AMHERST ISLAND WIND ENERGY PROJECT - RENEWABLE ENERGY APPROVAL AMENDMENT MODIFICATION REPORT #4

Appendix B:

WAWBR Revised Figures and Tables







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Table 3.1	(revised):
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Summary of mapped watercourses/waterbodies (LIO) in the Zone of Investigation and criteria for REA water bodies - Amherst Island Wind Project

				N N	Water Body+			Cri	Criteria for Screening Out Mapped Watercourses (Not a Water Body)							
Water Feature	WB Station(s)	NWB Station(s)	Tile No. in Figure 2	permanent stream	intermittent stream	seep++	No Surface Feature Present	Swale**	Grassed Waterway*	Temporary Channel for Surface Drainage*	Roadside Ditch*	Temporarily Ponded Area Normally Farmed*	Dugout Pond*	Rock Chute*	Other	Comments
Northern Drainage																
	1		2		~											
		3	1							~						No defined channel; cow pasture with active grazing.
		21	3							~						Approx. 50m upstream of road, surficial drainage only (no channel).
Eastern Drainage																
	8		3		~											
	9		3		~											
		11	3							~						
		28	3				~			~						
		30	3							✓						
	58		3		~											
		59	3							✓						
Southern Drainag	ge		-			-			1				T			
		10	3				~									Diffuse surficial drainage.
		12	3							✓						Surficial drainage.
		13	3							✓						
		14	3							✓						Diffuse surficial drainage.
		16	2				~			✓						Shallow furrows for surficial drainage.
		18	2				~			~						Not a WB within the Zone of Investigation; surficial drainage.
	19		2	✓												
		20	2								~					Grassed ditch parallel to 2nd Concession.
	36		2		✓											
	37		2		✓											
	38		2		~											
		39								~						Surficial drainage through pasture, turns into a water body at confluence with Miller Drain (but outside of ZOI).

* Other Comments

	No defined channel; cow pasture with active grazing.
	Approx. 50m upstream of road, surficial drainage only (no channel).

Table 3.1 (revised):

Summary of mapped watercourses/waterbodies (LIO) in the Zone of Investigation and criteria for REA water bodies - Amherst Island Wind Project

				Water Body+				Cri	teria for Scre	ening Out Map	ped Waterco	ourses (Not a W	later Body)			
Water Feature	WB Station(s)	NWB Station(s)	Tile No. in Figure 2	permanent stream	intermittent stream	seep++	No Surface Feature Present	Swale**	Grassed Waterway*	Temporary Channel for Surface Drainage*	Roadside Ditch*	Temporarily Ponded Area Normally Farmed*	Dugout Pond*	Rock Chute*	Other	Comments	
	52		2		~												
	53		2		~											Trapezoidal channel.	
	60		2		✓												
Western Drainage																	
		41	1				~									No defined channel; pasture.	
	51		1		✓												
Mainland	Mainland																
		M1 Trib	4							~							
	M2		4		~												
	M3		4		~												
	M4		4		~												
	M9		4		✓												
	M7				✓												
	M10		4		~											Lower portion near Taylor Kidd Road is not a water body.	
		M11	4							✓							
Lake Ontario													•	•	•		
	n/a		2 & 4		Lake												
Seeps																	
None	n/a															There were no groundwater seeps identified in the Project Location.	

+ if all three criteria are 'no', then the feature is not a water body

++ a site of emergence of ground water where the water table is present at the ground surface, including a spring

** low lying feature with no defined channel and not dominated by aquatic vegetation

* as per REA Definition O. Reg 359/09

WB = Water Body

NWB = Non-Water Body

*	Other	Comments
		Trapezoidal channel.

Table 3.2 (revised):	Summary of Water Bodies and Project Components								
	Cross	sing Class			Fish Habit	at			
Water Body	Access Road ^a	Collector Line	Turbine ^b	Access Road ^a	Collector Line	Substation/Switching Station/MET Tower	Direct Permanent (P) or Seasonal (S)	Indirect	
Northern Drainage									
Station 1	S06 crosses twice	1	-	Dock	-	-	S		
Eastern Drainage									
Stations 30 and 58	-	1	-	-	-	-	S		
Station 9	-	1	-	-	-	-	S		
Station 8	-	1	-	S28	-	-	S		
Southern Drainage									
Station 19	-	1	-	-	-	-	Р		
Stations 52, 36, 38, 34 and 35	S20	2	S34	S16	-	-	Р		
Station 37 and 60	S34	-	-	-	-	-	S		
Station 53	-	1	-	S16	-	-	S		
Western Drainage									
Station 51	-	1	-	-	-	-	S		
Mainland									
Option 1									
M2					1		S		
M3		1					S		
M4/M9					1		S		
Option 2									
M2						1	S		
Lake Ontario									
Mainland			Facilities I	Dock and Submarine Cal	ole Landing Area		Р		
Island			Facilities I	Dock and Submarine Cal	ole Landing Area		Р		
Offshore			S	Submarine Cable on Lake	Bottom		Р		
^a includes crane path and	Includes crane path and underground collector line								

^bturbine plus associated laydown area

Table 4.2 (revised):	Summary of Water Bodies Within the 120 m Zone of Investigation								
Reach ID ^a	Site Description	Proposed Works ^{ab}	Potential Impacts	Mitigation					
Northern Drainage									
Tributary Associated with Station 1	Intermittent flow dominated by flat morphology. Bankfull width = 3 m. Water depth = 20 cm. Substrate = silt and gravel . Fished May 2011 (Stantec). Seasonal fish habitat.	Crossed twice by access road to Turbine S06 and once by a proposed collector line. Potential submarine cable landing area and dock to be located within 120 m of water body providing fish babitat	Construction activities associated with the installation of the turbine access roads and culverts may affect the reach (e.g. Temporary increase in surface water turbidity due to runoff during construction (Section 5.1 and 5.2.) Construction activities within the constructible area of the cable landing and dock may affect the reach despite being outside of the constructible area (e.g. Temporary increase in surface water turbidity due to runoff during construction.	See Sections 6.1, 6.2, 6.3. Follow DFO (OS) for Overhead Line Construction, Dir Punch and Bore Crossings (Appendix E)					
Eastern Drainage	1	nabilat.							
Tributary Associated with Station 30/58	Intermittent dry at the time of the field investigation. Bankfull width = 5 m. Water depth = n/a. Substrate = limestone bedrock, silt and detritus. Seasonal fish habitat .	Crossed by a proposed collector line along Front Road.	With the exception of standard construction activities, collector line crossings of a water body should not affect the reach outside the constructible area (see Sections 5.1, 5.3).	See Sections 6.1 and 6.3. Follow DFO C Construction, Directional Drilling or Punc (Appendix E).					
Tributary Associated with Station 9	Intermittent flow dominated by run and flat morphology, with occasional pools and riffles . Bankfull width = 4 m. Water depth = 30 cm. Substrate = bedrock, silt, gravel and detritus. Seasonal fish habitat .	Crossed by a proposed collector line along Lower 40 Foot Road.	With the exception of standard construction activities, collector line crossings of a water body should not affect the reach outside the constructible area (see Sections 5.1, 5.3).	See Sections 6.1 and 6.3. Follow DFO (Construction, Directional Drilling or Punc (Appendix E).					
Tributary Associated with Station 8	Intermittent flow dominated by pool and flat morphology . Bankfull width = 4 m. Water depth = 20 cm. Substrate = bedrock, silt, gravel and detritus. Seasonal fish habitat .	Crossed by a proposed collector line along Lower 40 Foot Road.	With the exception of standard construction activities, collector line crossings of a water body should not affect the reach outside the constructible area (see Sections 5.1, 5.3).	See Sections 6.1 and 6.3. Follow DFO C Construction, Directional Drilling or Punc (Appendix E).					
Southern Drainage		L	·	·					
Tributary Associated with Station 19	Permanent Flow dominated by run and flat morphology. Bankfull width = 4 m. Water depth = 60 cm to >1.5 m. Substrate = Silt and detritus. Fish habitat.	Crossed by a proposed collector line along Stella 40 Foot Road.	With the exception of standard construction activities, collector line crossings of a water body should not affect the reach outside the constructible area (see Sections 5.1, 5.3).	See Sections 6.1 and 6.3. DFO OS for C Construction, Directional Drilling or Punc (Appendix E).					

	Net Effects ^c
D Operational Statement Directional Drilling or E)	New access road culvert. As per preliminary agency consultation, effects of a culvert at this location can be mitigated. DFO consultation is ongoing and the Project will comply with required permits and/or conditions.
OS for Overhead Line nch and Bore Crossings	None expected.
OS for Overhead Line nch and Bore Crossings	None expected.
OS for Overhead Line nch and Bore Crossings	None expected.
r Overhead Line nch and Bore Crossings	None expected.

Table 4.2 (revised):	Summary of Water Bodies Within the 120 m Zone of Investigation								
Reach ID ^a	Site Description	Proposed Works ^{ab}	Potential Impacts	Mitigation	Net				
Miller Municipal Drain (Stations 52, 36, 38, 34 and 35)	Permanent flow dominated by pool and flat morphology (downstream areas). Upstream areas (Stns 52, 36, 38) are intermittent. Bankfull width = 3 to 15 m.	Crossed by an access road to Turbine S20 and twice by a proposed collector line along 2 nd Concession Road.	Construction activities associated with the installation of the turbine and turbine access roads may affect the reach (e.g. Temporary increase in surface water turbidity due to runoff during construction See Section 5.1 and 5.2).	See Sections 6.1, 6.2, 6.3/6.4. Follow DFO OS for Overhead Line Construction, Directional Drilling or Punch and Bore Crossings (Appendix E).	New As p cons this cons Proj				
	Water depth = 15 cm. Substrate = Silt and clay. Fish habitat.	collector line and access road to S16 to be located within 120 m of water body providing fish habitat. Turbine S34 is located 106 m from a water body.	crossings of a water body should not affect the reach outside the constructible area (see Sections 5.1, 5.3).		perr				
Tributary Associated with Station 37/60	Intermittent flow dominated by float morphology. Bankfull width = 4 m. Water depth = 20 cm. Substrate = Silt and clay. Seasonal fish habitat.	Crossed by an access road to Turbine S34.	Construction activities associated with the installation of the turbine access roads may affect the reach (e.g. Temporary increase in surface water turbidity due to runoff during construction (Section 5.1 and 5.2).	See Sections 6.1 and 6.2.	New preli effe can is or com				
Tributary Associated with Station 53	Intermittent flow that was dry at the time of the field investigation. Bankfull width = 1.5 m. Water depth = n/a. Substrate = silt, clay and muck. Seasonal fish habitat.	Located within 120 m of a proposed collector line.	With the exception of standard construction activities, collector lines located within 120 m of a water body should not affect the reach outside the constructible area (see Section 5.1).	See Section 6.1.	Non				
Western Drainage	L				-				
Tributary Associated with Station 51	Likely intermittent flow dominated by pool and flat morphology. Bankfull width = 2.2 m. Water depth = 15 cm. Substrate = sand, silt, clay and detritus. Likely seasonal fish habitat.	Crossed by a proposed collector line.	With the exception of standard construction activities, collector line crossings of a water body should not affect the reach outside the constructible area (see Sections 5.1, 5.3).	See Sections 6.1 and 6.3. Follow DFO OS for Overhead Line Construction, Directional Drilling or Punch and Bore Crossings (Appendix E)	Non				
Mainland					- T				
Tributary Associated with Station M2	Intermittent flow that was dry at the time of the field visit. Bankfull width = 1.5 m. Water depth = dry. Substrate = Silt, muck, sand, cobble and detritus. Seasonal fish habitat.	Option 1 Located within proposed Laydown Area Option 2 Located within 120 m of a proposed collector line and dock location.	With the exception of standard construction activities, collector lines and docks located within 120 m of a water body should not affect the reach outside the constructible area (see Section 5.1).	See Section 6.1.	Non				
Tributary Associated with Station M3	Intermittent flow that was dry at the time of the field visit. Bankfull width = 1 m. Water depth = dry. Substrate = soil. Seasonal fish habitat.	Option 2 Crossed by a proposed collector line.	With the exception of standard construction activities, collector line crossings of a water body should not affect the reach outside the constructible area (see Sections 5.1, 5.3).	See Sections 6.1 and 6.3. Follow DFO OS for Overhead Line Construction, Directional Drilling or Punch and Bore Crossings (Appendix E)	Non				

n	Net Effects ^c
ons 6.1, 6.2, 6.3/6.4. Follow DFO OS for Overhead struction, Directional Drilling or Punch and Bore (Appendix E).	New access road culvert. As per preliminary agency consultation, effects of a culvert at this location can be mitigated. DFO consultation is ongoing and the Project will comply with required permits and/or conditions.
ons 6.1 and 6.2.	New access road culvert. As per preliminary agency consultation, effects of a culvert at this location can be mitigated. DFO consultation is ongoing and the Project will comply with required permits and/or conditions.
ion 6.1.	None expected.
ons 6.1 and 6.3. Follow DFO OS for Overhead Line ion, Directional Drilling or Punch and Bore Crossings : E)	None expected.
ion 6.1.	None expected.
ons 6.1 and 6.3. Follow DFO OS for Overhead Line ion, Directional Drilling or Punch and Bore Crossings : E)	None expected.

Table 4.2 (revised):	Summary of Water Bodies Within the 120 m Zone of Investigation								
Reach ID ^a	Site Description	Proposed Works ^{ab}	Potential Impacts	Mitigation					
Tributary Associated with Station M9/M4	Likely intermittent flow, dominated by flat and pool morphology. Bankfull width = 2 m. Water depth = 15 cm. Substrate = silt, clay, marl, muck and detritus. Likely seasonal fish habitat.	<i>Option 2</i> Within 120 m of a proposed collector line.	With the exception of standard construction activities, collector line crossings of a water body should not affect the reach outside the constructible area (see Section 5.1).	See Section 6.1.					
Lake Ontario									
Amherst Island Shoreline	Littoral zone of Lake Ontario. Bedrock with scattered cobble and sparse vegetation. Habitat for warmwater fish species.	Dock and Cable Landing Final dock design - to be determined (no infilling required). Cable landing area – bury cable in trench to approx. 100 m from the average high water mark; clamshell armour to be used from end of trench to 3 m depth (under average water level conditions?)	Dock construction and operation – Section 5.4. Cable Landing – Section 5.5.	See Sections 6.4 and 6.5.					
Mainland Shoreline	Littoral zone of Lake Ontario. Habitat for warmwater fish species at all three locations. <i>West Option</i> : Sand. <i>Centre Option</i> : Sand and cobble with scattered vegetation. <i>East Option</i> : Predominantly sand with scattered vegetation; steeper slope relative to the West and Centre options. <i>Optional Cable Landing</i> : Sand with patchy vegetation; gradual slope.	Dock and Cable Landing Final dock design - to be determined (no infilling required). Cable landing area – bury cable in trench to approx.100 m from the average high water mark; clamshell armour to be used from end of trench to 3 m depth (under average water level conditions).	Dock construction and operation – Section 5.4. Cable landing – Section 5.5.	See Sections 6.4 and 6.5 and DFO OS for (Appendix E).					
Offshore	Deepwater zone of Lake Ontario.	Submarine cable on lake bottom (115 kV, 180 mm diameter [approx.] 4 km long [approx.]). Clamshell armour at MTO air bubbler.	General construct impacts, temporary disturbance to lake bed – Section 5.5. Operation – Section 5.5.	Section 6.5 and see DFO OS for Underwa E).					

a see Figures 2, 4 and 5 (Appendix A) b the Project is planning to bury the collector lines unless requested otherwise by the Township; construction method to bury the collector line is not known at the time of report preparation (i.e. drilling vs. open cut) c assumes all mitigation measures are implemented and successful

Net Effects ^c
None expected.

	New dock structure on island shoreline; although there will be a permanent footprint of the dock footings, effects can be mitigated. DFO consultation is ongoing and the Project will comply with required permits and/or conditions
for Underwater Cables	New dock structure on shoreline; although there will be a footprint of the dock footings, effects can be mitigated. DFO consultation is ongoing and the Project will comply with required permits and/or conditions
rwater Cables (Appendix	None Expected.

	Fish Habitat Type	
Reach ID	Direct	Indirect
Northern Drainage		
Station 1 (Access Road to Turbine S06)	X (seasonal)	
Southern Drainage		
Miller Municipal Drain - Stations 52, 38, 34 and 35 (Access Road to Turbine S20)	х	
Station 37/60 (Access Road to Turbine S34)	X (seasonal)	
Lake Ontario		
Island – nearshore area (Dock and Cable Landing)	Х	
Mainland – nearshore area (Dock and Cable Landing)	Х	

Table 4.3: Water Bodies that provide fish habitat where in-water work is required