Appendix C

Field Notes
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** 1-1  
**Watercourse Name** Unknown  
**Project Name** Niagara Wind  
**Project #** 160982209  
**Field Staff** Greene, T. Clufter  
**Time**  

**Date** June 22/12  
**Weather conditions in previous 24 hrs** Hot & humid, 35°c+  
**GPS Coordinates (Zone)** 17T E N  
**Datum** NAD83  
**Descriptive Location** Not Rail and Greenlake, west of Andrews Court

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**Water Quality**

- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (µS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)** 25°C  

**Time in situ measurements taken**

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**Watercourse Dimensions & Morphology**

- **Mean Watercourse Width** 2.3 m  
- **Maximum Pool Depth** 10.2 cm  
- **Mean Bankfull Width** 2.3 m  
- **Mean Water Depth** 1.0 cm  
- **% Riffle** 50%  
- **% Pool** 30%  
- **% Run** 20%  
- **% Flat** 0%  

**Evidence of eroding banks, Comments on bank stability**

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**Substrate (% cover)**

- **Bedrock**  
- **Cobble**  
- **Sand**  
- **Silt**  
- **Muck**  
- **Boulder**  
- **Gravel**  
- **Clay**  
- **Marl**  
- **Detritus**

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**In-water Cover**

- **Cover Types Present (circle):**  
  - Undercut Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg  
  - Woody Debris  
  - Boulder  
  - Other

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**Riparian Zone**

- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**

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**Adjacent Land Use**

- **100% early**  
- **orchard**

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**Fish Habitat Potential**

- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**

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**Migratory Obstructions (seasonal, permanent)**

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**Note any fish observations** no access

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**Waterbody Notes**

- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Buried Tile**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Dominated by Aquatic Veg**  
- **Dry**

---

**Other Habitat Notes, Incidental Wildlife Observations, etc.** no access, seen from a distance

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Field Notes Authored by T. Clufter  
Field Notes QA/QCed by ME
Station #: 2-1  Project Name: Niagara Wind
Watercourse Name: unknown  Project #: 160952269
Photos  Field Staff: K. Clayton
Date: June 22/12  Time: 10:35
Weather conditions in previous 24 hrs: hot, humid, 72°F
GPS Coordinates (Zone) 17T E 691732 N 4781386 Datum Nad83
Descriptive Location: off of King Street, East of Thirtyed

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)  
Water Temperature (°C)  Air Temperature (°C) 25°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
   % Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 40  Cobble  Sand 40  Silt  Muck
Boulder 20  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
residential, built up, roads

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
dry - perched culvert

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Channel is defined - has boulders & cobble, overhanging veg is summer, walnut, suga maple, grape

Field Notes Authored by: K. Clayton  Field Notes QA/QCed by: ME
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station # 2.2  
Watercourse Name unknown  
Photos  
Date June 24/12  
Weather conditions in previous 24 hrs hot, humid, 32°C  
GPS Coordinates (Zone) 17T E 622067 N 4781132 Datum NAD 83  
Descriptive Location  

**Water Quality**

- Dissolved Oxygen (mg/L) 8.00  
- pH 8.70  
- Conductivity (µS/cm) 835  
- Water Temperature (°C) 20.10  
- Air Temperature (°C) 25°C  
- Time in situ measurements taken 10:46  

**Watercourse Dimensions & Morphology**

- Mean Watercourse Width 1.5 (m)  
- Maximum Pool Depth 0.20 (cm)  
- Mean Bankfull Width 2.5 (m)  
- Mean Water Depth 0.15 (cm)  
- 50% Rifle 30% Pool 20% Run 0% Flat  
- Evidence of eroding banks, Comments on bank stability  

**Substrate (% cover)**

<table>
<thead>
<tr>
<th>Substrate</th>
<th>% Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedrock</td>
<td>50</td>
</tr>
<tr>
<td>Cobble</td>
<td>20</td>
</tr>
<tr>
<td>Sand</td>
<td>20</td>
</tr>
<tr>
<td>Silt</td>
<td>10</td>
</tr>
<tr>
<td>Muck</td>
<td>5</td>
</tr>
<tr>
<td>Boulder</td>
<td>10</td>
</tr>
<tr>
<td>gravel</td>
<td>5</td>
</tr>
<tr>
<td>Clay</td>
<td>5</td>
</tr>
<tr>
<td>Marl</td>
<td>5</td>
</tr>
<tr>
<td>Detritus</td>
<td>5</td>
</tr>
</tbody>
</table>

**In-water Cover**

- Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg  
- Overhanging Vegetation Woody Debris Boulder Other algae  

**Riparian Zone**

- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 75% trees, mature  

**Adjacent Land Use**

- bush, wet, Road  

**Fish Habitat Potential**

- Critical Habitat (spawning or nursery areas, groundwater upwellings) spawning, nursery, foraging  
- Migratory Obstructions (seasonal, permanent) sandy, dry  
- Note any fish observations  

**Waterbody Notes**

- Natural Watercourse  
- Trapezoidal Channel  
- Graded Swale  
- Buried Tile  
- Surficial Drainage (i.e. furrows)  
- Dugout Pond  
- Dominated by Aquatic Veg  
- Dry  

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

- a little trickle of water  
- a defined channel is left of gravel road  
- snedged by japanese walnuts & sugar maple  
- east side of green agg.  
- road is more open  
- overpiles along bank  
- shedes by wilson  
- hurned by wilson  

Field Notes Authored by K Clayton  
Field Notes QA/QCed by WE  

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** 23  
**Watercourse Name** unknown  
**Photos**  
**Date** June 22/12  
**Weather conditions in previous 24 hrs** hot and humid 23°C  
**GPS Coordinates (Zone)** 17T E 6202300 N 4781050 Datum NAD 83  
**Descriptive Location** off of King Street east of 2-2

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**Water Quality**
- Dissolved Oxygen (mg/L)  
- pH  
- Conductivity (µS/cm)  
- Water Temperature (°C)  
- Air Temperature (°C) 25°C  
- Time in situ measurements taken  

**Watercourse Dimensions & Morphology**
- Mean Watercourse Width (m)  
- Maximum Pool Depth (cm)  
- Mean Bankfull Width (m)  
- Mean Water Depth (cm)  
- % Riffle  
- % Pool  
- % Run  
- % Flat  

Evidence of eroding banks, Comments on bank stability

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**Substrate (% cover)**
- Bedrock 50  
- Cobble  
- Sand 40  
- Silt  
- Muck  
- Boulder 10  
- Gravel  
- Clay  
- Marl  
- Detritus  

**In-water Cover**
- Cover Types Present (circle): Undershot Banks  
- Deep Pool  
- Watercress  
- Aquatic Veg  
- Overhanging Vegetation  
- Woody Debris  
- Boulder  
- Other  

**Riparian Zone**
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  
- 75% trees, mature

**Adjacent Land Use**
- Residential, Road

**Fish Habitat Potential**
- Critical Habitat (spawning or nursery areas, groundwater upwellings)  
- Spawning, nursery, fledging

**Migratory Obstructions (seasonal, permanent)**
- dry

**Note any fish observations**

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**Waterbody Notes**
- Natural Watercourse  
- Trapezoidal Channel  
- Grassed Swale  
- Buried Tile  
- Surficial Drainage (i.e. furrows)  
- Dugout Pond  
- Dominated by Aquatic Veg  
- Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**
- Channel well defined in cobble  
- & boulders, shaded by sumac, grape, virginia creeper, blackberries

Field Notes Authored by K. Clayton  
Field Notes QA/QC by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 3-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 160982369
Photos
Date June 20/12  Field Staff J. Geene, V. Clayton
Weather conditions in previous 24 hrs hot, humid, ~32°C
GPS Coordinates (Zone) 17T E 042,186 N 4780,325 Datum Nad 83
Descriptive Location off of Mountainview Road, North of McFadden Rd

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C) 25°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
85%, Typha, early

Adjacent Land Use
grape vine orchard, woodland, road

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton
Field Notes QA/QCed by ME
# Wind Farm Waterbody Rapid Assessment Form

**Station #**: 3-2  
**Project Name**: Niagara Wind  
**Watercourse Name**: Unknown  
**Project #:**: 100982269  
**Photos**: See photo log  
**Field Staff**: J. Keane, K. Clauern  
**Date**: June 27/12  
**Weather conditions in previous 24 hrs**: Hot & humid, 23°C+  
**GPS Coordinates (Zone)**: 41° 36' 13.71" W, 79° 18' 20.14" N  
**Datum**: NAD83  
**Descriptive Location**: Off of Mountain View Rd, NW of McCall  

## Water Quality

- **Dissolved Oxygen (mg/L)**
- **pH**
- **Conductivity (μS/cm)**
- **Water Temperature (°C)**
- **Air Temperature (°C)**
- **Time in situ measurements taken**

## Watercourse Dimensions & Morphology

- **Mean Watercourse Width** (m)  
- **Maximum Pool Depth** (cm)  
- **Mean Bankfull Width** (m)  
- **Mean Water Depth** (cm)  
- **% Riffle**  
- **% Pool**  
- **% Run**  
- **% Flat**

**Evidence of eroding banks, Comments on bank stability**

## Substrate (% cover)

<table>
<thead>
<tr>
<th>Substrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedrock</td>
</tr>
</tbody>
</table>
| Cobble    | 20  
| Sand      | 50  
| Silt      |  
| Muck      |  
| Boulder   |  
| Gravel    | 10  
| Clay      |  
| Marl      | 20  
| Detritus  |  

## In-water Cover

- **Cover Types Present (circle):** Undercut Banks  
- **Overhanging Vegetation:** Woody Debris  
- **Boulder**  
- **Other**

## Riparian Zone

- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**

**Adjacent Land Use**

- **Bush/lot/road**

## Fish Habitat Potential

- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**

## Migratory Obstructions (seasonal, permanent)

- **Dry - perched culvert - extreme slope**

**Note any fish observations**

## Waterbody Notes

- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Buried Tile**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Dominated by Aquatic Veg**  
- **Dry**

## Other Habitat Notes, Incidental Wildlife Observations, etc.

- **Channel is shallow, in grapes**
- **maple; sumac surrounding it.**

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Field Notes Authored by: K. Clauern  
Field Notes QA/QCed by: MG
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 3-3  Project Name Niagara Wind
Watercourse Name unknown  Project # 160988269
Photos  see photo 1-2  Field Staff J. Keene, K. Clanton
Date June 20/12  Time 12:00
Weather conditions in previous 24 hrs Hot, dry, wind
GPS Coordinates (Zone) 17T E 6228189 N 4779381 Datum NAD83
Descriptive Location off of Mahtin view Rd. South of 2-2

Water Quality
Dissolved Oxygen (mg/L)  No Water  Conductivity (µS/cm) 
Water Temperature (°C)  25°C  Air Temperature (°C) 
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  10 Sand  50 Silt  Muck
Boulder  10 Gravel  30 Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
95%, Typha, early

Adjacent Land Use
Residential, Road, garden nursery

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
dry

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Channel is cleared, however, possibly due to garden next door creating a termite nest to it. Dominated by Typha, on east side it's a Potentia rea, on west side it's not.

Field Notes Authored by K. Clanton  Field Notes QA/QCed by WE
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** 4-1  
**Watercourse Name** Unknown  
**Photos**  
**Date** June 22/12  
**Weather conditions in previous 24 hrs** Hot & Humid  
**GPS Coordinates (Zone)** 17T E 632208 N 478942 Datum NAD83  
**Descriptive Location** Off of Maintainview Rd. South of 33

### Water Quality
- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (μS/cm)**  
- **Air Temperature (°C)** 25°C  
- **Time in situ measurements taken**

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width** (m)  
- **Maximum Pool Depth** (cm)  
- **Mean Bankfull Width** (m)  
- **Mean Water Depth** (cm)  
- **% Riffle**  
- **% Pool**  
- **% Run**  
- **% Flat**  

**Evidence of eroding banks, Comments on bank stability**

### Substrate (% cover)
- **Bedrock**  
- **Cobble**  
- **Sand** 80  
- **Silt**  
- **Muck**  
- **Boulder**  
- **Gravel**  
- **Clay**  
- **Marl** 20  
- **Detritus**

### In-water Cover
- **Cover Types Present (circle):** Undercut Banks  
- **Deep Pool**  
- **Watercress**  
- **Aquatic Veg**  

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**  

### Adjacent Land Use
- **Grape Vines**

### Fish Habitat Potential
- **Critical Habitat** (spawning or nursery areas, groundwater upwellings)  

### Migratory Obstructions (seasonal, permanent)
- **Dry**

### Note any fish observations

### Waterbody Notes
- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Buried Tile**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Dominated by Aquatic Veg**  

### Other Habitat Notes, Incidental Wildlife Observations, etc.
- Small, shallow channel  
- Water flowing on West Side, wet/dry  
- One east bank side is on bush, to Virginia Creeper, Sumac, Walnut & Grape.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 5-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 160958269
Photos  Field Staff K. Clayten
Date June 30/12  Time 10:15
Weather conditions in previous 24 hrs sunny, 32°C
GPS Coordinates (Zone) 71T E 6,300,002 N 47,8419 Datum NAD 83
Descriptive Location off of Ridge Road, east, west of Thirty Rd

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
100 Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Residential, Road

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayten  Field Notes QA/QCed by ME

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Station # 5-2  
Watercourse Name unknown  
Photos  
Date June 28/12  
Weather conditions in previous 24 hrs hot & humid 82°F  
GPS Coordinates (Zone) 17T E 620 937 N 4780534 Datum NAD83  
Descriptive Location off of Thirty Rd, N of Elm Tree Rd, Valmont Rd  

Water Quality  
Dissolved Oxygen (mg/L)  
pH  
Conductivity (µS/cm)  
Water Temperature (°C)  
Air Temperature (°C)  

Time in situ measurements taken  

Watercourse Dimensions & Morphology  
Mean Watercourse Width (m)  
Maximum Pool Depth (cm)  
Mean Bankfull Width (m)  
Mean Water Depth (cm)  

% Riffle  
% Pool  
% Run  
% Flat  

Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)  
Bedrock 50  
Cobble  
Sand 40  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  

In-water Cover  
Cover Types Present (circle): Woody Debris Boulder Deep Pool Watercress Aquatic Veg  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

Adjacent Land Use  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings) spawning, nursery, foraging  

Migratory Obstructions (seasonal, permanent) Any - perched culvert & deep holes  

Note any fish observations  

Waterbody Notes  
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile  
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by  

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # (c-1) Watercourse Name Unknown Project Name Niagara Wind
Photos Date June 2012
Weather conditions in previous 24 hrs Hot & humid N 32°C
GPS Coordinates (Zone) 17T E 620348 N 479350 Datum NAD83 Descriptive Location off e Thirty Rd, North of Temperance

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 28°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use Soy pasture grape vines

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg. Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clifton Field Notes QA/QCed by N.E.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 8-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160953269
Photos  Field Staff
Date June 22/12  Yee, K. Clayton

Weather conditions in previous 24 hrs

hot & humid 25°C

GPS Coordinates (Zone) 17T E 632018 N 4769769 Datum NAD83
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) ______ pH _______ Conductivity (µS/cm) _______
Water Temperature (°C) _______ Air Temperature (°C) 25°C

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 3 (m) Maximum Pool Depth _______ (cm)
Mean Bankfull Width 1.3 (m) Mean Water Depth _______ (cm)

% Riffle % Pool % Run % Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  40  Silt  Muck
Boulder  Gravel  SO  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Soy, woodlot

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Spawning, nursery, foraging

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

REA waterbody that follows the bushlot w/defined channel, undercut banks & dominated by aquatic vegetation

Field Notes Authored by K. Clayton  Field Notes QA/QCed by WE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 9-1       Project Name Niagara Wind
Watercourse Name unknown
Photos
Date June 30/12
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 17T E
Descriptive Location 1st crossing north of Youngstown

Water Quality
Dissolved Oxygen (mg/L)       pH  Conductivity (µS/cm)  
Water Temperature (°C)  
Air Temperature (°C) 301°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  
Mean Bankfull Width (m)  
% Riffle  
% Pool  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  

In-water Cover
Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation  
Woody Debris  
Boulder  
Other  

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton
Field Notes QA/QCed by MF
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station #: 11-1  
Watercourse Name: Unknown  
Photos: 
Date: June 20/12  
Weather conditions in previous 24 hrs: Hot & Humid  
GPS Coordinates (Zone): UTM 17T E 017710 N 47723937 Datum NAD83  
Descriptive Location: Off South Farmby Rd, North of rail line.

### Water Quality
- Dissolved Oxygen (mg/L)  
- pH  
- Conductivity (μS/cm)  
- Water Temperature (°C)  
- Air Temperature (°C): 30°C  
- Time in situ measurements taken: 

### Watercourse Dimensions & Morphology
- Mean Watercourse Width: (m) 
- Mean Bankfull Width: (m) 
- Maximum Pool Depth: (cm) 
- Mean Water Depth: (cm) 

<table>
<thead>
<tr>
<th>% Rifle</th>
<th>% Pool</th>
<th>% Run</th>
<th>% Flat</th>
</tr>
</thead>
</table>

Evidence of eroding banks, Comments on bank stability: 

### Substrate (% cover)
- Bedrock  
- Cobble  
- Sand  
- Silt  
- Muck  
- Boulder  
- Gravel  
- Clay  
- Marl  
- Detritus

### In-water Cover
- Cover Types Present (circle): 
  - Undercut Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg  
  - Overhanging Vegetation  
  - Woody Debris  
  - Boulder  
  - Other

### Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 100% Typha, early

### Adjacent Land Use
- Say

### Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings): 
- Migratory Obstructions (seasonal, permanent): 
- Note any fish observations: 

### Waterbody Notes
- Natural Watercourse:  
- Trapezoidal Channel:  
- Grassed Swale:  
- Buried Tile:  
- Surficial Drainage (i.e. furrows):  
- Dugout Pond:  
- Dominated by Aquatic Veg: 
- Dry: 

### Other Habitat Notes, Incidental Wildlife Observations, etc.
- Does not qualify as intermittent stream

Field Notes Authored by: K Clayton  
Field Notes QA/QCed by: ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 11-2  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160982269
Photos  Field Staff K. Clayton
Date JUne 22/12  Time 13:55
Weather conditions in previous 24 hrs Hot & Humid
GPS Coordinates (Zone) 17T E 6176519  N 4773494 Datum NAD83
Descriptive Location Off of S. Primly Rd, south of rail tracks

Water Quality
Dissolved Oxygen (mg/L) 7.21  pH 8.58  Conductivity (µS/cm) 1253
Water Temperature (°C) 28.30  Air Temperature (°C) 23.00
Time in situ measurements taken 14:07

Watercourse Dimensions & Morphology
Mean Watercourse Width 10 (m)  Maximum Pool Depth 150 (cm)
Mean Bankfull Width 15 (m)  Mean Water Depth 1.00 (cm)
% Rifle 100  % Pool 100  % Run 0  % Flat
Evidence of eroding banks, Comments on bank stability Stable vegetation banks.

Substrate (% cover)
Bedrock  Boulder  Gravel  So  Clay  Marl  Detritus
Cobble  Sand  Silt  Muck

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 40 % trees, mature
Adjacent Land Use Forest

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 12-1
Watercourse Name unknown
Photos
Date June 20/12
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 17T E 616008 N 4718130 Datum NAD 83
Descriptive Location off of S Grimsby Rd, south of 30 miles

Water Quality
Dissolved Oxygen (mg/L) drought
pH
Conductivity (μS/cm) measured
Water Temperature (°C) 30
Air Temperature (°C) measured

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) measured
Mean Bankfull Width (m) measured
Maximum Pool Depth (cm) measured
Mean Water Depth (cm) measured

% Riffle % Pool % Run % Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
dry

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton Field Notes QA/QCed by ME

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Stantec

Station # 13-1 Project Name Niagara Wind
Watercourse Name unknown Project # 160953269
Photos Field Staff J. Keene, W. Clayton
Date June 20/12 Time 19:30
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 17T E 616302 N 4452039 Datum NAD 83
Descriptive Location off of C. Primby Rd, N of Smithville Rd

Water Quality
Dissolved Oxygen (mg/L) --- pH --- Conductivity (µS/cm) ---
Water Temperature (°C) --- Air Temperature (°C) 28 3
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) --- Maximum Pool Depth (cm) ---
Mean Bankfull Width (m) --- Mean Water Depth (cm) ---
% Riffle --- % Pool --- % Run --- % Flat ---
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock --- Cobble --- Sand --- Silt --- Muck
Boulder --- Gravel --- Clay --- Marl --- Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks --- Deep Pool --- Watercress --- Aquatic Veg
Overhanging Vegetation --- Woody Debris --- Boulder --- Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100% grasses, early

Adjacent Land Use
Cropland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Spring - Potential Spawning

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse --- Trapezoidal Channel --- Grassed Swale --- Buried Tile
Surficial Drainage (i.e. furrows) --- Dugout Pond --- Dominated by Aquatic Veg --- Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by W. Clayton Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 13-2  Project Name Niagara Wind
Watercourse Name unknown  Project # 16098 23
Photos  Field Staff K. Keene, V. Clauter
Date June 30/12  Time 19:48
Weather conditions in previous 24 hrs  hot + humid
GPS Coordinates (Zone) 17T E 617082 N 477895 Datum Nad83
Descriptive Location off of Tober Road, south of Smithville Rd

Water Quality
Dissolved Oxygen (mg/L) _______  pH _______  Conductivity (µS/cm) _______
Water Temperature (°C) _______  Air Temperature (°C) 30
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width _______ (m)  Maximum Pool Depth _______ (cm)
Mean Bankfull Width _______ (m)  Mean Water Depth _______ (cm)
% Riffle _______  % Pool _______  % Run _______  % Flat _______
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle):  Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other _______

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100%, Typha, early

Adjacent Land Use
Residential, soy, woods  to N

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations dry

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clauter  Field Notes QA/QCed by ME

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 13-3
Watercourse Name unknown
Photos
Date June 20/17
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 17T E 611095 N 4771275 Datum NAD 83
Descriptive Location off of Tobor Rd, north of Smuthville Rd, south of

Water Quality
Dissolved Oxygen (mg/L) 13.04 pH 8.45 Conductivity (µS/cm) 2884
Water Temperature (°C) 23.06 Air Temperature (°C) 30°C
Time in situ measurements taken 15:07

Watercourse Dimensions & Morphology
Mean Watercourse Width 3.00 (m) Maximum Pool Depth 0.50 (cm)
Mean Bankfull Width 12.00 (m) Mean Water Depth 0.30 (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble 10 Sand 40 Silt Muck
Boulder Gravel 50 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use Soy

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations unknown pin-hunt vegs.

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc. Redwing BB frag-green

Field Notes Authored by K. Clatten
Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 14-1  
Watercourse Name unknown  
Photos  
Date June 2023  
Weather conditions in previous 24 hrs hot & humid  
GPS Coordinates (Zone) 17T E 617914  N 4711946  Datum Nad83  
Descriptive Location off of Port Davidson Rd, south of Smithville

Water Quality
- no water
Dissolved Oxygen (mg/L)  
PH  
Conductivity (µS/cm)  
Water Temperature (°C)  
Air Temperature (°C) 30°

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  
Maximum Pool Depth (cm)  
Mean Bankfull Width (m)  
Mean Water Depth (cm)  
% Riffle  
% Pool  
% Run  
% Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Say

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 15-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 16093269
Photos  Field Staff J. Koene, K. Clayton
Date June 2017  Time 15:19
Weather conditions in previous 24 hrs hot, humid
GPS Coordinates (Zone) 17T E 617109 N 4770819 Datum Nad83
Descriptive Location Smithville Road

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)  
Water Temperature (°C)  Air Temperature (°C) 30°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)  
Mean Bankfull Width (m)  Mean Water Depth (cm)  
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck  
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
hay field, crops

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QCed by me
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 15-2  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160952269
Photos
Date June 20, 2012  Field Staff J. Keene, K. Clayton
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) N 41.7130 E 87.130  Datum NAD83
Descriptive Location off of Tobier Rd, N of Sixteen Road

Water Quality
- no water
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C) 30°C+

Watercourse Dimensions & Morphology
Mean Watercourse Width _______(m) Maximum Pool Depth _______(cm)
Mean Bankfull Width _______(m) Mean Water Depth _______(cm)

% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
- crops

Adjacent Land Use
- crops

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 16-1  Project Name: Niagara Wind
Watercourse Name: unknown  Project #: 160952369
Photos:  Field Staff: J. Keene, V. Clayton
Date: June 21  Time: 9:34
Weather conditions in previous 24 hrs: .
GPS Coordinates (Zone): 17T E 617924 N 4770895 Datum: Nad83
Descriptive Location: facing west, looking at REA, off of Bt. Davison Rd.

Water Quality
Dissolved Oxygen (mg/L) 5.89  pH: 7.95  Conductivity (μS/cm): 333.6
Water Temperature (°C): 28.3  Air Temperature (°C): 20°
Time in situ measurements taken: 9.39

Watercourse Dimensions & Morphology
Mean Watercourse Width: 6 (m)  Maximum Pool Depth: <1m (cm)
Mean Bankfull Width: 10 (m)  Mean Water Depth: 0.80 (cm)

% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability: all-vegetated: fairly stable

Substrate (% cover)
Bedrock  Cobble  10  Sand  40  Silt  Muck
Boulder  Gravel  50  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other:

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
5% , RCF, early

Adjacent Land Use
Corn

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
permanent

Note any fish observations: 10's of carp! 6 big individuals

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Heron

Field Notes Authored by: K. Clayton  Field Notes QA/QCed by: ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 16-2  
Watercourse Name unknown  
Photos  
Date June 21/12  
Weather conditions in previous 24 hrs  
GPS Coordinates (Zone) 17T E 617935 N 4770529 Datum NAD 83  
Descriptive Location off of Port Davidson Rd, south of Smithville Rd, south of 16-1  

Water Quality  
Dissolved Oxygen (mg/L)  
pH  
Conductivity (µS/cm)  
Water Temperature (°C)  
Air Temperature (°C) 30°C  
Time in situ measurements taken  

Watercourse Dimensions & Morphology  
Mean Watercourse Width (m)  
Maximun Pool Depth (cm)  
Mean Bankfull Width (m)  
Mean Water Depth (cm)  
% Riffle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)  
Bedrock  
Cobble 10  
Sand 40  
Silt  
Muck  
Boulder  
Gravel 50  
Clay  
Marl  
Detritus  

In-water Cover  
Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation  
Woody Debris  
Boulder  
Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

Adjacent Land Use  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  

Migratory Obstructions (seasonal, permanent)  

Note any fish observations  

Waterbody Notes  
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by W. E  
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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Stantec

Station # 16-3  Project Name Niagara Wind
Watercourse Name unknown  Project # 160958269
Photos
Date June 21/12  Field Staff J. Keene, Kelly Clayton
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) W 619466 N 4784975 Datum Nad 83
Descriptive Location off of Port Davidson Road, South of 16-2, North of Sixteen Rd.

Water Quality
Dissolved Oxygen (mg/L) - no water  pH Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C) 30 C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble 20 Sand 40 Silt Muck
Boulder Gravel 40 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg. 
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations dry

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg.

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 18-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 10093269
Photos  Field Staff Keene, K. Clayton
Date June 21/12  Time 18:00
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17T E 617954  N 4769752 Datum NAD83
Descriptive Location off of Port Davidson Rd, north of sixteen Rd

Water Quality
Dissolved Oxygen (mg/L)          pH          Conductivity (µS/cm)          
Water Temperature (°C)          Air Temperature (°C) 30
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)          Maximum Pool Depth (cm)
Mean Bankfull Width (m)          Mean Water Depth (cm)
% Riffle          % Pool          % Run          % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock          Cobble 10          Sand 40          Silt          Muck
Boulder          Gravel 40          Clay          Marl          Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 19-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 10258269
Photos
Date June 20/12  Time 15:46
Weather conditions in previous 24 hrs: hot & humid
GPS Coordinates (Zone) 17T E 666.737 N 476.842 Datum NAD 83
Descriptive Location off of Magnolium Rd, south of sixteen Rd, N of

cnc 4.

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C) 30°C+
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble 40 Sand 10 Silt Muck
Boulder Gravel 50 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Hay field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: K. Clayton  Field Notes QA/QCed by: ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 19-2  Project Name Niagara Wind
Watercourse Name unknown  Project # 160982269
Photos  Field Staff K. Clanton
Date June 30/12  Time 15:59
Weather conditions in previous 24 hrs hot, humid
GPS Coordinates (Zone) 17T E N 4767651 Datum Nad83
Descriptive Location off cnc 4, east of collum road

Water Quality
Dissolved Oxygen (mg/L) ______  pH _______ Conductivity (µS/cm) _______
Water Temperature (°C) _______ Air Temperature (°C) _______
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width ________ (m) Maximum Pool Depth ________ (cm)
Mean Bankfull Width ________ (m) Mean Water Depth ________ (cm)
% Riffle ________ % Pool ________ % Run ________ % Flat ________
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
--------------------- Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
forest, farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  _______ Trapezoidal Channel  _______ Grassed Swale  _______ Buried Tile  _______
Surficial Drainage (i.e. furrows)  _______ Dugout Pond  _______ Dominated by Aquatic Veg  _______ Dry  _______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clanton  Field Notes QA/QCed by ME

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** 19-3  
**Watercourse Name** unknown  
**Photos**  
**Date** June 20/12  
**Weather conditions in previous 24 hrs** hot & humid  
**GPS Coordinates (Zone)** 17T E 616640 N 4166241  
**Descriptive Location** off of con 4, west of part devrta

**Water Quality**  
Dissolved Oxygen (mg/L)  
**pH**  
Conductivity (μS/cm)  
**Water Temperature (°C)**  
**Air Temperature (°C)**  
**Time in situ measurements taken**

**Watercourse Dimensions & Morphology**  
Mean Watercourse Width (m)  
Mean Bankfull Width (m)  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Riffle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability

**Substrate (% cover)**  
Bedrock  Cobble  10  Sand  40  Silt  Muck  
Boulder  Gravel  50  Clay  Marl  Detritus

**In-water Cover**  
Cover Types Present (circle):  
Undercut Banks  Deep Pool  Watercress  Aquatic Veg

**Riparian Zone**  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 85%

**Adjacent Land Use**  
farm land

**Fish Habitat Potential**  
Critical Habitat (spawning or nursery areas, groundwater upwellings)

**Migratory Obstructions (seasonal, permanent)**

**Note any fish observations**

**Waterbody Notes**  
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**  

Field Notes Authored by K. Clayton  Field Notes QA/QCed by WEC
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 19-H  Project Name Niagara Wind
Watercourse Name unknown  Project # 160952-09
Photos  Field Staff J. Pereira, K. Clayton
Date June 20/12  Time 9:31 pm
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 17T E 616326 N 4767608 Datum Nad 83
Descriptive Location off of cone 4, west of McCallum Road

Water Quality
Dissolved Oxygen (mg/L)  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C) 32°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100% Typha early

Adjacent Land Use residential, farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

deeply incised channel

Field Notes Authored by K. Clayton  Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 19-S  Project Name Niagara Wind
Watercourse Name unknown  Project # 160952269
Photos  Field Staff E. Keene, L. Clayton
Date June 20/12  Time 9:46
Weather conditions in previous 24 hrs Hot & Humid
GPS Coordinates (Zone) 17T E 612476 N 4767658 Datum Nad83
Descriptive Location eff of conc 4

Water Quality
Dissolved Oxygen (mg/L)  -  pH  - Conductivity (μS/cm) -
Water Temperature (°C) - Air Temperature (°C) 32°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) - Maximum Pool Depth (cm) -
Mean Bankfull Width (m) - Mean Water Depth (cm) -
% Riffle - % Pool - % Run - % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 10%  Cobble 20%  Sand 40%  Silt 20%  Muck 10%
Boulder 10%  Gravel 20%  Clay 20%  Marl 10%  Detritus 10%

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other algae

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
45% trees, mature
Adjacent Land Use

Farm/land (South side of conc 4)  Forest (North side of conc 4)

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by L. Clayton  Field Notes QA/QCed by ME

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # _______________  Project Name: Niagara Wind
Watercourse Name: Unknown  Project #: 160952269
Photos _______________  Field Staff: J. Veene, E. Clayton
Date June 27/12  Time ______________________________
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17T E 418005  N 4768086  Datum NAD83
Descriptive Location off East of Port Davidson Rd. South of 16 Road

Water Quality
Dissolved Oxygen (mg/L) ___________
pH ___________
Conductivity (μS/cm) ___________
Water Temperature (°C) ___________
Air Temperature (°C) 30
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) _______
Mean Bankfull Width (m) _______
Maximum Pool Depth (cm) _______
Mean Water Depth (cm) _______
% Riffle _______  % Pool _______  % Run _______  % Flat _______
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock ___________
Cobble ___________
Sand ___________
Silt ___________
Muck ___________
Boulder ___________
Gravel ___________
Clay ___________
Marl ___________
Detritus ___________
In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100% Typha, early
Adjacent Land Use
Bayfield

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
dry

Note any fish observations

Waterbody Notes
Natural Watercourse Y  Trapezoidal Channel _______  Grassed Swale _______  Buried Tile _______
Surficial Drainage (i.e. furrows) Y  Dugout Pond _______  Dominated by Aquatic Veg _______  Dry _______

Other Habitat Notes, Incidental Wildlife Observations, etc.
Fast side has a defined channel. East side has a defined channel. Aquatic veg. can't drive through it. On the west side their is a portion near the culvert that is channelized however the channel disappears as the furrow has been being driven through it. Lots of Typha throughout.

Field Notes Authored by: K. Clayton  Field Notes QA/QCed by: ME

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Stantec**

**Station #** 20-2  
**Watercourse Name** unknown  
**Photos**  
**Date** June 21/12  
**Weather conditions in previous 24 hrs** hot & humid  
**GPS Coordinates (Zone)** 17T E 6018.771 N 41671.12  
**Datum** NAD83  
**Descriptive Location** off of Old Hwy Rd East of Port Davidson Rd East of old Pail Bed

### Water Quality
- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (μS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)** 30°  
- **Time in situ measurements taken**

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width** (m)  
- **Maximum Pool Depth** (cm)  
- **Mean Bankfull Width** (m)  
- **Mean Water Depth** (cm)  
- **% Riffle**  
- **% Pool**  
- **% Run**  
- **% Flat**  

Evidence of eroding banks, Comments on bank stability

### Substrate (% cover)
- **Bedrock**  
- **Cobble**  
- **Sand**  
- **Silt**  
- **Muck**  
- **Boulder**  
- **Gravel**  
- **Clay**  
- **Marl**  
- **Detritus**

### In-water Cover
- **Cover Types Present (circle):**  
- **Undercut Banks**  
- **Deep Pool**  
- **Watercress**  
- **Aquatic Veg**  
- **Overhanging Vegetation**  
- **Woody Debris**  
- **Boulder**  
- **Other**

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)** 100%, RCG, Early

### Adjacent Land Use
- **Oats, Hay**

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**
- **Migratory Obstructions (seasonal, permanent)**
- **Note any fish observations**

### Waterbody Notes
- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Buried Tile**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Dominated by Aquatic Veg**  
- **Dry**

### Other Habitat Notes, Incidental Wildlife Observations, etc.
- **on South Side of Cary Rd channel is not there even though mapped by MNR**

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by WFE
Station # 29-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 166982869
Photos  Field Staff J uprene, K Clayton
Date June 21/12  Time 13:37
Weather conditions in previous 24 hrs Hot & Humid
GPS Coordinates (Zone 17T E 617747 N 4765865 Datum Nad83
Descriptive Location 20 ft of Pat Davidson Road, just north of Silver Rd

Water Quality
Dissolved Oxygen (mg/L) 1.50  pH 8.19  Conductivity (μS/cm) 547
Water Temperature (°C) 21.25  Air Temperature (°C) 32.0
Time in situ measurements taken 13:30

Watercourse Dimensions & Morphology
Mean Watercourse Width 4 (m)  Maximum Pool Depth 0.20 (cm)
Mean Bankfull Width 8 (m)  Mean Water Depth 0.10 (cm)
% Riffle 60  % Pool 40  % Run 10  % Flat 0
Evidence of eroding banks, Comments on bank stability Stable - Vegetated

Substrate (% cover)
Bedrock 0  Cobble 10  Sand 50  Silt 40  Muck 0
Boulder 40  Gravel 80  Clay 0  Marl 0  Detritus 0

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Vég
Overhanging Vegetation Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
West Side = <5%, RCC, Early Eosim.  East Side = 35% RCC, Early
Adjacent Land Use  Farmland - Wheat

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Note any fish observations fish coming to surface for air

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K Clayton  Field Notes QA/QCed by ME

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 24-1  Watercourse Name: unknown
Photos: Date: June 21/12
Weather conditions in previous 24 hrs: Hot & humid, 33°C +
GPS Coordinates (Zone): 17T E 677163 N 47648660 Datum: NAD83
Descriptive Location: off of Vaughn Rd & Trent Lewin Rd intersect North of 221.

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (μS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken: 

Watercourse Dimensions & Morphology
Mean Watercourse Width ________ (m) Maximum Pool Depth ________ (cm)
Mean Bankfull Width ________ (m) Mean Water Depth ________ (cm)
% Riffle __________ % Pool __________ % Run __________ % Flat
Evidence of eroding banks, Comments on bank stability: 

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Overhanging Vegetation Woody Debris Boulder Other
Undercut Banks Deep Pool Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Say, road, residential

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)

Note any fish observations: 

Waterbody Notes
Natural Watercourse: / Trapezoidal Channel: _ Grasped Swale: _ Buried Tile: _
Surficial Drainage (i.e. furrows): _ Dugout Pond: _ Dominated by Aquatic Veg: _ Dry: _

Other Habitat Notes, incidental Wildlife Observations, etc.

Field Notes Authored by: K. Clayton  Field Notes QA/QCed by: ME

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Stantec

Station # 23-1 Project Name Niagara Wind
Watercourse Name unknown Project # 160958269
Photos June 21/12 Field Staff Keene, K. Clayton
Date June 21/12 Time 19:05
Weather conditions in previous 24 hrs Hot & humid
GPS Coordinates (Zone) 17T E 060013 N 4764198 Datum NAD 83
Descriptive Location off of Vaughn Road, west of 24-1

Water Quality
Dissolved Oxygen (mg/L) no water pH Conductivity (μS/cm) 
Water Temperature (°C) Air Temperature (°C) 32°C

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100%, RCG, Early

Adjacent Land Use
Forest

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
ued canyon, grass right by road, a little channel
defers further, no channel (over)

Field Notes Authored by Keene, K. Clayton Field Notes QA/QCed by W.E.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 23-2
Watercourse Name unknown
Photos
Date June 21, 2012
Weather conditions in previous 24 hrs Hot & humid
GPS Coordinates (Zone) 117T E 0149455 N 4765288 Datum Nad83
Descriptive Location off of concession #3

Project Name Niagara Wind
Project # 1609G2269
Field Staff J. Keene, T. Clayton
Time 14:19

Water Quality
Dissolved Oxygen (mg/L) 4.10
pH 8.18
Conductivity (μS/cm) 674
Water Temperature (°C) 23.82
Air Temperature (°C) 20.0

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.5 (m)
Maximum Pool Depth 0.15 (cm)
Mean Bankfull Width 1.8 (m)
Mean Water Depth 0.10 (cm)
% Riffle 50% Pool 45% Run 5% Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble 10 Sand 40 Silt Muck
Boulder Gravel 50 Clay Marl Detritus

In-water Cover
Cover Types Present (circle):
Undercut Banks Wooden Debris Boulder Other Algae Aquatic Veg
Overhanging Vegetation

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
95 - 100 %, RCM, Early

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse
Trapezoidal Channel
Grassed Swale
Surficial Drainage (i.e. furrows)
Dugout Pond
Dominated by Aquatic Veg
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by T. Clayton
Field Notes QA/QCed by WEE

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 26-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 1609560269
Photos See photo log
Date 06.12.19  Field Staff ME, MF
Weather conditions in previous 24 hrs Min: 8°C Max: 13°C
GPS Coordinates (Zone) 17 T E 0617994 N 4963459 Datum NA83
Descriptive Location On Echo Rd 10m east of Port Davidson Rd.

Water Quality
Dissolved Oxygen (mg/L) 6.74  pH 8.03  Conductivity (μS/cm) 436
Water Temperature (°C) 18.93  Air Temperature (°C) 30°C
Time in situ measurements taken 14:11

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 (m)  Maximum Pool Depth ~1.5 (m)
Mean Bankfull Width 2.5 (m)  Mean Water Depth ~3.0 (cm)
% Riffle 100  % Pool 0  % Run 0  % Flat 0
Evidence of eroding banks, Comments on bank stability None observed

Substrate (% cover)
Bedrock Cobble Sand 40 Silt 40 Muck
Boulder Gravel 20 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
5% Grasses

Adjacent Land Use
Farm buildings, meadow, fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Spawning location

Migratory Obstructions (seasonal, permanent)
Any time

Note any fish observations None

Waterbody Notes
Natural Watercourse 1 Trapezoidal Channel 1 Grassed Swale 1 Buried Tile
Surficial Drainage (i.e. furrows) 1 Dugout Pond 1 Dominated by Aquatic Veg 1 Dry

Other Habitat Notes, Incidental Wildlife Observations, etc. Jumping fish

Field Notes Authored by ME  Field Notes QA/QC by NWE
# Wind Farm Waterbody Rapid Assessment Form

**Station #** 27-1  
**Watercourse Name** Unknown  
**Photos** scr photo log  
**Date** 2012 06 18  
**Weather conditions in previous 24 hrs** Minor Precip  
**GPS Coordinates (Zone)** 17T E  
**Descriptive Location** On Kick Rd ~ 3.5 km west of Kick Rd on South  
**Project Name** Niagara Wind  
**Project #** 160950269  
**Field Staff** ME MF  
**Time** 14:00  
**Datum** NAD 83

### Water Quality
- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (μS/cm)**  
- **Air Temperature (°C)**

**Time in situ measurements taken**

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width** (m)  
- **Mean Bankfull Width** (m)  
- **Maximum Pool Depth** (cm)  
- **Mean Water Depth** (cm)  
- **% Rifle**  
- **% Pool**  
- **% Run**  
- **% Flat**

**Evidence of eroding banks, Comments on bank stability**

### Substrate (% cover)
- Bedrock  
- Cobble  
- Sand  
- Silt  
- Muck  
- Boulder  
- Gravel  
- Clay  
- Marl  
- Detritus

### In-water Cover
- **Cover Types Present (circle):** Undercut Banks Woody Debris Boulder Other Aquatic Veg

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**

### Adjacent Land Use
- Houses, rd

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**
- **Migratory Obstructions (seasonal, permanent)**
- **Note any fish observations**

### Waterbody Notes
- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Grassed Swale**  
- **Buried Tile**  
- **Dominated by Aquatic Veg**  
- **Dry**

### Other Habitat Notes, Incidental Wildlife Observations, etc.
- song bird

Field Notes Authored by ME MF  
Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 29-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 160950269
Photos see photo log  Field Staff ME, ME
Date 2012-06-19  Time 09:34
Weather conditions in previous 24 hrs minor precip
GPS Coordinates (Zone) 17T E 0617877 N 47162295 Datum NA92
Descriptive Location On Post Davidson Rd ~ 400 m north of Zumstein Rd.

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Water Quality
Dissolved Oxygen (mg/L) 2.49  pH 7.78  Conductivity (μS/cm) 1005
Water Temperature (°C) 22.92  Air Temperature (°C)
Time in situ measurements taken

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Watercourse Dimensions & Morphology
Mean Watercourse Width 2.0 (m)  Maximum Pool Depth 15.0 (cm)
Mean Bankfull Width 2.5 (m)  Mean Water Depth 8.0 (cm)
% Riffle 100  % Pool 0  % Run 0  % Flat 0
Evidence of eroding banks, Comments on bank stability none observed

---

Substrate (% cover)
Bedrock 0  Cobble 20  Sand 40  Silt 30  Muck 0
Boulder 10  Gravel 10  Clay 0  Marl 0  Detritus 0

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In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

---

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 3%

---

Adjacent Land Use
ag, rd

---

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) possible spawning
Migratory Obstructions (seasonal, permanent) dry at times

---

Note any fish observations none

---

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg
Dry

---

Other Habitat Notes, Incidental Wildlife Observations, etc. green frogs, hognose snakes

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Field Notes Authored by ME  Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 29-1 Project Name Niagara Wind
Watercourse Name Unknown Project # 160950269
Photos Sec photo log Field Staff MF, MF
Date 2012-07-17 Time 09:23
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 137°_E 061?859' N 42°1426' Datum NAD83
Descriptive Location Off Port Davidson Rd ~ 700m north of Carborough Rd.

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.40 (m) Maximum Pool Depth DRY (cm)
Mean Bankfull Width 1.5 (m) Mean Water Depth DRY (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand 30 Silt 40 Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Author by MF Field Notes QA/QCed by WEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 30-1  Project Name Niagara Wind
Watercourse Name Tributary Welland Rv.  Project # 1009502469
Photos See photo log  Field Staff M.E., M.E.
Date 02. 26. 09  Time 08:45
Weather conditions in previous 24 hrs Minor Precip.
GPS Coordinates (Zone) 19N  E 0620075  N 4361297 Datum NAD83
Descriptive Location On Canobough Rd ~1km east of Krick Rd

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 3.05 (m) Maximum Pool Depth 0.20 (cm)
Mean Bankfull Width 6.0 (m) Mean Water Depth 0.10 (cm)
% Riffle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 20 Cobble  Sand 30 Silt 30 Muck
Boulder Gravel  Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
10% Mature/Limber/Spec. Seed/Canopy Grass

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by M.E. Field Notes QA/QCed by M.E.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 31-1 Project Name Niagara Wind
Watercourse Name Unknown Project # 160938269
Photos Sea Photo Log
Date June 21/12 Field Staff MF MF
Time 10:31
Weather conditions in previous 24 hrs Hot & humid
GPS Coordinates (Zone) 17T E 0623645 N 4761279 Datum Nad83
Descriptive Location On Creek Rd ~ 2km east of Erick Rd

Water Quality
Dissolved Oxygen (mg/L) _______ pH _______ Conductivity (µS/cm) _______
Water Temperature (°C) _______ Air Temperature (°C) _______
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width _______(m) Maximum Pool Depth _______(cm)
Mean Bankfull Width _______(m) Mean Water Depth _______(cm)
% Rifle _______ % Pool _______ % Run _______ % Flat _______
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock _______ Cobble _______ Sand _______ Silt _______ Muck _______
Boulder _______ Gravel _______ Clay _______ Marl _______ Detritus _______

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other _______

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse_______ Trapezoidal Channel_______ Grassed Swale_______ Buried Tile_______
Surficial Drainage (i.e. furrows)_______ Dugout Pond_______ Dominated by Aquatic Veg_______ Dry_______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 31-2
Watercourse Name Unknown
Photos 3
Date June 21/12
Weather conditions in previous 24 hrs No precipitation
GPS Coordinates (Zone) 17T E 06224622 N 4761306 Datum NAD 83
Descriptive Location On Cock Rd - 2.4 km east of Prik Rd on Hardy

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.25 (m) Maximum Pool Depth (cm)
Mean Bankfull Width 2.2 (m) Mean Water Depth (cm)
% Rifle % Pool % Run % Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 0 Cobble 10 Sand 30 Silt 30 Muck
Boulder 30 Gravel 30 Clay 30 Marl 30 Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
30% dsl + 20% shrubs

Adjacent Land Use
ag fields, house, etc

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Possible spawn at high water times

Migratory Obstructions (seasonal, permanent)
dry now

Note any fish observations

Waterbody Notes
Natural Watercourse V Trapezoidal Channel V Grasseed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF
Field Notes QA/QCed by MF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

STANDING WATER

STANDING WATER

Station # 32-1
Watercourse Name Unknown
Photos See photo log
Date 2012 06 17
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 19T E 0623989 N 4761322 Datum NAD27
Descriptive Location On Creek Rd 25m west of Wellandport Rd

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.2 (m) Maximum Pool Depth 5 (cm)
Mean Bankfull Width 2.3 (m) Mean Water Depth 2 (cm)
% Riffle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble 10 Sand 30 Silt 40 Muck
Boulder Gravel 20 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
50% mainly @ 0.5 location 3 trees + shrubs
Adjacent Land Use
Farm pasture fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
possible spawning
Migratory Obstructions (seasonal, permanent)
lack of water
Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Station #: 34-1
Project Name: Niagara Wind
Watercourse Name: unknown
Photos: See photo log.
Date: June 2018
Weather conditions in previous 24 hrs: hot & humid
GPS Coordinates (Zone): 177 E 0621197 N 4702976 Datum: NAD83
Descriptive Location: On unmaintained road of Baldwin ~ 800m

Water Quality
Dissolved Oxygen (mg/L) 2.40 > 0.35 pH 7.70 Conductivity (μS/cm) 401
Water Temperature (°C) 23.14 Air Temperature (°C) 29.6
Time in situ measurements taken: 09:15

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.0 (m) Maximum Pool Depth 150.0 (cm)
Mean Bankfull Width 3.5 (m) Mean Water Depth 150.0 (cm)
% Riffle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability: Major scour along edge

Substrate (% cover)
- Bedrock
- Cobble
- Sand 50
- Silt 50
- Muck
- Boulder
- Gravel
- Clay
- Marl
- Detritus

In-water Cover
Cover Types Present (circle):
- Overhanging Vegetation
- Woody Debris
- Boulder
- Other
- Deep Pool
- Watercress
- Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):
100% mature trees/shrubs

Adjacent Land Use:
- meadow
- wetland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings):
- brook
- spawn
- nursery

Migratory Obstructions (seasonal, permanent):
- lack of flows/water

Note any fish observations:
Many fish caught in pool near old cement bridge. No water in stream; lots of dead carp carcasses

Waterbody Notes
Natural Watercourse
Trapezoidal Channel
Grassed Swale
Surficial Drainage (i.e. furrows)
Dugout Pond
Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.
- Water @ bridge only.
- Fish appear to be breaking surface and gulping air.
- Many green frogs, trapped frogs

Field Notes Authored by: MP
Field Notes QA/QCed by: MCE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 34-2
Watercourse Name unknown
Photos See Photo Log
Date June 20, 12
Weather conditions in previous 24 hrs No rain
GPS Coordinates (Zone) 17T E 0021159 N 4742268 Datum NAD83
Descriptive Location On unmaintained Rd of Baldwin 400 m north of Canoborg Rd

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Meadow lark, eastern kingbird

Field Notes Authored by MF
Field Notes QA/QCed by MEF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 35-1
Watercourse Name
Photos See photo log
Date 2014-06-18
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17° E
Descriptive Location 00 Colonial Rd - 30m South of Excav Rd

Project Name Niagara Wind
Project # 160950269
Field Staff ME, ME
Time 15:06
Datum NA93

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (μS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 30 (m)
Mean Bankfull Width 15 (m)
% Riffle 100 % Pool
Maximum Pool Depth 30 (cm)
Mean Water Depth 15 (cm)
% Run __________ % Flat __________
Evidence of eroding banks, Comments on bank stability None observed

Substrate (% cover)
Bedrock __________ Cobble __________ Sand __________
Boulder __________ Gravel __________ Clay __________
Silt __________ Muck __________ Detritus __________

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation __________ Undercut Banks __________
Woody Debris __________ Boulder __________
Deep Pool __________ Watercress __________ Aquatic Veg __________
Other __________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
80% willow sp.

Adjacent Land Use
Houses, ag fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Spawning, forage nursery

Migratory Obstructions (seasonal, permanent)
Lack of water

Note any fish observations None

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MEE
Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 35-2 Project Name Niagara Wind
Watercourse Name Triop of Welland Rd Project # 160950269
Photos See photo log
Date 2012 06 18 Field Staff ME MF
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 19T E 0623688 N 4302560 Datum NAD83
Descriptive Location On RD 27 ~ 40m north of Cambraugh Rd

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 30.0
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 3.0 (m) Maximum Pool Depth 7.10 (cm)
Mean Bankfull Width 4.0 (m) Mean Water Depth 1.50 (cm)
% Riffle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability none observed

Substrate (% cover)
Bedrock 20 Cobble Sand 40 Silt 20 Muck
Boulder Gravel 20 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
30% ash sp, willow sp.

Adjacent Land Use
business, house, rds

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
none observed

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
rose breasted goose, frog sp
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 35.3  Project Name Niagara Wind
Watercourse Name Welland Pk.  Project # 100950269
Photos See photo log  Field Staff MMCF
Date 28 Dec 18  Time 10:46
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 127 E 023 724 N 47 68 480 Datum NAD88
Descriptive Location On Riverside Dr ~ 40 m South of Canborough Rd

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)  Time in situ measurements taken
Water Temperature (°C)  Air Temperature (°C)

Watercourse Dimensions & Morphology
Mean Watercourse Width 50 (m)  Maximum Pool Depth >100 (cm)
Mean Bankfull Width 40 (m)  Mean Water Depth >75 (cm)
% Riffle 100  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (%)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Houses, roads

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
none observed

Note any fish observations none

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MMCF  Field Notes QAQC'd by MMCF

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 36-1
Watercourse Name: Unknown
Photos: See photo log
Date: 2022-05-19
Weather conditions in previous 24 hrs: Cloudy
GPS Coordinates (Zone): UTM E 0621414 N 4743685 Datum NA83
Descriptive Location: On Eleon Rd ~ 2km west of Bog Rd SW

Water Quality
Dissolved Oxygen (mg/L) 7.13
pH 7.98
Conductivity (μS/cm) 481
Water Temperature (°C) 23.14
Air Temperature (°C) 28.6
Time in situ measurements taken 13:00

Watercourse Dimensions & Morphology
Mean Watercourse Width 4.0 (m)
Mean Bankfull Width 5.3 (m)
Maximum Pool Depth ~ 80 (cm)
Mean Water Depth ~ 50 (cm)
% Riffle 100
% Pool
% Run
% Flat
Evidence of eroding banks, Comments on bank stability: none

Substrate (% cover)
Bedrock
Cobble
Sand 40
Silt 30
Muck
Boulder
Gravel 30
Clay
Marl
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks
Deep Pool
Watercress
Aquatic Veg
Overhanging Vegetation
Woody Debris
Boulder
Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations:

Waterbody Notes
Natural Watercourse
Trapezoidal Channel
Grassed Swale
Surficial Drainage (i.e. furrows)
Dugout Pond
Dominated by Aquatic Veg
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Barn Swallow

Field Notes Authored by: MCF
Field Notes QA/QCed by: MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 36-2
Watercourse Name unknown
Photos sec photo log
Date 2012-06-18
Weather conditions in previous 24 hrs hot humid
GPS Coordinates (Zone) 17S E 062120 N 4764279 Datum NAD83
Descriptive Location 600m north of field from Fisher Rd

Water Quality
Dissolved Oxygen (mg/L) ___________ pH ___________ Conductivity (µS/cm) ___________
Water Temperature (°C) ___________ Air Temperature (°C) ___________
Time in situ measurements taken ___________

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.0 (m) Minimum Pool Depth N/A (cm) DRY
Mean Bankfull Width 3.0 (m) Mean Water Depth N/A (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock ________ Cobble ________ Sand 30 Silt 70 Muck ________
Boulder ________ Gravel ________ Clay ________ Marl ________ Detritus ________

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
50% seed canopy grass

Adjacent Land Use
ag. small woodland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
possible spawn

Migratory Obstructions (seasonal, permanent)
DRY

Note any fish observations None - Dry

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc. None

Field Notes Authored by MCE
Field Notes QA/QCed by MCE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 36-3
Watercourse Name unknown
Photos See photo log
Date 2012-08-28
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17T E 002 0395 N 47 3366 Datum MAD88
Descriptive Location On Echo Rd ~ 3km west of RP 27

Water Quality
Dissolved Oxygen (mg/L) 7.68 pH 8.09 Conductivity (µS/cm) 675
Water Temperature (°C) 23.35 Air Temperature (°C) 30.2
Time in situ measurements taken 13:46

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.4 (m) Maximum Pool Depth ~ 70 (cm)
Mean Bankfull Width 1.2 (m) Floodplain Mean Water Depth ~ 50 (cm)
% Riffle 100 % Pool
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
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<tbody>
<tr>
<td>0</td>
<td>20</td>
<td>40</td>
<td>40</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
</tbody>
</table>

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

| 50% red canopy grass |

Adjacent Land Use
ag. Farm, rd

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

| 50%awn |

Migratory Obstructions (seasonal, permanent)

| Lack of water |

Note any fish observations


Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.


Field Notes Authored by MFE
Field Notes QA/QCed by MFE

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\textit{grazing}

\textit{Meadow}

\textit{Pool}

\textit{Pool}

\textit{pond}

\textit{scutal}

\textit{thick to algae/duckweed}

\textit{reed canary grass}
Station # 37-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160950369
Photos 22 photo legs  Field Staff ME, MF
Date 2/17/17 - 6/18  Time 12:40
Weather conditions in previous 24 hrs Precipitation
GPS Coordinates (Zone) 19T E 0422671 N 4463882 Datum NAD83
Descriptive Location 60m west of Regional Rd 27 on Elma Rd

Water Quality
Dissolved Oxygen (mg/L) 3.73  pH 7.57  Conductivity (μS/cm) 1534
Water Temperature (°C) 21.80  Air Temperature (°C) 28.0
Time in situ measurements taken 12:45

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.0 (m)  Maximum Pool Depth 70 (cm)
Mean Bankfull Width 3.0 (m)  Mean Water Depth 30 (cm)

% Riffle 30  % Pool 50  % Run 40  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 50  Cobble 30  Sand 40  Silt 20  Muck 10
Boulder 20  Gravel 20  Clay 10  Marl 10  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50% Seed Canary Grass

Adjacent Land Use
Houses 106

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwelling)

Migratory Obstructions (seasonal, permanent)
None observed

Note any fish observations  Fish sp.

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Frog sp.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 37-2  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160953269
Photos 3Qly photos taken  Field Staff MCF, MF
Date June 21, 2022  Time 11:23
Weather conditions in previous 24 hrs  Precipitation
GPS Coordinates (Zone) UTM E 062246260  N 4744173  Datum North
Descriptive Location On R1 24 m 600 m north of Elcho Rd

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)  30.2
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.40 (m)  Maximum Pool Depth 20 (cm)
Mean Bankfull Width 1.0 (m)  Mean Water Depth 20 (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand 40  Silt 30  Muck
Boulder  Gravel  30  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
0%
Adjoining Land Use
Fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by  MCF  Field Notes QA/QCed by  MGE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 39-1                Project Name: Niagara Wind
Watercourse Name: unknown                Project #: 160950269
Photos: see photo log                Field Staff: MEE
Date: 2012-06-18                Time: 14:52
Weather conditions in previous 24 hrs: warm, cloudy
GPS Coordinates (Zone): 171 E 0623841 N 47623744 Datum NAD83
Descriptive Location: 0.1 km east of RR #27

Water Quality
Dissolved Oxygen (mg/L): 1.83                pH: 8.16                Conductivity (μS/cm): 29.6
Water Temperature (°C): 22.43                Air Temperature (°C): 30°C
Time in situ measurements taken: 14:45

Watercourse Dimensions & Morphology
Mean Watercourse Width: 1.0 (m)                Maximum Pool Depth: 15 (cm)
Mean Bankfull Width: 3.0 (m)                Mean Water Depth: 10 (cm)
% Riffle: 100%                % Pool: % Run: % Flat: Minor undercut
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock: 0%                Cobble: 0%                Sand: 40%                Silt: 40%                Muck: 0%
Boulder: 0%                Gravel: 20%                Clay: 0%                Marl: 0%                Detritus: 0%

In-water Cover
Cover Types Present (circle): Undercut Banks, Deep Pool, Watercress, Aquatic Veg

Overhanging Vegetation: Woody Debris, Boulder, Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
5% shade cover 40% open

Adjacent Land Use
ag, houses, etc.

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations: Fish sp

Waterbody Notes
Natural Watercourse: yes                Trapezoidal Channel: no                Grassed Swale: yes                Buried Tile: no
Surficial Drainage (i.e. furrows): yes                Dugout Pond: no                Dominated by Aquatic Veg: no                Dry: yes

Other Habitat Notes, Incidental Wildlife Observations, etc:
frog sp

Field Notes Authored by: MEE                Field Notes QA/QCed by: MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 38-2  
Watercourse Name Unknown  
Photos See photo log  
Date 2012-06-02  
Weather conditions in previous 24 hrs Minor Precip  
GPS Coordinates (Zone) 17° E 062° 44' 46'' N 47° 6' 37'' W Datum NAD83  
Descriptive Location On Echo Rd - 6.5km east of Colver Rd

Water Quality

Dissolved Oxygen (mg/L) 5.18  
Water Temperature (°C) 19.59  
Time in situ measurements taken 14:55

pH 9.13  
Conductivity (μS/cm) 1798  
Air Temperature (°C) 30.6°

Watercourse Dimensions & Morphology

Mean Watercourse Width 1.0 (m)  
Maximum Pool Depth 30 (cm)

Mean Bankfull Width 2.0 (m)  
Mean Water Depth 15 (cm)

% Riffle 100  
% Pool

% Run  
% Flat

Evidence of eroding banks, Comments on bank stability None observed

Substrate (%)

Bedrock  
Cobble 10  
Sand 30  
Silt 30  
Muck  
Boulder  
Gravel 30  
Clay  
Marl  
Detritus

In-water Cover

Cover Types Present (circle): Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation Woody Debris  
Boulder  
Other

Riparian Zone

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 30% mature + immature oak sap, maple

Adjacent Land Use

ag land

Fish Habitat Potential

Critical Habitat (spawning or nursery areas, groundwater upwellings) Spawning, nursery, forage

Migratory Obstructions (seasonal, permanent) Muddy up

Note any fish observations Species observed

Waterbody Notes

Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile

Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF  
Field Notes QA/QCed by WEF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Stantec

Station # 29-1
Watercourse Name
Photos
Date 2012-06-18
Weather conditions in previous 24 hrs

GPS Coordinates (Zone) 17T E 04266522 N 4763874 Datum: NAD 82
Descriptive Location Do Akron Rd + 100 m east of Heslip Rd

Water Quality
Dissolved Oxygen (mg/L) 14.64 pH 8.73 Conductivity (μS/cm) 1401
Water Temperature (°C) 28.75 Air Temperature (°C) 50%

Time in situ measurements taken 15:15

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m) Maximum Pool Depth 30 (cm)
Mean Bankfull Width 3.0 (m) Mean Water Depth 10 (cm)

% Riffle 20 % Pool % Run 80 % Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock
Cobble
Sand 30
Silt 40
Muck
Boulder
Gravel 30
Clay
Marl
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
5% red canary grass

Adjacent Land Use
ag fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations none.

Waterbody Notes
Natural Watercourse  Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF
Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 40-1
Watercourse Name Unknown
Photos
Date 2018/06/18
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 975 E 0626874 N 4703925 Datum NAD83
Descriptive Location 200 E of 100 m west of Gee Rd.

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 30°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.0 (m) Maximum Pool Depth 15 (cm)
Mean Bankfull Width 2.5 (m) Mean Water Depth 8 (cm)
% Riffle 100 % Pool
Evidence of eroding banks, Comments on bank stability None observed
% Run % Flat

Substrate (% cover)
Bedrock Boulder
Cobble Gravel Sand 30
Silt 40 Clay Marl
Muck Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
25%

Adjacent Land Use
woodlot, rdiary

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by ME Field Notes QA/QCed by ME
Station # 48-1  
Watercourse Name Unknown  
Photos See photo Log  
Date 7/27/12 08:59  
Weather conditions in previous 24 hrs  
GPS Coordinates (Zone) 13T E 629310 N 4764069 Datum NAD83  
Descriptive Location On Boyle Rd 20m South of Canborough Rd.  

Water Quality  
Dissolved Oxygen (mg/L) 6.83  
Ph 8.37  
Conductivity (μS/cm) 819  
Water Temperature (°C) 24.04  
Air Temperature (°C) 30.6  
Time in situ measurements taken 15:40  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 1.2 (m)  
Mean Bankfull Width 2.5 (m)  
Maximum Pool Depth 10 (cm)  
Mean Water Depth 5 (cm)  
% Riffle 30  
% Pool 70  
% Run 0  
% Flat 0  
Evidence of eroding banks, Comments on bank stability: minor scour  

Substrate (% cover)  
Bedrock  
Cobble 20  
Sand 30  
Silt 20  
Muck  
Boulder  
Gravel 30  
Clay  
Marl  
Detritus  

In-water Cover  
Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation  
Woody Debris  
Boulder  
Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 3% tree cover  

Adjacent Land Use  
Pasture, houses, Rds  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  

Migratory Obstructions (seasonal, permanent)  

Note any fish observations:  

Waterbody Notes  
Natural Watercourse √  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by MEE  
Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 43-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 160952369
Photos  Field Staff K. Clayton
Date June 3/12  Time 8:51
Weather conditions in previous 24 hrs Hot & humid 32°C
GPS Coordinates (Zone) E 6200492 N 4964984 Datum Nad83
Descriptive Location Off of Vaughn Rd. East of Regional Rd. At

Water Quality
Dissolved Oxygen (mg/L) 1.60  pH  Conductivity (µS/cm) 443
Water Temperature (°C) 23.85  Air Temperature (°C) 30.0
Time in situ measurements taken 8:56

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.3 (m)  Maximum Pool Depth 8.30 (cm)
Mean Bankfull Width 5.0 (m)  Mean Water Depth 2.15 (cm)
% Riffle  % Pool 100 % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  10  Sand  40  Silt  Muck
Boulder  Gravel  80  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Other
Overhanging Vegetation Woody Debris Boulder Aquatic Veg.

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QCed by ME

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
Station # 44-1
Watercourse Name unknown
Photos
Date June 20/12
Weather conditions in previous 24 hrs hot and humid
GPS Coordinates (Zone) 17T E 622021 N 4765343 Datum NAD83
Descriptive Location West side of Regional Rd 37, North of Vaughn Rd

Water Quality
Dissolved Oxygen (mg/L) __________ pH ___________ Conductivity (µS/cm)
Water Temperature (°C) ___________ Air Temperature (°C) 30°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width _______ (m) Maximum Pool Depth _______ (cm)
Mean Bankfull Width _______ (m) Mean Water Depth _______ (cm)
% Riffle _______ % Pool _______ % Run _______ % Flat _______
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock _______ Cobble _______ Sand _______ 10 Silt _______ Muck _______
Boulder _______ Gravel _______ Clay _______ Marl _______ Detritus _______

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation _______ Woody Debris _______ Boulder _______ Other _______
Watercress _______ Aquatic Veg _______

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
x 50%, grasses, early

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse _______ Trapezoidal Channel V _______ Grassed Swale _______ Buried Tile _______
Surficial Drainage (i.e. furrows) _______ Dugout Pond _______ Dominated by Aquatic Veg _______ Dry _______

Other Habitat Notes, Incidental Wildlife Observations, etc. _______

Field Notes Authored by K. Clayton
Field Notes QA/QCed by ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 44-2
Watercourse Name unknown
Photos
Date June 2012
Weather conditions in previous 24 hrs hot and humid
GPS Coordinates (Zone) 12T E 622 021 N 4765 333 Datum NAD83
Descriptive Location off of Regional Rd 27 (East side)

Water Quality
Dissolved Oxygen (mg/L) ______ pH ________ Conductivity (μS/cm) ________
Water Temperature (°C) ________ Air Temperature (°C) 30
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width ________ (m) Maximum Pool Depth ________ (cm)
Mean Bankfull Width ________ (m) Mean Water Depth ________ (cm)
________% Riffle ________% Pool ________% Run ________% Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble 40 Sand 10 Silt Muck
Boulder Gravel 50 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
85% grasses, early crops, alfalfa, soy

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse ☑ Trapezoidal Channel ______ Grassed Swale ______ Buried Tile ______
Surficial Drainage (i.e. furrows) ______ Dugout Pond ______ Dominated by Aquatic Veg ______ Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton
Field Notes QA/QCed by ME

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 45-1
Watercourse Name unknown
Photos 9123 - 9125
Date June 20/12
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 624027 E 4765184 N Datum Nad83
Descriptive Location East of turbine 76, off of Vaughn Rd

Water Quality
Dissolved Oxygen (mg/L) ________ pH ________ Conductivity (µS/cm) ________
Water Temperature (°C) ________ Air Temperature (°C) ________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width ________ (m) Maximum Pool Depth ________ (cm)
Mean Bankfull Width ________ (m) Mean Water Depth ________ (cm)
% Riftle ________ % Pool ________ % Run ________ % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock
Cobble
Sand
Silt
Muck
Boulder
Gravel
Clay
Marl
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50%

Adjacent Land Use
farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent) dry

Note any fish observations ________

Waterbody Notes
Natural Watercourse______ Trapezoidal Channel______ Grassed Swale______ Buried Tile______
Surficial Drainage (i.e. furrows)______ Dugout Pond______ Dominated by Aquatic Veg______ Dry______

Other Habitat Notes, Incidental Wildlife Observations, etc. ________

Field Notes Authored by K. Clayton
Field Notes QA/QCed by J.C.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 45-2  
Watercourse Name 916-9128  
Photos June 20/12  
Date  
Weather conditions in previous 24 hrs, hot & humid  

Project Name Niagara Wind  
Project # H009502669  
Field Staff K. Clayton, J. Keen  
Time 10:45  

GPS Coordinates (Zone) W334331 E765169 N17U Datum NAD  
Descriptive Location East of 45-1, off of Vaughn Rd.  

Water Quality
Dissolved Oxygen (mg/L)         pH         Conductivity (µS/cm)  
Water Temperature (°C) 3.2  
Time in situ measurements taken  

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  
Mean Bankfull Width (m)  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Riffle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  

In-water Cover
Cover Types Present (circle):
Undercut Banks  
Overhanging Vegetation  
Woody Debris  
Boulder  
Deep Pool  
Watercress  
Aquatic Veg  

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

Adjacent Land Use
Agricultural land  

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)  

Migratory Obstructions (seasonal, permanent)  

Note any fish observations  

Waterbody Notes
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by K. Clayton  
Field Notes QA/QC'D by J. Keen  
G:\01609\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
Station # 40-1  
Watercourse Name unknown  
Photos  
Date June 20/12  
Weather conditions in previous 24 hrs Hot & Humid  
GPS Coordinates (Zone) 17T E 686628 N 4765819 Datum Nad83  
Descriptive Location Not Vaughn Rd. West of Grose Road  

Water Quality  
Dissolved Oxygen (mg/L) -  
pH  
Conductivity (μS/cm)  
Time in situ measurements taken  
Air Temperature (°C) 20°C  

Watercourse Dimensions & Morphology  
Mean Watercourse Width (m)  
Mean Bankfull Width (m) 3m  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Rifle  
% Pool  
% Run  
% Flat  

Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)  
Bedrock  
Cobble  
Boulder  
Gravel  
Sand  
40  
Silt  
Clay  
50  
Muck  
Marl  
Detritus  

In-water Cover  
Cover Types Present (circle): Undercut Banks Deep Pool Watercress  
Overhanging Vegetation Woody Debris Boulder Other Aquatic Veg  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 15% Grasses, Early  

Adjacent Land Use Corn & Soy  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  
Migratory Obstructions (seasonal, permanent)  
Potential Spawning Areas  
In-Seasonal  

Note any fish observations  

Waterbody Notes  
Natural Watercourse  
Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Grassed Swale  
Buried Tile  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by ME
Station # 47-1  
Watercourse Name unknown  
Photos [ ]  
Station Date June 21/12  
Weather conditions in previous 24 hrs [ ]  
GPS Coordinates (Zone) 117 E 62°19'3" N 47°6'68" Datum NAD83  
Descriptive Location off of corner of Regional Rd 20 & 37  

Water Quality  
Dissolved Oxygen (mg/L)  
Water Temperature (°C)  
Conductivity (μS/cm)  
Air Temperature (°C) 32°C  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 2 (m)  
Mean Bankfull Width 2 (m)  
Maximum Pool Depth 2 (cm)  
Mean Water Depth 2 (cm)  
Evidence of eroding banks, Comments on bank stability stable banks  

%Riffle %Pool %Run %Flat  

Substrate (% cover)  
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  

In-water Cover  
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg  
Overhanging Vegetation Woody Debris Boulder Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 100%, typha, early  

Adjacent Land Use  
field, residential, road  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  
Migratory Obstructions (seasonal, permanent) dry  

Note any fish observations  

Waterbody Notes  
Natural Watercourse  
Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Grassed Swale  
Buried Tile  
Dugout Pond  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by M. E.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 47-2  Project Name Niagara Wind
Watercourse Name unknown Project # 160952269
Photos Field Staff J. Keene K. Clayton
Date June 31/12 Time 18:25
Weather conditions in previous 24 hrs Hot & humid
GPS Coordinates (Zone) 17T E 602 21 1961 N 476647 Datum Nad83
Descriptive Location off of Regional Rd 20, E of 47-1

Water Quality
- dry
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 32°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation Woody Debris Boulder Other
Undercut Banks

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100% RCG, early

Adjacent Land Use
Residential, Road, Say

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
- dry
Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton Field Notes QA/QCed by ME
### WIND FARM WATERBODY RAPID ASSESSMENT FORM

**Station #:** 47-3  
**Watercourse Name:** unknown  
**Photos:**  
**Date:** June 21/12  
**Weather conditions in previous 24 hrs:**  
**GPS Coordinates (Zone):** UTM E 623014 N 4760446 Datum NAD83  
**Descriptive Location:** off of regional road 20, east of 47-2

### Water Quality
- **Dissolved Oxygen (mg/L):**  
- **pH:**  
- **Conductivity (μS/cm):**  
- **Air Temperature (°C):** 7.2°C  
- **Time in situ measurements taken:**

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width (m):**  
- **Mean Bankfull Width (m):** 1.8  
- **% Riffle:**  
- **% Pool:**  
- **Maximum Pool Depth (cm):**  
- **Mean Water Depth (cm):**

### Substrate (% cover)
- **Bedrock:**  
- **Cobble:**  
- **Sand:**  
- **Silt:**  
- **Muck:**  
- **Boulder:**  
- **Gravel:**  
- **Clay:**  
- **Marl:**  
- **Detritus:**

### In-water Cover
- **Cover Types Present (circle):**  
- **Undercut Banks:**  
- **Deep Pool:**  
- **Other:**  
- **Watercress:**
- **Aquatic Veg:**

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):** 90%, Typha, early  
- **Adjacent Land Use:** farmland, Road

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings):**

### Migratory Obstructions (seasonal, permanent)
- **dry**

### Note any fish observations

### Waterbody Notes
- **Natural Watercourse:**  
- **Trapezoidal Channel:**  
- **Grassed Swale:**  
- **Surficial Drainage (i.e. furrows):**  
- **Dugout Pond:**  
- **Buried Tile:**
- **Dominated by Aquatic Veg:**
- **Dry:**

### Other Habitat Notes, Incidental Wildlife Observations, etc.

---

Field Notes Authored by: k. daylor  
Field Notes QA/QCed by: m.e.
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station # 49.1
Watercourse Name **unknown**
Photos: [Image -1x-2 to 843x597]
Date: June 21, 2013

Weather conditions in previous 24 hrs: Minor precipitation
GPS Coordinates (Zone): 17T E 0623407 N 47665670 Datum NAD83
Descriptive Location: On R.R. 20 ~ 1 km east of R.R. 27

**Water Quality**
- Dissolved Oxygen (mg/L) [Data Missing]
- Water Temperature (°C) [Data Missing]
- Conductivity (µS/cm) [Data Missing]
- Air Temperature (°C) 28

**Time in situ measurements taken**

**Watercourse Dimensions & Morphology**
- Mean Watercourse Width 1.0 (m)
- Maximum Pool Depth [Data Missing] (cm)
- Mean Bankfull Width 2.0 (m)
- Mean Water Depth [Data Missing] (cm)

- % Riffle
- % Pool
- % Run
- % Flat

Evidence of eroding banks, Comments on bank stability

**Substrate (% cover)**
- Bedrock
- Cobble
- Sand
- Silt
- Mud
- Boulder
- Gravel
- Clay
- Marl
- Detritus

**In-water Cover**
- Cover Types Present (circle):
  - Undercut Banks
  - Deep Pool
  - Watercress
  - Aquatic Vegetation

**Riparian Zone**
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
  - 25% Mature tree, Reed, Canary Grass

**Adjacent Land Use**
- [Horse, roads, hay fields]

**Fish Habitat Potential**
- Critical Habitat (spawning or nursery areas, groundwater upwellings)
  - Possibles: [Data Missing]

**Migratory Obstructions (seasonal, permanent)**
- [Data Missing]

**Note any fish observations**
- [Data Missing]

**Waterbody Notes**
- Natural Watercourse: ✓
- Trapezoidal Channel: ✓
- Grassed Swale: ✓
- Surficial Drainage (i.e. furrows): [Data Missing]
- Dugout Pond: [Data Missing]
- Dominated by Aquatic Vegetation: ✓
- Buried Tile: [Data Missing]
- Dry: [Data Missing]

**Other Habitat Notes, Incidental Wildlife Observations, etc.**
- [Data Missing]

Field Notes Authorized by: MEE
Field Notes QA/QCed by: MEE
### WIND FARM WATERBODY RAPID ASSESSMENT FORM

**Station #**: 49-1  
**Project Name**: Niagara Wind

**Watercourse Name**: Unknown  
**Project #:** 60458269

**Photos**  
**Field Staff**: MEF

**Date**: June 22/12  
**Time**: 09:59

**Weather conditions in previous 24 hrs**: minor precipitation

**GPS Coordinates (Zone)**: 17T E 06268247 N 4366926 Datum NAD83

**Descriptive Location**: On Silveira Rd - 200 m north of R.R.20

### Water Quality

- Dissolved Oxygen (mg/L)
- pH
- Conductivity (µS/cm)
- Water Temperature (°C)
- Air Temperature (°C)
- Time in situ measurements taken

### Watercourse Dimensions & Morphology

- Mean Watercourse Width 2.0 (m)
- Maximum Pool Depth 10 (cm)
- Mean Bankfull Width 1.4 (m)
- Mean Water Depth 0.9 (cm)
- % Riffle 100
- % Pool
- % Run
- % Flat

Evidence of eroding banks, Comments on bank stability

### Substrate (% cover)

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
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<td>40</td>
<td>30</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### In-water Cover

- Cover Types Present (circle): Undercut Banks, Deep Pool, Watercress, Aquatic Veg
- Overhanging Vegetation: Woody Debris, Boulder, Other

### Riparian Zone

- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

### Adjacent Land Use

- Agric., forest, house, etc.

### Fish Habitat Potential

- Critical Habitat (spawning or nursery areas, groundwater upwellings)
  - Possible spawn

### Migratory Obstructions (seasonal, permanent)

- Fish migration into/out of veg

Note any fish observations

### Waterbody Notes

- Natural Watercourse
- Trapezoidal Channel
- Grassed Swale
- Buried Tile
- Surfacial Drainage (i.e. furrows)
- Dugout Pond
- Dominated by Aquatic Veg
- Dry

### Other Habitat Notes, Incidental Wildlife Observations, etc.

- Barn swallows, bigger frogs, tadpoles

Field Notes Authored by: MEF  
Field Notes QA/QCed by: MEF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 50-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160008209
Photos  Field Staff K. Clayton, J. Reene
Date June 20/12  Time 16:07
Weather conditions in previous 24 hrs Hot, Humid
GPS Coordinates (Zone) Easting 47687594  N Datum UTN
Descriptive Location Runs north to south along Regional Rd 36 off concession 4, west of 50-2

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)  Air Temperature (°C) 32
Time in situ measurements taken.

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)

% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck  Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Road, farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QCed by
G:\01509\resource\internal info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
Unnamed Creek to CWR

Station # 50-2
Watercourse Name Unknown
Photos
Date June 2012
Weather conditions in previous 24 hrs Hot / Humid
GPS Coordinates (Zone) W32065 E 9167880 N Datum NAD83
Descriptive Location E of regional rd 80, S of 1 off rd 80

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm) Air Temperature (°C)

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Mean Bankfull Width (m) Maximum Pool Depth (cm)
% Riffle % Pool Mean Water Depth (cm)
% Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

dry channel

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Author: K. Claytor
Field Notes QA/QC: JF

G:\1609\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 31
Watercourse Name: Unknown
Project Name: Niagara Wind
Photos
Date: June 12/12
Field Staff: W. Keene, R. Clayton
Weather conditions in previous 24 hrs
GPS Coordinates (Zone): W 621997 N 4758610 Datum Nad83
Descriptive Location: Off of Regional Road

Water Quality
Dissolved Oxygen (mg/L) [not tested]
Water Temperature (°C) [not tested]
Conductivity (µS/cm) [not tested]
Air Temperature (°C) 32

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) [not tested]
Mean Bankfull Width (m) [not tested]
% Rifle % Pool

Evidence of eroding banks, Comments on bank stability

Maximum Pool Depth (cm) [not tested]
Mean Water Depth (cm) [not tested]
% Run % Flat

Substrate (% cover)
Bedrock
Cobble
Silt
Muck
Boulder
Gravel
Clay
Marl
Detritus

In-water Cover
Cover Types Present (circle):
Undercut Banks
Deep Pool
Watercress
TYPHO

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
SOIL, Road, forest

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse
Surficial Drainage (i.e. furrows)
Grassed Swale
Buried Tile

Trapezoidal Channel
Dugout Pond
Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: R. Clayton
Field Notes QA/QCed by: WEE
Station # 52-1  
Watercourse Name unknown  
Photos 
Date June 01/12  
Weather conditions in previous 24 hrs Hot/humid.  
GPS Coordinates (Zone) 17T E 1500 N 4176971 Datum North  
Descriptive Location off of Regional Rd 569, near intersection of 

Water Quality  
Dissolved Oxygen (mg/L) 2.10  
Water Temperature (°C) 25.54  
Conductivity (µS/cm) 1165  
Air Temperature (°C) 33.0°C  
Time in situ measurements taken 16:05  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 2.5 (m)  
Mean Bankfull Width 10.5 (m)  
Maximum Pool Depth 0.15 (m)  
Mean Water Depth 0.10 (cm)  
% Riftle 100 % Pool 0 % Run 0 % Flat  
Evidence of eroding banks, Comments on bank stability stable - vegetated  

Substrate (% cover)  
Bedrock 10 Cobble 10 Sand 40 Silt 20 Muck 5  
Boulder 10 Gravel 50 Clay 10 Marl 10 Detritus 10  

In-water Cover  
Cover Types Present (circle):  
Overhanging Vegetation  
Undercut Banks  
Woody Debris  
Boulder  
Deep Pool  
Watercress  
Aquatic Veg  
Iris  
Duckweed  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  
50%  
Sycamore, Typha, Early  
Adjacent Land Use farmland  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  
spawning, nursery, foraging 
Migratory Obstructions (seasonal, permanent) permanent could be dry by end of summer  
Note any fish observations  

Waterbody Notes  
Natural Watercourse ✓ Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Grassed Swale  
Buried Tile  
Dominated by Aquatic Veg ✓ Dry  
Turbid Water  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by MEB
Station #: 54-1  Project Name: Niagara Wind
Watercourse Name: Unknown  Project #: 1609583269
Photos:  Field Staff: Mr. Tori
Date: June 22, 2020  Time: 09:34
Weather conditions in previous 24 hrs: Rain
GPS Coordinates (Zone): 17T E 060 28 25 N 43 36 24 Datum: NAD 83
Descriptive Location: On River Rd - 300m East of Silverdale Rd

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)  Air Temperature (°C) 24°
Time in situ measurements taken:

Watercourse Dimensions & Morphology
Mean Watercourse Width: 0.6 (m)  Maximum Pool Depth: 0.20 (cm)
Mean Bankfull Width: 1.0 (m)  Mean Water Depth: 0.10 (cm)
% Riffle: 100%  % Pool: % Run: % Flat: 
Evidence of eroding banks, Comments on bank stability:

Substrate (% cover)
Bedrock  Cobble  Sand  40%  Silt  30%  Muck  0%  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation: Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
20% native native species
Adjacent Land Use: agriculture

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
possible spawning, nursery
Migratory Obstructions (seasonal, permanent)

Note any fish observations: yes

Waterbody Notes
Natural Watercourse:  Trapezoidal Channel:  Grassed Swale:  Buried Tile:
Surficial Drainage (i.e. furrows): Dugout Pond: Dominated by Aquatic Veg:  Dry:

Other Habitat Notes, Incidental Wildlife Observations, etc.: Frogs, tadpoles, song sparrows
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 56-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 140954269
Photos See photo log  Field Staff CMF MC
Date June 22/12  Time 08:51
Weather conditions in previous 24 hrs Minor amounts of rain
GPS Coordinates (Zone) 17T E 0667007 N 4769151 Datum Nad83
Descriptive Location On Concession 4 ~ 300m east of Kearny Rd

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 23.0°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.2 (m) Maximum Pool Depth ___ (cm)
Mean Bankfull Width 3.0 (m) Mean Water Depth ___ (cm)
% Riffle ___ % Pool ___ % Run ___ % Flat ___
Evidence of eroding banks, Comments on bank stability
minor scour new road

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Cobble Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
70% mature + immature tree + shrub species on both banks
Adjacent Land Use
House, ac. fields, rd.

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Possibly spawning
Migratory Obstructions (seasonal, permanent)
Dries up
Note any fish observations none

Waterbody Notes
Natural Watercourse ✓ Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Songbirds

Field Notes Authored by VMF  Field Notes QA/QCed by MEE

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 55-2  
Watercourse Name: Unknown  
Project Name: Niagara Wind  
Photos: See Photo Log  
Field Staff: ME/MF  
Date: June 22/12  
Time: 09:18  
Weather conditions in previous 24 hrs:  
GPS Coordinates (Zone): 17T E 060°54.9" N 47°28.0'55" Datum: Nad83  
Descriptive Location: On Con 4, 600 m west of Beamr Road  

Water Quality  
Dissolved Oxygen (mg/L)  
Water Temperature (°C)  
Conductivity (μS/cm)  
Air Temperature (°C) 23.0°C  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 1.8 (m)  
Mean Bankfull Width 1.2 (m)  
Maximum Pool Depth 15.0 (cm)  
Mean Water Depth 4.2 (cm)  

% riffle 10%  
% pool 50%  
% run 10%  
% flat 30%  
Evidence of eroding banks, comments on bank stability: Minimal scour

Substrate (% cover)  
- Bedrock  
- Cobble  
- Sand 50%  
- Silt 10%  
- Muck  
- Boulder  
- Gravel 41%  
- Clay 1%  
- Marl  
- Detritus  

In-water Cover  
Cover Types Present (circle): Undercut Banks  
Overhanging Vegetation: Woody Debris  
Boulder  
Other: Watercress  

Aquatic Veg

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  
50% on south side (mature trees) 0% south side through field  

Adjacent Land Use: Field, weedlot, cd

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  
Migratory Obstructions (seasonal, permanent)  

Possible spawn

Note any fish observations: None

Waterbody Notes  
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by ME  
Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 56-1
Watercourse Name unknown
Photos  See Photos
Date June 8, 2013
Weather conditions in previous 24 hrs No rain - hot - humid
GPS Coordinates (Zone) 17T E 0659139 N 4768199 Datum NAD83
Descriptive Location On Concession 4 n 500 m east of Hodging Rd

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 31.2
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m) % Pool % Run % Flat
% Riffle
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Boulder Cobble Clay Sand Silt Marl Muck Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Other Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grasped Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MGF Field Notes QA/QCed by NCE
Red candy grass
Manicured grass
No deer

Hodgkins Rd ~ 500
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 56-2
Watercourse Name: Unknown
Photos: No photographs
Date: June 21/12
Weather conditions in previous 24 hrs: No rain
GPS Coordinates (Zone): 17T E 0627591 N 4269237 Datum: NAD83
Descriptive Location: On Hudgkin Rd, 30 m north of concession 4.

Water Quality
- Dissolved Oxygen (mg/L)
- pH
- Conductivity (μS/cm)
- Water Temperature (°C)
- Air Temperature (°C)
- Time in situ measurements taken

Watercourse Dimensions & Morphology
- Mean Watercourse Width (m)
- Mean Bankfull Width (m)
- Maximum Pool Depth (cm)
- Mean Water Depth (cm)
- % Riffle
- % Pool
- % Run
- % Flat
- Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
- Bedrock
- Cobble
- Sand
- Silt
- Muck
- Boulder
- Gravel
- Clay
- Marl
- Detritus

In-water Cover
- Cover Types Present (circle): Undercut Banks, Deep Pool, Watercress, Aquatic Veg
- Overhanging Vegetation: Woody Debris, Boulder, Other

Riparian Zone
- Riparian Cover (% of watercourse shaded; dominant vegetation, mature or early successional)

Adjacent Land Use
- Ag fields, rds

Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings)
- Migratory Obstructions (seasonal, permanent)
- Note any fish observations

Waterbody Notes
- Natural Watercourse
- Trapezoidal Channel
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Grassed Swale
- Buried Tile
- Dominated by Aquatic Veg
- Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: MP
Field Notes QA/QCed by: MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 56-84 3  Project Name Niagara Wind
Watercourse Name Unknown  Project # 1609508269
Photos  13.04.17  10.22  Field Staff ME, MF
Date June 21, 2017  Time 13:40
Weather conditions in previous 24 hrs No rain
GPS Coordinates (Zone) 11T E 06676288 N 43388178 Datum NAD83
Descriptive Location On Concession 4 - 70m east of Hodgkins Rd

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck  Detritus
Boulder  Gravel  Clay  Marl

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  ✓  Grassed Swale  ✓  Buried Tile
Surficial Drainage (i.e. furrows)  ✓  Dugout Pond  Dominated by Aquatic Veg  Dry  ✓

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by ME  Field Notes QA/QCed by MEE
Con Y

Holstein Rd

56-2. Non-REA

REA. At present, unused.

2x3m wide
patch of cut/fill.

Minimal debris.

Full of tree veg.

56-2. Non-REA

[Diagram details]
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 56-4
Watercourse Name Unknown
Photos See Photo Log
Date June 21/12
Weather conditions in previous 24 hrs No rain
GPS Coordinates (Zone) 17T E 0627568 N 4768098 Datum Nad 53
Descriptive Location Hedgkirk Rd. on the Crowe property

Water Quality
Dissolved Oxygen (mg/L) ______ pH _______ Conductivity (µS/cm) _______
Water Temperature (°C) _______ Air Temperature (°C) ______
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.6 (m) Maximum Pool Depth ______ (cm)
Mean Bankfull Width 2.4 (m) Mean Water Depth ______ (cm)
% Riffle ______ % Pool ______ % Run ______ % Flat ______
Evidence of eroding banks, Comments on bank stability minor undercutting

Substrate (% cover)
Bedrock ______ Cobble ______ Sand ______ Silt ______ Muck ______
Boulder ______ Gravel ______ Clay ______ Marl ______ Detritus ______

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
0%

Adjacent Land Use
Ag field, house

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
none

Migratory Obstructions (seasonal, permanent)
dry

Note any fish observations

Waterbody Notes
Natural Watercourse ______ Trapezoidal Channel ______ Grassed Swale ______ Buried Tile ______
Surficial Drainage (i.e. furrows) ______ Dugout Pond ______ Dominated by Aquatic Veg ______ Dry ______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by ME Field Notes QA/QCed by MEE

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
Station # 57-1  Project Name Niagara Wind
Watercourse Name Unknown
Photos #10
Date June 21, 2012
Weather conditions in previous 24 hrs
No rain
GPS Coordinates (Zone): 17T E 0630028 N 4768283 Datum NAD83
Descriptive Location On Concession #4 500m east of Rosedale Rd

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (µS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width ________(m) Maximum Pool Depth ________(cm)
Mean Bankfull Width ________(m) Mean Water Depth ________(cm)
% Riffle % Pool
% Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse ______ Trapezoidal Channel ______ Grassed Swale ______ Buried Tile ______
Surficial Drainage (i.e. furrows) ______ Dugout Pond ______ Dominated by Aquatic Veg ______ Dry ______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by __________ Field Notes QA/QCed by __________
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 57.2  Project Name Niagara Wind
Watercourse Name: Unknown  Project # 160952269
Photos  See Attach.  Field Staff MF, MF
Date June 21, 2012  Time 14:10
Weather conditions in previous 24 hrs: No rain - hot & humid
GPS Coordinates (Zone) 17T E 06299477 N 4783859 Datum NAD83
Descriptive Location On Concession 4 m 800m east of Roadside Rd

Water Quality
Dissolved Oxygen (mg/L) 7.77  pH 7.75  Conductivity (μS/cm) 1517
Water Temperature (°C) 24.50  Air Temperature (°C) 31°
Time in situ measurements taken ________

Watercourse Dimensions & Morphology
Mean Watercourse Width 3.5 (m)  Maximum Pool Depth 20 (cm)
Mean Bankfull Width 60 (m)  Mean Water Depth 10 (cm)
% Riffle 100  % Pool 0  % Run 0  % Flat 0
Evidence of eroding banks, Comments on bank stability: None observed

Substrate (% cover)
Bedrock 0  Cobble 0  Sand 50  Silt 30  Muck 0
Boulder 0  Gravel 20  Clay 0  Marl 0  Detritus 0

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
2% seed grass, grasses, mature tree

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Spawn, fry, nursery

Migratory Obstructions (seasonal, permanent)
Dig & fill

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF  Field Notes QA/QCed by MF

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### Wind Farm Waterbody Rapid Assessment Form

**Station #** 57.3

**Watercourse Name:** Unknown

**Project Name:** Niagara Wind

**Project #** 100088269

**Field Staff:** Me, Mf

**Date:** June 21/13

**Weather conditions in previous 24 hrs:** Rain

**GPS Coordinates (Zone):** 17T E 0639269 N 4467532 Datum NAD83

**Descriptive Location:** Dr. Rosedene Rd 300m south of concession 4

### Water Quality

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>8.46</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>8.02</td>
</tr>
<tr>
<td>Conductivity (µS/cm)</td>
<td>1674</td>
</tr>
</tbody>
</table>

**Water Temperature (°C):** 23.18

**Air Temperature (°C):** 32

**Time in situ measurements taken:** 14:35

### Watercourse Dimensions & Morphology

<table>
<thead>
<tr>
<th>Mean Watercourse Width (m)</th>
<th>2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Bankfull Width (m)</td>
<td>4.0</td>
</tr>
</tbody>
</table>

**Maximum Pool Depth (cm):** 10

**Mean Water Depth (cm):** 4

**% Riffle:** 100

**% Pool:** 0

**% Run:** 0

**% Flat:** 0

Evidence of eroding banks, Comments on bank stability: minor scour

### Substrate (% cover)

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand 40</th>
<th>Silt 30</th>
<th>Muck</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulder</td>
<td>Gravel</td>
<td>Clay</td>
<td>Marl</td>
<td>Detritus</td>
</tr>
</tbody>
</table>

### In-water Cover

<table>
<thead>
<tr>
<th>Cover Types Present (circle):</th>
<th>Undercut Banks</th>
<th>Deep Pool</th>
<th>Watercress</th>
<th>Aquatic Veg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhanging Vegetation</td>
<td>Woody Debris</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boulder</td>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Riparian Zone

<table>
<thead>
<tr>
<th>Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>270 seeded carya species</td>
</tr>
</tbody>
</table>

### Adjacent Land Use

<table>
<thead>
<tr>
<th>Riverbank</th>
<th>500 off riverbank</th>
</tr>
</thead>
</table>

### Fish Habitat Potential

<table>
<thead>
<tr>
<th>Critical Habitat (spawning or nursery areas, groundwater upwellings)</th>
<th>Spawn</th>
<th>Fish nursery</th>
</tr>
</thead>
</table>

### Migratory Obstructions (seasonal, permanent)

<table>
<thead>
<tr>
<th>Dry</th>
</tr>
</thead>
</table>

Note any fish observations: none

### Waterbody Notes

<table>
<thead>
<tr>
<th>Natural Watercourse</th>
<th>Trapezoidal Channel</th>
<th>Grassed Swale</th>
<th>Buried Tile</th>
<th>Surficial Drainage (i.e. furrows)</th>
<th>Dugout Pond</th>
<th>Dominated by Aquatic Veg</th>
<th>Green vegetation</th>
</tr>
</thead>
</table>

### Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: Mf

Field Notes QA/QCed by: MEE
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station # 50-1  
Watercourse Name: Unknown  
Project Name: Niagara Wind  
Photos: See photo log  
Project #: 160959269  
Date: June 21/12  
Field Staff: M.E., M.F.  
Weather conditions in previous 24 hrs: No precipitation  
GPS Coordinates (Zone): UTM E 063729  
Datum: Nad83  
Descriptive Location:  
Datum:  

### Water Quality
- Dissolved Oxygen (mg/L)  
- pH  
- Conductivity (µS/cm)  
- Water Temperature (°C)  
- Air Temperature (°C)  
- Time in situ measurements taken  

### Watercourse Dimensions & Morphology
- Mean Watercourse Width: 0.5 (m)  
- Mean Bankfull Width: 1.0 (m)  
- Maximum Pool Depth: (cm)  
- Mean Water Depth: (cm)  
- % Riftle  
- % Pool  
- % Run  
- % Flat  
- Evidence of eroding banks, Comments on bank stability  

### Substrate (% cover)
- Bedrock  
- Cobble  
- Boulder  
- Gravel  
- Sand  
- Clay  
- Silt  
- Muck  
- Marl  
- Detritus  

### In-water Cover
- Cover Types Present (circle): Undercut Banks, Deep Pool, Watercress, Aquatic Veg, Woody Debris, Boulder, Other

### Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  
- Adjacent Land Use:  

### Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings)  
- Migratory Obstructions (seasonal, permanent)  
- Note any fish observations:  

### Waterbody Notes
- Natural Watercourse  
- Trapezoidal Channel  
- Surficial Drainage (i.e. furrows)  
- Dugout Pond  
- Dominated by Aquatic Veg  
- Buried Tile  
- Dry  

### Other Habitat Notes, Incidental Wildlife Observations, etc.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 59-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 16652269
Photos  Field Staff
Date June 2019
Weather conditions in previous 24 hrs hot/humid
GPS Coordinates (Zone) E 4770090 N
Datum RT9
Descriptive Location off of Victoria Avenue, N of Killman Road

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C) 32
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
75% grasses, early

Adjacent Land Use
Transmission line, farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations dry

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF, Field Notes QA/QCed by 5k
Station # 59-2
Watercourse Name unknown
Photos
Date June 2010
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 4218S E 4269867 N
Datum NAD 83
Descrip Location off of Victoria Avenue, west of Kilman Road

Water Quality
Dissolved Oxygen (mg/L) __________________ pH __________________ Conductivity (µS/cm) __________________
Water Temperature (°C) __________________ Air Temperature (°C) 32
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) __________________ Maximum Pool Depth (cm) __________________
Mean Bankfull Width (m) __________________ Mean Water Depth (cm) __________________
% Riffle __________________ % Pool __________________ % Run __________________ % Flat __________________
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock __________________ Cobble __________________ Sand __________________ Silt __________________
Boulder __________________ Gravel __________________ Clay __________________ Muck __________________
Detritus __________________

In-water Cover
Cover Types Present (circle):
Undercut Banks __________________ Deep Pool __________________ Watercress __________________
Woody Debris __________________ Boulder __________________ Other __________________

Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse __________________ Trapezoidal Channel __________________
Surficial Drainage (i.e. furrows) __________________ Dugout Pond __________________
Grassed Swale __________________ Buried Tile __________________
Dominated by Aquatic Veg __________________ Dry __________________

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by M. Faiella
Field Notes QA/QCed by gk
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 58.2  
Watercourse Name Unknown  
Phosphorus Yes  
Date June 21, 12  
Weather conditions in previous 24 hrs N 90  
GPS Coordinates (Zone) NAD 83  
Descriptive Location Concession 4 & 500 m west of Victoria Rd  

Water Quality  
Dissolved Oxygen (mg/L) Temp (°C)  
Water Temperature (°C)  
Air Temperature (°C)  
Time in situ measurements taken  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 30 (m)  
Mean Bankfull Width 10 (m)  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Rifle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)  
Bedrock  
Cobble 20  
Sand 25  
Silt 25  
Muck  
Boulder 10  
Gravel 20  
Clay  
Marl  
Detritus  

In-water Cover  
Cover Types Present (circle): Undercut Banks Deep Pool Woody Debris Aquatic Veg  
Overhanging Vegetation Boulder Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 0%  
Adjacent Land Use Houses, barn, etc.  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings) None  
Migratory Obstructions (seasonal, permanent) Dry  
Note any fish observations None  

Waterbody Notes  
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Surficial Drainage (i.e. furrows)  
Dugout Pond Dominated by Aquatic Veg  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by MF Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Project Name: Niagara Wind
Project #: R5098269
Field Staff: ME, MF

Date: June 8/12
Time: 13:51
Weather conditions in previous 24 hrs: No precipitation
GPS Coordinates (Zone): UTM E 06350494 N 4768306 Datum NAD83
Descriptive Location: On Concession 4 ~ 700m west of Victoria Rd

Water Quality
Dissolved Oxygen (mg/L) _____ pH _____ Conductivity (μS/cm) _____
Water Temperature (°C) _____ Air Temperature (°C) 31.8

Watercourse Dimensions & Morphology
Mean Watercourse Width _______ (m) Maximum Pool Depth _______ (cm)
Mean Bankfull Width _______ (m) Mean Water Depth _______ (cm)

% Riffle _____ % Pool _____ % Run _____ % Flat _____
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock _____ Cobble _____ Sand _____ Silt _____ Muck _____
Boulder _____ Gravel _____ Clay _____ Marl _____ Detritus _____

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation: Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse_____ Trapezoidal Channel_____ Grassed Swale_____ Buried Tile_____
Surfical Drainage (i.e. furrows)_____ Dugout Pond_____ Dominated by Aquatic Veg_____ Dry_____

Other Habitat Notes, Incidental Wildlife Observations, etc.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # (00-1)  
Watercourse Name Unknown  
Photos See photo log  
Date June 20, 2022  
Weather conditions in previous 24 hrs sunny clear  
GPS Coordinates (Zone) 17T E 063°12'31" N 43°21'32" Datum NAD 83  
Descriptive Location On Victoria Ave ~ 500m north of Sixteen Rd

Water Quality
Dissolved Oxygen (mg/L) 3.44  
Water Temperature (°C) 27.20  
Conductivity (µS/cm) 610  
Air Temperature (°C) 32.66

Watercourse Dimensions & Morphology
Mean Watercourse Width 20.0 (m)  
Mean Bankfull Width 9.0 (m)  
Maximum Pool Depth 7100 (cm)  
Mean Water Depth 3700 (cm)

- % Riffle 10  
- % Pool
- % Run 90  
% Flat

Evidence of eroding banks, Comments on bank stability minor undercut.

Substrate (% cover)
- Bedrock  
- Boulder  
- Cobble  
- Sand  
- Gravel  
- Clay  
- Silt  
- Muck  
- Detritus

In-water Cover
Cover Types Present (circle):
- Undercut Banks
- Deep Pool
- Watercress
- Aquatic Veg
- Overhanging Vegetation
- Woody Debris
- Boulder
- Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
12% sparse shrubs on east + west side, some trees on west side

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
- Spawn
- Barge
- Nursery

Migratory Obstructions (seasonal, permanent)
- None

Note any fish observations Corp.

Waterbody Notes
Natural Watercourse ✔ Trapezoidal Channel  
Surficial Drainage (i.e. furrows) Dugout Pond  
Grassed Swale Buried Tile  
Dominated by Aquatic Veg ✔ Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Corp (e.g. ) barn swallows

Field Notes Authored by MF  
Field Notes QA/QCed by MEE
Stantec

WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 61-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160956269
Photos See Photo Log  Field Staff TBE
Date 2017-06-20  Time 16:35
Weather conditions in previous 24 hrs
NGS Coordinates (Zone) 17T E 0631091 N 4379101 Datum WGS83
Descriptive Location On Victoria ~ 600m south of Twenty Mile Rd

Water Quality
Dissolved Oxygen (mg/L) — pH — Conductivity (μS/cm) — Air Temperature (°C) —
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m)  Maximum Pool Depth 30.0 (cm)
Mean Bankfull Width 2.200 (m) Maximum Water Depth 30.0 (cm)
% Riffle — % Pool — % Run — % Flat
Evidence of eroding banks, Comments on bank stability None

Substrate (% cover)
Bedrock — Cobble — Sand 40 — Silt 30 — Mud 20
Boulder — Gravel — Clay 30 — Marl — Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks — Deep Pool — Watercress — Aquatic Veg
Overhanging Vegetation — Woody Debris — Boulder — Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse — Trapezoidal Channel — Grassed Swale — Buried Tile
Surficial Drainage (i.e. furrows) — Dugout Pond — Dominated by Aquatic Veg — Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by TBE  Field Notes QA/QC'd by MEE
Wind Farm Waterbody Rapid Assessment Form

Station #: 02-1
Watercourse Name: Smile Creek
Project Name: Niagara Wind
Photos
Date: June 30/2011
Weather conditions in previous 24 hrs: Hot & Humid
GPS Coordinates (Zone): 6233.89 E 4706213 N
Datum: 1711
Descriptive Location: On or near Regional Rd 36, 10040 or 0.

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 22
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: M. Faiella
Field Notes QA/QCed by: TV
Station # 63-1  
Watercourse Name Unknown  
Project Name Niagara Wind  
Photos See envelope log  
Project # 160950269  
Date 2012 06 19  
Field Staff NA, NA  
Weather conditions in previous 24 hrs (wind, precipitation)  
Time 10:23  
GPS Coordinates (Zone 17T) E 0623118 N 4760378 Datum NAVD88  
Descriptive Location In Stream 40 m north of Concession 6  

Water Quality  
Dissolved Oxygen (mg/L)  
pH  
Conductivity (μS/cm)  
Water Temperature (°C)  
Air Temperature (°C)  
Time in situ measurements taken  

Watercourse Dimensions & Morphology  
Mean Watercourse-Width (m)  
Mean Bankfull Width (m)  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Riffle  
% Pool  
% Run  
% Flat  

Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)  
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  

In-water Cover  
Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation  
Woody Debris  
Boulder  
Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

Adjacent Land Use  
Side ditch full of reed, cattail, grass  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  

Migratory Obstructions (seasonal, permanent)  
Note any fish observations  

Waterbody Notes  
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by MF  
Field Notes QA/QCed by MF  

W:\Resources\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 63-2
Watercourse Name Unknown
Photos See photo 100
Date 2012-09-20
Weather conditions in previous 24 hrs Minor prectp
GPS Coordinates (Zone) 19S E 23141 N 759947 Datum NAD83
Descriptive Location On side road 42 - 500 M width of concession

Water Quality
Dissolved Oxygen (mg/L) 10.20
pH 9.37
Conductivity (µS/cm) 676
Water Temperature (°C) 23.23
Air Temperature (°C) 30°
Time in situ measurements taken 10:40

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m)
Mean Bankfull Width 5.0 (m)
Maximum Pool Depth 8.0 (cm)
Mean Water Depth 2.0 (cm)
% Riffle 100
% Pool
% Run
% Flat
Evidence of eroding banks, Comments on bank stability None observed, will revisit

Substrate (% cover)
Bedrock
Cobble 10
Sand 40
Silt 40
Muck
Boulder
Gravel 10
Clay
Marl
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50%

Adjacent Land Use
Ag, rd, house

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)

Note any fish observations None

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc. Goldfinch

Field Notes Authored by MF Field Notes QA/QCed by ME
Station # 65-1
Watercourse Name Unknown
Photos See photo log
Date 2012-06-19
Weather conditions in previous 24 hours
GPS Coordinates (Zone) 19T E 062 337 N 478 126 Datum NA28
Descriptive Location Wheeler Road - 400 m South of Conc 5

Water Quality
Dissolved Oxygen (mg/L) 4.36 pH 7.8 Conductivity (µS/cm) 359.8
Water Temperature (°C) 22.5 Air Temperature (°C) 30

Watercourse Dimensions & Morphology
Mean Watercourse Width 25 (m)
Mean Bankfull Width 40 (m)
% Riffle 100% Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability none observed

Substrate (% cover)
Bedrock Cobble 10 Sand 40 Silt 30 Muck
Boulder Gravel 20 Clay Marl Detritus

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation Woody Debris Boulder Deep Pool Other Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
10% mature/invasive trees & shrubs

Adjacent Land Use
roads, houses

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
spawning

Migratory Obstructions (seasonal, permanent)
lack of water

Note any fish observations none

Waterbody Notes
Natural Watercourse Trapezoidal Channel
Surficial Drainage (i.e. furrows) Dugout Pond
Grassed Swale Buried Tile
Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF Field Notes QA/QCed by MFE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 65-2
Watercourse Name unknown
Photos see photo log
Date 2019-06-18
Weather conditions in previous 24 hrs wind 10 mph
GPS Coordinates (Zone) 19T E 0643353 N 4757235 Datum NAD83
Descripice Location On Willard Rd - 500 m south of Coxs

Water Quality
Dissolved Oxygen (mg/L) 1.24 pH 7.99 Conductivity (μS/cm) 913
Water Temperature (°C) 22.96 Air Temperature (°C) 30.2
Time in situ measurements taken 13:50

Watercourse Dimensions & Morphology
Mean Watercourse Width 20 (m) Maximum Pool Depth 25 (cm)
Mean Bankfull Width 10.0 (m) Fluvial 100 % Rifle 100 % Pool
Mean Water Depth 10 (cm) % Run 0 % Flat 0
Evidence of eroding banks, Comments on bank stability none observed

Substrate (% cover)

<table>
<thead>
<tr>
<th>0%</th>
<th>10%</th>
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<th>40%</th>
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<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
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</tbody>
</table>

In-water Cover
Cover Types Present (circle): Overhanging Vegetation Woody Debris Boulder Other

Deep Pool Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 10%
adjacent immature mature tree shrubs grass

Adjacent Land Use
Ag fields new house

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
lack of water thick aquatic veg

Note any fish observations

Waterbody Notes
Natural Watercourse ✓ Trapezoidal Channel Graded Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
green logs

Field Notes Authored by MF Field Notes QA/QCed by WEE
Station # 653  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160950.069
Photos 2012 10/29  Field Staff ME MF
Date 2012 10/29  Time 14:09
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17T E 0623013 N 4757840 Datum NAD83
Descriptive Location On un-maintained rd of Shafty Rd - 250 m north

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m)  Maximum Pool Depth 30 (cm)
Mean Bankfull Width 1.0 (m)  Mean Water Depth 15 (cm)
% Riffle 12/17  % Pool 0  % Run 0  % Flat 0
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
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<tbody>
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<td>40</td>
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</tbody>
</table>

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

10% mature trees/shrubs, reed, canary grass

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by ME Field Notes QA/QCed by MF
W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
Not sure of flow direction

---

\( \text{22.4} \) = sedges sp
\( \text{m} \) = algae mats
\( \text{L} \) = cattail
\( \text{H} \) = reed canopy grass
\( \text{duckweed} \)
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #:** 65-4  
**Watercourse Name:** Unknown  
**Photos:** See photo log  
**Date:** 2012-06-17  
**Weather conditions in previous 24 hrs:**  
**GPS Coordinates (Zone):** 19T E 0683036 N 4757316  
**Descriptive Location:** On Stafley Rd ~ 200m south of Con 5  
**Water Quality**

<table>
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<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>3.10</th>
<th>pH</th>
<th>7.89</th>
<th>Conductivity (µS/cm)</th>
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<td>Water Temperature (°C)</td>
<td>23.41</td>
<td>Air Temperature (°C)</td>
<td>30.6</td>
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</tr>
<tr>
<td>Time in situ measurements taken</td>
<td>14.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Watercourse Dimensions & Morphology**

<table>
<thead>
<tr>
<th>Mean Watercourse Width (m)</th>
<th>3.0</th>
<th>Maximum Pool Depth (cm)</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Bankfull Width (m)</td>
<td>7.0</td>
<td>Mean Water Depth (cm)</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Rifle</th>
<th>100</th>
<th>% Pool</th>
<th>% Run</th>
<th>% Flat</th>
</tr>
</thead>
</table>

Evidence of eroding banks, Comments on bank stability: None observed

**Substrate (% cover)**

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulder</td>
<td>Gravel</td>
<td>20</td>
<td>Clay</td>
<td>Marl</td>
</tr>
</tbody>
</table>

In-water Cover

<table>
<thead>
<tr>
<th>Cover Types Present (circle):</th>
<th>Undercut Banks</th>
<th>Deep Pool</th>
<th>Watercress</th>
<th>Aquatic Veg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhanging Vegetation</td>
<td>Woody Debris</td>
<td>Boulder</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Riparian Zone

<table>
<thead>
<tr>
<th>Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)</th>
<th>40% ash sp., elm sp., an rubs</th>
</tr>
</thead>
</table>

Adjacent Land Use

| house, ATV trails, rd6, rice fields |

**Fish Habitat Potential**

Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations: None

**Waterbody Notes**

Natural Watercourse: Trapezoidal Channel, Grassed Swale, Buried Tile  
Surficial Drainage (i.e. furrows): Dugout Pond, Dominated by Aquatic Veg, Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

| cardinal, frog |

Field Notes Authored by: MFR  
Field Notes QA/QCed by: NEE

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North

Haygrove

Meadow

ATV Trail

Manicured Grass

Sead Cenery Grass

\( \text{Hay} \)

\( \text{sedge} \)

\( \text{duckweed} \)
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 60-1 Project Name Niagara Wind
Watercourse Name unknown Project # 1609502469
Photos See Photo Log Field Staff ME, ME
Date 06.19.12 Time 12:18
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17T E N 47 50 6462 Datum NAD83
Descriptive Location On Willandflit Rd (#4) ~ 800m north of Hwy 3

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 27°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m) Maximum Pool Depth 30 (cm)
Mean Bankfull Width 3.5 (m) Mean Water Depth 10 (cm)
% Riffle 40 % Pool 60 % Run % Flat none observed
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand 40 Silt 30 Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 0%

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) possible spawn
Migratory Obstructions (seasonal, permanent) Lack of water
Note any fish observations none.

Waterbody Notes
Natural Watercourse ✓ Trapezoidal Channel ✓ Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg ✓ Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by ME Field Notes QA/QCed by ME

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 66-2 Project Name Niagara Wind
Watercourse Name Unknown Project # 160950349
Photos See photo log Field Staff MF
Date 2012. 09. 17 Time 12:45
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17° E 062°39.4" N 47°55.8" Datum NAD83
Descriptive Location On west side of Wellandport Rd (parallel) to Highway 5

Water Quality
Dissolved Oxygen (mg/L) 3.24 pH 7.95 Conductivity (μS/cm) 717
Water Temperature (°C) 23.2 Air Temperature (°C) 30
Time in situ measurements taken 12:45

Watercourse Dimensions & Morphology
Mean Watercourse Width 3.0 (m) Maximum Pool Depth 3.0 (cm)
Mean Bankfull Width 0.2 (m) Mean Water Depth 15 (cm)
% Rifle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability None. Well vegetated

Substrate (% cover)
Bedrock Cobble Sand 40 Silt 40 Muck
Boulder Gravel 20 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Rts, industrial buildings

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
 Spawn nursery
Migratory Obstructions (seasonal, permanent)
Lack of water
Note any fish observations None

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surfical Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF Field Notes QA/QCed by MEE

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 27-1  Project Name: Niagara Wind
Watercourse Name: Unknown  Project #: 1621-06-169
Photos:  Field Staff: Dragila, M. plank
Date: June 2012  Time: 14:42
Weather conditions in previous 24 hrs: hot, humid
GPS Coordinates (Zone): W 175522, E 4753776 N, Datum 17T
Descriptive Location: off of Hwy 3 (near #143), west of 67-7

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: Dragila, M.  Field Notes QA/QCed by: J.

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 07-2
Watercourse Name unknown
Photos
Date June 2012
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 617822 E 4753892 N Datum 1983
Descriptive Location Neatly past of 07-1

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 32
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use farm

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations dry

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by M. Faiella
Field Notes QA/QC'd by JK
WIND FARM WATERBODY RAPID ASSESSMENT FORM

<table>
<thead>
<tr>
<th>Station #</th>
<th>68-1</th>
<th>Project Name</th>
<th>Niagara Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watercourse Name</td>
<td>unknown</td>
<td>Project #</td>
<td>160950019</td>
</tr>
<tr>
<td>Photos</td>
<td>floor plan log</td>
<td>Field Staff</td>
<td>ME, ME</td>
</tr>
<tr>
<td>Date</td>
<td>2012.06.19</td>
<td>Time</td>
<td>14:56</td>
</tr>
<tr>
<td>Weather conditions in previous 24 hrs</td>
<td>rainy day</td>
<td>GPS Coordinates (Zone)</td>
<td>19T E 0620369 N 4755171 Datum NAD83</td>
</tr>
<tr>
<td>Descriptive Location</td>
<td>On Hutchinson Rd ~ 300m north of Hwy 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Water Quality

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>3.67</th>
<th>pH</th>
<th>9.07</th>
<th>Conductivity (μS/cm)</th>
<th>760</th>
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</thead>
<tbody>
<tr>
<td>Water Temperature (°C)</td>
<td>23.11</td>
<td>Air Temperature (°C)</td>
<td>30°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time in situ measurements taken</td>
<td>15:01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Watercourse Dimensions & Morphology

| Mean Watercourse Width (m) | 3.0 |
| Mean Bankfull Width (m) | 7.0 |
| Maximum Pool Depth (cm) | 20 |
| Mean Water Depth (cm) | 15 |
| % Riffle | 100 |
| % Pool | 0 |
| Evidence of eroding banks, Comments on bank stability | none observed, well wooded |

### Substrate (% cover)

| Bedrock | 0 |
| Cobble | 10 |
| Sand | 40 |
| Silt | 40 |
| Muck | 0 |
| Boulder | 0 |
| Gravel | 0 |
| Clay | 0 |
| Marl | 0 |
| Detritus | 0 |

### In-water Cover

- Cover Types Present (circle):
  - Overhanging Vegetation
  - Woody Debris
  - Boulder
  - Deep Pool
  - Watercress
  - Aquatic Veg

### Riparian Zone

- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
  - 15% shrubs, sedges, cattails, grass, mature tree sp, sedge

### Adjacent Land Use

- School, id, 100 yards

### Fish Habitat Potential

- Critical Habitat (spawning or nursery areas, groundwater upwellings)
  - Spawn, fertile, nursery

### Migratory Obstructions (seasonal, permanent)

- Lack of water, fish tape

### Note any fish observations

- None

### Waterbody Notes

- Natural Watercourse
- Trapezoidal Channel
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Grassed Swale
- Buried Tile
- Dominated by Aquatic Veg
- Dry

### Other Habitat Notes, Incidental Wildlife Observations, etc.

- None

Field Notes Authored by: ME
Field Notes QA/QC'ed by: MEF
Stantec

WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 091 Project Name Niagara Wind
Watercourse Name Unknown Project # 160950269
Photos See Print Log Field Staff ME, MF
Date 2012-06-19 Time 15:11
Weather conditions in previous 24 hrs mean estimate
GPS Coordinates (Zone) 171 E 0629094 N 4754549 Datum NH95
Descriptive Location On Hutchinson Rd 300m south of Hwy 3

Water Quality
Dissolved Oxygen (mg/L) 3.87 pH 7.67 Conductivity (µS/cm) 754
Water Temperature (°C) 24.97 Air Temperature (°C) 30.4
Time in situ measurements taken 15:16

Watercourse Dimensions & Morphology
Mean Watercourse Width 20 (m) Maximum Pool Depth 3.0 (cm)
Mean Bankfull Width 7.0 (m) Mean Water Depth 15 (cm)
% Riffle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability none observed

Substrate (% cover)

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>40</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
35% sparse shrubs and canopy

Adjacent Land Use a.g. rds

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
lack of water

Note any fish observations now

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF Field Notes QA/QC'd by MF
\( \text{Corn} \)

\( \text{Meadow sp} \)

\( \text{Corn} \)

\( \text{Shrub} \)

\( \text{\( \sim \) = thick duckweed} \)

\( \text{\( \wedge \) = sedge sp.} \)
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** 69.2  
**Watercourse Name** unknown  
**Photos** see photo log  
**Date** 2012-05-18  
**Weather conditions in previous 24 hrs** sunny, fair  
**GPS Coordinates (Zone)** 19T E 0621122 N 4753870 Datum NAD83  
**Descriptive Location** Along Hutchinson Rd from ~50 south of Aug 3 to ~100 m southwest Jenny Jump Rd on West Side. Runs Peakedly

**Water Quality**

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>pH</th>
<th>Conductivity (μS/cm)</th>
<th>Water Temperature (°C)</th>
<th>Air Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

**Time in situ measurements taken**

**Watercourse Dimensions & Morphology**

<table>
<thead>
<tr>
<th>Mean Watercourse Width</th>
<th>2.0 (m)</th>
<th>Maximum Pool Depth</th>
<th>10 (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Bankfull Width</td>
<td>4.0 (m)</td>
<td>Mean Water Depth</td>
<td>5 (cm)</td>
</tr>
<tr>
<td>% Riffle</td>
<td>150</td>
<td>% Pool</td>
<td></td>
</tr>
</tbody>
</table>

**Evidence of eroding banks, Comments on bank stability** no flow. No observed erosion.

**Substrate (% cover)**

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>10</th>
<th>Sand</th>
<th>50</th>
<th>Silt</th>
<th>30</th>
<th>Muck</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulder</td>
<td>Gravel</td>
<td>12</td>
<td>Clay</td>
<td></td>
<td>Marl</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**In-water Cover**

- Overhanging Vegetation
- Woody Debris
- Boulder
- Deep Pool
- Watercress
- Aquatic Veg

**Riparian Zone**

- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
  - 40% mature/immature tree/shrub species, weed caney

**Adjacent Land Use**

- Houses, etc.

**Fish Habitat Potential**

- Critical Habitat (spawning or nursery areas, groundwater upwellings)
- Spawning, nursery

**Migratory Obstructions (seasonal, permanent)**

- Lack of water

**Note any fish observations**

**Waterbody Notes**

- Natural Watercourse
- Trapezoidal Channel
- Grassed Swale
- Buried Tile
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Dominated by Aquatic Veg
- Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

**Field Notes Authored by** MRF  
**Field Notes QA/QCed by** MRF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 70-1
Watercourse Name Unknown
Photos see attachment
Date 2012-06-10
Weather conditions in previous 24 hrs hot & humid, moderate precip
GPS Coordinates (Zone) 177 E 062299 E N 4355488 Date NAD 83
Descriptive Location On line between Davenille/Winfleet rd - 800m south of Beckner Rd

Water Quality
Dissolved Oxygen (mg/L) 3.98 pH 7.93 Conductivity (µS/cm) 579
Water Temperature (°C) 23.21 Air Temperature (°C) 30.6
Time in situ measurements taken 16:03

Watercourse Dimensions & Morphology
Mean Watercourse Width 3.0 (m)
Mean Bankfull Width 6.0 (m)
% Riffle 100 % Pool
Mean Water Depth 3.0 (cm)
% Run % Flat

Evidence of eroding banks, Comments on bank stability Recent dredging on south bank

Substrate (% cover)
Bedrock Cobble Sand 40 Silt 40 Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
50% mature/mature tree & shrub species

Adjacent Land Use
Green houses

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent) Right of Way

Note any fish observations none

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MFE
-xx = duckweed

Townline: Dooree / aerial survey

Scour

Shrubs/Trees

GreenHoops
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 71-1 
Watercourse Name Unknown 
Photos See Photo Log 
Date 2017-06-19 
Weather conditions in previous 24 hrs sunny, clear 
GPS Coordinates (Zone) 17T E 0623848 N 4755150 Datum NAD83 
Descriptive Location On Henderson Rd ~ 400m south of Hwy 3, Near farm silos.

Water Quality 
Dissolved Oxygen (mg/L) / pH Conductivity (µS/cm) 
Water Temperature (°C) Air Temperature (°C) 24° 
Time in situ measurements taken 

Watercourse Dimensions & Morphology 
Mean Watercourse Width 20 (m) Maximum Pool Depth 80 (cm) 
Mean Bankfull Width 50 (m) Mean Water Depth 30 (cm) 
% Riffle 100 % Pool % Run % Flat 
Evidence of eroding banks, Comments on bank stability 

Substrate (% cover) 
Bedrock Cobble 10 Sand 40 Silt 30 Muck 
Boulder Gravel 20 Clay Marl Detritus 

In-water Cover 
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg 
Overhanging Vegetation Woody Debris Boulder Other 

Riparian Zone 
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50% Reed, Cane, Grass 
Adjacent Land Use 
ag fields, rd. 

Fish Habitat Potential 
Critical Habitat (spawning or nursery areas, groundwater upwellings) possible spawn 
Migratory Obstructions (seasonal, permanent) lack of way, thick reed/cane grass 
Note any fish observations note 

Waterbody Notes 
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile 
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry 

Other Habitat Notes, Incidental Wildlife Observations, etc. 

Field Notes Authored by MFE Field Notes QA/QCed by MFE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 72-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160950269
Ph locator 5440105  Field Staff ME, MF
Date 5/17 9:31  Time 18:37
Weather conditions in previous 24 hrs NA
GPS Coordinates (Zone) JT E 062115 N 4353895 Datum NAD 83
Descriptive Location On brethren rd ~250m north of Jenny Sumper Rd

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.0 (m)  Maximum Pool Depth N/A (cm)
Mean Bankfull Width 5.0 (m)  Mean Water Depth N/A (cm)
Riffle % Pool % Run % Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
- Bedrock
- Boulder
- Cobble
- Gravel
- Sand
- Clay
- Silt
- Muck
- Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF  Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 73-1  
Watercourse Name unknown  
Photos 200 photo 12  
Date June 2017  
Weather conditions in previous 24 hrs No precip  
GPS Coordinates (Zone) 117E 063399S N 4754257 Datum Niagara  
Descriptive Location Dr. Hospital Rd - 400m north of Townline Rd/Att  

Water Quality  
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm) Air Temperature (°C)  
Time in situ measurements taken  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 2.0 (m) Maximum Pool Depth 22 (cm)  
Mean Bankfull Width 4.0 (m) Mean Water Depth 19.5 (cm)  
% Riffle % Pool % Run % Flat  
Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)  
Bedrock Cobble Sand Silt Muck  
Boulder Gravel Clay Marl Detritus  

In-water Cover  
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg  
Overhanging Vegetation Woody Debris Boulder Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  
67% Cat tail, 33% Canada Grass  
Adjacent Land Use  
66% Grasses, 33% Fiel  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  
Migratory Obstructions (seasonal, permanent)  
Note any fish observations None - dry  

Waterbody Notes  
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile  
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by MP Field Notes QA/QCed by MEE  
W:\resource\internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 73-2  Project Name Niagara Wind
Watercourse Name unknown  Project # 106982269
Photos  Field Staff M. Faiella, M. Hill
Date June 20/12  Time 9:32
Weather conditions in previous 24 hrs hot & humid
GPS Coordinates (Zone) 123570E 4754636 N  Datum NAD
Descriptive Location Off of Taunton Dunningville Whinflet West of Henderson Rd South of 73-1

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C) 33.6
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riftle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris  Boulder  Other riparian vegetation

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by M. Faiella  Field Notes QA/QCed by JS

G:\01609\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #:** 74-1  
**Watercourse Name:** unknown  
**Project Name:** Niagara Wind  
**Project #:** 160926269  
**Field Staff:**  
**Time:** 10:31

**Weather conditions in previous 24 hrs:** hot & humid  
**GPS Coordinates (Zone):** 17T  
**Datum:** NAD83  
**Descriptive Location:**  
from ~2 km north of Route 17 to ~500 m south of Bookr Road  
S100 15 N, 053°21'40.7"W  
E177 063°8'04.7"N, 47°49'7.9"

**Water Quality**  
**Dissolved Oxygen (mg/L):**  
**pH:**  
**Conductivity (μS/cm):**  
**Air Temperature (°C):**  
**Time in situ measurements taken:**

**Watercourse Dimensions & Morphology**  
**Mean Watercourse Width:** 3.0 (m)  
**Mean Bankfull Width:** 6.0 (m)  
**% Riffle:** 100%  
**% Pool:**  
**% Run:**  
**% Flat:**

**Evidence of eroding banks, Comments on bank stability:**

**Substrate (% cover):**  
- Bedrock: 0%  
- Cobble: 10%  
- Boulder: 0%  
- Gravel: 10%  
- Sand: 40%  
- Silt: 40%  
- Mud: 0%  
- Detritus: 0%

**In-water Cover**  
**Overhanging Vegetation:**  
**Woody Debris:**  
**Boulder:**  
**Deep Pool:**  
**Watercress:**  
**Aquatic Veg:**

**Riparian Zone**  
**Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):**  
20%  
**Adjacent Land Use:**  
- Road, houses, as fields

**Fish Habitat Potential**  
**Critical Habitat (spawning or nursery areas, groundwater upwellings):**  
- Spawn nursery, shallow

**Migratory Obstructions (seasonal, permanent):**  
**Aquatic veg**

**Note any fish observations:**

**Waterbody Notes**  
**Natural Watercourse:**  
**Trapezoidal Channel:** ✓  
**Grassed Swale:**  
**Buried Tile:**  
**Surficial Drainage (i.e. furrows):**  
**Dugout Pond:**  
**Dominated by Aquatic Veg:** ✓  
**Dry:**

**Other Habitat Notes, Incidental Wildlife Observations, etc.:**  
- Barn swallows (20+?)

**Field Notes Authored by:** MC  
**Field Notes QA/QCed by:** MEF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 73-2
Watercourse Name Unknown
Photos 912, 914, 915, 921
Date June 13
Weather conditions in previous 24 hrs New
GPS Coordinates (Zone) 17T E
Descriptive Location Connected to 73-1, located south of Pan (73-1)
Channel along Townline Rd. Dredged on west property as well

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (µS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) __________ Maximum Pool Depth (cm) __________
Mean Bankfull Width (m) __________ Mean Water Depth (cm) __________
% Riffle __________ % Pool __________ % Run __________ % Flat __________
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Boulder
Cobble Gravel
Sand Clay
Silt Marl
Muck Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Channel has been dredged and is dominated by young terrestrial veg

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Note any fish observations dry

Waterbody Notes
Natural Watercourse _____ Trapezoidal Channel ☑ Grassed Swale _____ Buried Tile _____
Surficial Drainage (i.e. furrows) _____ Dugout Pond _____ Dominated by Aquatic Veg _____ Dry ☑

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF Field Notes QA/QCed by MCE
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #:** 7S-1  
**Watercourse Name:** Unknown  
**Photos:** See photo log  
**Date:** June 20/12  
**Weather conditions in previous 24 hrs:** New  
**GPS Coordinates (Zone):** 17T E 0263321 N 4752879 Datum Nad83  
**Descriptive Location:** On Booker Rd ~ 800m west of Twelve O'Clock (NW).  

### Water Quality

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>pH</th>
<th>Conductivity (μS/cm)</th>
<th>Water Temperature (°C)</th>
<th>Air Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**Time in situ measurements taken:**

### Watercourse Dimensions & Morphology

<table>
<thead>
<tr>
<th>Mean Watercourse Width (m)</th>
<th>Mean Bankfull Width (m)</th>
<th>Maximum Pool Depth (cm)</th>
<th>Mean Water Depth (cm)</th>
<th>% Riffle</th>
<th>% Pool</th>
<th>% Run</th>
<th>% Flat</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

**Evidence of eroding banks, Comments on bank stability:**

### Substrate (% cover)

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

### In-water Cover

<table>
<thead>
<tr>
<th>Cover Types Present (circle):</th>
<th>Undercut Banks</th>
<th>Deep Pool</th>
<th>Watercress</th>
<th>Aquatic Veg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhanging Vegetation</td>
<td>Woody Debris</td>
<td>Boulder</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Riparian Zone**

**Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):**

Channel with dogwood, maple sp., surrue, for pine, other meadow sp.

**Adjacent Land Use:**

### Fish Habitat Potential

**Critical Habitat (spawning or nursery areas, groundwater upwellings):**

**Migratory Obstructions (seasonal, permanent):**

**Note any fish observations:**

### Waterbody Notes

<table>
<thead>
<tr>
<th>Natural Watercourse</th>
<th>Trapezoidal Channel</th>
<th>Grassed Swale</th>
<th>Buried Tile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surficial Drainage (i.e. furrows)</td>
<td>Dugout Pond</td>
<td>Dominated by Aquatic Veg</td>
<td>Dry ✓</td>
</tr>
</tbody>
</table>

**Other Habitat Notes, Incidental Wildlife Observations, etc.:**

Trapezoidal channel with sedges and cattails sp.
## Wind Farm Waterbody Rapid Assessment Form

**Station #** 77-1  
**Watercourse Name** Unknown  
**Photos** See photos  
**Date** 2012-2013  
**Weather conditions in previous 24 hrs** Hot & humid  
**GPS Coordinates (Zone)** 17S E 0604271 N 4349592  
**Datum** NAD83  
**Descriptive Location** On Bird Rd in 300m north of Canal Point Rd  
**On east side of rd (paved)**

### Water Quality

- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (µS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)**  
- **Time in situ measurements taken**

### Watercourse Dimensions & Morphology

- **Mean Watercourse Width** 15 (m)  
- **Max Watercourse Width** 20 (m)  
- **% Riffle**  
- **% Pool**  
- **Mean Water Depth** (cm)  
- **% Run**  
- **% Flat**  

### Substrate (% cover)

- Bedrock  
- Cobble  
- Sand  
- Silt  
- Muck  
- Boulder  
- Gravel  
- Clay  
- Marl  
- Detritus

### In-water Cover

- Cover Types Present (circle): Undercut Banks  
- Deep Pool  
- Watercress  
- Aquatic Veg  
- Overhanging Vegetation  
- Woody Debris  
- Boulder  
- Other

### Riparian Zone

- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  
  - 10% native trees or shrubs along riparian zone

### Adjacent Land Use

-  
-  
-  
-  
-  
-  

### Fish Habitat Potential

- Critical Habitat (spawning or nursery areas, groundwater upwellings)  
  -  

### Migratory Obstructions (seasonal, permanent)

-  

### Note any fish observations

- None

### Waterbody Notes

- Natural Watercourse  
- Trapezoidal Channel  
- Grassed Swale  
- Buried Tile  
- Surficial Drainage (i.e. furrows)  
- Dugout Pond  
- Dominated by Aquatic Veg  
- Dry

### Other Habitat Notes, Incidental Wildlife Observations, etc.

-  
-  
-  
-  
-  

**Field Notes Authored by** MP  
**Field Notes QA/QCed by** NEE

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 78.1 Project Name Niagara Wind
Watercourse Name unknown Project # 160950.269
Photcs See photo log Field Staff MPE, MF
Date 2019, July 29 Time 15:38
Weather conditions in previous 24 hrs None
GPS Coordinates (Zone) 171 E 0629481 N 43149465 Datum NAD83
Descriptive Location On Canal Bank 1 km east of Bird Rd

Water Quality
Dissolved Oxygen (mg/L) ___________ pH ___________ Conductivity (μS/cm) ___________
Water Temperature (°C) ___________ Air Temperature (°C) ___________
Time in situ measurements taken ___________

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m) Maximum Pool Depth N/A (cm)
Mean Bankfull Width (m) Mean Water Depth N/A (cm)
% Riffle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability None observed but recently

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 10%

Adjacent Land Use
ag. fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) Possible cover connected to feeder canal

Migratory Obstructions (seasonal, permanent)

Note any fish observations None - off row

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MPE Field Notes QA/QC'd by MPE

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 29-1
Watercourse Name Unknown
Photos
Date June 10/12
Weather conditions in previous 24 hrs None: Hot & Humid
GPS Coordinates (Zone) 17T E 0462558 N 4349489 Datum Nad83
Descriptive Location On Canal Bank Rd. Canal runs along rd. Canal

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 8.0 (m) Maximum Pool Depth 910.0 (cm)
Mean Bankfull Width 10.0 (m) Mean Water Depth 835.0 (cm)

% Riffle 100 % Pool

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
40% Invasive/Non-native Tree Species throughout

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Northernspawn bass
Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse V Trapezoidal Channel V Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg V Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF Field Notes QA/QCed by MEE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 80-1  Project Name Niagara Wind
Watercourse Name UNKNWN
Photcs No Photos log
Date 2014 06 20
Weather conditions in previous 24 hrs No Precip
GPS Coordinates (Zone) 17T E 0621309 N 4747055 Datum NAD83
Descriptive Location On Ryner Road 700m west of Dickhout Rd.

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.3 (m) Maximum Pool Depth 4 (cm)
Mean Bankfull Width 3.0 (m) Mean Water Depth 2 (cm)
% Riffle 100 % Pool
% Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble Sand 40 Silt 40 Muck
Boulder Gravel 20 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Woody Debris Boulder Other
Overhanging Vegetation
Deep Pool Watercress
Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100% from the side mature trees.

Adjacent Land Use
ag fields, houses

Fish Habitat Potential
Critical Habitat ( spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel
Surficial Drainage (i.e. furrows) Dugout Pond
Grassed Swale Dominated by Aquatic Veg
Buried Tile Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MP Field Notes QA/QCed by MEE

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** 81-1  
**Watercourse Name**  
**Photos** See photo log  
**Date** 2018 04 20  
**Weather conditions in previous 24 hrs**  
**GPS Coordinates (Zone)** 195 E 062.911 N 4743.513 Datum WAD23  
**Describer Location** On Bird Rd - 900m south of Carel Bank Rd  

**Project Name** Niagara Wind  
**Project #** 1609502049  
**Field Staff** MF MF  
**Time** 13:50  
**Evidence of eroding banks, Comments on bank stability**  

### Water Quality
- **Dissolved Oxygen (mg/L)** 3.89  
- **pH** 7.90  
- **Conductivity (µS/cm)** 087  
- **Water Temperature (°C)** 26.71  
- **Air Temperature (°C)** 21.90  
- **Time in situ measurements taken** 14:00  

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width** 3.0 (m)  
- **Mean Bankfull Width** 9.0 (m)  
- **Maximum Pool Depth** 10 (cm)  
- **Mean Water Depth** 2 (cm)  

### Substrate (% cover)
- **Bedrock**  
- **Cobble**  
- **Sand** 40  
- **Silt** 30  
- **Muck**  
- **Boulder**  
- **Gravel** 30  
- **Clay**  
- **Marl**  
- **Detritus**  

### In-water Cover
- **Cover Types Present (circle):**  
  - Undercut Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg  
- **Overhanging Vegetation**  
- **Woody Debris**  
- **Boulder**  
- **Other**  

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**  
  - **25% Carex sp.**  
  - **10% Cattail sp.**  
  - **5% Fothergilla sp.**  
  - **5% Other**  

### Adjacent Land Use
- **Open Fields, Rd**  

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**  
- **Migratory Obstructions (seasonal, permanent)**  
- **Note any fish observations**  

### Waterbody Notes
- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Dominated by Aquatic Veg**  
- **Dry**  

### Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MF  
Field Notes QA/QCed by MFE

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 83-1
Watercourse Name Unknown
Photos 90_8110
Date 2012-04-08
Weather conditions in previous 24 hrs No precipitation
GPS Coordinates (Zone) 195 E 0624918 N 4749203 Datum NAD83

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 30°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.0 (m) Maximum Pool Depth 3 (cm)
Mean Bankfull Width 4.0 (m) Mean Water Depth 4 (cm)

% Riffle 100 % Pool 0 % Run 0 % Flat 0
Evidence of eroding banks, Comments on bank stability None

Substrate (% cover)
Bedrock Cobble Sand 40 Silt 30 Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
50% mature trees + shrubs + free species
Adjacent Land Use
rds. houses, woodlot, ag. fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)

Note any fish observations None

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MEE Field Notes QA/QCed by MEE

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 93.2  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160950269
Photos  Date 2012 08 20
Weather conditions in previous 24 hrs No precipitation - hot & humid
GPS Coordinates (Zone) E 0625899 N 4349102
Datum NAD83
Descriptive Location Runs to 93-1 and connects to 300' separation

Water Quality
Dissolved Oxygen (mg/L) 7.04  pH 7.90  Conductivity (µS/cm) 500
Water Temperature (°C) 22.34  Air Temperature (°C) 30
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m)  Maximum Pool Depth 760.0 (cm)
Mean Bankfull Width 10.0 (m)  Mean Water Depth 3.0 (cm)
% Riffle 100% Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
</tr>
</thead>
</table>

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation Woody Debris Boulder Other
Undercut Banks Deep Pool Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
15% willow, 10% shrubs

Adjacent Land Use
65% fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
not observed

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by MFE  Field Notes QA/QCed by MFE

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83-2
83-1
Hutchinson Rd.
Minor Rd.

* = arrowhead
| = duckweed
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station #: 211082  
Watercourse Name: 2  
Photos: 3057-3067  
Date: 19 Sept 2013  
Weather conditions in previous 24 hrs: Fire, rain day prior  
GPS Coordinates (Zone): 17T E 961822 N 47542960 Datum NAD 83  
Descriptive Location: Field with watercourse 2 running downstream  
North of Hwy 3 by approx 700 m; 600 m East of Crown Rd  

**Water Quality**  
Dissolved Oxygen (mg/L)  
pH  
Conductivity (μS/cm)  
Air Temperature (°C) 15C  
Water Temperature (°C)  
Time in situ measurements taken  

**Watercourse Dimensions & Morphology**  
Mean Watercourse Width (m)  
Maximum Pool Depth (cm)  
Mean Bankfull Width (m) 2-3  
Mean Water Depth (cm)  
% Rifle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability  
Channel is Adjacent fields are ploughed to top of bank  

**Substrate (% cover)**  
Bedrock  
Boulder  
Cobble  
Gravel  
Sand  
Silt  
Muck  
Clay  
Marl  
Detritus  

**In-water Cover**  
Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation: Woody Debris  
Boulder  
Other  

**Riparian Zone**  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

**Adjacent Land Use**  
Agricultural  
Weeds  
Shaded  
Herbaceous  
Exotics  

**Fish Habitat Potential**  
No water unlikely to bear fish  

**Critical Habitat** (spawning or nursery areas; groundwater upwellings)  

**Migratory Obstructions (seasonal, permanent)**  
Low - no flow  

**Note any fish observations**  
No  

**Waterbody Notes**  
Natural Watercourse  
Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Grassed Swale  
Buried Tile  
Dominated by Aquatic Veg  

**Other Habitat Notes, Incidental Wildlife Observations, etc.**  
Straight trapezoidal channel along entire site. Channel bed does not appear to be plowed.  
But channel is used to drain agricultural fields. Water sourced from wetland situated north of channel. No aquatic plants.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: S6 - S6R3  Project Name: Niagara Wind Farm
Watercourse Name: Spring Creek Tributary
Photos: 5/35  Project #: 160960969
Date: 5/35  Field Staff: Trielich & Hamilton
Weather conditions in previous 24 hrs: Fine - Rain 15°C
GPS Coordinates (Zone): 17T E 0620005  N 4715198  Datum: NAD83
Descriptive Location: South Grandly Rd. 200 m north of Young's St.

Water Quality:
Dissolved Oxygen (mg/L) ______ pH _______ Conductivity (μS/cm) _______
Water Temperature (°C) _______ Air Temperature (°C) 13°C
Time in situ measurements taken: _______

Watercourse Dimensions & Morphology:
Mean Watercourse Width (m) _______ Mean Bankfull Width (m) _______
Maximum Pool Depth (cm) _______ Mean Water Depth (cm) _______
% Riffle _______ % Pool _______ % Run _______ % Flat _______
Evidence of eroding banks, Comments on bank stability: _______

Substrate (% cover):
- Bedrock 100% Rip-crap in box culvert
- Cobble 0% Sand 100% (soil)
- Boulder 0% Silt 0%
- Gravel 0% Marl 0%
- Clay 0% Detritus 0%

In-water Cover:
Cover Types Present (circle):
- Woody Debris 75% Boulder 25%
- Watercress 0%
- Aquatic Veg 0%

Riparian Zone:
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):
- 30% shaded - grasses

Adjacent Land Use:
- Agricultural

Fish Habitat Potential:
- Critical Habitat (spawning or nursery areas, groundwater upwellings): unlikely
- Migratory Obstructions (seasonal, permanent): no - low flow
- Note any fish observations: _______

Waterbody Notes:
- Natural Watercourse N
- Trapezoidal Channel Y
- Grassed Swale N
- Buried Tile Y
- Surflcial Drainage (i.e. furrows) N
- Dugout Pond N
- Dominated by Aquatic Veg N
- Dry Y

Other Habitat Notes, Incidental Wildlife Observations, etc.:
- Box culvert - approx. 6m wide - some ponded water under culvert; otherwise channel is dry

Field Notes Authored by: Hamilton  Field Notes QA/QCed by: _______

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # CL:SGR3 2/4A
Project Name Niagara Wind
Watercourse Name
Photos
Date Sept 11, 12
Weather conditions in previous 24 hrs Rain
GPS Coordinates (Zone) 17E 442220 N 7776035 Datum NAD
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) Dry
pH
Conductivity (µS/cm)
Water Temperature (°C)
Air Temperature (°C) 17°C

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)
Mean Bankfull Width (m)
% Riffle
% Pool
% Run
% Flat

Evidence of eroding banks, Comments on bank stability Stable

Substrate (% cover)
Bedrock
Cobble
Sediment 100%
Sand
Gravel
Clay
Muck
Boulder
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use Agriculture/Pasture

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) None

Migratory Obstructions (seasonal, permanent)

Note any fish observations None

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental/Wildlife Observations, etc. Poorly defined channel

Field Notes Authored by Trevor Chandler
Field Notes QA/QC'd by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # CL-20632 Watercourse Name: Sped Wool
Photos: 3145, 9047, 09449
Date: 14 Sept 2012
Project Name: Ndoiwa Wind Project Farm
Weather conditions in previous 24 hrs: Fine
GPS Coordinates (Zone): 17° E 062.0039 N 477.6591 Datum: NAD83
Descriptive Location: South Gully Road 3 - Fig Rd 20 m off entrance of Fig Rd

Water Quality
- Dry of Culvert

Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)

Water Temperature (°C) Air Temperature (°C) 13°C

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width: 3 (m) Maximum Pool Depth: ~20 (cm)
Mean Bankfull Width: 2 (m) Mean Water Depth: 5 cm

% Riffle 100 % Pool % Run 0 % Flat

Evidence of eroding banks, Comments on bank stability: None

Substrate (% cover)
- Bedrock
- Cobble
- Boulder
- Gravel
- Sand 100
- Silt
- Muck
- Clay
- Marl
- Detritus

In-water Cover
Cover Types Present (circle):
- Undercut Banks
- Woody Debris
- Boulder
- Deep Pool
- Watercress
- Aquatic Veg
- Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

70% - shaded by grasses - trees - aquatic veg

Adjacent Land Use
- Rural residential
- wooded area
- agricultural field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
- unlikely

Migratory Obstructions (seasonal, permanent)
- no - low flow - heavily vegetated

Note any fish observations
- no

Waterbody Notes
Natural Watercourse: Trapezoidal Channel Y
Surficial Drainage (i.e. furrows): Dugout Pond N
- Grassed Swale N
- Buried Tile N
- Dominated by Aquatic Veg Y
- Dry N

Other Habitat Notes, Incidental Wildlife Observations, etc.
- Watch the poison ivy!

Field Notes Author: Hamish
Field Notes QA/QC: WZ
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # CL-CR4  Project Name Niagara Wind
Watercourse Name  Project # 160690269
Photos 3069 - 3070  Field Staff Trevor & Hamish
Date SEP 19, 2012  Time 14:20
Weather conditions in previous 24 hrs Rain, 15°C
GPS Coordinates (Zone) 171 E 0612993 N 4276772.2 Datum NH83
Descriptive Location Intersection Road 4 - 300 west of Minor Rd

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width Dry (m) Maximum Pool Depth Dry (cm)
Mean Bankfull Width < Wet (m) Mean Water Depth Dry (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability Stable feature

Substrate (% cover)
Bedrock Cobble Sand 100% (Soil) Silt Muck
Boulder Gravel Clay Marl Detritus

in-water Cover
Cover Types Present (circle):
Overhanging Vegetation Woody Debris Boulder Other Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Agricultural + rural residential

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
low - no flow

Note any fish observations no

Waterbody Notes
Natural Watercourse N Trapezoidal Channel N Grassed Swale Y (South of road)
Surficial Drainage (i.e. furrows) Yes Dugout Pond N Buried Tile N
Dominated by Aquatic Veg N Dry Y

Other Habitat Notes, Incidental Wildlife Observations, etc.
agricultural field disturbed by ploughing on side of road
a 300m cultv + CSP

Field Notes Authored by Hamish  Field Notes QA/QCed by MZ

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Station #:       C1-C4
Watercourse Name: 2
Photos: 8071 - 8074
Date: 19 Sept 2012
Weather conditions in previous 24 hrs: Fine, - Rain 15°C
GPS Coordinates (Zone): 175 E 061913 N 4267730 Catm. Nad83
Descriptive Location: Concession Rd 4, 150 m west of Wycar Rd

Water Quality: Dry
Dissolved Oxygen (mg/L):   pH:   Conductivity (µS/cm):   Water Temperature (°C): 17 °C
Air Temperature (°C): 17 °C

Watercourse Dimensions & Morphology:
Mean Watercourse Width Dry (m):   Mean Bankfull Width L12 (m):   Maximum Pool Depth dry (cm):   Mean Water Depth dry (cm):

% Riffle:   % Pool:   % Run:   % Flat:
Evidence of eroding banks, Comments on bank stability: Stable feature

Substrate (% cover):
Bedrock   Cobble   Sand 100% (Soil)   Silt   Muck
Boulder   Gravel   Clay   Marl   Detritus

In-water Cover: Dry
Cover Types Present (circle):
Undercut Banks   Deep Pool   Watercress   Aquatic Veg
Overhanging Vegetation: Woody Debris   Boulder   Other:

Riparian Zone:
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):
60%: shaded - grass cover, early successional / agriculture
Adjacent Land Use:
Agricultural / Road side ditch /Wild barbecues unde:

Fish Habitat Potential:
Critical Habitat (spawning or nursery areas, groundwater upwellings):
Migratory Obstructions (seasonal, permanent):
Note any fish observations:

Waterbody Notes:
Natural Watercourse: N   Trapezoidal Channel: N   Grassed Swale: Y   Buried Tile: N
Surficial Drainage (i.e. furrows): N   Dugout Pond: N   Dominated by Aquatic Veg: N   Dry: Y

Other Habitat Notes, Incidental Wildlife Observations, etc.:
Upstream (south side of road)

Field Notes Authored by: Hamish
Field Notes QA/QCed by: MP

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** C1-CK 4  
**Watercourse Name** 3  
**Photos** 3075 - 3080  
**Date** 19 Sept 2012  
**Weather conditions in previous 24 hrs** Fine - Rain - 15°C  
**GPS Coordinates (Zone)** N61 19353 E8767739  
**Datum** NAD83  
**Concession Rd 4 - 50 m East of Wind Rd**

**Water Quality**  
- **Dissolved Oxygen (mg/L)***  
- **pH***  
- **Conductivity (µS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)**  

**Watercourse Dimensions & Morphology**  
- **Mean Watercourse Width (Dry) (m)**  
- **Mean Bankfull Width (m)**  
- **% Rifle**  
- **% Pool**  
- **Maximum Pool Depth (Dry) (cm)**  
- **Mean Water Depth (Dry) (cm)**  
- **% Run**  
- **% Flat**  

**Evidence of eroding banks, Comments on bank stability** stable - debris

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**Substrate (% cover)**  
- Bedrock  
- Cobble  
- Sand 100% (Soil)  
- Silt  
- Muck  
- Boulder  
- Gravel  
- Clay  
- Marl  
- Detritus

**In-water Cover**  
- **Cover Types Present (circle):**  
  - Undercut Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg  

**Riparian Zone**  
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**  

**Adjacent Land Use**  
- Agricultural

**Fish Habitat Potential**  
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**

**Migratory Obstructions (seasonal, permanent)**  
- **No - Low Flow**

**Note any fish observations**

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**Waterbody Notes**  
- **Natural Watercourse** N  
- **Trapezoidal Channel** N  
- **Surficial Drainage (i.e. furrows)** Y  
- **Dugout Pond** N  
- **Grassed Swale** N  
- **Buried Tile** N  
- **Dominated by Aquatic Veg** Y  
- **Dry** Y

**Other Habitat Notes, Incidental Wildlife Observations, etc.**  
- Possibly agriization - cult  
- possibly deforestation observed  
- deforestation noted - all grassy - no crops

---

Field Notes Authored by: Hanish  
Field Notes QA/QCed by: MB
**Wind Farm Waterbody Rapid Assessment Form**

<table>
<thead>
<tr>
<th>Station #</th>
<th>CL-C2.4</th>
<th>Project Name</th>
<th>Niagara Wind Farm</th>
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<tr>
<td>Watercourse Name</td>
<td>1</td>
<td>Project #</td>
<td>1609.602.60</td>
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<tr>
<td>Photos</td>
<td>9021 - 9026</td>
<td>Field Staff</td>
<td>Hamish - Trevor</td>
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<tr>
<td>Date</td>
<td>19 Sept 2012</td>
<td>Time</td>
<td>3:05 pm</td>
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<tr>
<td>Weather conditions in previous 24 hrs</td>
<td>Fire - Yard 15 cm</td>
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<td>GPS Coordinates (Zone)</td>
<td>17°E 061°4602 N 43°27'47'' Datum</td>
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<tr>
<td>Descriptive Location</td>
<td>Concession Rd 4 200 m m East of Minor Rd</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Water Quality**
- Dissolved Oxygen (mg/L)
- pH
- Conductivity (μS/cm)
- Water Temperature (°C)
- Air Temperature (°C)
- Time in situ measurements taken

**Watercourse Dimensions & Morphology**
- Mean Watercourse Width Dry (m)
- Mean Bankfull Width (m)
- Maximum Pool Depth N/A (cm)
- Mean Water Depth N/A (cm)
- % Riffle
- % Pool
- % Run
- % Flat

**Evidence of eroding banks, Comments on bank stability**

**Substrate (% cover)**
- Bedrock
- Cobble
- Sandy (soil)
- Boulder
- Gravel
- Clay
- Mud
- Detritus

**In-water Cover**
- Dry
- Woody Debris
- Deep Pool
- Watercress
- Aquatic Veg

**Riparian Zone**
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
- Adjacent Land Use

**Fish Habitat Potential**
- Critical Habitat (spawning or nursery areas, groundwater upwellings)
- Migratory Obstructions (seasonal, permanent)
- Note any fish observations

**Waterbody Notes**
- Natural Watercourse
- Trapezoidal Channel
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Grassed Swale
- Buried Tile
- Dominated by Aquatic Veg
- Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

Field Notes Authored by: Hamish Aubrey
Field Notes QA/QCed by: [Signature]
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # CL-CR4
Watercourse Name S
Photos 2097 - 5091
Date 19 Sep 2012
Weather conditions in previous 24 hrs Fire - Rain 15°C
GPS Coordinates (Zone) 17T E 0619854 N 4767760 Datum NAD83
Descrptive Location Concession road 4 - 300 m east of Minor Rd

Water Quality
Dissolved Oxygen (mg/L) / pH / Conductivity (µS/cm)
Water Temperature (°C) / Air Temperature (°C) 17°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width Dry (m)
Mean Bankfull Width (m)
% Riffle / % Pool / % Run / % Flat
Evidence of eroding banks, Comments on bank stability Stable

Substrate (% cover)
Bedrock / Cobble / Sand 50% / Silt / Muck
Boulder / Gravel / Clay / Marl / Detritus

In-water Cover (Dry)
Cover Types Present (circle): Undercut Banks / Deep Pool / Watercress / Aquatic Veg
Overhanging Vegetation Woody Debris / Boulder / Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
70% shaded - grassy cover

Adjacent Land Use
Agricultural

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
No

Migratory Obstructions (seasonal, permanent)
No - Low

Note any fish observations

Waterbody Notes
Natural Watercourse N / Trapezoidal Channel N / Grassed Swale Y / Buried Tile N
Surficial Drainage (i.e. furrows) N / Dugout Pond N / Dominated by Aquatic Veg N / Dry Y

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by Hamish
Field Notes QA/QCed by

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# Wind Farm Waterbody Rapid Assessment Form

**Station #**: CL - CR 4  
**Watercourse Name**: 6  
**Photoc**: 8092 - 8096  
**Date**: 19 Sept 2012  
**Weather conditions in previous 24 hrs**: Fire -20°C, 15°C, -8°C  
**GPS Coordinates (Zone)**: 17T E 062 0212 N 426 7775 Datum NAD 83  
**Descriptive Location**: Recession flood 4-junction with Patterson Road

### Water Quality
- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (μS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)** 17°C  
**Time in situ measurements taken**

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width Dry (m)**  
- **Maximum Pool Depth Dry (cm)**  
- **Mean Bankfull Width (m)**  
- **Mean Water Depth Dry (cm)**  
- **% Riffle**  
- **% Pool**  
- **% Run**  
- **% Flat**  
**Evidence of eroding banks, Comments on bank stability**: stable

### Substrate (% cover)
- **Bedrock**  
- **Cobble**  
- **Sand** 120 (Soil)  
- **Silt**  
- **Muck**  
- **Boulder**  
- **Gravel**  
- **Clay**  
- **Marl**  
- **Detritus**

### In-water Cover
- **Cover Types Present (circle)**
  - Undercut Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg  
- **Overhanging Vegetation**
- **Woody Debris**
- **Boulder**
- **Other**

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**
  - 10% shaded by grasses, some trees

### Adjacent Land Use
- **Agricultural, roadside ditch**

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**
- **Migratory Obstructions (seasonal, permanent)**
  - no
  - no - low flow

### Waterbody Notes
- **Natural Watercourse**: N  
- **Trapezoidal Channel**: N  
- **Grassed Swale**: Y  
- **Buried Tile**: N  
- **Surficial Drainage (i.e. furrows)**: N  
- **Dugout Pond**: N  
- **Dominated by Aquatic Veg**: Y  
- **Dry**: Y

### Other Habitat Notes, Incidental Wildlife Observations, etc.
- **600 mm culvert - appear present**
- **Drainage feature crosses, perpendicular to road, Drainage feature**

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Field Notes Authored by: Hamish Aubrey  
Field Notes QA/QCed by: VWK  
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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station #: 6L-CR-4  
Watercourse Name: 7  
Photos: 8097 - 3400  
Date: 19 Sept 2019  
Weather conditions in previous 24 hrs: Rain, 15°C  
GPS Coordinates (Zone): 1TT E 0620335, N 4767783, Datum: NAD83

**Water Quality**  
Dissolved Oxygen (mg/L)  
Pb  
Conductivity (μS/cm)  
Water Temperature (°C)  
Air Temperature (°C)  
Time *in situ* measurements taken

**Watercourse Dimensions & Morphology**  
Mean Watercourse Width _Dry_ (m)  
Maximum Pool Depth _Dry_ (cm)  
Mean Bankfull Width _<1_m> (m)  
Mean Water Depth _Dry_ (cm)  
% Riffle  
% Pool  
% Run  
% Flat

Evidence of eroding banks, Comments on bank stability

**Substrate (% cover)**  
Bedrock  
Cobble  
Sand _100 (Soil)_  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus

**In-water Cover**  
Dry  
Cover Types Present (circle):  
Underrun Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Cover: Woody Debris  
Boulder  
Other

**Riparian Zone**  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

**Adjacent Land Use**  
Agriculture

**Fish Habitat Potential**  
Critical Habitat (spawning or nursery areas, groundwater upwellings)

**Migratory Obstructions (seasonal, permanent)**

Note any fish observations

**Waterbody Notes**  
Natural Watercourse N  
Trapezoidal Channel N  
Grassed Swale Y  
Buried Tile N  
Surficial Drainage (i.e. furrows) N  
Dugout Pond N  
Dominated by Aquatic Veg N

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

Field Notes Authored by: Hawish  
Field Notes QAQCed by: VP

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # (CL CR 4) Watercourse Name 2
Photos 9101-9104 Date 19 Sep 2012
Weather conditions in previous 24 hrs Finish 29 Oct 15°C
GPS Coordinates (Zone) 19T E 062.059 N 476.7795 Datum NAD83
Descriptive Location Concession Road 4 - 150m East of Patterson

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ conductivity (μS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (Dry) (m) __________ Maximum Pool Depth (cm) __________
Mean Bankfull Width (m) __________ Mean Water Depth (cm) __________
% Riffle __________ % Pool __________ % Run __________ % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock __________ Cobble __________ Sand __________ (Soil) __________
Cobble __________ Gravel __________ Clay ____________
Boulder __________ Marl ____________ Detritus __________

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
60% - grasses < some trees

Adjacent Land Use
rural residential agricultural, road

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
low

Migratory Obstructions (seasonal, permanent)
low / no flow

Note any fish observations

Waterbody Notes
Natural Watercourse — Trapezoidal Channel V Grassed Swale Y Buried Tile V
Surficial Drainage (i.e. furrows) V Dugout Pond W Dominated by Aquatic Veg N Dry Y

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: Trevor Chandler Field Notes QA/QCed by: [Signature]
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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # CL CR 4
Watercourse Name 9
Photos 9/05 - 8/08
Date 19 Sept 2012
Weather conditions in previous 24 hrs Fire Rain 15°C
GPS Coordinates (Zone) UTM E 0620608 N 4767792 Datum NAD83
Descriptive Location (intersection road 4 ~ 400 m East of Patterson)

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C) 17°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width Dry (m)
Mean Bankfull Width (m)
% Riffle % Pool
Evidence of eroding banks, Comments on bank stability

% Run % Flat

Substrate (% cover)
Bedrock Cobble Sand 100 (Soil) Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover Dry
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 30%
Adjacent Land Use rural, residential, agricultural, roadside, ditch, drainage

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse N Trapezoidal Channel N Grassed Swale Y Buried Tile N
Surficial Drainage (i.e. furrows) N Dugout Pond N Dominated by Aquatic Veg N Dry Y

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by Hamish Aubrey
Field Notes QA/QCed by VP
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #  C-CP-4  Project Name  Niagara Wind Farm
Watercourse Name  10  Project #  K0960269
Photos  31/12 - 3/12  Field Staff  Tawar + Hamish
Date  19 Sept 2012  Time  4:15 pm
Weather conditions in previous 24 hrs  Fine
GPS Coordinates (Zone)  17T E 062.074 N 41°28.14 Datum: NAD 92
Descriptive Location  Concession Road 4 - 500 West of Hwy 20

Water Quality
Dissolved Oxygen (mg/L)  __________ pH  __________ Conductivity (µS/cm)  __________
Water Temperature (°C)  __________ Air Temperature (°C)  __________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (Dry) (m)  __________ Maximum Pool Depth (cm)  __________
Mean Bankfull Width (m)  __________ Mean Water Depth (cm)  __________
% Rifle  __________ % Pool  __________ % Run  __________ % Flat  __________
Evidence of eroding banks, Comments on bank stability  Stable

Substrate (% cover)
Bedrock  __________ Cobble  __________ Sand  100 (Soil)  __________ Silt  __________
Boulder  __________ Gravel  __________ Clay  __________ Muck  __________

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other  ____________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
South side of road - grasses  North side - wooded cut grass

Adjacent Land Use  Rural  Residential  Agricultural

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)  no flow  no flow

Note any fish observations  0  0

Waterbody Notes
Natural Watercourse  N  Trapezoidal Channel  N  Grassed Swale  Y  Buried Tile  N
Surficial Drainage (i.e. furrows)  N  Dugout Pond  N  Dominated by Aquatic Veg  N  Dry  Y

Other Habitat Notes, Incidental Wildlife Observations, etc.
Roadside ditch (grass)  500mm approx

Field Notes Authored by  Hamish  Field Notes QA/QC by  MZ
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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #  C1 - CB4
Watercourse Name  
Photos  8113 - 8118
Date  19 Sept 2012
Weather conditions in previous 24 hrs  Fire - Rain 55°C
GPS Coordinates (Zone)  LT E 0620978, N 4762840  Datum NAD83
Descriptive Location  Concession Rd 4 - 475 m east of Hwy 20

Water Quality
Dissolved Oxygen (mg/L)  -
Water Temperature (°C)  -
Conductivity (µS/cm)  -
Air Temperature (°C)  17°C

Watercourse Dimensions & Morphology
Mean Watercourse Width  Dry (m)  -
Mean Bankfull Width  1-2 m (m)  -
Maximum Pool Depth  - (cm)
Mean Water Depth  - (cm)
% Riffle  -
% Pool  -
% Run  -
% Flat  -
Evidence of eroding banks, Comments on bank stability -

Substrate (% cover)
Bedrock  -
Cobble  -
Sand  100 (Soil) -
Silt  -
Muck  -
Boulder  -
Gravel  -
Clay  -
Marl  -
Detritus  -

In-water Cover
Cover Types Present (circle):  Undeck Bank -
Overhanging Vegetation  Woody Debris -
Boulder  -
Other  -

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  10.20% - some grasses/trees

Adjacent Land Use
Agricultural & rural residential -

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)  -

Migratory Obstructions (seasonal, permanent)  -

Note any fish observations  -

Waterbody Notes
Natural Watercourse  N  Trapezoidal Channel  N  Grassed Swale  Y  Buried Tile  N
Surficial Drainage (i.e. furrows)  N  Dugout Pond  N  Dominated by Aquatic Veg  N  Dry  Y

Other Habitat Notes, Incidental Wildlife Observations, etc.  North side of road is grassed swale, South side of road is dry channel, straight

c  900 mm CSP culvert

Field Notes Authored by  Hamish Aubrey  Field Notes QA/QCed by  -

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # C1-C14
Watercourse Name 12
Photos 3120 - 3124
Date 19 Sept 2012
Weather conditions in previous 24 hrs Fire - Rain - 15°C
GPS Coordinates (Zone) 19F E 0611210 N 4767228 Datum Nad 83
Descriptive Location Concession 2d # 4 - 300 m west of Hwy 20

Water Quality Dry
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (μS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken __________

Watercourse Dimensions & Morphology
Mean Watercourse Width Dry (m) __________ Maximum Pool Depth (cm) __________
Mean Bankfull Width (m) __________ Mean Water Depth (cm) __________
% Rifle % Pool % Run % Flat __________
Evidence of eroding banks, Comments on bank stability Stable

Substrate (% cover)
Bedrock __________ Cobble __________ Sand 100 (Soil) __________ Silt __________ Muck __________
Boulder Gravel Clay Marl Detritus __________

In-water Cover Dry
Cover Types Present (circle): Undercut Banks __________ Deep Pool __________ Watercress __________ Aquatic Veg __________
Overhanging Vegetation Woody Debris __________ Boulder __________ Other __________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
North side - 60 - 70% - agricultural grasses, South side 30% - clay out

Adjacent Land Use Agricultural __________

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) __________
Migratory Obstructions (seasonal, permanent) __________

Note any fish observations __________

Waterbody Notes
Natural Watercourse N Trapezoidal Channel Y Grassed Swale N Buried Tile N
Surficial Drainage (i.e. furrows) N Dugout Pond N Dominated by Aquatic Veg N Dry Y

Other Habitat Notes, Incidental Wildlife Observations, etc.
- 900 mm culvert of standing water
- Water small pockets of standing water

Field Notes Authored by Hanish
Field Notes QA/QCed by MCF
### WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # C-64
Watercourse Name 13
Photos 21, 9128
Date 19 Sept 2012
Weather conditions in previous 24 hrs Fine - Rain - 15°C
GPS Coordinates (Zone) 17T E 0621786 N 4767853 Datum NAD83
Descriptive Location Concession road 4 - 50m west of Hwy 20

#### Water Quality
- Dissolved Oxygen (mg/L)
- pH
- Conductivity (μS/cm)
- Water Temperature (°C)
- Air Temperature (°C) 15°C

#### Time in situ measurements taken

#### Watercourse Dimensions & Morphology
- Mean Watercourse Width Dry
- Mean Bankfull Width E.L.
- Maximum Pool Depth
- Mean Water Depth
- % Riffle
- % Pool
- % Run
- % Flat

Evidence of eroding banks, Comments on bank stability

#### Substrate (% cover)
- Bedrock
- Cobble
- Sand (20%)
- Silt
- Mud
- Muck
- Boulder
- Gravel
- Clay
- Marl
- Detritus

#### In-water Cover
- Dry

Cover Types Present (circle):
- Undercut Banks
- Deep Pool
- Watercress
- Aquatic Veg
- Woody Debris
- Boulder
- Other

#### Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
- Agricultural, Raising, Rural, Residential

#### Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
- No

Note any fish observations

#### Waterbody Notes
- Natural Watercourse
- Trapezoidal Channel
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Grassed Swale
- Buried Tile
- Dominated by Aquatic Veg
- Dry

#### Other Habitat Notes, Incidental Wildlife Observations, etc.
- 450 mm CSP culvert
- North side of grass swale - mowed
- North side of road = grasses + agricultural weeds
- channel is pleased on south side

Field Notes Authored by Hamish
Field Notes QA/QCed by

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# Wind Farm Waterbody Rapid Assessment Form

**Station #**: L - Younge  
**Watercourse Name**:  
**Photos**: 390 - 837  
**Date**: 19 Sept  
**Weather conditions in previous 24 hrs**: Fine - Partly  
**GPS Coordinates (Zone)**: UT E 0819315  
**Descriptive Location**: Agricultural land, rural residential - 200 east of clayson  
**Project Name**: Niagara Wind Farm  
**Project #**: 160960269  
**Field Staff**: Trevor + Hamish  
**Time**: 5:20 pm  
**Datum**: NAD83  
**Young St**:  
**Descriptive Location**:  

## Water Quality
- **Dissolved Oxygen (mg/L)**: NA  
- **pH**:  
- **Conductivity (µS/cm)**:  
- **Water Temperature (°C)**:  
- **Air Temperature (°C)**:  

## Watercourse Dimensions & Morphology
- **Mean Watercourse Width (m)**: 1-15  
- **Mean Bankfull Width (m)**: 3  
- **Maximum Pool Depth (cm)**:  
- **Mean Water Depth (cm)**: 10  
- **% Rifle**: 100  
- **% Pool**:  
- **% Run**:  
- **% Flat**:  

Evidence of eroding banks, Comments on bank stability: stable  

## Substrate (% cover)
- Bedrock: 10  
- Cobble:  
- Sand: 30  
- Silt:  
- Muck:  
- Boulder: 10  
- Gravel:  
- Clay:  
- Marl:  
- Detritus:  

## In-water Cover
- Cover Types Present (circle): Undercut Banks, Deep Pool, Watercress, Aquatic Veg  
- Overhanging Vegetation: Woody Debris, Boulder, Other  

## Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):  
  - Box shade - grasses  

## Adjacent Land Use
- Agricultural, roadside, rural residential  

## Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings): unlikely  
- Migratory Obstructions (seasonal, permanent): low flow  
- Note any fish observations:  

## Waterbody Notes
- Natural Watercourse: N  
- Trapezoidal Channel: Y  
- Grassed Swale: N  
- Buried Tile: N  
- Surficial Drainage (i.e. furrows): N  
- Dugout Pond: N  
- Dominated by Aquatic Veg: Y  
- Dry: N  

## Other Habitat Notes, Incidental Wildlife Observations, etc.
- Little to no flow  
- Small culvert observed; adjacent to road on southside, not on northside  
- 300mm then flows southwards. roadside drainage  

Field Notes Authored by: Hamish  
Field Notes QA/QCed by: MF  

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # G-Fly Rd  
Watercourse Name Spring Creek
Photos 3:56 8:16:09
Date 9 Sept 2012
Weather conditions in previous 24 hrs Fine, -Rain 15°C
GPS Coordinates (Zone) 962.0089 N 477.6898 W Datum Nad83

Descriptive Location Fly Rd - 400 m west of South Grimsley Rd SW

Water Quality 
Dissolved Oxygen (mg/L) NA  
Water Temperature (°C)  
Conductivity (μS/cm)  
Air Temperature (°C) 17°C

Watercourse Dimensions & Morphology
Mean Watercourse Width 3 m  
Mean Bankfull Width 6 m  
Maximum Pool Depth 30 cm  
Mean Water Depth 10 cm

% Riffle 100%  
% Pool  
% Run  
% Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)

Bedrock  
Cobble  
Sand 70  
Silt  
Muck  
Boulder  
Gravel 30  
Clay  
Marl  
Detritus

In-water Cover

Cover Types Present (circle):

Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg

Overhanging Vegetation

Woody Debris  
Boulder  
Other

Riparian Zone

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

70% - trees - grasses

Adjacent Land Use

Wooded area, rural residential

Fish Habitat Potential

Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

None noted

Note any fish observations  
Yes - one small one

Waterbody Notes

Natural Watercourse  
Trapezoidal Channel Y  
Surficial Drainage (i.e. furrows) N  
Domained by Aquatic Veg Y

Grassed Swale N  
Buried Tile N  
Dry N

Other Habitat Notes, Incidental Wildlife Observations, etc.

White tailed deer

Cow (bull) - 4 y. m. wide

Field Notes Authored by Hamish

Field Notes QA/QCed by

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** CL-Fly Rd / B  
**Watercourse Name**  
**Photos** 810-5  
**Date** Sept 19/12  
**Weather conditions in previous 24 hrs** Rainy, -15°C  
**GPS Coordinates (Zone)** E 0620868 N 4776668  
**Datum** NAD83  
**Descriptive Location** Fly Rd - south Grimsby Rd junction  

**Water Quality**  
Dissolved Oxygen (mg/L)  
Water Temperature (°C)  
Time *in situ* measurements taken  
**pH**  
**Conductivity (µS/cm)**  
**Air Temperature (°C)** 17°C  
**Watercourse Dimensions & Morphology**  
Mean Watercourse Width 3-4 m  
Mean Bankfull Width  
Maximum Pool Depth  
Mean Water Depth  
% Riffle  
% Pool  
% Run  
% Flat  
**Evidence of eroding banks, Comments on bank stability**  

**Substrate (% cover)**  
Bedrock  
Cobble  
Sand 100%  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  

**In-water Cover**  
Cover Types Present (circle): Undercut Banks Woody Debris Deep Pool Boulder Other  
**Riparian Zone**  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 0-10% pasture/roadside grass, early  
**Adjacent Land Use**  
agricultural field/pasture/rural residential  

**Fish Habitat Potential**  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  
**Migratory Obstructions (seasonal, permanent)**  
**Note any fish observations** none  

**Waterbody Notes**  
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry  

**Other Habitat Notes, Incidental Wildlife Observations, etc.**  
Culvert (box culvert 15 x 2m wide)  
**Drilled water in box**

**Field Notes Authored by** I Chandler  
**Field Notes QA/QCed by** JBE2  
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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # C: Flyer Rd 1C
Watercourse Name: Flyer to Puring Creek
Photos: 060-065
Date: Sept 15th
Weather conditions in previous 24 hrs: rainy
GPS Coordinates (Zone): 41° 06' 26.4" W 77° 16' 44" N Datum NAD83
Descriptive Location: Flyer Rd, 0.6 mi west of South Granby Rd.

Water Quality
Dissolved Oxygen (mg/L) ___
Conductivity (µS/cm) ___
Water Temperature (°C) 15°C
Air Temperature (°C) 17°C
Time in situ measurements taken: ___

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 m (m)
Mean Bankfull Width 2.5 m (m)
Maximum Pool Depth 60 cm (cm)
Mean Water Depth 30 cm (cm)
% Riffle ___
% Pool ___
% Run ___
% Flat ___
Evidence of eroding banks, Comments on bank stability: stable

Substrate (% cover)
Bedrock ___
Cobble ___
Sand 70
Silt 20
Muck 10
Boulder ___
Gravel ___
Clay ___
Marl ___
Detritus ___

In-water Cover
Cover Types Present (circle): Undercut Banks Woody Debris Deep Pool Boulder Watercress Aquatic Veg Other ___
Overhanging Vegetation ___

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 30-40% grass, early

Adjacent Land Use: wooded lot, roadside ditch

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings): none noted

Migratory Obstructions (seasonal, permanent): ___

Note any fish observations: none

Waterbody Notes
Natural Watercourse ___ Trapezoidal Channel V Grassed Swale ___ Buried Tile ___
Surficial Drainage (i.e. furrows) ___ Dugout Pond ___ Dominated by Aquatic Veg ___ Dry ___

Other Habitat Notes, Incidental Wildlife Observations, etc.: Channel heavily dominated by grass, road, drainage culvert, wire, debris, puddles, road

Field Notes Authored by: T. Chandler
Field Notes QA/QCed by: WR

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## WIND FARM WATERBODY RAPID ASSESSMENT FORM

**Station #**

**Watercourse Name**

**Photos**

**Date**

**Weather conditions in previous 24 hrs**

**GPS Coordinates (Zone)**

**Descriptive Location**

### Water Quality

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
</tr>
<tr>
<td>Conductivity (µS/cm)</td>
<td></td>
</tr>
<tr>
<td>Water Temperature (°C)</td>
<td></td>
</tr>
<tr>
<td>Air Temperature (°C)</td>
<td></td>
</tr>
<tr>
<td>Time in situ measurements taken</td>
<td></td>
</tr>
</tbody>
</table>

### Watercourse Dimensions & Morphology

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Watercourse Width (m)</td>
<td></td>
</tr>
<tr>
<td>Mean Bankfull Width (m)</td>
<td></td>
</tr>
<tr>
<td>Maximum Pool Depth (cm)</td>
<td></td>
</tr>
<tr>
<td>Mean Water Depth (cm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Roulette</th>
<th>% Pool</th>
<th>% Run</th>
<th>% Flat</th>
</tr>
</thead>
</table>

Evidence of eroding banks, Comments on bank stability

### Substrate (% cover)

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedrock</td>
<td></td>
</tr>
<tr>
<td>Cobble</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>100%</td>
</tr>
<tr>
<td>Silt</td>
<td></td>
</tr>
<tr>
<td>Muck</td>
<td></td>
</tr>
<tr>
<td>Boulder</td>
<td></td>
</tr>
<tr>
<td>Gravel</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Marl</td>
<td></td>
</tr>
<tr>
<td>Detritus</td>
<td></td>
</tr>
</tbody>
</table>

### In-water Cover

<table>
<thead>
<tr>
<th>Cover Types Present (circle):</th>
<th>Undercut Banks</th>
<th>Deep Pool</th>
<th>Watercress</th>
<th>Aquatic Veg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhanging Vegetation</td>
<td>Woody Debris</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boulder</td>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Riparian Zone

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

**Adjacent Land Use**

rural

### Fish Habitat Potential

Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

<table>
<thead>
<tr>
<th>Obstruction</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry channel</td>
<td></td>
</tr>
</tbody>
</table>

Note any fish observations

### Waterbody Notes

<table>
<thead>
<tr>
<th>Notes</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Watercourse</td>
<td></td>
</tr>
<tr>
<td>Trapezoidal Channel</td>
<td></td>
</tr>
<tr>
<td>Grassed Swale</td>
<td></td>
</tr>
<tr>
<td>Buried Tile</td>
<td></td>
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<tr>
<td>Surficial Drainage (i.e. furrows)</td>
<td></td>
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<tr>
<td>Dugout Pond</td>
<td></td>
</tr>
<tr>
<td>Dominated by Aquatic Veg</td>
<td></td>
</tr>
<tr>
<td>Dry</td>
<td></td>
</tr>
</tbody>
</table>

### Other Habitat Notes, Incidental Wildlife Observations, etc.

Box current, lm, open

bottom, straightened

---

Field Notes Authored by: [Signature]

Field Notes QA/QCed by: [Signature]
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # Walker Rd, ID  Project Name Niagara Wind
Watercourse Name 811 - 15  Project # Oceanside
Date Sept 13, 2012  Field Staff T. Chandler, Hampton Aubrey
Weather conditions in previous 24 hrs Rain 7:45 AM
GPS Coordinates (Zone) E 4 717 775  Datum NAD 83
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 15.6
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Mean Bankfull Width (m)
Maximum Pool Depth (cm)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability Stable

Substrate (% cover)
Bedrock  Cobble  Sand  100%  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
70%, grasses, early

Adjacent Land Use
Agriculture, rural residential

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) None noted
Migratory Obstructions (seasonal, permanent) Dry channel

Note any fish observations None

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc. Straightened

Field Notes Authored by T. Chandler  Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station: Walkery Rd 2.1 E
Watercourse Name: Niagra Wind
Photos: 8.76-0-R2
Date: Sept 19 2012
Weather conditions in previous 24 hrs: Rain 15°C
GPS Coordinates (Zone): E 0624112 N 4773773 Datum NAD83
Descriptive Location: Walkery Rd, 100 m NE of Blue Rd

Water Quality
Dissolved Oxygen (mg/L) ___________ pH ___________ Conductivity (µS/cm) ___________
Water Temperature (°C) ___________ Air Temperature (°C) ___________
Time in situ measurements taken ___________

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) ___________ Maximum Pool Depth (cm) ___________
Mean Bankfull Width (m) ___________ Mean Water Depth (cm) ___________
% Riffle ___________ % Pool ___________ % Run ___________ % Flat ___________
Evidence of eroding banks, Comments on bank stability: Stable

Substrate (% cover)
- Bedrock
- Cobble
- Sand 100%
- Silt
- Mud
- Boulder
- Gravel
- Clay
- Marl
- Detritus

In-water Cover
Cover Types Present (circle):
- Undercut Banks
- Deep Pool
- Watercress
- Aquatic Veg
- Woody Debris
- Boulder
- Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
- 70% grasses, early

Adjacent Land Use
- Agricultural fields
- Rural
- Residential

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
- None noted

Migratory Obstructions (seasonal, permanent)
- None noted

Note any fish observations

Waterbody Notes
Natural Watercourse
- Trapezoidal Channel
Surficial Drainage (i.e. furrows)
- Dugout Pond
- Buried Tile
- Dominated by Aquatic Veg
- Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
- Some paired water present

Field Notes Authored by: T. Chandler
Field Notes QA/QC'd by: [Signature]

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station # R11T001-1  Project Name Niagara Wind
Watercourse Name  Project # 1609502469
Photos See by
Date June 12, 2013  Field Staff
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) E 4133449 N 4765629 Datum
Descriptive Location Vaughan Rd + SE -1

---

**Water Quality**

Dissolved Oxygen (mg/L) 10.41  pH 7.81  Conductivity (µS/cm) 1513
Water Temperature (°C) 2.8  Air Temperature (°C) 30
Time in situ measurements taken 4:25 pm

---

**Watercourse Dimensions & Morphology**

Mean Watercourse Width 40 (m)  Maximum Pool Depth 10 (cm)
Mean Bankfull Width 15 (m)  Mean Water Depth 20 (cm)
% Riffle 10%  % Pool 10%  % Run 40%  % Flat 40%
Evidence of eroding banks, Comments on bank stability

---

**Substrate (% cover)**

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>20%</td>
<td>80%</td>
<td></td>
<td>20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>80%</td>
<td>20%</td>
<td></td>
<td>0%</td>
</tr>
</tbody>
</table>

**In-water Cover**

Cover Types Present (circle):
Undercut Banks  Woody Debris  Boulder  Other
Deep Pool  Watercress  Aquatic Veg

---

**Riparian Zone**

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

---

**Adjacent Land Use**

---

**Fish Habitat Potential**

Critical Habitat (spawning or nursery areas, groundwater upwellings)

---

**Migratory Obstructions (seasonal, permanent)**

---

**Note any fish observations**

---

**Waterbody Notes**

Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

---

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

---

---

Field Notes Authored by KE  Field Notes QA/QCed by

---

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** R11TD-02  
**Watercourse Name** 02-1  
**Project Name** NIAGARA WIND  
**Photos** 8850  
**Date** June 7, 2012  
**Weather conditions in previous 24 hrs** Light thunderstorms and sunny  
**GPS Coordinates (Zone)** 171E 627372 N 4265995  
**Descriptive Location**  

**Water Quality**

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>pH</th>
<th>Conductivity (μS/cm)</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

**Water Temperature (°C)** 20  
**Air Temperature (°C)**  
**Time in situ measurements taken** N/A  

**Watercourse Dimensions & Morphology**

<table>
<thead>
<tr>
<th>Mean Watercourse Width (m)</th>
<th>Maximum Pool Depth (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean Bankfull Width (m)</th>
<th>Mean Water Depth (cm)</th>
<th>% Riffle</th>
<th>% Pool</th>
<th>% Run</th>
<th>% Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
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</tbody>
</table>

**Evidence of eroding banks, Comments on bank stability** N/A  

**Substrate (% cover)**

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
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</tr>
</tbody>
</table>

**In-water Cover**

<table>
<thead>
<tr>
<th>Cover Type Present (circle):</th>
<th>Undercut Banks</th>
<th>Deep Pool</th>
<th>Watercress</th>
<th>Aquatic Veg</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Overhanging Vegetation</th>
<th>Woody Debris</th>
<th>Boulder</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**Riparian Zone**

**Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)** OPEN 100%  

**Adjacent Land Use**  

<table>
<thead>
<tr>
<th>CORNFIELD</th>
</tr>
</thead>
</table>

**Fish Habitat Potential**

**Critical Habitat (spawning or nursery areas, groundwater upwellings)**  

**Migratory Obstructions (seasonal, permanent)**  

**Note any fish observations**  

**Waterbody Notes**

<table>
<thead>
<tr>
<th>Natural Watercourse</th>
<th>Trapezoidal Channel</th>
<th>Grassed Swale</th>
<th>Buried Tile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surficial Drainage (i.e. furrows)</th>
<th>Dugout Pond</th>
<th>Dominated by Aquatic Veg</th>
<th>Dry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Other Habitat Notes, Incidental Wildlife Observations, etc.**  

---

Field Notes Authored by T. Chandler  
Field Notes QA/QCed by WJ

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
Station #: BILTD 02  Project Name: NIAGARA WIND
Watercourse Name:  Project #: 0905269
Photos: 02-2 Field Staff: J. Chandler M. Ellah
Date: June 4, 2017 Time: 6:35
Weather conditions in previous 24 hrs: Light thunder showers; Sunny
GPS Coordinates (Zone) E 677394 N 4765896 Datum:
Descriptive Location:

Water Quality: DRY - TILE DRAIN
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)
Water Temperature (°C)  Air Temperature (°C) 20
Time in situ measurements taken

Watercourse Dimensions & Morphology: DRY
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover): DRY
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover: DRY
Invertebrate Types Present (circle):  Underset Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
0%  

Adjacent Land Use: CORNFIELD

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent) NO FLOW

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by J. Chandler  Field Notes QA/QCed by NF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: R1807  Project Name: NIAGARA WIND  Project #: 1609500269  Field Staff: T. Chandler, M. Elam  Date: June 1, 2017  Time: 9:30 AM  Weather conditions in previous 24 hrs: 4°C


Water Quality
Dissolved Oxygen (mg/L) 7.0  pH 7.5  Conductivity (µS/cm) 1200
Water Temperature (°C) 20  Air Temperature (°C) 20
Time in situ measurements taken: 6:30 AM

Watercourse Dimensions & Morphology
Mean Watercourse Width 13 m  Maximum Pool Depth 5 cm
Mean Bankfull Width 4 m  Mean Water Depth 2 cm
% Riffle 100  % Pool 0  % Run 0  % Flat 0
Evidence of eroding banks, Comments on bank stability: Eroding banks

Substrate (% cover)
Bedrock 10  Cobble 20  Sand 20  Silt 20  Muck 10  Detritus 60
Boulder 0  Gravel 0  Clay 0  Marl 10

In-water Cover
Cover Type: Plant cover (select)
Undershaft Banks  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100% shrubs and aquatic vegetation

Adjacent Land Use
Agricultural fields (crops planted)

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Low  No Flow

Note any fish observations: None

Waterbody Notes
Natural Watercourse  No Trapezoidal Channel  Yes  Grassed Swale  No  Buried Tile  Yes
Surficial Drainage (i.e. furrows)  No  Dugout Pond  No  Dominated by Aquatic Veg  Yes  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Lesser Duckweed

Field Notes Authored by T. Chandler  Field Notes QA/QCed by M.E.
# Wind Farm Waterbody Rapid Assessment Form

**Station #** R117003  
**Project Name** Niagara Wind

**Watercourse Name**  
**Photos** see tog

**Date** June 11, 2012  
**Project #** 16050264

**Field Staff** KE Jr.  
**Time** 4:11 pm

**Weather Conditions in previous 24 hrs** hot & sunny

**GPS Coordinates (Zone)** E 679942 N 4764012  
**Datum** NAD83

**Descriptive Location** approx 500m east of Boyle rd.

## Water Quality
- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (μS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)**

**Time in situ measurements taken**

## Watercourse Dimensions & Morphology
- **Mean Watercourse Width** (m)  
- **Mean Bankfull Width** (m)  
- **Maximum Pool Depth** (cm)  
- **Mean Water Depth** (cm)

**% Riffle**  
**% Pool**  
**% Run**  
**% Flat**

**Evidence of eroding banks, Comments on bank stability**

## Substrate (% cover)
- Bedrock
- Cobble
- Sand
- Silt
- Muck
- Boulder
- Gravel
- Clay
- Marl
- Detritus

## In-water Cover
- Cover Types Present (circle): Undercut Banks
- Overhanging Vegetation: Woody Debris
- Boulder
- Other

## Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

## Adjacent Land Use

## Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings)

## Migratory Obstructions (seasonal, permanent)

**Note any fish observations**

## Waterbody Notes
- Natural Watercourse
- Trapezoidal Channel
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Dominated by Aquatic Veg
- Grassed Swale
- Buried Tile
- Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

**Surficial Drainage or Temp wet areas that are ploughed!**

Field Notes Authored by KE Jr.  
Field Notes QA/QCed by Joe Kearney

G:\01809\Resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.docx
## WIND FARM WATERBODY RAPID ASSESSMENT FORM

**Stantec**

<table>
<thead>
<tr>
<th>Station #</th>
<th>R11T094-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watercourse Name</td>
<td></td>
</tr>
<tr>
<td>Photos</td>
<td>see log</td>
</tr>
<tr>
<td>Date</td>
<td>June 12, 2012</td>
</tr>
<tr>
<td>Weather conditions in previous 24 hrs</td>
<td></td>
</tr>
<tr>
<td>GPS Coordinates (Zone)</td>
<td>E 627600 N 4988182</td>
</tr>
<tr>
<td>Datum</td>
<td>NAD 83</td>
</tr>
</tbody>
</table>

### Water Quality

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>pH</th>
<th>Conductivity (µS/cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.4</td>
<td>7.43</td>
<td>984</td>
</tr>
<tr>
<td>Water Temperature (°C)</td>
<td></td>
<td>Air Temperature (°C)</td>
</tr>
<tr>
<td>18.5</td>
<td></td>
<td>23.0</td>
</tr>
</tbody>
</table>

*Time in situ measurements taken: dry except in culvert*

### Watercourse Dimensions & Morphology

| Mean Watercourse Width (m) | 2.0       |
| Mean Bankfull Width (m)    | 4.5       |
| Maximum Pool Depth (cm)    |           |
| Mean Water Depth (cm)      |           |
| % Riffle                  |           |
| % Pool                    |           |
| % Run                     |           |
| % Flat                    |           |

Evidence of eroding banks, Comments on bank stability: some erosion

### Substrate (% cover)

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boulder</td>
<td>Gravel</td>
<td>80</td>
<td>Clay</td>
<td>Marl</td>
<td>Detritus</td>
</tr>
</tbody>
</table>

### In-water Cover

<table>
<thead>
<tr>
<th>Cover Types Present (circle):</th>
<th>Undercut Banks</th>
<th>Deep Pool</th>
<th>Watercress</th>
<th>Aquatic Veg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhanging Vegetation</td>
<td>Woody Debris</td>
<td>Boulder</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

### Riparian Zone

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 10%

### Adjacent Land Use

Ag - soybean

### Fish Habitat Potential

Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

### Waterbody Notes

Natural Watercourse, Trapezoidal Channel, Grassed Swale, Buried Tile, Surficial Drainage (i.e. furrows), Dugout Pond, Dominated by Aquatic Veg, Dry

### Other Habitat Notes, Incidental Wildlife Observations, etc.

- Trapezoidal ditch line dominated by aquatic veg

Field Notes Authored by XE

Field Notes QA/QCed by JF

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11TO04-2  Project Name Niagara Wind
Watercourse Name  Project # 160950269
Photos  Field Staff KE+JK
Date June 12, 2012  Time 9:25AM
Weather conditions in previous 24 hrs  
GPS Coordinates (Zone) E 4768178  N 5925698  Datum WGS 84
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L)  X  pH  Conductivity (μS/cm)  
Water Temperature (°C)  Air Temperature (°C)  13.6
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 (m)  Maximum Pool Depth
Mean Bankfull Width 3.5 (m)  Mean Water Depth
% Riffle  X  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle):  Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
25%
Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)  Dry

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by  KE+JK  Field Notes QAQCed by  JY
W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11F04-3
Watercourse Name
Photos
Date June 15, 2019
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) E 627611 N 4167868 Datum
Descriptive Location Coor H @ 400-Woodrun Rd, approx 400-500 ft.

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (μS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width __________ (m) Maximum Pool Depth __________ (cm)
Mean Bankfull Width __________ (m) Mean Water Depth __________ (cm)
% Ripple __________ % Pool __________ % Run __________ % Flat __________
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)

<table>
<thead>
<tr>
<th></th>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Mud</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulder</td>
<td></td>
<td></td>
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<tr>
<td>Boulder</td>
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</tr>
</tbody>
</table>

In-water Cover
Cover Types Present (circle):

<table>
<thead>
<tr>
<th></th>
<th>Undercut Banks</th>
<th>Deep Pool</th>
<th>Watercress</th>
<th>Aquatic Veg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhanging Vegetation</td>
<td>Woody Debris</td>
<td>Boulder</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse __________ Trapezoidal Channel __________ Grassed Swale __________ Buried Tile __________
Surficial Drainage (i.e. furrows) __________ Dugout Pond __________ Dominated by Aquatic Veg __________ Dry __________

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by：[Signature]

Field Notes QAQCed by：[Signature]
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Project Name: Niagara Wind
Project #: 160750269
Field Staff: [Name]
Time: [Time]

Weather conditions in previous 24 hrs:

GPS Coordinates (Zone): E 1627444 N 4767693 Datum

Water Quality
Dissolved Oxygen (mg/L) ______ pH _______ Conductivity (µS/cm) _______
Water Temperature (°C) _______ Air Temperature (°C) _______

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width ______ (m) Maximum Pool Depth ______ (cm)
Mean Bankfull Width ______ (m) Mean Water Depth ______ (cm)

% Riffle ______ % Pool ______ % Run ______ % Flat ______

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock ______ Cobble ______ Sand ______ Silt ______ Muck ______
Boulder ______ Gravel ______ Clay ______ Marl ______ Detritus ______

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other ______

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse ______ Trapezoidal Channel ______ Grassed Swale ______ Buried Tile ______
Surficial Drainage (i.e. furrows) ______ Dugout Pond ______ Dominated by Aquatic Veg ______ Dry ______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by ______ Field Notes QA/QC'd by ______

[Signature] [Signature]
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RUT004-5
Watercourse Name
Photos
Date June 21, 2015
Weather conditions in previous 24 hrs Rain
GPS Coordinates (Zone) E, N
Datum
Descriptive Location 400 m south 100 m east of Youngkin Rd

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (μS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) __________ Maximum Pool Depth (cm) __________
Mean Bankfull Width (m) __________ Mean Water Depth (cm) __________
% Riffle __________ % Pool __________ % Run __________ % Flat __________
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock __________ Cobble __________ Sand __________ Silt __________ Muck __________
Boulder __________ Gravel __________ Clay __________ Marl __________ Detritus __________

In-water Cover
Cover Types Present (circle): Undercut Banks, Deep Pool, Watercress, Aquatic Veg
Overhanging Vegetation Woody Debris, Boulder, Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse _______ Trapezoidal Channel _______ Grassed Swale _______ Buried Tile _______
Surficial Drainage (i.e. furrows) _______ Dugout Pond _______ Dominated by Aquatic Veg _______ Dry _______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KE _______ Field Notes QA/QC'd by FN _______

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## WIND FARM WATERBODY RAPID ASSESSMENT FORM

**Station #** RII7004-6  | **Project Name** Niagara Wind  
**Watercourse Name**  | **Project #** 160950269  
**Photos**  | **Field Staff** KE  
**Date**  | **Time** 10:34 AM  
**Weather conditions in previous 24 hrs**  
**GPS Coordinates (Zone)**  
**Datum**  
**Descriptive Location**  

### Water Quality

- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (μS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)**  
- **Time in situ measurements taken**

### Watercourse Dimensions & Morphology

- **Mean Watercourse Width**  
- **Maximum Pool Depth**  
- **Mean Bankfull Width**  
- **Mean Water Depth**  
- **% Riffle**  
- **% Pool**  
- **% Run**  
- **% Flat**

- **Evidence of eroding banks, Comments on bank stability**

### Substrate (% cover)

- **Bedrock**  
- **Cobble**  
- **Sand**  
- **Silt**  
- **Muck**  
- **Boulder**  
- **Gravel**  
- **Clay**  
- **Marl**  
- **Detritus**  

### In-water Cover

- **Cover Types Present (circle):** Undercut Banks, Deep Pool, Watercress, Aquatic Veg
- **Overhanging Vegetation:** Woody Debris, Boulder, Other

### Riparian Zone

- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)***

### Adjacent Land Use

- **Day and Bay**

### Fish Habitat Potential

- **Critical Habitat (spawning or nursery areas, groundwater upwellings)***

### Migratory Obstructions (seasonal, permanent)

- **Note any fish observations**

### Waterbody Notes

- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Buried Tile**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Dominated by Aquatic Veg**  
- **Dry**

### Other Habitat Notes, Incidental Wildlife Observations, etc.

- **Notes about channel, debris on road, plants, etc.**

---

Field Notes Authored by **KE**  | Field Notes QA/QCed by **[Signature]**
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R14700S-1
Watercourse Name Unnamed
Photos 131-143
Date Apr 19/12
Weather conditions in previous 24 hrs 12°C, overcast
GPS Coordinates (Zone) 17E 6081299 N 4747673 Datum NAD83
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) no water
pH Conductivity (µS/cm) Air Temperature (°C) 20°C

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1 (m)
Mean Bankfull Width 3 (m)
Maximum Pool Depth 20 (cm)
Mean Water Depth 16 (cm)
% Riffle % Pool 60 % Run % Flat Stable

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bare
Bedrock Cobble Sand 50 Silt 50 Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Aquatic Veg
Undercut Banks Deep Pool Watercress
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Seasonal

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KC Field Notes QA/QCed by MF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # PT1005-2
Watercourse Name Unknown
Photos 118 - 124
Date April 11
Weather conditions in previous 24 hrs 12°C, overcast
GPS Coordinates (Zone) 17T E N Datum NAD83
Descriptive Location Dick Trail, 400m north of Rymer, 400m west of

Water Quality
Dissolved Oxygen (mg/L) — pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock — Cobble — Sand — Silt — Muck
Boulder — Gravel — Clay — Marl — Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
ag land

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KC Field Notes QA/QCed by MF

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Refer to R11TOOS-3 or R11TOOS-1 for drawing of grassy node.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 811705-3 Project Name Niagara Wind
Watercourse Name Winnow
Photos 12S-130 Project # 100958264
Field Staff KC, MF
Date April 19/12 Time 4:13
Weather conditions in previous 24 hrs 12°C overcast
GPS Coordinates (Zone) 17T E 0624291 N 4748086 Datum NAD83
Descriptive Location 500m north of Rumor Road, 160m west of Dickhaut Road

Water Quality
Dissolved Oxygen (mg/L) 3.24mg/L pH 8.37 Conductivity (μS/cm) 96.31μS/cm
Water Temperature (°C) 19.0°C Air Temperature (°C) 20°C
Time in situ measurements taken 4:13

Watercourse Dimensions & Morphology
Mean Watercourse Width 6.5(m) Maximum Pool Depth 60(cm)
Mean Bankfull Width 6.0(m) Mean Water Depth 40(cm)
% Riffle 100 % Pool 100 % Run 0 % Flat
Evidence of eroding banks, Comments on bank stability stable - lots of vegetation

Substrate (% cover)
Bedrock Boulder Sand Silt Muck
Cobble Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other cattail!

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
<5% grasses, early

Adjacent Land Use
ag. land

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Spawning, nursery, feeding

Migratory Obstructions (seasonal, permanent)
Intermitten

Note any fish observations School of cyprinidae

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc. Frogs - chorus

Field Notes Authorized by KC Field Notes QAQCed by MF

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Station #: BHT006
Watercourse Name: Unknown
Photos: A4 & 35
Date: April 19, 2016
Weather conditions in previous 24 hrs: Cloudy, 10°C
GPS Coordinates (Zone): 11T
Descriptive Location: 800m north of Regional Rd 20, approx 1.2 km east

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (µS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken __________

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.40 (m) Maximum Pool Depth 5 (cm)
Mean Bankfull Width 0.50 (m) Mean Water Depth 5 (cm)
% Riffle __________ % Pool __________ 100 % Run __________ % Flat __________

Evidence of eroding banks, Comments on bank stability __________

Substrate (% cover)
Bedrock __________ Cobble __________ Sand __________ Silt __________ Muck __________
Boulder __________ Gravel __________ Clay __________ Marl __________ Detritus __________

In-water Cover
Cover Types Present (circle): Undercut Banks: Deep Pool Watercress Aquatic Veg
Overhanging Vegetation: Woody Debris Boulder Other aquatic __________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) __________

Adjacent Land Use
Agricultural field __________

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) __________

Migratory Obstructions (seasonal, permanent)
Note any fish observations __________

Waterbody Notes
Natural Watercourse __________ Trapezoidal Channel __________ Grassed Swale __________ Buried Tile __________
Surficial Drainage (i.e. furrows) __________ Dugout Pond __________ Dominated by Aquatic Veg __________ Dry __________

Other Habitat Notes, Incidental Wildlife Observations, etc.
Wild turkeys, white tail deer __________

Field Notes Authored by __________ Field Notes QA/QC'd by __________
Wind Farm Waterbody Rapid Assessment Form

Station #: RWT007  Project Name: Niagara Wind
Watercourse Name: Unknown  Project #: 160950269
Photos:  Field Staff: K. Chaffin, M. Failla
Date: June 13/12  Time: 3:30 PM
Weather conditions in previous 24 hrs:
GPS Coordinates (Zone): E 474924 Datum: NAD83
Descriptive Location: Rut's N of Echo Road, 2.300m west of

Water Quality:
Dissolved Oxygen (mg/L) [Blank]  pH [Blank]  Conductivity (µS/cm) [Blank]
Water Temperature (°C) [Blank]  Air Temperature (°C) 25
Time in situ measurements taken: [Blank]

Watercourse Dimensions & Morphology:
Mean Watercourse Width (m)  [Blank]  Maximum Pool Depth (cm) [Blank]
Mean Bankfull Width (m)  [Blank]  Mean Water Depth (cm) [Blank]
% Riffle [Blank]  % Pool [Blank]  % Run [Blank]  % Flat [Blank]
Evidence of eroding banks, Comments on bank stability: [Blank]

Substrate (% cover):

In-water Cover:
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation: Woody Debris  Boulder  Other [Blank]

Riparian Zone:
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):
36% grasses, early[Blank]

Adjacent Land Use:
[Blank]

Fish Habitat Potential:
Critical Habitat (spawning or nursery areas, groundwater upwellings):

Migratory Obstructions (seasonal, permanent):
[Blank]

Note any fish observations:

Waterbody Notes:
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: [Blank]  Field Notes QA/QCed by: [Blank]
Dry Channel
Surrounded by reed canary grass
No channel definition

Say beans

Elche Road
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #:** R1008  
**Watercourse Name:** 08-1A  
**Photos:** 8885 - 9588899800 - 02  
**Date:** June 8, 2012  
**Weather conditions in previous 24 hrs:** Sunny & cloudy periods  
**GPS Coordinates (Zone):** N 4765440  
**Datum**

**Descriptive Location**

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**Water Quality**

- **Dissolved Oxygen (mg/L):**  
- **pH:**  
- **Conductivity (µS/cm):**  
- **Water Temperature (°C):**  
- **Air Temperature (°C):** 25  
- **Time in situ measurements taken:**

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**Watercourse Dimensions & Morphology**

- **Mean Watercourse Width (m):**  
- **Maximum Pool Depth (cm):**  
- **Mean Bankfull Width (m):**  
- **Mean Water Depth (cm):**

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**% riffle % pool % run % flat**

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**Evidence of eroding banks, Comments on bank stability**

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**Substrate (% cover):**

- Bedrock  
- Cobble  
- Sand  
- Silt  
- Muck  
- Boulder  
- Gravel  
- Clay  
- Marl  
- Detritus  

---

**In-water Cover**

- Cover Types: Present (circle):
  - Upland Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg  
- Overhanging Vegetation:
  - Woody Debris  
  - Boulder  
  - Other

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**Riparian Zone**

- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):**

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**Adjacent Land Use**

- AGRICULTURAL FIELD - CROPPED

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**Fish Habitat Potential**

- Critical Habitat (spawning or nursery areas, groundwater upwellings)

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**Migratory Obstructions (seasonal, permanent):**

- **NO FLOW**

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**Note any fish observations**

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**Waterbody Notes**

- **Natural Watercourse:**  
- **Trapezoidal Channel:**  
- **Grassed Swale:**  
- **Buried Tile:**

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**Surficial Drainage (i.e. furrows), Dugout Pond**

- **Dominated by Aquatic Veg:**  
- **Dry**

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**Other Habitat Notes, Incidental Wildlife Observations, etc.**

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**Field Notes Authored by:** T. CHANDLER  
**Field Notes QA/QCed by:** N8
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11-TO-09
Watercourse Name D8-18
Photos 8903-09, 8910
Date JUNE 9, 2012
Weather conditions in previous 24 hrs Sunny w cloudy periods
GPS Coordinates (Zone) 177 E 61,46181 N 476 4676 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) 7.73 pH 8.34 Conductivity (µS/cm) 565
Water Temperature (°C) 28.0 Air Temperature (°C) 25
Time in situ measurements taken 3:50

Watercourse Dimensions & Morphology
Mean Watercourse Width 2 (m) Maximum Pool Depth 20 (cm)
Mean Bankfull Width 3 (m) Mean Water Depth 5 (cm)
% Riffle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
/ Bedrock / Cobble / Sand / Silt 100 / Muck / Gravel / Clay / Marl / Detritus

In-water Cover
Cover Type Present (circle): / Undercut Banks / Deep Pool / Watercress / Aquatic Veg
Overhanging Vegetation / Woody Debris / Boulder / Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
60% grasses, aquatic vegetation, and trees (mature)

Adjacent Land Use
Agricultural Field (flow) Woodlot to east and south

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Potential spawning or nursery habitat

Migratory Obstructions (seasonal, permanent)
Low flow

Note any fish observations NONE

Waterbody Notes
Natural Watercourse / Trapezoidal Channel / Grassed Swale / Buried Tile
Surficial Drainage (i.e. furrows) / Dugout Pond / Dominated by Aquatic Veg / Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Green frogs/aquatic invertebrates/ frogs

Field Notes Authorized by J. CHANDLER Field Notes QA/QCed by W.F.
Station #: B11TO08
Watercourse Name: 07-2
Photos: 3979-9b
Date: JUNE 9, 2017
Weather conditions in previous 24 hrs: Sunny, fair
GPS Coordinates (Zone): 19T E 614503 N 4765222 Datum

Water Quality
Dissolved Oxygen (mg/L): 2.11
pH: 7.51
Conductivity (µS/cm): 2.459
Water Temperature (°C): 19.91
Air Temperature (°C): 25
Time in situ measurements taken: 3:20PM

Watercourse Dimensions & Morphology
Mean Watercourse Width: POND (m)
Mean Bankfull Width: N/A (m)
Maximum Pool Depth: 30 (cm)
Mean Water Depth: 10 (cm)

Evidence of eroding banks, Comments on bank stability: N/A

Substrate (% cover)
Bedrock: %
Cobble: %
Gravel: %
Sand: %
Silt: 100%
Clay: %
Marl: %
Muck: %
Detritus: %

In-water Cover
Plants Types Present (write): Undercut Banks, Woody Debris, Boulder, Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 100% — Duckweed

Adjacent Land Use
AGRICULTURAL FIELD

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
MAY DRY OUT

Note any fish observations: N/A

Waterbody Notes
Natural Watercourse: S mall P onded A rea
Trapezoidal Channel: 
Surficial Drainage (i.e. furrows): 
Dugout Pond: 
Grassed Swale: 
Buried Tile: 
Dry: 

Other Habitat Notes, Incidental Wildlife Observations, etc.: LEOPARD + GREEN FROG

Field Notes Authored by: T. CHANDLER
Field Notes QA/QCed by: N/P
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: RI1I008
Watercourse Name: 08-3A
Photos: 11
Date: JUNE 8, 2012
Weather conditions in previous 24 hrs: Sunny w. Cloudy Periods
GPS Coordinates (Zone): 111 E 614339 N 4765160 Datum
Descriptive Location:

Water Quality
Dissolved Oxygen (mg/L) 
Conductivity (μS/cm) 
Water Temperature (°C) 
Air Temperature (°C) 23
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) 
Maximum Pool Depth (cm) 
Mean Bankfull Width (m) 
Mean Water Depth (cm) 
% Riffle 
% Pool 
% Run 
% Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)

In-water Cover
Overhanging Vegetation: Woody Debris Boulder Other
Deep Pool: Waterress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Wooded area (West) Ploughed agricultural field (East)

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations: None

Waterbody Notes
Natural Watercourse: Trapezoidal Channel: Grassed Swale: Buried Tile: Surficial Drainage (i.e. furrows): Dugout Pond: Dominated by Aquatic Veg: Dry:

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: J. CHANDLER
Field Notes QA/QCed by: [Signature]

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Station # B12068
Watercourse Name 08-31S
Photos 1111
Date June 28, 2012
Weather conditions in previous 24 hrs Sunny - cloudy periods
GPS Coordinates (Zone) 171 E 14427 N 476508X Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) N/A
pH N/A
Conductivity (µS/cm) N/A
Water Temperature (°C) N/A
Air Temperature (°C) 25
Time in situ measurements taken N/A

Watercourse Dimensions & Morphology
Mean Watercourse Width N/A (m)
Mean Bankfull Width N/A (m)
Maximum Pool Depth N/A (cm)
Mean Water Depth N/A (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability recently dug, stable

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Overhanging Vegetation Woody Debris Boulder Other
Undercut Banks Deep Pool Watertress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 20%
Adjacent Land Use Wooded area (west) plowed agricultural field (east)

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent) No flow
Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Eutrophic wetland on dry

Field Notes Authored by T. CHANDLER
Field Notes QA/QCed by MF
**Wind Farm Waterbody Rapid Assessment Form**

**Station #:** RH1008  
**Watercourse Name:** 08-4  
**Photos:** 8926-37  
**Date:** June 8, 2012  
**Weather conditions in previous 24 hrs:** Sunny & cloudy periods  
**GPS Coordinates (Zone):** 117° E 614.445  
**Datum:** N 4765766  
**Descriptive Location:**  

### Water Quality

- **Dissolved Oxygen (mg/L):**  
- **pH:**  
- **Conductivity (µS/cm):**  
- **Water Temperature (°C):**  
- **Air Temperature (°C):** 2.5  
- **Time in situ measurements taken:**  

### Watercourse Dimensions & Morphology

- **Mean Watercourse Width (m):**  
- **Maximum Pool Depth (cm):**  
- **Mean Bankfull Width (m):**  
- **Mean Water Depth (cm):**  
- **% Riffle:**  
- **% Pool:**  
- **% Run:**  
- **% Flat:**  

**Evidence of eroding banks, Comments on bank stability:**  

### Substrate (% cover)

- Bedrock  
- Cobble  
- Sand  
- Silt  
- Muck  
- Boulder  
- Gravel  
- Clay  
- Marl  
- Detritus  

### In-water Cover

- **Cover Types Present (circle):** Undercut Banks, Deep Pool, Watercress, Aquatic Veg  
- **Overhanging Vegetation:** Woody Debris, Boulder, Other  

### Riparian Zone

- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):** 70% Aquatic Vegetation  

### Adjacent Land Use

- Plowed agricultural field  

### Fish Habitat Potential

- **Critical Habitat (spawning or nursery areas, groundwater upwellings):**  

### Migratory Obstructions (seasonal, permanent)

- **Note any fish observations:**  

### Waterbody Notes

- **Natural Watercourse:**  
- **Trapezoidal Channel:**  
- **Grassed Swale:**  
- **Surficial Drainage (i.e. furrows):**  
- **Dugout Pond:**  
- **Buried Tile:**  
- **Dominated by Aquatic Veg:**  

### Other Habitat Notes, Incidental Wildlife Observations, etc.

- Echidna, Vagiterium  

**Field Notes Authored by:** J. Chandler  
**Field Notes QA/QCed by:** WF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: B11T010+37  Project Name: Niagara Wind
Watercourse Name:  Project #: 1609502660
Photos:  Field Staff: KB 4.1K
Date: June 13, 2012  Time: 4:30 pm
Weather conditions in previous 24 hrs:  wind + sun
GPS Coordinates (Zone): UTM Zone 17T E N 632185 4759134 Datum
Descriptive Location: Con 6 C sol reg 42

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)  Air Temperature (°C)
Water Temperature (°C)  Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KB  Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R117012-1 Project Name Niagara Wind
Watercourse Name Project # 160950269
Photos See log
Date June 13 9:15 a.m.
Weather conditions in previous 24 hrs Rainy
GPS Coordinates (Zone) E 621155 N 4756333 Datum
Descriptive Location 3 km west of Townline/Dunnville Rd just E, approximately 1 km

Water Quality
Dissolved Oxygen (mg/L) ------ pH ------ Conductivity (µS/cm) X
Water Temperature (°C) ------ Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 3 (m) Maximum Pool Depth 5 (cm)
Mean Bankfull Width 5 (m) Mean Water Depth 5 (cm)
% Rifle X % Pool X % Run X % Flat X
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 0 Cobble 0 Sand 20 Silt 20 Muck 0
Boulder 0 Gravel 0 Clay 0 Marl 0 Detritus 0

In-water Cover
Cover Types Present (circle): Undercut Banks Woody Debris Boulder Other
Overhanging Vegetation Deep Pool Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
80% maple & willow

Adjacent Land Use
Ag - soy & hay

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse X Trapezoidal Channel X Grasse Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KE Field Notes QA/QCed by Joe
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T013 - 1 | Project Name 1609SO2695
Watercourse Name | Project # Niagara Wind
Photos 46-50 | Field Staff B. Clayton
Date Apr 4/12 | Time 1:10:20
Weather conditions in previous 24 hrs 10°C Cloudy
GPS Coordinates (Zone) 117° E 0624405 | Datum North
Descriptive Location approx 500 N of Hwy 3 approx 1.2km West of Binville - Wainfleet Townline

Water Quality
- Agricultural Swale
Dissolved Oxygen (mg/L) ______ pH ______ Conductivity (µS/cm) ______
Water Temperature (°C) ______ Air Temperature (°C) ______
Time in situ measurements taken ______

Watercourse Dimensions & Morphology
Mean Watercourse Width ______ (m) | Maximum Pool Depth ______ (cm)
Mean Bankfull Width ______ (m) | Mean Water Depth ______ (cm)
% Riffle ______ | % Pool ______ % Run ______ % Flat ______
Evidence of eroding banks, Comments on bank stability ______

Substrate (% cover)
- Bedrock ______
- Cobble ______
- Sand ______
- Silt ______
- Muck ______
- Boulder ______
- Gravel ______
- Clay ______
- Marl ______
- Detritus ______

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other ______

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) ______

Adjacent Land Use ______

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) ______
Migratory Obstructions (seasonal, permanent) ______
Note any fish observations ______

Waterbody Notes
Natural Watercourse ______ Trapezoidal Channel ______ Grassed Swale ______ Buried Tile ______
Surficial Drainage (i.e. furrows) ______ Dugout Pond ______ Dominated by Aquatic Veg ______ Dry ______

Other Habitat Notes, Incidental Wildlife Observations, etc. ______

Field Notes Authored by B. Clayton | Field Notes QA/QCed by M. Failla
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RIIT013-2
Watercourse Name unknown
Photos 51-69
Date Apr. 4/12
Weather conditions in previous 24 hrs
10°C, Cloudy
GPS Coordinates (Zone) 19T E 0662327 N 4756999 Datum NAD83
Descriptive Location 800m North of Hwy 3, 1.2 km west of Danville - Windfarm turning

Water Quality
Dissolved Oxygen (mg/L) 14.80 mg/L pH 8.72 Conductivity (µS/cm) 843
Water Temperature (°C) 14.32°C Air Temperature (°C) 14°C
Time in situ measurements taken 14:35

Watercourse Dimensions & Morphology
Mean Watercourse Width 45 (m) Maximum Pool Depth 0.75 (cm)
Mean Bankfull Width 45 (m) Mean Water Depth 0.50 (cm)
% Riffle % Pool 100 % Run % Flat

Evidence of eroding banks, Comments on bank stability
banks are eroded, grasses visible

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel So Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Woody Debris Boulder Deep Pool Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
59% grasses, algae, reeds

Adjacent Land Use
farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
permanent

Note any fish observations

Waterbody Notes
Natural Watercourse ✓ Trapezoidal Channel ✓ Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
water, frog, jumping into

Field Notes Authored by K. Clayton
Field Notes QA/QCed by M. Failla
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RN1013-3
Watercourse Name ______________ Project Name Niagara Wind
Photos ______________ Project # 160956269
Date 06-01-12 Field Staff JK
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) E 162414 N 4355274 Datum
Descriptive Location Approximately 700 m west of Toweric Reservoir, Westflirt Rd, 30 m south
of highway 3

Water Quality
Dissolved Oxygen (mg/L) 9.04 pH 7.82 Conductivity (µS/cm) 573
Water Temperature (°C) 18.59 Air Temperature (°C) 20°
Time in situ measurements taken 10:35 am

Watercourse Dimensions & Morphology
Mean Watercourse Width 9 (m) Maximum Pool Depth 40 (cm)
Mean Bankfull Width 7 (m) Mean Water Depth 30 (cm)
% Rifle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability
Shovel, stakes, veg

Substrate (% cover)
Bedrock __________ Cobble 10 Sand __________ Silt __________ Muck
Boulder __________ Gravel 40 Clay __________ Marl __________ Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
40% Silver maple, 10% sumac, willows, RCG

Adjacent Land Use
Ag - soy

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
none

Migratory Obstructions (seasonal, permanent)
none - probably permanent

Note any fish observations
none

Waterbody Notes
Natural Watercourse _______ Trapezoidal Channel _______ Grassed Swale _______ Buried Tile _______
Surficial Drainage (i.e. furrows) _______ Dugout Pond _______ Dominated by Aquatic Veg _______ Dry _______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by _______ Field Notes QA/QC by _______

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R13013 - 44  Project Name Niagara Wind
Watercourse Name  Project # 160950269
Photos  Field Staff
Date June 13, 2012 Time
Weather conditions in previous 24 hrs Rain
GPS Coordinates (Zone) E 1021554 N 4355586 Datum
Descriptive Location Hwy 3, 1100 W of Townline/Doncaster Rd., approx.

Water Quality
Dissolved Oxygen (mg/L) too little water to sample  pH
Conductivity (µS/cm)
Water Temperature (°C)
Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1 (m) Maximum Pool Depth 2 (cm)
Mean Bankfull Width 2 (m) Mean Water Depth 1 (cm)
% Riffle 100% Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble 20 Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Ag - hay + corn

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Seasonal dry

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale  V Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg  V Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Grassed or swale dominated by aquatic veg.
Mineral water probably results in cattails and was not directly connected to other adjacent pond

Field Notes Authored by KE Field Notes QAQCed by JFL

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

**Stantec**

**Station #** R117074, R117015, R117044, R117043  
**Watercourse Name** Unknown  
**Project Name** Niagara Wind  
**Photos** 100-106  
**Project #** 160950269  
**Date** April 5, 2013  
**Field Staff** H. Clayon, M. Faiella  
**Time** 10:34 a.m.  
**Weather conditions in previous 24 hrs** 12°C Sunny  
**GPS Coordinates (Zone)** 17T E 0624433 N 47486666  
**Datum** NAD83  
**Descriptive Location** 2 km South of Canal Bank Road, 3 km East of Bird Road

**Water Quality**
- **Dissolved Oxygen (mg/L)** 11.21 mg/L  
- **pH** 9.12  
- **Conductivity (µS/cm)** 2630 µS/cm  
- **Water Temperature (°C)** 9.2°C  
- **Air Temperature (°C)** 3°C  
- **Time in situ measurements taken** 10:40 a.m.

**Watercourse Dimensions & Morphology**
- **Mean Watercourse Width** 0.75 (m)  
- **Maximum Pool Depth** (cm)  
- **Mean Bankfull Width** 4.0 (m)  
- **Mean Water Depth** (cm)  
- **% Riffle**  
- **% Pool**  
- **% Run**  
- **% Flat**

**Evidence of eroding banks, Comments on bank stability** Banks are fully vegetated with grasses & crows. 

**Substrate (% cover)**
- Bedrock  
- Cobble  
- Sand 40%  
- Silt 10%  
- Muck  
- Boulder  
- Gravel 50%  
- Clay  
- Marl  
- Detritus

**In-water Cover**
- **Cover Types Present (circle):** Undercut Banks, Deep Pool, Watercress, Aquatic Veg

**Riparian Zone**
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):** Cattails, Elder

**Adjacent Land Use**
- Farmland - ag. field

**Fish Habitat Potential**
- **Critical Habitat (spawning or nursery areas, groundwater upwellings):**
- **Migratory Obstructions (seasonal, permanent):**

**Note any fish observations**

**Waterbody Notes**
- **Natural Watercourse** ✓  
- **Trapezoidal Channel** ✓  
- **Grassed Swale**  
- **Buried Tile**  
- **Surficial Drainage (i.e. furrows)** Dugout Pond  
- **Dominated by Aquatic Veg**  
- **Dry**

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

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**Field Notes Authored by:** H. Clayon  
**Field Notes QA/QC'd by:** M. Faiella
Station # E01016-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 14095836
Photos 83-92  Field Staff KC & MF
Date April 19, 20  Time 12:30
Weather conditions in previous 24 hrs sunny
GPS Coordinates (Zone) 174 E 06236866 N 4499832 Datum NAD83
Descriptive Location 1/4 mile south of canal bank Road, 2km east

Water Quality
Dissolved Oxygen (mg/L) 12.77  pH 8.75  Conductivity (µS/cm) 462
Water Temperature (°C) 15.80  Air Temperature (°C) 12°C
Time in situ measurements taken 12:39 pm

Watercourse Dimensions & Morphology
Mean Watercourse Width 2 m  Maximum Pool Depth (cm)
Mean Bankfull Width 6 m  Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability unstable banks

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Clay  Muck
Boulder  Gravel  20  60  20  50  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
4.5% grass, reeds

Adjacent Land Use
ag. field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
spawning, nursery, foraging

Migratory Obstructions (seasonal, permanent)
permanent

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KC  Field Notes QA/QCed by MF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T017 & R14T047
Watercourse Name Cunkinwah
Photos 09-09
Date Apr 9, 2012
Weather conditions in previous 24 hrs 10°C, cloudy
GPS Coordinates (Zone) 177 E 062, 2, 792, 1 N 474, 85, 09 Datum NAD 83
Descriptive Location 1 km East of Bird Rd & 1 km south of canal

Project Name Niagara Wind
Project # 169,502,992
Field Staff K.C. M.E.
Time 14 30

Water Quality
Dissolved Oxygen (mg/L) 14.74 mg/L pH 9.03 Conductivity (µS/cm) 510 µS/cm
Water Temperature (°C) 15.73°C Air Temperature (°C) 12°C
Time in situ measurements taken 1:00

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 (m) Maximum Pool Depth 0.60 (cm)
Mean Bankfull Width 3 (m) Mean Water Depth 0.50 (cm)

% Riffle % Pool 100 % Run % Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)

Bedrock Cobble Sand Silt Muck
Cobble Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other algae

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
< 50%, grasses, early

Adjacent Land Use
\textbf{farm land}

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Spawning, nursery, foraging

Migratory Obstructions (seasonal, permanent)
seasonal / int.

Note any fish observations

Waterbody Notes
Natural Watercourse \\ Trapezoidal Channel \\ Grassed Swale \\ Buried Tile
Surficial Drainage (i.e. furrows) \\ Dugout Pond \\ Dominated by Aquatic Veg \\ Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

\textbf{frogs - leopard chows}

Field Notes Authored by K. Clayton
Field Notes QA/QCed by M. Faia}

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Station #: R11 T018  
Watercourse Name: 18-1  
Photos: 2837-3e  
Date: June 7, 2012  
Weather conditions in previous 24 hrs: Thunderstorms in the morning, otherwise sunny  
GPS Coordinates (Zone): 11T E 629950 N 476666.3 Datum  

Descriptive Location: M1 proposed access road crossing  

WIND FARM WATERBODY RAPID ASSESSMENT FORM

Stantec

Project Name: Niagara Wind  
Project #: 160950 269  
Field Staff: Chandler M. Ellah  
Time: 9:25

Water Quality

Dissolved Oxygen (mg/L)  
pH  
Conductivity (µS/cm)

Water Temperature (°C)  
Air Temperature (°C) 20

Time in situ measurements taken: N/A

Watercourse Dimensions & Morphology

Mean Watercourse Width: DRY (m)  
Mean Bankfull Width: 2 (m)  
Maximum Pool Depth: N/A (cm)  
Mean Water Depth: N/A (cm)

% Riffle  
% Pool  
% Run  
% Flat

Evidence of eroding banks, Comments on bank stability: NONE

Substrate (% cover)

Bedrock  
Cobble  
Boulder  
Gravel  
Sand  
Silt  
Muck  
Clay  
Marl  
Detritus

In-water Cover

Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg

Overhanging Vegetation  
Woody Debris  
Boulder  
Other

Riparian Zone

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 50%  

Adjacent Land Use: Agricultural Field

Fish Habitat Potential

Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations:

None

Waterbody Notes

Natural Watercourse  
Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Dugout/Pond  
Grassed Swale  
Buried Tile  
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Straightened drainage feature with well-defined borders. Coastal sedges present but not common.
**WIND FARM**  
**WATERBODY RAPID ASSESSMENT FORM**

**Station #:** R1TD18  
**Watercourse Name:** 18-2  
**Photos:** 8839-44  
**Date:** June 7, 2017  
**Weather conditions in previous 24 hrs.:** Light thunderstorm & sun  
**GPS Coordinates (Zone):** E 629 824 N 476 6486  
**Datum:**  
**Descriptive Location:**  

**Water Quality**  
Dissolved Oxygen (mg/L) N/A  
**pH:** N/A  
**Conductivity (μS/cm):** N/A  
**Water Temperature (°C):** N/A  
**Air Temperature (°C):** 20  
**Time in situ measurements taken:** N/A  

**Watercourse Dimensions & Morphology**  
**Mean Watercourse Width:** N/A (m)  
**Maximum Pool Depth:** N/A (cm)  
**Mean Bankfull Width:** N/A (m)  
**Mean Water Depth:** N/A (cm)  
**% Riffle:** 0%  
**% Pool:** 100%  
**% Run:** 0%  
**% Flat:** 0%  

**Evidence of eroding banks, Comments on bank stability:** Stable  

**Substrate (% cover):**  
- Bedrock  
- Cobble  
- Sand - 90%  
- Silt  
- Muck  
- Detritus  
- Boulder  
- Gravel  
- Clay  
- Marl  

**In-water Cover**  
**Cover Types Present (circle):**  
- Undercut Banks  
- Deep Pool  
- Watercress  
- Aquatic Veg  
- Overhanging Vegetation  
- Woody Debris  
- Boulder  
- Other  

**Riparian Zone**  
**Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):**  
- Bald cypress - evergreen  

**Adjacent Land Use:**  
- Rock field (planted)  

**Fish Habitat Potential**  
**Critical Habitat (spawning or nursery areas, groundwater upwellings):**  

**Migratory Obstructions (seasonal, permanent):**  
**Dry**  

**Note any fish observations:** NONE  

**Waterbody Notes**  
**Natural Watercourse:**  
**Trapezoidal Channel:**  
**Grassed Swale:**  
**Surficial Drainage (i.e. furrows):**  
**Dugout Pond:**  
**Dominated by Aquatic Veg:**  
**Dry:**  

**Other Habitat Notes, Incidental Wildlife Observations, etc.:**  
- Leopard Frog  

Field Notes Authored by: J. Chandler  
Field Notes QA/QCed by: M. D.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: R1TD18  Project Name: NIAGARA WIND
Watercourse Name: 19-3  Project #: 160950269
Photos: S845-46  Field Staff: T. Chandler, M Ellah
Date: June 6, 2017  Time: 4:15
Weather conditions in previous 24 hrs: Light thunderstorms / sunny
GPS Coordinates (Zone): E 679837  N 4766384  Datum
Descriptive Location: Near RR Tracks

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width: DRY (m)  Maximum Pool Depth: N/A (cm)
Mean Bankfull Width: N/A (m)  Mean Water Depth: N/A (cm)
% Ripple  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  100  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus
In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation: Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Corn Field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Low Flow
Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grasped Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: T. Chandler  Field Notes QA/QCed by: NE
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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T019H-1 Project Name Niagara Wind
Watercourse Name
Photos 12-Jun-2012 Project # 160950269
Date June 13, 2012 Field Staff KE + JK
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 171 E 620311 N 4295174 Datum Datum
Descriptive Location 600 North of Highway 3

Water Quality
Dissolved Oxygen (mg/L) 7.14 pH 7.76 Conductivity (µS/cm) 1520
Water Temperature (°C) 16.94° Air Temperature (°C) 20°
Time in situ measurements taken 10:35

Watercourse Dimensions & Morphology
Mean Watercourse Width 4 (m) Maximum Pool Depth 410 (cm)
Mean Bankfull Width 7 (m) Mean Water Depth 410 (cm)
% Rifle 100 % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble 80 Sand Silt Muck
Boulder Gravel 60 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
40% - elm, ash

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
- deep trapezoidal channel algae & aquatic veg
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11020-1
Watercourse Name Unknown
Photos 755-760
Date June 14/01
Weather conditions in previous 24 hrs Rain, hot, humid
GPS Coordinates (Zone) E 0630271 N 4749143 Datum NAD 83
Descriptive Location 600m north of Cowal Bank Road

Water Quality
- no water
Dissolved Oxygen (mg/L) ________ pH ________ Conductivity (µS/cm) ________
Water Temperature (°C) ________ Air Temperature (°C) 21
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) ________ Maximum Pool Depth (cm) ________
Mean Bankfull Width (m) ________ Mean Water Depth (cm) ________
% Riffle ________ % Pool ________ % Run ________ % Flat ________
Evidence of eroding banks, Comments on bank stability stable, vegetated

Substrate (% cover)
Bedrock ________ Cobble ________ Sand ________ Silt ________ Muck ________
Boulder ________ Gravel ________ Sand ________ Clay ________ Marl ________
Detritus ________

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other ________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100% scrub vegetation, small trees, early

Adjacent Land Use farm field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
No water

Note any fish observations

Waterbody Notes
Natural Watercourse ________ Trapezoidal Channel ________ Grassed Swale ________ Buried Tile ________
Surficial Drainage (i.e. furrows) ________ Dugout Pond ________ Dominated by Aquatic Veg ________ Dry ________

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton
Field Notes QA/QCed by S. K. M.
ag. field

Proposed access road

dry channel

Non-KFEA?

RI/TO 2021

Rattlesnake & riparian

Inman Road

N→
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11024-1  Project Name Niagara Wind
Watercourse Name Unknown  Project # 160956269
Photos  Field Staff K. Clayton & M. Fatella
Date June 13, 2011 Time 12:43 PM
Weather conditions in previous 24 hrs Rain, hot, thunderstorms
GPS Coordinates (Zone) 17T  E 0637835  N 4749745 Datum NAD83
Descriptive Location Road 10-1600 east of Buckett Road, no non-public

Water Quality
Dissolved Oxygen (mg/L) 7.37  pH 7.59  Conductivity (µS/cm) 848
Water Temperature (°C) 19.85  Air Temperature (°C) 27°C
Time in situ measurements taken 3:42

Watercourse Dimensions & Morphology
Mean Watercourse Width 3 (m)  Maximum Pool Depth 0.50 (cm)
Mean Bankfull Width 6 (m)  Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability Stable, Vegetated

Substrate (% cover)
Bedrock 40  Cobble 10  Sand 50  Silt 10  Muck 0
Boulder 0  Gravel 0  Clay 0  Marl 0  Detritus 0

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 45%
grasses, small trees, early

Adjacent Land Use
Farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T027  Project Name Niagara Wind  Non
Watercourse Name unknown  Project # 1600980269  No feature
Date Apr 4/12  Time 12:35 pm
Weather conditions in previous 24 hrs Cloudy 10°C
GPS Coordinates (Zone) 17T E 0632533  N 4763838  Datum NAD 83
Descriptive Location 20, 50m west of Comfort Rd. 600m east of Regional Rd

Water Quality  No water or features
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)  
Water Temperature (°C)  Air Temperature (°C)  
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Chorus Frogs in Bush/
Wind Farm Waterbody Rapid Assessment Form

Station #: R71028  Project Name: Niagara Wind
Watercourse Name: unknown  Project #: 16:0959:669
Photos: 34-45  Field Staff: K. Clinton, M. Faiella
Date: Apr 4, 12  Time: 12:40 pm
Weather conditions in previous 24 hrs: Cloudy, 10°C
GPS Coordinates (Zone): 17T E 0623S47  N 4769098  Datum: NAD 83
Descriptive Location:

Water Quality
Dissolved Oxygen (mg/L)  No water  pH  Conductivity (µS/cm)
Water Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1 (m)  Maximum Pool Depth 8 (cm)
Mean Bankfull Width 1.2 (m)  Mean Water Depth 2 (cm)
% Riffle 100  % Pool 40  % Run 0  % Flat 0
Evidence of eroding banks, Comments on bank stability: Exposed soil

Substrate (% cover)
Bedrock 10  Cobble 30  Sand 50  Silt 20  Clay 10  Muck 0  Marl 10  Detritus 0

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation: Woody Debris  Boulder  Other: Terrestrial plants

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):

Adjacent Land Use
Agricultural land

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations
Seasonal

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg
Buried Tile

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clinton  Field Notes QA/QCed by M. Faiella

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ag. field

ag. field

agricultural
swale at
this end—no water!

turbin

channel—wa little water

defined

No channel
definition

bushlot

farm

R11T028
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11TD29  Project Name NIAGARA WIND
Watercourse Name 29-1  Project # T60950269
Photos 8865-69  Field Staff T. CHANDLER M. ELLAH
Date June 8, 2012  Time 10:55 AM
Weather conditions in previous 24 hrs Sunny & cloudy periods.
GPS Coordinates (Zone) 171 E 628,607 N 4763,603 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) N/A  pH N/A  Conductivity (µS/cm) N/A
Water Temperature (°C) N/A  Air Temperature (°C) 25
Time in situ measurements taken N/A

Watercourse Dimensions & Morphology
Mean Watercourse Width DRY (m) N/A  Maximum Pool Depth N/A (cm)
Mean Bankfull Width 2.5 (m) Mean Water Depth N/A (cm)
% Riffle N/A % Pool N/A % Run N/A % Flat N/A
Evidence of eroding banks, Comments on bank stability Minor scour along

Substrate (% cover)
Bedrock 1 Cobble 19 Sand 60 Silt 1 Muck 1 Detritus
Boulder 1 Gravel 20 Clay 1 Marl 1

In-water Cover
Cover Types Present (circle): Undercut Banks N/A Deep Pool N/A Watercress N/A
Overhanging Vegetation Woody Debris

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) S0 % S2 S4 S6 S8 S0 S2 S4 S6 S8

Adjacent Land Use
Agricultural field - cropped

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Low/No Flow

Note any fish observations
None

Waterbody Notes
Natural Watercourse  Trapezoidal Channel
Surficial Drainage (i.e. furrows)  Dugout Pond
Grassed Swale  Buried Tile
Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Few seuglum

Field Notes Authored by T. CHANDLER  Field Notes QA/QCed by W
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R117029  Project Name NIAGARA WIND
Watercourse Name Z9-Z  Project # 160950769
Photos 2570-71  Field Staff L.CHANDLER M.ECLAH
Date JUNE 8, 2012  Time 11:15AM
Weather conditions in previous 24 hrs Cloudy, partly sunny
GPS Coordinates (Zone) 171 E 678309 N 4763066 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) N/A  pH N/A  Conductivity (µS/cm) N/A
Water Temperature (°C) N/A  Air Temperature (°C) 25
Time in situ measurements taken N/A

Watercourse Dimensions & Morphology
Mean Watercourse Width N/A (m)  Maximum Pool Depth N/A (cm)
Mean Bankfull Width N/A (m)  Mean Water Depth N/A (cm)
% Riffle 0%  % Pool 0%  % Run 0%  % Flat 0%
Evidence of eroding banks, Comments on bank stability disturbed by plowing

Substrate (% cover)
/ Bedrock  / Cobble  / Sand  / Silt  / Muck
/ Boulder  / Gravel  / Clay  / Marl  / Detritus

In-water Cover
Cover Types (include names): / Undercut Banks / Deep Pool / Watergrass / Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Agricultural Field - soybean.

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
No Flow

Note any fish observations None

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by L.CHANDLER  Field Notes QA/QCed by MR
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 8117029  Project Name: NIAGARA WIND
Watercourse Name: 329 - 3  Project #: 160950269
Photos: 3897-76  Field Staff: J. CHANDLER, M ELLAH
Date: JUNE 8, 2012  Time: 11:35
Weather conditions in previous 24 hrs: Sunny with cloudy periods
GPS Coordinates (Zone): 171 E 6283600 N 4762922  Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L)  6.30  pH  7.95  Conductivity (µS/cm)  1608
Water Temperature (°C)  15.17  Air Temperature (°C)  25
Time in situ measurements taken: 11:40

Watercourse Dimensions & Morphology
Mean Watercourse Width 3 (m)  Maximum Pool Depth 40 (cm)
Mean Bankfull Width 6 (m)  Mean Water Depth 5 (cm)
30% Riffle 50% Pool 10% Run 10% Flat
Evidence of eroding banks, Comments on bank stability: TREES WITH BENT TRUNKS

Substrate (% cover)
Bedrock / Boulder 30 / Clay 10  Cobble 40 / Gravel 20  Sand 20 / Marl 10  Muck / Detritus

In-water Cover
Cover Exposed Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation: Woody Debris
Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 95% - Mature trees
Adjacent Land Use
Woodlot - mature

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings): Spawning & Nursery potential
Migratory Obstructions (seasonal, permanent): Low/no flow
Note any fish observations: None observed

Waterbody Notes
Natural Watercourse  V  Trapezoidal Channel /  Grassed Swale /  Buried Tile
Surficial Drainage (i.e. furrows) / Dugout Pond / Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.
Naturally sinuous channel with well defined valley.
Flow observed (≤ 165)

Field Notes Authored by: J. CHANDLER  Field Notes QA/QC by: NR
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: R117031 1-4 78
Watercourse Name: Niagara Wind
Photos: Y
Date: 11-17-16
Weather conditions in previous 24 hrs: Not None
GPS Coordinates (Zone): E 625060 N 170507 Datum: NAD 83
Descriptive Location: Vaughan Rd 4000m west of Mashup Rd

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (µS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken __________

Watercourse Dimensions & Morphology
Mean Watercourse Width __________ (m) Maximum Pool Depth __________ (cm)
Mean Bankfull Width __________ (m) Mean Water Depth __________ (cm)
% Riffle __________ % Pool __________ % Run __________ % Flat __________
Evidence of eroding banks, Comments on bank stability __________

Substrate (% cover)
Bedrock __________ Cobble __________ Sand __________ Silt __________ Muck __________
Boulder __________ Gravel __________ Clay __________ Marl __________ Detritus __________

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other __________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) __________

Adjacent Land Use __________

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) __________

Migratory Obstructions (seasonal, permanent) __________

Note any fish observations __________

Waterbody Notes
Natural Watercourse __________ Trapezoidal Channel __________ Grassed Swale __________ Buried Tile __________
Surficial Drainage (i.e. furrows) __________ Dugout Pond __________ Dominated by Aquatic Veg __________ Dry __________

Other Habitat Notes, Incidental Wildlife Observations, etc.
Surficial drainage through soy field __________

Field Notes Authored by: KE
Field Notes QA/QCed by: JG

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<table>
<thead>
<tr>
<th>Field Notes OA/OC of the Waterbody</th>
<th>Other Habitat Notes, Incidental Wildlife Observations, etc.</th>
<th>Waterbody Notes</th>
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<tbody>
<tr>
<td>Note any fish observations</td>
<td>Note any fish observations</td>
<td>Trapezoidal Channel</td>
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<tr>
<td>Natural Watercourse</td>
<td>Natural Watercourse</td>
<td>Dugout Pond</td>
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<td>Surfling Drainage (i.e., furrows)</td>
<td>Surfling Drainage (i.e., furrows)</td>
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<td>Migratory Obstructions (seasonal, permanent)</td>
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<td>Riparian Zone</td>
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<td>Aquatic Zone</td>
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**Fish Habitat Potential**

<table>
<thead>
<tr>
<th>Critical Habitat (spawning or nursery areas, groundwater upwellings)</th>
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<tr>
<td>In-water Cover</td>
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<td>Woody Debris</td>
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<td>Overhanging Vegetation</td>
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<td>Above Waterline</td>
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<td>Evidence of Erosion Banks</td>
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<td>Comments on bank-stability</td>
<td>Comments on bank-stability</td>
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**Watercourse Dimensions & Morphology**

<table>
<thead>
<tr>
<th>Mean Watercourse Width</th>
<th>Mean Bankfull Width</th>
<th>% Pool</th>
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<tr>
<td>3.5</td>
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<td>100</td>
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**Watercourse Profiles**

<table>
<thead>
<tr>
<th>Maximum Pool Depth</th>
<th>% Run</th>
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<td>1.2</td>
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**Water Quality**

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>pPH</th>
<th>Conductivity (uS/cm)</th>
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<tr>
<td>5.0</td>
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**Weather Conditions in Previous 24 Hours**

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<tr>
<th>E</th>
<th>GPS Coordinates (Zone)</th>
<th>Descriptive Location</th>
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**Field Staff**

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<thead>
<tr>
<th>Date</th>
<th>Field Staff</th>
<th>Project Name</th>
<th>Watercourse Name</th>
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<tr>
<td>1/09/2012</td>
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<td>Watercourse Name</td>
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**Station #: R117031**
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: RL11031-10  Project Name: Niagara Wind
Watercourse Name:  Project #: 160950269
Photos:  Field Staff: KE TIK
Date: June 29 2019  Time: 5:20 PM
Weather conditions in previous 24 hrs:
GPS Coordinates (Zone): 171 E 625024 N 4753209 Datum
Descriptive Location: Vaughan 600 m west of hrslip

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KE  Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: R117031-11  Project Name: Niagara Wind
Watercourse Name:  Project #: 160956269
Photos:  Field Staff: KE + JK.
Date:  Time: 5:30 PM
Weather conditions in previous 24 hrs:  
GPS Coordinates (Zone): E 685024 N 4752309 Datum
Descriptive Location: Vaughan Rd 500m west of Beasley Rd

Water Quality
Dissolved Oxygen (mg/L): 12.48  pH: 8.10  Conductivity (µS/cm): 101
Water Temperature (°C): 25.7  Air Temperature (°C): 28
Time in situ measurements taken: 5:30 PM

Watercourse Dimensions & Morphology
Mean Watercourse Width: 0.5 (m)  Maximum Pool Depth: 10 cm
Mean Bankfull Width: 0.5 (m)  Mean Water Depth: 5 cm
% Rifle: 100  % Pool: 0  % Run: 0  % Flat: 0
Evidence of eroding banks, Comments on bank stability: Slightly eroded, but

Substrate (% cover)
Bedrock: 40  Cobble: 40  Sand: 10  Silt: Muck: 10
Boulder: 10  Gravel: 0  Clay: 10  Mud: 0
Detritus: 0

In-water Cover

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 100%

Adjacent Land Use
Ag - crop

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse:  Trapezoidal Channel:  Grassed Swale:  Buried Tile:
Surficial Drainage (i.e. furrows):  Dugout Pond:  Dominated by Aquatic Veg:  Dry:

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: KE  Field Notes QA/QCed by: JMK

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R117031-12
Watercourse Name
Photos
Date June 14, 2013
Weather conditions in previous 24 hrs Sunny + Hot
GPS Coordinates (Zone) E 252175 N 4765216 Datum
Descriptive Location Vangran Rd 5.5km west of Heaslip Rd

Water Quality
Dissolved Oxygen (mg/L) 1.9
pH 8.4
Conductivity (μS/cm) 850
Water Temperature (°C)
Air Temperature (°C) 850
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) 1.5
Mean Bankfull Width (m) 1.5
% Riffle 50
% Pool 50
% Run 0
% Flat 0
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock
Cobble 40
Sand
Boulder
Gravel 100
Clay
Silt
Muck
Marl
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
150%

Adjacent Land Use
Ag + rural Residential

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse
Surficial Drainage (i.e. furrows)
Trapezoidal Channel
Dugout Pond
Grassed Swale
Buried Tile
Dominated by Aquatic Veg
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
- Seasonal wetland
- Minimal channel definition (ill-defined)

Field Notes Authorized by
K. E.
Field Notes QA/QCed by
J. H.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: A11T032  Project Name: Naviga Wind
Watercourse Name: Unknown  Project #: 160950269
Photos: 8-23  Field Staff: KC, MF
Date: April 14, 2019  Time: 9:30 am
Weather conditions in previous 24 hrs: Cloudy, 10°C on Apr 3rd
GPS Coordinates (Zone): 17T E 0624862  N 4764452  Datum: NAD83
Descriptive Location: ~800m North of Eleba Rd ~1.9km NE of Culver Rd

Water Quality
Dissolved Oxygen (mg/L): 13.51  pH: 9.36  Conductivity (µS/cm): 1023
Water Temperature (°C): 10.5°C  Air Temperature (°C): 10°C
Time in situ measurements taken: 9:35 am

Watercourse Dimensions & Morphology
Mean Watercourse Width: 2.0 (m)  Maximum Pool Depth: 20 (cm)
Mean Bankfull Width: 3.0 (m)  Mean Water Depth: 15 (cm)
% Riffle: 30  % Pool: 30  % Run: 70  % Flat
Evidence of eroding banks, Comments on bank stability: Exposed soil, undercut, minor slumping

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Mud  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation: Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):
5%, mainly undercut, riparian grasses
Adjacent Land Use:
Agriculture

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings):
Nursery, nursery
Migratory Obstructions (seasonal, permanent):
None
Note any fish observations: None

Waterbody Notes
Natural Watercourse:  ✓  Trapezoidal Channel:  Grassed Swale:  Buried Tile:
Surficial Drainage (i.e. furrows):  Dugout Pond:  Dominated by Aquatic Veg:  ✓  Dry:

Other Habitat Notes, Incidental Wildlife Observations, etc.
Many bird species

Field Notes Authored by: MF  Field Notes QA/QCed by: MV
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #**: R11T033  
**Watercourse Name**: 33-1  
**Photos**: D8267-61, 8862dol163,8863-69  
**Date**: June 7, 2012  
**Weather conditions in previous 24 hrs**: Light thunder showers and sunny  
**GPS Coordinates (Zone)**: 171 E 626876 N 4765898  
**Datum**:  

**Water Quality**  
Dissolved Oxygen (mg/L) **7.41**  
**pH**: 8.55  
**Conductivity (µS/cm)**: 2258  
**Water Temperature (°C)**: 19.45  
**Air Temperature (°C)**: 20  
**Time in situ measurements taken**: 7:00 PM

**Watercourse Dimensions & Morphology**  
- **Mean Watercourse Width**: 1.5 (m)  
- **Maximum Pool Depth**: 15 (cm)  
- **Mean Bankfull Width**: 4 (m)  
- **Mean Water Depth**: 3.4 (cm)  
- **% Ripple**: 0  
- **% Pool**: 70  
- **% Run**: 30  
- **% Flat**: 0  

**Evidence of eroding banks, Comments on bank stability**: Minor banks erosive

**Substrate (% cover)**  
- **Bedrock**: 1  
- **Boulder**: 5  
- **Cobble**: 4  
- **Gravel**: 20  
- **Sand**: 60  
- **Silt**: /  
- **Muck**: /  
- **Muck**: /  

**In-water Cover**  
- **Cover Types**: Intact vegetation  
- **Undercut Banks**: Woody Debris  
- **Deep Pool**: Boulder  
- **Aquatic Veg**: Other minor  

**Riparian Zone**  
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**: 80% Grasses, minor tree - early  

**Adjacent Land Use**: Plowed agricultural field w crops planted

**Fish Habitat Potential**  
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**:  
- **Migratory Obstructions (seasonal, permanent)**:  
- **Flow/no flow**:  

**Note any fish observations**: None

**Waterbody Notes**  
- **Natural Watercourse**: V  
- **Trapezoidal Channel**: V  
- **Grassed Swale**:  
- **Buried Tile**:  
- **Surficial Drainage (i.e. furrows)**:  
- **Dugout Pond**:  
- ** Dominated by Aquatic Veg**:  

**Other Habitat Notes, Incidental Wildlife Observations, etc.**  
- **Green Frog**: along its down stream section

---

Field Notes Authored by T. Chandler  
Field Notes QA/QCed by "NP"
Property Line

Watercourse has been realigned along Gee Rd.

No channel (old)

Farm House
# WIND FARM WATERBODY RAPID ASSESSMENT FORM

**Station #**: R1170 34  
**Project Name**: Niagara Wind  
**Photos**:  
**Date**: June 11  
**Weather conditions in previous 24 hrs**: Sunny, chet  
**GPS Coordinates (Zone)**: E 126444 N 4763909  
**Descriptive Location**: Echka Rd, approx. 500m west of  

### Water Quality
- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (μS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)**  
- **Time in situ measurements taken**

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width** (m)  
- **Maximum Pool Depth** (cm)  
- **Mean Bankfull Width** (m)  
- **Mean Water Depth** (cm)  
- **% Riffle**  
- **% Pool**  
- **% Run**  
- **% Flat**

### Substrate (% cover)
- **Bedrock**  
- **Cobble**  
- **Sand**  
- **Silt**  
- **Muck**  
- **Boulder**  
- **Gravel**  
- **Clay**  
- **Marl**  
- **Detritus**

### In-water Cover
- **Cover Types Present (circle)**:  
  - Undercut Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg  
- **Overhanging Vegetation**: Woody Debris  
- **Boulder**  
- **Other**

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**

### Adjacent Land Use

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**

### Migratory Obstructions (seasonal, permanent)

### Note any fish observations

### Waterbody Notes
- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Buried Tile**
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Dominated by Aquatic Veg**  
- **Dry**

### Other Habitat Notes, Incidental Wildlife Observations, etc.

---

Field Notes Authored by:  
Field Notes QA/QCed by:  

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T035H
Watercourse Name Sebago
Photos 1269
Date June 11, 2014
Weather conditions in previous 24 hrs Sunny & hot.
GPS Coordinates (Zone) 171 E 6241169 N, 4764532 Datum
Descriptive Location Bee Rd South of Vaughan.

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KJ
Field Notes QA/QCed by JK
Station # R11035H Project SE13  
Watercourse Name  
Field Staff KE + JK  
Date June 11, 2012  
Weather conditions in previous 24 hrs hot + sunny  
Weather Conditions (Zone) E  
GPS Coordinates (Zone) N 4764568 Datum  
Descriptive Location See Rd South of Vaughn  

Water Quality  
Dissolved Oxygen (mg/L) 22.83  
pH 7.61  
Conductivity (μS/cm) 701  
Water Temperature (°C) 18.87  
Air Temperature (°C) 25°C  
Time in situ measurements taken 2:20 pm  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 8 m (m)  
Mean Bankfull Width 5 m (m)  
Maximum Pool Depth 15 (cm)  
Mean Water Depth 5 (cm)  
% Ripple 100  
% Pool 0  
% Run 0  
% Flat 0  
Evidence of eroding banks, Comments on bank stability mostly stable + vegetated w KG along edge  

Substrate (% cover)  
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel 100  
Clay  
Marl  
Detritus  

In-water Cover  
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg  
Overhanging Vegetation Woody Debris Boulder Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 0%  

Adjacent Land Use  
Cano Field  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  

Migratory Obstructions (seasonal, permanent) Low Flow or Seasonally Dry  

Note any fish observations  

Waterbody Notes  
Natural Watercourse  
Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Grassed Swale  
Buried Tile  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  
channel w tile drainage + params  
Stadding water dominated by algae  

Field Notes Authored by KE  
Field Notes QA/QCed by JF  

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 2U1T036-1
Watercourse Name unknown-Beaver Creek
Photos 9.50.14
Date June 13/14
Weather conditions in previous 24 hrs Hot & humid
GPS Coordinates (Zone) 1T E 0621694 N 4763476 Datum NAD 83
Descriptive Location South of Tantec property

Water Quality
- Dissolved Oxygen (mg/L) 6.01
- pH 8.19
- Conductivity (μS/cm) 384
- Water Temperature (°C) 17.70
- Air Temperature (°C) 21.00

Watercourse Dimensions & Morphology
- Mean Watercourse Width 5 (m)
- Mean Bankfull Width 7 (m)
- Maximum Pool Depth 0.60 (cm)
- Mean Water Depth 0.40 (cm)

% Riffle 100 % Pool
75 % Run
Evidence of eroding banks, Comments on bank stability vegetated w/ grasses

Substrate (% cover)
- Bedrock
- Cobble
- Sand 40
- Silt 50
- Muck
- Boulder
- Gravel 10
- Clay
- Marl
- Detritus

In-water Cover
- Cover Types Present (circle): undercut banks
- Deep Pool
- Watercress
- Aquatic Veg
- Woody Debris
- Boulder
- Other

Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
- 10% trees & grasses (DIS) mature (VIS) early

Adjacent Land Use
- farmland

Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings)
- Spawning nursery. foraging

Migratory Obstructions (seasonal, permanent)
- permanent

Note any fish observations

Waterbody Notes
- Natural Watercourse Y
- Trapezoidal Channel
- Grassed Swale
- Buried Tile
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Dominated by Aquatic Veg
- Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton
Field Notes QA/QCed by ND
Station # BU038-1  Project Name Niagara Wind
Watercourse Name unknown  Project # 160950269
Photos  Field Staff K. Clayton, M. Failla
Date June 13/18  Time 11:30
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17 T 0620900 N 4760000 Datum NAD 83
Descriptive Location Nw of 9th St

Water Quality
Dissolved Oxygen (mg/L)  - no water  pH  Conductivity (µS/cm) 
Water Temperature (°C)  
Air Temperature (°C) 20°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 100 (m) Maximum Pool Depth 100 (cm)
Mean Bankfull Width 30 (m) Mean Water Depth 30 (cm)
% Riffle 20  % Pool 20  % Run 20  % Flat 20
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 10  Cobble 10  Sand 50  Silt 50  Muck 10
Boulder 5  Gravel 5  Clay 10  Marl 10  Detritus 30

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations  - no water

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QCed by M.F.
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** R17038-2  
**Watercourse Name** Unknown  
**Photos**  
**Date** June 13, 12  
**Weather conditions in previous 24 hrs** Hot & humid  
**GPS Coordinates (Zone)** E 063150 N 476350 Datum NAD 83  
**Descriptive Location** Town South of Silver Street  

**Water Quality**  
Dissolved Oxygen (mg/L)  
**pH**  
Conductivity (μS/cm)  
Water Temperature (°C)  
Air Temperature (°C)  
Time in situ measurements taken  

**Watercourse Dimensions & Morphology**  
Mean Watercourse Width  
Mean Bankfull Width  
Maximum Pool Depth  
Mean Water Depth  
% Riffle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability  

**Substrate (% cover)**  
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  

**In-water Cover**  
Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation  
Woody Debris  
Boulder  
Other  

**Riparian Zone**  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

**Adjacent Land Use**  
Soybeans  

**Fish Habitat Potential**  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  

**Migratory Obstructions (seasonal, permanent)**  

**Note any fish observations**  

**Waterbody Notes**  
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Dominated by Aquatic Veg  
Dry  

**Other Habitat Notes, Incidental Wildlife Observations, etc.**  
Coyote  

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by N.K.
See map on R11T038-1
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R117039
Watercourse Name Unknown
Photos 708-711
Date June 11/12
Weather conditions in previous 24 hrs

GPS Coordinates (Zone) 17T E
Descriptive Location South of Vaughn Road, West of Pat Davidson Road.

Water Quality
Dissolved Oxygen (mg/L) __________ pH _________ Conductivity (μS/cm) __________
Water Temperature (°C) ___________ Air Temperature (°C) ___________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width _______ (m) Maximum Pool Depth _______ (cm)
Mean Bankfull Width _______ (m) Mean Water Depth _______ (cm)
% Rifle _______ % Pool _______ % Run _______ % Flat _______
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock _______ Cobble _______ Sand _______ Silt _______ Muck _______
Boulder _______ Gravel _______ Clay _______ Marl _______ Detritus _______

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other __________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse _______ Trapezoidal Channel _______ Grassed Swale _______ Buried Tile _______
Surficial Drainage (i.e. furrows) _______ Dugout Pond _______ Dominated by Aquatic Veg _______ Dry _______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clanton
Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T041-1
Watercourse Name
Photos
Date June 15 2012
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) N 4256992 E 621127
Descriptive Location + 700 m east into field, approx 100 m SW of tracks

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (μS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken __________

Watercourse Dimensions & Morphology
Mean Watercourse Width __________ (m) Maximum Pool Depth __________ (cm)
Mean Bankfull Width __________ (m) Mean Water Depth __________ (cm)
% Riffle __________ % Pool __________ % Run __________ % Flat __________
Evidence of eroding banks, Comments on bank stability __________

Substrate (% cover)
- Bedrock
- Cobble
- Sand
- Silt
- Muck
- Boulder
- Gravel
- Clay
- Marl
- Detritus

In-water Cover
Cover Types Present (circle):
- Undercut Banks
- Deep Pool
- Watercress
- Aquatic Veg
Overhanging Vegetation
- Woody Debris
- Boulder
- Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations __________

Waterbody Notes
Natural Watercourse
Surficial Drainage (i.e. furrows)

Other Habitat Notes, Incidental Wildlife Observations, etc.

survival drain through corn field

Field Notes Authored by KE
Field Notes QA/QCed by JH

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

- **Station #:** R11023
- **Watercourse Name:** Minneburst
- **Photos:** 10-68
- **Date:** Apr 14/12
- **Weather conditions in previous 24 hrs:** 10°C, cloudy
- **GPS Coordinates (Zone):** 17T E 0619971
- **Datum:** Wad83
- **Project Name:** Niagara Wind
- **Project #:** 11009-61023
- **Field Staff:** K. Clayton, A. Faiella
- **Time:** 15:16

### Water Quality
- **Dissolved Oxygen (mg/L):** 10.4
- **pH:** 8.84
- **Conductivity (µS/cm):** 758 µS/cm
- **Water Temperature (°C):** 11.63
- **Air Temperature (°C):** 12.0

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width:** 0.4 (m)
- **Mean Bankfull Width:** 0.5 (m)
- **Standing Water:**
- **Maximum Pool Depth:** 0.10 (cm)
- **Mean Water Depth:** 0.10 (cm)
- **% Riffle:** 100
- **% Pool:** 0
- **% Run:** 0
- **% Flat:** 0

### Substrate (% cover)
- **Bedrock:** 0
- **Cobble:** 0
- **Sand:** 60
- **Gravel:** 20
- **Silt:** 12
- **Muck:** 0
- **Clay:** 0
- **Marl:** 0
- **Detritus:** 0

### In-water Cover
- **Cover Types Present (circle):**
  - Woody Debris
  - Boulder
  - Deep Pool
  - Watercress
  - Aquatic Veg

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):** 50% grasses, early

### Adjacent Land Use
- **Farmland**

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings):**
  - Spawning
  - Nursery
  - Fraying

### Migratory Obstructions (seasonal, permanent)
- **Intermittent**

### Note any fish observations
- Small fish - cyprinidae

### Waterbody Notes
- **Natural Watercourse**
- **Trapezoidal Channel**
- **Grassed Swale**
- **Surficial Drainage (i.e. furrows)**
- **Dugout Pond**
- **Buried Tile**
- **Dominated by Aquatic Veg**
- **Dry**

### Other Habitat Notes, Incidental Wildlife Observations, etc.
- Frogs, small cyprinidae

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Field Notes Authored by: K. Clayton
Field Notes QA/QCed by: M. Faiella
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RIIT042-1  Project Name Niagara Wind
Watercourse Name  Project # 16095P0267
Photos 90°-94°  Field Staff K. Clayton M. Fairella
Date Apr 5-12  Time 9:00 am
Weather conditions in previous 24 hrs Sunny
GPS Coordinates (Zone) 17° 06'19947' N 43°53'627' Datum Ned 83
Descriptive Location 1.2 km south of Hwy 3 1.4 km west of Hutchinson Road

Water Quality
- no water - ag. swale
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use  - ag. land

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton  Field Notes QA/QC'd by M. Fairella
Wind Farm Waterbody Rapid Assessment Form

Station #: RI7042-2
Watercourse Name: unknown
Photos: 95-99
Date: Apr 5/12
Weather conditions in previous 24 hrs: 5°C
GPS Coordinates (Zone): 115°06'19.85" W, 44°53'41.62" N, Datum NAD 83
Descriptive Location: 3 km South of Hwy 3, 1.4 km West of Hutchison Rd

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### Water Quality

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>8.5</td>
</tr>
<tr>
<td>pH</td>
<td>8.61</td>
</tr>
<tr>
<td>Conductivity (μS/cm)</td>
<td>7.1</td>
</tr>
<tr>
<td>Water Temperature (°C)</td>
<td>5.79</td>
</tr>
<tr>
<td>Air Temperature (°C)</td>
<td>3</td>
</tr>
<tr>
<td>Time in situ measurements taken</td>
<td>9:20 am</td>
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</table>

### Watercourse Dimensions & Morphology

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Watercourse Width (m)</td>
<td>2</td>
</tr>
<tr>
<td>Mean Bankfull Width (m)</td>
<td>6</td>
</tr>
<tr>
<td>Maximum Pool Depth</td>
<td>0.40</td>
</tr>
<tr>
<td>Mean Water Depth (cm)</td>
<td>0.68</td>
</tr>
<tr>
<td>Evidence of eroding banks, Comments on bank stability</td>
<td>100% Run, 0% Flat, stable banks - lots of riparian vegetation</td>
</tr>
</tbody>
</table>

### Substrate (% cover)

- Bedrock
- Cobble
- Sand
- Boulder
- Gravel
- Clay
- Silt
- Muck
- Detritus

### In-water Cover

- Undercut Banks
- Woody Debris
- Boulder
- Watercress
- Aquatic Veg

### Riparian Zone

- Woody Debris
- Boulder
- Other

### Adjacent Land Use

- Farmland
- 20% grasses, early poplars

### Fish Habitat Potential

- Spawning, nursery, foraging
- Spawning, nursery, foraging

### Migratory Obstructions (seasonal, permanent)

- Permanent

### Note any fish observations

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### Waterbody Notes

- Natural Watercourse
- Trapezoidal Channel
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Grassed Swale
- Buried Tile
- Dominated by Aquatic Veg

### Other Habitat Notes, Incidental Wildlife Observations, etc.

- Red-winged blackbirds

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Field Notes Authored by: K. Clayton
Field Notes QA/QCed by: M. Farnella

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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Stantec**

- **Station #**: R11T042-3 & 042-4
- **Project Name**: Niagara Wind
- **Watercourse Name**: winnig
- **Project #**: 1109550269
- **Photos**: 34-41
- **Field Staff**: K. Claytn, M. Faella
- **Date**: Apr 19-13
- **Time**: 9:35
- **Weather conditions in previous 24 hrs**: light rain, air c. 10°C
- **GPS Coordinates (Zone)**: E 0619984 N 4732474
- **Datum**: NAD83
- **Descriptive Location**: 0.2mi south of Hwy 3, 1km East of Crawford Rd.

### Water Quality
- **Dissolved Oxygen (mg/L)**
- **pH**
- **Conductivity (μS/cm)**
- **Water Temperature (°C)**
- **Air Temperature (°C)**

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width**: 0.5m (m)
- **Maximum Pool Depth**: 0.30 (cm)
- **Mean Bankfull Width**: 1.5m (m)
- **Mean Water Depth**: 0.25 (cm)

### Substrate (% cover)
- **Bedrock**
- **Cobble**
- **Sand**
- **Silt**
- **Muck**
- **Boulder**
- **Gravel**
- **Clay**
- **Marl**
- **Detritus**

### In-water Cover
- **Cover Types Present (circle)**: Undercut Banks
- **Deep Pool**
- **Watercress**
- **Aquatic Veg**
- **Overhanging Vegetation**: Woody Debris
- **Boulder**
- **Other**

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**

### Adjacent Land Use
- **ag field**

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**

### Migratory Obstructions (seasonal, permanent)
- **seasonal**

### Note any fish observations

### Waterbody Notes
- **Natural Watercourse**
- **Trapezoidal Channel**
- **Grassed Swale**
- **Buried Tile**
- **Surficial Drainage (i.e. furrows)**
- **Dugout Pond**
- **Dominated by Aquatic Veg**
- **Dry**

### Other Habitat Notes, Incidental Wildlife Observations, etc.

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**Field Notes Authored by**: K. Claytn

**Field Notes QA/QCed by**: M. Faella
Station #: B11044  Project Name: Niagara Wind
Watercourse Name: Unknown  Project #: 10098582-09
Photos: 8-10  Field Staff: GC & ME
Date: Apr 19/12  Time: 12:40 PM
Weather conditions in previous 24 hrs: 12° C, overcast
GPS Coordinates (Zone): 17 T 0624474  Datum: NAD83
Descriptive Location: East of Bird Rd, 0.5 km South of Canal Bank Rd, 1 km

Water Quality
Dissolved Oxygen (mg/L) 7.92 mg/L  pH 8.96  Conductivity (μS/cm) 3000 μS/cm
Water Temperature (°C) 13.85 °C  Air Temperature (°C) 12° C
Time in situ measurements taken: 12:45

Watercourse Dimensions & Morphology
Mean Watercourse Width: 3.00 (m)  Maximum Pool Depth: 60 (cm)
Mean Bankfull Width: 6.50 (m)  Mean Water Depth: 50 (cm)
% Riffle: 100  % Pool: 0  % Run: 0  % Flat: 0
Evidence of eroding banks, Comments on bank stability: Fairly stable banks

Substrate (% cover)
- Bedrock: 0
- Cobble: 0
- Sand: 30
- Silt: 30
- Muck: 0
- Boulder: 20
- Gravel: 20
- Clay: 0
- Marl: 20
- Detritus: 0

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation: Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 80%
Adjacent Land Use: Farmland & bush lot

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings): Spawning, nursery, foraging
Migratory Obstructions (seasonal, permanent):
Note any fish observations: Huge school of shiners

Waterbody Notes
Natural Watercourse:  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows):  Dugout Pond  Dominated by Aquatic Veg:  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.: hundreds of shiners  Leopard frog.

Field Notes Authored by: KC  Field Notes QA/QCed by: ME
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 8117045-1
Watercourse Name Unknown
Photos (49-40
Date Apr 17/12
Weather conditions in previous 24 hrs 18°C aftercast
GPS Coordinates (Zone) 17T E 06229942 N 4748406 Datum NAD83
Descriptive Location Burt Rd

Water Quality
Dissolved Oxygen (mg/L) 9.15
pH 9.09
Conductivity (μS/cm) 220
Water Temperature (°C) 17.06
Air Temperature (°C) 12°C
Time in situ measurements taken 11:45

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 (m)
Mean Bankfull Width 6.0 (m)
Maximum Pool Depth 0.40 (cm)
Mean Water Depth 0.30 (cm)
% Riffle 100 % Pool
Evidence of eroding banks, Comments on bank stability Stable by vegetation

Substrate (% cover)
Bedrock Cobble Sand 30 Silt 50 Muck
Boulder Gravel Clay Marl 20 Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50% terrestrial shrubs, early

Adjacent Land Use
Farm land - ag. field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) spawning, nursery
Migratory Obstructions (seasonal, permanent)
Note any fish observations permanent

Waterbody Notes
Natural Watercourse
Surficial Drainage (i.e. furrows)
Other Habitat Notes, Incidental Wildlife Observations, etc.
beard chorus frogs

Field Notes Authored by K. Clayton
Field Notes QA/QCed by M. Faella
Station # R11045-2  Project Name Winnamurra Wind
Watercourse Name unknown  Project # 1109950249
Photos 7-12  Field Staff KC & MF
Date Apr 19/12  Time 11:56
Weather conditions in previous 24 hrs 120C, overcast
GPS Coordinates (Zone) 117°E 043029'N 174°8532'Datum 1983
Descriptive Location South of Canal Bank Rd, southeast of Bird Road.

Water Quality
- Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)
- Water Temperature (°C)  Air Temperature (°C)

Time in situ measurements taken

Watercourse Dimensions & Morphology
- Mean Watercourse Width 400 (m)  Maximum Pool Depth 30 (cm)
- Mean Bankfull Width 400 (m)  Mean Water Depth 15 (cm)

% Riffle % Pool 100 % Run % Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
- Bedrock  Cobble  Sand 20  Silt 60  Muck
- Boulder  Gravel  Clay  Marl 20  Detritus

In-water Cover
- Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress
- Overhanging Vegetation Woody Debris  Boulder  Other

Aquatic Veg
- Aquatic Veg
- Aquatic Veg
- Aquatic Veg
- Aquatic Veg
- Aquatic Veg

Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
- farm land

Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings)
- Spawning nursery

Migratory Obstructions (seasonal, permanent)
- Seasonal

Note any fish observations

Waterbody Notes
- Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
- Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayden  Field Notes QA/QCed by M. Faiella

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REA
RIIT045 - 2
Standing water
Can't drive through it
Dominated by aquatic veg.

Bushlot

REA (Previously mapped)
bulldozed section

Railbed

Canal Bank Rd
Stantec

WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RH45-3  Project Name Niagara Wind
Watercourse Name  Project # 160950 269
Photos 71-32  Field Staff  KC & MF
Date Apr 19/13  Time 12:08
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 174 E 062 3107  N 4749168 Datum NAD83
Descriptive Location 400m South of Canal Bank Rd

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 (m)  Maximum Pool Depth 20 (cm)
Mean Bankfull Width 2.0 (m)  Mean Water Depth 15 (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
25%

Adjacent Land Use
ag. field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Frogs

Field Notes Authored by K. Dayton  Field Notes QA/QCed by M. Faiella
Station # \( \text{RI7049-1} \)  
Watercourse Name \( \text{Unknown} \)  
Photos \( \text{rra.jpg} \)  
Date June 16, 2016  
Weather conditions in previous 24 hrs Rain/hot/humid  
GPS Coordinates (Zone) 17T E 062 6874 N 474 8779 Datum NAD83  
Descriptive Location 0.5 km north of Lakeshore Road, ~300 m north of old railway bed  

Water Quality  
Dissolved Oxygen (mg/L) \( \text{---} \)  
\( \text{pH} \) \( \text{---} \)  
Conductivity (\( \mu \text{S/cm} \)) \( \text{---} \)  
Water Temperature (°C) \( \text{---} \)  
Air Temperature (°C) 27°C  
Time in situ measurements taken \( \text{---} \)  

Watercourse Dimensions & Morphology  
Mean Watercourse Width \( b \) (m) \( \text{---} \)  
Maximum Pool Depth \( h \) (cm) \( \text{---} \)  
Mean Bankfull Width \( b \) (m) \( \text{---} \)  
Mean Water Depth \( d \) (cm) \( \text{---} \)  
\% Riffle \( \text{---} \)  
\% Pool \( \text{---} \)  
\% Run \( \text{---} \)  
\% Flat \( \text{---} \)  
Evidence of eroding banks, Comments on bank stability \( \text{---} \)  

Substrate (% cover)  
Bedrock \( \text{---} \)  
Cobble \( \text{---} \)  
Sand \( \text{---} \)  
Silt \( \text{---} \)  
Clay \( \text{---} \)  
Muck \( \text{---} \)  
Boulder \( \text{---} \)  
Gravel \( \text{---} \)  
Marl \( \text{---} \)  
Detritus \( \text{---} \)  

In-water Cover  
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg  
Overhanging Vegetation Woody Debris Boulder Other \( \text{---} \) \( \text{---} \) \( \text{---} \)  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) \( \text{---} \)  
Adjacent Land Use  
Corn field  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings) \( \text{---} \)  
Migratory Obstructions (seasonal, permanent) \( \text{---} \)  
Note any fish observations \( \text{---} \)  

Waterbody Notes  
Natural Watercourse \( \checkmark \)  
Trapezoidal Channel \( \checkmark \)  
Grassed Swale  
Surficial Drainage (i.e. furrows) Dugout Pond \( \text{---} \)  
Dominated by Aquatic Veg  
Buried Tile  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by K. Clayton  
Field Notes QA/QCed by WTR
would be great habitat if there was water (i.e. in spring), lots of woody debris, shaded channel.

- minor road
- old rail bed
- corn field
- mature riparian area
- ag field
- Veldhuizen property
- path
- Lake Shore Road
- old road
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # AI05Z-1  Project Name NIAGARA WIND
Watercourse Name S2-1  Project # 160950269
Photos 8885  Field Staff T. CHANDLER  M. ELLAN
Date June 8, 2012  Time 2:00 PM
Weather conditions in previous 24 hrs Sunny w/ cloudy periods
GPS Coordinates (Zone) E 614259  N 4766482  Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bédrick Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations none

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # B11052 Project Name 11AGARA WIND
Watercourse Name 57-2 Project # 166950869
Photos 8886-88 Field Staff M. MELLAH
Date JUNE 8, 2017 Time 2:05
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 171 E 614161 N 4756482 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) N/A pH N/A Conductivity (µS/cm) N/A
Water Temperature (°C) N/A Air Temperature (°C) 25
Time in situ measurements taken N/A

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) LOW AREA IN PLOUGHED FIELD
Mean Bankfull Width (m) 50% riffle 50% pool 50% run 50% flat
Maximum Pool Depth (cm) 
Mean Water Depth (cm) 
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Boulder Cobble Gravel Sand Clay Silt Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Agricultural Field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Flow

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by M. MELLAH Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R17058  Project Name NIAGARA WIND
Watercourse Name 52-3  Project # 160950269
Photos 8589  Field Staff T CHANDLER M FILLAH
Date JUNE 8 2012  Time 2:25
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) W 6 4366 N 4765321 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Upon Present (circle): Undershot Banks Deep Pool Watergrass Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
PLANTED ARI FIELD

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by T CHANDLER  Field Notes QA/QCed by NB
Station #: R11T052
Watercourse Name: 52-4
Photos: 8890
Date: JUNE 3, 2017
Weather conditions in previous 24 hrs:
GPS Coordinates (Zone): 171 E 614473 N 4766319 Datum
Descriptive Location:

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In Water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by T. CHANDLER
Field Notes QA/QCed by M.E.
Station #: RH7D 52  
Watercourse Name: 52-S  
Photos: 8891-92  
Date: JUNE 8, 2017  
Weather conditions in previous 24 hrs: Cloudy periods, Sun  
GPS Coordinates (Zone): N 476,6060  
Descriptive Location:  

Water Quality
Dissolved Oxygen (mg/L)  
pH  
Conductivity (μS/cm)  
Water Temperature (°C)  
Air Temperature (°C)  

Time in situ measurements taken  

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  
Maximum Pool Depth (cm)  
Mean Bankfull Width (m)  
Mean Water Depth (cm)  
% Riffle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  

In-water Cover
Cover Type: Primary (simple):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation  
Woody Debris  
Boulder  
Other  

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

Adjacent Land Use
PLOUGHED  AGRICULTURAL  FIELD  

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)  

Migratory Obstructions (seasonal, permanent)  

Note any fish observations  

Waterbody Notes
Natural Watercourse  
Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Grassed Swale  
Buried Tile  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by  
Field Notes QA/QCed by  
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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station #: R11052  
Watercourse Name: 52-6  
Photos: 3892 - 94  
Date: JUNE 8, 2012  
Weather conditions in previous 24 hrs: Sunny w/ cloudy periods  
GPS Coordinates (Zone): 17T E 614492 N 4766082  
Datum:  
Descriptive Location:  

**Water Quality**  
Dissolved Oxygen (mg/L)  
PH  
Conductivity (µS/cm)  
Water Temperature (°C)  
Air Temperature (°C) 25  
Time in situ measurements taken:  

**Watercourse Dimensions & Morphology**  
Mean Watercourse Width (m)  
Mean Bankfull Width (m)  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Riffle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability:  

**Substrate (% cover)**  
Bedrock  
Cobble  
Sand  
Silt  
Muck  
Boulder  
Gravel  
Clay  
Marl  
Detritus  
Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation  
Woody Debris  
Boulder  
Other:  

**Riparian Zone**  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):  
Adjacent Land Use: CROPLAND  

**Fish Habitat Potential**  
Critical Habitat (spawning or nursery areas, groundwater upwellings):  

**Migratory Obstructions (seasonal, permanent)**  
No Flow  

**Note any fish observations**:  

**Waterbody Notes**  
Natural Watercourse  
Trapezoidal Channel  
Grassed Swale  
Buried Tile  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Domained by Aquatic Veg  
Dry  

**Other Habitat Notes, Incidental Wildlife Observations, etc.**:  

Field Notes Authored by: T. CHANDLER  
Field Notes QA/QCed by: MB
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RUTOS4 Project Name Niagara Wind
Watercourse Name Unknown Project # 1609502369
Photos Field Staff K. Clayton M. Feiella
Date June 13/13 Time
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17T E N Datum NAD 83
Descriptive Location 100 m from Vaughn Road

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Boulder Gravel Clay Muck Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton Field Notes QA/QCed by MW
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11 T05S  Project Name Niagara Wind
Watercourse Name Unknown  Project # 1606930264
Photos 116-122  Field Staff K. Clayton, M. Fasta
Date Apr 5/12  Time 12:30 PM
Weather conditions in previous 24 hrs 12°C sunny
GPS Coordinates (Zone) 117º E 0642351 N 4706372 Datum NAD83
Descriptive Location 6600m north of Erie Road at km east

+ Regional Rd 27

Water Quality
Dissolved Oxygen (mg/L) 12.04  pH 8.75  Conductivity (μS/cm) 345
Water Temperature (°C) 6°C  Air Temperature (°C) 5°C
Time in situ measurements taken 12:31

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.60 (m)  Maximum Pool Depth 0.20 (cm)
Mean Bankfull Width 2.00 (m)  Mean Water Depth 0.15 (cm)
% Riffle 100% Pool 0% Run 0% Flat
Evidence of eroding banks, Comments on bank stability
riparian vegetation

Substrate (% cover)
Bedrock 0% Cobble 0% Sand 40% Silt 0% Muck 0%
Boulder 0% Gravel 60% Clay 0% Marl 0% Detritus 0%

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50% Grasses, Early
Adjacent Land Use
farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
spawning, nursery, foraging

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Red-tailed hawks

Field Notes Authored by K.E.  Field Notes QA/QCed by M.F.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R1/7056H  Project Name NIAGARA WIND
Watercourse Name EGH-1  Project # 160950268
Photos 25-49  Field Staff J. Chandler M. Eliah
Date June 7, 2012  Time 5:30
Weather conditions in previous 24 hrs N/A
GPS Coordinates (Zone) 17T E 626373 N 4769267 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) N/A  pH N/A  Conductivity (µS/cm) N/A
Water Temperature (°C) N/A  Air Temperature (°C) 20
Time in situ measurements taken N/A

Watercourse Dimensions & Morphology
Low area w no definition
Mean Watercourse Width N/A (m)  Maximum Pool Depth N/A (cm)
Mean Bankfull Width N/A (m)  Mean Water Depth N/A (cm)
0% Riffle 0% Pool 0% Run 0% Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Dry Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover:
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone Scrub
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Agricultural Field - planted w/ crops

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
No flow
Note any fish observations No

Waterbody Notes
Natural Watercourse  Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
No Access to drainage feature except along Fifteen Road
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T057  Project Name Niagara Wind
Watercourse Name  Project # 110950269
Photos  Field Staff K.K
Date June 12, 2012  Time 3:45 PM
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) E 265540 N 426053 Datum
Descriptive Location B00R KD just south of Lcole Track

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KE  Field Notes QA/QCed by J. A. Reed

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T058H-1
Project Name Niagara Wind
Watercourse Name 
Photos See log
Date June 12, 2013
Weather conditions in previous 24 hrs Rainy
GPS Coordinates (Zone) E 628437 N 4767522 Datum NAD 83
Descriptive Location 300m south of field

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm) 
Water Temperature (°C) Air Temperature (°C) 
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.5 (m) Maximum Pool Depth (cm) Dry
Mean Bankfull Width (m) Mean Water Depth (cm) 
% Rifle % Pool % Run % Flat Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
10% Shrub, 5% Grass, 10%

Adjacent Land Use
Corn, Soy, Hay

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg

Other Habitat Notes, incidental Wildlife Observations, etc.
Shallow/dead channel filled with grass, juncus
-

Field Notes Authored by KE Field Notes QA/QCed by

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- shallow, narrow defined channel along back edge of field
- loose definition definition & ploughed through in adjacent field
- BOBOUNK observed in bay field
  ~ 10-30
Station #: B107059
Watercourse Name: S9-2
Photos: 2828-29
Date: June 9, 2012
Weather conditions in previous 24 hrs
GPS Coordinates (Zone): 19N E 629926 N 4767524 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability
Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle):
Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Author: TC Hand
Field Notes QA/QC: N/A
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #  R11059  Project Name  NIASACA WIND
Watercourse Name  59-3  Project #  160950269
Photos  8833  8830  Field Staff  M. Ellah
Date  June 7, 2012  Time  2:45
Weather conditions in previous 24 hrs  Rain
GPS Coordinates (Zone)  141  E  629280  N  476 7449  Datum
Descriptive Location

Water Quality
- Isolated pool at east end of culvert @ Rosedene Rd.
- Dissolved Oxygen (mg/L)  1.74
- pH  7.79
- Conductivity (µS/cm)  4380
- Water Temperature (°C)  21.66
- Air Temperature (°C)  27
- Time in situ measurements taken  2:45 PM

Watercourse Dimensions & Morphology
- Mean Watercourse Width  3.0 - 4.0 (m)
- Maximum Pool Depth  MIA (cm)
- Mean Bankfull Width  2.0 - 3.0 (m)
- Mean Water Depth  30 cm
- 0% Riffle  0% Pool  0% Run  0% Flat
- Evidence of eroding banks, Comments on bank stability  stable

Substrate (% cover)
- Bedrock
- Cobble
- Sand  100
- Silt
- Muck
- Boulder
- Gravel
- Clay
- Marl
- Detritus

In-water Cover
- Cover Types Present (circle):
  - Undercut Banks
  - Deep Pool
  - Watercress
  - Aquatic Veg
- Overhanging Vegetation
- Woody Debris
- Boulder
- Other

Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
  - 90% - 100%

Adjacent Land Use
- Pasture (300 ft), Rosedene Rd (to west)

Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
- Dry - Flow - Perched Culvert at Rosedene Rd. w/10cm

Note any fish observations  None

Waterbody Notes
- Intermittent waterbody along roadside ditch

Natural Watercourse  - Trapezoidal Channel  - Grassed Swale  - Buried Tile
Surficial Drainage (i.e. furrows)  - Dugout Pond  - Dominated by Aquatic Veg  - Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by  M. Ellah  Field Notes QA/QCed by  NP
**WIND FARM**

**WATERBODY RAPID ASSESSMENT FORM**

**Stantec**

<table>
<thead>
<tr>
<th>Station #</th>
<th>RIOT59</th>
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<tbody>
<tr>
<td>Watercourse Name</td>
<td>59-4</td>
</tr>
<tr>
<td>Photos</td>
<td>23, 34, 35, 36</td>
</tr>
<tr>
<td>Date</td>
<td>June 7, 2017</td>
</tr>
<tr>
<td>Weather conditions in previous 24 hrs.</td>
<td>Thunderstorms previous evening, then sunny</td>
</tr>
<tr>
<td>GPS Coordinates (Zone)</td>
<td>77° E 629274 N 4767432 Datum</td>
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<tr>
<td>Descriptive Location</td>
<td></td>
</tr>
</tbody>
</table>

**Water Quality**

| Dissolved Oxygen (mg/L) | 8.00 |
| pH | 8.17 |
| Conductivity (µS/cm) | 406.2 |
| Water Temperature (°C) | 27.15 |
| Air Temperature (°C) | |
| Time in situ measurements taken | 3:00 PM |

**Watercourse Dimensions & Morphology**

| Mean Watercourse Width (m) | 1.5 |
| Mean Bankfull Width (m) | 2.5 |
| Maximum Pool Depth (cm) | 20 |
| Mean Water Depth (cm) | 5 |
| % Riffle | 80 |
| % Pool | 20 |
| % Run | 0 |
| % Flat | 0 |

**Substrate (% cover)**

- Bedrock
- Cobble 10
- Sand 60
- Silt
- Muck
- Boulder
- Gravel 30
- Clay
- Marl
- Detritus

**In-water Cover**

| Cover Types Present (circle): | Undercut Banks | Deep Pool | Watercress |
|-------------------------------|----------------|-----------|
| Overhanging Vegetation | Woody Debris | Boulder | Aquatic Veg |

**Riparian Zone**

- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
  - 70% - trees, early

**Adjacent Land Use**

- Road to east, pasture, field, to west by drainage feature

**Fish Habitat Potential**

- Critical Habitat (spawning or nursery areas, groundwater upwellings)

**Migratory Obstructions (seasonal, permanent)**

- Flow / no flow

**Note any fish observations**

**Waterbody Notes**

| Natural Watercourse | Trapezoidal Channel | Grassed Swale | Buried Tile |
|---------------------|---------------------|---------------|
| Surficial Drainage (i.e. furrows) | Dugout Pond | Dominated by Aquatic Veg |

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

- In prominent channel, dry roadside ditch. Light water, no evidence of flow.

Field Notes Authored by: Chandler
Field Notes QA/QC by: M2
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R12061-1 Project Name Niagara Wind
Watercourse Name Unknown Project # 1609502169
Photos June 15, 2012 Field Staff T. Clayton, M. Faiella
Date June 15, 2012 Time 2:50
Weather conditions in previous 24 hrs Rain, hazy, humid
GPS Coordinates (Zone) 17T E 063 2379 N 474 7349 Datum NAD83
Descriptive Location 2800 m north of Lake Shore Road

Water Quality
Dissolved Oxygen (mg/L) 3.51 pH 7.66 Conductivity (μS/cm) 535
Water Temperature (°C) 22.26 Air Temperature (°C) 27.3
Time in situ measurements taken 3.02

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.2 (m) Maximum Pool Depth 0.75 (cm)
Mean Bankfull Width 3.5 (m) Mean Water Depth 0.40 (cm)
% Riffle 10 % Pool 90 % Run % Flat
Evidence of eroding banks, Comments on bank stability
Vegetation

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
100% grasses (red canary grass, early

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by T. Clayton Field Notes QA/QCed by

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ag.field

PEA
RIITO61-1

Some mature trees, but mostly grass.

channel opening up into a little pond/pool

lot of riparian veg.

ag.field/corn

path

Barrick's yellow shed

ag.field/corn

Lakeshore Road
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Stantec**

Station # B11TO62-14-2  
Watercourse Name  
Photos  
Date June 21, 2013  
Weather conditions in previous 24 hrs Rain, hot, humid  
GPS Coordinates (Zone) E 662.1903 N 47°34.19' Datum NaD83  
Descriptive Location 2.6km west of Humintown Road

### Water Quality
- Dissolved Oxygen (mg/L)  
- pH  
- Conductivity (μS/cm)  
- Water Temperature (°C)  
- Air Temperature (°C)  
- Time in situ measurements taken

### Watercourse Dimensions & Morphology
- Mean Watercourse Width 2 m  
- Maximum Pool Depth 0.60 m  
- Mean Bankfull Width 5 m  
- Mean Water Depth 0.50 m  
- % Riffle  
- % Pool  
- % Run  
- % Flat  

Evidence of eroding banks, Comments on bank stability: Stable - vegetated.

### Substrate (% cover)
- Bedrock  
- Cobble  
- Sand 40  
- Silt 10  
- Muck  
- Boulder  
- Gravel 50  
- Clay  
- Marl  
- Detritus

### In-water Cover
- Cover Types Present (circle): 
  - Undercut Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg

### Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  
- Adjacent Land Use: Farmland

### Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings)  
- Migratory Obstructions (seasonal, permanent)

Note any fish observations

### Waterbody Notes
- Natural Watercourse  
- Trapezoidal Channel  
- Grassed Swale  
- Buried Tile  
- Surficial Drainage (i.e. furrows)  
- Dugout Pond  
- Dominated by Aquatic Veg  
- Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T065-1  Project Name Niagra Wind
Watercourse Name                Project # 160950369
Photos 3
Date 13 July 2012
Weather conditions in previous 24 hrs rain, sun
GPS Coordinates (Zone) E 623340  N 4754876 Datum
Descriptive Location along Township Dyneville, west of
north of Jenny Jump Rd

Water Quality
Dissolved Oxygen (mg/L) 8.84  pH 8.30  Conductivity (μS/cm) 701
Water Temperature (°C) 18.41  Air Temperature (°C) 28.0
Time in situ measurements taken 12:15 pm

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m)  Mean Bankfull Width 5 (m)
Maximum Pool Depth 30 (cm)  Mean Water Depth 30 (cm)
% Riffle 100% Pool  % Run  % Flat
Evidence of eroding banks. Comments on bank stability
sleep, but stable & vegetated.

Substrate (% cover)
Bedsrock  Cobble  Sand  Silt  Mud
Boulder  Gravel  Clay  Marl  Detritus
In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
50% Colorwood, aspen, sumac, grape, phragmites

Adjacent Land Use
Ag - corn & soy

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KE  Field Notes QA/QEd by KE
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11 TO-1  Project Name Niagara Wind
Watercourse Name  1  Project # 160959269
Photos 107-117  Field Staff 12-2 MF
Date April 19  Time 3:16
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) E N 495030 Datum NAD 83
Descriptive Location 500m east of Hope Rd, 600N North of Hutchinson Road

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (µS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.2 (m) Maximum Pool Depth 20 (cm)
Mean Bankfull Width 4 (m) Mean Water Depth 15 (cm)
% Riffle 100% Pool 100% Run 100% Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Mud Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Frogs

Field Notes Authored by KC Field Notes QA/QCed by MF
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

<table>
<thead>
<tr>
<th>Station #</th>
<th>R117076</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watercourse Name</td>
<td>Unknown</td>
</tr>
<tr>
<td>Photos</td>
<td>-</td>
</tr>
<tr>
<td>Date</td>
<td>June 12, 2012</td>
</tr>
<tr>
<td>Weather conditions in previous 24 hrs</td>
<td></td>
</tr>
<tr>
<td>GPS Coordinates (Zone)</td>
<td>E 625672 N 4165881</td>
</tr>
<tr>
<td>Descriptive Location</td>
<td>Vaughan Rd.</td>
</tr>
</tbody>
</table>

**Water Quality**
- Dissolved Oxygen (mg/L) 
- pH 
- Conductivity (µS/cm) 
- Water Temperature (°C) 
- Air Temperature (°C) 
- Time in situ measurements taken |

**Watercourse Dimensions & Morphology**
- Mean Watercourse Width (m) 
- Maximum Pool Depth (cm) 
- Mean Bankfull Width (m) 
- Mean Water Depth (cm) 
- % Riffle 
- % Pool 
- % Run 
- % Flat 

Evidence of eroding banks, Comments on bank stability |

**Substrate (% cover)**
- Bedrock 
- Cobble 
- Sand 
- Silt 
- Muck 
- Boulder 
- Gravel 
- Clay 
- Mud 
- Detritus |

**In-water Cover**
- Cover Types Present (circle): Undercut Banks, Deep Pool, Watercress, Aquatic Veg |
- Overhanging Vegetation: Woody Debris, Boulder, Other |
- Riparian Zone |
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) |

**Adjacent Land Use** |

**Fish Habitat Potential**
- Critical Habitat (spawning or nursery areas, groundwater upwellings) |
- Migratory Obstructions (seasonal, permanent) |
- Note any fish observations |

**Waterbody Notes**
- Natural Watercourse 
- Trapezoidal Channel 
- Grassed Swale 
- Buried Tile 
- Surficial Drainage (i.e. furrows) 
- Dugout Pond 
- Dominated by Aquatic Veg 
- Dry |

**Other Habitat Notes, Incidental Wildlife Observations, etc.**
- Low lying floodplain area of minimal surficial wetlands |
- No other waterbodies |

Field Notes Authored by: KE
Field Notes QAQCed by: JN
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RU1078-M-1  Project Name Niagara Wind
Watercourse Name  Project # 160950208
Photos  Field Staff
Date  June 1, 2017
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 177 E 476643 N 4265051 Datum
Descriptive Location Vaughn Rd, 900m West of Boyle Rd, on South Side

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)
Water Temperature (°C)  Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  Maximum Pool Depth (cm)
Mean Bankfull Width (m)  Mean Water Depth (cm)
% Rifle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
<table>
<thead>
<tr>
<th></th>
<th>Bedrock</th>
<th>Cobble</th>
<th>20</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Boulder</th>
<th>Gravel</th>
<th>80</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
</tr>
</thead>
</table>

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
- Habitat channel  dry

Field Notes Authored by
Field Notes QA/QCed by
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11TD784 - 2  Project Name Niagara Wind
Watercourse Name  Project # 1609562469
Photos see log  Field Staff RE + UK
Date June 17 2017  Time 3:50 pm
Weather conditions in previous 24 hrs run
GPS Coordinates (Zone) UTM E 6684360 N 47658214 Datum
Descriptive Location Vaughan Rd 600 m west of Whistle Rd

Water Quality
Dissolved Oxygen (mg/L) xx pH dry Conductivity (μS/cm) xx
Water Temperature (°C) xx Air Temperature (°C) xx
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.5 (m) Maximum Pool Depth xx
Mean Bankfull Width 0.75 (m) Mean Water Depth xx
% Riffle % Pool % Run % Flat
evidence of eroding banks, comments on bank stability

Substrate (% cover)
Bedrock Cobble 20 Sand Silt Muck
Boulder Gravel 89 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
- very shallow, narrow, debris channel, veg wet
- larger (could plough), does not point for area
- probably leaves for surface drainage

Field Notes: Author by: RE  Field Notes QA/QC by: RE

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # B117079  Project Name Niagara Wind
Watercourse Name 79-1  Project # 160450259
Photos 8807-09  Field Staff: T. Chandler, M. Ellah
Date: June 7, 2012  Time: 10:55 AM
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) E630771 N4772494 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) 4.4  pH 8.30  Conductivity (μS/cm) 766
Water Temperature (°C) 16.22  Air Temperature (°C) 25
Time in situ measurements taken 11:05 AM

Watercourse Dimensions & Morphology
Mean Watercourse Width 4 (m) Maximum Pool Depth 100 (cm)
Mean Bankfull Width 8 (m) Mean Water Depth 50 (cm)
0% Riffle 100% Pool 0% Run 0% Flat
Evidence of eroding banks, Comments on bank stability minor scour (basal) along
outside of meander - not excessive

Substrate (% cover)
25% Bedrock 20% Cobble 10% Sand 15% Silt 10% Muck
20% Boulder 10% Gravel 15% Clay 5% Marl 5% Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
50% shaded, grasses, early successional
Adjacent Land Use
Scrubland, mostly open grass, with few trees

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Spawning & nursery area
Migratory Obstructions (seasonal, permanent)
Low flow (possible) - No water movement observed.
Note any fish observations

Waterbody Notes
Natural Watercourse  V  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.
Walnuts close by, Green Frog, J. p Rogers, P. bellied Wood Duck, Yellow Warblers
Station # R11-1079  Project Name NIAGARA WND
Watercourse Name  79-2A  Project # 160950269
Photos  0610-6814  8818  Field Staff T. Chandler, M. Ellah
Date June 3, 2012  Time 11:35
Weather conditions in previous 24 hrs Thunderstorms last yesterday
GPS Coordinates (Zone)  17 T E 130210 N 471506 Datum
Descriptive Location

Water Quality
Mostly dry - small ponded areas
Dissolved Oxygen (mg/L) 7.22  pH 9.34  Conductivity (μS/cm) 1413
Water Temperature (°C) 27.34  Air Temperature (°C) 25
Time in measurements taken 11:35

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.0 (m)  Maximum Pool Depth 10 (cm)
Mean Bankfull Width 2.0 (m)  Mean Water Depth 2 (where ponded) (cm)
0 % Riffle 30 % Pool 0 % Run 0 % Flat
Evidence of eroding banks, Comments on bank stability Vertical incision occurring along channel - exposed drain tile

Substrate (% cover)
Bedrock 2  Cobble 20  Sand 50  Silt  Marl  Muck  Detritus
Boulder 8  Gravel 20  Clay  Other

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation  Woody Debris  Boulder  Watercress  Aquatic Veg
Undercut Banks  Deep Pool  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50% shaded - early successional - grass
Adjacent Land Use  Agricultural Field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent) Cow/No Flow
Note any fish observations None

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc. Note: Tile system failing - exposed, broken tiles

Field Notes Authored by T. Chandler  Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R113079 Watercourse Name 79-2B Project Name NIAGARA WIND
Photos 2619 Project # 160956769
Date June 7, 2012 Field Staff McLandry, M Ellah
Weather conditions in previous 24 hrs Thursday, Thundershowers in area, yesterday evening
GPS Coordinates (Zone) 12T E 630481 N 4771591 Datum
Descriptive Location

Water Quality NO WATER - DRY
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 25
Time in situ measurements taken

Watercourse Dimensions & Morphology NO CHANNEL - Poorly defined, shallow, Tiled
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull-Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Agricultural Field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Flycatchers

Field Notes Authored by J. McLandry Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: R1M7079
Watercourse Name: 79-2C
Photos: 8870, 8822, 8873
Date: JUNE 7, 2012
Weather conditions in previous 24 hrs: Thunderstorm previous evening
GPS Coordinates (Zone): 124 W 630436 N 4771699 Datum
Descriptive Location: Minor Wasteland

Water Quality
Dissolved Oxygen (mg/L): 6.15
pH: 8.15
Conductivity (μS/cm): 967
Water Temperature (°C): 19.35
Air Temperature (°C): 25
Time in situ measurements taken: 12:25

Watercourse Dimensions & Morphology
Mean Watercourse Width: 1.0 (m)
Mean Bankfull Width: 2.5 (m)
Maximum Pool Depth: 28 (cm)
Mean Water Depth: 2 (cm)

Evidence of eroding banks, Comments on bank stability: Minor Wasteland

Substrate (% cover):
- Bedrock
- Cobble
- Sand
- Silt
- Mud
- Detritus

In-water Cover
Cover Types Present (circle):
- Undercut Banks
- Deep Pool
- Watercress
- Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):
90% - Grasses, shrubs, trees

Adjacent Land Use:
Scrubland then ploughed agricultural field further west - wooded area to east

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings):
- Spawning nursery potential

Migratory Obstructions (seasonal, permanent):
Low flow

Note any fish observations: None

Waterbody Notes
Natural Watercourse
Surficial Drainage (i.e. furrows)
Grassed Swale
Dugout Pond
Dominated by Aquatic Veg
Buried Tile

Other Habitat Notes, Incidental Wildlife Observations, etc.
Green Frogs heard in wooded area off agricultural field

Field Notes Authored by: T. Chandler
Field Notes QA/QCed by: [Signature]
RM+079
79-2c

Agricultural field

Open scrubland

Fish

GPS
Wooded Area
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: R17081a
Watercourse Name: Unknown
Photos: Unknown
Date: June 11, 2018
Weather conditions in previous 24 hrs: Sunny & hot
GPS Coordinates (Zone): 41°53'32.4" N 78°45'27.0" W Datum North America 1983
Descriptive Location: Intersection of Foch Road & 100 m west of Kalamazoo Road

Water Quality
Dissolved Oxygen (mg/L)

pH

Conductivity (µS/cm)

Water Temperature (°C)

Air Temperature (°C)

Time in situ measurements taken: No water

Watercourse Dimensions & Morphology
Mean Watercourse Width: Unknown (m)
Mean Bankfull Width: 2 (m)
Maximum Pool Depth: Unknown (cm)
Mean Water Depth: Unknown (cm)

% Riffle

% Pool

% Run

% Flat

Evidence of eroding banks, Comments on bank stability: None

Substrate (% cover)
Bedrock

Cobble

20

Sand

70

Silt

10

Muck

Boulder

Gravel

Clay

Marl

Detritus

In-water Cover
Cover Types Present (circle):

Undercut Banks

Deep Pool

Watercress

Aquatic Veg

Overhanging Vegetation

Woody Debris

Boulder

Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

95%

Cattails,agrass,early successional

Adjacent Land Use

farm field - hay

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations:

Waterbody Notes
Natural Watercourse

Trapezoidal Channel

Grassed Swale

Buried Tile

Surficial Drainage (i.e. furrows)

Dugout Pond

Dominated by Aquatic Veg

Dry

Other Habitat Notes, incidental Wildlife Observations, etc.

Field Notes Authored by: Clay D. Field Notes QA/QCed by: Mark B. W

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hay field

RHT081a
REA
dry Channel

Cessation

Collum Road
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Stantec**

**Station #** R11T062  
**Watercourse Name** Unknown  
**Project Name** Niagara Wind  
**Project #** 1609508869  
**Photos** 10x - 115  
**Field Staff** F. E.  
**Date** Apr 5/12  
**Time** 11:40 am  
**Weather conditions in previous 24 hrs** 12°C, Sunny  
**GPS Coordinates (Zone)** N 47 34806 E 061 84082  
**Datum** NAD 83  
**Descriptive Location** 800m north of Hwy 3, 1800m east of Crown Rd

**Water Quality**
- **Dissolved Oxygen (mg/L)** 11.2  
- **pH** 8.70  
- **Conductivity (μS/cm)** 320  
- **Water Temperature (°C)** 12  
- **Air Temperature (°C)** 38  
- **Time in situ measurements taken** 11:40 am

**Watercourse Dimensions & Morphology**
- **Mean Watercourse Width** 1.2 m (m)  
- **Maximum Pool Depth** 0.80 m (cm)  
- **Mean Bankfull Width** 1.2 m (m)  
- **Mean Water Depth** 0.60 m (cm)  
- **% Pool** 100  
- **% Run** 0  
- **% Flat** 0  

**Evidence of eroding banks, Comments on bank stability** Stable banks, firm riparian veg.

**Substrate (% cover)**
- **Bedrock**  
- **Cobble**  
- **Sand** 40  
- **Silt** 10  
- **Muck**  
- **Boulder**  
- **Gravel** 50  
- **Clay**  
- **Marl**  
- **Detritus**

**In-water Cover**
- **Cover Types Present (circle):** Undercut Banks  
- **Deep Pool**  
- **Watercress**  
- **Aquatic Veg**

**Riparian Zone**
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**

**Adjacent Land Use**
- **agricultural field**

**Fish Habitat Potential**
- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**
- **Migratory Obstructions (seasonal, permanent)**

**Note any fish observations**

**Waterbody Notes**
- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Dominated by Aquatic Veg**  
- **Buried Tile**  
- **Dry**

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

**Field Notes Authored by** K. Clayton  
**Field Notes QA/QCed by** M. Failla
Bus lot

Hauzinga's farm

Hwy 3

REA water body

ag. field

intermittent agi. swale

farm access lane

ag. field
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: BIT932-2
Watercourse Name: unkriam
Photos: 01 116
Date: April 19 12
Weather conditions in previous 24 hrs: Overcast, 12°C
GPS Coordinates (Zone): 117° E 0618379 N 4754712
Datum: NAD83
Descriptive Location: Sec 3 N of 3 Hwy, 1 km west of Hulicaroka

Water Quality
Dissolved Oxygen (mg/L) — no water
pH — Conductivity (µS/cm) —
Water Temperature (°C) —
Air Temperature (°C) —
Time in situ measurements taken: —

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 (m)
Mean Bankfull Width 5 (m)
Maximum Pool Depth — (cm)
Mean Water Depth — (cm)
% Riffle —
% Pool —
% Run —
% Flat —
Evidence of eroding banks, Comments on bank stability: —

Substrate (% cover)
Bedrock — Cobble — Sand —
Boulder — Gravel — Silt —
Clay — Muck —
Marl — Detritus —

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation: Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
agricultural field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwelling)
Potentially spawning in early spring
Migratory Obstructions (seasonal, permanent)
seasonal/intermittent

Note any fish observations

Waterbody Notes
Natural Watercourse — Trapezoidal Channel — Grassed Swale — Buried Tile
Surficial Drainage (i.e. furrows) — Dugout Pond — Dominated by Aquatic Veg —
Dry —

Other Habitat Notes, Incidental Wildlife Observations, etc.
red-winged blackbirds

Field Notes Authored by: K. Dayton
Field Notes QAQCed by: M. Faiella
WATERBODY RAPID ASSESSMENT FORM

Station # R11T083
Watercourse Name 82-123
Photos 4761-32+73
Date June 6, 2012
Weather conditions in previous 24 hrs. Slight cloud
GPS Coordinates (Zone) 191 E 615842 N 4778614
Descriptive Location 50-1000 m due south of the southern terminus of Woods Road

Water Quality
Dissolved Oxygen (mg/L) O
pH N/A Conductivity (μS/cm) O
Water Temperature (°C) O Air Temperature (°C) O
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 (m) Maximum Pool Depth N/A (cm)
Mean Bankfull Width N/A (m) Mean Water Depth N/A (cm)
% Rifle N/A % Pool N/A % Run N/A % Flat N/A
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 0 Cobble 20 Sand 55 Silt 0 Muck 0 Boulder 0 Gravel 20 Clay 0 Marl 0 Detritus

In-water Cover N/A
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Agricultural field (cropped)

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
low/no flow

Note any fish observations N/A no water

Waterbody Notes
Natural Watercourse N/A DRY
Trapezoidal Channel
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg
Grassed Swale Buried Tile Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by Trevor Chandler Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #
Watercourse Name
Photos
Date
Weather conditions in previous 24 hrs
GPS Coordinates (Zone)
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)  Air Temperature (°C)

Water Temperature (°C)  Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.5 (m)  Maximum Pool Depth 15 (cm)
Mean Bankfull Width 2.0 (m)  Mean Water Depth 75-10 (cm)

% Rifle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  Cobble  Sand  Silt  Muck
Boulder  Gravel  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  Woody Debris  Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.


Field Notes Authored by K. Clayton  Field Notes QA/QCed by M. Faiella
### Wind Farm Waterbody Rapid Assessment Form

**Station #** RU17085-1  
**Watercourse Name:** Unknown Swale  
**Photos:** July 01, 2011  
**Date:** June 11/12  
**Weather conditions in previous 24 hrs:** Sunny, hot  
**GPS Coordinates (Zone):** 171  
**Time:** 2:35 PM  
**Datum:** NAD 83  
**Field Staff:** Clayton, Marc, Failla

---

**Water Quality**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tr>
<td>Dissolved Oxygen (mg/L)</td>
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<tr>
<td>pH</td>
<td></td>
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<tr>
<td>Conductivity (μS/cm)</td>
<td></td>
</tr>
<tr>
<td>Water Temperature (°C)</td>
<td></td>
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<tr>
<td>Air Temperature (°C)</td>
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</tbody>
</table>

**Watercourse Dimensions & Morphology**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Watercourse Width (m)</td>
<td></td>
</tr>
<tr>
<td>Maximum Pool Depth (cm)</td>
<td></td>
</tr>
<tr>
<td>Mean Bankfull Width (m)</td>
<td></td>
</tr>
<tr>
<td>Mean Water Depth (cm)</td>
<td></td>
</tr>
<tr>
<td>% Rifle</td>
<td></td>
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<tr>
<td>% Pool</td>
<td></td>
</tr>
<tr>
<td>% Run</td>
<td></td>
</tr>
<tr>
<td>% Flat</td>
<td></td>
</tr>
</tbody>
</table>

**Evidence of eroding banks, Comments on bank stability**

---

**Substrate (% cover)**

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
</tr>
</thead>
</table>

**In-water Cover**

- Cover Types Present (circle):
  - Undercut Banks
  - Deep Pool
  - Watercress
  - Aquatic Veg

**Overhanging Vegetation**

- Woody Debris
- Boulder
- Other

**Riparian Zone**

- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

**Adjacent Land Use**

---

**Fish Habitat Potential**

- Critical Habitat (spawning or nursery areas, groundwater upwellings)

**Migratory Obstructions (seasonal, permanent)**

**Note any fish observations**

---

**Waterbody Notes**

- Natural Watercourse
- Trapezoidal Channel
- Grassed Swale
- Buried Tile
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Dominated by Aquatic Veg
- Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

---

Field Notes Authored by: [Signature]  
Field Notes QA/QCed by: [Signature]

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Station #: R11 T088 T088-1B  Project Name: Niagara wind
Watercourse Name: T088-1B  Project #: 160950269
Photos T088-1B  Field Staff: Trevor Coulter, Mitch Elkah
Date: June 4, 2017  Time: 12:00 PM (noon)
Weather conditions in previous 24 hrs.: sunny, cloudy
GPS Coordinates (Zone): N47°47'47.5" Datum
Descriptive Location: At Southern terminus of woods Rd.

Water Quality
N O W A T E R _ G R A S S E D W A T E R W A Y
Dissolved Oxygen (mg/L)  ⬤  pH  ⬤  Conductivity (µS/cm)  ⬤
Water Temperature (°C)  ⬤  Air Temperature (°C)  ⬤
Time in situ measurements taken  ⬤

Watercourse Dimensions & Morphology
Mean Watercourse Width 0.5 (m)  Maximum Pool Depth (cm)
Mean Bankfull Width 111 m  Mean Water Depth (cm)
% riffle 111%  % pool 111%  % run 111%  % flat 111%
Evidence of eroding banks, Comments on bank stability  NO

Substrate (% cover)
Grass line 1 Bedrock 1 Cobble 1 Sand 1 Silt 1 Muck 1 Clay 1 Marl 1 Detritus

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation Woody Debris Boulder Other
Undercut Banks Deep Pool Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Grass line
Adjacent Land Use
Agricultural Fields (cropped)

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Low/Low flow
Note any fish observations  None

Waterbody Notes
N A
Natural Watercourse 1 Trapezoidal Channel 1 Grassed Swale 1 Buried Tile
Surficial Drainage (i.e. furrows) 1 Dugout Pond 1 Dominated by Aquatic Veg 1 Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.  None
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Stantec

Station #: R117088  Project Name: Niagara Wind
Watercourse Name: 108A-18  Project #: 160950 269
Photos: E777-79  Field Staff: Trevor Chandur, Mitch Ellah
Date: June 1, 2017  Time: 12:10
Weather conditions in previous 24 hrs.: Sunny + cloudy
GPS Coordinates (Zone): 127 E 61°56'7"  N 47°7'15" Datum
Descriptive Location: 200 m South of Farm at End of Woods Road
at concrete box culvert (ruins) 0.5 mi S, 0.5 mi W

Water Quality
- taken outside study area/project loc'n
Dissolved Oxygen (mg/L) 3.51  pH 7.81  Conductivity (µS/cm) 1753
Water Temperature (°C) 14.36  Air Temperature (°C) 20
Time in situ measurements taken: 12:40

Watercourse Dimensions & Morphology
Mean Watercourse Width: 1.0 (m)  Maximum Pool Depth: 5.0 (cm)
Mean Bankfull Width: 1.0 (m)  Mean Water Depth: 5.0 (cm)
-frequency of riffles 20%  - % Pool 20%
-frequency of runs 20%  - % Flat 20%
Evidence of eroding banks, Comments on bank stability:
Morphology analysis shows deeper pools incorporated into a concrete culvert with watercourse entering Devries property. 20% pool - 10% riffle - 10% flat.

Substrate (% cover)
- 50% Bedrock  5% Cobble  30% Sand  40% Silt  0% Muck
- 10% Boulder  0% Gravel  0% Clay  0% Marl  0% Detritus

In-water Cover
Cover Types Present (circle):  Undercut Banks  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation: Woody Debris  Boulder  Other: concrete slab

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
20% shade: grasses + or - Hollies

Adjacent Land Use
-agricultural fields

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
low/no flow

Note any fish observations: None observed.

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: Trevor Chandur  Field Notes QA/QCed by: 

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Station #: 810768
Watercourse Name: 88 - 2
Photos: 8750 - 8761
Date: June 4, 2012
Weather conditions in previous 24 hrs: sunny, cloudy
GPS Coordinates (Zone): 179, E 615567, N 477469
Datum:
Descriptive Location: 30 m north of southern terminus of weeds Rd.

Water Quality
Dissolved Oxygen (mg/L): 8
pH: 8
Conductivity (μS/cm): 8
Water Temperature (°C): 8
Air Temperature (°C): 8
Time in situ measurements taken: DRY

Watercourse Dimensions & Morphology
Mean Watercourse Width: (m)
Mean Bankfull Width: (m)
Mean Water Depth: (cm)
% Rifle
% Pool
% Run
% Flat
Evidence of eroding banks, comments on bank stability:
through fields, plowed over, some channel definition:

Substrate (% cover)
Bedrock / Cobble, 20 / Sand, 80 / Silt / Muck / Gravel
Boulder / Clay / Marl / Detritus

In-water Cover
Cover Types Present (circle):
Undercut Banks
Overhanging Vegetation
Woody Debris
Boulder
Other
Watercress
Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):
Crops, Winter Wheat

Adjacent Land Use
Agricultural Field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings):
N/A
Migratory Obstructions (seasonal, permanent):
Channel Flow
Note any fish observations:
None

Waterbody Notes
Naturel Watercourse
Trapezoidal Channel
Surficial Drainage (i.e. furrows)
Dugout Pond
Grassed Swale
Buried Tile
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: Trevor Chandler
Field Notes QA/QCed by:
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #  R11T089-1  Project Name  Niagara Wind
Watercourse Name  
Photos  
Date  June 13 2013  Project #  110960269
Field Staff  KE
Weather conditions in previous 24 hrs  Rain
GPS Coordinates (Zone)  W234W0  N4752696 Datum  Book Rd, 1 km west of Townline
Descriptive Location  

Water Quality
Dissolved Oxygen (mg/L)  4.82  pH  8.34  Conductivity (µS/cm)  540
Water Temperature (°C)  24.5  Air Temperature (°C)  23
Time in situ measurements taken  2:35 pm

Watercourse Dimensions & Morphology
Mean Watercourse Width  1.5 (m)  Maximum Pool Depth  80 (cm)
Mean Bankfull Width  3 (m)  Mean Water Depth  30 (cm)
% Riffle  100  % Pool  0  % Run  0  % Flat  0
Evidence of eroding banks, Comments on bank stability  Stable

Substrate (% cover)
Bedrock  0  Cobble  0  Sand  20  Silt  0  Muck  0
Boulder  0  Gravel  80  Clay  0  Marl  0  Detritus

In-water Cover
Cover Types Present (circle):  Woody Debris  Boulder  Other  Aquatic Veg
Overhanging Vegetation  Woody Debris  Deep Pool  Watercress

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Ewm, Ash, etc (brush lot to west)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  √  Trapezoidal Channel  
Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KE  Field Notes QA/QCed by JF

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: R117089-2
Watercourse Name
Phots
Date: June 13, 2012
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) E 624167 N 4753064 Datum
Descriptive Location Booker Rd 400 m west of towline

Water Quality
Dissolved Oxygen (mg/L) _______ pH _______ Conductivity (μS/cm) _______
Water Temperature (°C) _______ Air Temperature (°C) _______
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width _______ (m) Maximum Pool Depth _______ (cm)
Mean Bankfull Width _______ (m) Mean Water Depth _______ (cm)
% Riffle _______ % Pool _______ % Run _______ % Flat _______
Evidence of eroding banks, Comments on bank stability
steep, stable + veg

Substrate (% cover)
Bedrock _______ Cobble _______ Sand _______ Silt _______ Muck _______
Boulder _______ Gravel _______ Clay _______ Marl _______ Detritus _______

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other _______

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
30% elm, ash etc along

Adjacent Land Use
Ag - corn, soy

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations _______

Waterbody Notes
Natural Watercourse _____ Trapezoidal Channel _____ Grassed Swale _____ Buried Tile _____
Surficial Drainage (i.e. furrows) _____ Dugout Pond _____ Dominated by Aquatic Veg _____ Dry _____

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KE _______ Field Notes QA/QCed by JF Van _______

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # K117089-3
Watercourse Name
Photos
Date June 13, 2013
Weather conditions in previous 24 hrs
GPS Coordinates (Zone)
Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)
Mean Bankfull Width (m)
% Riffle
% Pool
% Run
% Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by
Field Notes QA/QCed by
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RUT091
Watercourse Name unknownd
Photos 102-106
Date Apr 19/12
Weather conditions in previous 24 hrs 13°C, overcast
GPS Coordinates (Zone) 174 W 062,0509 N 475,692 Datum NAD 83
Descriptive Location 300m east of CPE Rd, 1,069 N of Hutchins

Water Quality
Dissolved Oxygen (mg/L) _______ pH _______ Conductivity (µS/cm) _______
Water Temperature (°C) _______ Air Temperature (°C) _______
Time in situ measurements taken _______

Watercourse Dimensions & Morphology
Mean Watercourse Width 5.5 (m) Maximum Pool Depth 50 (cm)
Mean Bankfull Width 3.5 (m) Mean Water Depth 100 % Run
% Riffle _______ % Pool _______ % Flat _______
Evidence of eroding banks, Comments on bank stability _______

Substrate (% cover)
Bedrock _______ Cobble _______ Sand 30 Silt 30 Muck _______
Boulder _______ Gravel _______ Clay _______ Marl 10 Detritus _______

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other__algae__

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
<1%, grasses, early

Adjacent Land Use
agricultural field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
spawning, nursery, foraging seasonal

Note any fish observations

Waterbody Notes
Natural Watercourse _______ Trapezoidal Channel _______ Grassed Swale _______ Buried Tile _______
Surficial Drainage (i.e. furrows) _______ Dugout Pond _______ Dominated by Aquatic Veg _______ Dry _______

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by KC Field Notes QA/QCed by MF
ag. field

Flooded H2O

dry for

PEA
RI170941

contains water
very channelized
algae

farm path

goRE Road
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # B117093H  Project Name Niagara Wind
Watercourse Name: 98-1a  Project # 160959-769
Photos X796-98  Field Staff T. Chandler, M. Elijah
Date June 14, 2012  Time 9:45 AM
Weather conditions in previous 24 hrs  
GPS Coordinates (Zone) 12T E 618372  N 4767446 Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L)  NO WATER  pH  Conductivity (μS/cm)
Water Temperature (°C)  
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)  
Mean Bankfull Width (m)  
% Riffle  
% Pool  
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock  
Cobble  
Gravel  
Sand  
Silt  
Clay  
Muck  
Marl  
Detritus

In-water Cover
Cover Types Present (circle):  
Undercut Banks  Woody Debris  Deep Pool  Watercress  Aquatic Veg
Overhanging Vegetation  
Boulder  Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Aquatic  
Field
Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
NO Flow
Note any fish observations  

Other Habitat Notes, Incidental Wildlife Observations, etc.
Field recently ploughed

Field Notes Authored by T. Chandler  Field Notes QA/QCed by  

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Station # R170935H  Project Name Niagara Wind  
Watercourse Name 93-1B  Project # 160980279  
Photos 8799-8801  Field Staff I. Chandler, M. Elliot  
Date June 6, 2017  Time 9:50 AM  
Weather conditions in previous 24 hrs  
GPS Coordinates (Zone) 191 [E 618,502] N 4767.51 Catum  
Descriptive Location  

Water Quality  
Dissolved Oxygen (mg/L) 3.13  pH 9.29  Conductivity (μS/cm) 494  
Water Temperature (°C) 21.20  Air Temperature (°C) 20°C  
Time in situ measurements taken 9:50 AM  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 15 (m)  Maximum Pool Depth 50 (cm)  
Mean Bankfull Width 11.5 (m)  Mean Water Depth 20 (cm)  
% Ripple 100  % Pool 5%  % Run 10%  % Flat Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)  
Bedrock  /  Cobble  /  Sand 80  Silt  /  Muck  /  Boulder  /  Gravel 20  Clay  /  Marl  /  Detritus  

In-water Cover  
Cover Types Present (circle): Undercut Banks  Woody Debris  Boulder  Other  Algae  Aquatic Veg  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

Adj. Land Use  
Agricultural Field  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  

Migratory Obstructions (seasonal, permanent)  

Note any fish observations  Note  

Waterbody Notes  
Natural Watercourse  /  Trapezoidal Channel  /  Grassed Swale  /  Buried Tile  /  
Surficial Drainage (i.e. furrows)  /  Dugout Pond  /  Dominated by Aquatic Veg  /  Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by I. Chandler  Field Notes QA/QCed by MZ  
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## Wind Farm Waterbody Rapid Assessment Form

**Station #** B117093H  
**Watercourse Name** 93-2  
**Project Name** Niagara Wind  
**Project #** 160350269  
**Photos** 8802-26  
**Field Staff** T. Chandler M. Ellah  
**Date** June 6, 2017  
**Time** 5:00 PM  
**Weather conditions in previous 24 hrs** Sunny, cloudy  
**GPS Coordinates (Zone) E 618263 N 4767030 Datum**  
**Descriptive Location**  

### Water Quality
- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (μS/cm)**  
- **Water Temperature (°C)**  
- **Air Temperature (°C)** 25  
- **Time in situ measurements taken**

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width** 4.0 (m)  
- **Mean Bankfull Width** 8.0 (m)  
- **Maximum Pool Depth**  (cm)  
- **Mean Water Depth**  (cm)  
- **% River**  
- **% Pool**  
- **% Run**  
- **% Flat**

Evidence of eroding banks, Comments on bank stability

### Substrate (% cover)
- Bedrock  
- Boulder  
- Cobble  
- Gravel  
- Sand  
- Clay  
- Silt 100  
- Muck  
- Marl  
- Detritus

### In-water Cover
- Cover Types Present (circle):  
  - Undercut Banks  
  - Deep Pool  
  - Watercress  
  - Aquatic Veg  
  - Woody Debris  
  - Boulder  
  - Other

### Riparian Zone
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 70%
  - Shrubs:  
  - Cattails:  
  - Sedges:  
  - Sedges:  
  - Shrubs:

### Adjacent Land Use
- Agricultural Fields - Soybean & Winter Wheat

### Fish Habitat Potential
- Critical Habitat (spawning or nursery areas, groundwater upwellings)

### Migratory Obstructions (seasonal, permanent)
- Dry Flow (low)

### Note any fish observations
- None

### Waterbody Notes
- Natural Watercourse  
- Trapezoidal Channel  
- Grassed Swale  
- Surficial Drainage (i.e. furrows)  
- Dugout Pond  
- Buried Tile  
- Dominated by Aquatic Veg  
- Dry

### Other Habitat Notes, Incidental Wildlife Observations, etc.
- Green Frog
- Water snake
- Waterouse not played up (west)

Field Notes Authored by T. Chandler  
Field Notes QA/QCed by MF

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**WATERBODY RAPID ASSESSMENT FORM**

**Station #**: 81175944  
**Watercourse Name**: 94-1  
**Photos**: 3920-91  
**Date**: June 6, 2012

**Weather conditions in previous 24 hrs.**: Sung cloud

**GPS Coordinates (Zone)**: E619420  
**Datum**: N4768015

**Descriptive Location**: Along Scott Road (Allougan)

---

### Water Quality

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>pH</th>
<th>Conductivity (µS/cm)</th>
<th>Air Temperature (°C)</th>
</tr>
</thead>
</table>

**Time in situ measurements taken**

---

### Watercourse Dimensions & Morphology

<table>
<thead>
<tr>
<th>Mean Watercourse Width</th>
<th>2 (m)</th>
<th>Maximum Pool Depth</th>
<th>10 (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Bankfull Width</td>
<td>2 (m)</td>
<td>Mean Water Depth</td>
<td>% Pool</td>
</tr>
</tbody>
</table>

Evidence of eroding banks, Comments on bank stability: Minor scour around.

---

### Substrate (% cover)

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>5</th>
<th>Cobble</th>
<th>20</th>
<th>Sand</th>
<th>70</th>
<th>Silt</th>
<th>Marl</th>
<th>Muck</th>
<th>Detritus</th>
</tr>
</thead>
</table>

**In-water Cover**

<table>
<thead>
<tr>
<th>Cover Types Present (circle):</th>
<th>Undercut Banks</th>
<th>Deep Pool</th>
<th>Watercress</th>
<th>Aquatic Veg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhanging Vegetation</td>
<td>Woody Debris</td>
<td>Boulder</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**Riparian Zone**

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 90%+ Grees (trees at Scott Rd. crossing)

---

### Adjacent Land Use

**Agricultural Fields**

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### Fish Habitat Potential

**Critical Habitat (spawning or nursery areas, groundwater upwellings)**

**Migratory Obstructions (seasonal, permanent)**

**Note any fish observations**: None

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### Waterbody Notes

**Natural Watercourse**  
**Trapezoidal Channel**  
**Grassed Swale**  
**Surficial Drainage (i.e. furrows)**  
**Dugout Pond**  
**Buried Tile**  
**Other Habitat Notes, Incidental Wildlife Observations, etc.**: Wooded over 4 Scott Rd., Swamphick Hickory

---

Field Notes Authored by: T. Chandler  
Field Notes QA/QCed by: W. F.
Station # R178294  
Watercourse Name 94-2  
Photos 2792-94  
Date June 6, 2021  
Weather conditions in previous 24 hrs. Sunny and clear  
GPS Coordinates (Zone) 14T E 618459 N 4768466 Datum  

Descriptive Location  

Water Quality  NO WATER  
Dissolved Oxygen (mg/L)  
Water Temperature (°C)  
Time in situ measurements taken  

Conductivity (µS/cm)  

Watercourse Dimensions & Morphology  N/A  
Mean Watercourse Width (m)  
Mean Bankfull Width (m)  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Riffle % Pool % Run % Flat  
Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)  
Bedrock  Cobble  Sand  Silt  Muck  Clay  Marl  Detritus  

In-water Cover  NO WATER  
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg  
Overhanging Vegetation Woody Debris Boulder Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

Adjacent Land Use  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings)  
Migratory Obstructions (seasonal, permanent)  
Note any fish observations  

Waterbody Notes  
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile  
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Field Notes Authored by J. Chandler  
Field Notes QA/QCed by M. Rhea  

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RWT095-1
Watercourse Name Warehouse
Photos 801 - 810
Date June 13 13
Weather conditions in previous 24 hrs Hot humid
GPS Coordinates (Zone) 117 E 063 0268 N 476 0930 Datum NAD83

Descriptive Location 6250 m south of Creek Rd 2.5 km west

Water Quality
Dissolved Oxygen (mg/L) - no water
pH
Conductivity (μS/cm)
Water Temperature (°C)
Air Temperature (°C) 17°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m)
Mean Bankfull Width (m)
Maximum Pool Depth (cm)
Mean Water Depth (cm)
% RIffle
% Pool
% Run
% Flat

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock
Cobble
Sand
Silt
Muck
Boulder
Gravel
Clay
Marl
Detritus

In-water Cover
Cover Types Present (circle):
Undercut Banks
Deep Pool
Watercress
Aquatic Veg
Overhanging Vegetation
Woody Debris
Boulder
Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Note any fish observations

Waterbody Notes
Natural Watercourse
Trapezoidal Channel
Grassed Swale
Surficial Drainage (i.e. furrows)
Dugout Pond
Buried Tile
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authorized by
Field Notes QA/QCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RUTQ96-1
Watercourse Name Unknown
Photos 734-762
Date 10/23/2013
Weather conditions in previous 24 hrs Rain, hot, humid
GPS Coordinates (Zone) E 0620885 N 4750464 Datum NAD83

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 21
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50%

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Claytan Field Notes QA/QCed by MAE
Reed Grass
Cnoaqueche
no Water
surrounded
by marine
trees
probably lots
of Water 200 feet
spring @ year

pasture

Bird Road

farm land.

RIIT096-1
**Wind Farm Waterbody Rapid Assessment Form**

**Station #:** R117097  
**Watercourse Name:** 97-1  
**Photos:** N/A  
**Date:** June 6, 2017  
**Weather conditions in previous 24 hrs:** Sunny and cloudy  
**GPS Coordinates (Zone):** 17E 617,224 N 47°5,46.6 Datum  
**Descriptive Location:** 600m south of Silver Street and 600m west of Port Davidson Rd.

**Water Quality**
- Dissolved Oxygen (mg/L)  
- pH  
- Conductivity (µS/cm)  
- Water Temperature (°C)  
- Time in situ measurements taken

**Watercourse Dimensions & Morphology**
- Mean Watercourse Width: N/A (m)  
- Maximum Pool Depth: N/A (cm)  
- Mean bankfull Width: N/A (m)  
- Mean Water Depth: N/A (cm)  
- % Ripple  
- % Pool  
- % Run  
- % Flat  
- Evidence of eroding banks, Comments on bank stability

**Substrate (% cover)**
- Bedrock  
- Cobble  
- Sand 20%  
- Silt 80%  
- Muck  
- Boulder  
- Gravel  
- Clay  
- Marl  
- Detritus

**In-water Cover**
- Cover Types Present (circle):  
- Undercut Banks  
- Deep Pool  
- Watercress  
- Aquatic Veg

**Riparian Zone**
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
- Open field

**Adjacent Land Use**
- Ploughed agricultural field

**Fish Habitat Potential**
- N/A

**Critical Habitat (spawning or nursery areas, groundwater upwellings)**

**Migratory Obstructions (seasonal, permanent)**
- No flow

**Note any fish observations**

**Waterbody Notes**
- Natural Watercourse
- Trapezoidal Channel
- Grassed Swale
- Buried Tile
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Dominated by Aquatic Veg
- Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**
- N/A

Field Notes Authored by: T. Chandler  
Field Notes QA/QCed by: N/A
Wind Farm Waterbody Rapid Assessment Form

Stantec

Station #: R1171097
Watercourse Name: 97 - 2
Photos: R713 - 95
Date: June 1, 2012

Weather conditions in previous 24 hrs: Sunny cloudy
GPS Coordinates (Zone): 121° E 617231
Datum: NAD83, West 93
Descriptive Location: PH Silver Street, 500m west of Wind Davidson Rd

Water Quality
Dissolved Oxygen (mg/L): 6.18
pH: 8.38
Conductivity (μS/cm): 2630
Water Temperature (°C): 14.27
Air Temperature (°C): 26
Time in situ measurements taken: 2:10 PM

Watercourse Dimensions & Morphology
Mean Watercourse Width: 1.0 (m)
Mean Bankfull Width: 1.8 (m)
Maximum Pool Depth: 0 (cm)
Mean Water Depth: 0 (cm)
Evidence of eroding banks, Comments on bank stability: dom. sed. - good channel development, water

Substrate (% cover)
Bedrock: 10
Cobble: 20
Sand: 30
Silt: 30
Muck: 10
Gravel: 10
Clay: 10
Marl: 10
Detritus: 10

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation: Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
50% grass cover

Adjacent Land Use
Grassed area (mowed lawn) but mainly Scrub

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Low/no flow

Note any fish observations: none seen

Waterbody Notes
Natural Watercourse
Trapezoidal Channel
Surficial Drainage (i.e. furrows)
Dugout Pond
Grassed Swale
Buried Tile
Dominated by Aquatic Veg
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Large grassed buffer on either side of channel, weed, area to north of Silver Street

Field Notes Authored by:
Field Notes QA/QCed by:

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
Station #: R177097  
Watercourse Name: 97-2  
Photos: 2786-58, + 89  
Date: June 6, 2012  
Weather conditions in previous 24 hrs.: Sunny, Cloudy  
GPS Coordinates (Zone) 17T E 671666 N 4765985 Datum  
Descriptive Location: Pond near 20x40m dry swale that drains to wet  

700 m west of Park Dr., 180-200 m south of Silver Street.  

Water Quality  
Dissolved Oxygen (mg/L) 5.20  
PH 8.18  
Conductivity (µS/cm) 1073  
Water Temperature (°C) 26.83  
Air Temperature (°C) 20°C  
Time in situ measurements taken: 2:35 PM  

Watercourse Dimensions & Morphology  
Mean Watercourse Width (m)  
Mean Bankfull Width (m)  
Maximum Pool Depth (cm)  
Mean Water Depth (cm)  
% Riffle  
% Pool  
% Run  
% Flat  
Evidence of eroding banks, Comments on bank stability: Drainage trench. Swale is planted regularly.  

Substrate (% cover)  
Bedrock  
Cobble  
Boulder  
Gravel  
Cobble  
Clay  
Silt  
Muck  
Muck  
Detritus  

In-water Cover  
Cover Types Present (circle):  
Undercut Banks  
Deep Pool  
Watercress  
Aquatic Veg  
Overhanging Vegetation  
Woody Debris  
Boulder  
Other  

Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):  
0% shaded.  

Adjacent Land Use:  
Pasture  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings):  

Migratory Obstructions (seasonal, permanent):  
Pond may dry out in summer. Water turbid.  
Note any fish observations:  
None seen. Pond seems natural  

Waterbody Notes  
Natural Watercourse  
Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Grassed Swale  
Buried Tile  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.:  
Mallard ducks in pond  
Cattle & horses have access to pond. No evasive excavation (e.g. sod pile)  

Water outlet along the pond  

Field Notes Authored by:  
Field Notes QA/QCed by:  

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: REA-11172098-1
Watercourse Name: Niagara Wind
Project Name: Niagara Wind
Project #: 1609S0369
Field Staff: KE + JK
Date: June 13 2012
Time: 11:15 AM
Weather conditions in previous 24 hrs: Rain
GPS Coordinates (Zone): W71 E 417572 N 4753587
Datum: Niagara Datum
Descriptive Location: Ryegate Bluffs west

Water Quality
Dissolved Oxygen (mg/L): pH:
Water Temperature (°C): Conductivity (µS/cm):
Time in situ measurements taken:

Watercourse Dimensions & Morphology
Mean Watercourse Width: (m) x
Mean Bankfull Width: (m) x
Maximum Pool Depth: (cm) x
Mean Water Depth: (cm) x
% Rifle: 30
% Pool: 30
% Run: 40
% Flat: 0

Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock: 0
Cobble: 40
Gravel: 40
Boulder: 0
Sand: 0
Clay:
Silt:
Muck:
Detritus:

In-water Cover
Cover Types Present (circle): Undercut Banks: Deep Pool: Watercress: Aquatic Veg:
Overhanging Vegetation: Woody Debris: Boulder:
Other:

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Aquatic Veg:
Vegetation:

Adjacent Land Use
Rural residential:

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
None:
Migratory Obstructions (seasonal, permanent)
None:

Note any fish observations
None:

Waterbody Notes
Natural Watercourse: Trapezoidal Channel:
Surficial Drainage (i.e. furrows):
Dugout Pond:
Grassed Swale:
Buried Tile:

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authorized by:
Field Notes QAQCed by:

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Project Name: Niagara Wind
Project #: 16096369
Field Staff: K E
Time: 11:10 AM
Rain 0
N 423 3 438 Datum
Crown + Marshagen

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)
% Rifle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle):
Undercut Banks
Overhanging Vegetation
Woody Debris
Boulder
Other

Deep Pool
Watercress
Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse
Trapezoidal Channel
Grassed Swale
Surficial Drainage (i.e. furrows)
Dugout Pond
Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authorized by KE
Field Notes QAQCed by

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # R11T098-3
Watercourse Name
Photos
Date June 13 2012
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 15 E 61°7'03" N 42°53'60" Datum
Descriptive Location

Water Quality
Dissolved Oxygen (mg/L) 2.0
pH 7.6 Conductivity (µS/cm) 0.0
Water Temperature (°C) 15
Air Temperature (°C) 17
Time in situ measurements taken dry

Watercourse Dimensions & Morphology
Mean Watercourse Width 1.54 (m)
Mean Bankfull Width 1.25 (m)
Maximum Pool Depth 0.30 (cm)
Mean Water Depth 0.20 (cm)
% Run
% Flat
Evidence of eroding banks, Comments on bank stability不稳定处

Substrate (% cover) Bedrock 40 Cobble 40 Sand 40 Silt 40 Muck 0
Boulder 10 Gravel 10 Clay 10 Marl 10 Detritus 10

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
don't dry

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by REA Field Notes QA/QCed by REA
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: R11099-1
Watercourse Name: 4
Photos: See Pho 9
Date: June 13, 2011
Weather conditions in previous 24 hrs: Rain, sleet, humid
GPS Coordinates (Zone): 47° E 0619087 N 41°49101 Datum ND83
Descriptive Location: West of Inman Road (5 km)

Project Name: Niagara Wind
Project #: 400952/69
Field Staff: h. clayton, M. sounda
Time: 9:30
Datum NAD 83

Water Quality
Dissolved Oxygen (mg/L) 3.70
pH 7.32
Conductivity (µS/cm) 589
Water Temperature (°C) 20
Air Temperature (°C) 21
Time in situ measurements taken 9:35

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m)
Mean Bankfull Width 6.0 (m)
Maximum Pool Depth 0.5 (cm)
Mean Water Depth 0.4 (cm)
% Rifle 60
% Pool 20
% Run 10
% Flat 10

Evidence of eroding banks, Comments on bank stability: Stable, Vegetated

Substrate (% cover)
- Bedrock
- Cobble
- Sand
- Gravel
- Clay
- Silt
- Detritus

In-water Cover
Cover Types Present (circle):
- Undercut Banks
- Woody Debris
- Deep Pool
- Watercress
- Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 85%
- Sedges, grasses, early successional

Adjacent Land Use: Agricultural Field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
- Spawning, nursery, foraging

Migratory Obstructions (seasonal, permanent)
- Note any fish observations: Brook, Stickleback

Waterbody Notes
Natural Watercourse ✓ Trapezoidal Channel
Surficial Drainage (i.e. furrows) Dugout Pond
Grassed Swale Buried Tile
Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: h. clayton
Field Notes QAQCed by: W. K.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RMT099-2  Project Name Niagara Wind
Watercourse Name  Project # 160950269
Photos 727-134  Field Staff J.C. Ledden, M. Ferrilia
Date June 12th  Time 9:47
Weather conditions in previous 24 hrs Rain, hot, humid
GPS Coordinates (Zone) E 06430896 N 4493660 Datum North
Descriptive Location Off of Inman Road

Water Quality
Dissolved Oxygen (mg/L) 5.90  pH 7.71  Conductivity (μS/cm) 870
Water Temperature (°C) 18.08  Air Temperature (°C) 21
Time in situ measurements taken 9:46

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m)  Maximum Pool Depth 8.50 (cm)
Mean Bankfull Width 6.0 (m)  Mean Water Depth 1.00
% Riffle 20  % Pool 10  % Run 70  % Flat 10
Evidence of eroding banks, Comments on bank stability Vegetated

Substrate (% cover)
Bedrock 10  Cobble 30  Sand 40  Silt 10  Muck 5  Gravel 20  Clay 5  Marl 5  Detritus 10

In-water Cover
Cover Types Present (circle): Undercut Banks  Woody Debris  Deep Pool  Other Aquatic Veg
Overhanging Vegetation

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 95% grasses, small trees, early

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) Spawning, nursery, foraging

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authorized by K. Clayton  Field Notes QA/QCed by M.F
RAPID ASSESSMENT FORM FOR AQUATIC HABITAT

Stantec

Project: Niagara Wind  Project #: 160950269
Station #: 12-10  Field Staff: K. Masch, M. Faiella
Photos Taken:  Date: Oct 22/12
GPS Coordinates:  Time: 11:35
Descriptive Location: South of Goshen Bank Rd, East of Punville/Weinlefe Rd.

Water Quality
Dissolved Oxygen (mg/L)  pH  Conductivity (μS/cm)
Water Temperature (°C)  Air Temperature (°C) 10°C
Weather conditions in previous 24 hrs: Sunny, 15°C

Watercourse Dimensions & Morphology
Mean Watercourse Width: 1.5 (m)  Maximum Pool Depth: (cm)
Mean Bankfull Width: 3 (m)  Mean Water Depth: 15 (cm)
% Rifle:  % Pool:  % Run:  % Flat:  Evidence of eroding banks, Comments on bank stability: stable

Substrate – Upstream (% cover)

<table>
<thead>
<tr>
<th>% cover</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>Clay</td>
</tr>
<tr>
<td>50</td>
<td>Cobble</td>
</tr>
<tr>
<td>50</td>
<td>Sand</td>
</tr>
<tr>
<td>50</td>
<td>Detritus</td>
</tr>
</tbody>
</table>

Substrate – Downstream (% cover)

<table>
<thead>
<tr>
<th>% cover</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>Clay</td>
</tr>
<tr>
<td>50</td>
<td>Cobble</td>
</tr>
<tr>
<td>50</td>
<td>Sand</td>
</tr>
<tr>
<td>50</td>
<td>Detritus</td>
</tr>
</tbody>
</table>

In-water Cover
Cover Types Present (circle): Overhanging Vegetation
Undercut Banks Woody Debris Deep Pool Vascular Plants

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Upstream: meadow, sycamore, Typha, grasses
Downstream:
Adjacent Land Use
Upstream: ag land, canal, road, forest
Downstream:

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Upstream:
Downstream:
Migratory Obstructions (seasonal, permanent)
Upstream: dry
Downstream:
Note any fish observations: none observed

Other Habitat Notes, Incidental Wildlife Observations, etc.
Channel dominated by Typha Intermittent flow

Field Notes Authored by: K. Masch  Field Notes QA/QCed by: MF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 3-4
Watercourse Name: unnamed tributary
Photos 331-336
Date Oct 22/12
Weather conditions in previous 24 hrs Sunny, 15°C
GPS Coordinates (Zone) E 171 D 0618310 N 4764195 Datum NA83
Descriptive Location off of Castor Grainsborough Tawline, South of Vaughan Road

Water Quality
Dissolved Oxygen (mg/L) 11.24 pH 7.99 Conductivity (µS/cm) 1185
Water Temperature (°C) 8.38 Air Temperature (°C) 15°C
Time in situ measurements taken 10:40

Watercourse Dimensions & Morphology
Mean Watercourse Width 36 (m)
Mean Bankfull Width 44 (m)
Maximum Pool Depth 60 (cm)
Mean Water Depth 40 (cm)
% Riffle - % Pool - % Run - % Flat
Evidence of eroding banks, Comments on bank stability all grassed - stable

Substrate (% cover)
Bedrock 5 Cobble Sand 80 Silt 5 Muck 10 Detritus
Boulder Gravel Clay Marl

In-water Cover
Debris (large) Juncus Banks Deep Pool Waterlily Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other algae

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
15% grasses, leaves, trees, woody plants

Adjacent Land Use
residential, road, ag, field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
Thick vegetation

Note any fish observations none observed

Waterbody Notes
Natural Watercourse ✓ Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Riparian area comprised of Typha, grasses, willows, channel of shoreline very wide (7m wide) however narrow 15m from survey to 45m wide

Field Notes Authored by K. Mason
Field Notes QA/QCed by M.
Station # 4-2
Watercourse Name unnamed tributary
Photos 337-347
Date Oct 28/12
Weather conditions in previous 24 hrs sunny, 15°C
GPS Coordinates (Zone) E 061899 N 4761656 Datum NAD83
Descriptive Location off of Kieme Road, N of Elcho Road, South of Vaughan Rd.

Water Quality
Dissolved Oxygen (mg/L) 6.93
pH 8.38
Conductivity (μS/cm) 799
Air Temperature (°C) 15°C

Time in situ measurements taken 11:06

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.5 (m)
Mean Bankfull Width 4.9 (m)
Maximum Pool Depth 50 (cm)
Mean Water Depth 45 (cm)

% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability all grassed, stable

Substrate (% cover)
Bedrock 10
Boulder 10
Cobble 10
Gravel 10
Sand 80
Silt 10
Muck 10
Marl 0
Detritus 0

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation
Undercut Banks
Woody Debris
Boulder
Deep Pool
Watercress
Other
Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
Corn, bushlet, road

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations none observed

Waterbody Notes
Natural Watercourse Y
Trapezoidal Channel
Surficial Drainage (i.e. furrows)
Dugout Pond
Grassed Swale
Buried Tile

Other Habitat Notes, Incidental Wildlife Observations, etc.
Channel is pooled/flooded once away from culvert. Channel is defined as fairly dry, habitat channel is defined as grassed & fairly dry.
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #:** 4-3  
**Watercourse Name:** Unnamed Tributary  
**Project Name:** Niagara Wind  
**Project #:** 160950269  
**Field Staff:** K. Mason, M. Facella  
**Date:** Oct. 3-13  
**Time:** 11:18  
**Weather conditions in previous 24 hrs:** Sunny, 15°C  
**GPS Coordinates (Zone):** L11 N 9764925 Datum NAD83  
**Descriptive Location:** West of 4-3, 10.2012

### Water Quality

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>pH</th>
<th>Conductivity (µS/cm)</th>
<th>Air Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.62</td>
<td>8.22</td>
<td>784</td>
<td>15°C</td>
</tr>
</tbody>
</table>

**Time in situ measurements taken:** 11:22

### Watercourse Dimensions & Morphology

<table>
<thead>
<tr>
<th>Mean Watercourse Width (m)</th>
<th>Maximum Pool Depth (cm)</th>
<th>Mean Water Depth (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5</td>
<td>50</td>
<td>40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Riffle</th>
<th>% Pool</th>
<th>% Run</th>
<th>% Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Evidence of eroding banks, Comments on bank stability:** Stable - all grassed

### Substrate (% cover)

- Bedrock
- Cobble
- Sand: 80%
- Silt: 10%
- Muck: 10%
- Detritus: 10%
- Boulder
- Gravel
- Clay
- Marl

**In-water Cover**

- Undercut Banks
- Deep Pool
- Watercress
- Aquatic Veg

**Overhanging Vegetation:** Woody Debris, Boulder, Other algae

### Riparian Zone

**Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):**

- 80% Grasses, early

### Adjacent Land Use

- A.G. fields, road, rural, residential

### Fish Habitat Potential

**Critical Habitat (spawning or nursery areas, groundwater upwellings):** None

**Migratory Obstructions (seasonal, permanent):** Low water, thick vegetation

**Note any fish observations:** None observed

### Waterbody Notes

- Natural Watercourse
- Trapezoidal Channel
- Grassed Swale
- Buried Tile
- Surficial Drainage (i.e. furrows)
- Dugout Pond
- Dominated by Aquatic Veg
- Dry

### Other Habitat Notes, Incidental Wildlife Observations, etc.

- D13 side of road. With all the grasses, channel banks are hard to define

Field Notes Authored by: K. Mason  
Field Notes QA/QC'd by: [Signature]
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 4-H 10-20-19  Project Name Niagara Wind
Watercourse Name Unnamed Tributary  Project # 16095825 9
Photos 349-352  Field Staff Name
date 11/18  Time 1:30
Weather conditions in previous 24 hrs Sunny 15°C
GPS Coordinates (Zone) UTM E 820,9735 N 47,4957 Datum NBA83
Descriptive Location off of Vaughan Rd, east of 4-2, 10-20-19

Water Quality
Dissolved Oxygen (mg/L) not enough for VSI
pH
Conductivity (µS/cm)
Water Temperature (°C)
Air Temperature (°C) 15°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 5 (m) Maximum Pool Depth 20 (cm)
Mean Bankfull Width 7 (m) Mean Water Depth 15 (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 80 Silt 10 Muck
Cobble Sand
Boulder Gravel Clay
Clay Marl 10 Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
road, rural, residential, corn, bushlot

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K.Mann  Field Notes QA/QCed by M.P.

G:\01609\Shared\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** 53  10.02.12  
**Watercourse Name** unnamed trib.  
**Photos** 353-357  
**Date** Oct 22 12  
**Weather conditions in previous 24 hrs** Sunny, 15°C  
**GPS Coordinates (Zone)** UTM E 0619028 N 4763161 Datum NAD83  
**Descriptive Location** off of Brick Road, south of Echo Road.

### Water Quality

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>9.19</td>
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<tr>
<td>pH</td>
<td>8.04</td>
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<tr>
<td>Conductivity (µS/cm)</td>
<td>1389</td>
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<tr>
<td>Temperature (°C)</td>
<td>10.22</td>
</tr>
<tr>
<td>Air Temperature (°C)</td>
<td>15°C</td>
</tr>
</tbody>
</table>

**Time in situ measurements taken** 11:50

### Watercourse Dimensions & Morphology

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Mean Watercourse Width (m)</td>
<td>2</td>
</tr>
<tr>
<td>Mean Bankfull Width (m)</td>
<td>3</td>
</tr>
<tr>
<td>Maximum Pool Depth (cm)</td>
<td>80</td>
</tr>
<tr>
<td>Mean Water Depth (cm)</td>
<td>30</td>
</tr>
</tbody>
</table>

**% Riffle** 40%  
**% Pool** 40%  
**% Run** 0%  
**% Flat** 20%  

**Evidence of eroding banks, Comments on bank stability** stable, well vegetated

### Substrate (% cover)

<table>
<thead>
<tr>
<th>Substrate (%)</th>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
<td>20%</td>
<td>50%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

### In-water Cover

<table>
<thead>
<tr>
<th>Cover Type</th>
<th>Present (circle)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Undercut Banks</td>
</tr>
<tr>
<td></td>
<td>Woody Debris</td>
</tr>
<tr>
<td></td>
<td>Deep Pool</td>
</tr>
<tr>
<td></td>
<td>Watercress</td>
</tr>
<tr>
<td></td>
<td>Aquatic Veg</td>
</tr>
</tbody>
</table>

### Riparian Zone

**Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)** 80% grasses, early

### Adjacent Land Use

road, ag, field, pasture

### Fish Habitat Potential

**Critical Habitat (spawning or nursery areas, groundwater upwellings)**

**Migratory Obstructions (seasonal, permanent)** thick vegetation

**Note any fish observations** none observed

### Waterbody Notes

**Natural Watercourse** ✓  
**Trapezoidal Channel**  
**Grassed Swale**  
**Buried Tile**  
**Surficial Drainage (i.e. furrows)**  
**Dugout Pond**  
**Dominated by Aquatic Veg**  

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

channel is wider at culvert

vegetation, water in channel is murky. A couple of ducks

Field Notes Authored by K. Mason  
Field Notes QA/QCed by M.P.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 6-1
Watercourse Name Unnamed trib
Photos 358-361
Date Oct 22, 12
Weather conditions in previous 24 hrs Sunny, 15°C
GPS Coordinates (Zone) 17T E 010790 06 N 4762088 W Datum WGS 83
Descriptive Location N of Zaneboen Road

Water Quality
Dissolved Oxygen (mg/L) dry
pH Conductivity (μS/cm)
Water Temperature (°C) dry
Air Temperature (°C) 15
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) dry
Mean Bankfull Width (m) 1.5 dry
% Riftle dry
% Pool dry
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock
Boulder
Cobble
Gravel
Sand
Silt
Clay
Muck
Marl
Detritus

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
95% grasses, early
Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations dry

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Mason
Field Notes QA/QCed by JFL
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 1-6  
Watercourse Name: Unnamedtrib  
Photos: 362-367  
Date: Oct 25, 12  
Weather conditions in previous 24 hrs: Sunny, 75°F  
GPS Coordinates (Zone): 17T 0619064N 9701625W  
Descriptive Location: Off of N-Kirk Rd, South of Zumpke

Project Name: Niagara Wind  
Project #: 1609500,69  
Field Staff: K. Mason, M. Faella  
Time: 12:12

Water Quality
Dissolved Oxygen (mg/L): 7.22  
Water Temperature (°C): 8.88  
Conductivity (µS/cm): 610  
Air Temperature (°C): 57  
Time in situ measurements taken: 12:12

Watercourse Dimensions & Morphology
Mean Watercourse Width: 1.5 (m)  
Mean Bankfull Width: 8 (m)  
Maximum Pool Depth: 30 (cm)  
Mean Water Depth: 20 (cm)  
% Riffle:  ---  
% Pool:  ---  
% Run:  ---  
% Flat:  ---  
Evidence of eroding banks, Comments on bank stability: Stable - well vegetated

Substrate (% cover)
Bedrock  
Cobble  
Gravel  
Sand  
Silt  
Clay  
Muck  
Detritus

In-water Cover
Sediment Present (circle):  
Overhanging Vegetation:  
Undercut Banks:  
Deep Pool:  
Woodly Debris:  
Boulder:  
Other:  
Aqua veg:  
Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 100% grasses, early

Adjacent Land Use
ag. field, road

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings): none

Migratory Obstructions (seasonal, permanent)
low water, thick vegetation

Note any fish observations: none observed

Waterbody Notes
Natural Watercourse:  
Trapezoidal Channel:  
Grassed Swale:  
Buried Tile:  
Surficial Drainage (i.e. furrows):  
Dugout Pond:  
Dominated by Aquatic Veg:  
Dry:  
channel, stream, defined as a water course with relatively constant depth and width, flow, and direction.

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: K. Mason  
Field Notes QA/QCed by: M.P.
**Wind Farm Waterbody Rapid Assessment Form**

**Station #** 82  
**Watercourse Name** Unnamed tributary  
**Photos** 308-322  
**Date** Oct 22, 2012  
**Weather conditions in previous 24 hrs** Sunny, 15°C  
**GPS Coordinates (Zone)** UTM Zone 17T 0623115 N 4160425  
**Datum** North American 1983  
**Descriptive Location** Off of side road #20, near of concession 6

---

### Water Quality

- **Dissolved Oxygen (mg/L)**  
- **pH**  
- **Conductivity (µS/cm)**  
- **Air Temperature (°C)** 18°C  
- **Time in situ measurements taken**

### Watercourse Dimensions & Morphology

- **Mean Watercourse Width** (m)  
- **Mean Bankfull Width** (m)  
- **% Riffle**  
- **% Pool**  
- **% Run**  
- **% Flat**

**Evidence of eroding banks, Comments on bank stability**

---

### Substrate (% cover)

- Bedrock  
- Cobble  
- Gravel  
- Sand  
- Silt  
- Muck  

### In-water Cover

- **Cover Types Present (circle)**
- **Undercut Banks**
- **Deep Pool**
- **Watercress**
- **Aquatic Veg**

### Riparian Zone

- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)**

### Adjacent Land Use

- **Road, corn**

---

### Fish Habitat Potential

- **Critical Habitat (spawning or nursery areas, groundwater upwellings)**

### Migratory Obstructions (seasonal, permanent)

- **Low water, thick vegetation**

### Note any fish observations

---

### Waterbody Notes

- **Natural Watercourse**  
- **Trapezoidal Channel**  
- **Grassed Swale**  
- **Surficial Drainage (i.e. furrows)**  
- **Dugout Pond**  
- **Buried Tile**  
- **Dominated by Aquatic Veg**  
- **Dry**

### Other Habitat Notes, Incidental Wildlife Observations, etc.

- **Slight channel definition**
- **All terrestrial grasses in channel minimal water**
- **Bulrush area comprised of terrestrial grasses, sedges, wetland aspen**

---

Field Notes Authored by [Signature]  
Field Notes QA/QCed by [Signature]
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 8-3
Watercourse Name Upper Niagara River
Photos 313-371
Date Oct 13, 2012
Weather conditions in previous 24 hrs Sunny, 15°C
GPS Coordinates (Zone) 171 E 46°23'34" W 75°46'02" Datum NAD83
Descriptive Location east of sideroad 49, west of sideroad 42

Water Quality
Dissolved Oxygen (mg/L) __________ ph __________ Conductivity (µS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken __________

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) __________ Mean Bankfull Width (m) __________
Maximum Pool Depth (cm) __________ Mean Water Depth (cm) __________
% Riffle __________ % Pool __________ % Run __________ % Flat __________
Evidence of eroding banks, Comments on bank stability __________

Substrate (% cover)
Bedrock __________ Cobble __________ Sand __________ Silt __________ Mud __________
Boulder __________ Gravel __________ Clay __________ Marl __________

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other __________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
95% grasses, sedges, Typha, early

Adjacent Land Use
road, scrubland, future

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)
low water, thick vegetation

Note any fish observations __________

Waterbody Notes
Natural Watercourse __________ Trapezoidal Channel __________ Grassed Swale __________ Buried Tile __________
Surficial Drainage (i.e. furrows) __________ Dugout Pond __________ Dominated by Aquatic Veg __________ Dry __________

Other Habitat Notes, Incidental Wildlife Observations, etc.
Riparian area is comprised of dogwoods, grasses, Typha, meadow species
channel runs along corridor 6

Field Notes Authored by K. Mason
Field Notes QA/QCed by __________
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 9-2
Watercourse Name: ungainly trap
Photos: 380 - 384
Date: Oct 22 2012
Weather conditions in previous 24 hrs: sunny, 15°C
GPS Coordinates (Zone): 17T E 0623245 N 4758617 Datum: North American
Descriptive Location: off of sideroad 44, south of corn

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C) 18°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm)
Mean Bankfull Width (m) Mean Water Depth (cm)

% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability: stable banks, well vegetated w/ grass, Typha & muds

Substrate (% cover)
Bedrock Cobble Sand Muck
Boulder Gravel Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Vegetation
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 50%, Typha, Early

Adjacent Land Use
pasture, road, aeg, field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations: none

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
dry at the time of survey

Field Notes Authored by: K. Masun
Field Notes QA/QCed by: M.P.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 10-14
Watercourse Name: Unnamed Tributary
Photos 385-390
Date Oct 22/12
Weather conditions in previous 24 hrs Sunny, 15°C
GPS Coordinates (Zone) 117E 0622190 N 4757136 Datum North American 1983
Descriptive Location Off of side road 44 South of 9-16201

Water Quality
Dissolved Oxygen (mg/L) 7.50
Water Temperature (°C) 11.35
Air Temperature (°C) 18°C
Time in situ measurements taken 14:30

Watercourse Dimensions & Morphology
Mean Watercourse Width 2.8 (m)
Mean Bankfull Width 2.8 (m)
Max Pool Depth 140 cm
Mean Water Depth 130 cm
% Riffle 5
% Pool 30
% Run 5
% Flat 60
Evidence of eroding banks, Comments on bank stability Stable, well vegetated

Substrate (% cover)
Bedrock
Cobble
Sand 80
Silt 10
Muck 10
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
15% Small trees, intermediate

Adjacent Land Use
Agricultural fields, road

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations None

Waterbody Notes
Natural Watercourse
Trapezoidal Channel √
Grassed Swale
Surficial Drainage (i.e. furrows)
Dugout Pond

Dominated by Aquatic Veg
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Standing water at culvert, however dry for the rest

Field Notes Authored by K. Mason
Field Notes QA/QCed by M.P.
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station #: 11-3  
Watercourse Name: unnamed tributary  
Project Name: Niagara Wind  
Photos: 394-398  
Project #: 11-08092609  
Date: Oct 22-12  
Field Staff: K. Mason M. Farley  
Weather conditions in previous 24 hrs: Sunny, 15°C  
GPS Coordinates (Zone): 17T E 0623924 N 4755842  
Datums: NAD83  
Descriptive Location: off of Wellandport Road, south of Concession 5, North of Huron 3

**Water Quality**
- Dissolved Oxygen (mg/L)  
- pH  
- Conductivity (μS/cm)  
- Water Temperature (°C)  
- Air Temperature (°C) 15°C  
- Time in situ measurements taken: dry

**Watercourse Dimensions & Morphology**
- Mean Watercourse Width (m)  
- Mean Bankfull Width (m)  
- Maximum Pool Depth (cm)  
- Mean Water Depth (cm)  
- % Riffle  
- % Pool  
- % Run  
- % Flat  
- Evidence of eroding banks, Comments on bank stability: Vegetated

**Substrate (% cover)**
- Bedrock  
- Cobble  
- Gravel  
- Sand  
- Silt  
- Clay  
- Muck  
- Detritus  
- In-water Cover
- Cover Types Present (circle): Undercut Banks  
- Woody Debris  
- Boulder  
- Deep Pool  
- Watercress  
- Aquatic Veg  
- Overhanging Vegetation

**Riparian Zone**
- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 85% grass, 15% small shrubs, early

**Adjacent Land Use**
- ag. fields, road

**Fish Habitat Potential**
- Critical Habitat (spawning or nursery areas, groundwater upwellings)
- Migratory Obstructions (seasonal, permanent): dry
- Note any fish observations: none observed

**Waterbody Notes**
- Natural Watercourse  
- Trapezoidal Channel  
- Grased Swale  
- Surficial Drainage (i.e. furrows)  
- Dugout Pond  
- Buried Tile  
- Dominated by Aquatic Veg  
- Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**
- Waterbody on east side of road, grassed swale on west

Field Notes Authored by: K. Mason  
Field Notes QA/QCed by: MPL
**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

Station #: 12-B  
Watercourse Name: Unnamed Trib  
Photos: 408-413  
Date: 04/23/22  
Weather conditions in previous 24 hrs: Sunny, 18°C  
GPS Coordinates (Zone): E 062°32.28’ N 47°54.52’  
Descriptive Location: off of Jenny Jump Road alongside cornfield  

---

**Water Quality**

<table>
<thead>
<tr>
<th>Dissolved Oxygen (mg/L)</th>
<th>pH</th>
<th>Conductivity (µS/cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.21</td>
<td>8.8</td>
<td>253</td>
</tr>
</tbody>
</table>

**Water Temperature (°C)**: 11.48  
Time in situ measurements taken: 9:25  

---

**Watercourse Dimensions & Morphology**

<table>
<thead>
<tr>
<th>Mean Watercourse Width</th>
<th>3 (m)</th>
<th>Maximum Pool Depth</th>
<th>25 (cm)</th>
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</thead>
<tbody>
<tr>
<td>Mean Bankfull Width</td>
<td>6 (m)</td>
<td>Mean Water Depth</td>
<td>20 (cm)</td>
</tr>
</tbody>
</table>

% Riffle 100  % Pool  % Run  % Flat

Evidence of eroding banks, Comments on bank stability: Some erosion & scoping

---

**Substrate (% cover)**

<table>
<thead>
<tr>
<th>Bedrock</th>
<th>Cobble</th>
<th>Sand</th>
<th>Silt</th>
<th>Muck</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>10</td>
<td>10</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Boulder</th>
<th>Gravel</th>
<th>Clay</th>
<th>Marl</th>
<th>Detritus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

---

**In-water Cover**

| Cover Types Present (circle):  
Undercut Banks  
Overhanging Vegetation  
Woody Debris  
Boulder  
Deep Pool  
Other  
**Aquatic Veg**  
**Watercress**

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**Riparian Zone**

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 80% grasses & meadow species, early

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**Adjacent Land Use**

Corn & unmaintained road

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Fish Habitat Potential

Critical Habitat (spawning or nursery areas, groundwater upwellings): None

Migratory Obstructions (seasonal, permanent): Low water

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Note any fish observations: Non-observed

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**Waterbody Notes**

Natural Watercourse: Trapezoidal Channel

Surficial Drainage (i.e. furrows): Dugout Pond

Grassed Swale: Buried Tile

Dominated by Aquatic Veg: Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.: Defined trapezoidal

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Field Notes Authored by: K Mason  
Field Notes QA/QCed by: MF
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 4-12-9
Watercourse Name: Unnamed
Photos: 414-919
Date: 08/30/12
Weather conditions in previous 24 hrs: Sunny, high 18°C
GPS Coordinates (Zone): E 6024235, N 4753089, Datum: NAD 83
Descriptive Location: Off of Bozart Road, west of Dunnville

Water Quality
Dissolved Oxygen (mg/L): pH: Conductivity (µS/cm):
Water Temperature (°C): Air Temperature (°C): 10°C
Time in situ measurements taken:

Watercourse Dimensions & Morphology
Mean Watercourse Width (m): 9
Mean Bankfull Width (m): 9
Maximum Pool Depth (cm): % Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability:

Substrate (% cover)
- Bedrock
- Cobble
- Sand 80%
- Silt 10%
- Muck
- Boulder
- Gravel
- Clay
- Marl 10%
- Detritus

In-water Cover
- Undercut Banks
- Deep Pool
- Watercress
- Aquatic Veg

Riparian Vegetation
- Woody Debris
- Boulder
- Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):

Adjacent Land Use

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings):

Migratory Obstructions (seasonal, permanent)

Note any fish observations:

Waterbody Notes
Natural Watercourse: Trapezoidal Channel
Surficial Drainage (i.e. furrows): Dugout Pond
Grassed Swale: Buried Tile

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: K. Mason
Field Notes QA/QCed by: M.H.

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 13-5    Project Name Niagara Wind
Watercourse Name unnamed    Project # 160950269
Photos 920 - 923    Field Staff K. Main, M. Facello
Date Oct 23/12    Time 9:57
Weather conditions in previous 24 hrs Sunny, 18°C
GPS Coordinates (Zone) 177 E 0537222 N 4752388 Datum Na083
Descriptive Location off of Booker Rd, west of 13-1, 10 - 2012
& Dunville/Wainfleet township

Water Quality
Dissolved Oxygen (mg/L) Dry    pH    Conductivity (µS/cm)
Water Temperature (°C)    Air Temperature (°C) 10°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Dry    Maximum Pool Depth (cm)
Mean Bankfull Width (m) 2.5    Mean Water Depth (cm)
% Riffle    % Pool    % Run    % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock    Cobble    Sand    Silt 100    Muck
Boulder    Gravel    Clay    Marl    Detritus

In-water Cover
Cover Type Present (circle): Undercut Banks    Deep Pool    Watercress
Overhanging Vegetation Woody Debris    Boulder    Other
Aqua Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
80% - meadow, 20% Phragmites (early

Adjacent Land Use
ag. field, road, bushlot

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations none

Waterbody Notes
Natural Watercourse Trapezoidal Channel    Grassed Swale    Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond    Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by: K. Main
Field Notes QA/QCed by: M. Facello

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 13-6  
Watercourse Name unnamed trib  
Photos 424-427  
Date Oct 23/12  
Weather conditions in previous 24 hrs Sunny 18°C  
GPS Coordinates (Zone) 11T 0623258 N 4952788 Datum NaD83  
Descriptive Location off of Booker Road west of 13-2 & 13-I, running along bushlot (to the N)  

Water Quality  
Dissolved Oxygen (mg/L) [not enough for YSI]  
PH [ ]  
Conductivity (µS/cm) [ ]  
Air Temperature (°C) 10°C  
Time in situ measurements taken [ ]  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 15 (m)  
Mean Bankfull Width 2 (m)  
% Ripple [ ]  
% Pool [ ]  
% Run [ ]  
% Flat [ ]  
Evidence of eroding banks, Comments on bank stability well vegetated  

Substrate (%)  
Bedrock [ ]  
Cobble [ ]  
Sand [80]  
Silt [10]  
Muck [ ]  
Boulder [ ]  
Gravel [ ]  
Clay [ ]  
Marl [10]  
Detritus [ ]  

In-water Cover  
Cover Types Present (circle):  
Overhanging Vegetation [ ]  
Undercut Banks [ ]  
Boulder [ ]  
Deep Pool [ ]  
Watercress [ ]  
Aquatic Veg [ ]  
Riparian Zone  
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 75% meadow species & poplars, intermediate  

Adjacent Land Use  
road, ag field, bushlot  

Fish Habitat Potential  
Critical Habitat (spawning or nursery areas, groundwater upwellings) [ ]  

Migratory Obstructions (seasonal, permanent)  

Note any fish observations none observed  

Waterbody Notes  
Natural Watercourse [ ]  
Trapezoidal Channel [ ]  
Grassed Swale [ ]  
Buried Tile [ ]  
Surficial Drainage (i.e. furrows) [ ]  
Dugout Pond [ ]  
Dominated by Aquatic Veg [ ]  
Dry [ ]  

Other Habitat Notes, Incidental Wildlife Observations, etc.  
Road: non-waterbody on north side  
Riparian area consists of poplar, dogwood, grasses, meadow  

Field Notes Authored by K Mason  
Field Notes QA/QCed by JML  
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**WIND FARM WATERBODY RAPID ASSESSMENT FORM**

**Station #** 13-7  
**Watercourse Name** Unnamed Trib  
**Photos** 428-430  
**Date** Oct 23/12  
**Weather conditions in previous 24 hrs** Sunny, 18°C  
**GPS Coordinates (Zone)** 177 E 0644597 N 4754861 Datum NAD 83  
**Descriptive Location** off of Dunnville/Winnsfleet Tarmine South of Booker Road

### Water Quality

- **Dissolved Oxygen (mg/L)** 8.50  
- **pH** 8.32  
- **Conductivity (μS/cm)** 1058  
- **Water Temperature (°C)** 11.69  
- **Air Temperature (°C)** 10.41  

**Time in situ measurements taken**

### Watercourse Dimensions & Morphology

- **Mean Watercourse Width** 8 (m)  
- **Mean Bankfull Width** 6 (m)  
- **Maximum Pool Depth** 35 (cm)  
- **Mean Water Depth** 10 (cm)  
- **% Riffle** 30  
- **% Pool** 20  
- **% Run** 10  
- **% Flat** 40

**Evidence of eroding banks, Comments on bank stability** well vegetated - stable

### Substrate (% cover)

- Bedrock  
- Cobble  
- Sand  
- Gravel  
- Clay  
- Silt  
- Muck  
- Detritus

### In-water Cover

- Sedges & Cattails  
- Undercut Banks  
- Woody Debris  
- Boulder  
- Deep Pool  
- Watercress  
- Aquatic Veg

**Riparian Zone**

- Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

**Adjacent Land Use**

- ag land, road, rural, residential

### Fish Habitat Potential

- **Critical Habitat** (spawning or nursery areas, groundwater upwellings)

**Migratory Obstructions (seasonal, permanent)**

- potential spawning for cyprinid fish - low water

**Note any fish observations** none observed

### Waterbody Notes

- Natural Watercourse  
- Trapezoidal Channel  
- Grassed Swale  
- Buried Tile  
- Surficial Drainage (i.e. furrows)  
- Dugout Pond  
- Dominated by Aquatic Veg  
- Dry

**Other Habitat Notes, Incidental Wildlife Observations, etc.**

- surrounded by wild/riparian vegetation, lot of duckweed

Field Notes Authored by K. Mason  
Field Notes QA/QCed by M. F.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 13-8  
Watercourse Name Unnamed  
Photos 431-435  
Date Oct 23 12  
Weather conditions in previous 24 hrs Sunny 18°C  
GPS Coordinates (Zone) N 44°31'50" E 178°24'44.6"  
Descriptive Location off of Petal Road, West of Dunnville  
Datum NAD83  

Water Quality  
Dissolved Oxygen (mg/L) 9.13  
Water Temperature (°C) 11.92  
Conductivity (μS/cm) 273-  
Air Temperature (°C) 10°C  

Time in situ measurements taken 10:55  

Watercourse Dimensions & Morphology  
Mean Watercourse Width 2.4 (m)  
Mean Bankfull Width 4.1 (m)  
Maximum Pool Depth 3.0 (cm)  
Mean Water Depth 2.0 (cm)  

% Riffle % Pool % Run % Flat  

Evidence of eroding banks, Comments on bank stability  

Substrate (% cover)  

Bedrock  60  
Cobble  0  
Sand  70  
Silt  10  
Muck  0  
Detritus  0  

In-water Cover  

Undercut Banks  
Boulder  
Deep Pool  
Watercress  
Aquatic Veg  

Overhanging Vegetation  

Woody Debris  
Boulder  
Other  

Riparian Zone  

Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)  

60%  

Adjacent Land Use  

road, ag field  

Fish Habitat Potential  

Critical Habitat (spawning or nursery areas, groundwater upwellings)  

none  

Migratory Obstructions (seasonal, permanent)  

low water, thick grasses  

Note any fish observations  

Waterbody Notes  

Natural Watercourse  
Trapezoidal Channel  
Surficial Drainage (i.e. furrows)  
Dugout Pond  
Grassed Swale  
Buried Tile  
Dominated by Aquatic Veg  
Dry  

Other Habitat Notes, Incidental Wildlife Observations, etc.  

Riparian area count of meadow, pine,  

Field Notes Authored by J. Maun  
Field Notes QA/QC by  

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Stantec

Station # 14-1                                   Project Name Niagara Wind
Watercourse Name 440-444                             Project # 160950869
Photos Sunny, 8:30 AM                             Field Staff K. Mason, M. Faiella
Date Oct 23, 2017                   Time 11:16
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) E N 47°51'76" 4075305 Datum NAD83
Descriptive Location off of Dunnville/Wein fleet township road

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (µS/cm)
Water Temperature (°C) Air Temperature (°C) 15°C

Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 20 (m) Maximum Pool Depth 30 (cm)
Mean Bankfull Width 25 (m) Mean Water Depth 25 (cm)

% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock Cobble Sand 40 Silt 20 Muck 10 Detritus
Boulder Gravel Clay

In-water Cover
Cover Types Present (circle):
Overhanging Vegetation Woody Debris Deep Pool Watercress Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
15% Scrubland, 40% Grasses, Early

Adjacent Land Use
road, ag. field

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations
none observed

Waterbody Notes
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
Water body on east side of Dunnville/Wein fleet township, non-waterbody on west side.

Field Notes Authored by K. Mason
Field Notes QA/QCed by M.L.
## WIND FARM WATERBODY RAPID ASSESSMENT FORM

### Station
- **Station #:** 15-3
- **Watercourse Name:** unnamed
- **Photos:** 945 - 949
- **Date:** Oct 23, 12
- **Weather conditions in previous 24 hrs:** Sunny, 18°C
- **GPS Coordinates (Zone):** 19E 060 5873 N 475 0847
- **Datum:** NAD83

### Water Quality
- **Dissolved Oxygen (mg/L):** 9.73
- **pH:** 8.38
- **Conductivity (µS/cm):** 608
- **Water Temperature (°C):** 12.77
- **Air Temperature (°C):** 10°C

### Watercourse Dimensions & Morphology
- **Mean Watercourse Width:** 1.5 (m)
- **Mean Bankfull Width:** 3 (m)
- **Maximum Pool Depth:** 25 (cm)
- **Mean Water Depth:** 15 (cm)
- **% Riffle:**
- **% Pool:**
- **% Run:**
- **% Flat:**

### Substrate (% cover)
- **Bedrock**
- **Cobble**
- **Sand**
- **Silt**
- **Muck**
- **Clay**
- **Marl**
- **Detritus**

### In-water Cover
- **Cover Types Present (circle):**
- **Overhanging Vegetation:**
- **Undercut Banks:**
- **Deep Pool:**
- **Boulder:**
- **Watercress:**
- **Aquatic Veg:**

### Riparian Zone
- **Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional):** 95%, Typha, Eriophorum

### Adjacent Land Use
- **canal, road, corn**

### Fish Habitat Potential
- **Critical Habitat (spawning or nursery areas, groundwater upwellings):**
- **Migratory Obstructions (seasonal, permanent):**
- **low water, thick vegetation**

### Waterbody Notes
- **Natural Watercourse**
- **Trapezoidal Channel**
- **Grassed Swale**
- **Buried Tile**
- **Surficial Drainage (i.e. furrows)**
- **Dugout Pond**
- **Dominated by Aquatic Veg**
- **Dry**

### Other Habitat Notes, Incidental Wildlife Observations, etc.
- **channel dominated by cattails**

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Field Notes Authorized by: K. Mason
Field Notes QA/QCed by: [Signature]

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 15-4
Watercourse Name: Unnamed
Photos 452-454
Date Oct 23
Weather conditions in previous 24 hrs Sunny, 18°C
GPS Coordinates (Zone) 17T E 0632745 N 4750584 Datum NAD83
Descriptive Location Winfield Township off of Canal Bank Rd. west of Dunnville

Water Quality
Dissolved Oxygen (mg/L) pH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C) 10°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 2 (m) Maximum Pool Depth 20 (cm)
Mean Bankfull Width 4.5 (m) Mean Water Depth 15 (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability Stable, banks all grassed

Substrate (% cover)
Bedrock 10 Cobble 80 Sand 10 Clay 80 Silt 10 Muck 10 Detritus 10
Boulder Gravel 10 Clay Marl Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
17% grasses & Typha, Early

Adjacent Land Use
road, residential

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
none

Migratory Obstructions (seasonal, permanent)
law water

Note any fish observations none observed

Waterbody Notes
Natural Watercourse V Trapezoidal Channel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
maured grass up to channel edge, very defined channel
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 15-5 15-4 15-3 15-2
Watercourse Name unnamed
Photos 455-456
Date Oct 2-5
Weather conditions in previous 24 hrs Sunny, 80°
GPS Coordinates (Zone) 17T E 0654439 N 4750255 Datum NAD83
Descriptive Location off of Hutchinson Rd, west of Canal Bank Rd & 15-2

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (µS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) __________
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width ______(m) ______ Mean Bankfull Width ______(m) ______
Mean Watercourse Width ______(m) ______ Mean Bankfull Width ______(m) ______
% Riffle __________ % Pool __________ % Run __________ % Flat __________
Evidence of eroding banks, Comments on bank stability well vegetated

Substrate (% cover)

Bedrock  Cobble
Boulder  Gravel
Sand  Silt
Muck  Clay

In-water Cover

Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 15% forest, mature

Adjacent Land Use

ag field, canal

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) none

Migratory Obstructions (seasonal, permanent) low water

Note any fish observations

Waterbody Notes
Natural Watercourse  ______ Trapezoidal Channel  ______ Grassed Swale  ______ Buried Tile  ______
Surficial Drainage (i.e. furrows)  ______ Dugout Pond  ______ Dominated by Aquatic Veg  ______

Other Habitat Notes, Incidental Wildlife Observations, etc. riparian area contains

Field Notes Authored by K. Masa Field Notes QA/QCed by ml
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 1-2
Watercourse Name Unknown
Photos June 22/12
Date
Weather conditions in previous 24 hrs hot & humid 32°C
GPS Coordinates (Zone) 17T E 0622161 N 47826044 Datum NAD83
Descriptive Location North of intersection of Greenview Rd.

Water Quality
Dissolved Oxygen (mg/L) __________ pH __________ Conductivity (µS/cm) __________
Water Temperature (°C) __________ Air Temperature (°C) 32°C
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width (m) __________ Maximum Pool Depth (cm) __________
Mean Bankfull Width (m) __________ Mean Water Depth (cm) __________
% Riffle __________ % Pool __________ % Run __________ % Flat
Evidence of eroding banks, Comments on bank stability __________

Substrate (% cover)
Bedrock __________ Cobble __________ Sand __________ Silt __________ Muck
Boulder __________ Gravel __________ Clay __________ Marl __________ Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other __________

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use Residential, farmland, road

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings) none
Migratory Obstructions (seasonal, permanent)

Note any fish observations none observed

Waterbody Notes
Natural Watercourse ___ Trapezoidal Channel ___ Grassed Swale ___ Buried Tile ___ Seep ___
Surficial Drainage (i.e. furrows) ___ Dugout Pond ___ Dominated by Aquatic Veg ___ Dry___

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by K. Clayton Field Notes QA/QCed by J.k.

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 1-3  Project Name Niagara Wind
Watercourse Name unknown  Project # 1604582699
Photos  Field Staff J. Reone, L. Clayton
Date June 28, 2013  Time 11:15
Weather conditions in previous 24 hrs hot, humid, 32°C
GPS Coordinates (Zone) 1716 062911E  N 781929 Datum NAD83
Descriptive Location near intersection of Greenlane & Maintenance Road

Water Quality
Dissolved Oxygen (mg/L) 8.10  pH 8.70  Conductivity (µS/cm) 835
Water Temperature (°C) 20.10  Air Temperature (°C) 32°C
Time in situ measurements taken 11:16

Watercourse Dimensions & Morphology
Mean Watercourse Width 35 (m)  Maximum Pool Depth 0.20 (cm)
Mean Bankfull Width 35-50 (m)  Mean Water Depth 0.15 (cm)
% Riffle 25  % Pool 100  % Run 5  % Flat 95
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
Bedrock 50  Cobble 10  Sand 20  Silt 10  Muck 2  Detritus
Boulder 10  Gravel 5  Clay 10  Marl 5

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
15% trees, grasses, intermediate
Adjacent Land Use

Road, ag land

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile  Seep
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg  Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes Authored by L. Clayton  Field Notes QA/QCed by J. Reone

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WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station #: 12-3-6
Watercourse Name: Unknown
Photos: See photo log
Date: June 2012
Weather conditions in previous 24 hrs: hot & humid
GPS Coordinates (Zone): 17T E 0623260 N 4752701 Datum: Nad83
Descriptive Location: On Bocke Rd ~ 1 km west of Township Dunny Whoo

Water Quality
Dissolved Oxygen (mg/L): 5.54
pH: 7.90
Conductivity (μS/cm): 498
Water Temperature (°C): 21.57
Air Temperature (°C): 29
Time in situ measurements taken: 10:10

Watercourse Dimensions & Morphology
Mean Watercourse Width: 1.75 (m)
Mean Bankfull Width: 3.0 (m)
Maximum Pool Depth: 20 (cm)
Mean Water Depth: 15 (cm)
% Rifle: 50
% Pool: 50
% Run: 50
% Flat: 0
Evidence of eroding banks, Comments on bank stability: none

Substrate (% cover)
Bedrock
Cobble
Sand 40
Silt 40
Muck
Boulder
Gravel 20
Clay
Marl
Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks
Overhanging Vegetation
Woody Debris
Boulder
Other
Watercress
Aquatic Veg

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional): 70%
mature
Shrubs

Adjacent Land Use
ag. rd.

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings):

Migratory Obstruction(s) (seasonal, permanent): Lack of water

Note any fish observations: School of young or possible black sturgeon

Waterbody Notes
Natural Watercourse: Trapezoidal Channel
Surficial Drainage (i.e. furrows): Dugout Pond
Grassed Swale
Buried Tile
Dominated by Aquatic Veg
Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.: song bird sp.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 12-6
Project Name Niagara Wood
Watercourse Name unnamed Trib
Photos 424-427
Project # 1609502649
Date Oct 23/12
Field Staff K. Mason, M. Eriella
Weather conditions in previous 24 hrs Sunny 80°C
GPS Coordinates (Zone) 117 W 6022258 N 4752708 Datum WAD 83
Descriptive Location off of Booker Road west of 13-2
& 13-1, running along bushlot (to the N)

Weather conditions in previous 24 hrs Sunny 80°C

13-1. running along bushlot (to the N)

Water Quality
Dissolved Oxygen (mg/L) not enough for YSI
Water Temperature (°C) 10°C
pH Conductivity (μS/cm)
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width 5 (m)
Maximum Pool Depth 15 (cm)
Mean Bankfull Width 2 (m)
Mean Water Depth 10 (cm)
% Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability well vegetated

Substrate (% cover)
Bedrock 0
Cobble 0
Sand 80
Boulder 0
Gravel 0
Clay 10
Marl 10
Detritus

In-water Cover
Cover Types Present (circle):

Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

15% meadow species & poplars, intermediate

Adjacent Land Use
road, ag field, bushlot

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations none observed

Waterbody Notes
Natural Watercourse ⬑ Trapezoidal Channel ⬑ Grassed Swale ⬑ Buried Tile ⬑
Surficial Drainage (i.e. furrows) ⬑ Dugout Pond ⬑ Dominated by Aquatic Veg ⬑ Dry ⬑

Other Habitat Notes, Incidental Wildlife Observations, etc.
Road, non-waterbody on North side - reach 75-2
Riparian area consists of poplars, dogwood, grasses, meadow
species etc.

Field Notes Authored by K. Mason
Field Notes QA/QCed by I.W.
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # 16-3  Project Name Niagara Wind
Watercourse Name unknown  Project # 160952-269
Photos  Field Staff S. Keene, R. Clayton
Date June 21, 12  Time 9:50
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) 17T E 617946 N 4704975 Datum Nad83
Descriptive Location Off of Port Davidson Road, South of 16-2

Water Quality
Dissolved Oxygen (mg/L) _______  pH _______ Conductivity (μS/cm) _______
Water Temperature (°C) _______  Air Temperature (°C) 30°
Time in situ measurements taken

Watercourse Dimensions & Morphology
Mean Watercourse Width _______ (m)  Maximum Pool Depth _______ (cm)
Mean Bankfull Width _______ (m)  Mean Water Depth _______ (cm)
% Riffle  % Pool  % Run  % Flat
Evidence of eroding banks, Comments on bank stability

Substrate (% cover)
________________________________________________________________________
Bedrock  Cobble  20  Sand  40  Silt  Muck
Boulder  Gravel  40  Clay  Marl  Detritus

In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other

Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)

Adjacent Land Use
100% RCG, Early
residential, farmland

Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)

Migratory Obstructions (seasonal, permanent)

Note any fish observations

Waterbody Notes
Natural Watercourse  Trapezoidal Channel  Grassed Swale  Buried Tile
Surficial Drainage (i.e. furrows)  Dugout Pond  Dominated by Aquatic Veg Dry

Other Habitat Notes, Incidental Wildlife Observations, etc.
reed canary grass & a little topho - no water

Field Notes Authored by K. Clayton  Field Notes QA/QCed by ME
Appendix D

DFO Operational Statements
For the purpose of this Operational Statement, the term High-Pressure Directional Drilling (HPDD) means trenchless methods of crossing a watercourse using pressurized mud systems. HPDD is used to install cables and pipelines for gas, telecommunications, fibre optics, power, sewer, oil and water lines underneath watercourses and roads. This method is preferable to open-cut and isolated crossings since the cable or pipeline is drilled underneath the watercourse with very little disturbance to the bed or banks. HPDD involves drilling a pilot bore hole underneath the watercourse towards a surface target, back-reaming the bore hole to the drill rig while pulling the pipe along through the hole. This process typically uses the freshwater gel mud system composed of a mixture of clean, freshwater as the base, bentonite (clay-based drilling lubricant) as the viscosifier and synthetic polymers.

The general order of preference for carrying out a cable or pipeline stream crossing in order to protect fish and fish habitat is: a) a punch or bore crossing (see Punch & Bore Crossings Operational Statement), b) HPDD crossing, c) dry open-cut crossing, and d) isolated open-cut crossing (see Isolated or Dry Open-cut Stream Crossings Operational Statement). This order must be balanced with practical considerations at the site.

One of the risks associated with HPDD is the escape of drilling mud into the environment as a result of a spill, tunnel collapse or the rupture of mud to the surface, commonly known as “frac-out”. A frac-out is caused when excessive drilling pressure results in drilling mud propagating toward the surface. The risk of a frac-out can be reduced through proper geotechnical assessment practices and drill planning and execution. The extent of a frac-out can be limited by careful monitoring and having appropriate equipment and response plans ready in the event that one occurs. HPDD can also result in excessive disturbance of riparian vegetation and sedimentation and erosion due to operation of equipment on the shoreline or forcing to access the opposite bank.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the Fisheries Act no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the Fisheries Act.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your high-pressure directional drill project without a DFO review when you meet the following conditions:

- the crossing technique will not damage the stream bed and thereby negatively impact fish or fish habitat,
- the crossing is not a wet open-cut crossing,
- you have an emergency frac-out response plan and a contingency crossing plan in place that outline the protocol to monitor, contain and clean-up a potential frac-out and an alternative method for carrying out the crossing, and
- you incorporate the Measures to Protect Fish and Fish Habitat when High-Pressure Directional Drilling listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the Fisheries Act and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the Fisheries Act.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the Species at Risk Act (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Ontario Operational Statement notification form (www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

### Measures to Protect Fish and Fish Habitat when High-Pressure Directional Drilling

1. Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.
2. Design the drill path to an appropriate depth below the watercourse to minimize the risk of frac-out and to a depth...
to prevent the line from becoming exposed due to natural scouring of the stream bed. The drill entry and exit points are far enough from the banks of the watercourse to have minimal impact on these areas.

3. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the road or utility right-of-way.

4. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A Temporary Stream Crossing Operational Statement is also available.

   4.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.

   4.2. Grading of the stream banks for the approaches should not occur.

   4.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.

   4.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the Ontario In-Water Construction Timing Windows).

   4.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

5. Operate machinery on land above the ordinary high water mark (see definition below) and in a manner that minimizes disturbance to the banks of the watercourse.

   5.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

   5.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.

   5.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

   5.4. Restore banks to original condition if any disturbance occurs.

6. Construct a dugout/settling basin at the drilling exit site to contain drilling mud to prevent sediment and other deleterious substances from entering the watercourse. If this cannot be achieved, use silt fences or other effective sediment and erosion control measures to prevent drilling mud from entering the watercourse. Inspect these measures regularly during the course of construction and make all necessary repairs if any damage occurs.

6.1. Dispose of excess drilling mud, cuttings and other waste materials at an adequately sized disposal facility located away from the water to prevent it from entering the watercourse.

7. Monitor the watercourse to observe signs of surface migration (frac-out) of drilling mud during all phases of construction.

Emergency Frac-out Response and Contingency Planning

8. Keep all material and equipment needed to contain and clean up drilling mud releases on site and readily accessible in the event of a frac-out.

9. Implement the frac-out response plan that includes measures to stop work, contain the drilling mud and prevent its further migration into the watercourse and notify all applicable authorities, including the closest DFO office in the area (see Ontario DFO office list). Prioritize clean up activities relative to the risk of potential harm and dispose of the drilling mud in a manner that prevents re-entry into the watercourse.

10. Ensure clean up measures do not result in greater damage to the banks and watercourse than from leaving the drilling mud in place.

11. Implement the contingency crossing plan including measures to either re-drill at a more appropriate location or to isolate the watercourse to complete the crossing at the current location. See Isolated or Dry Open-cut Stream Crossings Operational Statement for carrying out an isolated trenched crossing.

12. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.

13. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

   13.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the “active channel/bank-full level” which is often the 1.2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial
vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO’s Fish Habitat and Determining the High Water Mark on Lakes.

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Fax: (807) 346-8545
Email: ReferralsThunderBay@DFO-MPO.GC.CA

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NOTIFICATION FORM

**PROONENT INFORMATION**

<table>
<thead>
<tr>
<th>NAME:</th>
<th>STREET ADDRESS:</th>
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<tbody>
<tr>
<td>CITY/TOWN:</td>
<td>PROVINCE/TERRITORY:</td>
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<tr>
<td>TEL. NO. (RESIDENCE):</td>
<td>TEL. NO. (WORK):</td>
</tr>
<tr>
<td>FAX NO:</td>
<td>EMAIL ADDRESS:</td>
</tr>
</tbody>
</table>

**CONTRACTOR INFORMATION** (provide this information if a Contractor is working on behalf of the Proponent)

<table>
<thead>
<tr>
<th>NAME:</th>
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<tbody>
<tr>
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<tr>
<td>FAX NO:</td>
<td>EMAIL ADDRESS:</td>
</tr>
</tbody>
</table>

**PROJECT INFORMATION**

Select Operational Statements that are being used (check all applicable boxes):

- Beach Creation for Residential Use
- Ice Bridges and Snow Fills
- Beaver Dam Removal
- Isolated Pond Construction
- Bridge Maintenance
- Isolated or Dry Open-cut Stream Crossings
- Clear-Span Bridges
- Maintenance of Riparian Vegetation in Existing Rights-of-Way
- Culvert Maintenance
- Mineral Exploration Activities
- Dock and Boathouse Construction
- Moorings
- High-Pressure Directional Drilling
- Overhead Line Construction
- Public Beach Maintenance
- Punch & Bore Crossings
- Bridge Maintenance
- Routine Maintenance Dredging
- Isolated Pond Construction
- Submerged Log Salvage
- Clear-Span Bridges
- Temporary Stream Crossing
- Culvert Maintenance
- Underwater Cables

Select the type of water body or watercourse at or near your project:

- River, Stream, Creek
- Marine (Ocean or Sea)
- Lake (8 hectares or greater)
- Pond or wetland (pond is less than 8 hectares)
- Estuary

**PROJECT LOCATION (S)** (fill out this section if the project location is different from Proponent Information; append multiple project locations on an additional sheet if necessary)

<table>
<thead>
<tr>
<th>Name of water body or watercourse</th>
<th>Coordinates of the Project (UTM co-ordinate or Degrees, Minutes, Seconds), if available</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Easting: Northing: Latitude: Longitude:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legal Description (Plan, Block, Lot, Concession, Township)</th>
<th>Directions to Access the Project Site (i.e., Route or highway number, etc.)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Proposed Start Date (YYYY/MM/DD):</th>
<th>Proposed Completion Date (YYYY/MM/DD):</th>
</tr>
</thead>
</table>

We ask that you notify DFO, preferably 10 working days before starting your work, by filling out and sending in, by mail or by fax, this notification form to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to the Operational Statement.

I, ____________________________ (print name) certify that the information given on this form is, to the best of my knowledge, correct and complete.

Signature ____________________________ Date ____________________________

**Note:** If you cannot meet all of the conditions and cannot incorporate all of the measures in the Operational Statement then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list), or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain more information on the possible options you should consider to avoid contravention of the *Fisheries Act*. For activities carried out under the Crown Forest Sustainability Act, the requirements of the applicable Operational Statements are addressed through an existing agreement and the Ontario Ministry of Natural Resources is the first point of contact.

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act* for the purpose of administering the fish habitat protection provisions of the *Fisheries Act*. Personal information will be protected under the provisions of the *Privacy Act* and will be stored in the Personal Information Bank DFO-SCI-605. Under the *Privacy Act*, individuals have a right to, and on request shall be given access to, any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada’s Info Source publications available at www.infosource.gc.ca or in Government of Canada offices. Information other than “personal” information may be accessible or protected as required by the provisions of the *Access to Information Act*. 
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Fisheries and Oceans Canada
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This Operational Statement (Version 3.0) may be updated as required by Fisheries and Oceans Canada. It is your responsibility to use the most recent version. Please refer to the Operational Statements web site at http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_e.asp to ensure that a more recent version has not been released.
For the purpose of this Operational Statement, the term “Isolated Crossing” means a temporary stream crossing technique that allows work (e.g., trenched pipeline or cable installation) to be carried out “in-the-dry” while diverting the natural flow around the site during construction. These types of open trenched crossings are isolated using flume or dam and pump techniques (see Pipeline Associated Watercrossings, 2005 at http://www.capp.ca/default.asp?V_DOC_ID=763&PubID=96717).

The term “Dry Open-cut Stream Crossing” means a temporary stream crossing work (e.g., trenched pipeline or cable installation) that is carried out during a period when the entire stream width is seasonally dry or is frozen to the bottom.

The risks to fish and fish habitat associated with isolated open cut stream crossings include the potential for direct damage to substrates, release of excessive sediments, loss of riparian habitat, stranding of fish in dewatered areas, impingement/entrainment of fish at pump intakes, and disruption of essential fish movement patterns. Similarly, dry open-cut stream crossings pose a risk to fish and fish habitat due to potential harmful alteration of substrates, loss of riparian habitat, and release of excessive sediment once stream flows resume.

The order of preference for carrying out a cable or pipeline stream crossings, in order to protect fish and fish habitat, is: a) punch or bore crossing (see Punch & Bore Crossings Operational Statement); b) high-pressure directional drill crossing (see High-Pressure Directional Drilling Operational Statement); c) dry open-cut crossing; and d) isolated open-cut crossing. This order must be balanced with practical considerations at the site.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the Fisheries Act no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the Fisheries Act.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your isolated or dry open-cut stream crossing project without a DFO review when you meet the following conditions:

- if working within the Thames River, Sydenham River, Ausable River, Grand River, or Maitland River, you have contacted your Conservation Authority or local DFO Office (see Ontario DFO office list) to ensure that your project will not impact Schedule I mussel species at risk under the federal Species at Risk Act (SARA), before proceeding,
- for dry, open-cut crossings the watercourse is dry or frozen completely to the bottom at the site,
- for isolated crossings, the channel width of the watercourse at the crossing site is less than 5 meters from ordinary high water mark to ordinary high water mark (HWM) (see definition below),
- the isolated crossing does not involve the construction or use of an off-stream diversion channel, or the use of earthen dams,
- the isolated crossing ensures that all natural upstream flows are conveyed downstream during construction, with no change in quality or quantity,
- the site does not occur at a stream location involving known fish spawning habitat, particularly if it is dependent on groundwater upwelling,
- the use of explosives is not required to complete the crossing, and
- you incorporate the Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated or Dry Open-cut Stream Crossing listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the Fisheries Act and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the Fisheries Act.

You are required to respect all municipal, provincial and federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with SARA (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work, by filling out and sending the Ontario Operational Statement notification form (www.dfo-mpo.gc.ca/regions/central/habitat/os-ee/prov-terr/index_e.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.
Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated or Dry Open-Cut Stream Crossing

1. Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.

2. Locate crossings at straight sections of the stream, perpendicular to the banks, whenever possible. Avoid crossing on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in the erosion and scouring of the stream bed.

3. Complete the crossing in a manner that minimizes the duration of instream work.

4. Construction should be avoided during unusually wet, rainy or winter thaw conditions.

5. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the utility right-of-way.

6. Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use. Operational Statements are also available for Ice Bridges and Snow Fills, Clear-Span Bridges, and Temporary Stream Crossing.

6.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.

6.2. Grading of the stream banks for the approaches should not occur.

6.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.

6.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see Measure 6.4).

6.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

7. Operate machinery in a manner that minimizes disturbance to the watercourse bed and banks.

7.1. Protect entrances at machinery access points (e.g., using swamp mats) and establish single site entry and exit.

7.2. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

7.3. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent deleterious substances from entering the water.

7.4. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

8. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

9. Stabilize any waste materials removed from the work site, above the HWM, to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.

10. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent soil erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

10.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated Crossing

Temporary isolation is used to allow work “in-the-dry” while maintaining the natural downstream flow by installing dams up and downstream of the site and conveying all of the natural upstream flow into a flume, or pumping it around the isolated area. In addition to measures 1 to 10, the following measures should be carried out when conducting an isolated stream crossing:

11. Time isolated crossings to protect sensitive fish life stages by adhering to fisheries timing windows (see Measure 6.4).

12. Use dams made of non-earthen material, such as water-inflated portable dams, pea gravel bags, concrete blocks, steel or wood wall, clean rock, sheet pile or other appropriate designs, to separate the dewatered work site from flowing water.

12.1. If granular material is used to build dams, use clean or washed material that is adequately sized (i.e., moderately sized rock and not sand or gravel) to withstand anticipated flows during the construction. If necessary, line the outside face of dams with heavy poly-plastic to make them impermeable to water. Material to build these dams should not be taken from below the HWM of any water body.

12.2. Design dams to accommodate any expected high flows of the watercourse during the construction period.
13. Before dewatering, rescue any fish from within the isolated area and return them safely immediately downstream of the worksite.

13.1. You will require a permit from DFO to relocate any aquatic species that are listed as either endangered or threatened under SARA. Please contact your Conservation Authority or the DFO office in your area to determine if an aquatic species at risk is in the vicinity of your project and, if appropriate, use the DFO website at www.dfo-mpo.gc.ca/species-especies/permits/sarapermits_e.asp to apply for a permit.

14. Pump sediment laden dewatering discharge into a vegetated area or settling basin, and prevent sediment and other deleterious substances from entering any water body.

15. Remove accumulated sediment and excess spoil from the isolated area before removing dams.

16. Stabilize the streambed and restore the original channel shape, bottom gradient and substrate to pre-construction condition before removing dams.

17. Ensure banks are stabilized, restored to original shape, adequately protected from erosion and re-vegetated, preferably with native species.

18. If rock is used to stabilize banks, it should be clean, free of fine materials, and of sufficient size to resist displacement during peak flood events. The rock should be placed at the original stream bank grade to ensure there is no infilling or narrowing of the watercourse.

19. Gradually remove the downstream dam first, to equalize water levels inside and outside of the isolated area and to allow suspended sediments to settle.

20. During the final removal of dams, restore the original channel shape, bottom gradient and substrate at these locations.

21. Pumped Diversion

Pumped diversions are used to divert water around the isolated area to maintain natural downstream flows and prevent upstream ponding.

21.1. Ensure intakes are operated in a manner that prevents streambed disturbance and fish mortality. Guidelines to determine the appropriate mesh size for intake screens may be obtained from DFO (e.g., Freshwater Intake End-of-Pipe Fish Screen Guideline (1995), available at www.dfo-mpo.gc.ca/Library/223669.pdf).

21.2. Ensure the pumping system is sized to accommodate any expected high flows of the watercourse during the construction period. Pumps should be monitored at all times, and back-up pumps should be readily available on-site in case of pump failure.

21.3. Protect pump discharge area(s) to prevent erosion and the release of suspended sediments downstream, and remove this material when the works have been completed.

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Measures to Protect Fish and Fish Habitat when Carrying Out a Dry Open-Cut Stream Crossing

In addition to measures 1 to 10, the following measures should be carried out when conducting a dry open-cut stream crossing:

22. Stabilize the streambed and restore the original channel shape, bottom gradient and substrate to pre-construction condition.

23. Ensure banks are stabilized, restored to original shape, adequately protected from erosion and re-vegetated, preferably with native species.

Definition:

Ordinary high water mark (HWM) - The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the “active channel/bank-full level” which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO's Fish Habitat and Determining the High Water Mark on Lakes.

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![Diagram of Ordinary High Water Mark](https://example.com/diagram.png)
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Overhead lines are constructed for electrical or telecommunication transmission across many watercourses that range in size from small streams and ponds to large rivers, lakes and reservoirs. This Operational Statement applies to selective removal of vegetation along the right-of-way to provide for installation and safe operation of overhead lines, and passage of equipment and materials across the water body.

Although fish habitat occurs throughout a water system, it is the riparian habitat that is most sensitive to overhead line construction. Riparian vegetation occurs adjacent to the watercourse and directly contributes to fish habitat by providing shade, cover, and spawning and food production areas. It is important to design and build your overhead line project to meet your needs while also protecting riparian areas. Potential impacts to fish and fish habitat include excessive loss of riparian vegetation, erosion and sedimentation resulting from bank disturbance and loss of plant root systems, rutting and compaction of stream substrate at crossing sites, and disruption of sensitive fish life stages.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your overhead line project without a DFO review when you meet the following conditions:

1. it does not require the construction or placement of any temporary or permanent structures (e.g. islands, poles, crib works, etc.) below the ordinary high water mark (HWM) (see definition below), and
2. you incorporate the **Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines** listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

**Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines**

1. Installing overhead lines under frozen conditions is preferable in all situations. On wet terrains (e.g., bogs), lines should be installed under frozen conditions, where possible, or using aerial methods (i.e., helicopter).
2. Design and construct approaches so that they are perpendicular to the watercourse wherever possible to minimize loss or disturbance to riparian vegetation.
3. Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or overhead line structures.
   3.1. Wherever possible, locate all temporary or permanent structures, such as poles, sufficiently above the HWM to prevent erosion.
4. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to accommodate the overhead line. This removal...
should be kept to a minimum and within the road or utility right-of-way.

5. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A Temporary Stream Crossing Operational Statement is also available.

5.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.

5.2. Grading of the stream banks for the approaches should not occur.

5.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.

5.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the Ontario In-Water Construction Timing Windows).

5.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

6. Operate machinery on land and in a manner that minimizes disturbance to the banks of the watercourse.

6.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

6.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.

6.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

6.4. Restore banks to original condition if any disturbance occurs.

7. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

7.1. Avoid work during wet, rainy conditions or use alternative techniques such as aerial methods (i.e., helicopter) to install overhead lines.

8. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.

9. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g.,

cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

9.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the “active channel/bank-full level” which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO’s Fish Habitat and Determining the High Water Mark on Lakes.
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For the purpose of this Operational Statement, the term punch and bore refers to a trenchless crossing method which involves the excavation of a vertical bell hole or shallow depression on either side of the watercourse. Horizontal punching or boring between the two points, at an appropriate depth below the watercourse, completes the creation of a passage-way for the crossing. Punch and bore crossings allow cables and pipelines to be installed under watercourses without imparting any disturbance to the bed and banks. Punch and bore crossings differ from high-pressure directional drilled crossings, in that no pressurized mud systems are required, thereby avoiding the risk of sediment release due to frac-out.

Punch and bore crossings can negatively impact fish and fish habitat due to erosion and sedimentation from site disturbance and dewatering of bell holes or the collapse of the punch or bore hole under the stream. Disturbing riparian vegetation can reduce important shoreline cover, shade and food production areas. Machinery fording the stream can disturb bottom and bank substrates, disrupt sensitive fish life stages, and introduce deleterious substances if equipment is not properly maintained. Impacts can be reduced if an emergency response plan and clean-up materials are in place.

The general order of preference for carrying out a cable or pipeline stream crossing in order to protect fish and fish habitat is: a) a punch or bore crossing, b) high-pressure directional drill crossing (see High-Pressure Directional Drilling Operational Statement), c) dry open-cut crossing, and d) isolated open-cut crossing (see Isolated or Dry Open-cut Stream Crossings Operational Statement). This order must be balanced with practical considerations at the site.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the Fisheries Act no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the Fisheries Act.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to be incorporated into your project in order to avoid negative impacts to fish habitat. You may proceed with your punch or bore crossing project without a DFO review when you meet the following conditions:

1. The crossing technique will not damage the stream bed or bank and thereby negatively impact fish or fish habitat,
2. The site does not occur at a stream location involving known fish spawning habitat, particularly if it is dependent on groundwater upwelling, and
3. You incorporate the Measures to Protect Fish and Fish Habitat when Conducting Punch and Bore Crossings, listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the Fisheries Act and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the Fisheries Act.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the Species at Risk Act (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Ontario Operational Statement notification form (www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Conducting Punch and Bore Crossings

1. A punch or bore crossing can be conducted at any time of the year provided there is not a high risk of failure and it does not require in-water activities such as machinery fording.
2. Design the punch or bore path for an appropriate depth below the watercourse to prevent the pipeline or cable from becoming exposed due to natural scouring of the stream bed.
3. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site and to excavate the bell holes. This removal is to be kept to a minimum and within the utility right-of-way.

4. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the water body. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

5. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A Temporary Stream Crossing Operational Statement is also available.

5.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.

5.2. Grading of the stream banks for the approaches should not occur.

5.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.

5.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the Ontario In-Water Construction Timing Windows).

5.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

6. Operate machinery on land above the ordinary high water mark (HWM) (see definition below) and in a manner that minimizes disturbance to the banks of the watercourse.

6.1. Machinery is to arrive on-site in a clean condition and to be maintained free of fluid leaks.

6.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.

6.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

7. Excavate bell holes beyond the HWM, far enough away from any watercourse to allow containment of any sediment or deleterious substances above the HWM.

7.1. When dewatering bell holes, remove suspended solids by diverting water into a vegetated area or settling basin, and prevent sediment and other deleterious substances from entering the watercourse.

7.2. Stabilize any waste materials removed from the work site (including bell holes) to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.

7.3. After suitably backfilling and packing the bell holes, vegetation any disturbed areas (see Measure 11).

8. Monitor the watercourse to observe signs of malfunction during all phases of the work.

9. For the duration of the work, keep on-site and readily accessible, all material and equipment needed to contain and clean-up releases of sediment-laden water and other deleterious substances.

10. Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance. This plan is to include measures to: a) stop work, contain sediment-laden water and other deleterious substances and prevent their further migration into the watercourse; b) notify all applicable authorities in the area, including the closest DFO office; c) promptly clean-up and appropriately dispose of the sediment-laden water and deleterious substances; and d) ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse.

11. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

11.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the “active channel/bank-full level” which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excluding water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

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Appendix E

Curricula vitae
Kathleen R. O. Todd  M.Sc.
Aquatic Ecologist / Project Manager

Kathleen’s experience is focused in aquatic biology, including stream, lake and wetland assessments, benthic macroinvertebrate identification and biomonitoring, and fisheries habitat studies. She has experience conducting environmental impact studies, environmental effects monitoring programs, baseline studies and watershed plans. Using ecosystem based approaches, typical multidisciplinary project involvement includes Class EAs and infrastructure siting/routing studies, evaluating alternative design concepts and developing mitigative solutions to minimize impacts to the natural environment.

Kathleen has acquired an understanding of federal and provincial legislation, policies and procedures for natural heritage features, particularly regarding working in and around fish habitat in Ontario. She is experienced in the Fisheries Act Authorization process, including evaluating the effects of development on aquatic habitat, designing fish habitat mitigation measures, and negotiating Fisheries Compensation Strategies. In addition, Kathleen serves as a team leader for aquatic science staff in Ontario, including professionals in the fields of fisheries biology, fluvial geomorphology, and aquatic invertebrate taxonomy.

EDUCATION

M.Sc., Watershed Ecosystems, Trent University, Peterborough, Ontario, 2003

B.Sc. (Env.), Environmental Sciences, University of Guelph, Guelph, Ontario, 1997

Certified in the Ecological Land Classification (ELC) System for Southern Ontario, Ontario Ministry of Natural Resources, Turkey Point, Ontario, 2000

Qualified Southern and Northern Ontario Wetlands Evaluator, Ontario Ministry of Natural Resources, North Bay, Ontario, 2000

Fisheries Assessment Specialist and Fisheries Contracts Specialist, MTO/DFO/OMNR Fisheries Protocol Course, Downsview, Ontario, 2006

Ontario Freshwater Mussel Identification Workshop / Fisheries and Oceans Canada, Burlington, Ontario, 2008

Qualified Electrofishing Operator (Class 2), Ontario Ministry of Natural Resources, Guelph, Ontario, 2010

MEMBERSHIPS

Member, North American Benthological Society

PROJECT EXPERIENCE

Environmental Assessments
Northwest Area Planning and Servicing Review, Welland, Ontario* (Environmental Scientist)
Conducted a review of natural heritage features and identified development-related constraints in a newly designated urban area.

Willoughby Lands Golf Course Facility, Niagara Region, Ontario* (Aquatic Ecologist)
Obtained Fisheries Act Authorization for development of a golf course facility. Supervised an underwater dive investigation to survey aquatic habitat along a series of alternative Niagara River water intake pipe alignments. The study lands also support habitat for a rare aquatic plant and an extensive program was proposed to ensure its protection. Environmental monitoring during construction was conducted.
Municipal Water and Wastewater EAs, Various Sites, Ontario* (Aquatic Ecologist)
Evaluated natural heritage features in terms of ecological sensitivity and watermain and/or trunk sewer construction feasibility options (tunnel vs. open cut). Aquatic habitat conditions were assessed at all potential watercourse crossings and recommendations were provided regarding Fisheries Act requirements, construction mitigation measures and timing restrictions on in-water works. Also responsible for siting a chlorine booster station, surface water treatment plants and pumping stations, and mitigating impacts from emergency overflow of chlorinated water into adjacent watercourses. Water and wastewater experience includes:
- City of Barrie, Surface Water Treatment Plant Class EA & Impact Assessment
- Region of Niagara (Point Abino), Water Supply Class EA
- Region of Peel (Brampton), West Brampton Reservoir, Pumping Station & Watermain Class EA
- Region of York (Etobicoke), Steeles Avenue West Forcemain Class EA
- Region of York (Markham), Southeast Collector Trunk Sewer Class EA

Natural Sciences & Heritage Resources
Environmental Impact Studies for Land Development, Various Sites, Ontario* (Project Manager)
Assessed potential environmental impacts from land development proposals. Conducted ecological community inventories in watercourses, wetlands and woodlots. Prepared Environmental Management Plans providing net effects analyses, mitigation solutions to minimize impacts to the natural environment, buffer zone recommendations, re-vegetation and restoration activities. Participated in public open houses to address the concerns of local residents. Where required, environmental monitoring during construction was conducted. EIS experience includes:
- City of London, Dearness Home for Seniors Redevelopment EIS, London, Ontario
- Fieldgate Developments, Tresstown Subdivision EIS, Stouffville, Ontario
- Grey Gables School, Proposed Private School Site, Ecological Assessment, St. Catharines
- Lebovic-Fieldgate Developments, Functional Servicing Plan, Ecological Component, Stouffville, Ontario
- Norwest Land Corp., Kains Road East Development EIS, London, Ontario
- Quinte’s Isle Campark, Scoped EIS, Prince Edward County, Ontario
- Sifton Properties Ltd., Equestrian Condominium Communities, Development Assessment Reports, Township of Middlesex Centre & Municipality of West Middlesex
- Sifton Properties Ltd., River Bend Community Phases 1 & 2 EIS, London, Ontario
- St. Joseph’s Health Care Centre, Parkwood Hospital Scoped EIS, London, Ontario
- Westhill Redevelopment Company Limited, Aurora Golf Course Community EIS, Aurora, Ontario

River Bend Community Phases 1 & 2, Environmental Monitoring Protocol & Baseline Study*, London, Ontario (Environmental Scientist)
Established baseline aquatic, terrestrial and soils conditions in the vicinity of a golf course community. Subsequently, the Environmental Monitoring Program - Year 1 and, later, Year 3, were submitted to document any potential impacts.
Ecological Risk Assessment of Residual Heavy Oil in a Wetland*, Drumbo, Ontario (Environmental Scientist)
Analyzed stream and wetland data to determine potential aquatic food chain impacts of a historical heavy oil release. Analyzed invertebrate community structure and identified exposure pathways and community end-points. Considered site remediation options on the basis of these data.

Proposed Acton Quarry Extension, Dufferin Aggregates, Acton, Ontario (Aquatic Ecologist / Project Manager)
The extension of the existing Acton Quarry is proposed to meet the need for additional close-to-market aggregate resources of high quality Amabel Dolostone. The area of focus encompasses approximately 615 ha, across two Conservation Authority watersheds within the Regional Municipality of Halton Hills. Kathleen has participated in extensive ecological field work, including aquatic species surveys and habitat assessments, inventories for potential Species at Risk habitat, and aquatic rehabilitation planning. She has co-authored technical reports produced in accordance with the PPS and ARA application requirements, as well as participated in interdisciplinary consultation with agencies and agency-appointed committees.

Otonabee Landfill Site Biological Assessment Study*, Peterborough, Ontario (Wetlands Ecologist)
Prepared a ‘Surface Water Quality Study’ to address background water quality and aquatic habitat conditions and a ‘Natural Environment Report’ to identify baseline wetland and terrestrial environment conditions. The study was designed to identify potential impacts from existing landfill operations and to predict future impacts from proposed landfill site expansion.

Forest City Industrial Lands, Wetland Evaluation & Environmental Assessment*, London, Ontario (Wetlands Ecologist)
Evaluated a locally significant wetland according to the Ontario Wetland Evaluation System and revised the existing boundaries of a provincially significant wetland in cooperation with MNR.

West Nile Virus Information Package, Ballantrae, Ontario (Environmental Scientist)
Designed a pamphlet to educate residents and golfers regarding West Nile virus, the status of the virus in York Region, and the client’s proactive mosquito monitoring program.

Confidential Client, Environmental Baseline and Feasibility Study for a Decommissioned Gold Mine*, Northern, Ontario (Environmental Scientist)
Conducted aquatic and terrestrial habitat inventories to determine the environmental feasibility of re-opening a gold mine. Assessed streams, wetlands and woodlots. Conducted invertebrate and fish collections, avifauna and wildlife surveys, and vegetation community inventories.

Transportation Planning
MTO Aquatic and Terrestrial Biology Retainer Services, Southwestern Ontario (Project Manager / Fisheries Specialist)
Under the terms of two 2-year Retainer Agreements (2004-2006, 2007-2009) eleven individual assignments were completed, involving: characterizing existing ecological conditions, assessing site sensitivities and impacts related to proposed bridge/culvert repairs and highway improvements, recommending environmental mitigation measures, and conducting during/post-construction monitoring. Value added components included: fluvial geomorphological services, design and implementation of bio-engineered slope stabilization solutions, Permit to Take Water applications, and site rehabilitation and Planting Plans. Extensive agency liaison was required with staff from numerous Conservation Authority, MNR and DFO offices.

Municipal Road Improvement Projects, Various Sites, Ontario (Environmental Scientist)
Collected aquatic and terrestrial habitat field data, conducted environmental impact assessments, and obtained required agency approvals related to municipal transportation projects, including:
- City of Hamilton, Bridge & Culvert Master Plan*
- City of London, Airport Road Widening*
- City of London, Bradley Avenue Extension
- City of London, Western Road Widening
- Town of Markham, Woodbine Avenue By-Pass*
- Township of Wilmot, Haysville Bridge Replacement*

Natural Sciences Reports Related to MTO Highway Improvement Works, Various Sites, Ontario (Fisheries Specialist)
Produced numerous Natural Sciences reports related to highway improvement works. Where required, Fisheries Act Authorization was obtained and Fish Habitat Compensation Plans were developed. Potential impacts to aquatic habitat, terrestrial vegetation, wetlands and wildlife were described for the following studies:

* denotes projects completed with other firms
Kathleen R. O. Todd  
M.Sc.  
Aquatic Ecologist / Project Manager

* denotes projects completed with other firms

- Highway 6 (Flamborough)*  
- Highway 6 (Guelph)  
- Highway 6 By-Pass (Caledonia)*  
- Highway 7 (Marmora)*  
- Highway 7 (Peterborough)*  
- Highway 7A/28/115 (Peterborough)*  
- Highway 8 (Dublin)*  
- Highways 11/17 (North Bay)  
- Highways 11/17 (Thunder Bay)  
- Highways 11/101 (Matheson)  
- Highway 17 (Stonecliff)*  
- Highway 17/Municipal Road 55 (Sudbury)  
- Highways 17/Southwest By-Pass (Sudbury)  
- Highways 17/531 (North Bay)*  
- Highway 21 (Bluewater)  
- Highway 21 (Grand Bend)  
- Highway 23 (Palmerston)  
- Highway 24 Interchange Improvements (Cambridge)  
- Highway 26 (Meaford)  
- Highway 26 (Owen Sound)  
- Highway 63 (Bancroft)*  
- Highway 63 (North Bay)*  
- Highway 401/403 (Woodstock)  
- Highway 401/County Road 41 (Napanee)*  
- Highway 518 (Orrville)*

West Nile Virus Surveillance Program, Various Sites, Central Ontario (Aquatic Ecologist)  
Evaluating the potential for MTO owned/managed properties (e.g. stormwater ponds) to be mosquito breeding habitats, and recommended suitable strategies to curtail mosquito breeding success.

Bridge Widening, CN Rail Mile 119.6*, Kingston, Ontario (Aquatic Ecologist)  
Procured federal Fisheries Act Authorization related to a rail line widening project over a warmwater creek. Conducted a post-construction monitoring program to confirm the viability of the habitat compensation measures.

Environmental Data Collection, CN Rail Corridor*, Toronto to Hornepayne, Ontario (Environmental Scientist)  
Identified, collected and assessed secondary source natural heritage data for a study area that followed the CNR corridor from Toronto to Hornepayne. The data were then transferred to a GIS database, to be used during emergency planning.

**Water Resources Management**

Minnow Lake Restoration*, Sudbury, Ontario (Aquatic Ecologist)  
Coordinated a lake-wide monitoring program to evaluate the degree of water pollution resulting from stormwater discharge to an urban lake. Participated in frequent public consultation to liaise with residents of the Minnow Lake Restoration Group.

Fort Creek Restoration*, Sault Ste. Marie, Ontario (Aquatic Ecologist)  
In consultation with DFO, completed a restoration plan for an urban creek that outlets to Lake Huron and provides salmon spawning habitat. Habitat enhancement involved the removal of in-stream debris, channel stabilization, riparian plantings, substrate enhancement, and creation of refuge areas. Fisheries Act Authorization was obtained, and environmental monitoring during construction was conducted.

**Environmental Effects Monitoring Programs for Mining Sector Clients, Various Sites, Canada (Benthic Ecologist)**  
Contributed benthic ecology chapter to numerous EEM reports for Canadian metal mines. Analyzed and reported on invertebrate data to determine whether the respective mine effluent was responsible for an aquatic community level effect. EEM experience includes:
- Hudson Bay Mining & Smelting Co. Ltd., Chisel North Mine, Snow Lake, Manitoba
- Hudson Bay Mining & Smelting Co. Ltd., Snow Lake Mill / Anderson Tailings, Snow Lake, Manitoba
- Hudson Bay Mining & Smelting Co. Ltd., Flin Flon Tailings Impoundment System and Trout Lake Mine, Flin Flon, Manitoba
- Hudson Bay Mining & Smelting Co. Ltd., Ruttan Mine, Leaf Rapids, Manitoba
- Hudson Bay Mining & Smelting Co. Ltd., Konuto Lake Mine, Denare Beach, Saskatchewan
- SMC (Canada) Ltd., McAlpine Mill, Cobalt, Ontario

**Environmental Effects Monitoring Programs for Pulp and Paper Sector Clients, Various Sites, Canada (Benthic Ecologist)**  
Contributed the benthic ecology chapter to numerous EEM reports for Canadian pulp and paper mills. Statistically analyzed and reported on invertebrate data, according to Environment Canada biological monitoring protocols, to determine whether the respective mill effluent was responsible for an aquatic community level effect. EEM project experience includes:
- Cascades Fine Papers Group Thunder Bay Inc., Lake Superior, Thunder Bay, Ontario
Kathleen R. O. Todd M.Sc.
Aquatic Ecologist / Project Manager

- Georgia Pacific Canada Inc., Lake Gibson, Thorold, Ontario
- Kimberly-Clark Incorporated, Lake Superior, Terrace Bay, Ontario
- Marathon Pulp Inc., Lake Superior, Marathon, Ontario
- Nexfor Fraser Papers, Saint John River, Edmundston, New Brunswick
- Norampac Inc., Lake Superior, Red Rock, Ontario
- Spruce Falls Inc., Kapuskasing River, Kapuskasing, Ontario
- Stora Enso Port Hawkesbury Limited, Strait of Canso, Port Hawkesbury, Nova Scotia
- Tembec Industries Inc., Mattagami River, Smooth Rock Falls, Ontario
- Spruce Falls Inc., Kapuskasing River, Kapuskasing, Ontario
- Stora Enso Port Hawkesbury Limited, Strait of Canso, Port Hawkesbury, Nova Scotia
- Tembec Industries Inc., Mattagami River, Smooth Rock Falls, Ontario

Watershed Based Biomonitoring Program for Urban Development, Oakville, Ontario (Benthic Ecologist)
Sampled and analyzed the Fourteen Mile Creek invertebrate community to establish baseline conditions, prior to the development of a housing subdivision. Six subsequent years of during-construction monitoring were conducted.

North and South Meade Creeks Subwatershed Plan*, Peterborough, Ontario (Aquatic Ecologist)
Conducted fish collections and population analyses, invertebrate sampling and identification, and collected and analyzed water chemistry samples. The information was used to predict the ecological sensitivity of Meade Creek and to provide recommendations regarding the extent and type of future development permitted in the watershed.

Pike River Aquatic Impact Assessment*, Field, Ontario (Benthic Ecologist)
Sampled fish, invertebrates and benthic sediments within the vicinity of a chlorinated discharge zone to determine the extent of chlorine related effects to the aquatic environment.

Biological Impact Assessment of a Closed Landfill on the Maitland River, Wingham, Ontario (Benthic Ecologist)
Analyzed Maitland River invertebrate community data within the vicinity of a closed landfill to determine the potential impact of landfill leachate.

Receiver Biomonitoring Program, Elmira, Ontario (Benthic Ecologist)
Analyzed invertebrate community data to determine the viability of an industrial contaminated groundwater collection and treatment system which discharges treated water to Canagagigue Creek.

Shekak River Post Impoundment Environmental Monitoring for the Shekak-Nagagami Hydroelectric Development, Hearst, Ontario (Aquatic Ecologist)
Addressed agency concerns regarding environmental monitoring in the headpond area of a river impoundment. Evaluated shoreline erosion and the viability of fish habitat compensation measures, including a walleye spawning shoal and aquatic invertebrate enhancement works.

Environmental Effects Monitoring Program for the Antamina Mine & Port Facility, Peru (Benthic Ecologist)
Analyzed biological (metal concentrations in fish and shellfish tissues, fish health, benthic invertebrate community structure) and physical (water and sediment chemistry) data collected in the vicinity of both an inland mine (freshwater environment) and a coastal mining port facility (marine environment) to determine if the local ecosystems were being adversely affected by mining/shipping operations.

Benthic Invertebrate Monitoring Program*, Caledonia, Ontario (Benthic Ecologist)
Assessed the Fox Creek invertebrate community to determine if the stream habitat was being adversely affected by adjacent mining effluent discharge.

* denotes projects completed with other firms
PUBLICATIONS


Mark C. Pomeroy  
B.Sc. 
Fisheries Biologist / Project Manager

Mark has 14 years of experience designing, coordinating, and implementing small and large scale aquatic habitat and impact assessments, encompassing numerous habitat types including lakes, ponds, large rivers, warmwater and coldwater streams. Mark has also developed and implemented many monitoring, mitigation, compensation and inventory processes. Past employment with Fisheries and Oceans Canada (DFO), and both the Grand River and St. Clair Region Conservation Authorities contributes to Mark’s extensive working experience with regulatory and approvals processes related to the Fisheries Act, the Conservation Authorities Act and the Drainage Act. Mark’s familiarity with Fisheries Act mitigation and compensation includes an understanding of the Habitat Alteration Assessment Tool (HAAT). He has extensive experience involving permitting and issues resolution related to the federal Species at Risk Act and the provincial Endangered Species Act. His experience also includes several transportation-related Environmental Assessments.

EDUCATION

Honours B.Sc. (Agriculture), University of Guelph / Natural Resources Management, Guelph, Ontario, 2000

Royal Ontario Museum / Freshwater Fish Identification Course, Toronto, Ontario, 2011

Class 1 Electrofishing Certificate / Ministry of Natural Resources, Waterloo, Ontario, 2010

Ontario Freshwater Mussel Identification Workshop / Fisheries and Oceans Canada - Canada Centre for Inland Waters, Burlington, Ontario, 2007

Fisheries Assessment Specialist and Fisheries Contracts Specialist, MTO/DFO/OMNR Fisheries Protocol Course, Downsview, Ontario, 2006

PROJECT EXPERIENCE

Environmental Assessments

Locks 24 and 25 – VLH Turbine Installation, Canadian Projects Limited, Lakefield, Ontario (Aquatic Biologist)
Conducted aquatic assessments including walleye and bass spawning and habitat surveys in support of an Environmental Assessment (EA) for the installation of Very Low Head (VLH) turbines at Dams 24 and 25 on the Otonabee River. As part of the EA, will provide an analysis of impacts to walleye and bass spawning habitat and habitat use by small-bodied fish. The impact assessment will also be used as during the assessment of the project using the Fisheries & Oceans Canada (DFO) Risk Management Framework.

Pier 27 Dockwall and Dredging, Hamilton Port Authority, Hamilton, Ontario (Aquatic Biologist)
Coordinated and conducted aquatic assessments in support of the installation of a new dockwall and dredging to facilitate shipping traffic. Coordinated with DFO regarding need for Fisheries Act approval.

Pier 22 Environmental Assessment, Hamilton Port Authority, Hamilton, Ontario (Aquatic Biologist)
Coordinated and conducted aquatic assessments in support of site improvements. Negotiated compensation measures and drafted letter of intent in pursuit of Fisheries Act Authorization.

Bruce to Milton Transmission Line, Various, Ontario (Fisheries Biologist)
Planned, coordinated and assisted with execution of large-scale fisheries field program to assess potential impacts of proposed hydroelectric corridor reinforcement project and provided relevant input to the provincial environmental assessment process as well as the Fisheries Act and Conservation Authorities Act permitting processes. Managed data entry, analysis and completed reporting of aquatic resources sections. Coordination of multi-disciplinary team and regulatory agencies for acquisition of appropriate permits and approvals.

Yellow Falls Hydroelectric Project, Smooth Rock Falls, Ontario (Aquatic Biologist)
Planned, coordinated and assisted with execution of fisheries field program to assess potential impacts of proposed hydroelectric dam project. Facilitated acquisition of permits and approvals from relevant agencies. Assisted with fish, benthos, habitat, water and sediment sampling. Authored significant portions of the technical appendix related to aquatic study results.

* denotes projects completed with other firms
Environmental Impact Assessments
Georgia Pacific Thorold Cycle 4 EEM, Thorold, Ontario (Aquatic Ecologist)
Assisted in field sampling of fish, benthos, water and sediment for federally regulated pulp and paper environmental effects monitoring.

Spruce Falls Cycle 4 EEM, Kapuskasing, Ontario (Aquatic Ecologist)
Assisted in field sampling of fish, benthos, water and sediment for federally regulated pulp and paper environmental effects monitoring.

Smooth Rock Falls Cycle 4 EEM, Smooth Rock Falls, Ontario (Aquatic Ecologist)
Assisted in field sampling of fish, benthos, water and sediment for federally regulated pulp and paper environmental effects monitoring.

Highway and Transportation
King Street and Fountain Street Improvements Class Environmental Assessment Study, Cambridge, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. Data collected during field investigations was used to assess potential impacts of preferred option. Drafted text for relevant sections of Class EA document.

Franklin Boulevard Widening Class Environmental Assessment Study, Cambridge, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. Drafted text for relevant sections of Class EA document.

Highway 69 - Patrol Yards between Parry Sound and Sudbury, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourses within the project study area. Data collected during field investigations was used to assess potential impacts of proposed maintenance patrol yards located adjacent to Highway 69. Drafted text for inclusion in Fisheries and Aquatic Ecosystems Report. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006).

Highway 11 - High Falls Road Access Improvements Class Environmental Assessment, Bracebridge, Ontario (Fisheries Biologist)
Planned and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006).

Highway 11 - Intersection Improvements, Powassan, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. Data collected during field investigations was used to assess potential impacts of preferred option including potential impacts to Brook Trout. Drafted text for inclusion in Fisheries and Aquatic Ecosystems Report. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006).

Highway 3 - Rehabilitation between Jarvis and Renton, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. Data collected during field investigations was used to assess potential impacts of preferred option, including potential impacts to Brook Trout. Drafted text for inclusion in Fisheries and Aquatic Ecosystems Report. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006), and included preparation and submission of “no HADD forms” to satisfy Fisheries Act requirements.

Highway 69 - Key River Bridge Replacement, Britt, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess aquatic habitat in Key River at proposed location of bridge replacement. Data collected during field investigations was used to assess potential impacts of bridge replacement activities. Drafted Fisheries and Aquatic Ecosystems Report. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006), and included preparation and submission of “no HADD forms” to satisfy Fisheries Act requirements.

Replacement of Coutts Line Bridge over Baptiste Creek, Tillbury, Ontario (Fisheries Biologist)
Facilitated acquisition of provincial Endangered Species Act (ESA) approval (letter of advice) through provision of advice regarding construction techniques. Planned, coordinated and conducted field investigations to assess freshwater mussel community and habitat at bridge site.

* denotes projects completed with other firms
Replacement of Dawn Mills Bridge over Sydenham River Creek, Dresden, Ontario (Fisheries Biologist)
Dawn Mills Bridge is located over a reach of the Sydenham River known to contain one of the largest number of taxa of federally regulated Species at Risk fish and mussels in Canada. Facilitated acquisition of federal approvals (Fisheries Act and Species at Risk Act, letter of advice) through provision of advice regarding construction techniques. Planned, coordinated and conducted field investigations to assess freshwater mussel habitat at bridge site.

Chinguacousy Road Widening, Brampton, Ontario (Fisheries Biologist)
Conducted fish community assessment to determine presence of Redside Dace (a provincially Endangered species). Drafted applications for Fisheries Act Authorization, Conservation Authorities Act approval, and Endangered Species Act approval. Provided input to engineering design for compensation measures related to Redside Dace habitat.

Detroit Windsor Truck Ferry Improvements (Design) (GWP 3071-06-00), Windsor, Ontario (Fisheries Biologist)
Provided aquatic community and habitat assessment services as well as input regarding project design, construction staging and silt and sediment control planning. Acquired approvals under Fisheries Act and Conservation Authorities Act related to fish habitat. Negotiated compensation measures with Conservation Authority prior to project design change, resulting in no HADD.

Highway 24 - Intersection Improvements, Cambridge, Ontario (Fisheries Biologist)
Provided fish rescue services. Performed environmental inspection duties related to implementation of the Fisheries Act compensation plan and resolution of onsite issues related to construction.

Detroit Windsor Truck Ferry Improvements (Contract Administration) (WP 3071-06-00), Windsor, Ontario (Fisheries Biologist)
Construction monitoring services related to Fisheries Act implications (fish removals, species at risk identification training for contract staff, staging and implementation design review), provision of advice regarding alternative staging/construction operations to prevent impacts to aquatic habitat/organisms.

Fanshawe Park Road Widening, London, Ontario (Fisheries Biologist)
Facilitated acquisition of approvals from DFO for the realignment of Heard Drain/Snake creek during the expansion of Fanshawe Park Road. Performed construction inspection services, resolved onsite implementation issues related to the Fisheries Act.

**Natural Resource Services**
Municipal Drain Classification Program*, Various, Ontario (Drain Assessment Technician)
Planned and implemented large scale sampling protocol designed by DFO to assess the sensitivity of various municipal drains to disturbance. Sampling program encompassed all drains within the Grand River watershed and consisted of habitat, thermal and fish community characterization based on extensive field sampling. Analyzed substantial quantities of field data, summarized results and produced interim and final reports.

Fish Habitat Study*, Strathroy, Ontario (Biological Technician)
Planned and implemented field program to sample fish community in reservoirs managed by the St. Clair Region Conservation Authority. Responsible for writing final report concerning existing fish habitat status and providing recommendations based on field data. Participated in water quality and benthic community field sampling programs.

Various Environmental Assessments*, Sarnia, Ontario (Fish Habitat Biologist)
Assessed project proposals for impacts to fish habitat as defined in the Fisheries Act. Issued Letters of Advice and Authorization under the Fisheries Act. Carried out screening level environmental assessments of proposed projects under the Canadian Environmental Assessment Act. Participated in outreach programs and inter-agency work groups regarding Species at Risk recovery. Acquired familiarity with the Habitat Alteration Assessment Tool (HAAT).

**Renewable Energy**
St. Columban Wind Project, Huron County, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of fifteen turbines. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09.

* denotes projects completed with other firms
Plateau Wind Project, Grey County, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to update previous field work to assess potential aquatic impacts resulting from proposed wind project consisting of eighteen turbines. Drafted relevant sections of the Environmental Screening Report (ESR) as mandated under Ontario Reg. 116/01. Provided advice concerning provincial species at risk concerns.

Grand Renewable Energy Park, Haldimand County, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess potential aquatic impacts resulting from proposed wind and solar project consisting of sixty-seven turbines and 425,000 solar panels. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09.

Springwood Wind Project, Belwood, Ontario (Fisheries Biologist)
Conducted field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of and assisted with draft Water Assessment and Water Body Report under Ontario Reg. 359/09.

Whittington Wind Project, Dufferin County, Ontario (Fisheries Biologist)
Planned and coordinated field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of three turbines. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09.

Fairview Wind Project, Stayner, Ontario (Fisheries Biologist)
Planned and coordinated field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of eight turbines. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09.

White Pines Wind Project, Prince Edward County, Ontario (Fisheries Biologist)
Planned, coordinated and conducted field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of twenty-nine turbines. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09 (in progress).

Urban Land
Berczy Dam Removal, Markham, Ontario (Fisheries Biologist)
Provided fish rescue services, including resolution of issues related to Species at Risk.

Medway Sanitary Trunk Sewer Extension, London, Ontario (Fisheries Biologist)
Drafted Fisheries Act application and Endangered Species Act application for pipeline crossing of Medway Creek. Coordinated and completed aquatic habitat assessment and relocation of freshwater mussels. Negotiated compensation measures prior to project design change, resulting in no HADD.

Fox Hollow Subdivision, London, Ontario (Fisheries Biologist)
Facilitated acquisition of approvals from DFO for the realignment of the Heard Drain/Snake Creek and the installation of a stormwater management pond in relation to construction of the Fox Hollow Subdivision. Performed construction inspection services, resolved onsite implementation issues related to the Fisheries Act.

* denotes projects completed with other firms
Katie Easterling is an Aquatic Ecologist with Stantec’s Environmental Services group in Kitchener. She has approximately 6 years of field experience in both the aquatic and terrestrial disciplines. Previous fieldwork includes: fish habitat assessments, fish community sampling, fish salvages, REA water body assessments, trout spawning surveys, walleye spawning surveys and baseline aquatic surveys for various pipeline, rail line, transportation, renewable energy and municipal projects. Furthermore, she has experience conducting preliminary or baseline terrestrial habitat assessments, Species at Risk surveys, and breeding bird surveys. Reporting skills include: aquatic existing conditions reports, REA water assessment and water body reports, terrestrial existing conditions reports, Environmental Screening/Review Reports, Natural Heritage Evaluations (NHE) and Environmental Impact Statements (EIS). Additionally, Katie has consulted with First Nations, municipal, provincial and federal government agencies as part of fieldwork or reporting activities.

Katie is proficient in a variety of fish sampling techniques, including: Fall Walleye Index Netting (FWIN), Near Shore Community Index Netting (NSCIN), fyke netting, seine netting, gill netting and boat and backpack electrofishing. She has experience PIT tagging, anesthetizing fish, weighing, measuring, sexing, determining gonadal condition, removing aging structures (otoliths and scales) and aging fish. She also holds a certificate in radio telemetry and is certified in Ecological Land Classification (ELC). Her educational background focused on terrestrial, wildlife and aquatic biology, and includes a degree in Zoology and a Fish and Wildlife diploma. Prior to joining Stantec, Katie worked as an Ecological Research Assistant with Parks Canada, a Conservation Interpreter with the Long Point Region Conservation Authority and has previous consulting experience working as a Research Assistant for The Impact Group and a Biologist for URS. She also spent a summer work term at the OPG Nanticoke Plant working as an Assistant Mechanical Maintainer.

EDUCATION

Diploma – Fish and Wildlife Technician, Fleming College, Lindsay, Ontario, 2007
Hon.B.Sc– Major Zoology, Minor Biology, University of Toronto, Toronto, Ontario, 2003

PROFESSIONAL ASSOCIATIONS

Canadian Environmental Certifications and Approvals Board – Environmental Professional-in-Training (EPI) 2009-present

MEMBERSHIPS/ASSOCIATIONS

American Fisheries Society, Ontario Chapter Member, 2007 – present
American Fisheries Society, Ontario Chapter Executive Committee – Treasurer, 2011 - present

SPECIALIZED TRAINING

MTO/DFO/OMNR Fisheries Protocol Training Session for Fisheries Specialists, 2011
ROM Fish Identification Course, 2011
MNR Renewable Energy Natural Heritage Assessment Training, 2011
MNR Bat Monitoring Workshop for Wind Power Projects, 2010
Certified Traffic Control Technician, 2010
Class Two (II) Electrofishing Crew Leader Certification Course, 2006 and 2009
Contractor Orientation Course, CN Rail, 2009
Bat Acoustic Analysis Course, 2008
Katie Easterling  H.B.Sc.(Zoology), Dip.(Fish and Wildlife), EPt
Aquatic Ecologist

Ecological Land Classification, 2006
Wetland Classification, 2006

PROJECT EXPERIENCE

Ministry of Transportation (MTO)

Aquatic

Detail Design, Highway 35, WP 102-99-01 Trent Canal Bridge Rehabilitation, Site 32-065 (Rosedale), MTO Eastern Region (2011 & 2012) (Role: Aquatic Ecologist)
Prepared the Aquatic Existing Conditions Report as part of the Detailed Design process for the Highway 35 site at the Trent Severn Waterway.

Detail Design, Highway 35, WP 4166-09-01 Corben Creek Structural Culvert Replacement, Site 32-165C, WP 4165-09-01 Martin Creek Structural Culvert Rehabilitation, Site 32-063BC and WP 4075-09-01 South McLaren Creek Structural Culvert Rehabilitation, Site 32-072BC, MTO Eastern Region (2011 & 2012) (Role: Aquatic Ecologist)
Conducted fish habitat and fish community assessments at 3 locations in the area surrounding Hwy 35 outside Lindsay, Ontario. This involved using a backpack electrofisher or minnow traps (where applicable) to determine fish species and habitat present in order to assess the community structure and supplement watercourse sensitivity information provided by the MNR. Reporting tasks included the Aquatic Existing Conditions Report

Detail Design, Highway 7, WP 4007-08-01/02 Mariposa Creek Structural Culvert Rehabilitation, Site 32-124BC and Mariposa Brook Structural Culvert Replacement, Site 32-161C, MTO Eastern Region (2011 & 2012) (Role: Aquatic Ecologist)
Conducted fish habitat and fish community assessments at 2 locations in the area surrounding Hwy 7 outside Lindsay Ontario. This involved using a backpack electrofisher or minnow traps (where applicable) to determine fish species and habitat present in order to assess the community structure and supplement watercourse sensitivity information provided by the MNR. Reporting tasks included the Aquatic Existing Conditions Report

Radio Telemetry Certificate, 2006
Pleasure Craft Operators Course, 2006

Route Planning – Highway 144 Bypass around Chelmsford (GWP 5023-03-00), MTO Northeast Region (2011) (Role: Aquatic Ecologist)
Conducted fish habitat and fish community assessments at 63 locations in the area surrounding Hwy 144 near Chelmsford, Ontario. This involved using a backpack electrofisher or minnow traps (where applicable) to determine fish species and habitat present in order to assess the community structure and supplement watercourse sensitivity information provided by the MNR. Reporting tasks included the Aquatic Existing Conditions Report

Route Planning – Hwy 17 Sudbury to Markstay (GWP 5031-09-00), MTO Northeast Region (2011) (Role: Aquatic Ecologist)
Prepared the Aquatic Existing Conditions Report as part of the preliminary route planning study for Highway 17 between Sudbury and Markstay.

Highway 3, 6 and 24 Fish Community and Fish Habitat Assessment for Detailed Design (GWP 3115-09-00, GWP 3048-03-00 and GWP 362-98-00), MTO Southwest Region (2011) (Role: Aquatic Ecologist)
Conducted a detailed spring, summer and fall fish community and fish habitat assessment of 20 watercourse crossings for the rehabilitation/resurfacing of Highways 3, 6 and 24 surrounding the communities of Simcoe, Delhi and Port Dover. Reporting tasks included the Aquatic Existing Conditions Report and Impact Assessment Report for each highway.

Hwy 6 Fish Salvage, MTO Southwest Region (2009) (Role: Project Biologist)
Conducted a fish salvage as part of an MTO highway widening project located along Hwy 6 near Varney, ON. Fish collected were identified, measured and released downstream of the in-water work area.
Katie Easterling  H.B.Sc.(Zoology), Dip.(Fish and Wildlife), EPt
Aquatic Ecologist

Terrestrial

Route Planning – Hwy 144 Bypass around Chelmsford (GWP 5023-03-00), MTO Northeast Region (2011) (Role: Project Biologist)
Classified the vegetation communities within the Study Area based on FEC and ELC guidelines in addition to identifying potential SAR habitat for a proposed bypass route around Chelmsford.

Highway 401 Interchanges GWP 3070-09-00, MTO Southwest Region (2011) (Role: Project Biologist)
Prepared the terrestrial existing conditions report as part of the detail design stage for three Highway 401 interchanges between Woodstock and London.

Windsor-Essex Parkway Owner’s Engineer, MTO Southwest Region (2010-2011) (Role: Project Biologist)*
Project Biologist for the acquisition of a Design, Build, Finance and Maintain consortia for the Windsor-Essex Parkway (WEP) which extends Highway 401 through Windsor below grade and includes an at-grade Highway 3. Conducted and reported on the Ecological Land Classification (ELC) and habitat availability for plant Species at Risk within the Windsor-Essex Parkway footprint as a requirement of ESA 17(2) B, ESA 17(2) C and ESA 17(2) D permits. Assisted with the preparation of Management, Monitoring and Habitat Restoration Plans for multiple Species at Risk, as required in the ESA 17 D permit. Co-ordinated and participated in one of the largest transplantation efforts for plant Species at Risk, which involved locating and identifying various plant Species at Risk within the Windsor-Essex Parkway footprint and transplanting to a region outside the area of impact.

Hwy 11 Madill-Church Road Interchange, MTO Northeast Region (2011) (Role: Project Biologist).*
Compiled and reported on the effectiveness of various wildlife detection/avoidance systems as part of a value added study for MTO.

Renewable Energy

Aquatic

Niagara Region Wind Corporation (2012) (Role: Aquatic Ecologist)
Conducted the REA water assessment at multiple locations across the project area.

Hydroelectric Facilities - Lock 24 and 25 Dams on the Trent-Severn Waterway, Coastal HydroPower (2012) (Role: Aquatic Ecologist)
Conducted 4 Walleye spawning surveys at Lock 24 and 25 to determine if suitable habitat is present at the locks and the number of staging/spawning Walleye within the project footprint.

Cedar Point REA Water Body Assessment, Suncor Energy Products Inc. (2011) (Role: Aquatic Ecologist)
Conducted the REA water body assessment for a renewable energy project, which involved fish habitat assessments at 99 locations across the Study Area.

Adelaide REA Water Body Assessment, Suncor Energy Products Inc. (2011) (Role: Aquatic Ecologist)
Conducted the REA water assessment and prepared the water body report for a renewable energy project, which involved fish habitat assessments at 41 locations across the Study Area.

Napier Wind Project REA Water Body Assessment, wpd Canada Corporation (2011) (Role: Aquatic Ecologist)
Conducted the REA water assessment and prepared the water body report for a renewable energy project, which involved fish habitat assessments at 3 locations across the Study Area.

Amherst Island REA Water Body Assessment, Windlectric Inc. (2011) (Role: Aquatic Ecologist)
Conducted the REA water assessment and prepared the water body report for a renewable energy project on Amherst Island, which involved fish community and a preliminary fish habitat assessment at 39 locations across the Island.
Fish Habitat Assessment, SkyPower (2009) (Role: Project Biologist)
As part of a wind farm Environmental Assessment under O.Reg. 116, a fish habitat assessment was conducted to determine the baseline conditions and watercourse sensitivity according to the DFO matrix at each of the proposed watercourse crossings.

Terrestrial

Under O.Reg. 116 AnaBat detectors were installed on MET towers and design/constructed/installed ground AnaBat detector units at various wind farms in Southern Ontario. Monitored pre-construction bat activity and identified species using spectrogram analysis to report on the activity level surrounding the proposed wind farms.

Post-Construction Bird and Bat Mortality Monitoring, Suncor (2008) and Enbridge (2009 and 2010) (Role: Project Biologist)
Conducted post-construction bird and bat mortality monitoring, scavenger impact trials and searcher efficiency trials at the Ripley and Enbridge Ontario Wind Farms near Kincardine, Ontario as a requirement under O.Reg. 116.

As a requirement of O.Reg.116, avian monitoring surveys were conducted to characterize the bird community of two sites in Southern Ontario during the over-wintering period.

Oil and Gas Pipeline

Aquatic

Detailed Fish Habitat Assessment and Reporting, Nova Chemicals (2011) (Role: Aquatic Ecologist)
Fish habitat was assessed at 9 proposed crossings for a pipeline route and existing conditions were summarized as part of an EA.

Detailed Fish Habitat Assessment and Reporting, TransCanada Pipeline Ltd (2009 & 2011) (Role: Project Biologist)
As part of a pipeline expansion project, a detailed fish habitat survey was conducted following MTO protocols at 10 watercourse crossings. Methodology included detailed habitat mapping 50 m upstream and 100 m downstream. Fish habitat conditions were summarized and watercourse sensitivity determined according to the DFO matrix in the Fish and Fish Habitat Assessment Report as part of a CEAA Environmental Assessment.

Baseline Aquatic Survey, Enbridge Gas Distribution Inc. (2009) (Role: Project Biologist)
As part of the Pipeline to Serve York Energy Centre LP Environmental Assessment, aquatic baseline conditions at all watercourse crossings were summarized as part of the preliminary assessment of reasonable routing opportunities for the proposed pipeline.

Fish Salvage and Construction Monitoring, Enbridge Pipelines (2008 and 2009) (Role: Project Biologist)
In-water construction work was monitored and fish salvages were conducted at various watercourses across Ontario as part of a pipeline maintenance or repair project. The fish collected were identified, measured and released downstream of the in-water work area.

Baseline Aquatic Habitat Survey, TransCanada Pipeline Ltd (2009) (Role: Project Biologist)
As part of an Environmental Assessment for the proposed Thorold Sales Meter Station to connect the TransCanada Mainline to the Enbridge Gas Distribution pipeline, baseline aquatic conditions were assessed as part of the report.

Terrestrial

Ecological Land Classification, TransCanada Pipelines Ltd (2011) (Role: Biologist)
Ecological Land Classification (ELC) surveys were conducted along the proposed pipeline expansion route, which documented the vegetation communities present.
Species at Risk Survey, TransCanada Pipelines Ltd (2009) (Role: Project Biologist)
Species at Risk surveys were conducted at four work areas along a pipeline right-of-way between Belleville and Brockville, Ontario. Surveys included looking for and assessing possible habitat conditions for Butternut, Henslow’s Sparrow, Grey Fox, Blanding’s Turtle, Eastern Milksnake and Eastern Ratsnake.

Herptile Rescue, Enbridge Pipeline Inc. (2009) (Role: Project Biologist)
As part of a large pipeline maintenance project situated within a beaver pond located near the Gananoque River, a herptile rescue was performed to remove any snakes, turtles and frogs from the trench-box once in-filling was started. All species found within or immediately adjacent to the trench-box were removed and relocated within the beaver pond but outside of the work zone.

Terrestrial Assessment, Enbridge Pipelines Inc. (2008) (Role: Project Biologist)
Preliminary aquatic and terrestrial assessments of various dig sites along a pipeline in Southern Ontario were conducted to establish the existing baseline conditions. Surveys involved recording bird species observed, vegetation cover species found at the dig site and assessing any aquatic habitat found on-site.

Nesting Bird Surveys, TransCanada Summer (2007) (Role: Project Biologist)
Nesting bird surveys were performed at various remote locations throughout Northern Ontario, which included finding and identifying any active and inactive nests within and surrounding the proposed work area along a pipeline right-of-way.

Railroad
Aquatic

Fish Salvage and Construction Monitoring, Canadian National Railway (2010) (Role: Project Biologist)
As part of a railway expansion project, in-water construction work was monitored and multiple fish salvages were performed at various bridge and culvert construction locations.

Detailed Fish Community and Habitat Surveys and Reporting, Canadian National Railway (2009) (Role: Project Biologist)
As part of a railway expansion project, detailed fish community and habitat surveys were conducted following MTO protocols at over 20 watercourse crossings. Methodology included detailed habitat mapping 50 m upstream and 100 m downstream, electrofishing to determine fish community present in the stream and water chemistry sampling. Fish community and habitat conditions were summarized and watercourse sensitivity determined according to the DFO matrix in the Fish and Fish Habitat Assessment Report as part of a CEAA Environmental Screening.

Fish Habitat Surveys and Reporting, Canadian Pacific (CP) Railway (2009) (Role: Project Biologist)
As part of a CEAA Environmental Screening Report, a fish habitat and aquatic baseline survey was conducted along a proposed rail siding within a wetland. The assessment consisted of a visual assessment of water depth, aquatic vegetation, available cover, substrate and the presence of barriers to fish movement within the area of the proposed siding.

Terrestrial

Nesting Bird Surveys, Canadian National Railway (2010) (Role: Project Biologist)
Nesting bird surveys were performed along various stretches of CN’s RoW to find and identify any active or inactive nests within the proposed work area.

Municipal

Aquatic

Arkell Well Field Adaptive Management Plan (AMP), City of Guelph (2011) (Role: Aquatic Ecologist)
As part of a yearly monitoring program, fish habitat was assessed using the OSAP protocol at four monitoring stations outside the city of Guelph.
Trout Spawning Surveys (2010) (Role: Project Biologist)
Conducted multiple trout spawning surveys along two coldwater creeks in the eastern region of the GTA for two municipal road expansion projects. Fieldwork involved surveying the creeks 50 m upstream and 100 m downstream to determine if Rainbow Trout were staging or spawning in the creek and within the vicinity of the bridge.

Aquatic Habitat Surveys, Town of Ajax (2009-2010) (Role: Project Biologist)
The Town of Ajax is committed to improving water quality along its Lake Ontario waterfront and in Duffins Creek and Duffins Marsh. As part of this, preliminary fieldwork was conducted to assess the existing conditions at each of the stormwater outfalls, including terrestrial and aquatic habitat. The assessment consisted of a visual assessment of water depth, aquatic and terrestrial vegetation, available cover, substrate and the presence of barriers to fish movement upstream or downstream.

Baseline Aquatic Survey, Regional Municipality of York (2009) (Role: Project Biologist)
As part of an Environmental Assessment for Cole Engineering Group Limited (Cole Engineering), a baseline terrestrial and aquatic survey was conducted for the Fairy Lake Garden Pond Maintenance Project in the Town of Newmarket. The assessment consisted of a visual assessment of water depth, aquatic vegetation, available cover, substrate and the presence of barriers to fish movement upstream or downstream of Garden Pond; which was used to assess Garden Pond’s function as fish habitat both within the pond and the pond’s function within the Fairy Lake/East Holland River watershed.

Fish Sampling, Durham-York Region (2008) (Role: Project Biologist)
Various stations along Tooley Creek in Durham Region were electrofished to obtain composite samples of whole fish that were identified, weighed, measured and bagged for a metals analysis as part of a human health risk report for the proposed Durham-York Residual Waste Study.

Terrestrial

Habitat Assessment, Durham-York Region July (2007) (Role: Project Biologist)
Multiple sites around the regions were assessed for wildlife usage, fisheries and ideal browse, nesting and cover habitat. Recommendations for a preferred site were given based on a combination of these factors and how the potential loss of habitat through development would affect the local wildlife.

Other Experience

Aquatic

Phase 3 Environmental Effects Monitoring (EEM): Periodic Monitoring, Kirkland Lake, ON (2011) (Role: Aquatic Ecologist)
This EEM program began in 2010 (continuing through 2012) and involved the collection of water, sediment, fish and benthos to assess possible environmental effects caused by the mine and followed federal Metal Mining Effluent Regulation (MMER) guidelines. Fyke nets and a boat electrofisher were used to capture target small-bodied species. The fish were dissected, sexed, livers and gonads were weighed and eggs were collected.

Lake Gibson Angler Survey, Ontario Power Generation, Thorold, Ontario (2011) (Role: Aquatic Ecologist)
Lake Gibson is a hydro-electric reservoir owned and operated by Ontario Power Generation (OPG). As detailed in the OPG Risk Management Plan, OPG is required to monitor the persistence of sediment contamination and its expression in the environment within Lake Gibson. The program was designed to identify, quantify and compare the levels of contamination over time and the impact on sediments, water, benthic invertebrates, and fish in the system. Katie was involved as a field biologist interviewing anglers at Lake Gibson to assess the effectiveness of OPG’s communication with the public regarding the contamination of Lake Gibson sediment and fishes.

Piles Development (Keswick) Corporation - DFO authorization PE 07-0957 (2011) (Role: Aquatic Ecologist)
An evaluation of fish habitat, fish passage and the fish community was conducted within the channel realignment to confirm the compensation measures and structures are
functioning as designed and are providing fish habitat. Fish community sampling was conducted using a backpack electrofisher.

Box Grove - DFO Authorization for Works Affecting Fish and Fish Habitat No. BU-04-3082 (2011) (Role: Aquatic Ecologist)

This survey was conducted to satisfy conditions included in the Department of Fisheries and Oceans (DFO) Authorization for Works Affecting Fish and Fish Habitat (DFO Authorization No. BU-04-3082). Condition 4.2 of the Authorization is to enhance fish passage through the creation of a low flow channel following the removal of a 30 m long culvert. The culvert removal and new channel construction were completed in spring 2010. This survey was conducted as part of the post construction monitoring program required by the DFO Authorization.

Benthic Invertebrate and Water Quality Sampling, Fox Meadows Estates (2009) (Role: Project Biologist)

Benthic invertebrate sampling was conducted following the OBBN protocol and water quality samples were collected and submitted for testing. Results from the sampling effort were summarized and compared to previous years in an effort to gauge and mitigate potential impacts from a residential development expansion.

Fish Community Survey (2006) (Role: Fisheries Field Biologist)*

FWIN, NSCIN, gill netting and Seine netting techniques were used to perform a fish surveys on a lake and rivers in the Kawartha Lakes system. Processing of the sampled fish included weighing, measuring, sexing, determining gonadal condition, removing aging structures and aging.

Terrestrial

Preliminary Aquatic and Terrestrial Assessment, Canada Post (2008) (Role: Project Biologist)

Preliminary aquatic and terrestrial assessments of various sites in Southern Ontario were conducted to establish the existing baseline conditions. Surveys involved recording bird species observed, vegetation cover species found on the site and assessing potential impacts on nearby Valued Ecosystem Components (VECs) and aquatic systems.


Conducted biological surveys of flora and fauna on potentially contaminated sites to assess the current site conditions.

Soil Sampling Survey, Brampton Brick (2007) (Role: Project Biologist)

Collected soil samples to assess the impact of emissions on the surrounding terrestrial environment as part of the phytotoxicology assessment of the Brampton Brick facility.

Forest and Wetland Classification, Parks Canada (2006) (Role: Ecological Research Assistant)*

Performed rapid assessments of 400 m forest plots and 100 m wetland plots to evaluate and classify sites along the Trent-Severn Waterway from Rice Lake to Canal Lake. Classification was based on biological features such as flora and fauna present and physiological features such as soil and drainage. Data collected was used to create a mapping inventory of the Trent-Severn system for Parks Canada and the Ministry of Natural Resources.

*Denotes experience with other firms
Joel [Joe] Keene has 14 years of extensive marine and freshwater experience, including mark recapture studies and species inventory projects investigating fish population stability, species identification, measurement and marking of fish collected. He has processed over 11,000 samples from over 400 freshwater and marine projects, both in Canada and internationally. Joe has performed fecundity analysis on several fish species and marine mussels, and is experienced in the collection of soil, sediments, water, fish, crayfish, clam and benthic samples in the field using a variety of techniques and equipment. In addition, Joe is experienced with morphological and histological analysis, as well as detailed necropsies and dissection. He has been involved with a number of projects involving freshwater mussel species at risk (SAR) in Ontario and is familiar with both provincial and federal approvals processes for surveys and moves related to these organisms.

Joe’s expertise includes compilation and statistical analysis of benthic data to derive various biological indices, including, but not limited to, Hilsenhoff Biodiversity Index, Percent Model Affinity, Simpson’s Diversity and Evenness indices, EPT indices and BioMAP. He has researched and prepared scientific reports, studies, presentations and reviews relating to benthic studies and aquatic biology including Environmental Effects Monitoring (EEM) programs.

**EDUCATION**

- M.Sc., University of Guelph / Aquaculture, Guelph, Ontario, 1997
- B.Sc. (Specialized Honours), University of Guelph / Marine Biology, Guelph, Ontario, 1994
- Certification, Ontario Freshwater Mussel Identification Workshop, Guelph, Ontario, 2008
- Class 2 Electrofishing Crew Leader, Class 2 Electrofishing Training Course, Guelph, Ontario, 2010

**MEMBERSHIPS**

- Member, North American Benthological Society

**PROJECT EXPERIENCE**

**Aquatic Ecology**

**Middle - Grand River WWTP Assimilative Capacity Study, Kitchener, Ontario (Aquatic Ecologist)**

Joe assisted with the planning and implementation of a field program to map and quantitatively sample aquatic vegetation to provide estimates of macrophyte biomass, used in the GRCA’s GRSM Model in support of the ACS for the Kitchener wastewater treatment plant. Joe was involved in completing routine surface water sampling on the Grand River as part of this project.

**Proposed Burlington Quarry Expansion, Burlington, Ontario (Aquatic Ecologist)**

Joe participated in the implementation and delivery of a multi year Natural Environment Existing Conditions program and report. The report was included as part of the application for the proposed Burlington Quarry expansion. The program involved the establishment of appropriate sampling stations for fish, benthos, water, thermal conditions and discharge.

**Periodic Monitoring EEM Program, Kirkland Lake, Ontario (Benthic Taxonomist / Aquatic Ecologist)**

Joe conducted the analysis, interpretation and reporting of benthic data produced for the Environmental Effects Monitoring (EEM) program in 2008 which was conducted to assess the impacts of mine effluent on the receiving waters at the KLG site. He was also involved in the interpretation and reporting of water quality, sediment and fisheries data.

**Magnitude and Extent Environmental Effects Monitoring, Flin Flon and Snow Lake, Manitoba (Aquatic Ecologist / Field Crew / Benthic Taxonomist)**

Joe was involved in the planning and benthic site selection for three Environmental Effects Monitoring (EEM) projects in the Flin Flon and Snow Lake areas of Manitoba for Hudson Bay Mining and Smelting. He collected benthic, sediment and water samples and processed, enumerated and identified organisms from the benthic samples. He performed the QA/QC and statistical analysis of the benthic data for each of the three EEM programs. Joe also assisted with the design and implementation of a tissue metal concentration study in amphipods (Hyalella) collected from several sites in the Flin Flon and Snow Lake areas.

* denotes projects completed with other firms
Georgia-Pacific Cycle 5 Environmental Effects Monitoring - Investigation of Cause, Thorold, Ontario (Aquatic Ecologist/Field Crew Leader)
As part of an Environmental Effects Monitoring (EEM) program on Beaverdams Creek and Lake Gibson in Thorold, Ontario, Joe was involved in the planning, experimental design and site selection for a caged bivalve study to determine the effects of pulp and paper mill effluent on growth, survival and reproductive success in mussels (Lasmigona compressa). He collected water samples during the collection, deployment and retrieval of the mussels to test for a variety of parameters including metals, pH, conductivity, turbidity, nutrients and chlorophyll. He also conducted an effluent plume delineation survey within Lake Gibson.

Freshwater Mussel Detection and Relocation in Medway Creek and the Grand River, London, Ontario (Aquatic Ecologist)
Involved in the identification and relocation of freshwater mussel species at risk from Medway Creek in London, Ontario and the Grand River in Kitchener-Waterloo, Ontario.

Environmental Youth Corps, University of Guelph, Guelph, Ontario* (Aquatic Ecologist)
Conducted histological analyses of Sea lamprey (Petromyzon marinus) for use in fecundity and sex determination studies.

Mark Recapture and Species Inventory Project*, North Shore of Lake Ontario (Aquatic Ecologist)
Electrofished several rivers, investigating the effects of low head barrier dams on fish distribution. Performed species identification, measuring and marking of fish, and collection of stream physical data.

American eel (Anguilla rostrata) downstream migration and discrimination study for New York Power Authority*, New York (Aquatic Ecologist)
Performed eel collection using hoop nets and electrofishers, morphological analysis of external characteristics, and detailed necropsies including the collection of otoliths, blood, ovary and eel muscle tissues. He also conducted histological analysis of ovary tissue, focusing on oocyte developmental stage and diameters.

Mark Recapture Study and Species Inventory Project, Mill Creek, Guelph, Ontario* (Aquatic Ecologist)
Participated in project investigating fish population stability. Performed species identification, measuring, weighing and marking of fish collected using an electrofisher.

Benthic Services
Spencer Creek Invertebrate Study, Flamborough, Ontario (Benthic Taxonomist/Field Crew Leader)
Joe has coordinated the field program of benthic sampling in Spencer Creek near Flamborough, Ontario from 2006 to 2010 which monitors effects of a housing development on the benthic communities in the area. He has been responsible for the sorting and identification of benthic macroinvertebrates from the site and has performed the analysis of the resulting data. He was responsible for quality assurance/quality control analysis and the production of reports summarizing current conditions for each year, as well as an analysis of trends or changes over time.

14 Mile Creek Invertebrate Study, Oakville, Ontario (Benthic Taxonomist/Field Crew Leader)
Joe has coordinated the field program of benthic sampling in 14 Mile Creek near Oakville, Ontario from 2006 to 2010 which monitors effects of a housing development on the benthic communities in the area. He has been responsible for the sorting and identification of benthic macroinvertebrates from the site and has performed the analysis of the resulting data. He was responsible for quality assurance/quality control analysis and the production of reports summarizing current conditions for each year, as well as an analysis of trends or changes over time.

DFO Small Bodied Fish Gut Content Analysis, Ontario (Benthic Taxonomist)
Joe conducted gut content analysis on 736 small bodied fish for Fisheries and Oceans, Canada. The study involved weights and measures of fish and gut contents as well as detailed identification and enumeration of benthic macroinvertebrates from the stomach and intestinal tract of dissected fish. Data will be used to compare resident fish diets both before and after Round Goby introduction.

Acton Quarry Expansion, Acton, Ontario (Aquatic Biologist)
As an Aquatic Biologist, Joe participated in field studies for a multi-year Natural Environment Existing Conditions program and report. The report was included as a part of the application for the proposed Acton Quarry expansion. The program involved establishing appropriate sampling stations for baseline monitoring of fish, benthos, water, thermal conditions and discharge. He was also responsible for the sorting and identification of benthic macroinvertebrates collected as part of the multi-year field surveys, as well as the subsequent analysis and reporting of benthic community data.
Proposed Burlington Quarry Expansion, Burlington, Ontario (Aquatic Ecologist)
Joe participated in the implementation and delivery of a multi-year Natural Environment Existing Conditions program and report. The report was included as part of the application for the proposed Burlington Quarry expansion. The program involved the establishment of appropriate sampling stations for fish, benthos, water, thermal conditions and discharge.

Mount Forest Waste Water Treatment Plant (WWTP) Study*, Mount Forest, Ontario (Benthic Taxonomist / Field Crew)
Joe was responsible for the collection and identification of benthic macroinvertebrates upstream and downstream of existing and proposed Waste Water Treatment Plant (WWTP) discharge locations to establish baseline environmental conditions on the South Saugeen River.

2006 Biomonitoring-Crompton, Elmira, Ontario (Benthic Taxonomist)
Joe participated in the field program of benthic sampling in Canagagigue Creek near Elmira, Ontario from 2006 to 2008 which monitors effects of a polluted site near the creek on the benthic communities in the area. He has been responsible for the sorting and identification of benthic macroinvertebrates from the site and has performed the analysis of the resulting data. He was responsible for quality assurance/quality control analysis and the production of reports summarizing current conditions for each year, as well as an analysis of trends or changes over time. Prior to 2006, he was responsible for the sorting and identification of the benthic samples through a different firm.

Tembec Enterprises Inc. Cycle 5 EEM, Kapuskasing, Ontario (Benthic Taxonomist)
As part of an Environmental Effects Monitoring (EEM) program on the Kapuskasing River, Ontario, Joe was involved in the planning, collection, sorting and identification of benthic samples for the purpose of characterizing the benthic communities upstream and downstream of a pulp and paper mill on the Kapuskasing River. He also collected water and sediment samples at each benthic station and assessed physical parameters such as pH, conductivity, dissolved oxygen, temperature and flows. He has performed statistical analysis of the resulting benthic data and produced reports summarizing current conditions for each year, as well as an analysis of trends or changes over time.

Proposed Quarry, Flamborough, Flamborough, Ontario (Benthic Taxonomist / Field Crew)
Joe has been involved in several aspects of the surface water monitoring of lands adjacent to the proposed quarry in an effort to provide a picture of the background ecology and hydrology. He has collected, processed, identified and analyzed benthic samples from Flamboro and Mountsberg Creeks and their tributaries over several years. He has conducted bimonthly monitoring of a number of surface water stations in the area for water depth, flow and water quality. He has also taken part in a pump test which required daily assessments of flow, depth, turbidity, pH, temperature, dissolved oxygen, conductivity, metals and bacterial samples and was responsible for coordinating daily laboratory water sample deliveries and dissemination of results to stakeholders.

Wescast Invertebrate Study, Wingham, Ontario (Benthic Taxonomist / Field Crew Leader)
Joe has coordinated the field program of benthic sampling in the Maitland River near Wingham, Ontario from 2006 to 2009 which monitors effects of a historic landfill on the benthic communities in the area. He has been responsible for the sorting and identification of benthic macroinvertebrates from the site and has performed the analysis of the resulting data. He was responsible for quality assurance/quality control analysis and the production of reports summarizing current conditions for each year, as well as an analysis of trends or changes over time. Prior to 2006, he was responsible for the sorting and identification of the benthic samples through a different firm.

Bridge Street Bridge Rehabilitation, Kitchener, Ontario (Field Crew Leader / Benthic Taxonomist)
Joe was involved in the identification, collection and relocation of freshwater mussels from the Grand River in Kitchener, Ontario. This mussel move was performed to minimize impacts of bridge reconstruction and repair on local mussel populations which included the wavyrayed lampmussel (Lampsilis fasciola); a freshwater species at risk (SAR). Joe was involved in the planning, collection, identification and relocation aspects of this mussel move.

Extensive Variety of Taxonomic Experience, 1999-2011 (Aquatic Invertebrate Taxonomist)
Joe has processed over 11,000 samples from over 400 projects in 12 years. Joe is skilled in the identification of benthic macroinvertebrates from lentic and lotic environments. His experience encompasses marine and freshwater systems across Canada and internationally.

* denotes projects completed with other firms
PUBLICATIONS


Are the costs to meet environmental effects monitoring (EEM) benthic sample precision and accuracy criteria justified?. *Proceedings of the 32nd Annual Aquatic Toxicity Workshop*, 2005.


Kelly Clayton is a member of the Environmental Management Group at Stantec Consulting with four years of industry experience. She has a Graduate Certificate in Ecosystem Restoration and a Bachelor of Environmental Science, majoring in environmental geography and area of emphasis in biotic systems. Kelly has gained valuable experience through her formal employment and her extensive participation in volunteer projects in Ontario, as well as the United States of America. Her experience at teaching college-level environmental monitoring has imbued Kelly with a practical ability to apply Ecological Monitoring and Assessment Network (EMAN) and Ontario Stream Assessment Protocol (OSAP) protocols.

Kelly has conducted a wide array of environmental monitoring that includes bird migration surveys, salmon spawning counts, butterfly and odonate surveys, as well as fish assessment and vegetation surveys. She is familiar with the use of all manner of such survey equipment as GPS and radio telemetry equipment, seine nets, hoop nets, gill nets, fyke nets, minnow traps, basking traps and spring haul traps. Kelly is experienced at the identification of flora and fauna, and is capable of handling wildlife. Certified in ELC (Ecological Land Classification), Class II Electrofishing, and Ontario Benthic Biomonitoring Network, Kelly has the ideal background to support a wide variety of both Terrestrial and Aquatic natural heritage studies. Her laboratory experience has honed Kelly’s skills in data processing and analysis, and she has a demonstrated ability to interpret and report findings accurately.

EDUCATION

B.Sc. (Env.), University of Guelph / Environmental Science, Guelph, Ontario, 2007

Graduate Certificate, Niagara College / Ecosystem Restoration, Niagara-on-the-Lake, Ontario, 2009

Class II Electrofishing Certificate, Niagara College / Ecosystem Restoration, St. Catharines, Ontario, 2008

Ontario Benthic Biomonitoring Network Certificate, Niagara College / Ecosystem Restoration, St. Catharines, Ontario, 2009

Certificate, Ecological Land Classification (ELC), Lindsay, Ontario, 2010

Certificate, Tallgrass Ontario / Seed Collector, Burlington, Ontario, 2010

Certificate, Ontario Wildlife Rehabilitation Network (OWREN), London, Ontario, 2010

Certificate, St. Johns Ambulance / CPR and First Aid, Burlington, Ontario, 2010

Workplace Hazardous Materials Information System (WHMIS), Burlington, Ontario, 2010

Licence, Boat Smart / Pleasure Craft Operators, Orangeville, Ontario, 2008

Certificate, ROM / Ontario Fish Identification Workshop, Toronto, Ontario, 2011

PROJECT EXPERIENCE

Education

Niagara College Environmental Monitoring Program*, Niagara-on-the-Lake, Ontario (Part-time Teacher)

Taught two sections of students at a second-year, college level. Demonstrated and explained Ontario Stream Assessment Protocol (OSAP) and Ontario Benthic Biomonitoring (OBBN) protocols. Discussed proper field and lab sampling/analysis techniques for water, sediment, and benthos. Prepared assignments, lectures, and exams (both written and practical). Evaluated students based on performance.

Linear Infrastructure

Thunder Bay Generating Station Pipeline Project, Thunder Bay, Ontario (Aquatic Ecologist)

Researched and summarized data for existing conditions report as part of the EA process.
Union Gas Pipeline Construction, Nanticoke, Ontario  
(Aquatic Ecologist)  
Researched and summarized data for existing conditions report as part of the EA process.

Mining  
Environmental Effects Monitoring (EEM) Program: Vale Inco, Sudbury, Ontario (Aquatic Ecologist)  
Collected fish and water samples for toxicity testing.

Environmental Effects Monitoring (EEM) Program:  
Hudson Bay Mining and Smelting, Flin Flon, Manitoba (Aquatic Ecologist)  
Collected Hyalella, water samples and sediment samples for toxicity testing.

Natural Sciences & Heritage Resources  
Proposed Melancthon Quarry, Melancthon, Ontario  
(Aquatic Ecologist)  
Conducted fish community surveys (electrofishing).

New Hamburg Oxbow, New Hamburg, Ontario  
(Aquatic Ecologist)  
Collected water samples and water quality data twice monthly.

Blue Springs Creek Ground and Surface Water Monitoring, Arkell, Ontario (Aquatic Ecologist)  
Downloaded weekly temperature and water level data and performed stream discharge measurements.

Ontario Power Generation - Lake Gibson Project, Thorold, Ontario (Aquatic Ecologist)  
Collected benthic invertebrate and water samples. Safety boat operator.

Mill Creek Surface Water Monitoring Program, Milton, Ontario (Aquatic Ecologist)  
Performed monthly stream discharge measurements and downloaded water level and temperature logger data. Graphed hydrological data.

Greenhouse Effluent Filtration Design Team, Niagara College*, Niagara-on-the-Lake, Ontario (Biologist)  
Conducted environmental impact assessment on receiving stream and suggested several filtration design methods.

Bird Studies Canada Marsh Monitoring Program*, Hamilton, Ontario (Volunteer)  
Conducted amphibian surveys on Royal Botanical Gardens property. Aided in the development of the BSC database.

Species at Risk Inventory at Legends on the Niagara Golf Course*, Chippewa, Ontario (Student Consultant)  
Designed and conducted survey methods. Produced research and consultant proposals. Made recommendations for further restoration efforts.

St. Clair River Horizontal Directional Drill, Sarnia, Ontario (Aquatic Ecologist)  
Performed analysis and presentation of in-situ and laboratory water quality data. Reported on results of water quality monitoring program.

Island Lake Conservation Area, Credit Valley Conservation*, Orangeville, Ontario (Conservation Technician)  
Served as a client services representative, which entailed conservation awareness education. Maintained conservation area grounds.

Royal Botanical Gardens*, Hamilton, Ontario (Restoration Ecologist)  
Coordinated summer students and assisted in the planning and implementation of restoration activities. Participated in habitat rehabilitation strategies (cattail and waterlily plantings). Maintained floodplain connections. Assisted the Species at Risk Biologist in the creation of snake hibernacula. Assisted in turtle monitoring using radio telemetry, basking traps and hoop nets. Assisted Terrestrial Ecologist with Prairie grassland rehabilitation techniques (Prescribed burns and Prairie plantings). Conducted environmental monitoring (salmon spawning count, waterfowl migration count, aquatic vegetation surveys, butterfly and odonate counts). Performed wildlife population management (carp (Cyprinus carpio) seining in Cootes Paradise Marsh and RBG ponds, electrofishing for carp), and beaver dam maintenance. Operated Cootes Paradise Fishway carp barrier (to separate non-native species from native) and ran educational presentations at Cootes Paradise Fishway. Collected water quality measurements and performed data entry, data quality control and analysis, in addition to report writing. Assisted in development of educational materials (pamphlets and signage).

* denotes projects completed with other firms
Various Environmental Effects Monitoring (EEM) Studies, Ontario (Aquatic Ecologist)
Conducted fish population monitoring, benthic invertebrate identification and report writing/data management in support of various EEM studies for both Mining and Pulp and Paper industry projects.

Renewable Energy
White Pines Wind Farm, Picton, Ontario (Aquatic Ecologist)
Performed water-body assessments on mapped watercourses.

Fairview Wind Farm, Stayner, Ontario (Aquatic Ecologist)
Performed water-body assessments on mapped watercourses.

Pristine Power Wind Power, St. Columban, Ontario (Aquatic Ecologist)
Conducted fish community surveys (electrofishing).

Algonquin Power Wind Project, Amherst Island, Ontario (Aquatic Ecologist)
Conducted shoreline habitat mapping and fish community surveys.

Solar Power Plan Design Team, University of Guelph, City of Guelph*, Guelph, Ontario (Student)
Designed a solar power plan for the City of Guelph to coordinate with Community Energy Plan. Conducted public surveys on solar power interest. Coordinated with key stakeholders. Conducted cost/benefit analysis, baseline research regarding solar power use, prepared proposal, and presented plan to key stakeholders.

Port Dover Wind Farm, Port Dover, Ontario (Assistant Aquatic Ecologist)
Fish population monitoring (electrofishing).

Melancthon Wind Power Project, Melancthon and Amaranth Townships, Ontario (Biologist)
Conducted bat and bird mortality monitoring studies and raptor monitoring (winter raptor counts) as well as habitat assessments and data analysis.

Transportation Planning
MTO Highway 3, 6 and 24, Simcoe, Ontario (Aquatic Ecologist)
Conducted fish community surveys (electrofishing).

* denotes projects completed with other firms
Kelly Clayton  B.Sc. (Env.)
Ecologist

PUBLICATIONS


Marc Faiella’s experience has included industry and development sector projects. He has conducted field investigations, liaised with representatives of government agencies, regulators and worked with First Nations, synthesized data and produced reports. Marc’s specific areas of expertise include Environmental Effects Monitoring (EEM), Environmental Impact Studies (EIS) and Fish Habitat Assessments. He has assessed potential impacts to aquatic habitats at a number of mining and development-related sites, such as metal mines, quarries, pulp and paper mills, subdivisions, city drainage systems and wind energy projects. Marc’s technical experience has focused mainly on aquatic habitats. He has conducted fisheries inventories and Species at Risk project surveys based on provincial protocols, trout spawning surveys, collected benthic invertebrate samples, and collected water, sediment and non-lethal and lethal fish tissue samples for mercury. Marc has gained practical experience with all construction phases of DFO applied work sites. In addition, Marc has on-site experience at remote northern sites where access is gained via helicopter, ATV, boat and hiking.

**EDUCATION**

- Tech. Dipl., Sir Sanford Fleming College / Ecosystem Management, Lindsay, Ontario, 2005
- Certificate, St. John Ambulance / First Aid and CPR, Guelph, Ontario, 2010
- P.A.L. and Firearms, Brampton, Ontario, 2005
- Sir Sanford Fleming College / Short Wave Radio, Lindsay, Ontario, 2004
- Sir Sanford Fleming College / Chainsaw Operator, Lindsay, Ontario, 2004
- Certificate, Pleasure Craft Operator, Toronto, Ontario, 2005
- Fisheries and Oceans Canada / Ontario Freshwater Mussel Identification Workshop, Burlington, Ontario, 2011

**MEMBERSHIPS**

- Canadian Environmental Practitioner In Training (CEPIT), Canadian Environmental Certification Approvals Board

**PROJECT EXPERIENCE**

**Environmental Assessments**

- Communal Irrigation Study, Township of Melancthon, Ontario (Crew Lead)
  
  Obtained appropriate licences to conduct presence / absence and fish utility surveys within the Pine and Noisy River watersheds. Served as crew lead, overseeing fish surveys that were conducted in 2008 and preparations for proposed surveys in the spring / summer of 2009. Responsible for assembling report figures, maps and analysis of collected fisheries data, in tandem with Stantec’s in-house GIS / graphics department.

- Bruce to Milton Transmission Reinforcement Project, Multiple Sites, Ontario (Crew Lead)
  
  Key member of the study team for the proposed hydro corridor expansion from Bruce Nuclear to a Milton, Ontario. Liaised with several Ministry of Natural Resources offices to coordinate issuance of permits and processing of historical fisheries data requests. Worked directly with the project manager to complete a work plan to safely and efficiently complete spring and summer fisheries surveys along the approximate 180 km corridor. Led a 2-person crew to conduct stream cross section surveys used to determine appropriate sizing of culverts. Coordinated production of detailed mapping and figures upon completion of the surveys, in tandem with Stantec’s in-house GIS / graphics department, and was key in production of the independent Class EA report.
Port Alma Wind Power Project, Port Alma, Ontario (Field Crew / Data Analyst)
Exclusively responsible for conducting background topography research. Performed tree measurements for entire survey area, identified and mapped tree species locations using aerial photo base. Constructed tests for future heights (software) and produced reports detailing results. These results had significant bearing on wind turbine selection and placement.

Brampton MESP, Phase I, Springdale Environmental Site Assessment, Brampton, Ontario (Habitat Assessor)
Responsible for obtaining background information and conducted field work to assess study area. Compiled field notes and detailed data using an air photo base. Prepared final technical memorandum for submission.

Environmental Site Management
Randall Drain Branch A Restoration, Environment Inspection and Post-construction Monitoring, Waterloo, Ontario (Environmental Inspector)
Responsible for overseeing that approved plans to remediate a damaged watercourse on the City of Waterloo’s airport property, as outlined by The Department of Fisheries and Oceans, Grand River Conservation Authority and Stantec Consulting Ltd., were carried out accordingly. Works included properly diverting flow downstream, efficiently dewatering the damaged area and relocating any stranded aquatic species downstream. Worked closely with the construction crew to ensure all remediation phases met Fisheries Act requirements. Prepared final report.

Mining
Vale Technology Development - Hydrology and Aquatic Assessment, Sudbury, Ontario (Aquatic Technician)
Marc was part of a two person crew that conducted a fishery presence/absence survey in a number of lakes associated with mining practices. Fish were identified, measured and tissue samples were collected for laboratory analysis.

Environmental Effects Monitoring (EEM) Program:
Periodic Monitoring Phase, Hudson Bay Mining and Smelting, 2007, Flin Flon, Manitoba (Aquatic Technician)
Participated in metal mine EEM Periodic Monitoring phase, involving fisheries and benthic invertebrate surveys. Collected benthic and water samples in the field as well as fish, using various collection techniques. Completed habitat assessments, plume measurements and fish necropsies. Upon completion of field work, performed data analysis and reporting for the EEM report.

Environmental Effects Monitoring (EEM) Program:
Focused Monitoring Phase, Hudson Bay Mining and Smelting, 2009, Flin Flon, Manitoba (Aquatic Technician)
Participated in metal mine EEM Focused Monitoring phase, involving fisheries and benthic invertebrate surveys. Collected benthic and water samples in the field as well as fish, using various collection techniques. Completed habitat assessments, plume measurements and fish necropsies. Upon completion of field work, performed data analysis and reporting for the final EEM report.

Environmental Effects Monitoring (EEM) Program:
Periodic Monitoring Phase, Hudson Bay Mining and Smelting, 2007, Snow Lake, Manitoba (Aquatic Technician)
One of a 2-person crew stationed in Snow Lake for metal mine EEM Periodic Monitoring phase, involving fisheries and benthic invertebrate surveys. Collected benthic and water samples in the field as well as fish, using various collection techniques. Completed habitat assessments, plume measurements and fish necropsies. Upon completion of field work, performed data analysis and reporting for the EEM report.

Environmental Effects Monitoring (EEM) Program:
Focused Monitoring Phase, Hudson Bay Mining and Smelting, 2009, Snow Lake, Manitoba (Aquatic Technician)
One of a 2-person crew stationed in Snow Lake for metal mine EEM Focused Monitoring phase, involving fisheries and benthic invertebrate surveys. Collected benthic and water samples in the field as well as fish, using multiple collection techniques. Completed habitat assessments, plume measurements and fish necropsies. Upon completion of field work, performed data analysis and reporting for the final EEM report.

Natural Sciences & Heritage Resources
Hydro One Series Capacitor Station (Project Manager)
Responsible for a fisheries sampling survey to determine the presence or absence of fish species near a proposed capacitor station. Secured a Fish Collection Licence from OMNR, compiled maps to assist in field investigations, assembled field staff, initiated survey and prepared report for internal and external circulation.
Melancthon Wind Energy Project Tree Surveys, Melancthon, Ontario (Aquatic Technician)
Measured tree heights and the species identified with use of a laser-sighted measuring device. Performed a desktop exercise, whereby heights were projected over a 20 year period. These projections were then synthesized on aerial photos, showing potential hazards to turbines, thus assisting with selection of wind turbine placement and selection of site-appropriate turbine models.

Oil & Gas
Enbridge Pipeline Crossing, Sarnia, Ontario (Aquatic Construction Monitor)
Marc was responsible for monitoring the St. Clair River for “frak-outs” that may occur during the horizontal drilling and pipe line installation under the St. Clair River. Marc was also responsible for collecting water samples for laboratory analysis and recording current river conditions using a YSI water quality meter.

Power
Biological Monitoring for the Shekak-Nagagami Generating Station, Hearst, Ontario (Field Crew Lead)
Responsible for compiling appropriate field gear to complete the Year-13 monitoring study along the Shekak and Nagagami Rivers in the vicinity of a hydroelectric dam. Participated in surveys, which included: fish inventories through electrofishing, fish tissue collection via gillnets, benthic sampling and water quality and sediment quality collection through several collection techniques. Performed data analysis and completion of the report. Worked closely with Brookfield Power, the MNR and Hearst employees to obtain necessary information and data to complete the project.

Hydro One Series Capacitor Station, Huntsville, Ontario (Project Management / Crew Leader)
Undertook a fisheries sampling survey to determine the presence or absence of fish species near a proposed capacitor station. Duties included securing fisheries permits from related agencies, compilation of maps to assist with surveys, assembly of staff, planned and implemented the field program and prepare report for internal and external circulation.

Yellow Falls Hydroelectric Project, Smooth Rock Falls, Ontario (Aquatic Technician)
Crew member responsible for extensive fish, benthic, water and habitat surveys along the Matagami River. Fish surveys included setting and retrieving gillnets, electrofishing, identification of fish species, retrieving age indicators from fish, characteristic measurements and collecting non-lethal samples for mercury analysis. Collected benthic invertebrates using various sampling techniques for later sorting and identification. Collected water samples and substrate samples using various sampling techniques and equipment for lab testing. Worked closely with a First Nations crew member for the duration of the project and, upon completion of the field surveys, performed data analysis and report writing.

Roads and Highways
Highway 11 Access Improvements. Preliminary Design. MTO Northeastern Region, Huntsville, Ontario (Fisheries Specialist)
Marc conducted an inventory of aquatic resources adjacent to the existing highway. The fish and fish habitat investigations were completed on three watercourses in the Study Area, and were conducted in accordance with the 2006 MTO/DFO/OMNR Protocol

Highway 11 Access Improvements. Preliminary Design. MTO Northeastern Region, Huntsville, Ontario (Fisheries Specialist)
Marc conducted an inventory of aquatic resources adjacent to the existing highway. The fish and fish habitat investigations were completed on three watercourses in the Study Area, and were conducted in accordance with the 2006 MTO/DFO/OMNR Protocol

Highway 8 and Highway 401 Interchange Improvements. Preliminary Design. MTO Southwestern Region, Kitchener, Ontario (Fisheries Specialist)
Marc conducted an inventory of aquatic resources within the study area. The fish and fish habitat investigations were completed following the 2006 MTO/DFO/OMNR Protocol. An exception to this occurred at the Grand River, where fish inventories were not conducted in order to avoid disturbances to mussel Species at Risk that are known to occur in the area.

Highway 3 Rehabilitation, Renton to Jarvis. Detail Design. MTO West Region, Ontario (Fisheries Specialist)
Marc participated in detailed Natural Heritage features assessments and a Fish Habitat Existing Conditions Report in accordance with the 2006 MTO/DFO/OMNR Protocol. Three major water crossings (Nanticoke Creek and two crossings of Black Creek) were assessed in addition to other smaller crossings.

* denotes projects completed with other firms
Wind Power
White Pines Wind Energy, Prince Edward County, Ontario (Field Crew Lead)
Marc conducted aquatic habitat assessments and a fisheries presence/absence surveys to determine aquatic features under REA (Renewable Energy Act). He also assisted in producing a photo log and figures that assisted in the application process for construction work permits.

Fairview Wind Energy, Staynor, Ontario (Field Crew Lead)
Marc conducted aquatic habitat assessment surveys to assess their designation under the REA (Renewable Energy Act). In addition, Marc conducted electrofishing surveys to assess the presence or absence of fish species and was also part responsible for producing a photo log and figures to assist in the application process for associated construction work permits.

Port Dover Wind Energy, Port Dover, Ontario (Aquatic Technician)
Marc conducted field surveys to assess aquatic features and to determine its designation under the REA (Renewable Energy Act). Marc was also part responsible for producing reports, photo logs and figures to aid in the application process to gain associated construction work permits.

Amherst Island Wind Energy, Amherst, Ontario (Field Crew Lead)
Responsible for collecting fisheries habitat characteristics along the proposed shoreline of Lake Ontario to aid in obtaining associated construction work permits. Marc was also responsible for conducting a presence/absence survey using several capture methods such as, gill nets, boat electrofishing, Fyke nets and minnow traps.

* denotes projects completed with other firms
Mitch Ellah is an aquatic ecologist who serves Stantec’s Environmental Services group. He has significant experience conducting field research in the Canadian Arctic and various locations in southern and northern Ontario and Quebec. Mitch has been involved in all aspects of aquatic and terrestrial projects, including the review of background data, correspondence with government agencies, site investigation and data collection, and report writing. He is knowledgeable in, and proficient at field surveys and standardized protocols involving data collection for water quality and quantity, benthic macroinvertebrates, fish, bird, herpetofauna, aquatic plants and forest communities. Mitch has performed vegetation surveys using Ecological Land Classification (ELC) and Ontario Wetland Evaluation (OWES) protocols. He has excellent fish identification skills, and is proficient at conducting aquatic habitat and fish community assessments using electrofishing equipment, gill nets, fyke nets, seine nets and minnow traps. Mitch worked progressively for three field seasons in the Canadian Arctic investigating treatment wetlands in Nunavut and NWT Inuit communities. Mitch’s knowledge of ecology and biotic identification, his strong communication skills and proven abilities at multi-discipline teamwork are complemented by his research experience, providing him with valuable technical expertise to meet a variety of project needs.

EDUCATION

B.Sc. (Honours), Trent University / Environmental Resource Science, Peterborough, Ontario, 2011

Tech. Dipl., Sir Sandford Fleming College / Environmental Technologist Diploma, Lindsay, Ontario, 2009

Tech. Dipl., Sir Sandford Fleming College / Environmental Technician Diploma, Lindsay, Ontario, 2008

Certificate, Ministry of Natural Resources / Ontario Wetland Evaluation System (OWES), Lindsay, Ontario, 2009

Certificate, Royal Ontario Museum / Fish Identification Workshop, Toronto, Ontario, 2011

Certificate, Stantec Consulting Ltd. / Class 2 Electrofishing Training, Guelph, Ontario, 2012

PROJECT EXPERIENCE

Natural Sciences & Heritage Resources

Hydro One Clarington Transformer Station, Clarington, Ontario (Field Ecologist)

Conducted fisheries and aquatic habitat assessment for proposed transformer station development

Shell Oil and Gas, Montreal, Quebec (Field Ecologist)

Conducted site investigation for amphibian and reptile populations, and amphibian breeding call surveys

Natural Heritage Site Inventories and Reporting*, Various Locations (Field Ecologist)

Bat maternity roost surveys in forest settings, various wildlife surveys including amphibians, reptiles, mammals, and birds; data collection and report writing for renewable energy REA environmental assessment projects; ELC vegetation community and wildlife habitat assessments; online database research for technical report preparation, including MNR Biodiversity Index and various atlases

Proposed Melancthon Quarry, Melancthon, Ontario (Field Ecologist)

Conducted species at risk surveys targeting Whip-poor-will using standardized MNR protocol

* denotes projects completed with other firms
Mitch Ellah  Tech. Dipl., B.Sc. (Hons.)
Aquatic Ecologist

Proposed Simpson's Quarry EA, Bancroft, Ontario (Field Ecologist)
Conducted field sampling, including breeding bird, waterfowl breeding, and amphibian surveys, aquatic assessments, habitat characterizations, as well as species at risk surveys that included Blanding's Turtle and Whip-poor-will

**Renewable Energy**
Niagara Region Wind Corp. Wind Farm, Niagara Region, Ontario (Field Ecologist)
Conducted aquatic assessments using REA water body designations, fish community presence/absence study and habitat characterization related to proposed wind farm

Bow Lake Wind Farm, Montreal River Harbour, Ontario (Field Ecologist)
Conducted fieldwork related to natural heritage terrestrial assessment that included locating bat maternity roosts, amphibian surveys, and habitat delineation. Aquatic fieldwork included habitat characterization and water body determination congruent with the Renewable Energy Act (REA) and fish community assessments

**Cedar Point Wind Farm, Middlesex County, Ontario**
(Man-Field Ecologist)
Conducted snake cover board searches to determine presence/absence of snake population and diversity

**Capital Power (K2) Wind Farm, Goderich, Ontario**
(Man-Field Ecologist)
Conducted aquatic assessments using REA water body designations, fish community presence/absence study and habitat characterization related to proposed wind farm

**Research / Laboratories**
Centre for Alternative Wastewater Treatment (CAWT), Sir Sandford Fleming College*, Various Sites, Nunavut and Northwest Territories (Arctic Field and Laboratory Research Technician)
Remote study sites in Baker Lake, NU, Gjoa Haven, NU and Holman, NT; results used for the continuation of the International Polar Year research project

Centre for Alternative Wastewater Treatment (CAWT), Sir Sandford Fleming College*, Alert, Nunavut (Arctic Field and Laboratory Research Technician)
A partnership project with Department of National Defense and Environment Canada Wastewater Division; remote study site in Alert, NU; sole researcher to plan, research, organize equipment, work with partners and set-up laboratory; conducted bird surveys for Environment Canada

**Water**
Komoka Wastewater Treatment Plant, Komoka, Ontario (Field Ecologist)
Conducted benthic macroinvertebrate and water quality sampling for wastewater treatment plant discharge

Fox Meadow Subdivision EEM, Peterborough, Ontario (Field Ecologist)
Conducted benthic macroinvertebrates and water quality sampling for EEM of subdivision encroachment on PSW

Canagagigue Creek EEM, Elmira, Ontario (Field Ecologist)
Water quality and quantity measuring, benthic macroinvertebrate, and fish community assessment at chemical plant discharge site

**Blue Springs EEM, Guelph, Ontario** (Field Ecologist)
Routine flow measurement, monitoring and maintenance of rain gauges, Barologgers, air temperature loggers and in-stream water level loggers to assess potential effects of aggregate operations and groundwater draw down on fish habitat in a coldwater stream

**Mill Creek EEM, Guelph, Ontario** (Field Ecologist)
Routine flow measurement, monitoring and maintenance of rain gauges, Barologgers, air temperature loggers and in-stream water level loggers to assess potential effects of aggregate operations and groundwater draw down on fish habitat in a coldwater stream

* denotes projects completed with other firms
Mitch Ellah  Tech. Dipl., B.Sc. (Hons.)
Aquatic Ecologist

PUBLICATIONS

Chemical and Biological Changes in an Arctic Treatment Watershed to Assess the Value of Macroinvertebrate Biomonitoring. *Undergraduate Thesis, Trent University, Peterborough, Ontario, 2011.*
Trevor Chandler is a geomorphologist, with 18 years experience, working in concert with Stantec’s Aquatic Group. He has participated in a number of environmental and fluvial investigations that have included Environmental Effects Monitoring and effluent plume delineations for Pulp and Paper and Mining Sector clients, natural channel design and restoration, channel stability studies, erosion threshold and meander belt assessments for planning, and post impoundment monitoring and fisheries mortality investigations at hydroelectric facilities. Current projects include delineation of mining effluent in central Manitoba, the restoration of a degraded urban watercourse to support Redside Dace, an at-risk fish species, meander belt assessments, channel stability and fluvial erosion threshold analyses, and an investigation of meander planform evolution along a large southern Ontario river.

EDUCATION

M.Sc., University of Guelph / Fluvial Geomorphology, Guelph, Ontario, 1992

B.E.S. (Honors Co-op), University of Waterloo / Environmental Studies, Waterloo, Ontario, 1990


Wildland Hydrology Inc. / Applied Fluvial Geomorphology Course (Level I), Guelph, Ontario, 1993

PROJECT EXPERIENCE

Environmental Assessments

Plume Delineation Investigation, Spruce Falls, Ontario (Environmental Scientist)

In situ conductivity and river and effluent discharge records were used to delineate the effluent plume concentrations along the Kapuskasing River over a period of one year.

Sedimentation Investigation, Humber Arm, Newfoundland (Environmental Scientist)

Custom sedimentation towers were designed, constructed and deployed for two weeks to collect inorganic sediments in a 40 m deep marine environment. The towers consisted of an array of duplicate collectors spaced at four different depths in the water column. One array was deployed in the vicinity of pulp and paper and municipal discharges and the other in an undisturbed reference area.

Environmental Effects Monitoring (EEM) Plume Investigations, Various Sites, Ontario, Quebec and Newfoundland (Environmental Scientist)

Eight separate plume investigations, using rhodamine WT as an active tracer, were conducted at eight pulp and paper mills in Ontario, Quebec and Newfoundland. Receiving environments included large rivers, lakes, tidal estuaries, and marine environments.

Environmental Effects Monitoring (EEM), Flin Flon, Manitoba (Environmental Scientist)

Mining effluent plume investigations, using in situ conductivity, were undertaken along an effluent plume flowpath that extended over 100 km from the end-of-pipe through a variety of hydraulic environments.

Geomorphologic Assessments

Estimated Meander Belt Delineation, Credit Valley Watershed*, Southwestern Ontario (Geomorphologist)

All permanent and intermittent watercourses within the Credit River System upstream of Mississauga, ON were delineated into distinct reaches. Meander belts were estimated along all reaches using detailed topographic mapping and high resolution aerial photography.

Sydenham River Fluvial Geomorphology Assessment*, Southwestern Ontario (Geomorphologist)

The mainstem and all tributary watercourses in the basin were delineated into geomorphically and hydrologically distinct reaches and the stability of each reach assessed by field survey. Recommendations were made to enhance channel stability and improve water quality.

* denotes projects completed with other firms
Mini-Regional Curve Analysis, Brampton, Ontario
(Geomorphologist)
A series of small to medium-sized streams west of Brampton were surveyed to develop a regional curve. The purpose of the analysis was to develop a tool to predict appropriate bankfull and inner-berm dimensions for the restoration of highly disturbed watercourses.

Ontario Stream Assessment Protocol, Highland Creek*, Toronto, Ontario (Geomorphologist)
Fisheries habitat was systematically inventoried throughout the watershed in each of 22 channel reaches.

Highland Creek Geomorphology Study*, Toronto, Ontario (Geomorphologist)
A series of detailed geomorphological field investigations were systematically undertaken in each of the 22 delineated reaches in the watershed. Measurements in each reach included total station survey of 10 cross-sections of channel and floodplain, long profile survey, Wolman pebble counts and bank geometry and materials characterization.

Waterloo Creek Geomorphic Inventory*, Waterloo, Ontario (Geomorphologist)
All watercourses within the City were identified and delineated into distinct morphological and hydrological reaches. All watercourses were walked, erosion sites identified, and reach stability assessed using Rapid Geomorphic Assessment technique.

Greater Toronto Airports Authority (GTAA) Fluvial Geomorphology Study, Etobicoke, Ontario (Geomorphologist)
A fluvial geomorphology study of the Etobicoke Creek was undertaken to address creek stability issues that posed a potential risk to runways and other airport infrastructure. Problem areas were identified and potential solutions presented.

Shekak-Nagagami Erosion Assessment, Hearst, Ontario (Geomorphologist)
Fluvial investigations for a hydroelectric generating station, monitoring design and implementation of the field program (e.g. fishing efforts, water/sediment sampling and erosion pin installation), desktop analyses and historical assessment of the Shekak and Nagagami Rivers for the purpose of quantifying system-wide, long-term bank erosion rates and directions.

Mining
Effluent Plume Study, Lake Gibson, St. Catharines, Ontario (Environmental Scientist)
Effluent concentrations were measured using in situ conductivity in a highly modified receiving environment affected by artificial pumping.

Mine Closure Investigations, Poirier and Selbaie, Quebec (Environmental Scientist)
Mining effluent concentrations were measured using in situ conductivity throughout the baseline and post-closure monitoring phases of the project.

Environmental Effects Monitoring (EEM), Snow Lake, Manitoba (Environmental Scientist)
Mining plume delineation surveys were conducted using in situ conductivity on an embayment on a large inland lake. Effluent discharge rates and weather conditions were monitored to determine the effect on the concentration, size, and shape of the effluent plume in the receiving environment.

Environmental Effects Monitoring (EEM), Snow Lake, Manitoba (Environmental Scientist)
A mining plume delineation survey, using in situ conductivity, was undertaken along the effluent flow path which traversed a variety of hydraulic environments ranging from a small watercourse to large lakes.

Stream Restoration
Northrup Creek Channel Restoration, Greece, New York (Geomorphologist)
A two kilometre section of watercourse is being re-aligned in order to alleviate the effects of long term fill placement within the floodplain. The field investigations involved geomorphic assessments conducted to determine appropriate watercourse dimensions. The Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) models were utilized to assess existing bank stability and potential for future erosion. The restored watercourse will exhibit a natural planform that alleviates flooding and incorporates a variety of natural hydraulic habitats, such as woody debris bank treatments and rock constructed riffles.
Laurel Creek Geomorphic Assessment, Waterloo, Ontario (Geomorphologist)
A 400 metre section of watercourse is being restored which will involve the removal of a channel constriction and vertical gabion banks, improvements to floodplain connection and the installation of a rock constructed riffle over an existing exposed sanitary sewer crossing. BEHI and NBS models were applied to isolate sections of the watercourse where bank treatments were deemed necessary.

Snake Road Tributary Restoration, Burlington, Ontario (Geomorphologist)
A fluvial assessment and topographical survey were undertaken to restore a small section of watercourse affected by erosion that had exposed a formerly buried gas pipeline.

Tributary to Grand River Culvert Removal, Cambridge, Ontario (Geomorphologist)
A derelict corrugated steel pipe culvert is being removed and the channel and floodplain are being restored to a natural condition. A topographical survey of the stable watercourse upstream and downstream of the crossing was utilized to guide the restoration.

Tributary to Fairchild Creek, Brantford, Ontario (Geomorphologist)
A fluvial geomorphological investigation and topographical survey was undertaken to restore fish passage to a watercourse affected by invasive exotic vegetation growth.

Tributary to Nichol Drain Restoration, Elora, Ontario (Geomorphologist)
An existing online pond is to be filled and the pre-existing channel restored to reduce thermal impacts to the watercourse. Water levels in an existing upstream wetland feature are to be maintained.

Fourteen Mile Creek W2 Tributary Restoration, Oakville, Ontario (Geomorphologist)
An unstable section of the tributary was restored using a combination of pools, riffles and log drop structures to dissipate energy. The design incorporates natural materials and live woody vegetation to further control bank erosion.

Credit River Tributary Restoration, Brampton, Ontario (Geomorphologist)
A 260 m section of concrete-lined watercourse is being restored using the principles of natural channel design. The restored watercourse will exhibit a variety of natural hydraulic habitats, such as woody debris bank treatments and riffles, functional over a range of flows. The design includes deep pools and other habitat features considered beneficial to Redside Dace, an at-risk fish species.
PUBLICATIONS


