



Buffalo Bay Development
Part Lot 17, Concession 14, Geographic Township of Harvey
Municipality of Trent Lakes, County of Peterborough
Environmental Impact Study - Addendum

Prepared for: 2394735 Ontario Inc.
c/o Orion Group Properties Ltd.
Submitted by: Niblett Environmental Associates Inc.
File: PN 16-052
Date: November 2016





Niblett Environmental Associates Inc.
Biological Consultants

November 23, 2016

PN 16-052

2394735 Ontario Inc.
c/o Orion Group Properties Ltd.
989 Creditstone Road, Suite 300
Concord, ON
L4K 4N7

Project: Buffalo Bay Development
Part Lot 17, Concession 14, Geographic Township of Harvey
Municipality of Trent Lakes, County of Peterborough
Environmental Impact Study - Addendum

Dear Mr. Avedian:

NEA has prepared this letter as an addendum to the Environmental Impact Study completed by Beacon Environmental Limited, dated Sept. 2016 for a 16 lot plan of subdivision and a vacant land plan of condominium. Discussions with the Ministry of Natural Resources and Forestry (MNR) have been ongoing regarding Species at Risk, specifically Blanding's turtles and permits. A review of the EIS was conducted by NEA staff which found a number of gaps in the data related to Species at Risk. This was noted by MNR in their review of the file. This addendum provides additional information, primarily on Species At Risk, as well a description of the modifications to the site plan as a result.

Please contact us if you require any additional information on our findings or responses.

Sincerely,

A handwritten signature in blue ink, appearing to read "C. Ellingwood", with a long horizontal flourish extending to the right.

Chris Ellingwood
President and Sr. Terrestrial and Wetland Biologist

TABLE OF CONTENTS

1.0	Gap Analysis.....	1
2.0	Bats.....	2
2.1	Bat Surveys Methodology.....	2
2.2	Bat Survey Results.....	3
2.3	Discussion.....	4
2.4	Recommendations.....	4
3.0	Blanding’s Turtle.....	5
3.1	Blanding’s Turtle Basking Surveys.....	5
3.2	Blanding’s Turtle Basking Survey Results.....	6
3.3	Blanding’s Turtle Mitigation Measures.....	6
4.0	Butternuts.....	12
4.1	Butternut Methodology.....	12
4.2	Butternut Survey Results and Significance.....	12
5.0	Additional Significant Species.....	14
5.1	Eastern Hog-nosed Snake.....	14
5.2	Area Sensitive Species.....	15
5.3	Winter Deer Yard.....	15
6.0	Impact Assessment and Recommendations.....	16
6.1	Building Envelopes.....	16
6.2	Wetlands.....	16
6.2.1	Buffers.....	16
6.2.2	Drainage.....	18
6.3	Significant Wildlife Habitat.....	19
6.4	Beacon Report Mitigation Measures and Recommendations.....	20

LIST OF FIGURES

Figure 1. Blanding’s Turtle Habitat.....	7
Figure 2. Butternut Locations.....	13

LIST OF APPENDICES

- Appendix I: Revised Site Plan-Nov. 2016
Appendix II: Blanding’s Turtle Mitigation Fencing

Buffalo Bay Development
Part Lot 17, Concession 14, Geographic Township of Harvey
Municipality of Trent Lakes, County of Peterborough
Environmental Impact Study - Addendum

1.0 Gap Analysis

Based on discussions with the proponent and MNR staff and review comments received to date, the following gaps were identified:

- Screening and exit surveys for endangered bat species
- Assessment of Blanding's turtle habitat and compliance with ESA
- Discussion regarding placement of building envelopes
- Assessment of butternut trees and implications
- Review MNR Endangered Species Act forms including the Information Gathering Form, Avoidance Alternative form and C permit application form to ensure all typical maps and supporting documentation is included for re-submission.

In addition we have added some additional details on whip-poor-will habitat, hog-nosed snake habitat, wetlands, area sensitive species, two Special Concern species, deer yards and wetland buffers and Blanding's turtle mitigation measures. We have also added to the recommendations and impact sections with some additional information. There are additional items related to the Endangered Species Act documentation and permit applications that will be addressed separately with MNR and will include revisions to all of the forms and resubmission of the ESA forms.

It is important to note that the Beacon EIS report does cover all of the current policy documents and legislation such as the 2014 Provincial Policy Statement, Municipality of Trent Lakes Zoning By-law, Municipality of Trent Lakes Official Plan, County of Peterborough Official Plan and other provincial and federal legislation including the Ontario Endangered Species Act (2007 and updates). Therefore, a considerable amount of work has already been completed on this project site in terms of field work. We find the botanical inventories, wetland boundaries and wildlife surveys were adequately done, with the exception of bats and butternut trees. NEA staff focused on the additional field surveys to address any identified gaps. The site visits allowed NEA to confirm the presence of

specific natural features such as the wetland pockets, watercourses, shoreline habitat, Blanding's habitat, bat nesting trees and butternut trees. It also allowed us to see the location of the proposed docks, lots, roads and conditions of the shoreline buffer.

NEA biologists met with MNRF staff on site on August 3rd, 2016 to show them the site and discuss options regarding Blanding's turtles. Discussions involved questions and concerns with the proposed docking areas, land uses, storage, access roads, docking and tree clearing, as well as shoreline disturbance and dredging. There were considerable discussions regarding the watercourses, open space blocks and wetlands that are suitable for Blanding's turtle, as well as preserving corridors through the lot fabric to wetland 15. Discussions also surrounded options for mitigation and overall benefit for Blanding's turtles as part of the ESA permit process. We also examined the butternut trees and the docking areas with MNRF.

2.0 Bats

2.1 Bat Surveys Methodology

Species at Risk of Ontario (SARO, 2016), the Ministry of Natural Resources Significant Wildlife Habitat Technical Guide (OMNR, 2000), Bats and Bat Habitats: Guidelines for Wind Power Projects (MNR, 2011) and the Ontario Bat Count Packet - Ontario Summer Maternity Roost Monitoring, (OMNR, 2012) were the guiding documents utilized for the bat search/surveys conducted on the property. The two most common bat species, historically in Ontario are the little brown myotis (*Myotis lucifugus*) and the big brown bat (*Eptesicus fuscus*). The bats move to their hibernation sites by fall (caves predominantly) and stay there until spring.

Bats may also use, buildings such as old houses, country churches, barns and other old structures for roosting and overwintering. Largest colonies are usually located along major rivers or other large bodies of water where they can find an ample food supply for foraging activities. Other colonies can be found near forests and water. (OMNR, 2012 -Ontario Summer Maternity Roost Monitoring). The Buffalo Bay site does not have any structures, but the extensive forest cover, shoreline location and larger diameter trees and dead trees near the shore and in the building envelope, warranted the searches for bat maternity and roosting sites. The protocols required by MNRF are found in the Bat and Bat Habitats, Guidelines for Wind Power Projects, Ontario Ministry of Natural Resources, Second Edition, July 2011, MNR Number 52696 (English).

The purpose of the bat search was to determine the presence of bats and bat habitat within the “development” envelope. The survey included checking all trees > 25 cm dbh, for cavities which might provide suitable entrance holes for bats to enter and possible bat maternity colony sites. The surveys targeted potential bat maternity sites in hollows or cavities in trees where the bats raise their young. Visual scans of all trees during daylight hours were conducted as per the protocol in 12.6 m diameter plots. Based on the size of the project building envelope, the number of survey plots was determined to be 20 as required by the protocol. A subsequent evening survey was conducted to determine if any bat species were utilizing tree cavities.

NEA staff conducted an initial bat cavity search/survey on the property on May 3rd, 2016 to determine the snag density and if the number of cavity trees found met the criteria for maternity surveys. Plots were randomly generated by a computer through our GIS system and were selected based on the forest type habitat criteria for bats. Specifically, plots were located in forest communities classified as either deciduous (FOD) or mixed forest (FOM) which were classified using the Ecological Land Classification (ELC) manual. Each plot consisted of an area of 12.6 m radius (0.05 hectares). All trees greater than 25 cm dbh were examined for cavities and those containing a cavity were measured. An evening survey was conducted on June 29th, 2016 to determine if bats were using the cavities in the trees as roosting sites.

2.2 Bat Survey Results

Using computer based randomly generated forest plots locations, two NEA biologists conducted a survey of twenty (20) forest plots and found a total of 21 trees containing cavities in all of the plots. Using the equation in the bat protocol, it was determined that the number of snags equalled 21 and therefore an exit survey was conducted. Anything over 10 requires additional surveys to search for bat maternity colonies. The best examples of candidate bat maternity roost trees were selected for exit surveys. This included plots #6 and 14 as these plots had five trees and four trees, respectively that had cavities in them that may be suitable for bats.

During the exit surveys, two NEA biologists chose a location within each of the plots that had a clear view of the cavity opening. Observations of the cavities were conducted over a 15 minute period at each plot.

No bats were observed flying in or out of the cavities, nor were any bats seen flying anywhere in the area from when NEA staff arrived at the site to when they left the site which amounted to approximately 2.0 hours in total.

2.3 Discussion

Although bats were not observed during the exit surveys or other surveys of the site by Beacon and NEA, it does not mean there are no bats on the property or that there is no habitat in any of the cavities and dead trees on site.

2.4 Recommendations

1. Where possible, snags and cavity trees should be retained within the lot fabric and on portions of lots outside the building envelopes, where they are not considered 'hazard trees'.
2. In addition, tree clearing of buildings envelopes and roads is not to occur during the peak bat activity times from May to August, when bats may be roosting or raising young in the snag trees.
3. The information will be forwarded to MNRF as part of our ESA permit application. This may result in further discussion, mitigation measures or compensation measures.

3.0 Blanding's Turtle

3.1 Blanding's Turtle Basking Surveys

Blanding's turtle (*Emydoidea blandingii*) is a threatened Species at Risk both nationally and provincially and its habitat consists of a complex of essential aquatic and terrestrial components. Aquatic habitats typically consist of fresh, shallow, open or vegetated water features such as ponds, marshes, shrub swamps, bogs, ditches and streams with slow-moving water (COSEWIC, 2016; COSSARO, 2016; MDNR, 2008). Terrestrial habitats consist of upland forests and meadows although females will often travel through agricultural fields and cross roadways while moving between habitat types (MDNR, 2008).

Blanding's turtles will utilize different habitat types depending on their seasonal movements. This includes their primary residential habitat where they carry out the majority of their life cycle as well as breeding, nesting and overwintering habitats.

Overwintering habitats are generally located in permanent water bodies between 1.5 to 2 metres in depth to ensure there is a sufficient amount of open water under the ice during winter months. The substrate consists of soft mud or detritus and abundant vegetation.

Visual basking surveys were conducted in search of the Blanding's Turtles within the study area. As was noted in the Beacon EIS, three Blanding's turtles were observed basking in Buffalo Bay, specifically along the west side of the bay. Two NEA biologists conducted additional basking surveys on June 29th, and July 5th, 2016 to confirm the sightings.

NEA staff walked the perimeter of the eastern shoreline of the Bay wetland and stopped at two locations to conduct turtle basking surveys. These two locations were selected due to their location and visibility of the surrounding shoreline. At each station, basking surveys were completed by scanning the shoreline with a pair of 10x50 wide angle Bushnell binoculars. The number of turtles and species were noted and photographed if possible.

Areas of suitable habitat for other reptiles and/or amphibians were investigated during field investigations to check for the presence of significant species. Logs and rocks were turned over in all habitats to check for salamanders and snakes. Specific effort for targeted species such as species at risk was made by looking in suitable habitat and at times of year when they would be most active.

3.2 Blanding's Turtle Basking Survey Results

Weather conditions on both days basking surveys were completed were considered ideal with temperatures on both days around 21°C and 22°C with little to no cloud cover and calm winds. Table 1 shows the details of the basking surveys (target species = Blanding's turtle). No Blanding's turtles were observed by NEA during our site visits.

Table 1. Blanding's Turtle Basking Survey Results

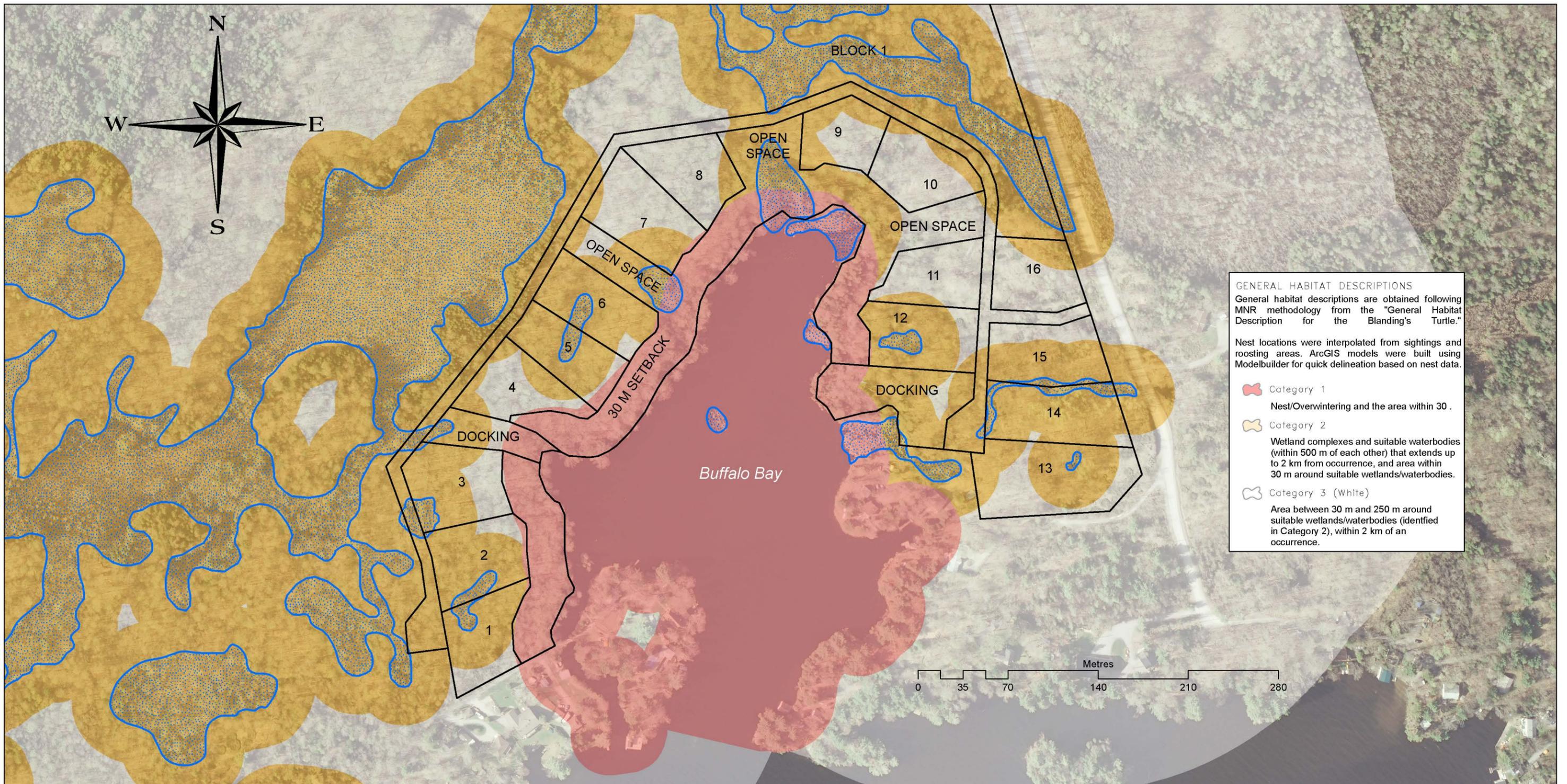
Date	Station No.	Start Time	End Time	Observation Notes
June 29, 2016	1	1950	2000	Good basking logs on west shore; no turtles observed basking; kayaker disrupted survey
	2	2002	2012	Shallow aquatic site; no turtles observed
July 5, 2016	1	1008	1028	2 painted turtles observed basking on logs
	2	0945	1005	No turtles observed

3.3 Blanding's Turtle Mitigation Measures

Beacon Environmental had addressed habitat protection measures in their EIS and as part of the Endangered Species Act forms that were submitted to MNRF. There were discussions regarding habitat protection measures, restrictive fencing and overall benefit options. NEA has reviewed those documents and the mitigation measures. The following paragraphs outline some additional biological information that was collected and data that is to be presented to MNRF as part of the various forms required to obtain a permit under the Endangered Species Act. Those items are presented here as part of the EIS addendum and the planning approval process but will be addressed in greater detail in the submissions to MNRF.

The following additional information is provided to assist in the discussions with MNRF. The MNRF has published a General Habitat Description for Blanding's Turtle Habitat (2014) that is the standard for determining habitat and impacts on turtles. This is required as part of an ESA permit application and compensation options.

The attached figure shows the Blanding's turtle habitat on the property based on the GHD categories (Figure 1).



GENERAL HABITAT DESCRIPTIONS
 General habitat descriptions are obtained following MNR methodology from the "General Habitat Description for the Blanding's Turtle."
 Nest locations were interpolated from sightings and roosting areas. ArcGIS models were built using Modelbuilder for quick delineation based on nest data.

- Category 1
Nest/Overwintering and the area within 30 m.
- Category 2
Wetland complexes and suitable waterbodies (within 500 m of each other) that extends up to 2 km from occurrence, and area within 30 m around suitable wetlands/waterbodies.
- Category 3 (White)
Area between 30 m and 250 m around suitable wetlands/waterbodies (identified in Category 2), within 2 km of an occurrence.

- LEGEND**
- CONCEPT PLAN OUTLINE (DIGITIZED FROM PDF)
 - WETLANDS (BEACON ENV.)
 - CATEGORY 1
 - CATEGORY 2
 - CATEGORY 3

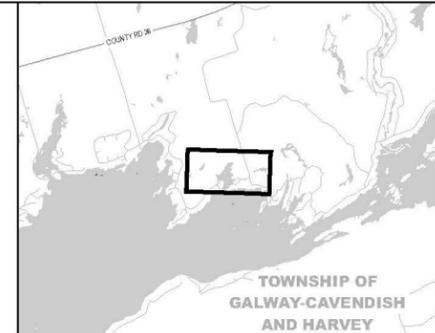


FIGURE 1: BLANDING'S TURTLE HABITAT

LOT/CON OR ADDRESS, TOWNSHIP
 MUNICIPALITY
 DISTRICT

GENERAL HABITAT DESCRIPTIONS WERE CALCULATED BASED ON ENVIRONMENTAL DATA DIGITIZED FROM MAPS BY BEACON ENVIRONMENTAL. DATA FOR CATEGORY 1 UTILIZED THE ENTIRETY OF BUFFALO BAY.

UTM Zone 17
 WKID: 26917 Authority: EPSG
 Transverse Mercator
 GCS North American 1983, ESRI ArcGIS 10.1

Map was produced by
 NEA under public license from Ontario
 Ministry of Natural Resources,
 Copyright (c) Queens Printer 2016.

REVISIONS			
NO	BY	DATE	DESCRIPTION
1	W.P.	03/11/2016	INSERT SHORT DESCRIPTION OF CHANGES.

CONTACT: WILL PRIDHAM, GIS SPECIALIST & CARTOGRAPHER	PROJECT NO.: PN16-052	REVISION NO.: RV-01	SCALE: 1:2,969 CENTIMETERS <small>© Niblett Environmental Associates Inc. 2016.</small>
PHONE/FAX: T: 1 (705)-878-9399 F: 1 (705)-878-9390	PROJECT: BUFFALO BAY DEVELOPMENT		
EMAIL: WILL PRIDHAM: WPRIDHAM@NIBLETT.CA GENERAL INQUIRIES: MAIL@NIBLETT.CA	CLIENT: INSERT CLIENT HERE		

The regulation identifies three categories of habitat.

Category 1: Nest sites and overwintering sites are essential features and along with the 30 m area surrounding them are considered to have the lowest tolerance to alteration. Blanding's turtles depend on these areas for sensitive life processes including egg-laying, incubation, hatching of young, and hibernation. A 30 m radius (average tree height) buffer around nesting and overwintering sites is important to maintain the microclimate conditions (e.g. thermal, vegetative and lighting features). Suitable Blanding's turtle overwintering habitat typically includes permanent bogs, fens, marshes, ponds, channels or other habitats with free (unfrozen) shallow water (Joyal *et al.*, 2001; Edge, 2010; Seburn, 2010). Blanding's turtles studied in Algonquin Provincial park overwintered in wetlands with free water depths of 7 cm - 50 cm (Edge *et al.*, 2009).

Category 2: The wetland complex (i.e. all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from an occurrence and the area within 30 m around those suitable wetlands or waterbodies. Suitable habitat for Blanding's Turtles during the active season includes a variety of wetlands such as marsh, swamps, ponds, fens, bogs, slow-flowing streams, shallow bays of lakes or rivers, as well as graminoid shallow marsh and slough forest habitats that are adjacent to larger marsh complexes.

Category 3: Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2 within 2 km of an occurrence. Blanding's turtles also make regular overland movements between wetlands throughout the active season in order to access Category 1 and 2 habitats within their home range. Category 3 habitat provides essential movement corridors of up to 500 m between wetlands, which will encompass the areas that are most likely to be used for overland movement.

Based on the site conditions and the wetlands present, the entire bay would be considered Category 1 and Category 2 habitat with a 30 m buffer. The bay does provide a number of habitat functions due to its depth and the vegetation. Those functions include overwintering habitat, foraging habitat, basking sites and year-round habitat. No development is proposed within the bay except for one communal dock on the eastern docking block adjacent to Lot 12. In addition the 30 m buffer is also in place around the entire bay to protect the adjacent upland for turtle habitat and act as a buffer from the development envelopes.

The internal wetlands would be considered Category 2 habitat as well. This includes the small wetland pockets within the lot fabric. They would provide little opportunity for long term visits by Blanding's turtles such as for summer foraging habitat and would not

provide Category 1 habitat such as overwintering. However they may provide seasonal habitat for foraging in the spring and as an aestivation site. This was pointed out to MNRF staff on site and they did later confirm those wetlands be considered Category 2 habitat. A 30 m buffer around Category 2 wetlands is difficult to maintain within the lotting fabric. The plan does include preservation of the wetland pockets themselves with the driveways avoiding that area, as well as the building envelope for the house and septic system.

The larger wetland to the north (Community 15) would also be considered Category 2 habitat. The 30 m buffer from that wetland feature does not impact on the buildable area of each lot. The buffer does however include the proposed access road and roadside ditches that are part of the stormwater management system.

Category 3 habitat would cover the balance of the plan of subdivision including most of the building envelopes on the lots.

As such a permit is required from MNRF under the Endangered Species Act for loss of Category 2 and Category 3 habitat. The area of Category 2, including the 30 m buffer within the lots is approximately 6.71 ha. The area of Category 3 habitat within the lots is approximately 2.91 ha. As the entire lot will not be cleared but only the area necessary for a septic, driveway and house, the area per lot of development is approximately 40-60% of the lot depending on the size of the septic bed and grading necessary. Building envelopes were purposely placed to limit impact on Category 2 wetlands and also the 30 m Category 2 buffer. This equates to the potential removal of approximately 2.7-4.0 ha of Category 2 and approximately 1.1-1.7 ha of Category 3 habitat. To compensate for the loss within the building envelopes the CPAF permit application includes a series of mitigation and overall benefit measures.

A number of options and compensation measures have been proposed by the study team and in the EIS and ESA forms. We have reviewed those options and discussed with MNRF. Discussions with MNRF and the final mitigation measures to be included on the ESA permit have not been finalized.

The following recommendations were made by NEA and changes have been made to the lotting fabric. The restrictive fencing proposed by NEA is a 30-40 cm high limestone rock laid end to end to create a barrier specifically for Blanding's turtles.

The advantages of this type of material are:

- Relatively easy to install
- Easily accessible and available in nearby quarries
- Natural depth of rock bed creates even depths, one coarse is needed
- Permanent feature with no maintenance, repair or replacement required
- Effective barrier to turtles when constructed without gaps
- Can direct turtles to culverts and be used as support for fill on lots and roadbed
- Aesthetic feature for development.
- Turtles can navigate over the stone when moving downslope
- Stone along 30 m shoreline will be landscape feature, identify the 30 m buffer and limit of the individual's lot and start of protected shoreline zone, and provide a barrier for turtles moving from the lake/bay upslope to other natural areas.

Stone barriers have been proposed at key locations on the development to block movement through the lots in the busiest parts of the road and development and direct the turtles through the open space blocks and wildlife crossing structures to the wetland and upland areas beyond the access lane. The 2-3 lots at the west end are accessible via the lane but ending at a cul-de-sac. The low traffic volume, signage and education campaign will prevent mortality on this section of the lane.

The eastern docking area includes a boat ramp for launching boats and a communal dock. As such a lane to the water is required and the stone barrier cannot extend across that block. While the boat ramp may facilitate turtle access to the upland area, that location is not ideal for turtle movement as there are no wetlands upslope as a destination and Nichols Bay Road does not provide sufficient sunlight for use as a possible nesting area.

Ditching on parts of the north side of the access lane is required for the stormwater management plan. The placement of a stone barrier on the outside of the ditching will direct turtles to the culverts and wildlife crossings. A barrier along the full length was originally proposed by Beacon. While the barrier would completely isolate the development and road from the wetlands and the lake, it also severely limits movement for the turtles and directs them to a few culverts. With the additional crossings now proposed and the porosity of the site and low traffic volumes, it is our opinion, this is not necessary for the protection and may create a barrier for normal movement patterns, directing turtles onto Nichols Road. We have proposed less stone barrier length but have focussed the stone to key corridors and between the main wetlands.

NEA recommendations and comments on the development plan:

- 1) Re-evaluation of the type of restrictive fencing along the 30 m shoreline setback and along the perimeter of the property has been undertaken in consultation with Kari Gunson and MNRF. The use of Animex plastic fencing would be, in our opinion, difficult to install and maintain on this rocky site. In addition, it would be difficult to enforce the maintenance and preservation of the fencing by the occupants of these lots. The long term viability of this fencing has not been shown on other sites and regular maintenance, repair, inspection and occasionally replacement is required. As this is a condominium corporation responsibility, a more permanent type of barrier is being proposed. Animex fencing may also negatively impact other wildlife by restricting their movement across the landscape.
- 2) Maintain all of the existing watercourses crossing the lotting fabric as open space blocks, with culverts, restrictive fencing and for turtle movement corridors
- 3) Added one additional corridor open space block for a direct connection from the bay between Lots 6 and 7 through a small wetland pocket (#12) and north to the main wetland (wetland 15) located north of the access road. A culvert will be placed to connect under the road with restrictive fencing on both sides.
- 4) Additional culvert and corridor adjacent to western docking area.
- 5) Maintain and possibly enhancement of the wetland pockets within the proposed corridor blocks.
- 6) Design culverts at each watercourse crossing and other wildlife crossings in consultation with the study team, engineers and MNRF staff to allow for safe turtle passage.
- 7) Create turtle nesting opportunities in buffers and undeveloped portions of plan area (north of road and southwest of development) as per original EIS with enhancement of other wetland pockets for deeper more permanent uses and possible foraging sites.

Other mitigation measures and compensation measures will be discussed with MNRF as part of the ESA permit process. An update to the ESA documents may be required as part of the determination of compensation and mitigation measures, in consultation with MNRF.

4.0 Butternuts

4.1 Butternut Methodology

Butternut trees are listed both federally and provincially by COSEWIC (2016) and COSSARO (2016) as an endangered species. Butternut trees are experiencing a dramatic decline in numbers due to the presence of the Butternut Canker fungus. The fungus infects the trees and effectively cuts off the flow of water and nutrients to branches and stems causing branch and crown die-back (Forest Gene Conservation Association). In Ontario butternuts are protected under the Endangered Species Act regulations (2007).

Trees are classified to be either “non-retainable” (Category 1), “retainable” (Category 2) or “archivable” (Category 3) using an MNRFP assessment table. Category 2 and 3 trees are considered protected under the Endangered Species Act and cannot be cut or harmed without MNRFP approval of the assessment and preparation of a planting plan for compensating for their harm and/or removal, if necessary for the development envelope.

4.2 Butternut Survey Results and Significance

A total of three (3) butternut trees (*Juglans cinerea*) were found and assessed during our 2016 field investigations.

The trees were assessed by our MNRFP certified Butternut Health Assessor using the standard protocols. After analyzing the tree forms to determine if they were retainable, based on the assessments done in the field, and using MNRFP’s BHA Tree Analysis spreadsheet, the results determined one tree was found retainable (Tree # Bn3 - Category 2) located near the road on Lot 6 and the remaining two trees were considered non-retainable (Tree # Bn1 on Lot 11 and Bn2 on Lot 11 - Category 1).

Category 1 trees can be removed upon approval of a submitted Butternut Health Assessment report to the OMNRFP district manager, or if 30 days have lapsed since OMNRFP received the report and provided there are no municipal bylaws or other legislation prohibiting their removal.

Retainable trees (Category 2 and 3) require a buffer of 25 m from the base of the tree. A Butternut Health Assessment report is required to be sent to the local MNRFP Species at Risk Biologist to provide details on the tree locations and BHA results. An ESA permit and planting plan are required if protection cannot be afforded and removal is necessary. The locations of the retainable trees are found on Figure 2 below.

All three butternut trees were quite large in diameter with a diameter at breast height of 35 cm, 35 cm and 43 cm respectively. Based on our assessment of the butternut, these trees appeared to be pure and naturally occurring. Only Tree # Bn3, located on Lot 6 (Figure 2) was deemed to be retainable and therefore compensation will be required under the ESA for the removal or harming of this butternut. At the moment, it is unknown whether this tree will be killed or taken. However as it is adjacent to Wetland #13, a Category 2 Blanding's turtle wetland, it may possible to preserve this tree as well as the wetland. The 25 m buffer zone will be partially graded and a dwelling and septic constructed within that distance. As such possible impacts or 'harm' to that tree may occur. As such, compensation is still recommended. The compensation ratio for removal of the Category 2 tree of this size would be the planting of at least twenty (20) butternut seedlings in a location on the property that will not be altered in the future. Monitoring of the planted compensatory trees is required annually for 5 years.

5.0 Additional Significant Species

5.1 Eastern Hog-nosed Snake

The eastern hog-nosed snake occupies very large areas and travels extensively in search of toads, mates and nesting/denning/overwintering sites. The preferred habitats are also wide ranging as mature forests, fields, open areas and shallow wetlands provide habitat for its main prey, toads. This species is primarily nocturnal as toads are also most active at night. The protection of snake habitat and toad habitat is important but forest fragmentation from the construction of paved and gravel roads is also a major factor in their decline and impact on local populations.

Due to the extent of forest and habitat of the subject lands and due to the limited use of the access road proposed, there will be no significant impacts to the snakes' ability to continue to utilize the area for foraging and a very low risk of road mortality.

The habitat on site may provide foraging habitat for hog-nosed snake but limited areas of natural hibernaculum sites or denning areas. There were a few areas noted at the eastern boundary of the property (Communities 30 and 35 – Figure 2 - Existing Conditions, Beacon 2016) that contained suitable cracks or fissures available for snakes to find cover. No snakes or evidence of snakes were observed during NEA field investigations.

5.2 Area Sensitive Species

A number of area sensitive bird species were noted in the EIS including two species designated as Special Concern. The EIS did not propose specific measures to address the impact on those species.

The eastern wood-pewee was designated as Special Concern by COSEWIC (2016) and just recently as Special Concern by COSSARO (2016). This species breeds in all woodland types and winters in partially cleared shrubby habitats and secondary forests. The property would contain suitable habitat for the eastern wood-pewee. The impact from the development will be a loss of habitat in the building envelopes and roadway that may result in a pair or two having a reduced territory size. Clearing of the building envelopes outside of the nesting season will prevent direct impacts on the birds.

The wood thrush was recently listed as threatened federally (COSEWIC, 2016) and Special Concern provincially (COSSARO, 2016). It breeds in deciduous and mixed forests where there are large trees, moderate understory, shade and abundant leaf litter for foraging. The property would provide suitable habitat for the wood thrush. The impact from the development will be a loss of habitat in the building envelopes and roadway that may result in a pair or two having a reduced territory size. Clearing of the building envelopes outside of the nesting season will prevent direct impacts on the birds.

5.3 Winter Deer Yard

According to MNR mapping, the entire property is traversed by an area identified as a Stratum 2 deer yard and as such has been designated as “Significant Wildlife Habitat” – deer yard/wintering area. Beacon Environmental stated in their EIS that “portions of the subject property are used by deer during the winter, the highest concentration of deer activity was northwest of the proposed development area”. No additional mitigation measures are proposed by NEA.

6.0 Impact Assessment and Recommendations

6.1 Building Envelopes

It should be noted that the original site plan provided in Beacon Environmental's EIS report does not show the building envelopes on each lot (house, driveway and septic). Based on our previous experience with shoreline developments in the Kawarthas, and especially where wetlands and Blanding's turtles are involved, these should be conceptually located on each lot. This will show the best location based on the topography, buffers, turtle habitat and other constraints for each individual lot.

A revised version of the site plan produced by EcoVue Consulting Services, dated November 16, 2016 shows the proposed location of all proposed building envelopes, driveways and septic areas (Appendix I). In addition we have also reviewed the Functional Servicing Study and revisions to the septic locations based on the topography, type of system and soil types. This has resulted in adjustments to the layout of individual lots.

As the development includes 16 lots, the density for this property is low. This creates separation between building envelopes and particularly between houses. This "porosity" provides opportunities to maintain wildlife corridors, turtle corridors and movement patterns and naturally vegetated areas between lots. This reduces the environmental impact on wildlife, forest cover and biodiversity.

6.2 Wetlands

6.2.1 Buffers

The property contains a number of wetland features. These have not been evaluated by MNRF under the wetland evaluation system and as such are not listed as provincially significant.

The main embayment is not being developed or altered and has a 30m shoreline buffer adjacent to all lots. The two communal docking areas are shown on the site plan. A buffer from the shoreline on those blocks may pose a constraint to the recreational uses. No buffer is recommended, however natural shoreline vegetation should be retained as per Parks Canada-Trent Severn Waterway shoreline policies. The policies state no more than 25% of the shoreline frontage or 15 m whichever is less should be developed for recreational uses.

There are three small wetlands shown on the vegetation community mapping prepared by Beacon. There may be an opportunity to preserve those wetlands within the fabric of the lots. Wetland Community number 12 can be included as part of the open space block for wildlife/Blanding's turtle connectivity. Community 13 is a small pocket straddling two lots and would be more difficult to maintain, as would wetland Community 5. Those wetlands will be delineated as Category 2 habitat by MNRF and require protection or compensation as part of the ESA permitting. Alternatively, these wetlands will be maintained and avoided by proposing the placement of the building envelopes, driveways and septic systems in areas that will avert the wetland pockets totally.

Additionally, discussions with Kari Gunson of Eco-Kare have provided valuable guidance on the placement of restrictive fencing and placement of culverts for drainage and eco-passage functionality. In the revised site plan drawing, an open space block around Lot 7, incorporates a shoreline wetland pocket (Community 12) and provides a direct line to the large wetland Community 15 to the northwest (Appendix I & II). This provides a total of three (3) open space blocks in the fabric and a direct link plus two boat launch areas. NEA is also recommending that instead of placing restrictive fencing along the entire length of the 30m shoreline setback and a fence along the entire perimeter of the road and lots, that fencing be placed in strategic locations that would direct turtles to crossing points that are directly linked to wetland features on the north and west sides (Appendix II).

In addition, another connection to Wetland #15 is proposed that will be located on the western docking area block (Appendix II). That block is being used for recreational uses but will not have a boat ramp. The narrow connection proposed and barrier fencing will be on the docking area block to a culvert under the road.

NEA staff are of the opinion that with the original fencing along the entire perimeter, large sections of potential existing movement patterns would be eliminated, possibly restricting turtles from the vernal pools and smaller wetland pockets in the buffer or lotting fabric that are being preserved within the lots and outside of the building envelopes. The development's new lotting pattern and low density as well as the open space blocks every 2-3 lots allows for greater movement patterns/crossings for turtles and other wildlife. In addition, the cul-de-sacs at the east and west end which create access to a few lots will have very little traffic flow and reduced vehicle speeds further reducing the potential impacts to wildlife movement corridors and potential for mortality.

Community 15 is located on the northwest side of the access road. The location of the road, which has been roughed in, does not provide for any buffer. As this is a key feature, a buffer from the wetland is typically required. The current road location follows the roughed in

access lane currently present. The design of the permanent road should minimize any further tree cutting on the north side of that alignment and allow trees to re-establish in the disturbed area outside the road surface. Maintaining a natural buffer will provide separation from noise and activity in the development. A drawing and cross section of the final road will be prepared at the detailed design stage and circulated to the approval agencies. The road will not be paved, but gravel based, and the width and profile will be minimized to reduce impacts on the natural features.

6.2.2 Drainage

Maintaining the hydrology of the large wetland, Community 15 is important to preserving the features and functions, most importantly as a Category 2 Blanding's turtle wetland. Any drainage works either from ditching, stormwater or cross culverts should not lower the natural water level of this wetland, nor cause the wetland to drain completely. The road bed and natural topography should be utilized to maintain the berming on the south side of the wetland. The existing natural outlets from the wetland may require culverts where they cross the proposed road. The culvert invert is to be designed to the same elevation as the current bottom of the watercourses.

Ditching on the north side of the access road through that part of the development is part of the design. Care must be taken to avoid the introduction of salts, sediment and other materials into the sensitive wetland and changes to the hydrology and water levels in the wetland. The wetland is not to be used to treat runoff from the development. A berm between the wetland and the ditching will be part of the final design.

The Stormwater Management Report prepared by Engage Engineers Ltd, dated May 2016 concluded that the development will result in an increase in peak runoff and contaminant/sediment loading from the site. The report provided four types of stormwater management options available for the proposed development including wet pond, reduced lot grading, individual detention/infiltration basins and enhanced grassed swales. Due to the topography of the site, a wet pond facility cannot be functionally located anywhere on the property.

The report recommended that some form of stormwater management quality controls be implemented to provide protection for downstream receivers, namely Pigeon Lake. The report also recommended a stormwater management plan that employs a treatment train approach. This can be provided through the implementation of lot level controls that include reduced lot grades in combination with conveyance controls on Street 'A' that include enhanced grassed swales at minimum grades with rock check dams. The report

went on to state that culvert analysis and sizing for driveways and road crossings would be completed at the detailed design stage.

6.3 Significant Wildlife Habitat

During NEA site investigations, two deer (fawn and doe) were observed on the property. However, due to the lack of browsing evidence and no substantial trails, there was no evidence to suggest that deer utilize the property for yarding purposes. Most of the subject property did not meet the suggested criteria for this habitat type. The property did not contain any large hemlock trees, nor did the eastern white cedar on the property provide any form of dense cover (> 60 % canopy closure) suitable for deer yarding/overwintering habitat and the understory provided very little in terms of secondary or regenerating growth as a food source for deer.

The closest possible dense conifer stand, suitable for yarding purposes, was located approximately 275 m to the northwest or 630 m to the east of the subject property. The agricultural fields which were located approximately 1 km to the north could support good foraging areas (depending on crops grown). As the development is located along the north shore of Pigeon Lake, the core areas for deer would appear to be located further to the north and therefore the development envelope is not considered a core area for deer.

Appendix Q – Table Q-1 shows the evaluation criteria used for Seasonal Concentration Habitats (Significant Wildlife Habitat Technical Guide, 2000)

Table Q-1: Evaluation Criteria for Seasonal Concentration Habitats

Specific Habitat	Suggested Criteria	Guidelines for Evaluation
Winter deer yards	<ul style="list-style-type: none"> • relative importance of yard to local deer population • population size of deer supported by the site • size of the site • distribution of yards • quality of habitat • location of yard • historical use • importance of the winter yard to other wildlife • degree of disturbance 	<ul style="list-style-type: none"> • The yard is most significant if it is the only one in the planning area; it is significant if it is one of only a few in the area. • Heavily populated sites are the most significant. • Larger sites are usually more significant than smaller sites. • In areas where there are no clearly delineated large yards, smaller, more loosely aggregated yards are collectively significant. • Significant sites have denser conifer cover (i.e., > 60% canopy closure), more woody browse in the core area, and good foraging on adjacent lands (e.g., agricultural crops, acorns). • Significant sites have no barriers to safe movement by deer to and from the yard, and are located within a landscape providing cover and food. • Most significant yards will have a long history of use (e.g., at least 10 years). • Significant yards provide important habitat for other mammals and birds. • More significant yards will be less disturbed.

Although the subject lands for the proposed development are not considered significant deer wintering areas, development in general and development-related human disturbances can have an effect on the function or loss of habitat.

Additionally, local residents can be educated about the negative effects of feeding deer during winter.

6.4 Beacon Report Mitigation Measures and Recommendations

Beacon had included a list of mitigation measures and recommendations in the EIS report. The recommendations included are appropriate and typical measures for mitigating impacts.

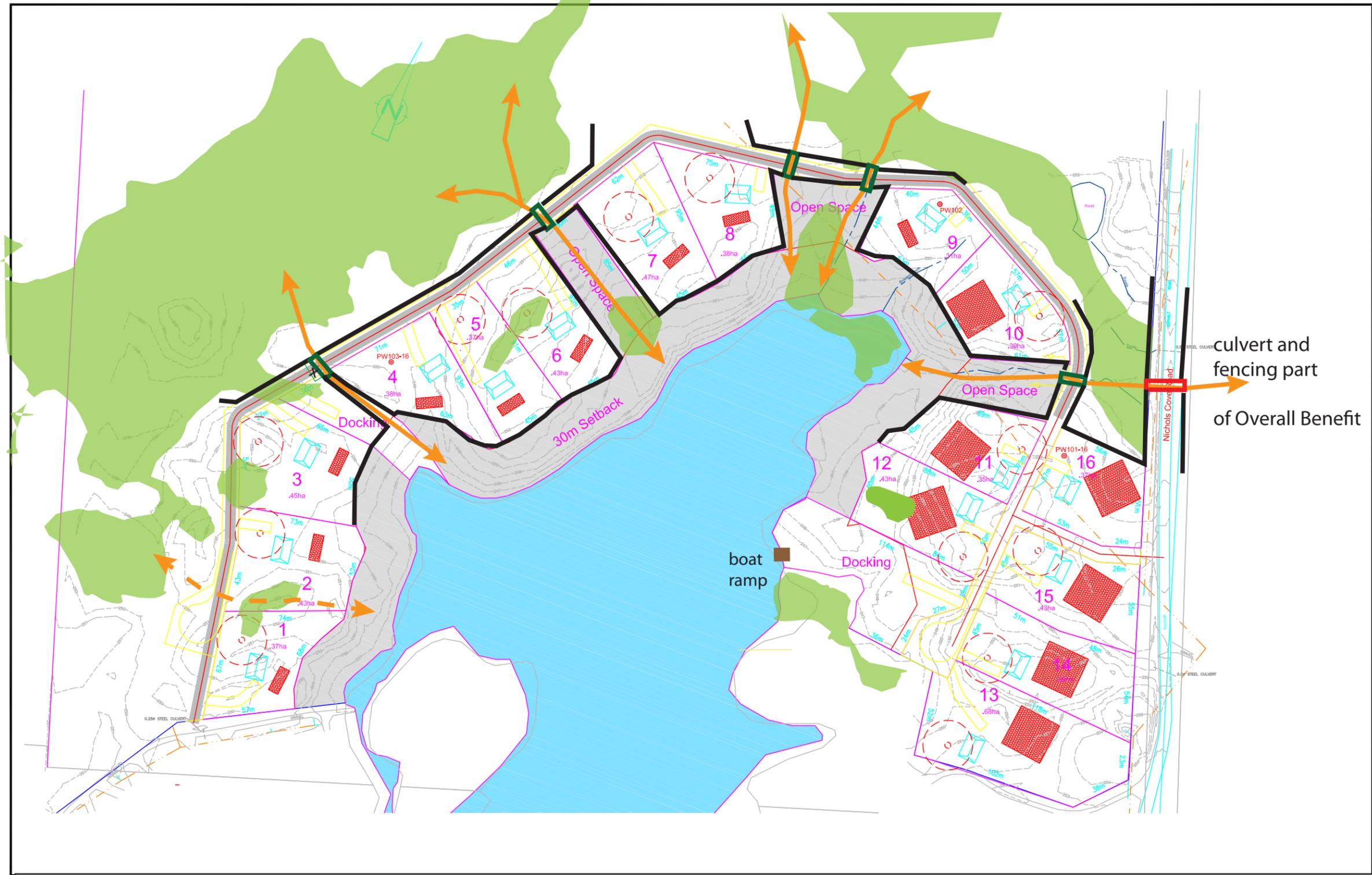
Additional recommendations to be added by NEA include:

- 1) The access road be designed and site plans, including cross sections circulated to the approval agencies.
- 2) A buffer be maintained of existing trees and vegetation or replanted trees between the ELC wetland Community 15 and the access road.
- 3) Butternuts and bat roosting/maternity colonies (SWH) be added to the Endangered Species Act forms for approval and review by MNR.

- 4) The IGF, AAF and C-permit forms all be updated and resubmitted to MNRF.
- 5) Drainage plans and stormwater management plans be designed to maintain the existing wetlands and limit impacts to the hydrology, water levels and water quality.
- 6) Additional culverts /wildlife crossings be incorporated into the design especially in areas of open space blocks where there is a direct link to larger wetland communities, allowing ease of movement for wildlife, particularly Blanding's turtles. Details regarding culvert size, style of culvert/crossing structure and configuration to be determined during the final design phase.

Appendix I
Revised Site Plan-Nov. 2016

Appendix II
Blanding's Turtle Mitigation Fencing



-  new wildlife crossing/culvert
-  wetlands
-  restrictive fencing (limestone-40 cm)
-  post-construction corridor

**Buffalo Bay Development
Blanding's Turtle Mitigation Measures-NEA**



Niblett Environmental Associates Inc.
Biological Consultants