



Severn Sound

Environmental Association

**PENETANGUISHENE
URBAN WOODLAND
ASSESSMENT**



October, 2008

PENETANGUISHENE URBAN WOODLAND ASSESSMENT

Conducted and Prepared by
David J. Hawke

Severn Sound Environmental Association

October 06, 2008

This report has been prepared by staff of the Severn Sound Environmental Association for the Town of Penetanguishene and in cooperation with McNair and Marshall, Planning and Development Consultants.

Keith Sherman, Co-ordinator, provided communication and overall direction for the project. ksherman@town.midland.on.ca

David Hawke, Field Technician, created the field data sheets, conducted field visits and prepared this report. dhawke@town.midland.on.ca

Alexander McPhail, GIS/Applications Specialist, prepared the maps and provided linkages to the data. lmcp@town.midland.on.ca

Michelle Hudolin, Wetlands and Habitat Biologist, provided research of existing woodland evaluation methodology, proof-reading and written report preparation. mhudolin@town.midland.on.ca

Technical comments and reviews by Eleanor Rath, Paul Hodgins, Al McNair and Barbara Marshall are acknowledged.

This report received technical review prior to its publication. This does not necessarily signify that the contents reflect the views and policies of the municipality supporting the work, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Severn Sound Environmental Association
67 Fourth Street
Midland, Ontario
L4R 3S9

(705) 527-5166

TABLE OF CONTENTS

1.	Background and Methodology	1
1.1	Background	1
1.2	Intent of Study	1
1.3	Site Definition	1
1.4	Site Numbering	1
1.5	Woodland and Patch definitions	2
1.6	Contiguous Woodlands	2
1.7	Biodiversity	2
1.8	Forest Stands	3
1.9	ELC and Land Use Classifications	3
1.10	Land Parcels and Property Ownership	3
1.11	Permission to Enter Lands	3
1.12	Field Data Collection	4
1.13	Non-wooded Lands	4
2.	Scoring Criteria	5
2.1	Land Parcels: Ownership	5
2.2	Size 1: Area of Coverage	6
2.3	Size 2: Interior Woodland	6
2.4	Diversity 1: Stand Count	7
2.5	Diversity 2: ELC Stand Types	8
2.6	Slope	8
2.7	Hydrology	9
2.8	Well Head Protection Areas	9
2.9	Growth Type	10
2.10	Recreational Use	11
2.11	Disturbance of Woodlands	11
2.12	Special Features	11
2.13	Scoring: Total Points	12
3.	Ranking of Sites	13
3.1	Gold Level Sites	13
3.2	Silver Level Sites	14
3.3	Bronze Level Sites	14
	Table 1. Ranked Sites	15
	Table 2. Site Scores Summary	16
4.	Site Constraints and Considerations	17

5.	Summary and Future Considerations	42
5.1	Project Summary	42
5.2	Future Considerations	42
5.2.1	Further Research	42
5.2.2	Biodiversity	43
5.2.3	Stewardship and Recreational	43
6.	Tables	
	Table 1. Ranked Sites and Scores	15
	Table 2. Scores Summary Sheet	16
	Table 3. Site Sizes and Scores	44
	Table 4. Interior Forest Habitat Scores	45
	Table 5. Site and Stand Descriptions	46
	Table 6. Plant Species Codes	52
	Table 7. ELC Types and Percent Coverage	53
	Table 8. Slope Categories, Areas and Scores	54
	Table 9. Well Head Protection Area Scores	55
	Table 10. Site Number Conversions	56
7.	Maps	
	Map 1: Site Boundaries and Locations	57
	Map 2: Topography	58
	Map 3: Ecological Land Classification	59
	Map 4: Interior Forests	60
	Map 5: Well Head Protection Zones	60
	Map 6: Recharge and Discharge Areas	61
	Map 7: Ranked Sites Map	61
8.	Photographs	
	Site 14 – Stand 27: trail	62
	Site 21 – Stand 63: black ash swamp	62
	Site 7 – Stand 107: poplar regeneration	63
	Site 22 – Stand 74: large red oak	63
9.	Appendices	
9.1	Landowner Permission Request Letter	65
9.2	Permission Form	66
9.3	Field Data Sheet	67
9.4	Scoring Master Sheet	68
9.5	Site maps (aerial photographs)	70
10.	References	84

1. **BACKGROUND and METHODOLOGY**

1.1 **Background:**

As part of phase one of the **Penetanguishene Growth Management Study** by McNair and Marshall, there were several land parcels designated as Vacant or Under-developed with most of these parcels containing tree growth.

The study area was generally triangular shaped, bounded by Fuller Avenue to the east, Brunelle Sideroad to the south, and Park Street and Fox Street to the west. See *Map 1- Site Boundaries and Locations*.

A map identifying 23 sites to be studied was provided to the **Severn Sound Environmental Association (SSEA)**; additional sites were added in June and July, creating a total of 25 sites within the study area.

SSEA was contracted to assess these sites and devise a way to rank them with regard to woodland cover. This project was named the **Penetanguishene Urban Woodland Assessment (PUWA)**.

1.2 **Intent of Study:**

The intent of this project has been to assess the woodland cover contained within the identified sites of vacant and underdeveloped parcels within Penetanguishene, and to rank the sites with reference to their natural history values and ecological constraints to development, so as to integrate woodland values into the development lands.

1.3 **Site definition:**

In the Growth Management Study, the parcels identified on Map 4 as underdeveloped lands usually included parts of several property ownerships. A "site" in the PUWA may include lands which are not wooded, because the sites are based on all or parts of one or several contiguous parcels of land.

1.4 **Site Numbering:**

McNair and Marshall provided SSEA with site locations from the Growth Management Study (via *Map 4: Major Residentially-Designated Vacant and Underdeveloped Lands*) to which site numbers were assigned by SSEA.

Note: Site numbering differs between SSEA documents and earlier maps provided by Marshall and McNair as the initial information provided did not indicate a numbering system. See *Map 1 - Site Boundaries and Locations; Table 10. Site Number Conversions*.

1.5 Woodland and patch definitions:

For the purpose of this study, an area that contains multiple trees that are closely grown together was considered a woodland. Most sites within the PUWA project contained **contiguous tree cover, referred to as a patch**. (See section 1.13 in regards to non-wooded areas within a site.)

Mature hedgerows and street boulevard trees were excluded from sites due to their linear occurrence. However, these types of tree growth provide important wildlife corridors between woodlands and have great aesthetic value to people, and should therefore be considered as an important part of the community fabric.

1.6 Contiguous Woodlands:

At times the boundary of the woodland patch extended beyond the site boundary. Calculations were based on the **wooded area captured within the site boundary**, leaving portions of the woodland patch excluded from the scoring process of this project.

These contiguous woodland areas ranged in size from a backyard thicket of sumacs to several hundred hectares of forest cover. Sites 1, 6, 22, 23, 24 and 25 (located near the periphery of the study area) have large areas of contiguous forest. Some of the ‘interior’ sites (8, 9, 10, 12, 17 and 18) have smaller areas of contiguous woodland cover.

Map 4 – Interior Forests, indicates the woodland cover as determined by the 2002 Southern Ontario Land Resources Information System (SOLRIS) mapping by the Ontario Ministry of Natural Resources (OMNR), in relation to the site boundaries for this project. The current accuracy of this data is questionable because woodland boundaries have both decreased and increased (depending on removal or growth of forest borders) since the time of the initial mapping. It is, however, the best information available at this time for the purposes of this assessment.

1.7 Biodiversity:

To have a healthy woodland, there should be a mix of many floral and faunal species, this mix being referred to as biodiversity. As part of the assessment of these woodlands, the diversity of tree coverage within a site factored into the final scoring.

While wildlife species and their habitat requirements were not the focus of this assessment, incidental observations were recorded when noted during the field visits.

1.8 Forest Stands:

For this study, a forest stand is an area within a woodland patch that is dominated by a certain tree species; a patch will contain one or several stands. The number of stands within a woodland patch contributes to diversity, and the greater the diversity the more 'value' the woodland has for ecological reasons. *See Table 5. Site and Stand Descriptions.*

1.9 ELC Stand Types and Land Use Classifications:

The standard for identifying and classifying vegetation in southern Ontario is the *Ecological Land Classification for Southern Ontario*, published by the Ontario Ministry of Natural Resources, 1998. Each stand can be identified with a standard Ecological Land Classification (ELC) code, i.e. FOD5-1 is a Fresh Sugar Maple Deciduous Forest. See *Table 7. ELC Types and Percent Coverage* for descriptions.

Urban non-forested land in this study was identified and given the land use code of **MOS** (manicured open space), which includes lawns, gardens, cemeteries, and laneways.

Areas of **active construction** were designated as **CD** (current development) e.g. Site 24.

Areas of **intensive agriculture** were designated **InAg** e.g. Sites 6 and 7.

A designation of “**unclassified**” was used in areas where permission was not granted to enter the property, and neither over the fence nor aerial photo interpretation could adequately determine the ELC type of a stand. These stands require more information to determine their ELC type.

1.10 Land Parcels and Property Ownership:

129 land parcels are located completely or partially within the identified sites. Tree cover on these parcels ranged from a significant amount of woodland coverage to a few trees encroaching on the back yard.

46 parcels were identified as high priority to gain access to for field data collection; of these 16 are owned by the Town of Penetanguishene.

1.11 Permission to enter lands:

The Town of Penetanguishene granted permission to enter their lands (16 parcels) for the purpose of this assessment.

A cover letter and permission form (with a stamped return envelope) were sent to the owners of the remaining 30 high priority parcels. Sixteen owners responded, 11 granting permission to access their property for the purposes of this project, four replied denying permission, and one replied that the listed owner had died 10 years ago (but did not provide a current contact name).

Where property access was either denied or permission was not gained, field staff conducted roadside and fenceline surveys. In addition, aerial photographs were used to interpret woodland information on these properties.

1.12 Field Data Collection:

A form was designed to capture required details of field visits. Each stand had a separate form completed, indicating: forest composition by canopy, understory, shrub layer and ground cover; any indication of water movement; wildlife species noted; slope; use by people; and general impressions of the woodland (*see Appendix: Field Data Form*).

In reality, not every one of the forest stands identified from the interpretation from aerial photographs could be visited due to time and permission constraints. However, enough data was gathered in the field to assess each woodland patch's composition and provide adequate information for scoring purposes.

1.13 Non-wooded lands

As indicated in 1.3 (above), portions of a site may be non-wooded. This study compared and ranked sites as a whole, rather than removing open areas from the calculations. Open lands (non-wooded) adjacent to forest cover provide habitat edge to the woodland, and may also be part of the water table recharge area.

2. SCORING CRITERIA

A variety of agencies within southern Ontario have designed methods of evaluating urban and rural woodlands based on a scoring system. Unlike the Provincial Wetland Evaluation System (Ontario Ministry of Natural Resources, 1993), which has been accepted as the standard method to compare wetlands in southern Ontario, urban woodland evaluation is still somewhat subjective. This is due to the wide variation of types of tree cover in urban areas, the density of urban development within which the trees grow, and the wide range of governing policies that woodlands fall under.

Within the document *Natural Heritage System for the Lake Simcoe Watershed – Phase 1: Components and Policy Templates*, Table 7.4 *Criteria Recommended by Others for the Identification of Significant Woodlands in Southern Ontario*, five criteria are compared across three systems. Their Table 7.5 *Criteria Used for the Determination of Significant Woodlands in Southern Ontario* compares six criteria as used by seven agencies.

The Severn Sound Environmental Association (SSEA) has developed a scoring system for the Penetanguishene Urban Woodland Assessment (PUWA) by adopting portions of the above noted successful methodologies to score this project. In addition, when new criteria were created, the scoring levels were designed to ensure an even weighting of the scores.

Twelve criteria were used by SSEA to assess and score the sites. See *Appendix: Scoring Master Sheet* for a summary of the following.

2.1 Land Parcels: Ownership.

Most urban woodland patches covered more than one property owner's lot, thus all neighbours have shared responsibility for the overall health of the woodland.

It is expected that a woodland with multiple landowners may have a better chance of remaining undeveloped than a site with just one or two owners. The smaller size of the multiple lots negates any large scale removal of trees as the likelihood of getting all owners to agree on a single development plan is small. However, a woodland with a single owner is at risk to a single decision; although this decision could be either pro or con to woodland alteration.

PUWA score system for land parcel ownership:

5 or more parcels within the site = 3 points
3 or 4 parcels = 2 points
1 or 2 parcels = 1 point

See Table 2. *Site Score Summary Sheet*

2.2 Size 1: Area of Site Coverage.

The spatial area covered by each site (measured in hectares) will determine the buffering capacity of the tree roots in regards to water runoff, and the amount of shade available for plant growth (some species are tolerant of shade while others require more sunlight) and what wildlife species will utilize the woods.

For scoring purposes, only the area within the site boundary was used. Any tree cover outside the site boundary and part of the same patch has been identified but not used in scoring. In some cases the patch extends a considerable distance beyond the study area (e.g. Sites 6, 25).

Based on the *Eastern Ontario Woodland Valuation System; Rowsell 2003* the following score system was used for PUWA:

Total size of site is greater than 4 hectares = 3 points.
Total size of site is 2 to 4 hectares = 2 points
Total size of site is less than 2 hectares = 1 point

See Table 3. *Site Sizes and Scores*

2.3 Size 2: Interior Woodland.

The populations of many species of woodland birds are in decline, with loss of habitat being one of the main concerns. Some of these birds will nest only in very large, undisturbed woodlands.

Interior woodland is defined as the internal portion of a forest patch that remains within a specified distance from the edge of the forest. Most studies in southern Ontario use 100 and 200 metres from edge as the threshold measurements (e.g. *A Framework for Guiding Habitat Rehabilitation in Great Lakes Areas of Concern*, Environment Canada, 2004).

PUWA scoring was accomplished by determining the proportion of the woodland that remains 100 m or further from the forest edge. This replicates the amount of sheltered area available for those species requiring large tracts of undisturbed forest. Some other evaluation systems (Eastern Ontario Woodland Valuation System, Roswell 2003; Ontario Nature, FON 2004) use a 4 hectare minimum for remaining cover, which is better suited to rural woodlands; the PUWA system uses the criteria of awarding a score for any urban interior woodland remaining within a 100 metre edge buffer.

Note: this scoring criteria used the boundaries of the woodland patch (as determined by the 2002 SOLRIS mapping project), not the site boundary, for determining interior forest. Note that there is concern that the actual woodland coverage in 2008 may be less than indicated in the 2002 data.

Criteria for interior woodland scoring:

Amount of interior woodland remaining on the site after 100 metre buffer zone:

>4 ha = 3 points
1.01 to 3.90 ha = 2 points
0.01 to 1 ha = 1 point
0 ha remains = 0 point

See Map 4 - Interior Forest Habitat; Table 4. Interior Forest Scores.

2.4 Diversity 1: Woodland Stand Count.

Ecologically, the diversity of the composition of tree species makes a woodland patch 'more valuable' as the mix of growth types provides a greater range of habitat and function. A woodland comprised of a single dominant species will provide certain amounts of shade, soil retention and wildlife habitat, but a woodland with several types of growth will attract more species to each stand type. A naturally formed and healthy forest will have a diversity of stands present.

Using the "leaf off" April 2002 aerial photographs (County of Simcoe/OMNR) and the "leaf on" July 2004 aerial photos (Town of Penetanguishene/SSEA), each woodland patch was divided into tree cover stands, determined by the type and abundance of canopy species. A woodland may have a few or many stands depending upon such factors as size, slope, surface water, soil type, disturbance and light availability.

Where and when possible, these stand boundaries were 'ground truthed' during field visits and corrected as necessary.

The stand count included identified stands, unclassified stands (boundaries of physical changes to woodland characteristics as defined via air photo interpretation but without species data available), and thicket stands.

NOT included in the stand counts were areas of current development (referred to as CD), open lawns (Manicured Open Space, MOS) or areas of intensive agriculture (InAg), as these areas do not contain tree cover.

The PUWA scoring system for woodland stand counts within a site is:

More than 5 stands = 3 points
3 to 5 stands = 2 points
Less than 3 stands = 1 point
Non-wooded = 0 point

See Table 5. Site and Stand Descriptions.

2.5 Diversity 2: ELC Stand Type

Each stand has certain characteristics determined by the composition of the main canopy species. These recurring characteristics have been summarized and presented as the *Ecological Land Classification for Southern Ontario*, published by the Ontario Ministry of Natural Resources, 1998 (referred to as ELC type).

2.4 Diversity 1: Stand Count (above) looked at *how many* types of stands may be found in a woodland, while the ELC system determines *what kinds* of stands are present.

For purposes of scoring ELC types, a stand identified as **unclassified** was included in the count as the stand exists as a part of the woodland albeit unidentified at this time.

Cultural thickets (CUT) and **cultural meadows (CUM)** were also included as the early stages of forest succession takes place within these habitats.

Excluded from woodland ELC scoring were areas identified as manicured open space (**MOS**), intensive agriculture (**In Ag**), and current development (**CD**) as no tree cover exists.

PUWA scoring for ELC types within a site:

More than 5 ELC types = 3 points
3 or 4 ELC types = 2 points
Less than 3 ELC types = 1 point
Non-wooded ELC type = 0 point

See Table 5. *Site and Stand Descriptions*; Table 7. *ELC Types and Percent Coverage*; Map 3 – *Ecological Land Classification*.

2.6 Slope:

The amount of landscape slope found within a woodland indicates the dependency on tree roots for soil stabilization. Generally stated, the steeper the slope, the greater the importance for the presence of trees on a site to control erosion (by water and wind).

A dominant ridge runs generally north-south through the study area, creating the need for careful considerations in regards to any development options upon this landscape.

Percent gradient of slopes were generated from the 5 metre resolution Water Resource Information Project (OMNR) digital elevation model, which was derived from the 2002 ortho photo project data. The data were separated into very low slope (0 – 5%), low slope (5 – 15%), moderate slope (15 – 30%) and high slope (greater than 30%) categories.

Scoring was done by a ‘present or absent’ method, meaning if any area of the site had 0.01 ha or greater of low, medium or high slope, it was given points for the highest slope category present within the site boundary.

Points are awarded using the *Eastern Ontario Woodland Valuation System; Rowsell, 2003*.

If a site contained an area with slope:

greater than 30% (high slope)= 3 points
15 to 30% (moderate slope) = 2 points
5 to 15% (low slope) = 1 point
less than 5% (very low slope) = 0 point

See *Table 8. Slope Categories, Areas and Scores; Map 2 - Topography*

2.7 Hydrology:

The North Simcoe Municipal Ground Water Study (2005, Golder report) mapped areas of water recharge and discharge. These identified areas were overlaid on the PUWA sites to determine their importance to groundwater recharge.

Water flow and retention are interdependent with tree type and presence. While trees obviously need water to grow, the tree roots retain water flow and ensure soil stability. Water retention within ponds is critical for long-term release into surrounding soils.

The PUWA system for scoring hydrology within a site is:

Site within a recharge area = 3 points
Surface flow via stream or has surface seep areas present; water catchment and retention areas present = 2 points
Site within discharge area; ditching within or immediately adjacent to the site to direct water flow = 1 point
Site has no evidence of water flow or catchments = 0 points

See *Map 6 – Recharge and Discharge Areas*

2.8. Well Head Protection Areas:

Penetanguishene's municipal water supply well head protection areas, which were modeled during the North Simcoe Municipal Groundwater Study, were established to identify the **time of travel (TOT)** for horizontal groundwater to reach each well field (Golder Associates, 2005).

“Overall, the municipal water supplies in the town of Penetanguishene are not well protected from surface contamination. Elevated chloride at the Payette system and the TCE contamination at the Robert Street well head indicate that the

aquifers in these areas are vulnerable to contamination, even though they are quite deep.” *North Simcoe Municipal Groundwater Study Main Report, p. 92, Golder Associates Ltd.*

It is expected that the Town of Penetanguishene would place a high priority on protecting areas of land that could affect the Town’s drinking water supply. PUWA sites that coincide with the 50 day, 2 year, 10 year and 25 year TOT capture zones were ranked based on the closest TOT capture zone present within the site.

The study area encroached upon two well head capture zones, the Payette Dr. and Robert Street zones.

Scoring for well head protection areas:

Site within 50 day TOT zone = 4 points
Site within 2 year TOT zone = 3 points
Site within 10 year TOT zone = 2 points
Site within 25 year TOT zone = 1 point
Site outside any TOT zone = 0 point

See Table 9. Well Head Protection Area Scores; Map 5 – Well Head Protection Zones;

2.9 Woodland Growth Type:

Scoring was devised to acknowledge the woodland growth pattern. A naturally occurring, mature and multi-aged woodland takes many years to form and will be functioning as best as nature intended with available soil, water and light (e.g. mature growth of red oak, sugar maple, white pine).

A woodland that is in a stage of succession, indicates the site was disturbed at one time (e.g. farm field, fire, aggregate extraction) and is recovering. A woodland matures by having shade-tolerant plant species succeed in 'taking over' the existing sun-loving species (e.g. poplar, white birch, small sugar maple).

Tree plantations and urban hedgerow plantings tend to be mono-cultural and lack diversity in age, height and species mix (e.g. Scot's pine, white spruce borders, cedar hedgerows).

The PUWA system for scoring growth type is that if the *majority* of the woodland on the site is:

Naturally occurring, mature woodland = 3 points
Early- or mid-succession stage = 2 points
Plantation or planted = 1 point
Non-wooded = 0 point

2.10 Recreational Use:

Woodlands provide people with cooling shade, aesthetic roadside view, a place to observe wildlife, trails for fitness or recreation, and a place to explore and have fun out of doors. These uses are important to the social fabric of a neighbourhood and enhance the 'value' of living near such amenities.

The PUWA scoring system for social use of a site is:

Walking or bicycle trail present = 1 point
--

Note: trail presence was noted whether on public or private lands. Some existing trails may indeed be trespassing on private property; the scoring system is not intended to encourage trespassing, but rather to reflect the social value of the woodland.

2.11 Disturbances:

During field visits it was observed that disruptive activities such as brush dumping, ATV trail riding, bush parties and littering occurred in several urban woodlands. Tree cutting should to be planned with forest health in mind; this is not usually the case with urban woodland firewood removal. Tree cutting for safety reasons (dead tree beside trail) is acceptable.

Scoring for signs of disruptive activity within a site:

ATV trail causing well defined surface disruption: MINUS 1 point
Extensive litter/ brush dumping: MINUS 1 point
Firewood tree removal: MINUS 1 point

2.12 Special Features:

Occasionally a feature is discovered that is unique within a woodland or site and not captured with other scoring criteria. This may be a stand of unusually large trees (e.g. old fenceline) or a stand of a tree species that is difficult to find otherwise (e.g. black ash stand in water; stand of mature black walnut), or the woodlands on the site are part of a much larger patch that extends beyond the study area.

The PUWA scoring system allows for these and other subjective features to be awarded

1 point each; multiple scoring is possible
--

2.13 Totaling Points:

Each site has a potential of 29 points, plus additional bonus points for Special Features. *Table 2. Scores Summary Sheet* shows the twelve criteria scores as well as the Total Score for each site.

These Total Scores are used to rank the sites.

See: *Table 1: Sites ranked by score and level*

Table 2: Site Scores Summary for a break-down of site scores by criterion.

Appendix: Scoring Master Sheet

3. RANKING OF SITES BY SCORE:

The intent of this project has been to assess the woodland cover of identified sites of vacant and underdeveloped parcels within Penetanguishene. These site scores and rankings will assist in the determination of what development constraints may exist.

Ranking was determined by totaling scores from 12 criteria (see *Table 2. Site Score Summary*). A maximum of 29 points was possible, plus additional points for special features if present. The PUWA site scores ranged from 3 to 27 (see *Table 1. PUWA Ranked Sites and Scores*).

The divisions of ranking are:

Gold Site: 20 or more points in total score

Silver Site: 11 to 19 points in total score

Bronze Site: up to 10 points in total score

The distribution of site levels appears compatible with the results obtained in the *Oro Moraine Forest Study (2002, Couchiching Conservancy)* with the majority of sites being ranked 'mid-level'.

The rank of a site should be seen as a guideline, as a site with a high silver score could possibly become a gold site with further investigation or a bit of landscape enhancement. Conversely, a site with a low silver score could slip into a Bronze ranking should landscape degradation occur.

As development options are explored, this data will provide a base upon which decisions may be made; further discussion should be done on a site-by-site basis.

3.1 Gold Level Sites:

A Gold site has scored 20 or more points. The woodlands on these sites generally are large in area, contain mature trees, have water occurring as seeps, and have moderate to steep slopes. It is recommended that a Gold site should be retained and protected due to its natural ecological values and for soil stabilization.

7 of 25 PUWA sites received a Gold ranking.

3.2 Silver Level Sites:

A Silver site has scored 11 to 19 points in its total score. The woodlands on these sites tend to be medium-sized in area, contain a mix of forest stands, and may have a moderate slope.

Development of a Silver site needs careful consideration for limited development intrusion, as negative impacts may quickly degrade the site to a lower ecological level.

12 of 25 PUWA sites received a Silver ranking.

3.3 Bronze Level Sites:

A Bronze site scored 10 or fewer points, tends to be small in area, has a lot of plantation or planted coverage, and may currently be abused by dumping or filling.

Tree planting and/or management could ecologically improve the woodland patch found on these sites.

6 of 25 PUWA sites received a Bronze ranking.

See: *Table 1. PUWA Ranked Sites and Scores*
Table 2. Site Scores Summary
Map 7 - Ranked Site Map

Table 1: PUWA Ranked Sites and Scores

By Site:

Site	Total	Rank
1	19	Silver
2	9	Bronze
3	8	Bronze
4	3	Bronze
5	17	Silver
6	10	Bronze
7	20	Gold
8	17	Silver
9	12	Silver
10	12	Silver
11	14	Silver
12	14	Silver
13	20	Gold
14	27	Gold
15	8	Bronze
16	12	Silver
17	13	Silver
18	19	Silver
19	25	Gold
20	23	Gold
21	23	Gold
22	20	Gold
23	10	Bronze
24	16	Silver
25	19	Silver

By Score:

Site	Total	Rank
14	27	Gold
19	25	Gold
20	23	Gold
21	23	Gold
7	20	Gold
13	20	Gold
22	20	Gold
1	19	Silver
18	19	Silver
25	19	Silver
5	17	Silver
8	17	Silver
24	16	Silver
11	14	Silver
12	14	Silver
17	13	Silver
9	12	Silver
10	12	Silver
16	12	Silver
6	10	Bronze
23	10	Bronze
2	9	Bronze
3	8	Bronze
15	8	Bronze
4	3	Bronze

Table 2: Site Score Summary Sheet

Site	Parcels	Site Size	Forest Interior	Div. 1 Stands	Div. 2 ELC types	Slope	Hydro	Well Head Zone	Growth Type	Social	Disturb.	Special Features	TOTAL	Rank
1	3	3	0	3	2	2	2	3	1	0	-1	0	19	Silver
2	1	2	0	1	1	1	2	2	0	0	-1	0	9	Bronze
3	1	1	0	2	2	1	0	1	1	0	-1	0	8	Bronze
4	1	1	0	0	0	0	0	1	0	0	0	0	3	Bronze
5	3	2	0	3	2	1	3	1	2	1	-1	0	17	Silver
6	1	3	1	1	1	1	0	0	1	0	0	1	10	Bronze
7	1	3	3	2	2	1	3	0	2	1	0	2	20	Gold
8	3	2	0	2	1	2	1	2	3	0	0	1	17	Silver
9	3	1	0	1	1	2	0	2	1	1	0	0	12	Silver
10	1	1	0	2	2	1	2	2	1	0	0	0	12	Silver
11	3	1	0	2	2	0	2	2	2	0	0	0	14	Silver
12	2	1	0	2	2	2	1	2	2	0	-1	1	14	Silver
13	3	3	0	3	2	2	2	2	3	0	-1	1	20	Gold
14	3	3	2	3	3	3	3	4	3	1	-1	0	27	Gold
15	1	1	0	1	1	1	0	3	1	0	-1	0	8	Bronze
16	1	1	0	1	1	1	0	3	3	1	0	0	12	Silver
17	2	1	0	1	1	0	3	3	2	0	0	0	13	Silver
18	2	2	0	3	2	2	3	3	2	1	0	0	19	Silver
19	3	3	1	3	3	3	2	4	3	1	-2	0	25	Gold
20	3	3	0	3	3	2	3	3	2	0	0	1	23	Gold
21	3	3	3	3	2	3	2	0	3	1	-1	1	23	Gold
22	3	3	0	3	2	3	2	0	3	0	0	1	20	Gold
23	2	1	0	1	1	1	0	0	3	0	0	1	10	Bronze
24	1	3	1	3	2	2	2	1	2	0	-2	1	16	Silver
25	1	3	0	3	3	1	3	1	2	1	0	1	19	Silver

Gold 7
Silver 12
Bronze 6

4. SITE CONSTRAINTS and CONSIDERATIONS

The following section summarizes critical data obtained for each site and indicates development constraints and/or special considerations.

These categories are open for discussion and views presented here are ‘first steps’ to the next level of options required for future planning. It is recommended that the individual site maps provided in the accompanying CD be referred to as each site is discussed.

Site: 1 Rank: Silver

Area of site: 7.6 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped lands	10

Woodland Growth Type:

Mainly pine plantation (untended); pockets of hardwoods; some wet soil trees at west end

Recreational Use:

None noted

Disturbance:

Some dumping along south boundary (via hydro line corridor)

Connectivity:

Adjoins very large Thompson Tract (County Forest); separated by hydro line corridor and access road.

Constraints and Considerations:

Slope within site:

1.88 ha of 15-30%; 4.11 ha of 5-15%; 1.52 ha of 1-5%.

Hydrology:

Catchment area at west end of site

Well Head Protection Zone:

1.04 ha within 2 year zone; 1.52 ha within 10 year zone.

Tree cover to be retained on steep slopes.

Tree Preservation Plan to be determined as part of any development proposal.

Site: 2 Rank: Bronze

Area of site: 3.6 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	1

Woodland Growth Type: Not applicable

<u>Recreational Use:</u>	<u>Disturbance:</u>
None current	old campground; gravel roads, some services

Connectivity: Shoreline shrubs

Constraints and Considerations:

Slope within site:
0.19 ha of 5-15%; 3.42 ha of 0-5%.

Woodland Hydrology:
Site adjacent to wetland and Penetang Bay.

Well Head Protection Zone:
.39 ha within 10 year zone.

Shoreline planting to be considered as part of any redevelopment plan.

Site: 3 Rank: Bronze

Area of site: 1.2 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	1

Woodland Growth Type:
Mainly pine plantation and domestic planted spruce.

<u>Recreational Use:</u>	<u>Disturbance:</u>
None	brush dumping; litter

Connectivity: Isolated

Constraints and Considerations:

Slope within site:
0.68 ha of 5-15%; 3.42 ha of 0-5%.

Woodland Hydrology:
None

Well Head Protection Zone:
0.97 ha within 25 year zone

Tree Preservation Plan to be required as part of any development approval.

Site: 4 Rank: Bronze

Area of site: 0.5 ha

<u>Designations:</u>	<u>Parcels:</u>
Vacant land	1

Woodland Growth Type: Not applicable (lawn area)

<u>Recreational Use:</u>	<u>Disturbance:</u>
None	vacant lot

Constraints and Considerations:

Slope within site:
0.5 ha at 0-5%

Woodland Hydrology:
Drainage ditch along east boundary (unopened Lucy Street).

Well Head Protection Zone:
0.5 ha within 25 year zone

Development proposal to consider tree planting to connect to Site 5.

Site: 5 Rank: Silver

Area of site: 3.6 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	5
Vacant	3

Woodland Growth Type:
Semi-mature wet woods species

<u>Recreational Use:</u>	<u>Disturbance:</u>
Bicycle trail within southern parts	littering; youth party site; brush dumping

Connectivity: Isolated

Constraints and Considerations:

Slope within site:
0.13 ha at 5-15%; 3.55 ha at 0-5%.

Woodland Hydrology:
Wet woods, catchment for large residential area (both natural and ditched)

Well Head Protection Zone:
3.6 ha within 25 year zone

Tree Preservation Plan to be required as part of any development approval.

Site: 6 Rank: Bronze

Area of site: 8.5 ha

<u>Designations:</u>	<u>Parcels:</u>
Vacant land	1

Woodland Growth Type:

Scotch pine plantation (mid-aged, untended); very small stand of hardwoods in east corner.

<u>Recreational Use:</u>	<u>Disturbance:</u>
none	none

Connectivity:

Plantation area within site is **part of a much larger woodland** that extends east to Fuller St and south to Brunelle Sideroad.

Constraints and Considerations:

Slope within site:
1.35 ha at 5-15%; 7.19 ha at 0-5%.

Woodland Hydrology:
None noted

Well Head Protection Zone:
Outside zones

Forest Interior:
0.06 ha remains after 100m zone

Special Features:
- site is part of a larger forest patch

Tree preservation in easterly portion to be considered in conjunction with Site 7.

Site: 7 Rank: Gold

Area of site: 31.1 ha

<u>Designations:</u>	<u>Parcels:</u>
Vacant land	1
Intensification	1

Woodland Growth Type:

Half of site is conifer plantation (untended) and rest is mature successional poplar woods.

Recreational Use:

Walking/bicycle trail connects to high school property.

Connectivity:

Adjacent to Sites 25 and 6, as well as small woodlands north of Robert Street.

Constraints and Considerations:

Slope within site:

1.94 ha at 5-15%; 24.14 ha at 0-5%.

Woodland Hydrology:

Small seasonal **catchment area** in north-west corner.

Well Head Protection Zone:

6.97 ha in 25 year zone

Forest Interior:

2.13 ha remains after 100 zone

Special Features:

- part of larger woodland patch; includes interior woodland cover

Tree Preservation Plan to be part of secondary plan.

Site: 8 Rank: Silver

Area of site: 3.4 ha

<u>Designation:</u>	<u>Parcels:</u>
Underdeveloped	8

Woodland Growth Type:

Mature white pine and red oak; small stand of mature black locust along north boundary.

<u>Recreational Use:</u>	<u>Disturbance:</u>
none	none

Connectivity:

Links Sites 9 and 13.

Constraints and Considerations:

Slope within site:

1.71 ha of 15-30%; 1.49 ha of 5-15%; 0.03 ha of 0-5%

Woodland Hydrology:

- **drainage from school property** onto woodland site.

Well Head Protection Zone:

1.83 ha within 10 year zone; 1.4 ha within 25 year zone.

Special Features:

- large trees present, including Or, Pw and Mh.

Tree cover to be retained on steep slopes.

Tree Preservation Plan to be required as part of any development approval.

Site: 9 Rank: Silver

Area of site: 0.8 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	7

Woodland Growth Type:
Residential backyard trees

<u>Recreational Use:</u>	<u>Disturbance:</u>
none	none

Connectivity: Connects sites 8 and 12.

Constraints and Considerations:

Slope within site:
0.07 ha at 15-30%; 0.69 ha at 5-15%

Woodland Hydrology:
None noted

Well Head Protection Zone:
0.43 ha within 10 year zone; 0.34 ha within 25 year zone

Tree cover to be retained on steep slopes.
Tree Preservation Plan to be required as part of any development approval.

Site: 10 Rank: Silver

Area of site: 0.9 ha

<u>Designations:</u>	<u>Parcels:</u>
Vacant land	1

Woodland Growth Type:
Wet soil mature poplar surrounded by conifer plantings.

<u>Recreational Use:</u>	<u>Disturbance:</u>
none	none

Connectivity: isolated; provides jump from Site 8 to Site 7.

Constraints and Considerations:

Slope within site:
0.18 ha at 5-15%; 0.75 ha at 0-5%.

Woodland Hydrology:
Seasonal catchment

Well Head Protection Zone:
0.9 ha within 10 year zone

Tree Preservation Plan to be required as part of any development approval.

Site: 11 Rank: Silver

Area of site: 1.1 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	5
Vacant	1

Woodland Growth Type:

Mix of mature basswood and poplar with thick shrub layer of glossy buckthorn.

Connectivity: isolated; distant to site 12 to east.

<u>Recreational Use:</u>	<u>Disturbance:</u>
None	none

Constraints and Considerations:

Slope within site:

1.18 ha at 0-5%

Woodland Hydrology:

Seasonal catchment; wet soils; ditch along south boundary.

Well Head Protection Zone:

1.1 ha within the 10 year zone

Tree Preservation Plan to be required as part of any development approval.

Site: 12 Rank: Silver

Area of site: 0.9 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	2

Woodland Growth Type:
Mixed hardwoods; stand of mature black walnut (planted).

<u>Recreational Use:</u>	<u>Disturbance:</u>
None	firewood removal

Connectivity:
Part of corridor from Site 9 (to south) to Site 18 (to north).

Constraints and Considerations:

Slope within site:
0.27 ha at 15-30%; 0.41 ha at 5-15%; 0.19 ha at 0-5%

Woodland Hydrology:
Ditch runs along west boundary

Well Head Protection Zone:
.88 ha within 10 year zone

Tree cover to be retained on steep slopes.
Mature trees to be retained along edges of site.
Tree Preservation Plan to be required as part of any development approval.

Site: 13 Rank: Gold

Area of site: 5.2 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	5

Woodland Growth Type:
Mature Pw, Or and Po.

<u>Recreational Use:</u>	<u>Disturbance:</u>
None	litter; old kids fort mess

Connectivity: Links Site 8 to Site 12.

Constraints and Considerations:

Slope within site:
2.2 ha at 15-30%; 2.83 ha at 5-15%; 0.17 ha 0-5%.

Woodland Hydrology:
Seasonal flow via shallow ravine; some damp soil trees present (hemlock, dogwood).

Well Head Protection Zone:
5.22 ha within 10 Year zone

Special Features:
- Large Pw and Or, 'old growth'.

Tree cover to be retained on steep slopes.

Tree Preservation Plan to be required as part of any development approval.

Site: 14 Rank: Gold

Area of site: 28.3 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	2
Vacant	8

Woodland Growth Type:

Very diverse: large section pine plantation; large area mixed mature Or and Mh; thicket growth around large manicured open space (MOS).

Recreational Use:

Well used walking biking trails

Disturbance:

litter; pits dug on trail; ATV use

Connectivity: Connects Site 19 to Site 20.

Constraints and Considerations:

Slope within site:

0.05 ha at over 30%; 3.52 ha at 15-30%; 5.63 ha at 5-15%; 19 ha at 0-5%

Woodland Hydrology:

Site has surface drain across manicured open space (MOS) leading down to Church Street.

No drainage noted within woodland patch.

Well Head Protection Zone:

6.96 ha within 50 day zone; 17.35 ha within 2 year zone; 3.89 ha within 10 year zone.

Forest Interior:

1.95 ha within 100 metre edge

Further assessment of woodland and tree preservation plan to be part of any future development approval.

Town may consider forest management plan for areas to be excluded from development.

Site: 15 Rank: Bronze

Area of site: 0.7 ha

Designations:

Vacant

Parcels:

1

Woodland Growth Type:

Half of site is unmanaged Ps plantation, other half is open field/thicket.

Recreational Use:

Kid's fort

Disturbance:

brush dumping, litter, kid's fort mess

Connectivity: Adjacent to Site 16.

Constraints and Considerations:

Slope within site:

0.05 ha at 5-15%; 0.62 ha at 0-5%.

Woodland Hydrology:

None

Well Head Protection Zone:

0.64 ha within 2 year zone; 0.04 ha within 10 year zone

Tree planting or preservation plan to be required as part of any development approval.

Site: 16 Rank: Silver

Area of site: 0.7 ha

<u>Designations:</u>	<u>Parcels:</u>
Vacant land	1

Woodland Growth Type:
Naturally occurring mature hardwoods

<u>Recreational Use:</u>	<u>Disturbance:</u>
Walking trail	none

Connectivity:
Adjacent to Site 15; close to Site 17

Constraints and Considerations:

Slope within site:
0.06 ha at 5-15%; 0.67 ha at 0 –5%

Woodland Hydrology:
None

Well Head Protection Zone:
0.7 ha within 2 year zone

Tree planting or preservation plan to be required as part of any development approval.

Site: 17 Rank: Silver

Area of site: 0.94 ha

<u>Designations:</u>	<u>Parcels:</u>
Vacant land	1

Woodland Growth Type:
Semi-mature poplar and oak; patch extends beyond site boundaries.

<u>Recreational Use:</u>	<u>Disturbance:</u>
None	none

Connectivity:
Connects to Sites 14 and 16, as well as other minor patches in neighbourhood.

Constraints and Considerations:

Slope within site:
0.94 ha at 0-5%

Woodland Hydrology:
None

Well Head Protection Zone:
0.02 ha within 2 year zone; 0.92 ha within 10 year zone.

Tree Preservation Plan to be required as part of any development approval.

Site: 18

Rank: Silver

Area of site: 2.2 ha

Designations:

Underdeveloped

Parcels:

2

Woodland Growth Type:

mid-succession mix of pine, oak and maple; glossy buckthorn wet areas

Recreational Use:

Walking trails

Disturbance:

none

Connectivity: Links Sites 12 and 19.

Constraints and Considerations:

Slope within site:

0.27 ha at 15-30%; 1.67 ha at 5-15%; 0.26 ha at 0-5%

Woodland Hydrology:

Seepage areas present; wet soil plant growth

Well Head Protection Zone:

0.63 ha within 2 year zone; 1.56 ha within 10 year zone

Tree cover to be retained on steep slopes.

Tree Preservation Plan to be required as part of any development approval.

Site: 19 Rank: Gold

Area of site: 18.3 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	20
Vacant	5

Woodland Growth Type:

Very diverse stand cover; mature oak and maple on slope areas.

Recreational Use:

Walking trails

Disturbance:

ATV trails; municipal dumping of snow

Connectivity: Adjacent to Sites 18 and 14.

Constraints and Considerations:

Slope within site:

0.10 ha at greater than 30%; 2.96 ha at 15-30%; 9.34 ha at 5-15%; 5.97 ha at 0-5%.

Woodland Hydrology:

Site contains **seeps, catchment areas**

Well Head Protection Zone:

0.21 ha within 50 day zone; 9.8 ha within 2 year zone; 7.96 ha within 10 year zone

Forest Interior:

0.58 ha remains after buffer zone

Tree cover to be retained on steep slopes.

Tree Preservation Plan to be required as part of any development approval.

Site: 20 Rank: Gold

Area of site: 12.9 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	8
Vacant	3

Woodland Growth Type:

Somewhat diverse; contains second-growth poplar and mature oak as well as conifer plantation areas.

Recreational Use:

Parcel 237 appears to be manicured lawn with campsite at east end.

Disturbance:

None

Connectivity:

Adjacent to Site 14 and Site 20; provides 'hop' to St. Andrew's Lake wooded area to the east.

Constraints and Considerations:

Slope within site:

0.08 ha at 15-30%; 2.13 ha at 5-15%; 10.68 ha at 0-5%.

Woodland Hydrology:

None

Well Head Protection Zone:

2.01 ha within 2 year zone; 7.01 ha within 10 year zone

Special Features:

- very large red oaks along boundary between stands 59 and 141.

Mature red oaks to be retained.

Tree cover to be retained on steep slopes.

Tree Preservation Plan to be required as part of any development approval.

Site: 21 Rank: Gold

Area of site: 16.1 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	10
Vacant	1

Woodland Growth Type:

Diverse; mature oak and maple; pure black ash stand; mixed black ash stand.

Recreational Use:

Walking trails

Disturbance:

ATV: surface disturbance

Connectivity:

Important link in north-south corridor

Constraints and Considerations:

Slope within site:

0.06 ha at greater than 30%; 2.76 ha at 15-30%; 5.87 ha at 5-15%; 7.38 ha at 0-5%.

Woodland Hydrology:

Seeps, stream and catchment areas

Well Head Protection Zone:

Outside zone

Forest Interior:

5.18 ha remains after buffer zone

Special Features:

- black ash, in standing water.

Tree cover to be retained on steep slopes.

Tree Preservation Plan to be required as part of any development approval.

Site: 22 Rank: Gold

Area of site: 5.5 ha

<u>Designations:</u>	<u>Parcels:</u>
Underdeveloped	14

Woodland Growth Type:
Mature oak, second-growth beech, mature hardwoods

<u>Social Use:</u>	<u>Disturbance:</u>
None	None

Connectivity:
Links Sites 21 and 23 to larger patch that extends northwards off site.

Constraints and Considerations:

Slope within site:
0.02 ha at greater than 30%; 1.41 ha at 15-30%; 4.07 ha at 5-15%; 0.02 ha at 0-5%.

Woodland Hydrology:
Seep areas on north boundary and along ridge.

Well Head Protection Zone:
Outside of zone.

Special Features:
- woodland patch is part of larger contiguous stand.

Tree cover to be retained on steep slopes.
Tree Preservation Plan to be required as part of any development approval.

Site: 23 Rank: Bronze

Area of site: 1.3 ha

<u>Designations:</u>	<u>Parcels:</u>
Vacant lands	3

Woodland Growth Type:
Mature oak and mixed hardwoods

<u>Recreational Use:</u>	<u>Disturbance:</u>
None	None

Connectivity:
Provides link from site 22 to woodland patch across Fuller Ave to east.

Constraints and Considerations:

Slope within site:
1.3 ha at 5-15%

Woodland Hydrology:
None

Well Head Protection Zone:
Outside of zone.

Special Features:
Woodland on site is part of larger patch that extends north and east.

Tree cover to be retained on steep slopes.
Tree Preservation Plan to be required as part of any development approval.

Site: 24 Rank: Silver

Area of site: 32 ha

<u>Designations:</u>	<u>Parcels:</u>
Under construction	2

Woodland Growth Type:
mid-stage succession; some plantation

<u>Recreational Use:</u>	<u>Disturbance:</u>
None	- ATV trail; wooded areas recently removed

Connectivity:
Connects to County Forest to west.

Constraints and Considerations:

Slope within site:
0.9 ha at 15-30%; 13.56 ha at 5-15%; 17.63 ha at 0-5%

Woodland Hydrology:
Catchment area on west boundary; **catchment area** in main construction zone.

Well Head Protection Zone:
0.31 ha within 25 year zone

Forest Interior:
0.47 ha remains after buffer zone.

Special Features:
- connects to large forest (Thompson Tract)

Slope stabilization plan and replanting required as part of development approvals.
Town to consider forest management plan for parkland block.

Site: 25 Rank: Silver

Area of site: 19.18 ha

<u>Designations:</u>	<u>Parcels:</u>
Intensification area	2

Woodland Growth Type:

Early succession thickets and poplar groves; some mature maple and oak.

<u>Recreational Use:</u>	<u>Disturbance:</u>
Walking, bicycle trail	none

Connectivity:

Site links to woodlands to south as well as adjacent Site 7.

Constraints and Considerations:

Slope within site:

1.78 ha at 5-15%; 17.47 ha at 0-5%.

Woodland Hydrology:

Catchment area along southeast boundary

Well Head Protection Zone:

1.97 ha within 25 year zone

Special Features:

- connects to a much larger woodland patch

Tree Preservation Plan to be required as part of any development approval.

5. SUMMARY and FUTURE CONSIDERATIONS

5.1 Project Summary:

A total of 25 sites were assessed within this project with the intent to determine their ecological sensitivity to future development. The main criterion in this assessment was the presence and quality of tree cover, with supporting evidence of other factors such as slope and water catchment. (see *Section 2: Scoring Criteria; Table 2. Site Score Summary.*)

The 25 sites were determined to consist of 7 Gold sites, 12 Silver sites and 6 Bronze sites.

Comments on development constraints and considerations, from an ecological point of view, are listed with each site in Section 4 of this report. Generally, a dominant ridge runs north-south through the study area, creating the need for careful considerations in regards to any development options upon this landscape.

The tree coverage of Penetanguishene creates a pleasing and welcoming atmosphere to the town. Current research is investigating the connections of a healthy community with available tree cover. Lessons are to be learned from other municipalities that have reduced their tree cover to minimal and are now trying to re-establish forest cover for shade, ecological enhancement and aesthetic appearance. 'Rebuilding' a forest takes a great amount of time, effort and funding whereas 'retaining' a forest is an exercise of forethought.

The Town of Penetanguishene has an opportunity to put into effect a long-term strategy of protecting and enhancing their urban woodlands and ensuring the healthy biodiversity currently found within their community.

5.2 Future Considerations:

While this PUWA project provides good data on the identified properties in regards to supporting informed land use decisions, the following are some options for future consideration:

5.2.1 Further Research.

5.2.1.1 Additional patches. There are patches of woodland within the Town that were not included in the identified sites. To gain a better understanding of the roles of these wooded areas (e.g. connectiveness between woodlands) an assessment of the entire Town should be undertaken.

5.2.1.2 Unclassified stands. Additional information regarding woodland composition on properties that were not accessed should be gathered through further field visits to identify and classify these stands.

5.2.1.3 Adjoining woodlands. Some of the current sites are adjoined to larger woodlands. These sites could be re-scored with the larger forest factored in.

5.2.2 Biodiversity

5.2.2.1 Biodiversity studies. Species focused surveys could be done to determine presence and populations of species in decline, such as interior woodland birds, ginseng, reptiles and amphibians.

5.2.2.2 Invasive Species. Alien or undesirable species, such as **glossy buckthorn** (*Rhamnus frangula*), **garlic mustard** (*Alliaria officinalis*) and **poison ivy** (*Rhus radicans*) can degrade woodlands. Their control/removal ensures that more native species can populate the area.

5.2.2.3 Heritage Trees. The Ontario Urban Forest Council has produced a toolkit entitled, *Securing the Future of Heritage Trees: A Protection Toolkit for Communities*. This aspect could be incorporated into Penetanguishene's woodland planning.

5.2.2.4 Tree Planting. The Town may wish to look at the longer natural heritage view and identify lands for enhancing tree cover to increase ecological value of woodlands.

5.2.3 Stewardship and Recreational

5.2.3.1 Landowner stewardship initiatives. To enhance marginal woodlands, landowners should consider planting seedlings and performing garbage cleanup, and rethinking brush dumping.

5.2.3.2 Tax break incentives. To encourage landowners with large portions of their properties containing tree cover to conserve their woodlands, a tax incentive program could be established. Stewardship actions may have to be shown to qualify.

5.2.3.3 Trail Mapping. The network of informal trails found within and connected to the sites indicates an active use by walkers, cyclists and ATV riders. This system, with modifications, may form the basis of a community trail system. However, there must first be consideration if trails are to be acknowledged and assumed by Town, or will be part of stewardship options.

Table 3. Site Sizes and Scores

by site:

Site no	ha
1	7.6
2	3.6
3	1.2
4	0.5
5	3.6
6	8.5
7	31.1
8	3.4
9	0.8
10	0.9
11	1.1
12	0.9
13	5.2
14	28.3
15	0.7
16	0.7
17	0.9
18	2.2
19	18.3
20	12.9
21	16.1
22	5.5
23	1.3
24	32
25	19.18

TOTAL 206.48

by size:

Site no	ha	Score
24	32	3
7	31.1	3
14	28.3	3
25	19.18	3
19	18.3	3
21	16.1	3
20	12.9	3
6	8.5	3
1	7.6	3
22	5.5	3
13	5.2	3
2	3.6	2
5	3.6	2
8	3.4	2
18	2.2	2
23	1.3	1
3	1.2	1
11	1.1	1
10	0.9	1
12	0.9	1
17	0.9	1
9	0.8	1
15	0.7	1
16	0.7	1
4	0.5	1

TOTAL 206.48

Table 4. Interior Forest Habitat and Scores

SITE	SOLRIS Total Area (Ha)	Forest Interior 100m removed (ha remaining)		Forest Interior 200m removed (ha remaining)		Forest Interior 100m removed (ha remaining within the Site Boundary)	Score
	<i>Includes Adjoining and Internal</i>	<i>Includes Adjoining and Internal</i>	<i>Includes Adjoining and Internal</i>	<i>Includes Adjoining and Internal</i>	<i>Includes Adjoining and Internal</i>		
1	339.50	213.96		128.37		0.00	
2	0.98	0.00		0.00		0.00	
3	0.53	0.00		0.00		0.00	
5	2.40	0.00		0.00		0.00	
6	73.26	23.28		4.25		0.06	1
7	25.83	4.10		0.00		2.13	2
8	4.35	0.00		0.00		0.00	
9	1.94	0.00		0.00		0.00	
10	1.35	0.00		0.00		0.00	
11	1.51	0.00		0.00		0.00	
12	1.36	0.00		0.00		0.00	
13	4.41	0.00		0.00		0.00	
14	25.33	2.18		0.00		1.95	2
15	0.20	0.00		0.00		0.00	
16	0.49	0.00		0.00		0.00	
17	1.45	0.00		0.00		0.00	
18	2.44	0.00		0.00		0.00	
19	51.91	1.74		0.00		0.58	1
20	10.73	0.00		0.00		0.00	
21	24.89	5.18		0.00		5.18	3
22	17.05	0.46		0.00		0.00	
23	1.96	0.00		0.00		0.00	
24	341.62	213.96		128.37		0.47	1
25	73.26	23.28		4.25		0.00	

Table 5. Site and stand descriptions

Site	Stand ID No.	Stand Desc	ELC type	Stand Size (ha)	Info Source	Comments
1	1	Ps10	CUP3-3	2.9	RS - GT	Ps plantation atop ridge
1	79	Ps10	CUP3-3	1.3	GT	
1	80	Ps, Po	uncl	0.2	RS	
1	81	unknown	uncl	0.1	API	
1	82	Po10	FOD8-1	0.5	RS - GT	
1	127	Be6, Mh2, Ba1, Cb1	FOD4-1	0.1	RS - GT	
1	128	Or10	FOD1-1	0.1	RS - GT	
1	129	Ps10	CUP3-3	0.0	GT	Part of Thomson Tract
1	163		MOS	0.9	API	
1	164		MOS	0.6	API	
1	165		MOS	0.5	API	
1	209		MOS	0.3	API	
1	210		MOS	0.1	API	
1	240		MOS	0.0	API	
7.62 ha						
2	83	unknown	uncl	0.1	API	wet shrubs, Mm
2	84	field	MOS	3.5	GT	no trees, open field campgrounc
3.6 ha						
3	2	Ps10	CUP3-3	0.3	GT	
3	3	Sw10	CUP3-8	0.3	GT	mature Sw stand
3	143	shrub meadow	CUT1-1	0.2	GT	
3	166		MOS	0.5		
1.2 ha						
4	85	open field	MOS	0.4	GT	no trees, open vacant lot
4	104	lawn	MOS	0.1	API	
0.5 ha						
5	4	Mm10	SWD3-4	0.1	RS -GT	young to mid-age Mm
5	5	unknown	uncl	1.2	API	
5	6	Cb8, Ms1, Bw1	FOD	0.3	RS -GT	wet woods, litter, trail, brush dump
5	7	Po9, Wi1	FOD3-1	0.6	RS -GT	wet swale
5	8	Po10	FOD8-1	0.1	RS -GT	mature Po, rising land
5	144	unknown	uncl	0.2	API	
5	167		MOS	0.5	API	
5	168		MOS	0.6	API	
5	218		MOS	0.0	API	
3.6 ha						
6	9	Ps10	CUP3-3	4.1	RS	wild grown scot's pine
6	86	field	INT AG	4.3	RS	cultivated field
6	106	Or	FOD1-1	0.1	RS	
8.5 ha						
7	10	Ps7, Pr3	CUP3-3	12.4	RS	wild grown Scot's pine
7	11	Or10	FOD1-1	0.3	RS - GT	roadside opening
7	87	field	INT AG	5.2	RS	cultivated field
7	105	Ha7, Ps3	CUS1-1	0.1	RS - GT	regen field
7	107	Po8, Mh1, Or1	FOD3-1	11.3	RS - GT	small part of large next-door stand
7	244	Ps9, Po1	CUP3-3	1.75	GT	
31.1 ha						
8	12	Or7 Pw1 Mh1 Lo1	FOD2-4	2.7	GT	squawroot abundant
8	13	Or6, Pw4	FOD2-4	0.4	GT	scattered within site
8	108	Pw6, Or4	FOC1-2	0.1	GT	
8	169		MOS	0.1	API	
8	170		MOS	0.1	API	
8	219		MOS	0.0	API	
8	220		MOS	0.0	API	
3.4 ha						

Site	Stand ID No.	Stand Desc	ELC type	Stand Size (ha)	Info Source	Comments
9	14	Sw, Or, Mh	uncl	0.3	API	backyard tree cluster, not a woodlot
9	145	Or, Mh	FOD1-1	0.0	API	
9	146	Or, Mh	FOD1-1	0.0	API	
9	171		MOS	0.4	API	
9	172		MOS	0.1	API	
9	221		MOS	0.0	API	

0.8 ha

10	15	Pw9, Bw1	FOC1-2	0.6	RS - GT	
10	16	Po10	FOD8-1	0.1	RS - GT	
10	17	Pw8, Or1, Po1	FOC1-2	0.1	RS - GT	
10	147	Po9, Mm1	FOM5-2	0.1	API	

0.9

11	18	Ab5, Ce4, Or1	FOM7-2	0.3	RS - GT	
11	19	Po9, Or1	FOM5-2	0.5	RS - GT	
11	20	unknown	uncl	0.1	API	
11	126	Ba10	uncl	0.1	RS	
11	173		MOS	0.1	API	

1.1 ha

12	21	Po7 Ba2 Ab1	FOD3-1	0.3	RS	old road?
12	131	Po, Mh	FOD3-1	0.4	API - RS	
12	132	Wb10	CUP1-3	0.1	RS	
12	133	Or9 Wb1	FOD2-4	0.0	RS	
12	148	Pw10	FOC1-2	0.0	API	
12	174		MOS	0.1	API	
12	222		MOS	0.0	API	

0.9 ha

13	22	Po8, Mh1, Pw1	FOD3-1	0.4	RS	
13	23	Pw5, Or3, Cb1, Bw1	FOM2-1	2.6	GT	
13	24	unknown	uncl	0.4	API	
13	25	Or10	FOD1-1	0.3	GT	
13	26	Po6, Or4	FOD3-1	0.1	GT	
13	90	unknown	uncl	0.2	API	
13	91	Sw, Pw, Po	CUP3-8	0.2	API	
13	175		MOS	0.0	API	
13	176		MOS	0.7	API	
13	177		MOS	0.1	API	
13	178		MOS	0.1	API	
13	179		MOS	0.0	API	
13	223		MOS	0.0	API	

5.2 ha

Site	Stand ID No.	Stand Desc	ELC type	Stand Size (ha)	Info Source	Comments
14	27	Pr10	CUP3-1	4.4	GT	Pr plantation
14	28	Or4, Po4, Mh2	FOD3-1	4.1	GT	
14	29	Or10	FOD1-1	2.2	GT	
14	30	Pw5, Or3, Po2	FOM2-1	4.4	GT	
14	31	Or, Mh, Bw, Po, Pw	uncl	0.1	RS	
14	32	Wi8, Su1, Mm1	SWD4-1	0.8	GT	
14	88	field	CUM1-1	5.9	GT	ATV track
14	92	Po8, Mh1, Wi1	FOD3-1	0.3	GT	
14	93	Mm10	SWD3-4	0.1	GT	
14	94	Ps8, Mh2	FOC1-2	1.3	GT	
14	96	Or, Po	FOD3-1	0.5	RS -GT	
14	97	Pw8, Or1, Po1	FOM2-1	0.7	RS -GT	
14	98	Pw, Or	FOM2-1	0.0	API	
14	99	Pw, Su	uncl	0.5	API	
14	102	Pw5, Or4, Bw1	FOM2-1	0.3	GT	
14	109	field opening	CUT1-1	0.3	GT	Su, Cc
14	113	Su	CUT1-1	0.1	GT	successional field
14	181		MOS	0.1	API	
14	183		MOS	0.1	API	
14	189		MOS	0.2	API	
14	224	open	MOS	0.0	GT	ATV track
14	225		MOS	0.1	API	
14	226		MOS	0.5	API	
14	227		MOS	0.0	API	
14	228		MOS	0.2	API	
14	229		MOS	0.1	API	
14	243	field	CUM1-1	0.9	GT	ATV track

28.3 ha

15	33	Ps9, Mh1	CUP3-3	0.2	GT	
15	89	field	CUM1-1	0.5	GT	open field

0.7 ha

16	34	Mh8, Or1, Ps1	FOD5-3	0.6	GT	
16	101	field	CUM1-1	0.1	GT	
16	241		MOS	0.0		

0.7 ha

17	35	Po6, Or2, Be1, Aw1	FOD3-1	0.9	GT	beside Ecole St. Louis; 3 nearby fragment:
----	----	--------------------	--------	-----	----	--

0.9 ha

18	36	Mh10	FOD5-1	0.7	GT	
18	37	Pw9 Cb1	FOC1-2	0.2	GT	
18	72	Po6 Ab2 Wi2	FOD8-1	0.0	GT	
18	135	Su10	CUT1-1	0.0	GT	
18	136	Pw8 Po4	FOC1-2	0.1	GT	
18	137	Po10	FOD3-1	0.2	GT	
18	138	Po8 Pw2	FOD3-1	0.4	GT	
18	139	Po8 Mh1 Pw1	FOD3-1	0.3	GT	
18	184		MOS	0.1	API	
18	185		MOS	0.1	API	

2.2 ha

Site	Stand ID No.	Stand Desc	ELC type	Stand Size (ha)	Info Source	Comments
19	38	unknown	uncl	0.1	API	
19	39	Or7, Mh3	FOD2-4	3.3	GT	
19	40	Po, Al, Pw	FOD8-1	1.4	RS - GT	
19	41	Ce8, By2	SWM1-1	0.8	GT	
19	42	Po6, Bw2, Ba1, Be1	FOD3-1	1.6	GT	
19	43	unknown	uncl	0.0	API	
19	44	unknown	uncl	0.7	API	
19	45	Ce7, Pw1, Bf1, Bw1	SWM4-1	0.9	GT	
19	46	unknown	uncl	0.6	API	
19	47	Mh10	FOD5-1	0.5	GT	
19	48	Bf7, By1, Ce1, Ab1	SWM4-1	1.6	GT	
19	49	Ta, Sw, Al	uncl	0.1	RS	
19	50	unknown	uncl	0.1	API	
19	51	Or7, Po2, Aw1	FOD1-1	3.0	GT	
19	52	Pw8, Po1, Aw1	FOC1-2	1.0	GT	
19	103		uncl	0.1	API	
19	186		CUM1-1	0.8	GT	
19	188		MOS	0.0	API	
19	190		MOS	0.1	API	
19	191		MOS	0.1	API	
19	192		MOS	0.2	API	
19	193		MOS	0.1	API	
19	194		MOS	0.1	API	
19	195		MOS	0.3	API	
19	196		MOS	0.1	API	
19	197		MOS	0.6	API	
19	198		MOS	0.1	API	
19	230		MOS	0.0	API	
19	231		MOS	0.0	API	

18.3 ha

20	53	Or8, Mh1 Bw1	FOD2-4	0.8	RS - GT	
20	54	unknown	uncl	0.2	API	
20	55	Pw6 Or3 Aw1	FOM2-1	1.6	GT	
20	56	conifer	uncl	0.5	API	
20	57	unknown	uncl	0.3	API	
20	58	Pr, Or, Pj	uncl	0.2	RS - GT	
20	59	Ps8 Or1 Mh1	CUP3-3	2.0	GT	
20	60	unknown	uncl	0.0	API	
20	110	unknown	uncl	0.2	API	
20	111	unknown	uncl	0.2	API	
20	112	unknown	uncl	0.0	API	
20	140	Or6 Po2 Mh1 Cb1	FOD2-4	1.4	GT	
20	141	Or5 Po5	FOD2-4	1.2	GT	
20	142	Or, Po, Sw, Wb	FOD2-4	0.0	GT	mixed rows of planted
20	149	Po, Mh	FOD3-1	0.3	GT	
20	158	Su	CUM1-1	0.9	GT	wildflower meadow
20	159	Su	CUM1-1	0.2	GT	
20	160		MOS	1.0	API	
20	161	Po, Su	FOD3-1	0.1	API	
20	162	Su, Mm, Po	CUT1-1	0.2	API	
20	199	open	MOS	0.3	API	
20	232		MOS	1.2	API	
20	233	unknown	uncl	0.0	API	
20	234		MOS	0.0	API	

12.9 ha

Site	Stand ID No.	Stand Desc	ELC type	Stand Size (ha)	Info Source	Comments
21	61	unknown	uncl	0.1	API	
21	62	unknown	uncl	1.1	GT	
21	63	Ab9 Po1	SWD2-1	0.6	GT	standing water; large ash
21	64	Pw7 Po2 Ba1	FOC1-2	2.5	GT	
21	65	Ab, Ce, Ms	uncl	0.4	(RS)	
21	66	Po, Ce	uncl	0.7	(RS)	
21	67	unknown	uncl	0.1	API	
21	68	unknown	uncl	0.1	API	
21	69	unknown	uncl	0.9	API	
21	70	unknown	uncl	0.9	API	
21	71	Ps, Pr, Or	uncl	1.0	RS -GT	
21	114	Po, Ab	uncl	0.4	API	
21	115	Ab	FOD7-2	0.1	(RS)	
21	116	Po, Mh	uncl	0.5	API	
21	117	Gb, Ce	uncl	0.2	API	
21	118	unknown	uncl	0.4	API	
21	119	unknown	uncl	1.5	API	
21	120	Mh4 Be4 Or1 Pw1	FOD5-2	3.7	GT	
21	150	unknown	uncl	0.3	API	
21	151	unknown	uncl	0.1	API	
21	202		MOS	0.2	API	
21	203		MOS	0.1	API	
21	235		MOS	0.1	API	
21	236		MOS	0.1	API	
21	242		MOS	0.0	API	

16.1 ha

22	74	Or9 Bw1	FOD1-1	3.8	RS - GT	
22	75	Or, Ce, Mh	uncl	0.3	RS - GT	
22	121	unknown	uncl	0.0	API	
22	123	Po6 Be3 Or1	FOD3-1	0.1	GT	
22	124	Or4 Be3 Po3	FOD2-4	0.2	GT	
22	130	Po10	FOD3-1	0.2	GT	
22	204		MOS	0.2	API	
22	205		MOS	0.4	API	
22	206		MOS	0.1	API	
22	207		MOS	0.1	API	
22	237		MOS	0.0	API	
22	238		MOS	0.0	API	
22	239		MOS	0.0	API	

5.5 ha

23	77	Or9 Be1	FOD1-1	1.1	GT	
23	78	Pr8 Bf2	CUP3-1	0.2	GT	
23	208		MOS	0.0	API	

1.3 ha

24	152	Su	CUT1-1	0.4	GT	
24	153	Mh6 Be2 Or2	FOD5-2	2.9	GT	
24	155	Ps	CUP3-3	3.3	RS - GT	
24	156	unknown	uncl	0.2	API	
24	157	Gb	CUT	0.2	RS - GT	
24	211		uncl	1.3	API	
24	212		CD	18.6	API	construction site
24	213		uncl	0.8	API	
24	214		uncl	1.4	API	
24	215		uncl	0.3	API	
24	216		MOS	1.8	API	
24	217		MOS	0.8	API	

32.0 ha

Site	Stand ID No.	Stand Desc	ELC type	Stand Size (ha)	Info Source	Comments
25	245		CUM1-1	0.32	GT	old field
25	246	Or9, Mh1	FOD2-4	6.88	GT	
25	247	Su, Ha	CUT1-1	0.60	GT	shrubby meadow
25	248	Or8, Bw1, Be1	FOD2-4	0.58	GT	thick sapling growth
25	249	Ps8, Or1, Aw1	CUP3-3	2.51	GT	wild plantation
25	250	Po6, Mh4	FOD3-1	2.34	GT	
25	251	Po10	FOD3-1	0.30	GT	
25	252	Mh6, Po4	FOD5-1	2.61	GT	
25	253	Po10	FOD3-1	1.21	GT	
25	254	Or8, Mh1, Ir1	FOD2-4	0.27	GT	
25	255	Po9, Ps1	FOD3-1	0.30	GT	
25	256	Ps7, Po3	CUP3-3	0.25	GT	wild grown Ps
25	257		MOS	0.09	GT	
25	258		MOS	0.92	GT	

19.18 ha

GT	Ground Truthed
RS	Roadside Survey
API	Air Photo Interpretation

Table 6. Plant Species Codes

Codes correspond to data given in *Table 4. Site and Stand Descriptions*.

Code:	means:	also known as:
Ab	Ash, black	
Aw	Ash, white	
Ba	Basswood	Linden
Be	American Beech	
Bf	Balsam fir	
Bg	Buckthorn, glossy	
Bw	Birch, white	
By	Birch, yellow	
Cc	Cherry, choke	
Ce	Cedar, white	Eastern cedar
Cr	Cherry, red	
Da	Dogwood, alternate-leaved	
Er	Elderberry, red	
Ew	Elm, white	American elm
Ha	Hawthorn	Hawthorn spp.
Ir	Ironwood	
Ju	Juniper	
Li	Lilac	
Lob	Locust, black	
Mh	Maple, hard	Sugar maple
Mm	Maple, Manitoba	
Ms	Maple, soft	Red maple
Or	Oak, red	
Pj	Pine, jack	
Po	Poplar	Large-toothed and Trembling Aspen; Balsam Poplar
Pr	Pine, red	
Ps	Pine, Scotch	Scot's pine
Pw	Pine, white	
Su	Sumac, staghorn	
Sw	Spruce, white	
Wb	Walnut, black	
Wi	Willow sp	
spp.	plural species	unidentified to species
sp.	species	

Table 7. ELC Type and Percent coverage of study sites.

ELC TYPE	Total ha	% of coverage	Description
CUP3-3	31.08	15.07%	Scotch pine plantation type
FOD3-1	26.21	12.70%	dry poplar dominant
MOS	20.18	9.78%	manicured open space
uncl	20.09	9.74%	unclassified woods
CD	18.59	9%	current development
FOD2-4	17.71	8.58%	red oak - sugar maple
FOD1-1	10.82	5.25%	red oak dominant
CUM1-1	10.03	4.90%	old field meadow
FOM2-1	9.63	4.67%	white pine - red oak
INT AG	9.49	4.60%	intensive agriculture
FOD5-2	6.56	3.18%	sugar maple - beech
FOC1-2	5.83	2.82%	white pine dominant
CUP3-1	4.6	2.21%	red pine plantation type
FOD5-1	3.81	1.85%	sugar maple dominant
SWM4-1	2.46	1.19%	white cedar - hardwood
FOD8-1	2.13	1.03%	wet poplar dominant
CUT1-1	2.03	1%	sumac thicket
SWM1-1	0.81	0.39%	white cedar - hardwood
SWD4-1	0.76	0.37%	willow swamp
FOM5-2	0.63	0.31%	poplar - white pine
SWD2-1	0.63	0.31%	black ash swamp
FOD5-3	0.58	0.28%	sugar maple - red oak
CUP3-8	0.52	0.25%	white spruce plantation type
FOM7-2	0.26	0.13%	white cedar - black ash
FOD	0.25	0.11%	(deciduous forest)
SWD3-4	0.2	0.10%	Manitoba maple
CUS1-1	0.13	0.06%	hawthorn
FOD7-2	0.1	0.05%	black ash
CUP1-3	0.08	0.04%	black walnut plantation
FOD4-1	0.06	0.03%	beech dominant
	206.26	100.00%	

Table 8. Slope Category and Area (ha)

SITE	Very Low 0.01 to 4.99	Low 5.00 to 14.99 %	Moderate 15 to 29.99 %	High Over 30 %	Site Score
1	1.52	4.11	1.88	0	2
2	3.42	0.19	0	0	1
3	0.57	0.68	0	0	1
4	0.5	0	0	0	0
5	3.55	0.13	0	0	1
6	7.19	1.35	0	0	1
7	29.14	1.94	0	0	1
8	0.03	1.49	1.71	0	2
9	0	0.69	0.07	0	2
10	0.75	0.18	0	0	1
11	1.18	0	0	0	0
12	0.19	0.41	0.27	0	2
13	0.17	2.83	2.2	0	2
14	19	5.63	3.52	0.05	3
15	0.62	0.05	0	0	1
16	0.67	0.06	0	0	1
17	0.94	0	0	0	0
18	0.26	1.67	0.27	0	2
19	5.97	9.34	2.96	0.1	3
20	10.68	2.13	0.08	0	2
21	7.38	5.87	2.76	0.06	3
22	0.02	4.07	1.41	0.02	3
23	0	1.28	0	0	1
24	17.63	13.56	0.9	0	2
25	17.47	1.78	0	0	1
Points:	0	1	2	3	

Table 9: Well Head Protection Area Scores

Sites within Municipal Well Head Protection Area Capture Zones
(North Simcoe Municipal Groundwater Study, 2005, Golder Associates)

Data shown are hectares of site within capture zone

Site	50 Day	2 Year	10 Year	25 Year	Outside	Site Score
1	0	1.04	1.52	0	4.97	3
2	0	0	0.39	0	3.22	2
3	0	0	0	0.97	0.28	1
4	0	0	0	0.5	0	1
5	0	0	0	3.68	0	1
6	0	0	0	0	8.54	0
7	0	0	0	6.97	24.11	1
8	0	0	1.83	1.4	0	2
9	0	0	0.43	0.34	0	2
10	0	0	0.93	0	0	2
11	0	0	1.18	0	0	2
12	0	0	0.88	0	0	2
13	0	0	5.22	0	0	2
14	6.95	17.35	3.89	0	0	4
15	0	0.64	0.04	0	0	3
16	0	0.74	0	0	0	3
17	0	0.02	0.92	0	0	3
18	0	0.63	1.56	0	0	3
19	0.21	9.8	7.96	0	0.41	4
20	0	2.01	7.01	0	3.87	3
21	0	0	0	0	16.08	0
22	0	0	0	0	5.53	0
23	0	0	0	0	1.28	0
24	0	0	0	0.31	31.79	1
25	0	0	0	1.97	17.28	1
Score	4	3	2	1	0	

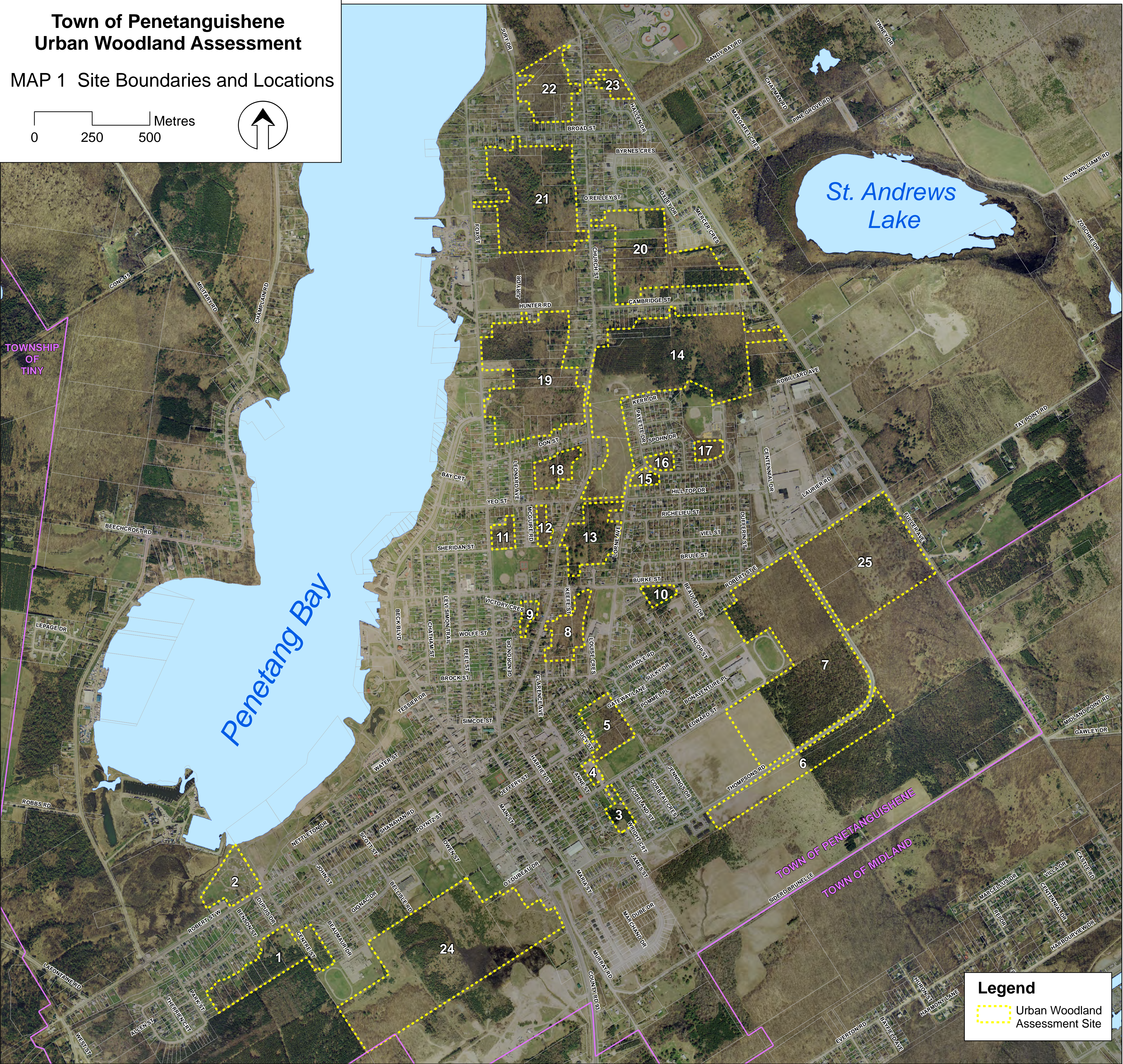
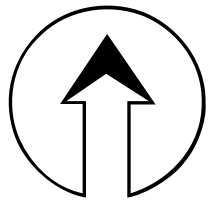
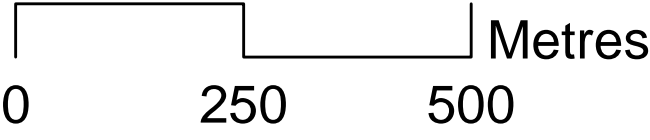
Table 10. Site Number Conversions

M&M* Site No.	converts to	SSEA Site No.	SSEA Site No.	converts to	M&M Site No.
1		2	1		2
2		1	2		1
3		24	3		18
4		n/a	4		17
5		n/a	5		17
6		n/a	6		21 partial
7		19, 21	7		20
8		22	8		15
9		23	9		14
10		13, 14, 20	10		16
11		15, 16, 17	11		13
12		12, 18	12		12
13		11	13		10
14		9	14		10
15		8	15		11
16		10, n/a	16		11
17		4, 5	17		11
18		3	18		12
19		n/a	19		7
20		7	20		7
21		6 partial	21		7
22		7, 25	22		8
23		n/a	23		9
24		n/a	24		3
25		n/a	25		22
26		n/a			
27		n/a			

*From M&M Map 5: Potential Development and Intensification Areas

Town of Penetanguishene
Urban Woodland Assessment

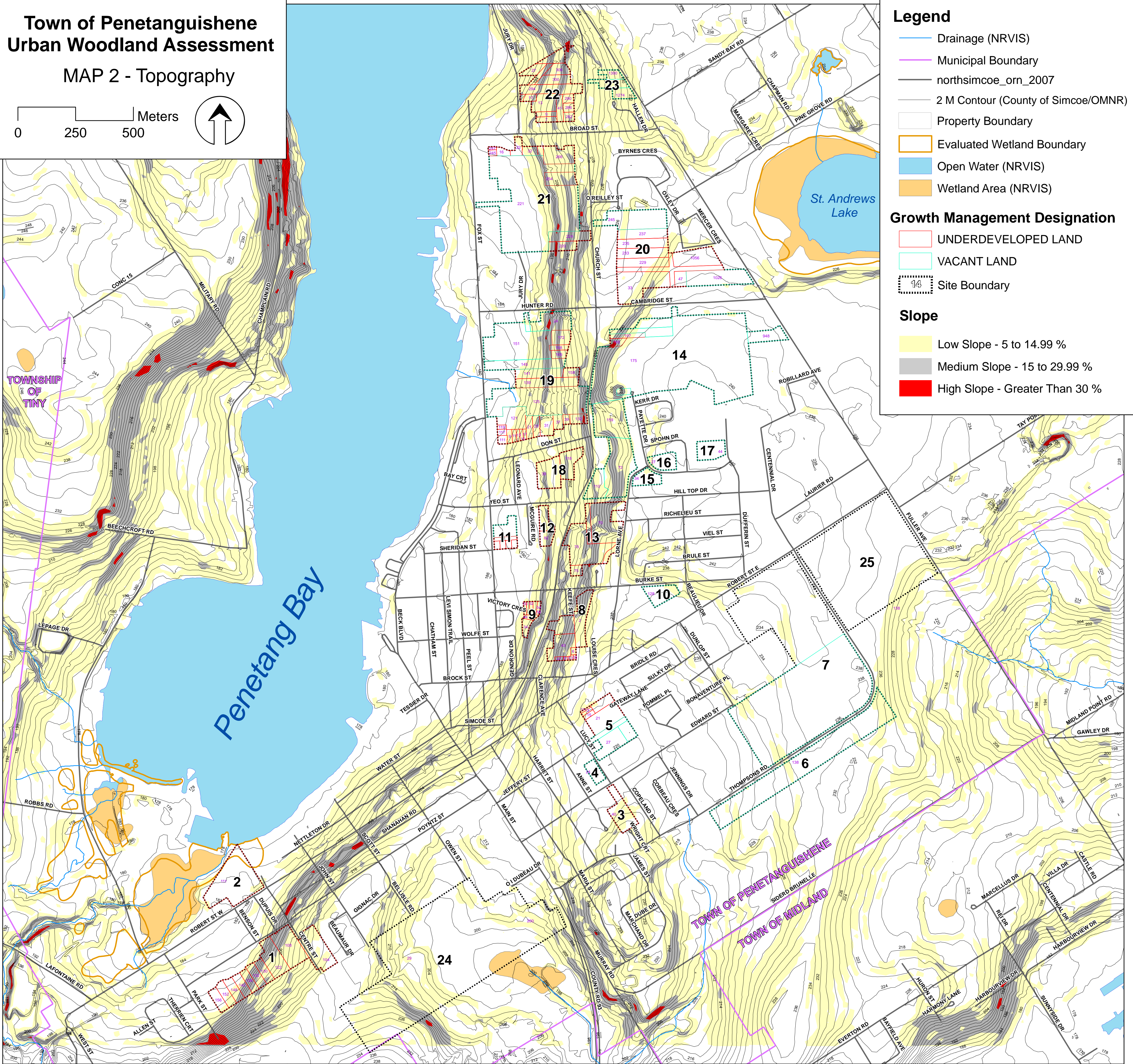
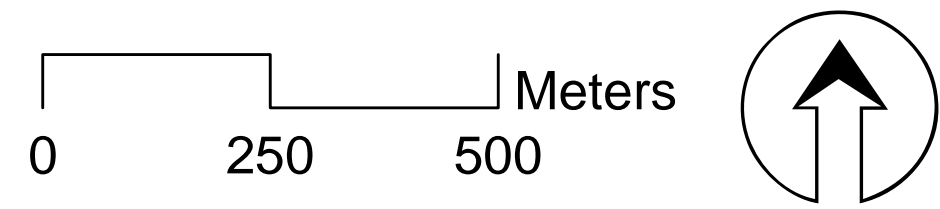
MAP 1 Site Boundaries and Locations



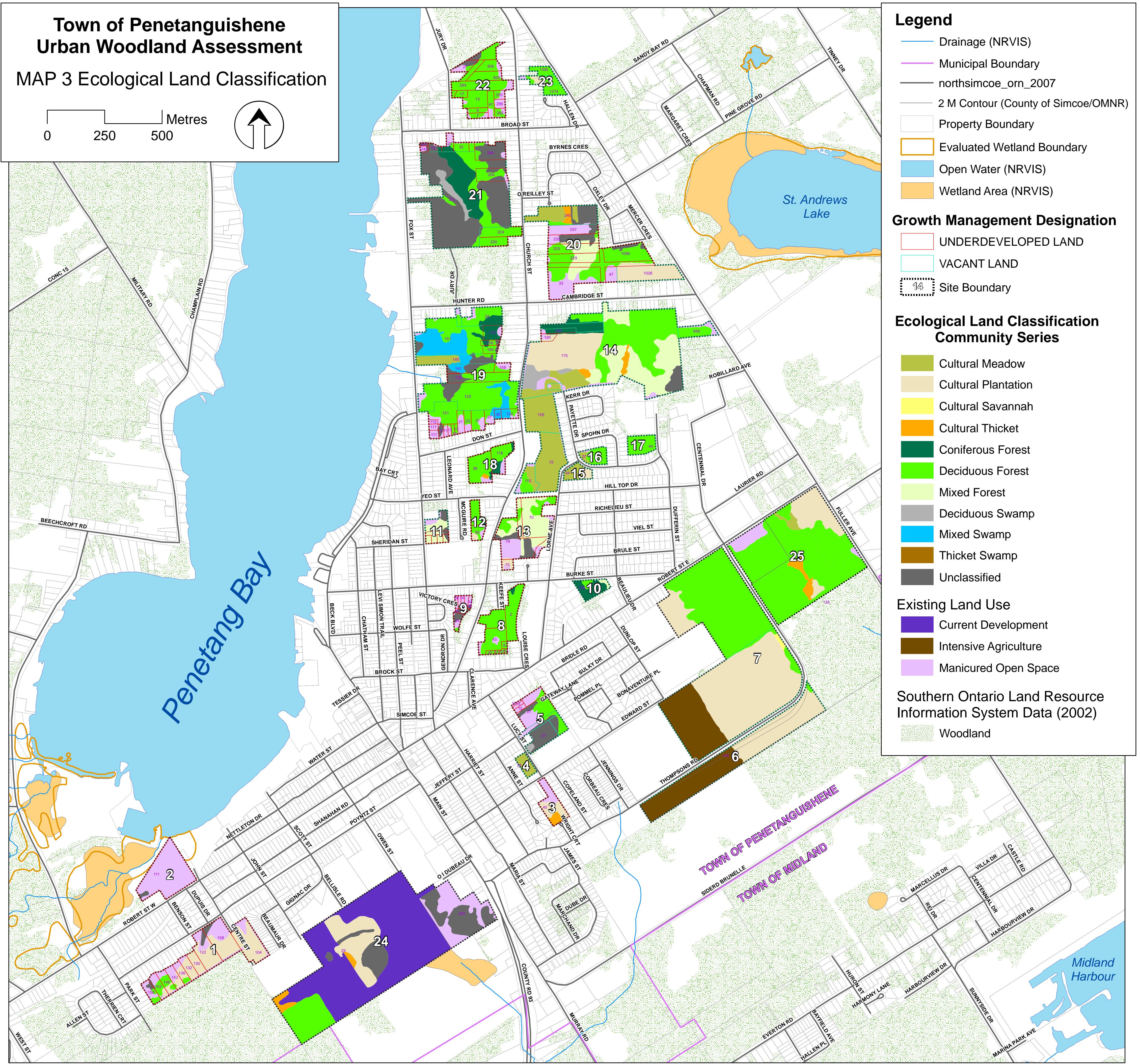
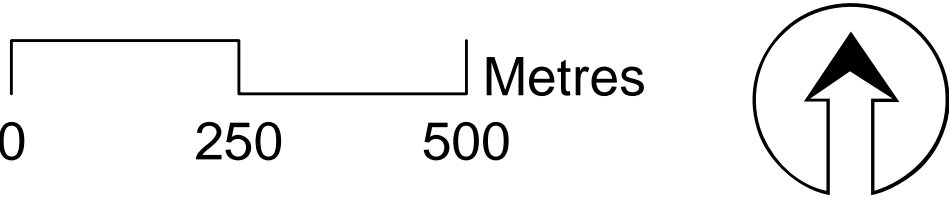
Legend

Urban Woodland Assessment Site

Town of Penetanguishene
Urban Woodland Assessment
MAP 2 - Topography



Town of Penetanguishene
Urban Woodland Assessment
MAP 3 Ecological Land Classification



Legend

- Drainage (NRVIS)
- Municipal Boundary
- northsimcoe_orn_2007
- 2 M Contour (County of Simcoe/OMNR)
- Property Boundary
- Evaluated Wetland Boundary
- Open Water (NRVIS)
- Wetland Area (NRVIS)

Growth Management Designation

- UNDERDEVELOPED LAND
- VACANT LAND
- Site Boundary

Ecological Land Classification Community Series

- Cultural Meadow
- Cultural Plantation
- Cultural Savannah
- Cultural Thicket
- Coniferous Forest
- Deciduous Forest
- Mixed Forest
- Deciduous Swamp
- Mixed Swamp
- Thicket Swamp
- Unclassified

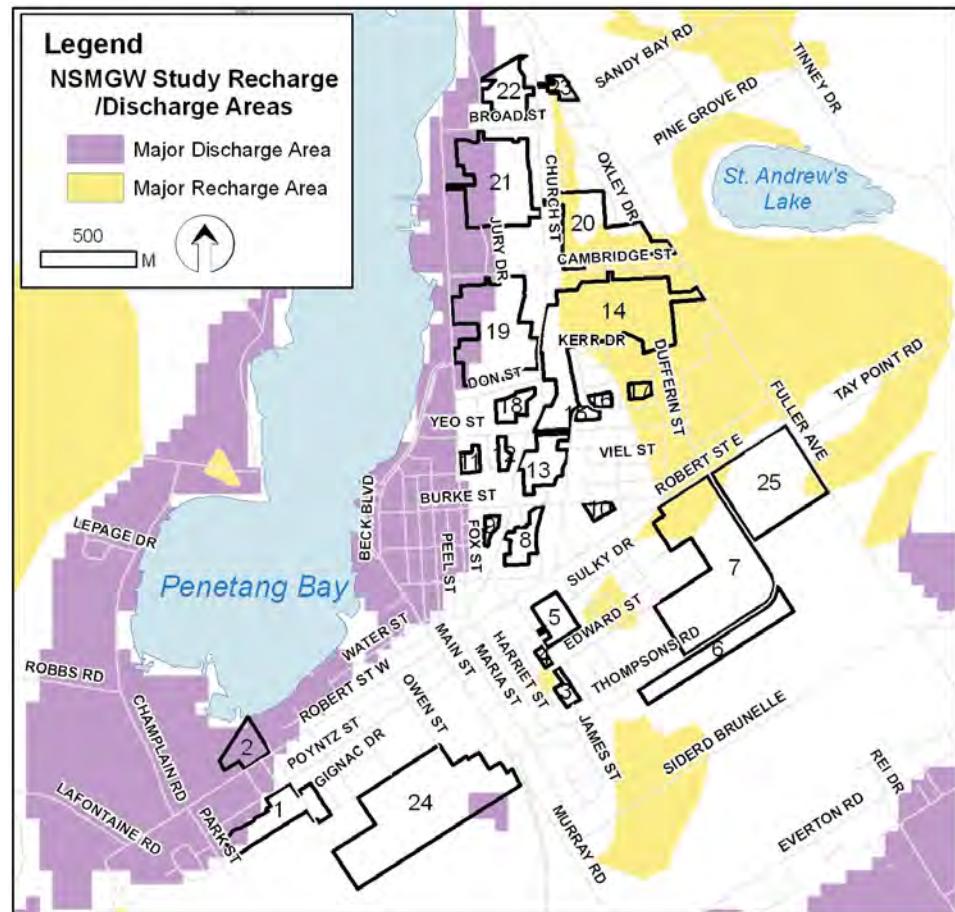
Existing Land Use

- Current Development
- Intensive Agriculture
- Manicured Open Space

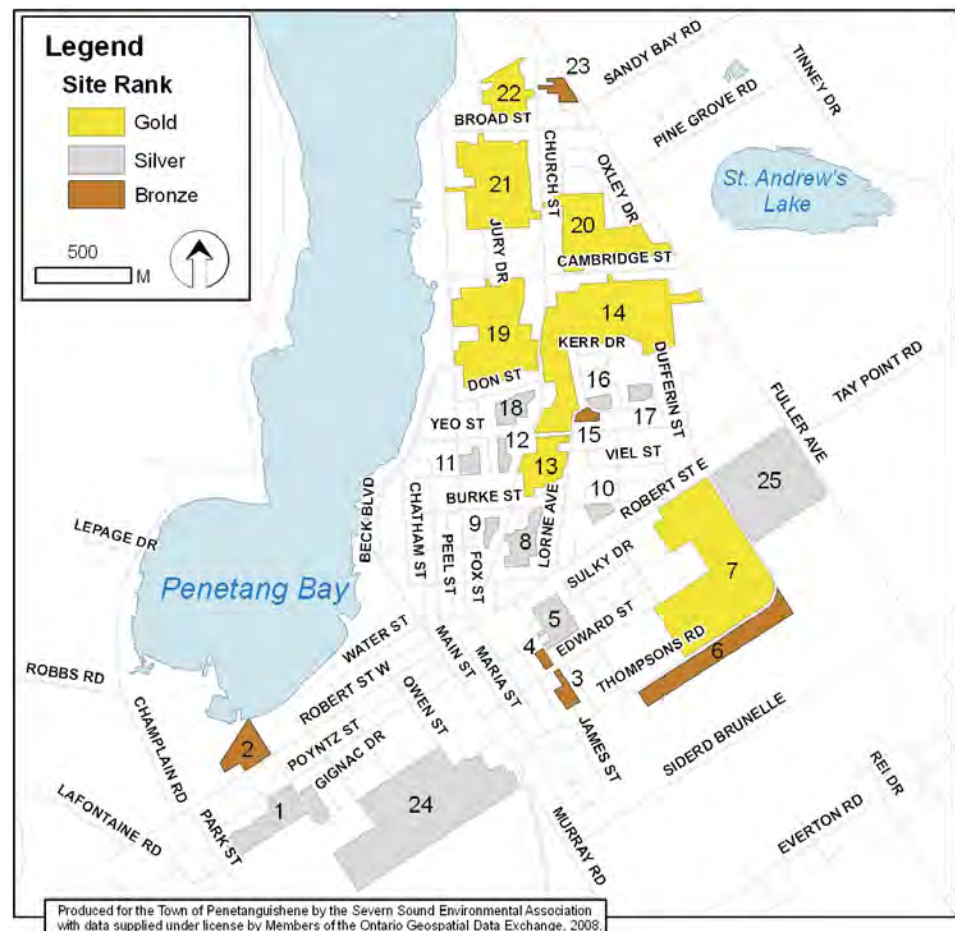
Southern Ontario Land Resource Information System Data (2002)

- Woodland

Map 6: Recharge and Discharge Areas



Map 7: Ranked Site Map



8: PHOTOGRAPHS



Site 14 – Stand 27
Trail through conifer plantation



Site 21 – Stand 63
Black ash trees in standing water



Site 7 – Stand 107
Mature poplar regeneration



Site 22 – Stand 74
Large Red Oak

9. APPENDICES

- 9.1 Landowner Information and Permission Letter
- 9.2 Permission Form
- 9.3 Field data sheet
- 9.4 Scoring Master Sheet
- 9.5 Site maps (aerial photographs)

Appendix 9.1: Landowner Permission Request Letter



Severn Sound Environmental Association

67 Fourth Street

Midland Ontario L4R 3S9

Tel: 705-527-5166 Fax: 705-527-5167

Email: dhawke@town.midland.on.ca Web-site: www.severnsound.ca

May 26, 2008

Dear Landowner:

**RE: LANDOWNER PERMISSION
URBAN WOODLOT ASSESSMENT PROJECT: 2008 FIELD WORK**

Severn Sound Environmental Association, in cooperation with the Town of Penetanguishene, is conducting an assessment of the woodlots located within the town's residential areas as part of the Growth Management Study.

Fieldwork is required for the project, and is scheduled to commence in May and conclude by late-June. The work involves assessing features in the woodlots, mapping vegetation communities, documenting wildlife species utilizing the woods, and collecting other information necessary for completion of the woodlot project.

Most of the areas to be studied are located on private land. To ensure that the woodland is accurately documented, **permission to access your property would be appreciated**. The visit will be brief and non-intrusive as only observations are needed to determine tree species.

The information gathered will be used to provide the Town with accurate mapping in support of their land use planning process.

I hope that you will allow our field crew access to your property for the purpose of the woodlot evaluation. **Please complete the enclosed Landowner Permission Form, and return it to our office by Friday, June 6, 2008.** A self-addressed, postage-paid envelope is enclosed for your convenience.

Thank you for your cooperation. If you have any further questions or would like more information about the project, please contact David Hawke or myself at our office (527-5166, dhawke@town.midland.on.ca).

Yours truly,

Keith Sherman, Coordinator
Severn Sound Environmental Association

Appendix 9.2: Permission Form

LANDOWNER PERMISSION FORM

I, (print name): _____

owner of (Location/address): _____

(check one): AGREE _____ or DO NOT AGREE _____

To allow the Severn Sound Environmental Association staff field crew to access my property to conduct a woodlot assessment during May and June, 2008.

Signature: _____ Date: _____

Phone Number and/or Email Address where you can be reached to advise you when the field crew will be on your property:

Please complete this form and return to the Severn Sound Environmental Association by June 6 using the enclosed return envelope.

Appendix 9.3: Field Data Sheet

SEVERN SOUND ENVIRONMENTAL ASSOCIATION

Field Data Form

Penetanguishene Urban Woodlot Assessment

Stand Number:

Date:

SITE: _____

Staff: _____

GPS: N _____

E _____

Canopy: _____

%: _____

Dia: _____

Understory: _____

Dia: _____

Shrubs (<4m): _____

Ground Cover: _____

Invasive Species:

Glossy Buckthorn

Garlic Mustard

Hort escapes

Habitat:

cavity
trees

old logs

stone piles

Wildlife notes:

Topography:

Slope:

steep

moderate

slight

flat

Flow:

present

seep

seasonal

ponding

absent

Social Notes:

Trails:

ATV

Bicycle

Walking

None

Litter:

Extensive

Scattered

None

Proximity:

School

Playground

Sports
Field

Cutting:

Impressions:

____ Excellent woodlot: mixed age and species, large, few impacts

____ Nice woodlot: even aged, medium sized, some impacts

____ Poor woodlot: thick glossy buckthorn, plantation, heavily impacted

Comments:

Appendix 9.4: Scoring Master Sheet

Scoring Master for PUWA:

Land parcels within the site boundary:

5+ parcels = 3 points
3 or 4 parcels = 2 points
1 or 2 parcels = 1 point

Size 1: Area of site

>4 ha = 3 points
2 to 3.9 ha = 2 points
<2 ha = 1 point

Size 2: Forest Interior

Amount of interior forest remaining after 100m edge buffered is removed:

>4 ha = 3 points
1.01 to 3.90 ha = 2 points
.01 to 1 ha = 1 point
no interior remains = 0 point

Diversity 1: Stand Count

>5 stands = 3 points
3 to 5 stands = 2 points
<3 stands = 1 point
Non-wooded = 0 point

Diversity 2: ELC types

>5 ELC types = 3 points
3 to 5 ELC types = 2 points
<3 ELC types = 1 point
Non-wooded = 0 point

Slope within site:

>30% slope = 3 points
15 - 30% slope = 2 points
6 - 14% slope = 1 point
0 – 5% slope = 0 points

Hydrology:

Surface seeps present; catchment and retention present = 3 points
Surface flow via stream or seasonal = 2 points
Ditching present or adjacent = 1 point
No water present = 0

Well Head Protection Zone:

Site, or part of site, falls within a capture zone:

50 day zone: 4 points
2 yr zone: 3 points
10 yr zone: 2 points
25 yr zone: 1 point
outside zones: 0 points

Woodland Growth Type:

If majority of woodland on site is:

Naturally occurring, mature = 3 points
Early- or mid-succession = 2 points
Plantation or planted = 1 point
Non-wooded = 0 point

Social use

Walking/bicycle trail = 1 point

Disturbance

ATV damage = MINUS 1 point
Extensive dumping, litter = MINUS 1
Firewood removal = MINUS 1

Special Feature Points:

1 point each special feature
(e.g. heritage tree; pure stand; part of larger woodland)

=====

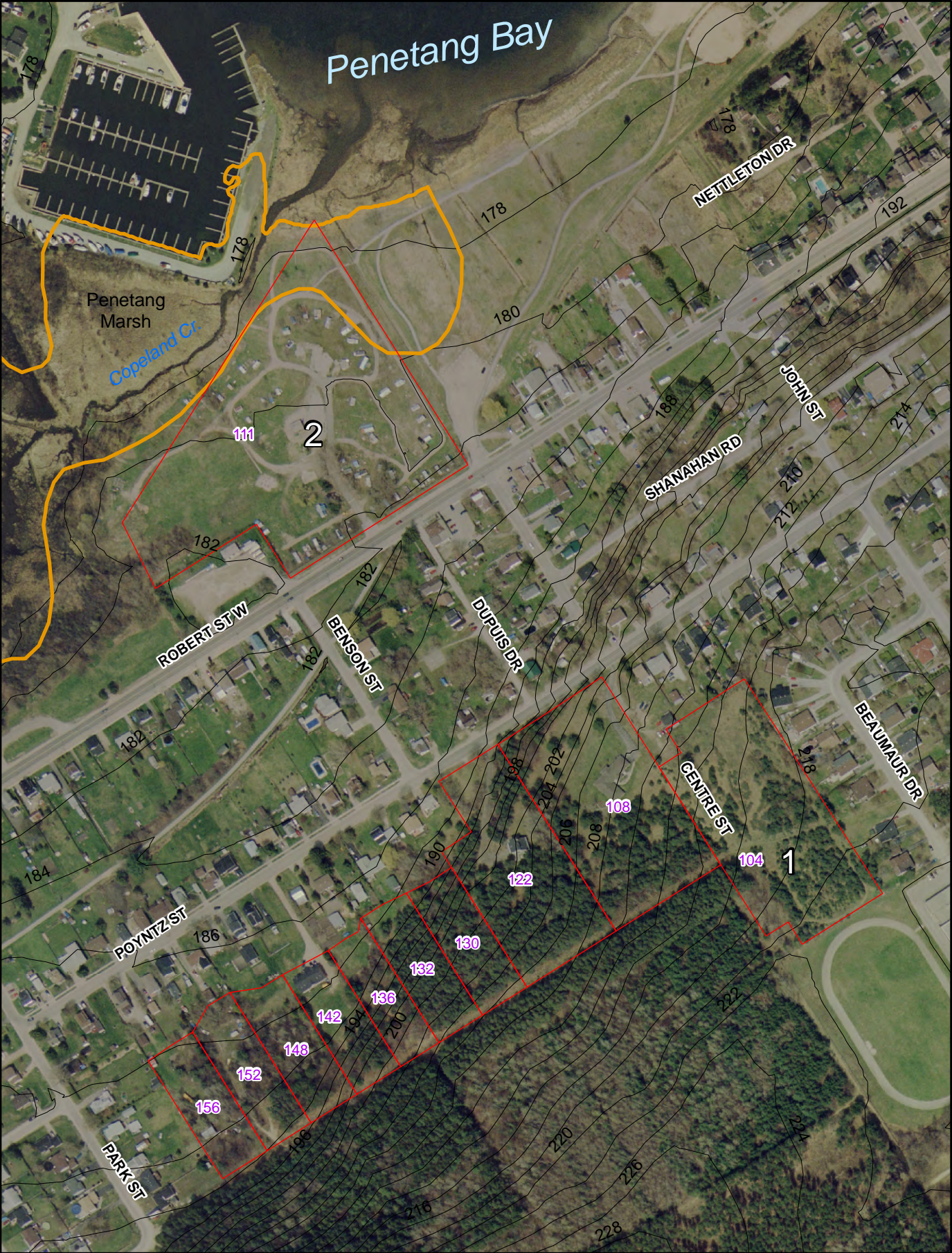
29 points maximum plus special feature points

Gold = 20 or greater points

Silver = 11 to 19 points

Bronze = 1 to 10 points

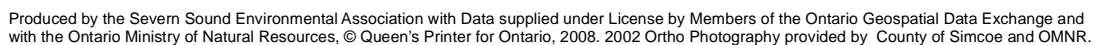
Appendix 9.5 Site maps (aerial photographs)





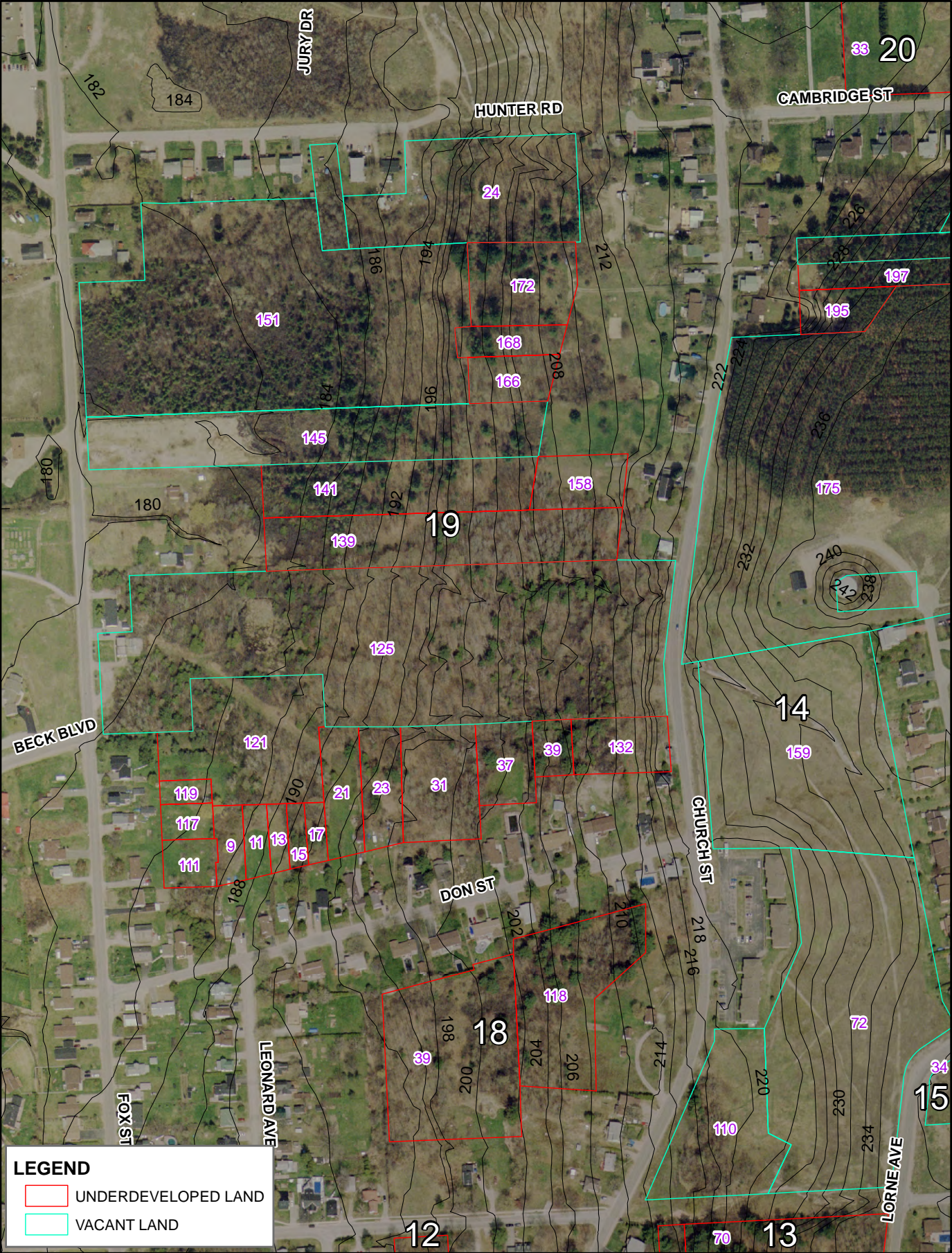


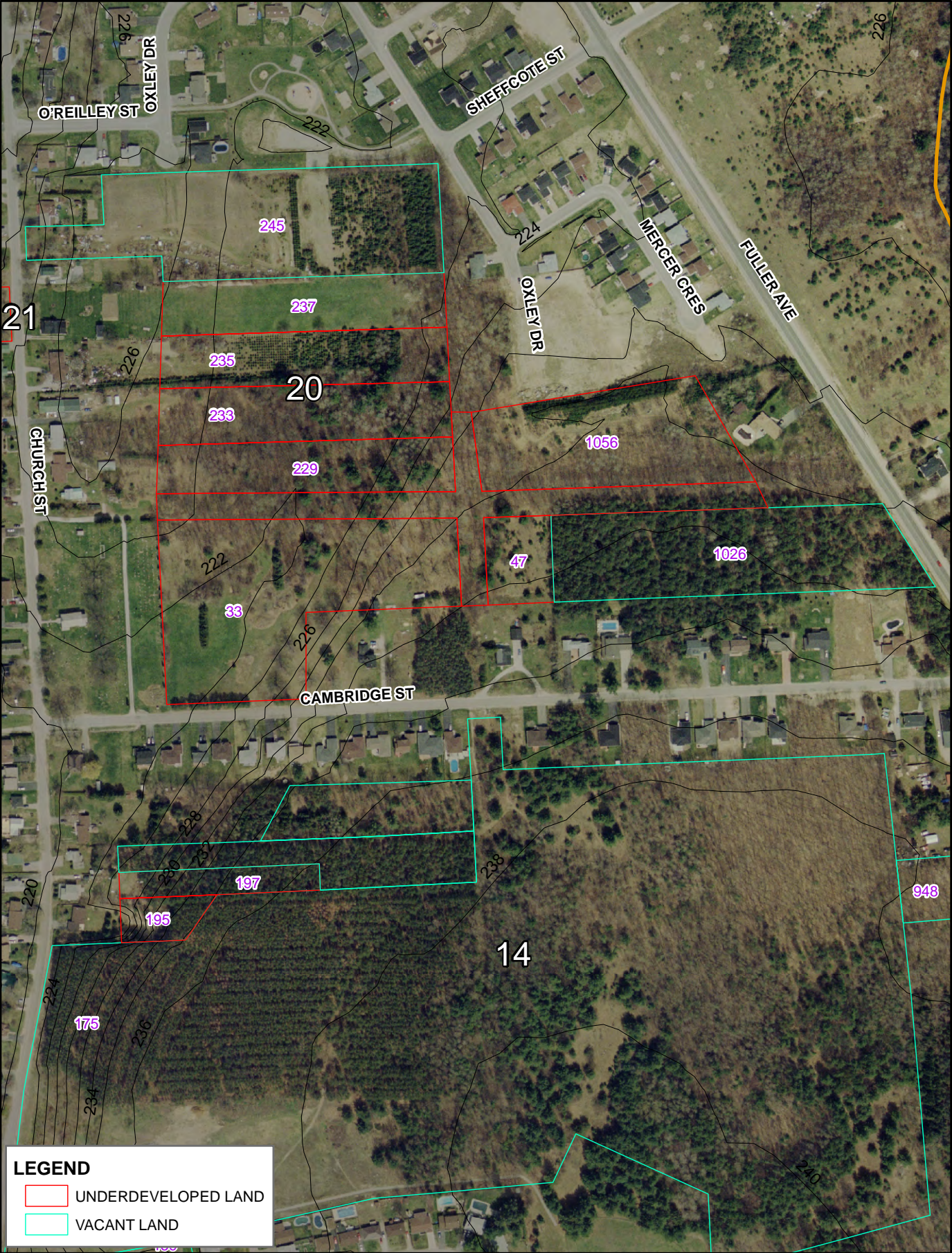




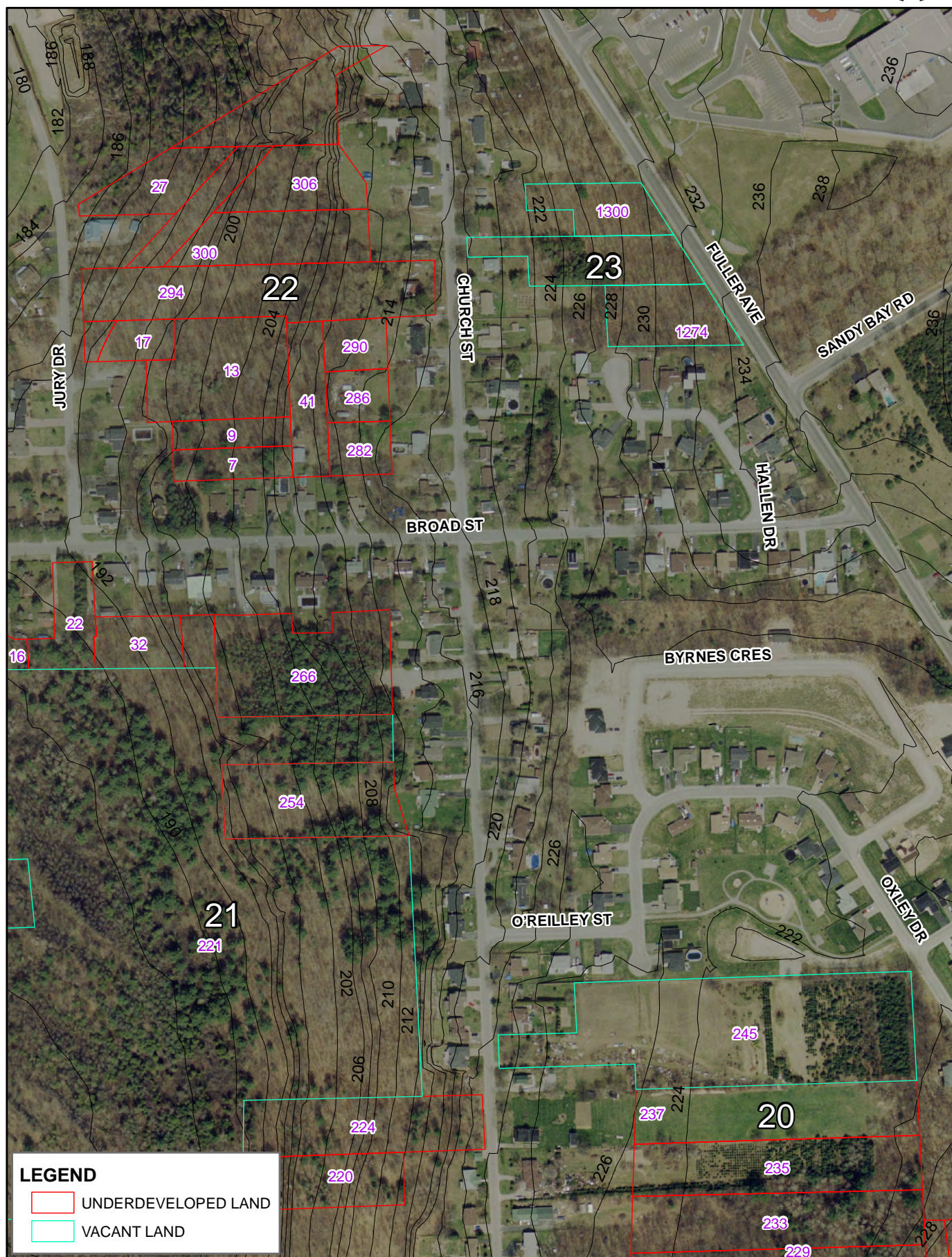
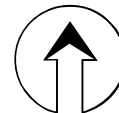


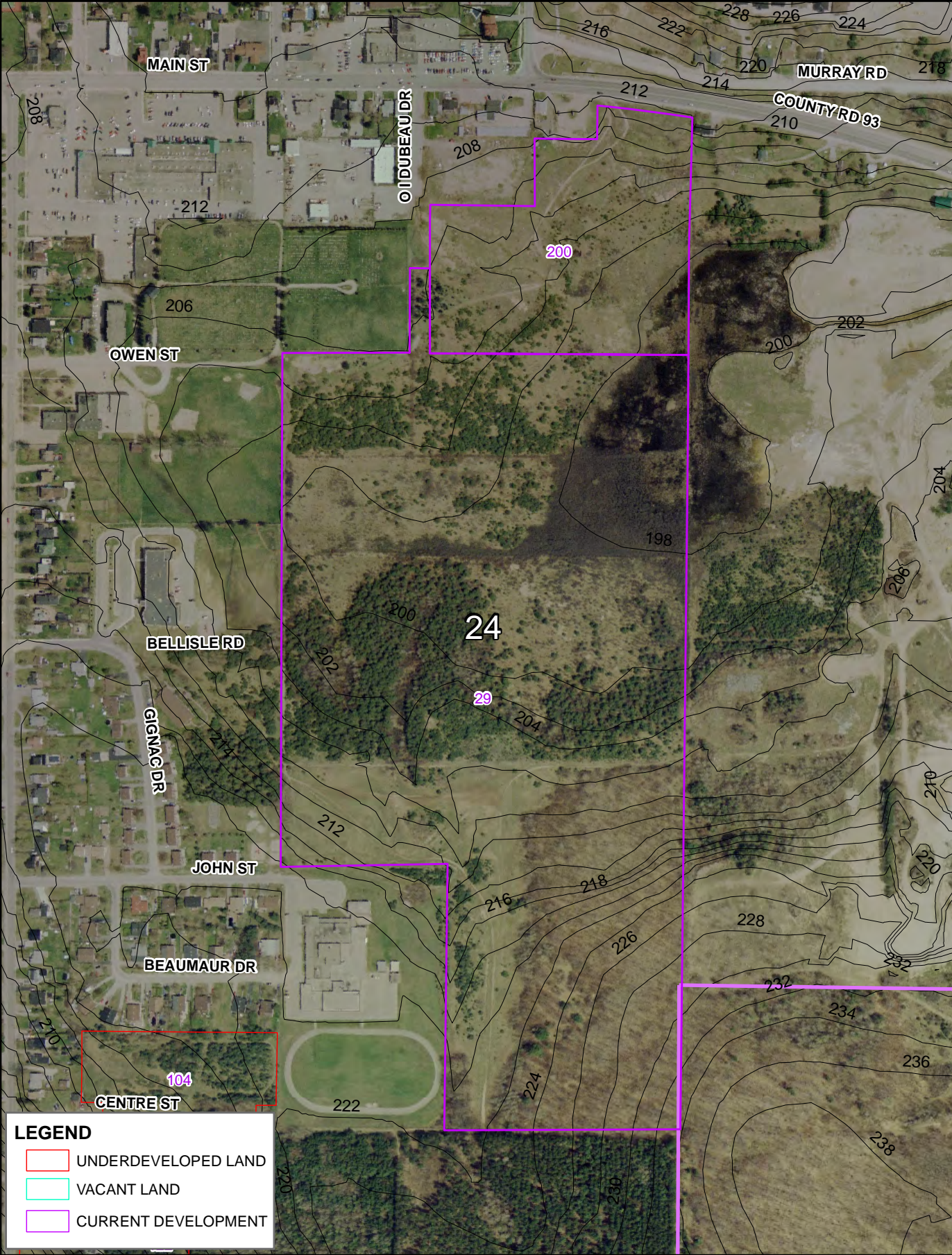














10. REFERENCES

Publications:

A Method of Analyzing Historical Wetland Habitat Conditions; 2004; Severn Sound Environmental Association.

Ecological Land Classification for Southern Ontario: First Approximation and Its Application; September 1988; Ontario Ministry of Natural resources.

Habitat Restoration Strategy for Severn Sound: Automated Arcview 3.1 Habitat Analysis Method; 1999; Severn Sound Environmental Association.

How Much Habitat is Enough? A Framework for Guiding Habitat Rehabilitation in Great Lakes Areas of Concern; 2nd Edition; 2004; Environment Canada.

Natural Heritage and Hazard Land Study: Town of Penetanguishene; 2001; Gartner Lee Limited.

Natural Heritage System for the Lake Simcoe Watershed – Phase 1: Components and Policy Templates; July 2007; Lake Simcoe Region Conservation Authority.

North Simcoe Groundwater Study WHPA – Town of Penetanguishene, Appendix G; May 2005; Golder Associates Ltd.

North Simcoe Municipal Groundwater Study, Main Report; May 2005; Golder Associates Ltd.

The Natural Heritage of Southern Ontario's Settled Landscapes: A Review of Conservation and Restoration Ecology for Land-use and Landscape Planning; 1994; Ontario Ministry of Natural Resources.

Town of Penetanguishene – Background report. Section 2: Natural Features (pp. 40, 41).

Abstracts, Excerpts, Websites:

Identifying Significant Woodlands – Part of the process of bringing Halton's Greenlands system into conformity with the Provincial Policy Statement; Leading Edge '99 conference notes; Lori Riviere and Suzanne McInnes.

Map 4: Major Residentially-Designated Vacant and Underdeveloped Lands; County of Simcoe October 30, 2007; Town of Penetanguishene Growth Management Study.

Map 5: Potential Development and Intensification Areas; County of Simcoe November 6, 2007; Town of Penetanguishene Growth Management Study.

Natural Heritage Reference Manual: Significant Woodlands; 1999; Ontario Ministry of Natural Resources.

Oro Moraine Forest Study; Hawke 2002, Couchiching Conservancy.

Parks and Recreation, City of Brampton: Trees and Woodlots; internet download (June 5, 2008); www.brampton.ca/parks-rec/trees.tml.

Proposed Definition and Criteria for Identifying Significant Woodlands; draft 2008; County of Simcoe.

Significant Wildlife Habitat Technical Guide; 2000; Ontario Ministry of Natural Resources.

Suggested Conservation Guidelines for the Identification of Significant Woodlands in Southern Ontario; August 2004; Ontario Nature – Federation of Ontario Naturalists.

What is the Urban Forest?; internet download from Federation of Ontario naturalists; www.ontarionature.org.

Woodland Evaluation Criteria: Woodlands at Risk; undated; Federation of Ontario Naturalists.

Woodland Valuation System. Version 2.0; Eastern Ontario Natural Heritage Working Group; <http://woodlandvaluation.eomf.on.ca>