, RH9*, RH10*, RH11*, RH12*, RH14*		Storage of Materials and Equipment	No direct effect on significant natural features adjacent to the Project Location following vegetation clearing within the Project Location.	Potential for spills Release of dust and soil particles into woodlands Emissions: Potential for air pollution from dust and emissions from construction vehicles and machinery and equipment. Overall impact to air quality during construction, operations, and decommissioning. Leaks and Spills: Potential for leak or spill of fuel and other deleterious substances from vehicles and machinery that affect wetland wildlife, vegetation, or contaminate water and the soil.	Low. Emissions: Slight change to air quality temporarily Leaks and Spills: Minimal localized effect.	Low frequency with mitigation measures. Potential during construction, operations and decommissioning.	During construction phase. During the operations phase limited materials will be stored at the Project. Storage of hazardous materials and refueling of vehicles/equipment for the Project should not occur within 30 m of a significant natural feature that has been identified within 50 m of the Project Location. A Spill Prevention and Contingency Plan is to be in place for the Project. Secondary containment is to be used for hazardous substances stored in the Project Location. Use controlled work procedures in order to minimize occurrences of spills. Spills cover release of materials from the Project into the air, water or onto land. Ensure that emergency spill kit is available at the Project Location at all times in the even that a spill occurs. Spills and leaks of deleterious substances must be contained and cleaned up in accordance with Provincial regulatory requirements and reported to the Ontario Spills Action Centre (1-800-268-6060). Maintain a log book of spills and mitigation measures. Minimize activities with potential for dust releases, especially during windy and prolonged dry periods. Restore disturbed areas as soon as possible to minimize the duration of soil exposure. Avoid refueling within 30 m of significant natural features.	None. Spills will be remediated. No adverse effects of natural features are anticipated with implementation of mitigation measures

Significant or Provincially Significant Natural Feature Affected by Activity^	Project Phase & Activity within 50 m of Natural Feature	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
		Physical Impact (Direct)	Functional Effect (Indirect)					
<ul style="list-style-type: none"> Colonially Nesting Bird Breeding Habitat CNT1*, CNT26*, CNT27*, CNT28* Other Rare Vegetation Community ALV21 Carolina Whitlow-Grass Habitat Waterfowl Nesting Area WNA2*, WNA4*, WNA7* Turtle Nesting Area TNA1 Amphibian Breeding Habitat (Woodland) ABHWO1, ABHWO2, ABHWO3*, ABHWO9*, ABHWO10 Woodland Area-Sensitive Bird Breeding Habitat ASBB2, ASBB3 Terrestrial Crayfish TC1* Common Nighthawk CN4, CN12 Red-headed Woodpecker RHWO2 Eastern Wood Pewee EAWP3, EAWP3, EAWP4 Wood Thrush WOTH1, WOTH4 Juniper Hairstreak JH1*, JH2*, JH3*, JH4*, JH5*, JH6*, JH7*, JH8*, JH9*, JH10*, JH11*, JH12*, JH13*, JH14*, JH27* Generalized Candidate Significant Wildlife Habitat 								
<p>Wetlands (26*, 31*, 34*, 40*, 43*, 44*, 45*, 54*, 61*, 62*, 71*, 72*, 73*, 75*, 77*, 78*, 83*, 85*, 94, 96*, 109*, 118*, 122*, 123*, 125*, 126*, 127*)</p> <p>Woodlands AP, AQ, BC, BD, BH, BI, CA, CW, CX and DB.</p> <p>Wildlife Habitat associated with connection lines:</p> <ul style="list-style-type: none"> Waterfowl Stopover and Staging (Terrestrial) WSST1~, WSST2~, WSST3~, WSST6~ Reptile Hibernaculum RH13* 	Installation of Connection and Collector Lines Within Road Right-of-Way	No direct effect on wetland, woodland or wildlife habitat adjacent to the Project Location where connection lines are proposed in a road right-of-way	<p>Some minor tree trimming and tree removal will be required.</p> <p>Emissions: Potential for air pollution from dust and emissions from constructions vehicles and machinery and equipment. Overall impact to air quality during construction, operations, and decommissioning.</p>	Low	Once	During connection line installation	<p>All vehicles, machinery, and equipment must be maintained and equipped with emission controls, as applicable by provincial standards.</p> <p>Develop and implement a sediment and erosion control plan prior to and during construction.</p> <p>Establish an spill prevention and contingency plan. Ensure that emergency spill kit is available at the Project Location at all times in the even that a spill occurs. All spills and leaks of deleterious substances must be contained and cleaned up in accordance with Provincial regulatory requirements and reported to the Ontario Spills Action Centre (1-800-268-6060). Maintain a log book of any spills and mitigation measures.</p> <p>No refueling within 30 m of significant natural features.</p>	No residual effects.

Significant or Provincially Significant Natural Feature Affected by Activity^	Project Phase & Activity within 50 m of Natural Feature	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
		Physical Impact (Direct)	Functional Effect (Indirect)					
<ul style="list-style-type: none"> • Colonially Nesting Bird Breeding Habitat CNT9*, CNT10*, CNT11*, CNT18*, CNT19*, CNT20*, CNT21*, CNT22*, CNT23*, CNT24*, CNT25* • Amphibian Breeding Habitat (Woodland) ABHWO1 • Woodland Area-Sensitive Bird Breeding Habitat ASBB1, ASBB2 • Red-headed Woodpecker RHWO2 • Eastern Wood Pewee EAWP1, EAWP2 • Wood Thrush WOTH1 • Juniper Hairstreak JH5*, JH15*, JH19*, JH20*, JS25*, JH26*, JH27*, JH28* <p>Wetlands (18*, 49*, 114*) Woodlands AD and BM. Wildlife Habitat Associated with panels and substations:</p> <ul style="list-style-type: none"> • Waterfowl Stopover and Staging (Terrestrial) WSST1~ • Waterfowl Stopover and Staging (Aquatic) WSSA1~, WSSA2~ • Reptile Hibernaculum RH1*, RH2*, RH3*, RH4*, RH5*, RH15*, RH16* • Colonially Nesting Bird Breeding Habitat CNT15*, CNT16*, CNT17* • Amphibian Breeding Habitat (Woodland) ABHWO1 • Woodland Area-Sensitive Bird Breeding Habitat ASBB1, ASBB2 • ALV6 	Installation of Connection and Collector Lines On Private Land or unopened road allowance	<p>Disturbance and displacement to species inhabiting the natural feature</p> <p>Mortality of animals species travelling to/from and/or inhabiting the natural features during season utilization</p>	<p>Leaks and Spills: Potential for leak or spill of fuel and other deleterious substances from vehicles and machinery that affect woodland wildlife.</p> <p>Sediment transport into adjacent significant natural features</p> <p>Declines in animal populations and species richness due to disturbance to breeding. Animal avoidance of habitat</p> <p>Habitat and sensory disturbance to species utilizing the habitat.</p> <p>Mortality of species inhabiting the natural feature during seasonal utilization of the feature.</p> <p>Disruptions of species from utilizing habitat.</p>	Low	Once	During connection line installation Construction	<p>According to the ISA Arborists' Standards, a general tree protection zone should be 0.3 m diameter for each 2.5 cm of trunk diameter. Given the dominant size class of trees in the Woodlands is >25 cm, the minimum tree protection distance will be the greater of the drip line or 3.0 m from the trunk. This guideline should be used to protect trees during the installation of poles to support overhead connection lines. If tree trimming is required, it should be done by a qualified professional (e.g. ISA arborist or forester). Where trees are required to be removed, snags and trees with quality wildlife cavities are to be removed following dusk and before dawn if during the bat active season, or anytime during the winter hibernation period for bat species. Where snags and trees with quality wildlife cavities are removed, an equal number of bat boxes will be installed in similar habitat in the general area of the Project.</p> <p>Connection lines along municipal roads are not anticipated to occur within wetlands. Where a wetland area may infringe on the road right-of-way, avoid placing poles in these areas where possible. Where spanning a wetland is not possible, priority should be placed on avoiding the installation of poles in wetland areas typically permanently inundated with more than 0.3 m of water. Where this occurs, the sediment and erosion control plan for the project should include appropriate mitigation measures.</p> <p>Equipment required for connection line installation will be restricted to the road/shoulder surface whenever possible.</p> <p>To the extent practicable, connection line installation will be completed in the winter to minimize disturbance to the wetland and any associated wildlife/wildlife habitat.</p> <p>Limits of construction work to be staked in the field in order to minimize disturbance to the wetlands, woodland areas and wildlife habitat.</p> <p>Where wetlands occur within a proposed connection line route, an access road or collector line should not be placed within the natural feature. It is anticipated that wetland areas will be spanned by overhead collector/collection lines or the connection line installed via directional boring. If directional boring is used, an emergency frac-out plan should be developed prior to construction and implemented.</p> <p>Avoid placing poles to support overhead lines in areas of rare alvar community.</p> <p>Develop and implement a sediment and erosion control plan prior to and during construction.</p> <p>According to the ISA Arborists' Standards, a general tree protection zone should be 0.3 m diameter for each 2.5 cm of trunk diameter. Given the dominant size class of trees in the Woodlands is >25 cm, the minimum tree protection distance will be the greater of the drip line or 3.0 m from the trunk. This guideline should be used to protect trees during the installation of poles to support overhead connection lines. If tree trimming is required, it should be done by a qualified professional (e.g. ISA arborist or forester).</p>	

Significant or Provincially Significant Natural Feature Affected by Activity^	Project Phase & Activity within 50 m of Natural Feature	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
		Physical Impact (Direct)	Functional Effect (Indirect)					
<ul style="list-style-type: none">• Common Nighthawk CN1• Red-headed Woodpecker RHW02• Eastern Wood Pewee EAWP1, EAWP2• Wood Thrush WOTH1• Juniper Hairstreak JH18*, JH21*, JH23*, JH24*			Sediment transport into adjacent significant natural features				<p>Where trees are required to be removed, snags and trees with quality wildlife cavities are to be removed following dusk and before dawn if during the bat active season, or anytime during the winter hibernation period for bat species. Where snags and trees with quality wildlife cavities are removed, an equal number of bat boxes will be installed in similar habitat in the general area of the Project.</p> <p>If tree trimming is required, it should be done by a qualified professional (e.g. ISA arborist or forester).</p> <p>If possible, avoid clearing vegetation during the breeding bird season to minimize impacts on breeding birds. Should clearing be required during the breeding bird season (from April 1 to September 15; March 15 to September 15 for areas where waterfowl nesting may occur), nest searches conducted by a qualified person must be completed 48 hours in advance of clearing. If nests are found and the species protected by the <i>Migratory Bird Convention Act</i>, work within a minimum of 10 m of the nest (species status dependent) will cease until the nest has fledged. If there are no nests, then clearing can occur. Construction may occur on cleared lands during the breeding season once vegetation has been removed (if applicable).</p> <p>Where there is a potential entrance/exit to a reptile hibernaculum, efforts should be made to minimize disturbance effects and maintain the structural integrity of the entrance/exit (i.e., do not grade/compact soil over it).</p> <p>The construction workforce will be educated on local wildlife that may be encountered on the Project Location and will be instructed to take measures for avoiding wildlife. A protocol will be provided to contractors to follow in the event that wildlife is encountered. This is to include routine engine checks for snakes before use of machinery during construction.</p> <p>If the Lockridge Road unopened municipal road allowance or an area identified as having a high concentration of avian activity is used for the Project connection line, overhead connection lines and supporting poles to include mitigation measures for reducing collision mortality such as line marking.</p> <p>No refueling within 30 m of significant natural features.</p>	

^Minimum distances between natural features and the Project Location are detailed in the *NHA Site Investigation Report* as required by *Ontario Regulation 359/09*

*Indicates the wildlife habitat will be treated as significant as surveys are not able to be completed in the habitat due to access limitations (permissions and/or health and safety concerns) or due to the ubiquitous nature of the feature across the Project Location (i.e., numerous potential entrance/exits to candidate reptile hibernacula and host plants for butterfly species)

~indicates surveys will be completed prior to construction if, during detailed design, the Project Location is verified to occur in those locations.



10.0 Environmental Effects Mitigation and Monitoring Plan

The Environmental Effects Mitigation and Monitoring Plan (EEMMP) prepared for the Project outlines the mitigation measures to minimize the environmental effects of engaging the Project (**Table 10**). The mitigation measures outlined in **Table 10** below are in response to the physical impacts and functional effects that have potential to occur during the construction of the facility and are specific to significant natural heritage features outlined in **Table 5**, **Table 6** and **Table 7**. These will form part of the overall EEMMP for the Project in the *Design and Operations Report* and the *Construction Plan Report*, as applicable. **Table 10** also summarizes the monitoring plan and monitoring frequency following construction of the facility, as well as contingency measures that will be undertaken if performance objectives are not achieved. **Table 10** should be read in conjunction with **Tables 8** and **9** which outline the features and attributes necessary for persistence, features potentially sensitive to development and features that serve as good indicator features or species.

Table 10: Environmental Effects Mitigation and Monitoring Plan

Significant/ Provincially Significant Natural Feature(s) Affected by Activity	Potential Positive/Negative Environmental Effects		Performance Objective	Environmental Effects Mitigation and Monitoring Plan						Contingency Measures
	Physical	Functional		Mitigation Measure	Monitoring Strategy & Methods	Monitoring Locations	Frequency & Duration	Technical and Statistical Value of Data	Reporting Requirements	
(Assumed) Provincially Significant Wetlands	Alteration of wetland vegetation composition	Change in surface water/drainage run-off volumes and patterns to wetlands and associated wildlife habitat.	Persistence of significant natural features	Cleared lands to be vegetated as soon as practical following construction activities.	Monitor erosion and sediment control (ESC) measures regularly during site preparation and construction.	ESC measures to be monitored where implemented according to the ESC plan.	Monitor ESC measures regularly during construction.	Comparison of significant habitat persistence and use by indicator species post-construction.	ESC inspection checklist log compiled for monitoring events.	Repair deficiencies in ESC structures as soon as possible upon notification of breach in ESC structure and/or insufficient measures based on site conditions.
Significant Woodlands	Permanent removal or degradation of woodland and/or wildlife habitat area	Compaction of ground near treed vegetation root zone	Significant wildlife habitat will continue to meet the criteria for significance post-construction.	<u>Setbacks</u> <ul style="list-style-type: none">Setbacks between significant woodlands and the project perimeter fence, collector and collection line poles to follow ISA Arborist standards.A minimum 5 m setback to be applied to significant wildlife habitat and wetland areas adjacent to the Project Location where PV panels and/or the Project substation is located.	Monitor exclusion fencing regularly during site preparation and construction and relocate wildlife to suitable habitat where required.	Wildlife monitoring to occur where fencing to exclude wildlife has been installed near significant wildlife habitat.	ESC monitoring to occur monthly or after rain events 10 mm or greater (within 24 hrs) until vegetation is re-established.	Determination if mitigation measures were effective.	Surface water quality reporting requirements as per SWM plan and/or the REA issued by the MOECC.	Repair deficiencies in wildlife exclusion fencing within 24 hours of notification of breach.
(Treated as) Significant Waterfowl Stopover and Staging Areas~		Potential changes to water quality.	General connectivity between woodlands maintained at a local landscape level	<u>Erosion and Sediment Control (ESC)</u> Minimize soil exposure. Install erosion and sediment control measures based on final Project ESC Plan prior to vegetation clearing, grubbing and grading to prevent mobilization of sediment and other contaminants from the Project location into the surrounding landscape.	Follow recommendations in the SWM Plan and/or REA issued by the MOECC to monitor effectiveness of water flow management measures; ensure flow is free of sedimentation.	Monitor for surface water quality at locations identified in the SWM Plan and/or REA issued by the MOECC.	Wildlife monitoring to determine if species present in construction disturbance area(s) to occur on an ongoing basis throughout the construction phase.		Annual memo to be submitted to the MNRF outlining the results of surveys (i.e., the area of access roads between the perimeter fencing and the municipal road) for nesting turtles during construction and the relocation of alvar plant species, as applicable.	If performance objectives are not achieved following the first year of post-construction monitoring and significant wildlife habitat is not re-evaluated as significant, the MNRF will be made aware of the monitoring results and an additional year of post-construction monitoring will occur. The maximum length of time for post-construction monitoring will not exceed three years.
(Treated as) Significant Turtle Overwintering Area	Mortality of wildlife species moving across Project area due to increased traffic volumes during construction.	Reduction in quality of habitat.		Restrict vegetation clearing to lands within Project Location identified for development.	Pre-construction surveys to evaluate the significance of waterfowl stopover and staging area treated as significant. See Appendix A for pre-construction survey methodology.	Monitoring for potential turtle nesting along access roads external to perimeter fencing to the intersection with municipal roads if construction of roads occurs during nesting season.	Wildlife monitoring to determine if species present in construction disturbance area(s) to occur on an ongoing basis throughout the construction phase.		Post-construction monitoring report to be submitted to the MNRF outlining the results of the surveys and re-evaluation of features to determine persistence of significance.	
(Treated as) Significant Reptile Hibernaculum		Potential loss of linear treed connectivity between woodlands.		<u>Stormwater Management</u> Develop and implement a Stormwater Management Plan to ensure drainage patterns are not significantly altered from existing conditions due to road drainage, reduction in surface permeability, etc. Hydrogeological work to be completed to verify that no significant changes to groundwater characteristics are anticipated as a result of the Project.						
(Treated as) Significant Colonially Nesting Bird Breeding Habitat (Trees & Shrubs)	Mortality of avian species due to collision with overhead connection lines.			<u>Vegetation/ Habitat Considerations</u> Woodland removal and/or removal of sensitive natural features to be minimized if possible during detail design. Snags and trees with quality wildlife cavities are to be removed following dusk and before dawn if during the bat active season (generally March to November), or anytime during the winter hibernation						
Significant Other Rare Vegetation Communities										
Significant Carolina Whitlow-Grass Habitat										
(Treated as) Significant Waterfowl Nesting Area										
(Treated as) Significant Turtle Nesting Area										
(Treated as) Significant Amphibian Breeding Habitat (Woodland)										
Significant Woodland Area-Sensitive Bird Breeding Habitat										

Significant/ Provincially Significant Natural Feature(s) Affected by Activity	Potential Positive/Negative Environmental Effects		Performance Objective	Environmental Effects Mitigation and Monitoring Plan						Contingency Measures
				Mitigation Measure	Monitoring Strategy & Methods	Monitoring Locations	Frequency & Duration	Technical and Statistical Value of Data	Reporting Requirements	
	Physical	Functional								
(Treated as) Significant Terrestrial Crayfish Habitat				period for bat species. Where snags and trees with quality wildlife cavities are removed, an equal number of bat boxes will be installed in similar habitat in the general area of the Project.	perimeter fencing during the first turtle nesting season to determine effectiveness of access road at preventing nesting.	significant wildlife habitat is wholly or partially retained following construction.	July between 7 pm and 10 pm. Frequency during this time period will be subject to weather conditions			barriers placed over known nests to discourage predation or removal of eggs for incubation by a qualified organization. Once the nest is vacated, alternative mitigation options will be explored to discourage further nesting in consultation with the MNRF.
Significant Common Nighthawk Habitat				Installation of connection line overhead poles to avoid areas of sensitive natural features such as potential reptile hibernacula entry/exit points and wetlands or vernal pools with standing water during the amphibian breeding season.	Monitoring of transplanted alvar species to occur in the target recipient sites.	One year of post-construction monitoring for significant wildlife habitat that is wholly or partially retained following construction (see Section 13 for which wildlife habitat is subject to post-construction monitoring).				
Significant Red-headed Woodpecker Habitat				To compensate for the loss of 0.65 ha of a Rare Vegetation Community (ALV21), removal of invasive species identified within the portion of the community located to the north of the Project Location or other areas identified will be undertaken. Actions taken may also include periodic thinning of woody vegetation cover to maintain an open alvar environment. Where possible, alvar indicator plants will be collected during an appropriate time of year and transplanted out of the Project Location and into an appropriate recipient site that has been carefully selected and prepared to receive the transplanted species.	Monitoring of invasive species removal in area ALV21 located outside of the Project Location.	Monitoring for frac-out to occur in wetland and/or water body locations being drilled under.				
Significant Eastern Wood Pewee Habitat										
Significant Wood Thrush Habitat										
Significant Yellow Pond Lily Habitat										
(Treated as) Significant Juniper Hairstreak Habitat										
Generalized Candidate Significant Wildlife Habitat				For installation of collector/collection lines by directional boring/drill, follow proper geotechnical assessment practices, drilling planning and execution. Time drilling activities to occur outside of sensitive timing windows as determined through consultation with the MNRF following approval of the REA. Design the drill path to an appropriate depth below the water body/wetland to minimize the risk of frac-out. Develop an emergency frac-out response plan prior to undertaking direction boring activities. Should frac-out occur, the extent can be limited by careful monitoring during the boring activities and having appropriate response equipment available on-site and ready for use. Monitor the wetland and associated water body to observe signs of surface migration (frac-out) of drilling mud during boring activities.	Monitoring for frac-out to occur in wetland and/or water body locations being drilled under.	Monitoring to document establishment success of transplanted alvar plant species and removal of invasive species in areas of ALV21 for a minimum period of three years following transplantation/removal activities.	Monitoring for frac-out to occur during drilling operations.			If frac-out occurs, re-evaluate drilling pathway and assess feasibility of alternative installation methods (where available).

Significant/ Provincially Significant Natural Feature(s) Affected by Activity	Potential Positive/Negative Environmental Effects		Performance Objective	Environmental Effects Mitigation and Monitoring Plan						Contingency Measures
	Physical	Functional		Mitigation Measure	Monitoring Strategy & Methods	Monitoring Locations	Frequency & Duration	Technical and Statistical Value of Data	Reporting Requirements	
				<u>Wildlife Considerations</u> The construction workforce will be educated on local wildlife that may be encountered on the Project Location at the time of site orientation. Included in the orientation will be instructions for how to identify and avoid wildlife that may be encountered. A protocol will be provided to contractors to follow in the event wildlife is encountered. This protocol will include specific measures for dealing with turtles, breeding birds and other wildlife. Wildlife located within the Project Location will be relocated to an area outside the Project Location (and into an area of appropriate habitat) as necessary. This will be completed by a professional trained in the safe handling of wildlife. Vehicle speeds restricted to 15 km/hr or less when travelling within the Project Location where PV panels and the substation are proposed. Utilize fencing (e.g., Perimeter fencing and/or silt fencing) to deter wildlife from entering the construction site during construction and decommissioning. In the vicinity of the Project Location (e.g. sections of Rattie Road, Hinch Road and Centreville Road) where traffic volumes exceed normal volumes due to construction activities, exclusion fencing shall be installed adjacent to natural habitats and wetlands areas to minimize road mortality of wildlife. Signage will be installed beyond the extents of the exclusion fencing to warn construction traffic of the potential for wildlife to be crossing the road and to indicate a speed limit of 20 km/hr. An environmental monitor shall regularly inspect the exclusion fencing to ensure it is properly installed (keyed-in) and to observe for wildlife that may be attempting to travel around the ends of the fencing, An environmental monitor or designated personnel will monitor construction traffic speed and have the authority to direct, slow or halt construction traffic accordingly to protect against road mortality.						

Significant/ Provincially Significant Natural Feature(s) Affected by Activity	Potential Positive/Negative Environmental Effects		Performance Objective	Environmental Effects Mitigation and Monitoring Plan						Contingency Measures
	Physical	Functional		Mitigation Measure	Monitoring Strategy & Methods	Monitoring Locations	Frequency & Duration	Technical and Statistical Value of Data	Reporting Requirements	
				<p>The perimeter fencing is to have contact with the ground surface to prevent entry of wildlife. Where it is not feasible for the fence to contact the ground, other measures will be installed to prevent wildlife access under the fence. During the construction phase, in areas appropriate to protect hatchling turtles, the spacing in the chain link should be of sufficient size to prevent entry from the ground surface to a height of approximately 0.5 m. Where feasible, the perimeter fencing is to be constructed outside of the turtle active season (i.e., March- May to avoid turtles emerging from wintering habitats; May-June for nesting; September-October window to avoid turtles moving to wintering habitat).</p> <p>Where it is not feasible to construct perimeter fencing in its entirety during the turtle overwintering period, fencing to be temporarily supplemented with silt fencing to act as a barrier/exclusionary measure.</p> <p>Minimize impacts to breeding birds (from April 1 to September 15; March 15 to September 15 for areas where waterfowl nesting may occur) by clearing naturalized vegetation outside of the breeding bird season. Should clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed 48 hours prior to clearing activities. If nests are found, works within 10 m will cease until nest has fledged. If no nests are present, clearing can occur. Prohibitions under the federal <i>Migratory Bird Convention Act</i> are to be complied with.</p> <p>Construction vehicle speeds to be restricted to 20 km/hr on municipal roads adjacent to where wildlife exclusion fencing has been installed (as described in this table). Minimize construction traffic during nighttime hours. Vehicle speeds to be restricted to 15 km/hr or less on the Project site and speed limit signage posted</p> <p>Access roads located outside of the perimeter fence are to be designed to discourage turtle nesting (e.g. use of hardeners, at-grade access roads on bedrock, etc.).</p>						

Significant/ Provincially Significant Natural Feature(s) Affected by Activity	Potential Positive/Negative Environmental Effects		Performance Objective	Environmental Effects Mitigation and Monitoring Plan						Contingency Measures
	Physical	Functional		Mitigation Measure	Monitoring Strategy & Methods	Monitoring Locations	Frequency & Duration	Technical and Statistical Value of Data	Reporting Requirements	
				Overhead connection lines and supporting poles to include mitigation measures for reducing collision mortality such as line marking in areas of known high bird activity and if a connection line is installed in the Lockridge Road unopened road allowance. Cleared lands to be vegetated as soon as practical following construction activities.						

**where a natural feature is preceded by (assumed) or (treated as), this indicates that one or more of the features included in this grouping has not be evaluated by provincial standards and has been assumed/treated as significant for the purposes of this NHA EIS Report. For more information please refer to the NHA Evaluation of Significance Report; ~wildlife habitat treated as significant will be surveyed prior to construction and evaluated for significance.*

11.0 Negative Environmental Effects, Design and Operations

The REA regulation requires an environmental effects monitoring plan as a part of the *Design and Operations Report* to demonstrate how negative environmental effects of the Project will be mitigated, and set out a program for ongoing monitoring of the effectiveness of the mitigation measures. Through the NHA, the Project Location has been defined to avoid directly impacting significant natural features where possible. During the operations phase of the Project, there are no expected impacts or effects to significant natural features that would require ongoing mitigation measures or monitoring. As such, information relating to significant natural features is not required to be included in the environmental effects monitoring plan for the Project *Design and Operations Report*. Additional mitigation measures proposed to minimize impacts of the facility and not related to significant natural features are summarized in the *Design and Operations Report*.

12.0 Negative Environmental Effects, Construction

The REA regulation requires that a *Construction Plan Report* be prepared to demonstrate how negative environmental effects of construction activities will be mitigated including modifications to construction activities, use of treatment technologies (e.g. Erosion and Sediment Control structures), and scheduling of activities. **Table 10** above provides a description of performance objectives in respect of each negative environmental effect; mitigation measures planned to achieve performance objectives; how the Project is to be monitored; and a contingency plan to be implemented should monitoring reveal that mitigation measures have failed. **Table 10** has been prepared for inclusion in the Project *Construction Plan Report*. Additional mitigation measures proposed to minimize impacts of the facility and not related to natural features are summarized in the *Construction Plan Report*.

13.0 Conclusion

Through a records review, site investigation and natural features evaluation of significance, it was determined that significant natural features exist within the Project Location and 50 m setback (see **Figure 3, Figure 4, and Figures 5A-5O**). As such, an *NHA EIS Report* was required under Sections 37 and 38 of *Ontario Regulation 359/09*. This fourth and final report therefore satisfies the requirements under *Ontario Regulation 359/09* with respect to an NHA. This *NHA EIS Report* demonstrates how negative environmental effects of the Project will be mitigated, and sets out a program for ongoing monitoring of the effectiveness of the mitigation measures. **Table 10** above provides a description of performance objectives in respect of each negative environmental effect; mitigation measures planned to achieve performance objectives; how the Project is to be monitored; and a contingency plan to be implemented should monitoring reveal that mitigation measures have failed. The *NHA EIS report* was completed to mitigate potential negative environmental effects to the significant natural features found in association with this Project.

Significant Natural Features associated with the Project has been identified below. Wetlands that have been assumed to be provincially significant and wildlife habitat treated as significant have been identified with an asterisk (*). Where wildlife habitat has been **bolded**, these will be subject to post-construction monitoring (see **Table 10**).

- Wetlands
 - 4, 11, 18*, 26*, 31*, 34*, 40*, 43*, 44*, 45*, 49*, 54*, 61*, 62*, 71*, 72*, 73*, 75*, 77*, 78*, 83*, 85*, 86*, 88, 92*, 94, 96*, 102, 103, 104, 109*, 114*, 117*, 118*, 122*, 123*, 125*, 126*, 127*
- Woodlands
 - AB, AD, AE, AP, AQ, B, BC, BD, BH, BI, BM, CA, CW, CX, DB, EA, I, L
- Seasonal Concentration Areas
 - Waterfowl Stopover and Staging Area Terrestrial (**WSST1***, **WSST2***, WSST3*, WSST4*, WSST5*, **WSST6***, **WSST7***, **WSST8***, WSST9*, WSST10*). Note, only those habitats that are evaluated to be significant following pre-construction surveys will be subject to post-construction monitoring.
 - Waterfowl Stopover and Staging Area Aquatic (**WSSA1***, **WSSA2***, **WSSA4***). Note, only those habitats that are evaluated to be significant following pre-construction surveys will be subject to post-construction monitoring.
 - Turtle Wintering Areas (TWA1*)
 - Reptile Hibernaculum (RH1*, RH2*, RH3*, RH4*, RH5*, RH7*, RH8*, RH9*, RH10*, RH11*, RH12*, RH13*, RH14*, RH15*, RH16*)
 - Colonially Nesting Bird Breeding Habitat (Tree & Shrubs) (CNT1*, CNT9*, CNT10*, CNT11*, CNT15*, CNT16*, CNT17*, CNT18*, CNT19*, CNT20*, CNT21*, CNT22*, CNT23*, CNT24*, CNT25*, CNT26*, CNT27*, CNT28*)

- Rare Vegetation Communities
 - Alvar
 - **ALV6** (Significant Other Rare Vegetation Community)
 - **Significant Carolina Whitlow Grass Habitat** (previously ALV11; only the approximately 25 m² portion that was reported to support Carolina Whitlow Grass is significant)
 - **ALV21** (Significant Other Rare Vegetation Community)
- Specialised Wildlife Habitat
 - Waterfowl Nesting Area (WNA2*, WNA4*, WNA7*)
 - Turtle Nesting Areas (TNA1*)
 - Amphibian Breeding Habitat (Woodland) (**ABHWO1, ABHWO2, ABHWO3*, ABHWO6, ABHWO9*, ABHWO10**)
 - Woodland Area-Sensitive Bird Breeding Habitat (**ASBB1, ASBB2, ASBB3**)
 - Terrestrial Crayfish (TC1*)
- Habitat For Species of Conservation Concern
 - Common Nighthawk (**CN1, CN4, CN12**)
 - Woodland Specific Bird Species of Special Concern
 - Red-headed Woodpecker (**RHW02**)
 - Eastern Wood-Pewee (**EAWP1, EAWP2, EAWP3, EAWP4**)
 - Wood Thrush (**WOTH1, WOTH4**)
 - **Large Yellow Pond Lily**
 - Juniper Hairstreak*

14.0 References

- Ontario Ministry of Natural Resources and Forestry. 2000. Significant Wildlife Habitat Technical Guide. 151 pp.
- Ontario Ministry of Natural Resources and Forestry. 2012. Natural Heritage Assessment Guide for Renewable Energy Projects. Second Edition. 109 pp.
- Ontario Ministry of Natural Resources and Forestry. 2014. Significant Wildlife Habitat Mitigation Support Tool. 533 pp.
- Ontario Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. 38 pp.

Appendix A

Pre-Construction Survey Methodology

Methodology to Evaluate Waterfowl Stopover and Staging Areas

For evaluation methodology related to Waterfowl Stopover and Staging Areas (Terrestrial and Aquatic), surveys will be completed within the habitat, where accessible, between mid-March to early May 2017 following the methods for stopover counts, as adapted from the Bird and Bird Habitats: Guidelines for Wind Power Projects (MNR, 2011), and the Waterfowl Stopover and Staging Areas (Terrestrial and Aquatic) habitat criteria as outlined in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E.

The purpose of stopover counts is to estimate the abundance of waterfowl species using the habitat as a stopover site on migration, whether for resting and/or for foraging. The stopover count method will be a variation on the standardized area search method from the Bird and Bird Habitats: Guidelines for Wind Power Projects (MNR, 2011) to account for areas of restricted access (i.e., lack of permission and/or health and safety concerns).

Most waterbirds can be counted at any time during the day. Habitats are to be surveyed three times between mid-March and early May with survey dates spaced a minimum of 7 days apart in order to determine whether there are aggregations of 100 or more listed species for 7 days.

The surveys will be completed using binoculars and/or a spotting scope to estimate the total number of individuals of each species present in the area on a particular visit. As sampling is expected to only include a portion of each habitat, a fixed width transect, in which a route (transect) is selected, is to be used to survey each habitat. Waterfowl observed within a fixed distance of the transect are to be recorded. For waterbirds in open areas, birds may be detected and identified at distances of 1 km or more with good optical equipment. Where a habitat may not be easily traversed using a transect (i.e. terrain, land access), a fixed point count is to be placed along the edge of the habitat where open water can be viewed. Multiple point counts may be placed along the edge of a habitat 500 m apart in order to adequately survey the habitat. Each point count fixed along the edge of a habitat is to be surveyed for 10 minutes.

Data recorded for these surveys are to include a map of the route/point counts and the major observation sites, the date, the start and end time of each visit, weather conditions, species and an estimate of abundance for each species.