September 2010

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KENT BREEZE WIND FARMS

Water Assessment Report

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REPORT

Report Number: 10-1151-0123

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Table of Contents

FIGURES

APPENDICES

APPENDIX A
Field Notes

1.0 INTRODUCTION

Kent Breeze Corporation and MacLeod Windmill Project Inc. (the Proponent) are proposing to develop a wind energy project in the northern portion of the Municipality of Chatham-Kent (Figure 1). The Kent Breeze Wind Farms Project (the Project) is a Class 4 wind facility consisting of eight wind turbines with a total nameplate generating capacity of 20 megawatts (MW). The Project was divided into two separate Renewable Energy Standard Offer Program (RESOP) contracts, but for the purpose of this water assessment, it is considered one Project.

The Project will involve the construction of turbines, access roads, and related electrical infrastructure to connect with the Hydro One overhead transmission corridor located on approximately 436 hectares (ha) of land. There are currently no plans to expand the Project beyond its current scope.

The following water assessment was completed in accordance with Section 29 to 31 of O. Reg. 359/09 for a Renewable Energy Approval (REA). The following sections detail the results from a records review and a site investigation to confirm information gathered during previous records review (2006 and 2007) as well as site investigations (2008 and 2010) completed by BioLogic.

1.1 Study Area

Initially, there were two separate projects; the Kent Breeze Wind Farm and the MacLeod Windmill Project. The two original projects have been combined, and are being submitted under REA as one consolidated Project. The properties in consideration for the Project lie within the Municipality of Chatham-Kent, Kent County, Township of Camden, and includes:

- Kent Breeze Wind Farm – Concession 1, Part Lots 4, 5, 6, and 8, as well as Concession 2 Part Lots 5 and 6; and
- MacLeod Windmill Project – Concession 1, Part Lots 8, 9 and 10, as well as Concession A, Part Lot 8.

The Kent Breeze Wind Farm land holdings occupy an area of approximately 242 ha and the MacLeod Windmill Project occupies approximately 194 ha as shown on Figure 1.

For the purpose of this report, the Project Area is defined as the construction disturbance area for the components of the wind farm (i.e., cables, turbines and roads). Figure 1 shows the boundaries of the Project Area, turbine layout and the location and type of water features identified in relation to the project location.

2.0 RECORDS REVIEW

In accordance with O. Reg 359/09, the following determinations were made to reflect the Project Area for the purpose of this water assessment:

- If the project location is in a water body;
- If the project is within 120 m of a seepage area, or the high water mark of a stream;

- If the project location is in, or within 120 m of the average annual high water mark of a lake (other than a lake trout lake that is at or above development capacity); and
- If the project location is in, or within 300 m of the average annual high water mark of a lake trout lake that is at or above development capacity.

A records review was completed by BioLogic in 2006 and 2007. A supplemental records review for water features within the Project Area was completed in July 2010. The records reviewed include the following:

- Official Plan (Municipality of Chatham-Kent Official Plan, 2005 – Community of Camden Township) reviewed in July 2010;
- Lower Thames Valley Conservation Authority Regulated Areas reviewed in July 2010;
- St. Clair Region Conservation Authority Regulated Areas reviewed in July 2010;
- Ontario Ministry of Natural Resources (MNR). 2006. Inland Ontario Lakes Designated for Lake trout Management. Fish and Wildlife Branch. Peterborough, Ontario. May 2006;
- Contact was made with the MNR by BioLogic in 2007 for records of water bodies controlled by the MNR (i.e., cold water fish habitat);
- Records of Crown owned water bodies reviewed in 2007; and
- Background documents, reports and maps related to the physical setting of the Project Area reviewed in July 2010.

The review of these documents is described in the following sections.

2.1 Official Plan Review

The Project Area is comprises flat agricultural land dominated by field crops such as corn and soybeans with grain to a lesser extent. The use of the land is primarily Agricultural Area (Land Use Schedule A10 of the Chatham-Kent Official Plan – Community of Camden Township, 2005) The Chatham-Kent Official Plan (Schedule C10 – Natural Heritage Features) notes a Thames River flood prone area that cuts into the south edge of the Project Area.

2.2 Regulatory Designation Review

The boundary between the St. Clair Region Conservation Authority (SCRCA) and the Lower Thames Valley Conservation Authority (LTVCA) lies generally between the two sites. SCRCA has jurisdiction over the Kent Breeze Wind Farm area and LTVCA over the MacLeod Windmill Project area.

The SCRCA Generic Regulation Limits – O. Reg. 171/06 shows a 30 m regulation limit associated with two watercourses, Shaw Ferguson Drain and Canadian Drain (referred to as the Dobson Drain by the Municipality of Chatham-Kent) branch in the south and Biocreek Drain (referred to as the Courtney Drain by the Municipality of

Chatham-Kent) in the north (Figure 1), all within the Kent Breeze Wind Farm. The Shaw Ferguson, Biocreek and Canadian Drains are designated as intermittent watercourses by the SCRCA.

The LTVCA Generic Regulation Limits – O. Reg. 152/06 shows a 30 m regulation limit associated with five open watercourses, Mason Drain, Cryderman Drain, Liberty Drain, Benjamin Drain and an unnamed drain. The latter three are tributaries of the Cryderman Drain. The Mason Drain and Cryderman Drain are Class C watercourses (warmwater, baitfish). The Liberty, Benjamin and unnamed Drains are Class F watercourses (unclassified). Additionally, there is a flood hazard associated with the Thames River within the MacLeod Windmill Project.

Differences are noted between the flood hazard line associated with the Thames River on mapping provided by LTVCA and the Official Plan. For this report, the flood line shown on the LTVCA mapping is used to reflect the Thames River flood hazard.

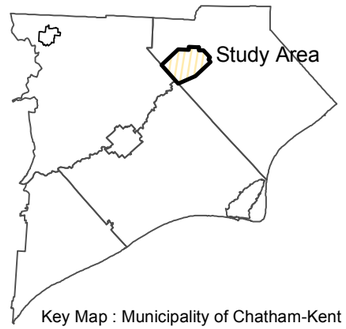
No water bodies were identified within the study area that are in the control of the MNR. All water bodies are classified as warm water, intermittent streams and municipal drainage ditches. Also, no crown owned waterbodies were identified within the project location. There are no lake trout lakes located within 300 m of the Project location (MNR, 2006).

2.3 Physical Setting

Agricultural drainage ditches located within the Project Area drain either south or west to the Thames River or to Big Creek, which ultimately flows to Lake St. Clair. The majority of the Project Area is currently under active agriculture. Topography is flat with faint relief and poor drainage. As a result, dredged ditches and tile drains have been constructed to provide suitable conditions for crop growth. The Thames River valley is situated approximately 600 m to the south of the Project Area and is well defined and confined, with elevation ranging from 10 to 20 m from top of bank to the water's edge. Lake St. Clair is located more than 30 km to the north and Lake Erie is located more than 30 km to the south.

Drainage ditch records from the Municipality of Chatham-Kent indicate that the Courtney Drain is the most northerly drain within the Project Area. The Courtney Drain runs perpendicular to Smoke Line, slightly north of the Kent-1 site (Figure 1). Figure 1 is reproduced here. It was completed by IBI Group and has been included in the Project description Report. A drainage feature, which flows southwest through the Project Area (identified as the Shaw Ferguson Drain by the SCRCA) begins at Huff's Side Road, slightly south of Smoke Line. An unnamed water feature and Dobson Drain flow to the Shaw Ferguson Drain. The Mason Drain begins east of Huff's Side Road and continues in an eastward direction. Mason Drain is located slightly north of the railway tracks and south of the MacLeod-1 site. The Cryderman Drain is the most southerly drain within the Project Area and is located south of the Macleod-3 site. The Liberty Drain flows into the Cryderman Drain at Evergreen Line. Benjamin Drain also flows to the Cryderman Drain slightly west of the eastern border of the Project Area. A third unknown drainage ditch flows into Cryderman Drain east of MacLeod-3 (Figure 1).

Kent Breeze Wind Farms & Macleod Windmill Project



Site Plan

Legend

- Turbine
- Removed Turbine
- Points of Reception
- Points of Reception (Participating)
- Farm Buildings
- Access Road
- Underground Cable
- Utility Line
- 300m Project Area Buffer
- Significant Woodlot (As per Official Plan)
- Other Vegitation
- Contour Line
- Railroad
- Road
- Watercourse
- Closed Tile Drain
- Agriculture

0 500 1,000
Metres

1:17,500 (11 X 17 Layout)

July 9, 2010

IBI GROUP

J:\20443\5.8 GIS\Maps\Map Created For Suncore 2010-03-24\PMMConceptual Site Plan-2010-07-09.mxd

3.0 SITE INVESTIGATION

A site investigation of water features was conducted by Darren Benallick (Wildlife Technician/Technologist, Dip. T) on July 23rd, 2010 from 8:30 AM to 1:40 PM. Previous fisheries site investigations were completed by Dave Hayman, M.Sc. on December 3rd, 2008 and a follow-up investigation was completed by Robyn Arts, B.Sc. on May 28th, 2010, both from BioLogic (BioLogic, 2010). The following sections are based on the site investigation completed on July 23rd, 2010, which confirm the earlier site investigations completed by BioLogic (Biologic, 2010).

Weather conditions on July 23rd, 2010 for the site investigation were partly sunny, with an air temperature of 28°C at 8:30 AM. There was light rainfall overnight. Complete field records are located in Appendix A.

The site investigation included an assessment of all water features within 120 m of the Project location in accordance with O. Reg. 359/09. The site investigation was completed to confirm:

- If the results of the records review were correct or required correction;
- If additional water features exist; and
- The boundaries of any water feature within 120 m of the project location.

3.1 Methods

An investigation of water features was conducted on July 23, 2010 for the Project. This investigation included an assessment of in-stream features. Methods for the assessment included:

- Observations and measurements for channel morphological characteristics;
- Observations on flow characteristics;
- Observations of habitat features; and
- Observations of riparian vegetation characteristics.

3.2 Results

The site investigation completed on July 23rd, 2010 confirmed the location of all watercourse and drainage areas discussed in Section 2.0 (detailed field notes are located in Appendix A). No seepage areas within 120 m of project components were identified during the site investigation; therefore, there are no negative environmental effects associated with directional drilling under Evergreen Line and the Railroad. Table 1 presents the project components identified to be in or within 120 m of a watercourse. Characterization of the Courtney Drain, Mason Drain and Shaw Ferguson Drain is presented below. A description of the Barnhart Drain is in Section 4.0.

Table 1: Project Components in or within 120 m of a Watercourse

Project Component	Watercourse	Distance
Kent-1 turbine and cable	Courtney Drain	~ 85 m
Directional drill for cable installation	Shaw Ferguson Drain	< 30 m
Directional drill for cable installation	Mason Drain	< 30 m
Cable installation along either side of Huff's Side Road	Barnhart Drain	~ 15 m
Kent and MacLeod Switching Stations	Shaw Ferguson Drain/Barnhart Drain	~ 35 m

The Courtney Drain generally flows northeast/southwest. There was standing water present in the Courtney Drain and it was not flowing at the time of the site investigation. Both the left and right banks of the Courtney Drain were steep and 1.5 m in height. The wetted width was 2.4 m, with a bankfull width of 5 m. The mean wetted depth was 0.10 m and the water temperature at the time of sampling was 23.5°C. The substrate in the Courtney Drain was dominated by mud and organics. Fauna identified at the time of the investigation included water boatman (*Corixa* sp.), crayfish and leopard frogs (*Rana pipiens*). Heavy overhanging vegetation and woody debris was present along the edges of the drain. The Courtney Drain was bordered on both sides by corn fields.

Directional drilling is planned to install underground cabling under the Mason Drain. Standing water was present in the Mason Drain, which was not flowing at the time of the site investigation. This observation confirms observations made on a previous site investigation completed on May 28, 2010 which also indicated standing water and no flow in the Mason Drain. The wetted width was 3.1 m with a bankfull width of approximately 5 m. The mean wetted depth was 0.20 m and the water temperature at the time of the investigation was 24°C. The banks of the Mason Drain were steep, and have a height of 1.5 m. The substrate of the Mason Drain was composed of mud and silt. No aquatic vegetation was present; however, heavy overhanging vegetation and woody debris was located along the banks. A stickleback was identified along with water boatman.

Directional drilling is planned to install underground cabling under the Shaw Ferguson Drain. The Shaw Ferguson Drain drains northeast/southwest and water was flowing southwest at the time of the investigation. The wetted width was 0.18 m, with a bankfull width of approximately 4.5 m. Mean wetted depth was 0.02 m. The dominant substrate in the Shaw Ferguson Drain was silt/sand with some muck. Water temperature at the time of the investigation was 19.3°C.

4.0 COMPARISON BETWEEN RECORDS REVIEW AND SITE INVESTIGATION

The site investigation completed on July 23rd, 2010 confirmed the locations of the agricultural drains located within 120 m of Project components and locations where directional drilling will be used to install underground cabling. Historical records indicate that the Barnhart Drain runs parallel to Huff's Side Road between Smoke Line and terminates up-stream from the Mason Drain. The Barnhart Drain was installed in June of 1954 as an open ditch and then subsequently closed in with overburden and drainage tile at a later date. The drain is within the jurisdiction of the SCRCA; however it is not currently located on SCRCA watercourse mapping or in the

Municipality of Chatham-Kent drainage records. Barnhart Drain was also not visible during the site investigation suggesting that the drain has been closed. Minimal work is expected to occur on the drain, such as the installation of steel plates and extra overburden will be used to protect the integrity of the drain at the time of construction.

An unknown drainage ditch flowing into Cryderman Drain, east of MacLeod-3 is identified in Figure 1. The site investigation confirmed that this ditch is underground and tiled; therefore, no further consideration is warranted.

No new water bodies were identified in the July 2010 site investigation that were not already identified in previous site investigations. The site investigation in July 2010 simply confirms the water bodies previously identified by BioLogic.

5.0 WATER IMPACT ASSESSMENT

A water impact assessment is required for the Project, in accordance with O. Reg 359/09, because the Project is a Class 4 Wind Facility and some project components are within 30 m of an intermittent stream (see Table 1). The following sections describe the potential environmental effects as a result of the Project during the Site Preparation and Construction, Operations and Decommissioning Phases of the Project; mitigation measures; and a monitoring plan.

5.1 Potential Environmental Effects

5.1.1 Surface Water Quantity

5.1.1.1 Site Preparation and Construction Phase

Activities associated with the Site Preparation and Construction Phase have the potential to affect runoff patterns by changing the existing surface cover associated with the construction of access roads and turbine foundations within the Project Area. The average change in runoff across all lots sited with a turbine is 1.1% (Table 2), which will not be measurable in the receptors. The Macleod-1 access road directly adjacent to the Barnhart Drain will result in a change in runoff of 0% on its associated lot; therefore, this will not result in a measurable change in runoff from pre-construction activities. Furthermore, activities such as the interconnection of turbines to the substation will only result in short-term changes to runoff patterns as the existing cover will be restored after the underground cabling has been installed and the trenches filled and re-vegetated. Therefore, runoff during the Site Preparation and Construction Phase is considered to be negligible and does not warrant further consideration.

Table 2: Anticipated Change in Runoff under Existing and Proposed Conditions

Turbine Location	Approximate Lot Area (m^2)	Access Road and Turbine Foundation Area (m^2)	Existing Runoff (m^3/year)	Proposed Runoff (m^3/year)	Change in Runoff (%)
Kent-1	532,500	1,770	79,000	80,000	1.3
Kent-3	514,500	3,370	77,000	78,000	1.3
Kent-4	384,000	4,970	51,000	53,000	3.9

Turbine Location	Approximate Lot Area (m^2)	Access Road and Turbine Foundation Area (m^2)	Existing Runoff (m^3/year)	Proposed Runoff (m^3/year)	Change in Runoff (%)
Kent-5	474,000	1,770	71,000	71,000	0.0
MacLeod-1	554,250	1,770	83,000	83,000	0.0
MacLeod-3	274,500	1,310	41,000	41,000	0.0
MacLeod-4	298,500	2,910	45,000	46,000	2.2
MacLeod-5	641,250	3,930	96,000	97,000	1.0
Total	**3,673,500**	**21,800**	**543,000**	**549,000**	**1.1**

5.1.1.2 Operations Phase

The estimated average increase in runoff as a result of the presence of access roads and turbine foundations across all lots is 1.1% (Table 1), which will not be measurable in receptors. Therefore the increase in runoff is considered to be negligible and does not warrant further consideration.

5.1.1.3 Decommissioning Phase

Activities associated with the Decommissioning Phase of the Project may result in changes to runoff patterns. Land use will return to pre-existing conditions as agricultural field. Immediately after Decommissioning, access roads will be removed, at the landowner's request. Site grading may be required and soil may be exposed in the short-term while turbine foundations are removed. Land use will return to pre-existing conditions as agricultural field. Therefore, changes in runoff are expected to be negligible and do not warrant further consideration.

5.1.2 Erosion and Sedimentation

5.1.2.1 Site Preparation and Construction Phase

The activities associated with the Site Preparation and Construction Phase have the potential to affect water quality by increasing suspended sediment contributions to the local agricultural ditches. These contributions can be the result of activities such as, but not limited to:

- Increased erosion in areas where vegetation has been removed;
- Erosion of stockpiles;
- Increased erosion in local areas where stormwater runoff flows increase because of the development of the site;
- Tracking of mud and soil onto local roads by construction equipment; and
- Movement of fine material from newly constructed gravel roads and construction areas.

The above activities may occur within 30 m of a water feature, specifically for the construction of the MacLeod-1 access road and direct drilling under the Shaw Ferguson and Mason Drains for the installation of underground cabling.

The increases in sediment are generally highest during periods of heavy rainfall and snowmelt (spring freshet). During this time, mitigation measures may need to be employed to reduce the potential effects of erosion and sedimentation (Section 5.2). During dry and frozen periods, there will be no runoff from the site; therefore, measurable effects on suspended sediment concentrations are not expected.

The removal of vegetation from agricultural fields may increase surface water runoff thereby creating the potential for soil erosion and sedimentation in the Shaw Ferguson, Mason and Barnhart Drains within the Project Area. However, the increase in runoff is considered to be negligible (Section 5.1.1) and is expected to have a minor effect on these agricultural ditches. Underground cabling at the Mason and Shaw Ferguson Drains will be installed using directional drilling, which is expected to have no effect on agricultural drains.

5.1.2.2 Operations Phase

There are no potential environmental effects related to sedimentation and erosion during the Operations Phase of the Project.

5.1.2.3 Decommissioning Phase

Activities occurring within 30 m of a water feature (potential removal of the MacLeod-1 access road at Barnhart Drain) associated with the Decommissioning Phase may contribute to increased erosion and sediment load to the local drainage ditches as a result of demolishing the switching stations and removing the access roads. These activities include, but are not limited to:

- Tracking of mud and soil onto local roads by dismantling equipment; and
- Exposed soil during re-grading of the site.

Mitigation measures will be employed at the time of decommissioning to reduce the effects on erosion and sedimentation during this phase. These mitigation measures are presented in Section 5.2. Not all access roads will have to be removed. Access roads that existed prior to the Project will not have to be removed, as well as access roads that are left in place at the request of the landowner.

5.1.3 Direct Disturbance to Water Features

5.1.3.1 Site Preparation and Construction Phase

Direct disturbance to watercourses may occur as a result of site preparation and construction activities such as vegetation removal along the edges of water features or compaction and stream bank disturbance attributed to heavy equipment.

Directional drilling will be used to install underground cabling under the Shaw Ferguson and Mason Drains. This will prevent any direct disturbance to these watercourses. MacLeod-1 access road construction will ensure the integrity of the Barnhart Drain is maintained by applying additional overburden and installing steel plates to prevent disturbance to the Drain (Section 5.2.1). Since no direct disturbance to the Shaw Ferguson, Mason and Barnhart Drains is expected based on the above, no further consideration is warranted.

5.1.3.2 Operations Phase

No direct disturbance to water features is expected during the Operations Phase; therefore, no further consideration is warranted.

5.1.3.3 Decommissioning Phase

The additional overburden applied and steel plates installed during site preparation and construction will remain through the Decommissioning Phase; therefore, no disturbance to the Barnhart Drain is anticipated and no further consideration is warranted.

5.1.4 Accidental Spills of Contaminants

5.1.4.1 Site Preparation and Construction Phase

Accidental spills of contaminants in or within 30 m of a water feature, including hydrocarbons (diesel fuel, oil, etc.) during the Site Preparation and Construction Phase are considered to be potential sources of contamination, which may affect water and sediment quality in the Shaw Ferguson and Mason Drains. Accidental spills could occur during directional drilling under the Shaw Ferguson and Mason Drains. Since the occurrence and location of the spills cannot be predicted, mitigation measures will be employed (Section 5.2).

5.1.4.2 Operations Phase

Accidental spills of contaminants are significantly lower during the Operations Phase since there is reduced vehicle traffic on the site. Refuelling will not be required during the Operations Phase of the Project, although, there is low potential for leaks from vehicles and hydrocarbons entering the drainage ditches. Lubricating fluids required for the turbines will be stored in the turbine towers and in the event of a spill, would be contained within the turbine tower.

5.1.4.3 Decommissioning Phase

The occurrence of accidental spills of contaminants during the Decommissioning Phase of the Project would be a result of diesel fuel and oil used during the demolishing of the switching stations. Mitigation measures are presented in Section 5.2.2.

5.2 Mitigation Measures

5.2.1 Erosion and Sedimentation

Although the results presented in Table 1 demonstrate a negligible change in post-development runoff potential (relative to existing conditions), Best Management Practices (BMPs) will be considered prior to and during construction to minimize potential erosion/sedimentation and associated effects to water quality, as previously identified in the Construction Plan Report. The following typical BMPs are described in guidelines by various conservation authorities and provincial ministries (MOE, MNR):

- Plan construction activities to minimize the disturbed area at any given time;

- Interception and diversion of stormwater runoff around disturbed areas;
- Stabilization of disturbed areas through grading and re-vegetation;
- Implanted buffer strips of vegetation between disturbed areas and watercourses;
- Minimization of off-site vehicle tracking of soil;
- Construction of appropriate stormwater and sediment ponds prior to any other construction activities;
- Restriction of water use for dust control only;
- Installation of temporary erosion control fencing prior to any grading or excavation to minimize silt migration from the Site and to delineate the limits of stripping and grading;
- Installation of erosion control fencing or sheeting over all stockpiles, manholes and catchbasins;
- Placement of geotextile fabric under catchbasin grates;
- Removal of accumulated sediment from control measures (ponds, fencing, etc) at completion of construction or after significant accumulation; and
- Minimize construction during wet weather.

The implementation of appropriate BMPs and mitigation measures will preclude or minimize potential adverse effects to sediment and/or water quality as a result of erosion/sedimentation processes. As part of the erosion and sediment control plan, the appropriate BMPs will be selected and implemented prior to site preparation and construction. To maintain the integrity of the Barnhart Drain during the construction of the MacLeod-1 access road, steel plates and additional overburden will be used.

5.2.2 Accidental Spills of Contaminants

The potential environmental effects on water and sediment quality in the drainage ditches by spills of contaminants will be minimized by implementing the following mitigation measures:

- Conducting refuelling and maintenance in designated areas;
- Proper maintenance and inspection of vehicles and construction equipment for leaks;
- Maintain a supply of spill control materials on the site (i.e., absorbent material, absorbent booms); and
- Proper training of workers for spill prevention and containment.

The implementation of the above mitigation measures will preclude or minimize any potential negative environmental effects associated with spills of contaminants during all phases of the Project. Any accidental spills will be dealt with immediately in accordance with the MOE's Spills and Discharges Reporting Protocol as required by the *Ontario Environmental Protection Act* (s. 92 and s. 15), as previously identified in the Construction Plan Report.

5.3 Construction Plan Report

The Kent Breeze Wind Farm Construction Plan Report (IBI Group, 2010) indicates that there are potential negative environmental effects on surface water associated with erosion, sedimentation and accidental spills of contaminants. The net effect on any of the drainage ditches will be minimal after the implementation of mitigation and management practices. The Kent Breeze Wind Farm Construction Plan Report indicates the following management options:

- Maintain good safety and health programs and practices as well as good environment control programs as part of all work activities;
- Execute site construction, installation and testing of equipment to a high standard of quality;
- Act as an interface with operational staff, the subcontractors, third party inspectors (TPI) and other organizations involved with the Project;
- Manage any environmental and safety issues during construction and commissioning;
- Organize and attend regular site co-ordination meetings, progress meetings and prepare minutes of meetings;
- Maintain on-site, complete and proper records of the progress of the Project;
- Maintenance of correct as-built drawings reflecting all changes and modifications;
- Training of operations and maintenance personnel; and
- Construction completion, testing and commissioning of all balance of plant items.

The Construction Plan Report also indicates a number of BMPs that may be implemented to mitigate potential negative environmental effects to surface water (Appendix 3, Construction Plan Report). The appropriate mitigation measures will be decided on at the time of construction.

5.4 Monitoring Plan

The following sections provide a description of the activities that will be undertaken to monitoring the effects of erosion/sedimentation and accidental spills of contaminants on water quality.

5.4.1 Erosion and Sedimentation

The potential negative environmental effects associated with erosion and sedimentation during Construction and Decommissioning Phases of the Project are described in Section 5.1.2. In order to monitor these effects, regular visual assessment of the drainage ditches within 120 m of Project components (Shaw Ferguson, Courtney and Mason Drains) will be conducted during these phases. Additionally, regular visual assessment of the employed mitigation measures (i.e., silt fencing, plastic sheeting) will be undertaken to ensure that the measures are installed properly or maintenance is required. If an increase in in-stream sediment is observed, water samples will be taken to confirm this observation.

5.4.2 Accidental Spills of Contaminants

The potential negative environmental effects associated with accidental spills of contaminants during all phases of the Project are described in Section 5.1.4. If an accidental spill or oily film is identified in a watercourse, it will be dealt with immediately in accordance with the MOE's Spills and Discharges Reporting Protocol as required by the *Ontario Environmental Protection Act* (s. 92 and s. 15). In the case of larger spills with a risk of contamination in downstream areas, and investigation including water samples will be taken to measure VOCs and PAHs. Contingency measures such as immediate containment and remediation of the contaminated area, removing/replacing leaking/malfunctioning equipment and relocating construction and refuelling equipment away from the affected drainage ditch will be undertaken.

6.0 AUTHORIZATIONS

Site preparation and construction, operations and decommissioning of the Project are not expected to have negative effects on the water features located within the Project Area. However, where improvements or construction of new water crossings are necessary, and where harmful alteration, disruption or destruction (HADD) of fish habitat may occur, authorization under Fisheries and Oceans Canada may be necessary. No culverts will be installed in any of the drainage ditches because directional drilling will be used. Although all watercourse crossings for service connections will be completed by directional drill, which will not disturb the channels, the Operational Statement for High Pressure Direction Drilling should be used (DFO, 2010). Permitting and approval from LTVCA and SCRCA will also be required.

7.0 CONCLUSION

Overall, the site investigation completed on July 23rd, 2010, confirmed the information documented during the records review, as well as previous site investigations and no changes were required. The supplemental investigation conducted by Golder Associates confirmed the findings by BioLogic in previous investigations. Barnhart Drain is not identified on municipal or conservation authority records, and was also not visible during the site investigation; therefore no further consideration is warranted on the Barnhart Drain. No negative environmental effects are expected on watercourses within the Project Area, subject to recommended mitigation measures and appropriate approvals from the local conservation authorities. Mitigation measures have been previously identified in other reports, including the Natural Heritage Report (BioLogic, 2010) and the Construction Plan Report (IBI Group, 2010).

8.0 REFERENCES

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Report Signature Page

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APPENDIX A

Field Notes

10-1151-0123

July-23-2010 Kent Breeze pg 1 of 6

Crew - D. Bonellick

Purpose - Site Recon water features

Location - partly sunny, humid, temp @ 0830hrs 28°C, rain overnight light

0830 - Arrive in Thamesville, called Ray Macleod.

0845 - Met Ray Macleod at his office, drove around with him to see access points on property.

0930 At access point for Mac3
- Mac3 is in middle of corn field
- drainage ate SE of Mac3 co-ordinates is 224m 0415795 4710331 +/-8m NAD83
- Not within the 120m area pic 244

MAC-4 - No water features within 120m of Mac4 co-ordinates, Railway tracks are 148m NW of Mac4

- Drainage culvert N side of Evergreen Line

July-23-2010 10-1151-0123 2of6

0415782 4710789 underground drainage pics (245,246)

Huffs Sp.Rd - Drainage S of Railroad tracks (pic 247) facing SW 0414488 4710071 +/- 6m drainage is Dry. Area choked out due to vegetation, grasses & overhanging trees (pic 248,249) culverts feeding drainage area (pic 250) of Box Culvert 1.3m height 2.3m wide
- high water mark stain on concrete at 45cm (pic 251)
- Drainage crosses Huffs Rd then goes in a NW/SE direction (pic 252) of NE side of Huffs Rd

Box culvert at Railroad Tracks 0414437 4710137 +/-5m NW/SE Direction (pic 253 NW) (pic 254 SE) width 2.15m wide, 1.95m height
- stagnant water in culvert, outside of culvert dry (pic 255 NW in culvert)
High water stain in culvert 35cm

July-23-2010 10-1151-0123 3of6

Huffs Rd Drainage N of tracks changes direction from NW/SE to NE/SW
0414337 4710249 +/-5m
(pics 256, 257 facing NE)
- drainage is choked out due to grasses & overhanging veg
- NE from Huffs Rd 0414710 4710588 +/-5m
(pics 258 NE, 259 SW, 260 Bank) NO FLOW
Average Depth 20cm
wetted width 3.1m
Bankfull width 50m
- steep banks 1.5m height
- small minnow species approx 1-3cm length (stickle backs)
- water boatman
- water temp 24°C @ 1145hrs
- No Aquatic veg
- substrate, soft mud, silty, no boulders no gravel
- heavy overhanging veg, wood debris in drainage area.
- drainage area bordered with cornfields
- culvert 0414694 4710580
width 1.2m, depth 1.2m to substrate
water depth 13cm, water width 1.15m

July-23-2010 10-1151-0123 4of6

Kent5 - No water features within 120m
Mac1 - No water features within 120m
Kent4 - No water features within 120m
Mac5 - No water features within 120m
Kent3 - No water features within 120m
Kent-1 water feature 85 m from Kent-1 co-ordinates.
Drainage area runs NE/SW, No Flow
average depth 10cm
wetted width 2.4m
bankfull width 5m
steep banks 1.5m height
water temp 23.5°c @ 1228hrs
substrate soft mud/organic
waterboatman, crayfish, leopard frog
(pic 262 NE, 263 SW, 264 bank)
- heavy overhanging veg, woody debris
pic 265 from bank looking down
drainage co-ordinates 0413164 4711193 +/-6m
- drainage area bordered with corn fields

- South of Smoke Line on Huffs Sd Rd
Drainage area NE/SW (pic 266 SW from rd. 267 culvert SW side Rd. 268 SW)

July-23-2010 10-1151-0123 5of6

water flowing SW 0413883 4710818
wetted width 18cm
depth 2cm
bankfull 4.5m
culvert dimensions width 80cm
depth to substrate 60cm, water depth 7cm
pic 269 NE at culvert
substrate silt/sand w muck
water temp 19.3°c @ 1307hrs
flow approx 10cm for 3sec

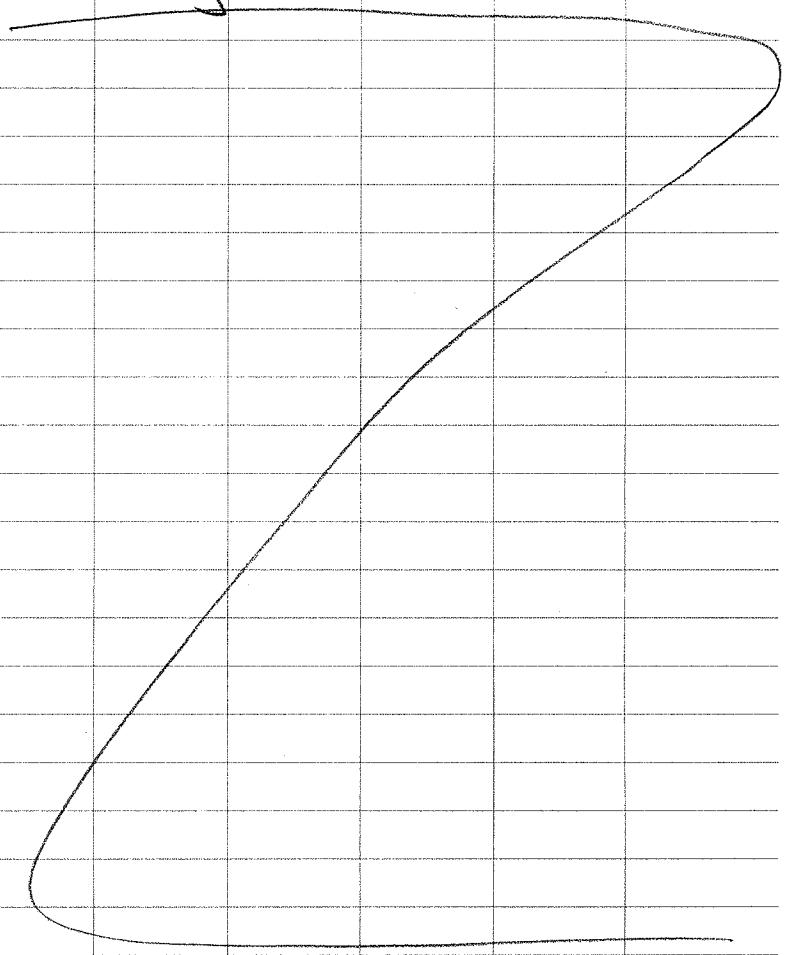
NE side of Huffs Sd Rd. underground drainage
pics 270-271 of underground drainage
3-4ft culverts feed into larger culvert which flows SW
Box is 1.3x1m width, 1.3m deep
- No visible surface water drainage channel at intersection with Smoke Line & Huffs Sd. Rd.
pic 272 NW towards intersection
pic 273 from Huffs rd looking NE
pic 274 looking N
pic 275 looking W
WEATHER @ 1430 - overcast 30°c, Humid
WIND NW 10-20km

10-1151-0123

July-23-2010 6of6

Met Ray Macleod @ 1340 to let him know I'm leaving site

-Called Heather Melcher to notify her I'm leaving site



At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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