Bolton Resource Management Tract Management Plan

Background Report

DRAFT

May, 2013

Prepared by:
Bolton Resource Management Tract Public Advisory Committee
Bolton Resource Management Tract Technical Staff Committee
Conservation Lands Group, Toronto and Region Conservation

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EXECUTIVE SUMMARY

Toronto and Region Conservation (TRCA) initiated the preparation of a management plan for the Bolton Resource Management Tract (BRMT) in 2007. As a part of the development of the management plan, TRCA has prepared a background report that provides a description and evaluation of the property based on relevant plans and policies, existing resource inventories and environmental conditions, site limitations and opportunities.

At Authority Meeting #2/07, held on March 30, 2007, the initiation of the BRMT Management Plan was endorsed. Resolution #A47/07 was adopted as follows:

"THAT WHEREAS staff are developing a Bolton Resource Management Tract Management Plan;

THEREFORE LET IT BE RESOLVED THAT staff be directed to establish an advisory committee, which would include members of the Humber River Watershed Alliance, interested community groups, business representatives, community residents, agency staff, municipal elected officials and staff and to assist with the development of the management plan and to facilitate the opportunity for public input;

AND FURTHER THAT the management plan when complete be submitted to the board for approval."

This background report was reviewed by TRCA staff and the BRMT Management Plan Advisory Committee.

The Bolton Resource Management Tract M*anagement Plan Background Report* contains nine (9) chapters, divided among four parts. Each section and chapter is briefly described below.

The first part consists of Chapters 1 and 2. This section provides an introduction to the project and the site.

> **Chapter 1**, "Introduction," provides the reader with an introduction to, and the purpose of, the background report. It also describes the process that TRCA is following in order to complete a management plan for BRMT. This chapter includes a brief site description of BRMT; and
>
> **Chapter 2**, "Land Acquisition and Current Land Uses," describes BRMT in more detail, including land acquisitions, sales, and current ownership and land uses. This chapter also briefly looks at proposed surrounding land uses and their possible effects on BRMT.

The second part of the report consists of Chapters 3 to 5. These chapters summarize the programs, policies and plans which have affected or potentially will affect the management of BRMT. These documents should be considered when making future management recommendations and creating the associated plans.

Chapter 3, “TRCA Planning Studies, Strategies and Policies,” summarizes the plans, strategies, guidelines, programs and visions in place at TRCA that will guide the development of a management plan for BRMT, including Pathways To A Healthy Humber, the Terrestrial Natural Heritage Program and *The Living City* strategic plan;

Chapter 4, “Bolton Resource Management Tract Planning Studies, Projects and Policies,” reviews some of the proposals and plans that have been developed specifically for BRMT by TRCA, including the Canadian Heritage Rivers System designation and the Forest Management Plan for 1984 - 2003. This chapter also includes a summary of projects undertaken at BRMT by TRCA and its partners; and

Chapter 5, “Land Use Policies and Plans,” summarizes the significance of the Official Plans and other related policies and plans of the Regional Municipality of Peel and the Town of Caledon in relation to the BRMT and the development of the management plan. Provincial policies and acts that concern BRMT are also encapsulated. The chapter also reviews developments in the area surrounding BRMT that have required an environmental assessment.

The third part of the report, consisting of Chapters 6 to 8, provides an inventory of resources located within BRMT. These chapters describe the natural and cultural heritage resources, and the outdoor recreation and economic resources within BRMT.

Chapter 6, “Natural Heritage Resources,” includes an inventory of the terrestrial natural heritage and aquatic resources of BRMT. The tract has numerous regionally and provincially significant landscape features, including a Provincially Significant Wetland Complex (PSW), Environmentally Significant Areas (ESAs) and Areas of Natural and Scientific Interest (ANSIs). In addition, BRMT contains regionally rare fauna and flora species;

Chapter 7, “Cultural Heritage Resources,” summarizes the stories of both the Aboriginal and post-European settlements that inhabited the area. The Aboriginal section derives from the archaeological inventory of the area, while the other section derives from an investigation into the historical data and accounts available. Finally, the chapter sums up heritage resources within and around BRMT; and

Chapter 8, “Recreation, Conservation, Education and Tourism,” details recreation, conservation, education and tourism resources and opportunities within and around BRMT. This chapter provides an overview of greenspace, trails and regional recreational facilities within the Town of Caledon.

Chapter 9: “Next Steps”, comprises the final part of this report. This chapter discusses the steps that will be taken to continue the development of a management plan for BRMT.

This report represents a consolidation of the current knowledge of BRMT. It will act as a reference document for making management recommendations for the management plan. TRCA and the Advisory Committee can refer to the contents of this report when making recommendations and decisions regarding BRMT.

CHAPTER 1: INTRODUCTION

1.1 Purpose

At Authority Meeting #2/07, held on March 30, 2007, the initiation of the BRMT Management Plan was endorsed. Resolution #A47/07 was adopted as follows:

"THAT WHEREAS staff are developing a Bolton Resource Management Tract Management Plan;

THEREFORE LET IT BE RESOLVED THAT staff be directed to establish an advisory committee, which would include members of the Humber Watershed Alliance, interested community groups, business representatives, community residents, agency staff, municipal elected officials and staff to assist with the development of the management plan and to facilitate the opportunity for public input;

AND FURTHER THAT the management plan when complete be submitted to the board for approval."

This background report contains existing information that will be used to inform the BRMT Management Plan Advisory Committee about the property and TRCA. It will also help the advisory committee to make well-informed decisions when determining management zones, making recommendations and developing any associated plans.

This is an appropriate time to complete a management plan for the BRMT, as there is no current management plan for the property. Prior to the 1984 forest management plan there were no formal plans designed specifically for BRMT. Forest management activities were carried out as a part of the general TRCA programs that included reforestation, stream improvement, fish and wildlife habitat enhancement, stand improvement, and cutting operations. Subsequently, only the forest management plan has been developed to formally guide TRCA activities at BRMT. In addition to a lack of management documents, with the projected population growth in the Town of Caledon and the Region of Peel, the BRMT will likely become an even more popular environmental and outdoor recreation centre. As such, it requires a plan that can address future public use demands and enhanced environmental protection. Furthermore, it is necessary to prepare a comprehensive and integrated management plan for the property that can respond to the changes in the availability of public funds and evolving concepts in conservation and sustainability. The plan must also match TRCA goal's for *The Living City* – a vision of healthy communities based on a healthy ecosystem.

The development and implementation of a management plan for the BRMT will also help to achieve environmental targets that were established in the *Humber River Watershed Plan – Pathways to a Healthy Humber* (2008), the management strategy for the Humber River watershed that replaces *Legacy: A Strategy for a Healthy Humber*. The management plan will address topics such as:

- improving biodiversity;
- restoring a healthy fish community;

- improving water quality in the creeks;
- developing a watersheds-wide connected trail system;
- increasing awareness about environmental issues in the watersheds; and
- involving stakeholders in environmental initiatives.

At the same time, the management plan will consider the provision of high-quality recreational opportunities that will benefit the property and the entire Humber River watershed.

1.2 The Management Planning Process

The objective of the BRMT management planning process will be to examine the BRMT property and determine its environmental attributes, and its potential for outdoor recreation or other uses. This review will be used to establish a management plan for the development and management of the BRMT.

The BRMT Management Plan is being undertaken in three phases, which include the following steps:

Phase One

1. Establish and circulate a study newsletter.
2. Establish the Advisory Committee and host at least one meeting.
3. Host at least one public information session.
4. Host a site vision workshop with Advisory Committee.

Phase Two

1. Develop site vision.
2. Determine draft management zones.
3. Integrate watershed management recommendations.
4. Host at least one advisory committee meeting.
5. Circulate a study newsletter update.
6. Host one public meeting to review draft material.

Phase Three

1. Develop draft trail plan and draft management recommendations for the property
2. Host one advisory committee meeting to review draft trail plan and management recommendations.
3. Complete draft background report and management plan
4. Host one advisory committee meeting to review draft management plan
5. Finalize management plan
6. Host one public meeting to review final draft plan.
7. Obtain partners and TRCA Board endorsement of plan.
8. Circulate a study newsletter update.

This report has been prepared by TRCA staff to facilitate the production of the BRMT Management Plan. The production of this report completes a major component of Phase Three of the management planning process. This report describes current and historical uses of the lands within the BRMT as well as planning and policy initiatives that have affected or potentially

could affect the management of this land. The report also provides an inventory of the natural heritage, cultural heritage, education and recreational resources within the BRMT. This information will be used by a multi-stakeholder advisory committee in final stages of Phase Three of the planning process.

Phase One includes the formation of an advisory committee comprised of representatives from the Town of Caledon, the Region of Peel, members of the local community, community groups and TRCA staff. The committee was provided a Draft Terms of Reference for their comments, which was prepared by TRCA staff. The Terms of Reference will guide Committee actions toward the development of the management plan. The Committee will also provide a forum to facilitate public input and consultation.

TRCA staff will prepare the Management Plan, with input and guidance from the Advisory Committee and the public.

1.3 Report Format

This report and its accompanying planning process follow an ecosystem approach. The ecosystem is broadly defined as including ecological, social and economic components, and their respective interactions. Achieving ecosystem health is a function of integrating the ecological, social and economic needs of a particular area. Accordingly, these needs are assessed and incorporated into the background report and subsequent management plan.

The background report describes the BRMT, and is principally based on a literature and data review. This report also summarizes and includes studies, plans and policies of the TRCA, the Region of Peel, and the Town of Caledon and other relevant plans and policies, that may affect the future management of these lands.

Information regarding the BRMT is presented in four parts. The first part consists of Chapters 1 and 2. Chapter 1 is the introduction and the purpose of the report. Chapter 2 describes the BRMT in detail, including land acquisitions, sales, and current ownership and land uses.

The second part of the report consists of Chapters 3 to 5. These chapters summarize the programs, policies and plans that have affected or potentially will affect the management of the BRMT. These documents should be considered when making future management recommendations and any associated plans.

The third part of the report, consisting of Chapters 6 to 8, provides an inventory of resources located within the BRMT. These chapters provide an inventory of natural and cultural heritage resources, and the outdoor recreation and economic resources within the BRMT.

Chapter 9 comprises the final part of this report. This chapter discusses the steps that will be taken to continue the development of a management plan for the BRMT.

CHAPTER 2: LAND ACQUISITION AND CURRENT LAND USES

Chapter 2 provides a preliminary description of the Bolton Region Management Tract and summarizes major land acquisitions, sales and surrounding land uses as they relate to the BRMT.

2.1 Site Description

The plan study area includes TRCA lands located along the Humber River valley in the Town of Caledon, Regional Municipality of Peel. A large portion of the BRMT is located along the main branch of the Humber River, north–west of downtown Bolton in the Town of Caledon (Map 2.1). These lands are largely found south of Old Church Road, north of King Street and Old King Road, west of Regional Road 50 and east of The Gore Road.
Two additional parcels of land have been added to the BRMT since 2009: the former Campbell Property and the Bolton Camp lands. These parcels are located along the Caledon-King Townline, north of King Street and lie within the Cold Creek subwatershed of the Humber River. In total, BRMT Management Plan area is approximately 973 hectares (ha) in size.

Currently, the BRMT can only be accessed via the Humber Valley Heritage Trail, with trail entry points off of Regional Road 50, Duffy's Lane, Castlederg Sideroad, Glasgow Road, Humber Station Road and other points throughout downtown Bolton.

The Humber River Watershed is the largest in the Toronto Region Conservation (TRCA) jurisdiction. It spans 903 square kilometres from the headwaters on the Niagara Escarpment and the Oak Ridges Moraine to the river mouth on Lake Ontario over a distance of 126 kilometres. It includes portions of 10 local municipalities: the City of Vaughan, the Town of Richmond Hill, the Township of King, and the Town of Aurora in the Regional Municipality of York; the City of Brampton and the City of Mississauga and the Town of Caledon in the Regional Municipality of Peel; the City of Toronto; the Town of Mono in Dufferin County; and the Township of Adjala-Tosorontio in Simcoe. Up to 35 per cent of the watershed lies within the Town of Caledon, and the Bolton RMT accounts for 14.5 per cent of TRCA's landholdings in the watershed.

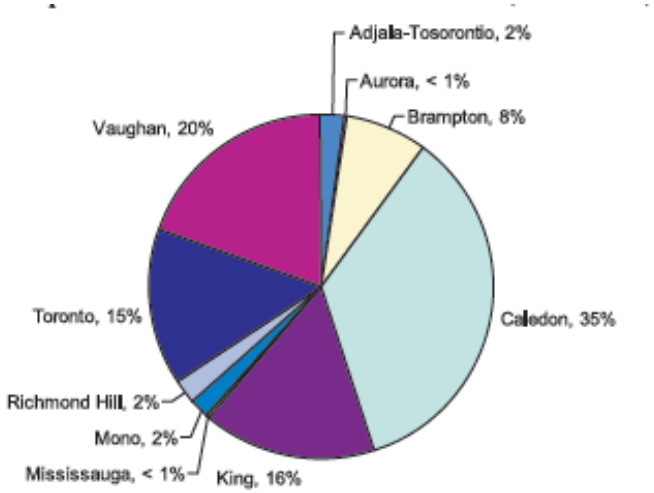


Figure #1: Municipal Share of the Humber River watershed (% Total)

The BRMT Management Plan area lies entirely within the Great Lakes-St. Lawrence floristic region, composed of mixed coniferous-

deciduous forest. The northwest half of the tract lies on the Oak Ridges Moraine, with the remainder extending down onto the South Slope physiographic region. The moraine boundary is south of Castlederg Sideroad and extends southwest, lying a short distance west of Duffy's Lane. Gentle slopes lead into a major valley created by the Humber River. The topography ranges from flat tableland east of the Humber River; to steep valley slopes along the river, and low, wet flood plains to the west. Elevation peaks at 259 metres above sea level at the top of the Humber River valley.

The topography and hydrogeology is divided distinctly by the Oak Ridges Moraine boundary. On the moraine, the terrain is rolling with a fairly loosely-defined river valley. At the upstream end of BRMT, the moraine's sandy loam soils are evident, while as one approaches the boundary of the moraine, there is more of a till overlay. Wetlands are abundant, with numerous kettles in the till portion and seepage headwater swamps along the valleys.

The South Slope climate region is characterized by a milder climate than those to the north and without the moderating influence of Lake Ontario of those to the south, with respect to other areas within the humid continental types. The humid continental climates have moderate winters and adequate rainfall for most agriculture crops. The South Slope portion of BRMT, as one moves downstream toward Bolton, has clay loam soils on till with a deeply incised river valley and fewer wetlands. As the Humber River exits the Oak Ridges Moraine, the valley includes some remarkably large and well-developed incised meanders, notably around Duffy's Lane.

Average climatic data for the Bolton area is listed in Table 2.1. Data is based on 30 year averages from 1981-2011.

Table 2.1: Average Climatic Data for Caledon East

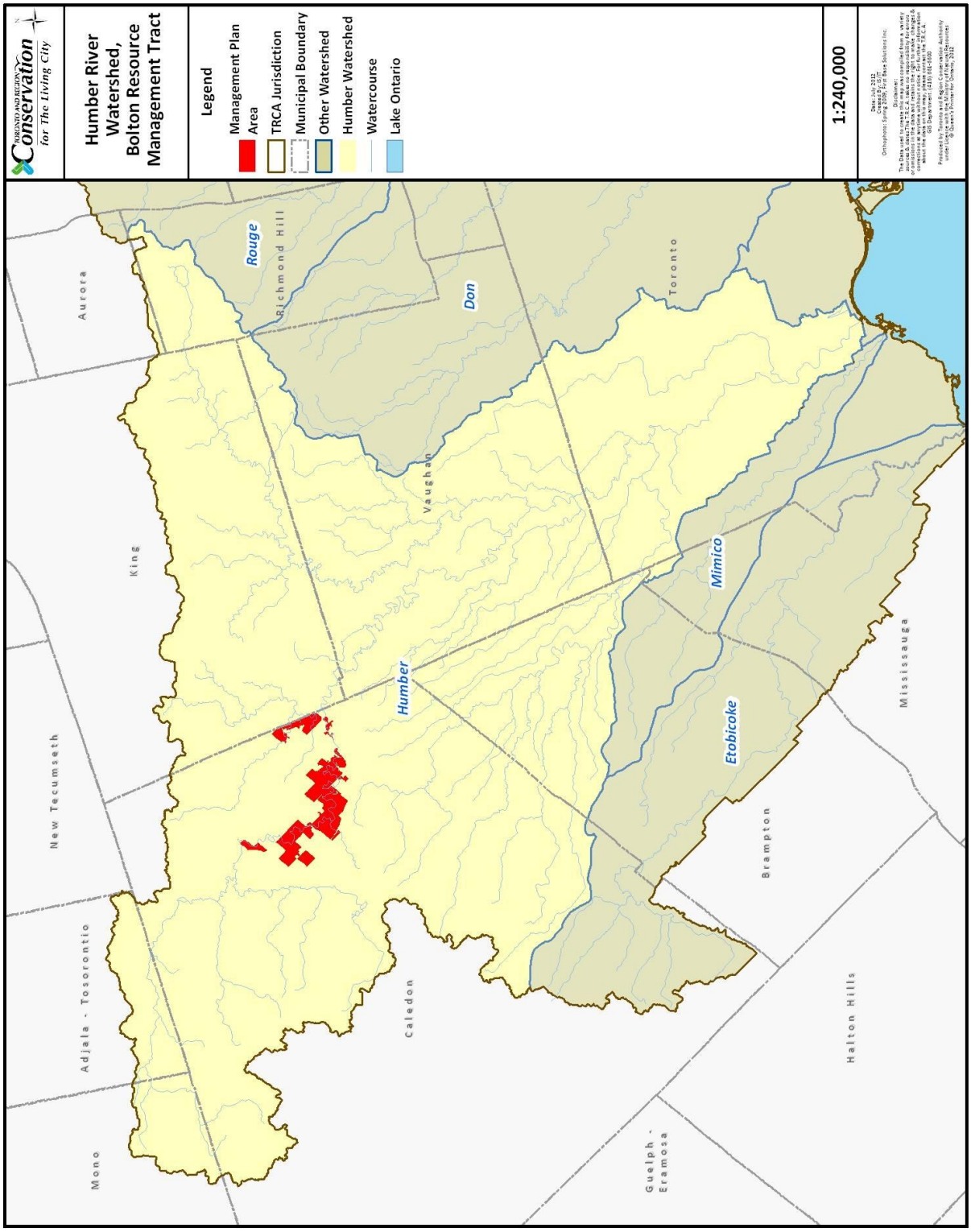
Mean Annual Temperature (°Celsius)	5.9
Rainfall (mm)	731
Snowfall (cm)	160
Total Precipitation (mm)	891
Days above 0°C (days)	245

[1] Average annual values in Caledon, Ontario, based on 30 years average (Caledon East Climate Normals 1981-2000). The Weather Network, 2011.

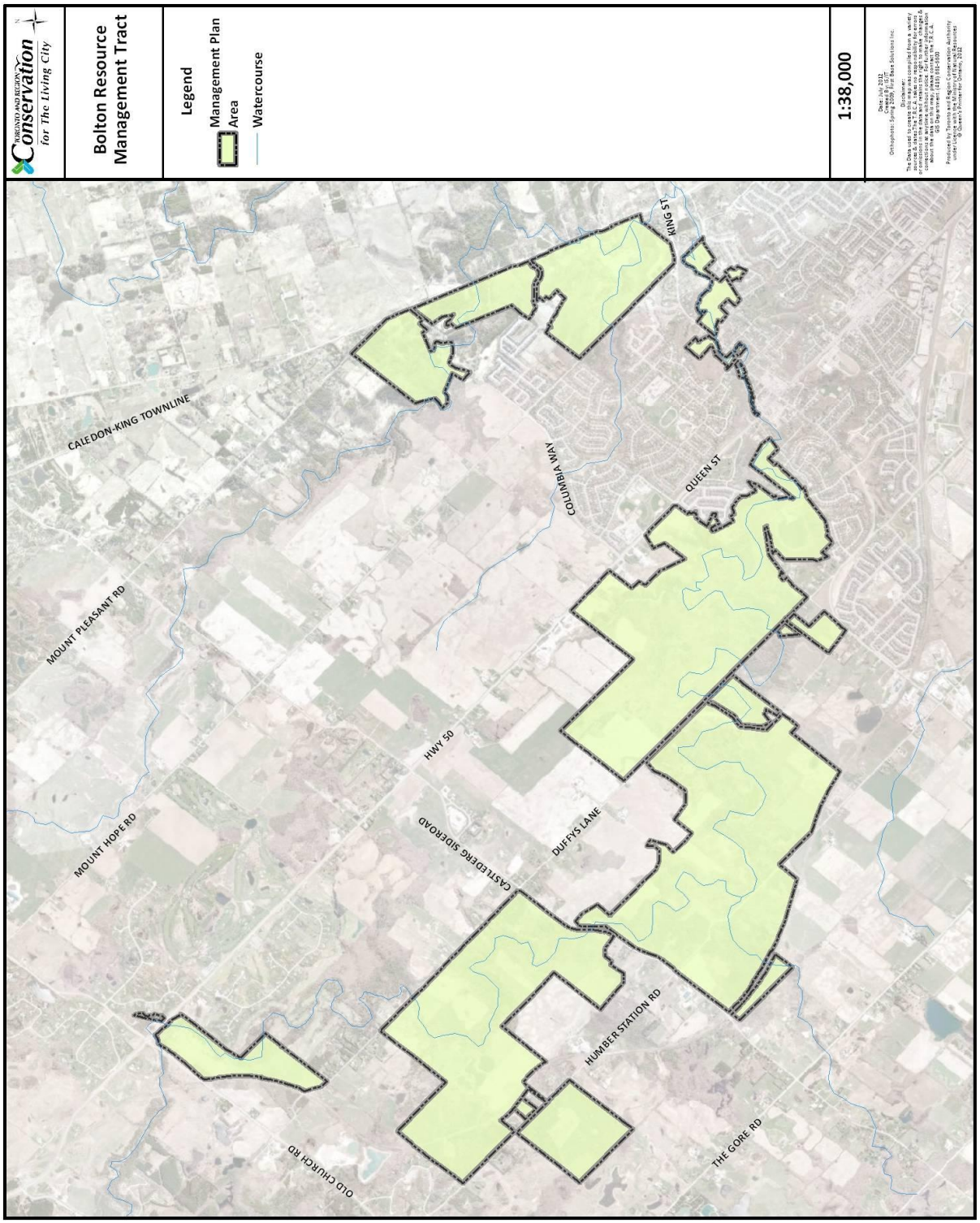
The property's diverse ecosystem includes:

- numerous kettle lakes;
- surficial geology composed of glacial till and river deposits.
- 774 hectares of vegetated natural cover, including;
    - 372 hectare of forest including 221 hectares of successional forest;
    - 93 hectares of wetland;
    - 0.2 hectares of vegetative aquatic habitat;
    - 6.8 hectares of bluff and barren lands; and
    - 80.8 hectares of meadow.

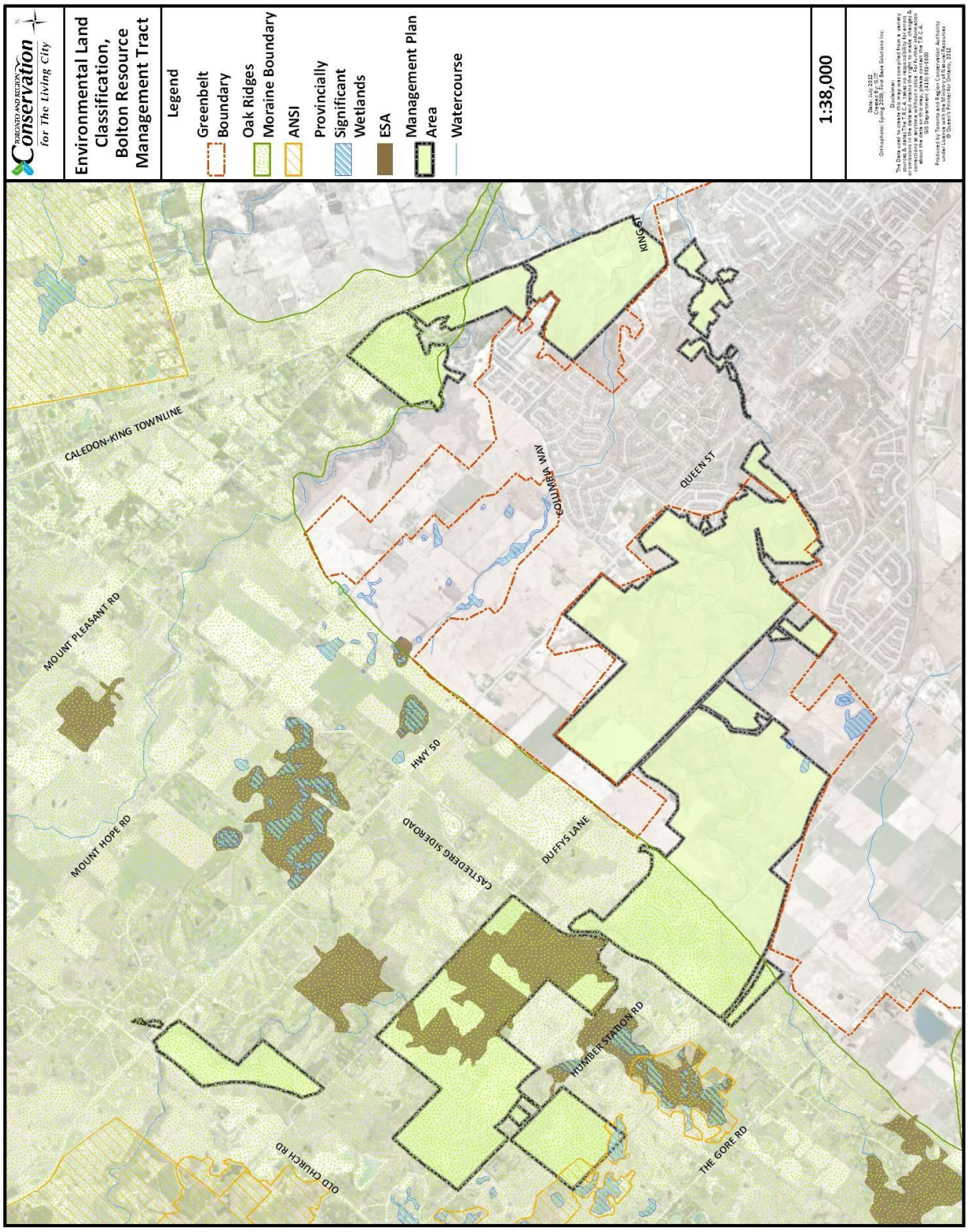
Map 2.1: Humber River Watershed



Map 2.2: Bolton Resource Management Tract



Map 2.3: Environmental Classifications for BRMT



This combination of unique habitats has qualified sections of BRMT to be identified as significant by the Ontario Ministry of Natural Resources (MNR). The tract includes two Environmentally Significant Areas (ESAs), one Provincially Significant Wetland (PSW) and a candidate for a Life Science Area of Natural and Scientific Interest (PSW) (see Map 2.3). The Duffy's Lane ESA constitutes most of BRMT, while the Vance-Donaldson Area ESA and the Hockley Valley Wetland Complex PSW occupy small portions of the tract. The Innis-Gibson Lakes Kettles area is a candidate for a Life Science ANSI. The wetland areas within BRMT connect to other wetlands outside of the property boundaries. Thus, BRMT has a strong natural connection to many of its neighbouring properties.

This resource management tract is a significant publicly accessible natural greenspace area in the Town of Caledon. It provides the community with attractions such as wildlife viewing, fishing and hiking trails. In addition, portions of the management plan area are subject to a management agreement with the Town of Caledon, which provides soccer, tennis and other recreation amenities and facilities (See *Chapter 8: Recreation, Conservation Education and Tourism* for more information)

2.2 Location of Bolton Resource Management Tract

The BRMT encompasses all or part of Lots 14, 15, and 18, Concession IV; Lots 10, and 12 to 19, Concession V; Lots 9 to 13, and 20, Concession VI; Lots 7 to 9, and 20, Concession VII; and Lots 7 to 11, Concession VIII in the Town of Caledon. This land is largely found south of Old Church Road, north of King Street and Old King Road, west of Regional Road 50 and east of The Gore Road, though several small sections lie east of Regional Road 50.

Neighbouring properties include residential subdivisions, agricultural lands, a golf course and commercial businesses.

2.3 Land Acquisitions for the Bolton Resource Management Tract

The majority of land comprising BRMT was acquired in over one hundred property purchases from 1961 to 1982. This was a result of TRCA's 1961 Flood Control and Water Conservation scheme which sought to address the need for flood prevention and control following the extensive damage caused by Hurricane Hazel in October of 1954.

Acquisitions have continued up until 2011 to include a former landfill on the west side of Humber Station Road north of Castlederg surrounded by plantation and forest, the Cedar Mains property east of Duffy's Lane and south of Old Church Road and the former Campbell and Bolton Camp properties along the Caledon-King Townline.

Table 2.2: History of Land Acquisition, Bolton Resource Management Tract

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FORMER OWNER	**AREA (acre)**	**DATE**	**COST ($)**
Governing Council of the Salvation Army	0.369	1955.5.5	1,200
Duffy, W.A	100.00	1955.9.22	4,000
La Plante Stock Farms LTD.	198.986	1961.9.22	60,000
Argent, J.S.	99.1	1961.12.5	12,000
Bolton, The Corporation of the Village of	7.806	1962.5.2	2.00
Culham, G.	40.130	1962.5.30	14,050
McKaye, J.A & L.M.	0.685	1962.8.2	17,500
Taylor, N.B.	127.843	1962.8.23	55,000
Osbourne, S.E & P.	1.130	1962.11.23	21,500
Attwell, J.	1.213	1962.8.29	6,500
Childs, H. & E.	0.244	1962.11.12	9,500
Bartley, G. & Dunn, D.	0.754	1962.11.14	4,000
Henson, C. &E.	0.939	1962.11.23	10,800
Godwin, E.T.	55.546	1962.11.30	28,000
Rees, L.L	0.724	1962.12.11	900
Shaw, H.W.	7.403	1963.1.25	30,000
Clarry, D.M.	1.348	1963.2.15	7,500
Todd, M.G.	0.964	1963.2.19	8,250
Pinchin, J.H.	48.351	1963.3.4	11,550
White, J.A.	1.060	1963.3.13	2,750
Gardner (White), L.	1.289	1963.3.13	7,150
Taylor, N.B.	9.805	1963.3.21	9,805
Flear, J.K. & J.L.	0.570	1963.3.21	7, 500
Villeneuve, M.J. & E.	0.874	1963.5.3	9,500
Newlands, P. & D.	0.330	1963.5.24	6,800
Sharpe, J. & B.	5.311	1963.5.28	9,796
Croake, D.B.	0.945	1963.5.30	3,900
Malin, W.F. & N.	0.543	1963.6.28	8,750
Butler, J. & M.	0.505	1963.7.12	6,300
Purkis, E. & J.	2.515	1963.8.6	7,500
French, E.	0.840	1963.8.27	4,800
Erwin, G. & G.	2.021	1963.8.27	7,500
Ward, C. & M.	0.453	1963.9.4	5,800
Gallaugher, H.R.	1.355	1963.10.3	7,800
Bryant, H.R.M. & A	1.348	1963.10.16	1,700
Thompson, G.P.	1.534	1963.10.16	6,200
Roberts, S. & E.M.	0.607	1963.10.18	6,000
Cole, I.	0.650	1963.10.18	6,700
McIlroy, L.& M.	7.070	1963.10.30	37,500
Hall, R. & T.	0.843	1963.10.31	1,200
Hubbard, G. & G.	0.929	1963.11.14	15,200
Campbell, A. & G.	1.342	1963.11.15	13,000
Shock, P. & V.	0.793	1963.11.15	10,500
Grant, I.	11.931	1963.11.28	22,000
Card, E.H.	52.246	1963.12.11	52,000
Christopher Dev. LTD.	47.335	193.12.16	10,000
Hunter, E.M.	0.236	1964.3.10	650

Hummel, R. & I.	0.532	1964.3.24	2,000
Elsley, G.W.& I.	0.605	1964.3.26	6,000
Hickin, M.	4.402	1964.4.28	7,500
Taylor, L.M.	0.882	1964.7.24	9,700
Sweny, I. (Bridewell)	3.230	1964.7.29	4,200
Bryant, H.M.R.	1.923	1964.8.14	17,800
Sharman, G.	0.856	1964.8.14	4,000
Taberner, E.	0.557	1964.10.7	8,800
Adye, R. & A.L.	0.778	1964.10.8	1,250
Lewis, M.	0.227	1964.10.28	2,700
McIlroy, L. & M.	13.640	1964.10.30	0.00
De Repentigay, W.	1.514	1964.11.4	3,200
Henderson, D. & E.	0.511	1964.11.4	5,000
Simms, E.A.	0.344	1964.11.9	3,800
Stanford, Hellwinkell & Janes	92.879	1964.12.4	23,750
Attwell, R.A.	1.732	1965.5.20	7,200
Fullarton, D.B. & E.	1.710	1965.8.4	5,000
Ashbee, W.B. & D.L.	4.379	1965.9.9	7,000
Phillips, M. & Wilson, W.	0.590	1965.9.21	2,000
Hutton, P.J. & L.	2.330	1965.11.24	6,900
O'Connor, O.	1.044	1966.1.10	3,500
Ribot Investments Ltd. (James H. Black)	0.811	1966.3.11	5,000
Beckett, L.G. (D.V.L.A.)	2.982	1966.5.18	25,000
Shypit, W. & C.Y.	0.641	1966.11.9	5,650
Ireland, B. & C.G.	0.997	1967.1.12	4,000
Wood, L.W. et al.	0.838	1967.5.25	8,000
Legard, M.G.	1.317	1967.6.28	5,500
Johnston, M.H.	2.491	1968.2.2	25,200
Sutton, A.E. & E.M. & Wood, A.E. & E.V.	8.324	1968.2.9	21,644
Humber Glen Campsite of The United Church of Canada	7.908	1968.6.17	23,500
Diversified Financial Corp. LTD.	0.235	1968.9.26	3,725
Speiers, Euphemia (Estate)	41.727	1968.10.16	15,036.20
Conlan, C.	0.478	1968.1.20	7,500
Stewart, Samuel D.R. (Estate)	69.874	1969.2.7	58,000
Lavallee, W.D. & Agate, L.E.	0.920	1969.11.4	11,500
Kuniski, P. & S.	48.365	1969.11.20	87,500
Lewis, T. & C.	1.096	1970.1.15	9,000
Shipman, H.D.	1.041	1970.1.30	10,000
Ellis, G.W.	1.178	1970.2.24	15,000
Grogan, M. & E.	69.623	1970.2.27	55,696
Wakely, D. & W.	53.758	1970.4.24	86,013
Boudrea, A.A.	0.679	1970.7.30	9,995
Bremner, Nora L.	0.566	1970.7.30	7,500
Drury, G. & E.	0.500	1970.7.30	7,900
Ramsden, F.J.	1.853	1970.10.9	20,500
Long, N.W. & R.	102.487	1970.10.21	195,288
Kobert, T.W. & D.S.	100.132	1970.11.6	175,000
Monte Carlo Investments LTD	0.554	1970.12.24	8,000
Goldstone, J.S. & R.	1.000	1971.6.22	10,000
Mackenzie, D.J. & M.L.	3.008	1970.12.1	8,000
Department of Transportation and	1.673	1972.4.24	500

Communications			
Bossert, R. & K. (Van Herpen)	0.651	1972.6.27	11,750
Medideth, Helen M. Estate	7.069	1972.8.3	45,000
Thacher, J. & M.	2.920	1972.9.1	21,400
Beauchamp, E.M. & Burnfield, E.M.	0.770	1972.9.8	15,000
Waites, J.A. & D.	2.590	1972.9.29	32,500
Smith, F.H.C. & Y.M.	0.184	1972.10.20	21,500
Cannon, W.C. & M.F.	119.035	1972.10.20	237,500
Ashby, Nellie E. (Estate)	1.908	1972.11.30	19,500
Phillips, William (Estate)	0.906	1973.1.4	13,000
Trans Canada Holdings	12.766	1973.12.10	2.00
McPhee, C.D.D. & R.	1.298	1973.12.12	38,000
Stewart, R.J. & B.J.	4.296	1974.1.23	7,800
R.M. Kitchen Ltd.	0.260	1974.6.14	13,500
Detweiler, E.V.	12.046	1974.6.14	145,000
Ontario Heritage Foundation	20.000	1976.4.8	1.00
Adams, et.al.	7.450	1976.7.27	132,750
Ontario Heritage Foundation	27.000	1977.2.28	1.00
Hobbs, W. & E.	1.430	1977.8.3	80,000
Grogan, M.N.	9.060	1977.8.5	135,000
Tulloch, R.L.	19.799	1977.8.5	48,225
Mackenzie, D.J. & M.L.	4.610	1977.12.21	122,000
Dobson, A. (Estate of)	100.800	1978.9.29	365,500
Zoltay, N. & M.	1.00	1980.1.30	38,000
Sorrento Developments Limited et. al.	2.839	1982.10.1	9,000
Greymac Mortgage Corporation	24.430	1982.10.14	120,000
Replete Investments Limited	0.600	1983.2.25	27,500
Replete Investments Limited	0.103	1983.2.25	0.00
Peel, The Regional Municipality of	0.150	1983.4.13	2.00
Peel, The Regional Municipality of	0.020	1983.7.20	2.00
Caledon, The Corporation of the Town of	0.988	1983.9.19	2.00
Caledon, The Corporation of the Town of	3.170	1983.10.25	2.00
Blair, Sidney M. (Estate of)	40.580	1984.6.11	210,000
Bifolchi, Maria, Renata & Gino Known Construction Co.	19.170	1986.6.24	180,000
Underhill, David and Elizabeth	5.390	1986.9.16	29,500
Caledon, The Corporation of the Town of	3.827	1987.9.25	2.00
Pacific Painters Limited	2.500	1987.12.11	2.00
Schlechter, Lothar & Jane	0.780	1990.4.27	335,000
Harbour View Investments Limited	2.847	1991.10.30	2.00
Bonner, Dorothy & William	7.172	1993.10.1	299,000
Peel, The Regional Municipality of	3.242	1994.10.21	2.00
Allan, Hillard Mackenzie and Mary Luella	1.890	1998.3.6	289,500
The Corporation of the Town of Caledon	5.800	1999.9.1	2.00
Realzon Incorporated	20.433	2000.2.3	2.00
Paniccia, Linda	1.420	2007.9.18	2.00
Campbell, Kathleen Joan, Estate of	92.000	2007.12.21	900,000
Hi-Lands of Bolton	253.473	2011.7.14	1,400,000
TOTAL	**2361.108**		**6,981,953**

In addition to acquisitions, TRCA has disposed of some parcels of land in the BRMT (Table 2.3).

Table 2.3: History of Land Disposal, Bolton Resource Management Tract

Table 2.3: History of Land Disposal, Bolton Resource Management Tract		
PURCHASER	**AREA (ha)**	**DATE**
Department of Highways	0.032	1964.5.10
Department of Highways Ontario	0.344	1967.10.24
Pomerleau, Linda	27.153	1987.11.6
The Regional Municipality of Peel	0.042	1984.7.16
The Corporation of the Town of Caledon	5.042	1987.11.19
The Corporation of the Town of Caledon	0.176	1988.2.9
McFall, Andrew David	0.049	1983.9.23
The Regional Municipality of Peel	0.057	1989.9.25
The Regional Municipality of Peel	0.390	1992.5.14
The Regional Municipality of Peel	0.054	1999.4.13
TOTAL	**33.339**	

2.4 Current Land Use

2.4.1 Land Rentals and Management Agreements

A large portion of BRMT has been leased for a variety of agriculture uses. Since the lands were acquired, agriculture was designated as an interim use of the land, with the potential to change if a more appropriate use is found. Previously, cattle had a significant impact on the area, primarily in the southern sections. Poor fencing resulted in the destruction of regeneration and herbaceous species through browsing, damage to the root systems and soil structure by compaction through trampling. (MTRCA, 1984). Now however, all agricultural leased areas are farmed with Best Management Practices and have had an Environmental Farm Plan prepared with the assistance of TRCA.

The Town of Caledon has a management agreement with TRCA on 74 hectares of land in the southern extent of BRMT for the provision of park space. This area includes Edelweiss Park and Dicks Dam Park, which currently provide soccer, tennis and beach volleyball facilities for Caledon residents. Additional information about Caledon's park system is found in *Section 8.1.2. Municipal Parks and Open Space.*

The Humber Valley Heritage Trail Association (HVHTA) has an annual trail agreement with TRCA allowing for the provision of a nature trail that roughly follows the main Humber River in the BRMT. The HVHTA operates this trail as a hiking-only route. As a part of this agreement, the HVHTA is responsible for all construction and maintenance of the trail and its structures in a condition that is clean and safe for pedestrian travel by the public. See *Section 8.4.1 Existing Trails in BRMT* for more information about the Humber Valley Heritage Trail.

As part of the planning process and through various land acquisitions, TRCA has come to own a number of residences within BRMT. TRCA currently maintains three residential leases on a total of 1.2 ha of land.

TRCA is also formalizing a 'Stewardship Agreement' with the Ontario Heritage Trust for the protection, maintenance, restoration and enhancement of 16 hectares of land referred to as the 'Cedar Mains' property (aka Blair Property).

2.4.2 Infrastructure and Services

The majority of BRMT is free of infrastructure or services. A few areas under management agreement with the Town of Caledon have some services for recreational uses including Edelweiss Park and Dicks Dam Park (See Section 8.1.2 for more information on the recreational infrastructure provided at these locations).

The former Albion Landfill, on Humber Station Road, was acquired by TRCA in 1961 and contained an abandoned aggregate extraction pit. Approximately four hectares of the site was used as a municipal landfill from 1965 to 1993. Since the mid-1980's the Region of Peel has been responsible for groundwater monitoring around the site, reporting to the Ministry of the Environment every two years.

TRCA also acquired the Bolton Camp property in 2011, which has 61 buildings remaining from its time as an active-use youth camp. These range in size from small pump-houses and two room sleeping cabins, to the dining hall and gymnasium which are hundreds of square metres. The property has an extensive patchwork of water, sewage and electrical services, all of which are in a poor state of repair. There are also several kilometres of internal gravel road, and over 8 kilometres of informal, natural-surface trails across the property. The BRMT Management Plan will address many of the land management issues that arise at Bolton Camp, while a separate planning process will seek to re-establish a camp operation on the property.

2.4.3 Flood Control

Following hurricane Hazel's wake in 1954, the newly amalgamated MTRCA embarked on an era defined by land acquisition and expropriation for the purpose of flood control and hazard mitigation. The majority of the BRMT lands were acquired during this time, and however unlikely, flood control remains a potential use for BRMT.

A series of dams were scheduled to be built at certain locations of the Humber River to impound water at times of peak flow, control erosion, regulate summer flow as a pollution abatement measure and allow the reservoirs to be employed as artificial recreational lakes. The Bolton dam, to be situated 3.2 km northwest of the village of Bolton, was to serve the primary purpose

of retarding spring and autumn flood waters and regulating summer flows. All trees below 238 metres (ASL) in elevation were removed in designated forest stands because of the anticipated water level created by the dam. After further review of TRCA's flood control program, it was determined that the Bolton dam and reservoir would not be built. The land acquired for planned reservoirs was retained by TRCA in the event that they may be required sometime in the future. The section of the Humber River that flows through Bolton is considered a flood damage centre requiring some protection works in the form of channel, dyke and bridge improvement. These measures involve less capital outlay than the construction of a dam and reservoir and protect the site to the minimum acceptable level (MTRCA 1984).

2.4.4 Operations

The BRMT is a passive-use property, meaning there are no staff on-site on a regular basis. However, staff from Conservation Parks, Conservation Lands and Enforcement responds to land management and security issues across the property.
The annual trail agreement between TRCA and the Humber Valley Heritage Trail Association (HVHTA) assigns responsibility to HVHTA for the construction and maintenance of the trail and its structures.

2.4.5 Recreation

The BRMT hosts a number of land uses, including recreation, nature appreciation, agriculture and forest management. Each of these land uses affects the character and appearance of the property and must be considered carefully to ensure the long-term sustainability of the tract's natural resources and cultural features.

Today, the BRMT offers a number of attractions, including fishing, canoeing, hiking, bird watching and wildlife viewing.

The Humber River is well-known for its fishing opportunities. Of the most common species found in a 2001 sample were Brown trout, Creek Chub, blacknose dace, Fantail darter, white sucker, common shiner and Johnny darter.

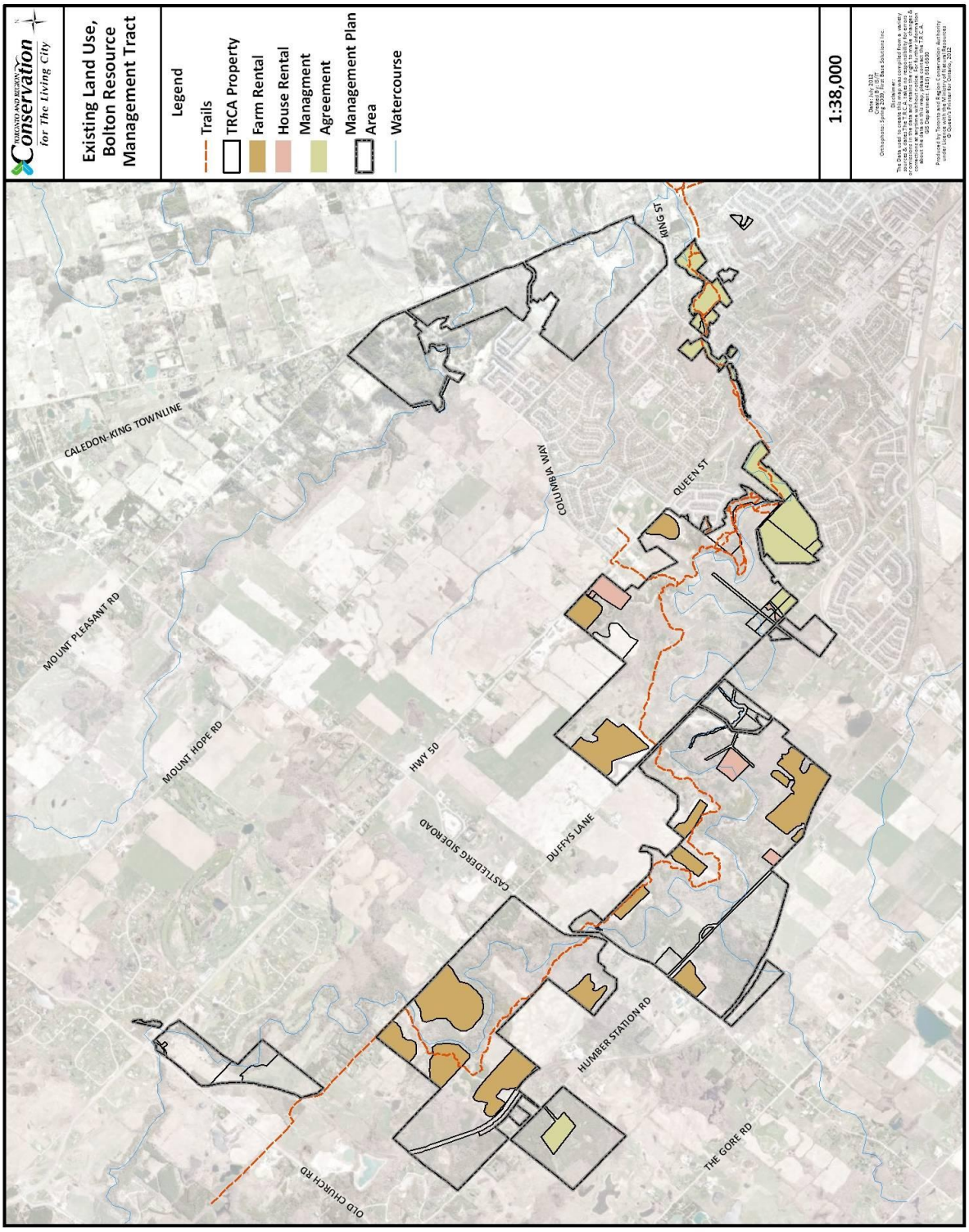
Both official and unofficial trails exist within the BRMT. The Humber Valley Heritage Trail Association (HVHTA) was formed in 1995 and developed and maintained the Humber Valley Heritage Trail since that time. The pedestrian-only trail generally follows the Humber River and is currently the only authorized trail in the tract (see Section 8.4.1 Existing Trails in BRMT for more details on the Humber Valley Heritage Trail).

Many local residents use these trails to walk their dogs. While leased dog walking is a permitted activity at BRMT, many allow their dogs to run off-leash, which is becoming a concern at various TRCA properties. TRCA's *Policy for Managing Domestic Pets* (2009), requires dogs to be on a leash at all times while on TRCA lands and also stipulates that each dog walker may walk a maximum of three dogs at one time. The purpose of the policy is to prevent widespread trampling of vegetation, wildlife disturbance and undue risk to other users of the property.

BRMT attract visitors because of the escape from urban development that it offers. In the future, as urban development expands towards this tract, there will be additional pressure for public

use opportunities coming from a variety of interest groups. These groups can and do bring much public support. However, TRCA, along with public consultation, should consider how it wants BRMT to develop. What opportunities will it provide and at what intensity of use? How will the experience be affected by increasing development and how can this experience be managed so that it is a safe and enjoyable one? The management plan that will be created for BRMT in conjunction with this background report will address these issues.

Map 2.4 Current Land Use within BRMT



2.4.6 Enforcement Issues

As stated, the BRMT is a passive-use property and TRCA staff is not present on a regular basis. Consequently, unauthorized use of the tract does occur. Unauthorized use includes firewood cutting, Christmas tree theft, all-terrain vehicle and snowmobile use, the creation of unauthorized access points and trails and garbage dumping. TRCA administers the Land Care Program to audit, assess and proactively manage unauthorized uses on its properties. Through this program and the forthcoming BRMT Management Plan the BRMT Site Securement and Protection Plan (Section 4.3) will be implemented to address these issues.

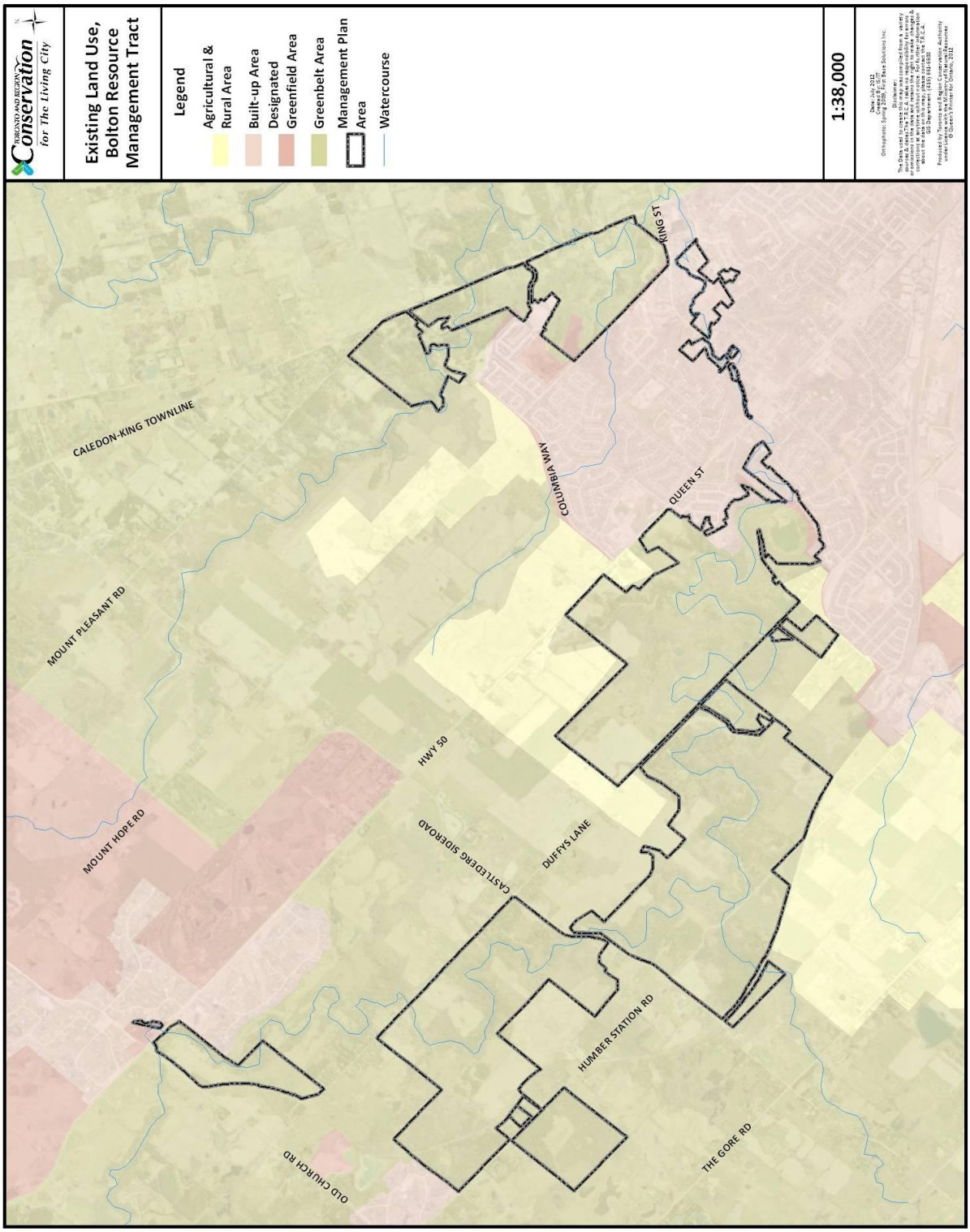
TRCA also relies on users, neighbours and occasional patrols to remain aware of any inappropriate uses of the property. To the best of their ability, TRCA attempts to address these misuses.

2.5 Surrounding Land Use

2.5.1 Current Surrounding Land Use

At approximately 980 hectares, the BRMT and the surrounding lands constitute a significant area of greenspace within the Town of Caledon. The natural features of these lands connect to areas beyond its boundaries, both in Caledon and in the Township of King. The use of these nearby lands affects the quality of the lands and waters within the management plan area. See Map 2.5 for Bolton's current settlement area and land-use designations.

Map 2.5 Current Surrounding Land Uses



2.5.2 Proposed Surrounding Land Use

Within the TRCA watershed jurisdiction, future growth in the Town of Caledon will primarily focus on the Rural Settlement Areas of Bolton, Caledon East, and Mayfield West; and the Palgrave Estate Residential Community. BRMT traverses the northern portion of Bolton, approximately north of Old King Road. The Town of Caledon is proposing a Rural Settlement Boundary Expansion for Bolton to create more employment lands for development. In addition to expanding the boundary along Coleraine Drive westward, the proposed expansion has identified as an area at the north-east corner of Columbia Way and Queen Street for a new grocery store known as the North Hill Supermarket Area, which is adjacent to the BRMT.
On the north-east side of Bolton, the TRCA has recently acquired the former Montessori School (Bolton Camp) Property through land acquisition, which links the Campbell Property north of Columbia Way to the larger BRMT land holdings. Future residential development is proposed on the retained table lands that front Crestridge Drive.

On the north-west side of Bolton, the Region of Peel and Town of Caledon are extending King Street north to Duffy's Lane. This road extension (Regional Road 150), as part of the Town's Bolton Arterial Roads Network, is proposed through the BRMT lands and a Municipal Class Environmental Assessment is underway.

The remaining area of the BRMT that extends north towards Old Church Road is located outside of the Bolton Rural Settlement Area boundary and is surrounded by agricultural and rural residential land uses. There are no known proposals to change the current land uses within this area.

2.5.3 Bolton Arterial Road

In 1983 the Town of Caledon completed the Bolton Transportation Study which identified that an eastern arterial needed to be developed along the Vaughan/King/Caledon Townline Road. The town completed an Environmental Study Report for the proposed works in 1988 at which time concerns were raised with respect to the need for the proposal, its links to other arterial roads in the Bolton area, and the potential environmental effects. As a result, in 1989, the Minister of the Environment (MOE) “bumped up” the level of study required for the project to an Individual Environmental Assessment (IEA).

The IEA report was submitted to the Ministry in 1997 and divided the proposal into two stages. Stage 1 included immediate improvements to the transportation network, including the reconstruction/construction of both Townline Road and Coleraine Drive, south of King Street. Stage 2 included a “by-pass” road around the Village of Bolton from King Street and Coleraine Drive, extending north, crossing Duffy’s Lane and Regional Road 50 and then running southeast to connect with King Road at Townline Road.

Concerns regarding the IEA were raised by TRCA related to significant impacts on landform features and functions of the Humber River watershed, as well as significant impacts on the management and operation of TRCA’s Bolton Resource Management Tract. On February 21, 1997, the Authority recommended that staff advise MOE and the Town of Caledon the TRCA could not support the proposed alignments for the Bolton By-pass (Res. #A310/96), between Duffy’s Lane and Regional Road 50.

The town submitted a formal amendment to the IEA in 1998 which moved the alignment to the northern limits of TRCA property. The Bolton Arterial Roads IEA was approved by the Minister of the Environment in April 2000. For Stage 2, however, as part of the Conditions of Approval set forth by MOE, it was required that a future Municipal Roads Class Environmental Assessment (EA) be carried out for confirmation of the road alignment between Duffy's Lane and Regional Road 50.

The Draft Environmental Study Report (ESR) was received in 2007 identifying two alignments for the east/west corridor (alignment between Duffy's Lane and Highway 50), including a northern alignment at the limit of TRCA property and a southern alignment located approximately 240 m south of TRCA property's north boundary line. The southern alignment was proposed so avoid severing a farmland parcel. Previous discussions and correspondence in 2006 with TRCA staff, the Town of Caledon, the consultant and the farm owners impacted by the alignment concluded that TRCA staff had no objection in principle to a southern alignment, based on the town's commitment to address TRCA's outstanding concerns. The Draft ESR concluded that the southern alternative was the most technically preferred and through enhancements, impacts to the environment would be minimized and mitigated.

This project is now in the detailed design stage and TRCA staff are working in partnership with the Region of Peel to review and discuss the various components of this work. TRCA staff are currently awaiting a formal design submission from the Region of Peel.

The Town of Caledon Official Plan contains two Secondary Plans for residential development in areas adjacent to BRMT; The Palgrave Estate Residential Community and The Bolton Golf Course Estate Residential area. More detailed information can be found in section 5.3.1.1 Assessment of the Town of Caledon Official Plan. These developments will most likely affect BRMT by means of increased population pressure in the area. This could put additional strain on the properties' resources and could lead to more conflict over the different activities permitted within the area and the management of natural resources. Continued residential development around the BRMT will make the Tract an even more significant component of the greenspace system in the future.

CHAPTER 3: TRCA PLANNING STUDIES, STRATEGIES AND POLICIES

Over the years, TRCA has undertaken a number of studies and developed strategies, programs, and policy documents that affect land use changes on both TRCA and private lands. These TRCA initiatives address issues and actions necessary for integrated watershed management. These initiatives are summarized in the following sections. Each of these documents must be considered in its entirety when developing a management plan for the BRMT.

3.1 Conservation Authorities Act (R.S.O. 1990)

The *Conservation Authorities Act* was created in 1946 in response to flooding and erosion concerns and the recognition that these and other natural resource initiatives are best managed on a watershed basis. As a piece of provincial legislation, the *Conservation Authorities Act* provides the legal basis for TRCA's mandate to prevent, eliminate or reduce the risk to life and property from flooding and erosion, and to encourage the protection and regeneration of natural systems.

3.2 Ontario Regulation 166/06 and the Conservation Authorities Act – Section 28 (2004)

In 2004, the province enacted Ontario Regulation 97/04 to create a Generic Regulation for all Conservation Authorities and to replace the existing Fill, Construction and Alteration to Waterways Regulation. TRCA's Generic Regulation, Ontario Regulation 166/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (under 97/04) was approved by the Minister of Natural Resources on May 4, 2006. Ontario Regulation 166/06 is now in effect and has replaced Ontario Regulation 158. The main objectives of Ontario Regulation 166/06 are to ensure public safety with regards to natural hazards and to protect the natural environment.

To comply with Ontario Regulation 166/06, a permit is required from TRCA prior to various works taking place (e.g., diverting or interfering with the existing channel of a watercourse, constructing any building in or on a wetland, filling or re-grading in a regulated area). A permit could be refused if, in the opinion of TRCA, the work negatively affects the control of flooding, pollution or the conservation of the land.

Section 28 of the *Conservation Authorities Act* has consequently undergone revisions. Under the revised Section 28, a conservation authority may make regulations applicable in the area under its jurisdiction:

- Restricting and regulating the use of water in or from rivers, streams, inland lakes, ponds, wetlands and natural or artificially constructed depressions in rivers or streams;

- Prohibiting, regulating or requiring the permission of TRCA for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing or interfering in any way with a wetland and;
- Prohibiting, regulating or requiring the permission of TRCA for development if, in the opinion of TRCA, the control of flooding, erosion, dynamic beaches or pollution, or the conservation of land may be affected by the development.

3.3 The Watershed Plan (1980)

In 1979, conservation authorities in Ontario were directed by the Province of Ontario to study and investigate their watersheds and to prepare and file a watershed plan with its member municipalities and the Ministry of Natural Resources. The MTRCA Watershed Plan (1980) was prepared following a series of studies to inventory MTRCA's jurisdiction, and a review of policies and programs. Throughout the preparation of the Watershed Plan, MTRCA maintained an effort to involve and gain input from municipal and provincial agencies and the watershed community.

The 10 programs comprising the Watershed Plan have been structured as groups of resource management activities which serve a common goal but that can be implemented as identifiable management units. The 1980 Watershed Plan set out recommendations for 10 programs dealing with flood control, erosion and sediment control, stormwater management, land acquisition, conservation land management, watershed recreation, Lake Ontario waterfront development, shoreline management, heritage conservation, and community relations across the jurisdiction.

Below are the use designations for TRCA properties, as established in the Watershed Plan:

- Conservation Areas: landscapes capable of providing a broad range of outdoor recreation opportunities supported by the development of facilities and services.
- Forest and Wildlife Areas: landscapes where the natural resources may provide certain outdoor opportunities for study and observation with limited site development. Provision of the public area may be provided but intensive recreation activities are not permitted.
- Resource Management Tracts: landscapes that may provide opportunities for passive recreation and photography. The use of motorized vehicles and hunting activities are prohibited.
- Agreement Forests: landscapes that may provide opportunities for passive recreation only, such as hiking, nature appreciation and photography. The use of motorized vehicles and hunting activities are prohibited.

3.4 The Watershed Plan Update (1996)

In 1996, the Watershed Plan was updated to reflect changes in the goals and objectives of the original plan while retaining its basic principles. The 1996 Watershed Plan is a statement of TRCA's goals and objectives for the "conservation, restoration, development, and management" of the renewable natural resources within its area of jurisdiction. The 10 program documents outlined in the 1980 Watershed Plan were reviewed and revised. The revisions did not affect these documents: watershed recreation, heritage conservation and community relations programs. The 1994 Valley and Stream Corridor Management Program replaced parts of the program dealing with flood, erosion and sediment controls.

3.5 Environmentally Significant Areas Study (1982) and the ESA Update Program

In 1982, TRCA approved the Environmentally Significant Areas (ESAs) Study that identified some of the areas in its jurisdiction that contained rare or significant habitat or species and made recommendations for the management of these areas. The study took place on both TRCA and private lands.

In 1994, TRCA initiated the ESA Update Program where the criteria for selecting the sites were revised. Some of the sites evaluated in the 1982 study were re-evaluated and other sites have been selected based on the new criteria and on changes over time. All but a small portion of the Duffy's Lane ESA is located within BRMT, while the Vance-Donaldson Area ESA occupies a small portion of the tract (see Map 2.3).

Given TRCA's current focus on the Terrestrial Natural Heritage System Strategy (see Section 3.15), the ESA program has been discontinued. Existing ESAs will continue to exist; however, the program will not be updated.

3.6 An Archaeological Master Plan for the Toronto and Region Conservation Authority (1990) and Archaeological Resource Management Procedures: Guidelines (2003)

The Archaeological Master Plan describes the process for identifying, studying, conserving and interpreting heritage resources located on lands owned by TRCA. The Archaeological Master Plan provides TRCA with a heritage inventory that helps facilitate future developments on its lands. The Plan is also means by which TRCA can comply with the heritage requirements of the *Ontario Environmental Assessment Act* and the *Ontario Heritage Act*. The plan also consolidated TRCA's interests in developing an interpretative unit describing archaeological resources on its lands.

The Guidelines for Archaeological Resource Management Procedures are intended to clarify the legislative requirements of the Ontario Heritage Act, the Planning Act and the Environmental Assessment Act as they pertain to the role of TRCA in archaeological matters. The guidelines define general archaeological requirements to be applied to all TRCA undertakings, land severances and externally generated projects. The specific requirements may vary from situation to situation and therefore will be recommended by TRCA's coordinator of heritage projects. The strategy for managing the archaeological resources on TRCA property is considered an integral component of the Greenspace Plan for the Greater Toronto Region.

3.7 Valley and Stream Corridor Management Program (1994)

The TRCA Valley and Stream Corridor Management Program provides an integrated approach to protecting and regenerating valley and stream corridors from their headwaters down to Lake

Ontario. The Program provides policy direction to reduce risks to life and property from flooding, erosion and valley slope instability; to protect or restore the ecological health and integrity of valley and stream corridor systems; and to provide opportunities for public use and enjoyment that are compatible with these systems.

The Program identifies valley and stream corridor boundaries so that they can be appropriately identified in municipal planning documents and zoned in appropriate Open Space categories. Generally, the boundaries of valley and stream corridors are determined on a site-specific basis and are accompanied by technical analysis such as a flood study or a geotechnical analysis.

The Valley and Stream Corridor Management Program provides policy direction on what types of land uses may be permitted within valley and stream corridors. Generally, these types of uses must be compatible with the landform features and functions such that the existing topography is retained and features and functions are protected or improved. These types of land uses usually consist of the following:

- low intensity outdoor recreation and education;
- local and regional trail systems; and
- pasture, agriculture, gardening, horticulture and silviculture.

This program will provide guidance for any future developments that may occur in the BRMT, as well as the special management lands in the north end of the BRMT, which are classified as part of the valley and stream system.

3.8 Toronto and Region Conservation Authority Policy for the Disposal of Land

Any proposals to sell or dispose of parcels of TRCA-owned land, other than for reasons of road widening or other routine public purposes, at nominal consideration, must first be brought to the attention of the TRCA's Executive Committee and processed in the following manner:
A detailed technical review is to be carried out by the Authority's technical staff. Appropriate terms and conditions are to be prepared by the technical staff dealing with any technical concerns, including the potential impact or mitigation requirements relating to remaining Authority holdings;
The proposed disposition is to be circulated to the local and regional municipalities; and
All sales are to be at market value, with agreements to include provisions for all Authority objectives to be met.

Where the land proposed for disposal is of significance, other than small fragments offered to abutting owners in exchanges of land, minor sales or resolution of encroachment problems, the following additional steps must be taken:

1. The Authority's intention to consider disposal of the lands be duly publicized, including adequate newspaper publication in at least one local and one major Toronto region newspaper;
2. At least one public open house information session be held in the vicinity of where the lands proposed to be disposed of are situated;
3. The general public and any other interested parties be invited to make submissions, either verbal or written, to the Executive Committee prior to a final recommendation being made with respect to disposal; and

4. At such time as a final recommendation is made with respect to disposal, staff provide to the members of the Authority details of the recommended disposition including commission rates and any other specific information relating to the transaction.

3.9 Requirements for Approval (by the Minister of Natural Resources) of Leases or Sales

In accordance with Section 21 of the *Conservation Authorities Act*, if the Minister of Natural Resources has made a grant to TRCA under Section 39 in respect of the land, TRCA cannot sell, lease for more than five years or otherwise dispose of the land without obtaining the approval of the Minister.

3.10 The Strategy for Public Use of Conservation Authority Lands (1995)

The purpose of the Strategy is to provide guidelines on where and how public outdoor recreation and education uses will be considered. To manage different communities' growing interest in TRCA lands, a clear set of goals, guiding principles and objectives have been identified that permit the TRCA to focus on outdoor recreation and education uses. These principles and objectives are summarized below.

Generally, approved existing uses will continue on TRCA lands. Modifications will be encouraged that reduce or eliminate the impact of existing facilities on the landscape or the community. Future public uses must fit within identified land use categories as part of a concept plan for all TRCA lands. Concept plans will include full consultation with agencies, and community and interest groups. The concept plan will identify general use, limited use and protection categories. Details on any one type of public use will be provided in specific proposals and be subject to a screening process. The screening process will be employed for all new recreation or conservation education proposals on TRCA lands to ensure that natural, social and economic impacts are acceptable.

On lands owned and/or managed by the Authority, the provision of public uses must balance the needs of the community with protecting and enhancing the natural environment. The Strategy provides a framework for decision making that can achieve that balance and sustain our natural resources for years to come.

3.11 The Conservation Land Tax Incentive Program (CLTIP)

The Conservation Land Tax Incentive Program (CLTIP) is a voluntary provincial program administered by the Ontario Ministry of Natural Resources that provides an incentive for landowners including conservation authorities to protect conservation lands by offering 100per cent property tax exemption on eligible portions of their properties. Under the program, landowners agree not to undertake activities that will degrade, damage or result in the loss of features for which it was identified.

The program recognizes that conservation authorities are key stakeholders in the protection of natural and biodiversity values, for the benefit of the natural environment, the local community and the people of Ontario. Conservation authorities and registered charities whose primary objective is natural heritage conservation are also eligible landowners to apply for the Community Conservation Land (CCL) category which was added to the program in 2004.

The criteria for CLTIP are set out in Ontario Regulation 282/98 (as amended by O. Reg. 388/04) pursuant to the *Assessment Act* and include the following:

Provincially significant wetland
Provincially significant areas of natural and scientific interest (ANSI)
Life Science Category– biological (ALS)
Earth Science Category– geological (AES)
Habitat of a regulated endangered species
Designated as Escarpment Natural Area under the *Niagara Escarpment Planning and Development Act*

Community Conservation Lands category (CCL)
Required to meet one of eleven conditions
-Niagara Escarpment Protection Area
-Ontario Living Legacy (OLL) Featured Area
-Natural Heritage Feature or an area as established by the Provincial Policy Statement
-Regionally significant area of natural and scientific interest (ANSI)
-Habitat of species of special concern
-Species occurrence or ecological community with s-rank 1-3 (Natural Heritage Information Centre)
-Natural core, natural linkage or countryside in Oak Ridges Moraine Plan
-Natural heritage area identified within a regional or watershed plan or strategy
-Designated environmentally sensitive area, environmentally significant area, environmental protection area, natural heritage system or other designation within a municipal official plan or zoning bylaw
-Within or abuts a “protected area” and contributes significantly to the natural heritage objectives of the park, reserve or wildlife area
-Identified under the Great Lakes Wetlands Conservation Action Plan Highlights Report (2000-2003)

All supporting documentation must be submitted with the initial application

Process for inclusion in CLTIP

General

Eligible natural heritage features are first identified and/or approved by the Ministry of Natural Resources and eligible property owners receive application packages describing the program and are invited to participate.

Community Conservation Lands Category

The conservation authority or registered charity submits a completed application to the Minister of Natural Resources for designation under this section by July 31 of the current year for the following taxation year.

Once approved, the Ministry will automatically include the property in its annual program package providing approved conditions continue to be met.

Challenges and Considerations

The CLTIP program has very strict criteria for the management of land under its program. Activities which could make the land ineligible include: built areas including maintained roadways, landscaped and groomed areas including picnic and camping areas, farmed areas including recently abandoned farmed lands where the vegetative cover is not representative of the natural ecosystem, unrepresentative conditions (plantations which include non-native species, areas where non-native or invasive species are a significant component, plantations managed for forest products and timber harvesting) some site alterations including dredging and filling of wetlands, and motorized vehicle use including off-trail use (which can be a challenge where trespassing is a problem).

Use of the land under the CLTIP program is limited to low impact recreational activities where there is little or no impact on the natural heritage and biodiversity features and objectives. MNR CLTIP staff must approve and be notified where certain land use activities are proposed including planned trail development or upgrading.

Restoration of sites including open areas of meadows and grasslands of native species is an obvious goal toward program eligibility

3.12 Toronto and Region Conservation Authority Managed Forest Plan for the Managed Forest Tax Incentive Program (January 1, 2008 to December 31, 2027)

The Managed Forest Tax Incentive Program (MFTIP) is a voluntary provincial program offered by the Government of Ontario that provides lower property taxes to participating landowners who agree to conserve and actively manage their forests. The goal of the program is to sustain and enhance healthy forests that contribute to the maintenance of a healthy environment in the Province of Ontario.

Under the MFTIP, qualifying forested lands are reassessed similar to farm lands and taxed at 25 per cent of the residential tax rate. To participate in the MFTIP, landowners must agree to certain conditions including preparing and following a managed forest plan for their forest. The goal of the plan is to improve the owner's knowledge of the forest and help to ensure the sustainability of the forest.

TRCA has agreed to participate in this program and receives a direct financial benefit in the form of reduced taxes on the managed forest properties. To maintain Managed Forest status in the program, the forest owner must be involved in managing their forests, implementing stated

management objectives and proceeding with the implementation of the prescribed forest management activities.

In order to qualify for the program, the following requirements must be met by the landowners:

- The land must be owned by a Canadian citizen, corporation, partnership or Conservation Authority;
- The forest area must cover at least four hectares (10 acres), excluding residences;
- The forest must be located entirely on one property with one municipal roll number;
- A minimum number of trees must grow on each hectare; and
- The land cannot be subject to a Registered Plan of subdivision or be licensed under the Aggregate Resources Act.

TRCA's primary responsibility is to manage its watersheds with an emphasis on water and related land management programs, and to develop and maintain natural resources within a multiple-use format. The forest management plan developed by landowners will contribute to achieving these responsibilities via water conservation, erosion and sediment control, provision of forest products, and maintenance and enhancement of:

- aquatic and terrestrial habitats;
- visual quality of the area; and
- opportunities for passive recreation.

The objectives of this management plan depend upon and will consider the overall objectives of TRCA. The plan will focus on environmental protection, biodiversity conservation and sustainable forest management when planning and implementing forest management projects. In particular, this forest management plan has been prepared to aid in meeting the following objectives for TRCA to:

- continue to extend and manage the vegetative cover to improve water conservation, control erosion and sedimentation, provide aquatic and terrestrial habitat, and to provide opportunities for products, education, recreation, and for aesthetics;
- provide an inventory of the quality and quantity of the forest resources on TRCA properties;
- provide a concise set of guidelines for establishing priorities and recommendations for forest management programs for each of the individual properties; and
- provide input for and aid in the prioritization and development of a multi-year forest management strategy for all TRCA watersheds.

The management plan will be the means by which forest policy aims and objectives will be carried out within the management area. The plan consists of 10 sections that will help the landowner meet these policy aims and objectives. These sections cover:

- plan preparation detail;
- location and identification of property;
- property management history;
- property location maps;
- landowner objectives,
- strategies and activities;
- managed forest compartment maps and descriptions;
- proposed five-year active management program summary; and
- annual report on activity.

3.13 The Living City Region – A Strategic Vision for the New Millennium (2006)

The Living City Region is a strategic vision for TRCA for the new millennium. It recognizes TRCA's expertise in urban and regional environmental protection and restoration, and commits both the Conservation Foundation of Greater Toronto and TRCA to supporting a healthy and sustainable regional environment through project implementation, partnerships and public education.

The vision of The Living City Region recognizes that the Toronto region is more than simply a place to live and work; it is a living, breathing ecosystem that supports a rich diversity of life and life-giving processes.

Sustaining The Living City Region requires a commitment to the protection and restoration of the natural environment. This commitment is critical to the future health of our communities and our region. It is also the foundation for building sustainable cities, critical to the future of our planet. TRCA is committed to making a Living City Region.

A Living City Region includes:

- Healthy Rivers and Shorelines – safe, clean, vibrant rivers and shorelines within the watersheds of the region
- Regional Biodiversity and Greenspace – a rich variety of animals and plants that thrive in a network of greenspace
- Sustainable Living Through Education – people engaging in environmentally friendly practices
-

3.14 Greenspace Acquisition Project 2011 - 2015 (2010)

Greenspace protection and acquisition programs are essential components of TRCA's Watershed Plan and other strategic initiatives. TRCA and its partners have been involved in a number of greenspace protection and acquisition projects since 1957. These projects are the legal vehicles with which TRCA raises funds to pursue its objectives to protect and acquire greenspace.

Property rights are acquired by the TRCA in one, or a combination, of the following ways:

- fee simple;
- conservation easements;
- covenants;
- leases and agreements.

Lands to be protected and acquired through various means must meet TRCA's conservation objectives as expressed in policies such as the Valley and Stream Corridor Management Program and the Terrestrial Natural Heritage System Strategy.

3.15 The Terrestrial Natural Heritage System Strategy (2007)

The Terrestrial Natural Heritage System Strategy (TNHSS) was developed between 2001 and 2006 by TRCA and was approved in principle by the TRCA Board in 2007. It provides extensive data, scientific models, mapping and guidance for TRCA staff, partner municipalities and community groups for achieving natural heritage protection objectives.

The need for a TNHSS arose when TRCA and others observed an alarming reduction in vegetation communities and species populations and a contraction of their distribution within TRCA's area of jurisdiction. Despite best efforts at protection, this change was occurring simultaneously with urban expansion. The reduction in forests, wetlands, meadows and their species was also accompanied by an increase in flooding and erosion, and in conflicting recreational uses in protected areas. Changes in land use were being approved site by site without understanding how, cumulatively, they were impacting the region's natural system and environmental health. TRCA initiated its Living City Strategic Plan in 1999 to engage agencies, industries and communities in collaborating for the sustainability of all life within TRCA's nine river watersheds and Lake Ontario waterfront. The TNHSS provides an important vehicle for achieving the Greenspace and Biodiversity objective of The Living City Strategic Plan.

TRCA would redefine its approach to biodiversity conservation to better reflect the role of ecosystems in the landscape. One important premise is that the distribution and quantity of natural cover and species is intricately linked to water balance and flow, air quality, climate regulation, as well as sustainability and the quality of life enjoyed by residents of our Living City Region. Therefore, conservation efforts should not focus solely on the conventional protection of rare species or special natural areas. TRCA assembled a large database of flora and fauna species and land cover from across the region. From that, a computer-based landscape analysis model was developed to evaluate the existing condition and to predict the response of the region's biodiversity to urbanization undertaken in accordance with the current practices in natural system protection. From a known 1,111 species, 693 were predicted to either disappear from the region or be severely restricted in their distribution. This dramatic loss would be accompanied by further impacts on water quality, flooding, and erosion within the natural system. It was concluded that in order to meet the objectives of The Living City Strategy Plan – to protect biodiversity and its ancillary benefits in the face of urbanization – more natural cover would be needed in the region than exists today.

A second model was developed to assist in designing an expanded target natural system. The model selected the areas of highest value to the region's natural system based on a variety of criteria, both ecological and planning. The result was a target system that includes much of the existing forests, wetlands and meadows (adding up to 25 per cent of the region) plus additional areas to be restored. This target system was evaluated using the landscape analysis model. It was determined that at least 30 per cent of the region should be natural cover in order to sustain the existing distribution and populations of species of concern. That target would also help to sustain the environmental and social benefits of the existing system.

The TNHSS was developed and finalized in consultation with stakeholders, including municipalities, NGOs, provincial and federal governments, community groups, academics and the development industry. The data, mapping and models are now available to stakeholders to assist them in decisions related to land planning, management, stewardship and securement.

The target terrestrial natural system was used and refined at the watershed scale in the development of watershed plans. The target system within the Growth Plan area is subject to further analysis and refinement to integrate with other community planning objectives as part of Growth Planning exercises. Applications and refinements will also occur through the more detailed planning at the secondary, subdivision and site plan scales. The target system within the rural areas will be refined at the detailed scale with landowners in stewardship initiatives. Thus, guided by the TNHSS, decisions at smaller scales will be made in consideration of the sustainability of the region.

In summary, the target system represents:
regionally, a net increase in terrestrial natural cover quality, from “fair to good”, and quantity, from 25 to 30 per cent; a net increase in quantity and quality in the Greenbelt Area and in the Agricultural and Rural Area; and net losses in quantity and quality in the Designated Greenfield and Built-up Areas.

3.16 Marketing Framework and Strategic Development Business Plan for the Conservation Foundation of Greater Toronto and the Toronto and Region Conservation Authority (1998)

This document provides a framework for marketing TRCA’s work and assets (e.g., conservation areas and education centres).

The plan outlines TRCA’s marketing strategies and objectives as follows:

1. Enhance product relevancy and value;
2. Establish excellence in creative messages and branding;
3. Define target markets and strategic vehicles for penetration;
4. Corporate delivery through a commitment to corporate change; and
5. Relationship building through customer service.

Many components of this plan are relevant for the BRMT management planning process. These lands are valuable public assets and their future management must be consistent with TRCA’s marketing and fundraising efforts.

3.17 TRCA Sustainability Management System

TRCA employs a sustainability management system to guide its practices and policies. The following are approved targets of the TRCA Sustainability Management System related to the management of TRCA lands and properties. They represent only a partial list of SMS targets.

- Practice best management sediment control techniques at all applicable construction sites, properly maintaining all control structures (structures will be monitored and results recorded at least once per week).

- Complete and implement a policy of mandatory best management practices (BMPs) for farming operations on TRCA lands (ongoing).
- Continue to green conservation areas to create linkages, improve riparian zones, boost habitat, etc. (ongoing).
- All plantings on any TRCA land, for any purposes (excluding annual ornamental flowers) are to utilize only “native” species.
- Ensure all above ground fuel storage containers and spill control structures are to standard.
- Work location supervisors to ensure fire prevention and warning systems are inspected and working, including back-up generators where they exist.
- New land purchases are assessed and contamination mitigated as required (ongoing).
- Meet Reg. 903 requirements for abandoned wells.
- Upgrade all underground fuel storage tanks to Ontario Ministry of the Environment standards (2006).
- Adhere to the TRCA Pesticide Policy.
- Follow operations for smog alert days.
- Protect the integrity of current managed lands through annual efforts to assess and upgrade the following – fencing, hazardous trees, signage, illegal dumping mitigation measures, etc.

3.18 Near-Urban Agriculture Policy (2012)

Toronto and Region Conservation (TRCA) recognizes that agricultural land is a vital resource, which must be conserved, and that progressive environmental stewardship in the farming/agricultural sector will be a requirement for TRCA to collectively realize The Living City vision. The Living City vision is a vision for a healthy, attractive, sustainable urban region extending into the 22nd century, based on a foundation of Healthy Rivers and Shorelines, Regional Biodiversity, Sustainable Communities and Business Excellence. Toronto and Region Conservation's vision for sustainable near-urban agriculture on its lands includes the use of diverse crops, innovative and sustainable agricultural production methods-a combination of appropriate technology, Environmental Goods and Services (EG&S), Beneficial Management Practices (BMPs) and new partners. Farming operations may be on a smaller scale than the typical agri-food industry approach and do not compromise other TRCA objectives (i.e., the Terrestrial Natural Heritage System Strategy).

Objectives of sustainable near-urban agriculture for TRCA lands include:

- promotes social equity and food security in communities by providing opportunities for increased accessibility to fresh, healthy and local food; provides opportunities for community economic development by helping to reduce the number of imports and by creating jobs and meaningful work for the local produce;

- reduces our ecological footprint by providing locally grown, raised and sold food, reducing food miles and greenhouse gas emissions related to food transportation and helps to reduce the impacts of climate change;

- provides a space for celebrating the cultural diversity of communities by growing a diverse range of crops;
- provides a positive influence on adjacent natural heritage; and
- complements Toronto and Region Conservation Authority's (TRCA) vision for The Living City by participating in growing local foods that contribute to sustainable communities.

TRCA's Near-Urban Agriculture Policy will continue to be relevant for the BRMT given the ongoing partnership with the Albion Hills Community Farm and other initiatives.

3.19 Legacy: A Strategy for a Healthy Humber, The Report of the Humber Watershed Task Force (1997)

Legacy: A Strategy for a Healthy Humber was prepared by TRCA and the Humber Watershed Task Force in May 1997. It presents a vision for the management of the Humber River watershed and a strategy for achieving the goal of protecting and enhancing the watershed as a vital and healthy ecosystem. The guiding principles developed as a part of *Legacy* are to:

-Increase awareness of the watershed's resources;
-Protect the Humber River watershed as a continuing source of clean water;
-Celebrate, regenerate, and preserve our natural, historical, and cultural heritage;
-Increase community stewardship and take individual responsibility for the health of the Humber River;
-Establish linkages and promote partnerships among communities;
-Build a strong watershed economy based on ecological health; and
-Promote the watershed as a destination of choice for recreation and tourism.

The report is split into four sections: Environment, Society, Economy and Getting it Done. Each section has a series of objectives and the report as a whole contains 30 objectives, many of which are of particular relevance to the development of a management plan for BRMT. For more details, please refer to the original document. *A Call to Action – Implementing Legacy: A Strategy for a Healthy Humber* was created as a co-document that outlines implementation measures.

The majority of the BRMT plan area is within the main branch of the Humber River watershed. *Legacy* notes that the main challenge facing this subwatershed is protecting its forests, water, peat, sand and gravel, and natural areas resources as development occurs. It will be especially important to protect the resources and landforms of the Oak Ridges Moraine, key recharge and discharge areas of the Humber River, the subwatershed's many ESAs and ANSIs, and the cold-water streams that support brown and brook trout. Also requiring protection is the subwatershed's groundwater which supplies the drinking water sources for residents in Mono, Adjala-Tosorontio, Caledon, King and part of Vaughan.

In addition, there are many aspects of the Main Humber subwatershed that need regenerating. In order to improve water quality in wetlands and kettle lakes, vegetation should be planted, stormwater should be managed, and sediment runoff should be controlled. Reducing

agricultural runoff through Environmental Farm Management Plans will require funding and education about the benefits.

Legacy also identifies BRMT as a Community Action Site within the Main Humber subwatershed. It proposes to continue construction of a pedestrian trail to link Bolton and Albion Hills Conservation Area. The project includes habitat rehabilitation, education and nature interpretation opportunities. The project is a partnership between the HVHTA and TRCA. The construction of the Humber Valley Heritage Trail has since been completed. Other aspects of the project are on-going.

Throughout the development of a management plan for the BRMT consideration should be given to the watershed Vision and guiding principles established in *Legacy.* Management recommendations for the BRMT should complement *Legacy* and its objectives for the Humber River watershed, except where information conflicts with recommendations from more recent documents in the remainder of this chapter. Where there are conflicting recommendations, the most recent document should be given precedence.

3.20 Humber River Watershed Plan – Pathways to a Healthy Humber (2008)

This plan, prepared by the Humber Watershed Alliance updates *Legacy: a Strategy for a Healthy Humber* (MTRCA, 1997) by building on existing information and addressing identified data gaps, particularly with respect to the groundwater system, water budget, water use and terrestrial natural heritage system. The plan has a strong technical foundation, based on several years of monitoring environmental conditions combined with a leading edge approach to modelling of potential future conditions. A series of management summits was held to convene experts who could help identify best management practices and recommendations to achieve watershed objectives. Meetings were held with agencies, other watershed partners and the public to review issues and seek feedback on the plan's recommendations.

Approaches to watershed planning have evolved during the 10 years since *Legacy* was published. It is now possible to take a more integrated approach that focuses on the interdependencies among watershed systems and evaluates proposed actions based on their ability to achieve multiple and synergistic benefits.

The guiding framework for this watershed plan is a set of principles and 30 objectives with specific targets for watershed conditions. They address:

Environment: stream form, groundwater, surface water, air, aquatic system, terrestrial system
Society: cultural heritage, nature-based recreation
Economy: land use, resource use

The path to a healthier, more resilient watershed that emerged from this analysis is based on a comprehensive and inter-dependent set of strategies that will protect and enhance valued resources, regenerate damaged systems, and build more sustainable communities. This will help to increase the resilience of natural systems to human activities and climate change. It will also create healthier places for people and wildlife and stronger support for economic activities.

The recommended management strategies fall into three broad categories:

1) **Expand the terrestrial natural heritage system:** This system can be accomplished by protecting existing valued assets, securing additional lands, regenerating degraded areas, and improving stewardship of public and private lands. The first priority is the lands in the potential greenfield development areas outside the Niagara Escarpment, Oak Ridges Moraine and Greenbelt. The second priority is the protected countryside areas of the Greenbelt and Oak Ridges Moraine Conservation Plans and the rural area of the Niagara Escarpment Plan; and the third priority is in natural core and linkage areas of the Oak Ridges Moraine Conservation Plan and natural areas of the Niagara Escarpment Plan

2) **Build sustainable communities:** More sustainable approaches to urban form, infrastructure, transportation and resource use are proposed in order to contribute to increase environmental integrity and quality of life. They should be applied to new communities, as well as to the intensification or redevelopment of existing ones. Some of the key features include reduced imperviousness, rainwater harvesting and other measures to maintain or restore water balance, design features to facilitate sustainable choices (e.g. energy conservation, reduced vehicle use, support for local agricultural products) and protection and adaptive re-use of cultural heritage features. Erosion and sediment control practices must be improved to protect watercourses, especially in areas of intense urban growth. Development should be designed to proceed at a pace and extent that allows sufficient time to adopt, test and evaluate the effectiveness of new technologies and to make adjustments if the results do not meet the objectives and targets for the watershed.

3) Recognize the distinctive heritage of the Humber through an enhanced regional open **space system:** The Humber watershed has the basis for a significant, linked regional open space system including inter-regional trails, conservation areas, major municipal parks and cultural heritage features and landscapes. Greater collaboration is needed between public and private sector partners to improve links between nature-based recreation and cultural heritage destinations and experiences and to facilitate better planning and management of the system. This system should be further developed to reach its potential to provide nature-based recreation experiences for a growing population and support healthy communities, interpretation of natural and cultural heritage, links with local neighborhoods and connections to surrounding watersheds and regions. The status of the Humber as a Canadian Heritage River is a remarkable designation that should be promoted. Completion of a contemporary trail along the historic Carrying Place trade route that follows a spectacular river valley system would help to highlight and connect people with the natural and cultural heritage assets of the watershed.

This watershed plan outlines specific recommendations with respect to the BRMT and will serve as a primary guide during the next phase of the management planning process. Where this plan conflicts with, or differs from *Legacy,* these more recent management recommendations will apply.

3.21 Humber River Fisheries Management Plan (2008)

The need for a watershed based fisheries management plan was recognized early in the development of *Legacy*. The *Humber River Fisheries Management Plan* is a cooperative resource management plan developed by the OMNR and the TRCA to protect and enhance the health of the Humber River watershed's aquatic resources through proper management. It is a resource document to be used to develop and implement rehabilitation projects and as a tool to guide and influence where development occurs. The report contains detailed information about the biological, physical and chemical characteristics of the watershed. It also describes the habitat potential within the Humber River by dividing the watercourse into cold and warm water habitat as well as small, intermediate and large riverine habitat, estuarine and lacustrine habitats. The final section of the report provides a framework for the management of the watershed.

Analyses of recent data indicates that the aquatic habitats in the rural areas of the Upper Main(where BRMT is located), East and West Humber River subwatersheds are generally in good condition while the more urbanized Black Creek and Lower Main Humber River subwatersheds are more degraded. The best and worst habitats are found in the smaller tributaries, suggesting these watercourses are more easily impacted than the larger tributaries.

For more information on the Humber River Fisheries Management Plan (2008) see *Section 6.2 Aquatic Resources.*

3.22 The Humber River – A Canadian Heritage River

The Canadian Heritage Rivers System (CHRS) was established in 1984 and is Canada's national river conservation program. It promotes, protects and enhances Canada's river heritage, and ensures that Canada's leading rivers are managed in a sustainable manner. Responsible river stewardship is the ethic it engenders. Cooperation and public support are the strengths it builds upon (Canadian Heritage River System, 2007).

The first Canadian Heritage River was the French River in Ontario, designated in 1986. Today there are forty Heritage Rivers across Canada, and more are being added to the system each year. The goal is to establish a system that reflects the diversity of Canada's river environments and celebrates the role of rivers in Canada's history and.

In 1999 the Humber River was designated a Canadian Heritage River based on its outstanding cultural values and its offering of quality recreational opportunities. It showcases the benefits and enjoyment of a healthy river environment, now and in the future. *Legacy*, and now *Pathways,* the Humber Watershed Management Plans, forms the required management plan that ensures that the river will be managed to conserve its outstanding cultural and recreational values.

The BRMT Management Plan can help contribute to the Humber River's CHR status by supporting the goals and objectives of *Pathways,* especially as they relate to natural and cultural heritage, stewardship and nature-based recreation.

CHAPTER 4: BOLTON RESOURCE MANAGEMENT TRACT PLANNING STUDIES, PROJECTS AND PROPOSALS

Over the years, there have been several planning studies, projects and proposals developed for BRMT by TRCA. Those of particular interest are detailed in the following sections. For more detailed information, please refer to the corresponding document.

4.1 A Forest Management Plan for the Bolton Resource Management Tract, 1984 – 2003 (1984)

The most recent forest management plan for BRMT covered the period from 1984 to 2003. At the time of inventory, BRMT contained 457.1 hectares of forested land, of which 386.1 hectares was classified as production forest (i.e. accessible, harvestable and revenues are expected from forest operations). The forest management plan identifies that BRMT is found in the transition zone between the Deciduous and the Huron-Ontario section of the Great Lakes-St. Lawrence forest regions.

The forest management plan contributes to achieving TRCA goals by meeting a Conservation Land Management objective of vegetation management in rural and urban sections of the watersheds. In particular, this plan contributes to erosion and sedimentation control, retention of moisture holding capacity of the soil, extension of wildlife and fish habitat, provision of timber products, and enhancement of the visual quality of the region. It includes flexible management objectives that encourage multiple uses, allows for coordination of activities, minimizes conflict between users, and provides funding for other TRCA projects.

Key forest management strategies include the following:

- establish and maintain a healthy forest cover;
- reforest open areas;
- forest and site protection;
- forest production; and
- monitoring.

Information about working groups, stands, and silvicultural practices are detailed in the forest management plan.

The following are key statements about the implementation of the forest management plan and forest management operations. These have guided forest management practices at BRMT since 1984.

- The key to managing forests is good access. Access needs to be improved throughout the BRMT to ensure that the desired intensity of management can be attained.
- The timing of successive cuttings will be dependent on the volumes initially removed and the vigour of the forest. Prior to these additional cutting operations an inventory should be taken to determine any adjustments needed to provide accurate results.

- As work is completed, information should be included in this plan to keep it up to date and to ensure prescriptions are being followed.
- The objective of management is to encourage natural regeneration for all forest types to minimize site impact and minimize costs. Planting will only occur if the area does not meet the minimum stocking standards at the end of the regeneration period, or if a species conversion is desired.

Forest management activities at BRMT are now included in the overall Managed Forest Plan for TRCA (section 3.12). Management activities will continue to focus on improving forest health, especially given the poor access to potentially harvestable stands with the tract.

4.2 Habitat Implementation Plan – Bolton Resource Management Tract

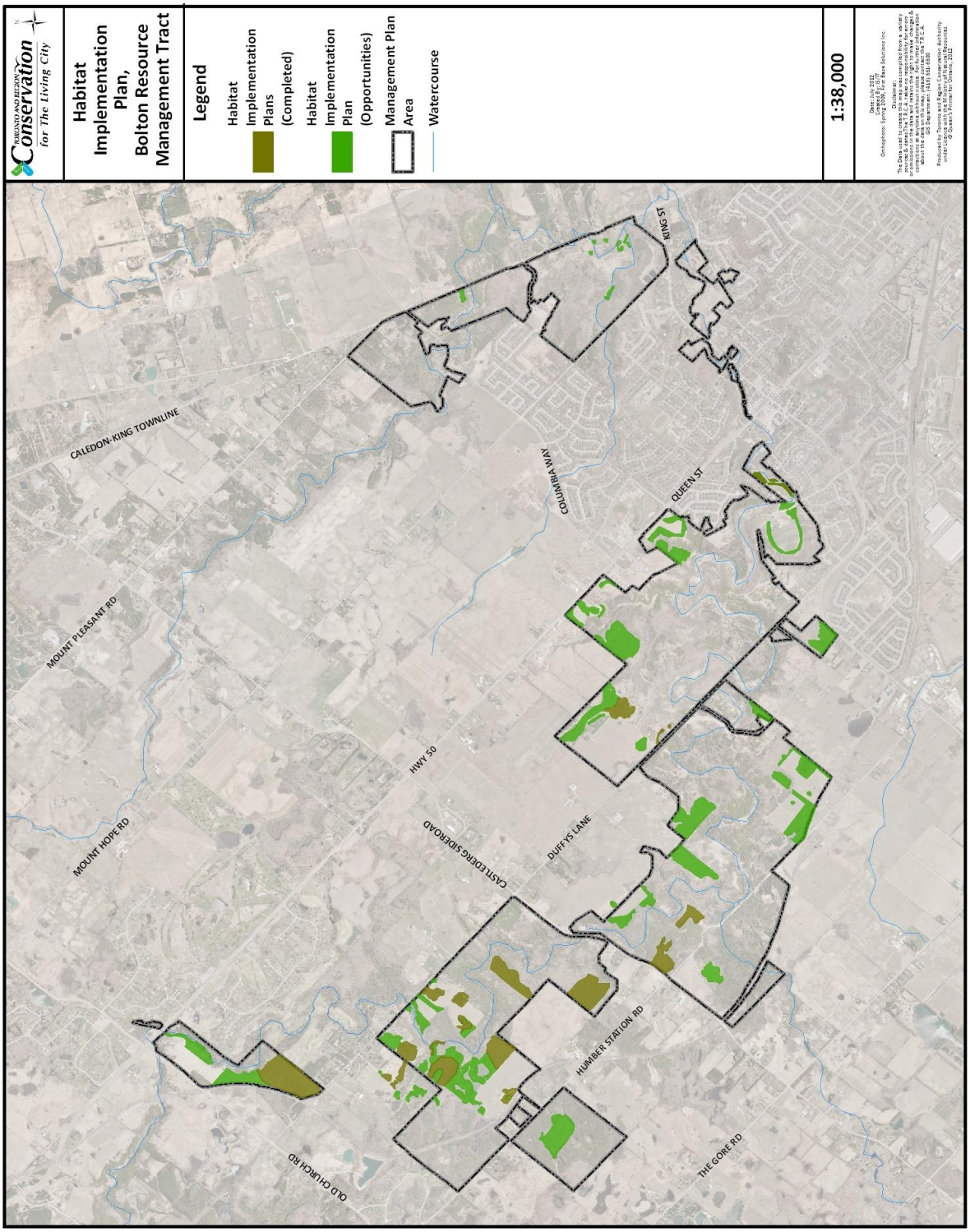
TRCA's Habitat Implementation Plan (HIP) identifies restoration opportunities for TRCA lands, including BRMT. Map 4.1 details areas that have already been restored by TRCA as well as future restoration opportunities. The future opportunities will be further discussed in the management plan as part of the management zones and management recommendations.

4.3 Bolton Resource Management Tract Site Securement and Protection Plan, 2009 (updated, 2011)

A Site Securement and Protection Plan (SSPP) was initially prepared in 2009 to address high priority securement issues at BRMT and has since been updated to include more recent land acquisitions such as the Campbell and Bolton Camp properties. The SSPP is designed to manage the unauthorized uses that are occurring at the BRMT and incorporates all boundary issues, including existing fencing, current and potential access points, encroachments and major trails. The full SSPP, including maps is contained in Appendix A.

The SSPP takes into consideration all of the above issues and makes recommendations on how to remedy them. Many issues that were discovered in the BRMT are short-term and have been taken care of already, while others are on-going and may be implemented in the future as part of the land management process.

Map 4.1 Humber River HIP: Restoration Opportunities and Completed Sites



4.4 Bolton Camp Recreation Concept Plan

In July of 2011, TRCA, with the support of the City of Toronto and region of Peel, acquired the 'Bolton Camp' property. The 103ha former youth camp lies in the Cold Creek subwatershed at the eastern edge of the BRMT. TRCA and its partners are interested in pursuing an updated camp use on the property in order re-establish a positive presence on the site as well as to celebrate the natural and cultural heritage features with a new generation of youth from across the GTA. A separate recreation plan is currently being developed for approximately 12ha of the property while the entire 103ha will be included into the BRMT Management Plan to guide future, restoration, environmental protection, site securement and public-use/ recreation objectives. Below is a brief history of the Bolton Camp property as well as TRCA's conceptual recreation plans.

In 1921 the Neighbourhood Workers Association, in partnership with the Rotary Club, the Fresh Air Fund and other partners, established the Bolton Fresh Air Camp. The camp, intended to benefit low income families, became the largest supported by the fund, hosting a few hundred campers per season at the beginning, and approximately 4000 per season at its peak. At that time there were four independent camps operating on the property at once: Rotary Camp for boys, Hastings Lodge and Camp Howell for mothers and children, and Sherbourne Camp for girls. Originally built in the Tudor Revival architectural style, the camp at one point had 169 buildings.

An extensive restoration of the camp took place between 1968 and 1971 during which many original buildings were replaced, and it was at this time the dining hall and conference centre were built. Renamed the Family Service Association of Metropolitan Toronto (FSA) in 1962, the former TWA subdivided the property in 2000. A 62 acre parcel was sold to a developer, and the remaining 279 acre parcel including the conference centre building was sold to the Toronto Montessori Schools (TMS). Operating for only a few years, TMS sold the property to the developer Hi-Lands of Bolton in 2006. Buildings were left vacant and unsecured from that time until the purchase of the property by TRCA. Significant vandalism of the property had occurred, including the burning down of the heritage 'Crafts Building' in May of 2011.

Since acquiring the property TRCA has been attending to the immediate needs of the site. Actions include boarding up unsecure buildings, emergency roof repairs, hazard tree removals, assessments of the entry-bridge and electric system, as well as ongoing seasonal maintenance and security.

TRCA has developed preliminary concepts for one of three different operating models: Summer Day Camp, Summer Residential Camp, or Year-round Field Centre as shown in the figures below. Any new programming or facility upgrades would expand and enhance, not compete with, existing TRCA education programs. Given the extensive capital investments required at this site, further investigation into funding and operating partners will be required.

TRCA has also requested additional capital funding from the Region of Peel for the Bolton Camp Site Improvement Project which is intended to implement land management best-practices and infrastructure improvements on the Bolton Camp property with the goal to:

-protect and enhance natural and cultural heritage resources

-re-establish a positive presence on-site to prevent vandalism and inappropriate uses
-address public safety and site securement issues
-restore a sustainable camp/recreation operation on the property

Key implementation priorities of this project include:

-Detailed Heritage Assessments of those buildings and structures identified by the Architectural Conservancy of Ontario and Town of Caledon; plus implementation of recommendations as appropriate
-Assessment, securement, improvement or demolition of remaining buildings and structures as appropriate
-Access road and parking lot improvements
-Hazard tree mitigation
-Trail Plan implementation including:
    Access point creation and formalization
    Delineating and formalizing the public trail network
    Decommissioning remaining redundant or unsustainable trails
    Way-finding signage and trail guides
-Updating and restoring recreation infrastructure including the former sports field, swimming pool and ropes course

The current budget request is for $1,600,000 over four years, beginning in 2013.

Figure 4.1: Bolton Camp Summer Day Camp and Summer Overnight Camp Concept

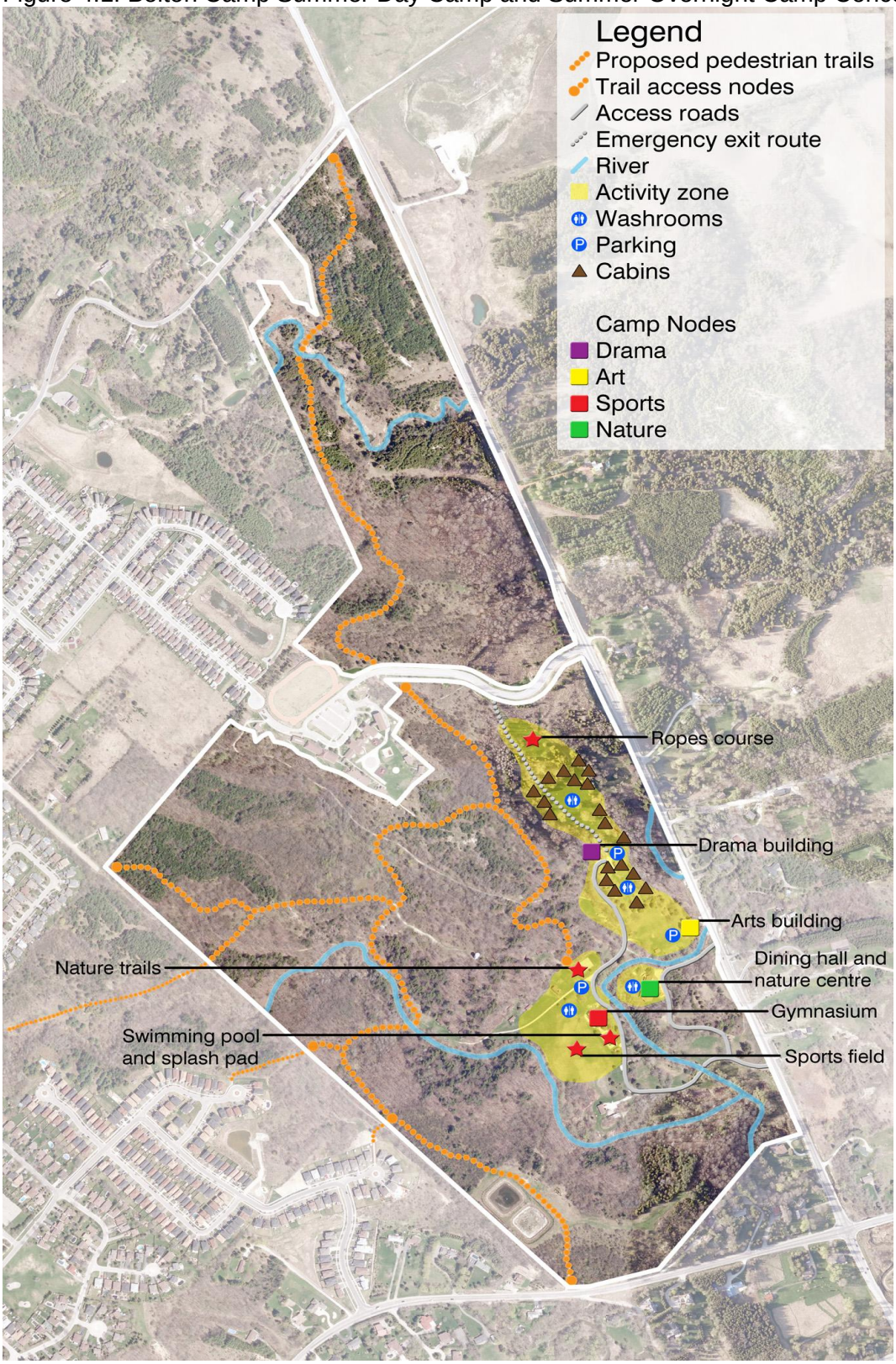
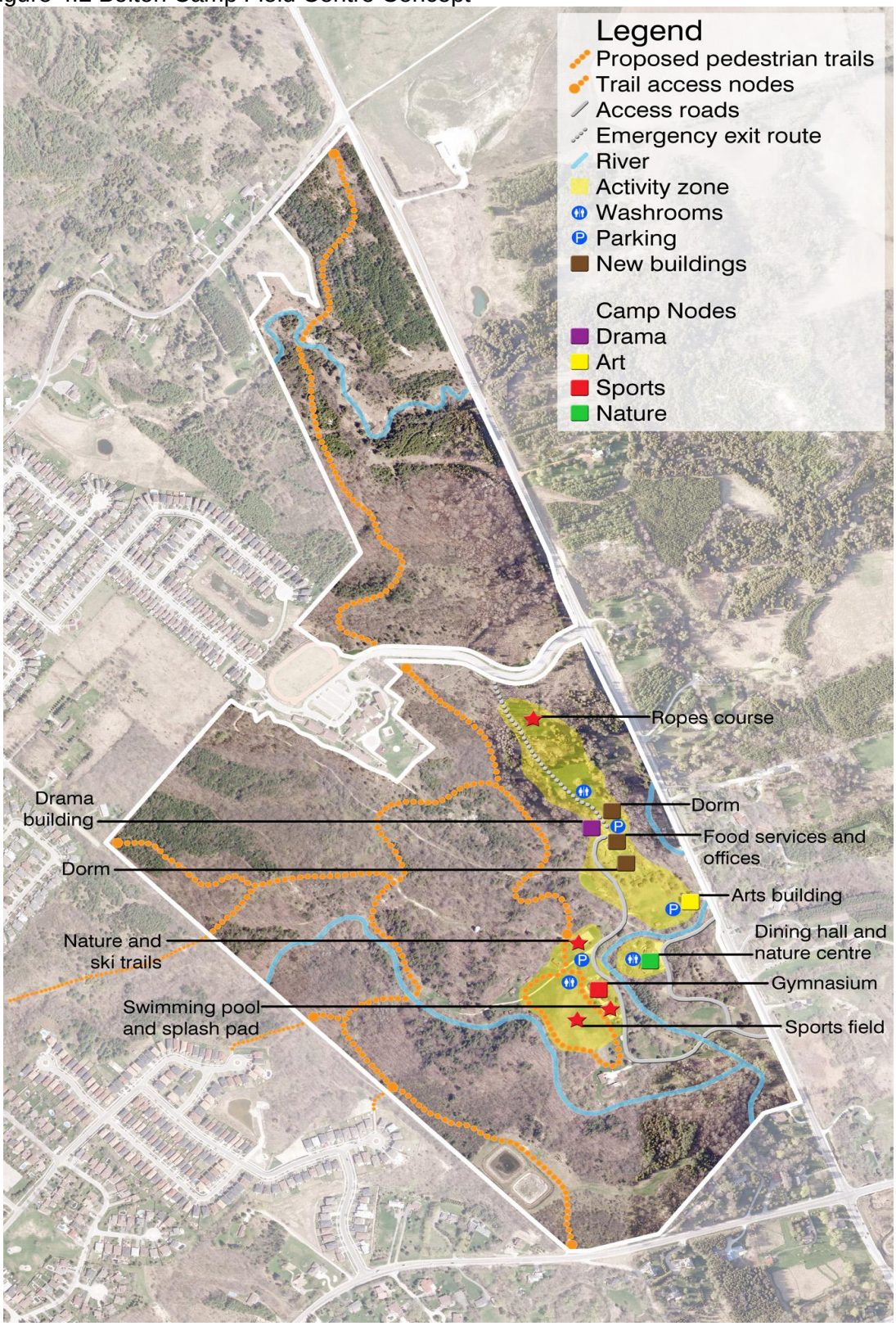


Figure 4.2 Bolton Camp Field Centre Concept



CHAPTER 5: LAND-USE POLICIES AND PLANS

Chapter 5 “Land-Use Policies and Plans” presents an outline of the current provincial, regional and municipal planning frameworks that influence and direct land-use related activities within the BRMT. Within BRMT there are numerous provincial, regional and municipal land-use planning policies, by-laws, regulations, studies and plans that determine land use. These policies and plans include those from the following: the Province of Ontario (Section 5.1), the Regional Municipality of Peel (Section 5.2) and the Town of Caledon (Section 5.3).

Pursuant to the Ontario *Planning Act*, municipalities are required to prepare plans that provide long-term management directions to govern land use and development and to update those plans on a regular (five year) basis to ensure that they continue to reflect the changing shape and priorities of the community. The *Planning Act* also requires that municipalities be consistent with provincial policy in matters of provincial interest, such as flood plain management and wetland protection.

In general, the Official Plans of regional and local municipalities provide conceptual directions for land use planning, while the secondary plans and Zoning Bylaws of the local municipality provide the concrete details, especially as they relate to site-specific development. In addition to Official Plans, the municipalities are also guided by other policies and strategic documents, some of which are described below.

5.1 The Province of Ontario

5.1.1 The Provincial Policy Statement (2005)

The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development, and sets the policy foundation for regulating the development and land-use in Ontario. The PPS, which is to be read and considered in it’s entirely, is considered to be the keystone of the provincial planning system. As stated in Section 3 of the *Planning Act*, all planning applications shall be consistent with the PPS.

In order to optimize the use of land and the efficient use of resources to ensure that they may provide important environmental, economic and social benefits, the Province provides direction within the PPS with respect to the management of: natural heritage resources, water, agricultural lands, mineral resources, and cultural heritage and archaeological resources. The wise use and management of these resources over the long term is essential, and the Province must ensure that its resources are managed in a sustainable way in order to protect essential ecological processes and minimize negative environmental impacts. The section of Natural Heritage provides specific direction in this regard. As referenced in Section 2.1:

> the diversity and connectivity of natural features in an area, and the long-term *ecological function* and biodiversity of *natural heritage systems*, should be maintained, restored or, where possible, improved, recognizing linkages between and among *natural heritage features* and *areas*, *surface water features* and *ground water features*.

To ensure the effective implementation of the PPS, the Province inter-relates Natural Heritage to the economic and social components of land-use policy. Therefore, in recognition of the various sensitive natural features within the BRMT, the PPS establishes the groundwork for ensuring the long-term protection of this significant area.

5.1.2 The Oak Ridges Moraine Conservation Plan (2002)

The Oak Ridges Moraine Conservation Plan (ORMCP) is a provincial regulation; O. Reg. 140/02. It was developed in accordance with the Oak Ridges Moraine Conservation Act (2001) to promote the ecological health and long-term sustainability of the Oak Ridges Moraine, as a unique natural heritage feature. The ORMCP outlines policies related to land use planning and resource management with the central objective of protection of this vital source of clean water and natural habitat.

The ORMCP was created through the provincial government's vision to preserve "a continuous band of green rolling hills that provides form and structure to south-central Ontario, while protecting the ecological and hydrological features and functions that support the health and well-being of the region's residents and ecosystems" (ORMCP, 2002). Through the Act and the Plan, the Ontario Government sets a clear policy framework, in keeping with the provincial land use planning system, for ensuring the long term protection the Oak Ridges Moraine. Municipalities are responsible for implementing provincial policy through their official plans and when making decisions on development applications. Therefore, municipal planning decisions shall also conform to this Plan, which takes precedence over municipal official plans. Municipal plans are required to be brought into conformity with this Plan within a specified time period.

The ORMCP sets out policies for the Moraine by dividing the area into four land use designations: Natural Core Areas, Natural Linkage Areas, Countryside Areas and Settlement Areas. The land use designations were created to protect key natural heritage and hydrological features such as wetlands, woodlands, kettle lakes and springs and to provide clear direction with respect to land use planning practices. Natural Core Areas, which comprise 38 per cent of the moraine, are the most valued for their natural heritage aspects. Uses in these areas are restricted mainly to existing activities and low intensity recreation as well as other low impact uses such as ones associated with transportation and utilities. Natural Linkage Areas, which consist of 24 per cent of the moraine, focus on protecting the natural and open space linkages that exist along watercourses. They have the important function of supporting connectivity to Natural Core Areas. In contrast to the Natural Core Areas, some aggregate resource extraction could be allowed within the Natural Linkage Areas. Countryside Areas (which incorporates Rural Settlement Areas) protect the important agricultural land and rural activities on the Moraine. Typical agricultural uses as well as small settlement areas including hamlets are allowed within the Countryside Areas. These agricultural areas provide a buffer between the Natural Core Areas and the Settlement Areas. Settlement Areas are the parts of the moraine where old and new developments are concentrated.

The Oak Ridges Moraine within the BRMT starts approximately 800 metres south of Castlederg Sideroad. Oak Ridges Moraine land use designations within BRMT include Countryside, Natural Core and Natural Linkage. The vast majority of the BRMT within the Oak Ridges Moraine is designated as Natural Core Area. This includes all parcels west of Regional Road 50 from the southern edge of the Moraine (south of Castlederg as described above), north to Old Church Road. Areas within the BRMT Management Plan area classified as Natural Linkage Area

include the former Campbell, and Bolton Camp properties, as well as half of a small property referred to as Cedar Mains (the northernmost section of the BRMT Management Plan area).

This classification also extends to a small sliver of land east of Regional Road 50. The remaining half of Cedar Mains is classified as Countryside Area (Map 5.1).

Table 5.1 Total ORMCP Land Use designation hectares for BRMT

Classification	Total hectares (ha)
Non-Oak Ridges Moraine	552.60
Within Oak Ridges Moraine	420.40
Natural Core Area	338.30
Natural Linkage Area	60.58
Countryside Area	21.52

The maintenance and protection of Key Natural Heritage Features (KNHFs) and Hydrologically Sensitive Features (HSFs) is central to the overall intent of the ORMCP and this must be incorporated into the BRMT Management Plan.

5.1.3 The Greenbelt Plan (2005)

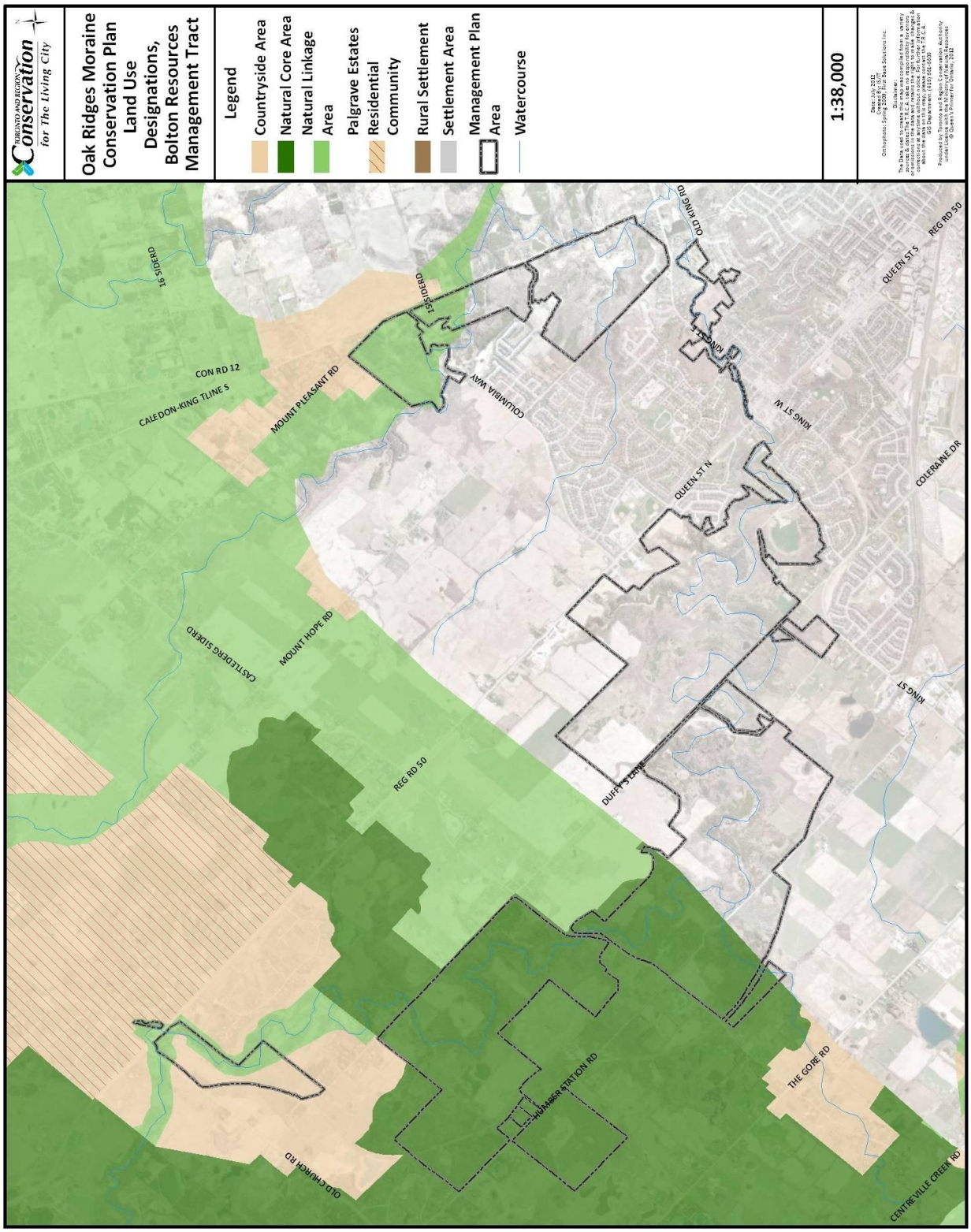
The Greenbelt Plan (GP) was developed to permanently protect ecological features and functions as well as agricultural lands in the Greater Golden Horseshoe. The intent of the GP is to connect rural and ecologically sensitive lands already covered by the ORMCP, the Niagara Escarpment Plan (NEP) and the Parkway Belt West Plan (PBWP) to form a continuous band across the Greater Golden Horseshoe. The GP was made possible by the Greenbelt Act, which received royal accent in February 2005, and defines the land designated as part of the Greenbelt (O. Reg. 59/05).

The vision for the Greenbelt addresses three main areas of importance: agricultural lands, natural heritage and the social and economic well-being of rural communities. The GP promotes on-going agricultural activities and protects “against the loss and fragmentation of the agricultural land base”. The GP also “gives permanent protection to the natural heritage and water resource systems that sustain ecological and human health and enhances the economic and social good of rural communities through supporting agriculture, tourism, recreation and resources uses”.

Within the Oak Ridges Moraine and the Niagara Escarpment, the ORMCP and NEP respectively will continue to apply. The Protected Countryside policies are not applicable with the exception of sections 3.3. The PBWP will also still apply to the areas already protected but section 3.2 and 3.3 of the Protected Countryside policies will be adopted. The areas that fall completely under the new Greenbelt policies are the Protected Countryside lands. The lands covered by the Protected Countryside policies are divided into three types of Geographic Specific Policies. These lands are designated as: the Agricultural System, the Natural System and the Settlement Areas. In addition to the specific policies that cover the Protected Countryside, there are General Policies that cover the entire Greenbelt.

The lands within the Agricultural System are necessary to protect prime agricultural areas that will provide food and a rural economy for current and future generations. The Agricultural System is further divided into *specialty crop areas*, *prime agricultural areas* and *rural areas*. In

Map 5.1 Oak Ridges Moraine Conservation Plan Land Use designations within BRMT



the two *specialty crop areas*, the Niagara Peninsula Tender Fruit and Grape Area and the Holland Marsh, only agricultural uses are allowed. Human settlement areas are not permitted to be developed on these designated lands. *Prime agricultural areas* are designated by municipal official plans and will also be maintained as farming lands. However, the policies for other uses being introduced into these areas are less strict than for the *specialty crop areas*. *Rural areas* are not considered as valuable for agricultural purposes and are generally designated as rural or open space in municipal official plans. These areas are important for tourism, recreation and resource-based commerce and are separate from Settlement Areas.

The Natural System provides important protections for natural heritage features, landforms, and hydrologic processes. The Natural System protects many lands that are not included in the ORMCP and the NEP. This part of the Protected Countryside follows the courses of tributaries and protects groundwater resources. The Natural System is further divided into a Natural Heritage System and a Water Resource System. Natural Heritage System areas receive their designation because of a high concentration of sensitive and/or significant natural features and functions. Within these lands, agricultural uses are permitted although they are subject to restrictions that ensure on-going ecological health. The Water Resource System protects important ground and surface water features including streams, lakes, wetlands and seepage areas, as well as their functions.

Settlement Areas, including towns, villages and hamlets, are key areas of economic and social growth. These areas permit population growth within the Greenbelt but restrict human settlement areas to lands that are appropriate for development.

Certain General Policies apply to the Greenbelt as a whole that encourage a system of parklands, open spaces, water bodies and trails. These publicly accessible areas will encourage recreation, nature appreciation as well as provide further benefits to the natural system. The GP encourages that trail plans be developed to improve the trail system.

BRMT is found within the Greenbelt in the Protected Countryside and is classified as part of the Natural System. Conservation authority lands are considered an important part of the Greenbelt.

Where the two plans overlap the requirements of the ORMCP (Ontario Regulation 140/02), made under the *Oak Ridges Moraine Conservation Act, 2001* , continue to apply and the Protected Countryside policies do not.

5.2 The Regional Municipality of Peel

Situated in the heart of southern Ontario's major urban centres, the Region of Peel is the second largest municipality in Ontario, with a population of 1.16 million. The Region encompasses the City of Mississauga, the City of Brampton and the Town of Caledon. The rapid population growth in the past few decades has transformed Peel from a primarily rural area of farms and villages into a dynamic blend of urban, industrial and residential areas. The BRMT draws visitors primarily from the Town of Caledon as well as from throughout the Region of Peel.

5.2.1 Region of Peel Official Plan – July 2012 Office Consolidation

The *Region of Peel* Official Plan applies to the combined area of the City of Brampton, the City of Mississauga, and the Town of Caledon. In portions of *Peel*, such as the areas covered by the Niagara Escarpment Plan and the *Parkway Belt West Plan*, special provincial plans are in effect. These provincial plans take precedence over this Plan.

The Region of Peel Official Plan, July 2012 Office Consolidation has been adopted by regional council. However, portions of the OP have been appealed to the Ontario Municipal Board and are highlighted in yellow below and in Appendix B.

1.3.1 Application of Provincial Policy
The Regional Official Plan is designed to clarify the roles and responsibilities of *the Region* and the local municipalities by providing regional leadership where the value is added and by clearly assigning certain roles to the area municipalities through strong directive policy language. An underlying premise of this Plan is that provincial policy will be implemented *jointly* through both the Regional Plans and area municipal plans. As stated, local municipal official plans will contain more detailed policies.

According to the Plan, it contains balanced yet flexible goals and objectives that promote equilibrium between an *ecosystem*[1] approach, *sustainable development* and *healthy communities*. Three of the four overall goals of Regional Council, as stated in Peel's Official Plan, are:

1.3.6.1 To create healthy and sustainable regional communities for those living and working in *Peel* which is characterized by physical, mental, economic and social well-being; minimized crime, hunger and homelessness; a recognition and preservation of *the region*'s natural and cultural heritage; and an emphasis on the importance of *Peel*'s future as a caring *community*. (Adopted and approved ROPA 20)

1.3.6.2 To recognize, respect, preserve, restore and enhance the importance of eco*system* features, functions and linkages, and enhance the environmental well-being of air, water, land resources and living organisms.

1.3.6.4 To *support* growth and *development* which takes place in a sustainable manner, and which integrates the environmental, social, economic and cultural responsibilities of *the Region* and the Province.

Several chapters within Peel's Official Plan are relevant to providing a context for the BRMT. These include the chapters on The Natural Environment, Resources, Regional Structure, and Implementation. The goals found in The Natural Environment and Resources chapters are particularly relevant and found below:

2.1.2. To create and maintain a system of viable, well-functioning environmental features to ensure a healthy, resilient and self-sustaining natural environment within *Peel Region*.

3.1.2 To protect, manage and utilize the renewable and non-renewable resources of *Peel* in an efficient manner that conserves and *protects* environmental features and functions, and the character of rural *Peel* including its **agricultural,** social, cultural heritage, *community* and economic aspects. (Adopted ROPA 21B) (Provincial Modification in bold)

Specific policies relevant to the BRMT and the development and implementation of the BRMT Management Plan are found in Appendix B.

5.2.1.1 Assessment of the Region of Peel Official Plan

Within its Official Plan, the Region of Peel makes a commitment to the protection, restoration and enhancement of its natural features. The Greenlands System (which applies to portions of BRMT) established within the Plan is an example of how the Region sets directives for its member municipalities. The Region also shows a strong commitment to working with and endorsing the initiatives of its local conservation authorities, area municipalities and other agencies. However, it should be noted that many of the details with regard to the Greenlands System and Oak Ridges Moraine Conservation Plan are implemented through the area municipality's official plan.

5.2.2 Charting our Course – The Region of Peel's Strategic Plan, 2011-2014

Charting Our Course is a high level corporate plan comprised of a vision for the community of Peel and a mission describing the Corporation of the Region of Peel's role in supporting the community's vision. In addition, there are five broad goals that further define the mission in terms of key results to be achieved. Each of the goals has a number of supporting strategic actions that begin to describe how the goals will be implemented. The following goals and strategic actions will influence the development and implementation of the BRMT Management Plan:

Goal 1: Protect, enhance and restore the environment
1.1 Demonstrate leadership in responsible environmental management practices and energy use.
1.2 Minimize the impact of waste.
1.3 Improve air quality, mitigate and adapt to climate change.
1.4 Protect and restore water resources, significant natural heritage and environmentally sensitive areas.
1.5 Support the viability of Peel's agricultural resources.
1.6 Promote low impact development and urban restoration.
1.7 Collaborate with other levels of government and agencies on environmental issues.

Goal 3: Maintain and improve the health of Peel's community
3.1 Influence healthy living through community design.
3.2 Increase investment in prevention strategies to strengthen the effectiveness and sustainability of the entire health system in Peel.
3.3 Deliver services that anticipate and respond to the evolving health needs of the community.
3.4 Ensure a clean, safe and adequate water supply.

The approved Strategic Plan will guide the development of plans by staff at the Region, ensuring that these plans support the high level directions contained in *Charting Our Course*.

5.3 Town of Caledon

The majority of the BRMT is located within Bolton, the largest community in the Town of Caledon. Caledon was established on January 1, 1974 in conjunction with the creation of the regional level of government. Representing an amalgamation of the former County of Peel townships of Albion, Caledon and the northern half of Chinguacousy, the Town of Caledon forms the northern municipality of the present Region of Peel. Caledon is home to over 58,000 people, living mostly in rural areas or the 'rural service centres' of Bolton, Caledon East or Mayfield West. The town of Caledon's Official Plan influences the BRMT and is much more detailed than the Regional Official Plan. As such it must be evaluated closely for management planning.

5.3.1 The Town of Caledon Official Plan – December 2008 Consolidation

Below are relevant excerpts from the 2008 Consolidation of the Town of Caledon Official Plan. More detail information found within specific policies can be found in Appendix C.

1.3 PURPOSE AND SCOPE

1.3.1 This Official Plan is a statement of principles, goals. Objectives and policies intended to guide future land use, physical development and change, and the effects on the social, economic, and natural environment within the Town of Caledon.

2.2 PRINCIPLES, STRATEGIC DIRECTION AND GOALS

The following are applicable for the BRMT management planning process:

2.2.1 Principles

a) That the Town will seek to preserve, protect and enhance natural physical features and biological communities, and cultural heritage resources.

b) That the Town will seek to improve the health and well-being of the residents, employees, landowners and businesses by fostering the development of communities where individuals can pursue diverse goals for personal development and where individual needs for employment, learning, culture, recreation and physical and social well-being can be satisfied.

2.2.2 Strategic Direction

The strategic direction is based on the three principles and forecasts of the forces that will affect the Town in the future.

Stewardship of Resources

A key strategy of this plan is to protect land resources including landscape features, systems and areas that perform important natural functions or which provide economic and recreational opportunities. Included in this category are natural and cultural heritage resources, recreational lands and agricultural lands.

As a municipality with a strong rural character, adjacent to a large urban area where urban activities are intensifying rapidly, the responsibility for conserving resources and related rural ambiance of the Town is a major basis for the policies of the Plan.

2.2.3 Goals
Together the following goals provide the context within which the policies in this Plan should be interpreted:

To protect the steward ecosystems in the Town.

- To provide residents with a quality of community life that provides access to community based services in a manner that best responds to the need for employment, learning, shopping, culture, recreation and social opportunities.
- To provide residents with an open space system which promotes a diversity of recreational and leisure opportunities.

Several sections and chapters within the Town's Official Plan relate to the development of a management plan for BRMT including Strategic Directions, Ecosystem Planning and Management, Environmental Policy Area, Open Space and Recreation, Transportation, and Settlements (see Appendix C for specific policies).

Within the Town's Official Plan, BRMT is considered to be an Environmental Policy Area (EPA) (see Schedule C in Appendix C). EPA's are made up of land that the Town considered ecologically important such as natural core areas and natural corridors to connect them. Within these areas, development is not permitted but non-intensive recreation and related facilities are allowed. The Official Plan states:

5.7.3.4.3 It is recognized that certain public agencies, such as the Town and the Conservation Authorities, are major providers of recreational opportunities. Where such opportunities are provided on lands which are designated EPA, they must be planned and managed in a manner which adheres to the Town's ecosystem principle, goal, objectives, policies and performance measures. Therefore the Town encourages the preparation of Comprehensive Master Plans, or comparable documents, for these sites, through a cooperative process, involving relevant agencies such as the Town, the Conservation Authorities and the Niagara Escarpment Community, where applicable.

Chapter 5 of the Official Plan (Section 5.8.2) also addresses the recreational needs of the Town of Caledon. Recreation objectives listed in the plan include:

- To develop and maintain in system of parks and publicly accessible open spaces which provide for a diversity of recreational and leisure opportunities for a range of age and interest groups.
- To preserve and protect existing linear trail systems, including the Bruce Trail, the Great Pine Ridge Trail and the Caledon Trailway.
- To identify and develop a comprehensive recreational system in the Town through the preparation and implementation of a Caledon Greenways Strategy.
- To participate in, and support, where appropriate, the initiatives of other agencies and interest groups in establishing or expanding interconnected linear and other recreational open space systems within Caledon, and at a broader scale.

5.3.1.1 Assessment of the Town of Caledon Official Plan

While few of the Town of Caledon's policies have any direct implications for the lands within BRMT, the policies do affect the lands in the immediate surrounding areas. The Town of Caledon's Official Plan implies that Caledon intends to protect and steward its ecosystems and maintain its rural character. Consequently, settlement will be concentrated in compact regions, as outlined in the Secondary Plans within Caledon's Official Plan (Chapter 7 of the Official Plan).These regions include the Bolton Core Area, the Bolton Golf Course Estate Residential area, covering part of lots 18, 19, and 20, Concession 6, as well as the Palgrave Estates Residential area to the northeast of BRMT. The latter is an official land use designation under the ORMCP, and abuts the northernmost section of the BRMT Management Plan area.

These secondary plans provide a clearer idea of the specific surrounding land use implications for planned developed in the areas adjacent to BRMT. Even where policy does not directly affect the management planning process for BRMT, the long term goals for BRMT should take into account the increased population pressures in the surrounding settlement pockets of Bolton, Palgrave, and Caledon East.

The importance that the Town of Caledon places on its environmental features is incorporated into its Open Space and Recreation policies (Chapter 5). The introductory statements of this chapter echo many of the concerns of the TRCA as it relates to the sustainable provision of appropriate recreational opportunities:

> The Town's population is expected to continue to grow and Caledon's proximity to expanding urban areas all but ensure that demand for open space/recreation and opportunity will increase. It is necessary therefore to plan for such opportunities in a manner which protects and stewards Caledon's natural environment, cultural heritage, rural landscapes, and settlements while addressing the open space/recreational needs of communities, and exploring the potential economic and social benefits of providing such opportunities.

The BRMT Management Plan and associated Trail Plan must address these concerns.

5.3.2 Bolton Camp zoning

Schedule C of the Town of Caledon's Official Plan details the Bolton Land Use Plan (Appendix C). The majority of the property is zoned as Environmental Policy Area (EPA), or Open Space (OP). The North-East Bolton Secondary Plan also applies to a small portion of the site near the former Montessori

OS 469 is a site-specific exemption pertaining to a portion of the Bolton Camp property and was implemented through an Ontario Municipal Board hearing related to the Town's Official Plan (Figure 5.1). Map 5.2 shows the municipal zoning designations for the Bolton Camp property.

Table 5.2: Extract from the Town of Caledon Comprehensive Zoning By-law 2006-50

OS	**469 (OMB Case No. PL070319, April 23, 2009)**	**-Camping Ground** ***-Cemetery*** ***-Conservation School*** ***-Existing Dwelling, Detached*** ***-Fishing Club*** ***-Forest Management*** ***-Golf Course*** ***-Nursery, Horticultural*** ***-Park*** ***-Park, Private*** ***-Ski Area***	For the purpose of this *zone*, *Camping Ground* shall also include: a) *existing* individual cabins, which may or may not contain washroom facilities, but shall not contain kitchen or cooking facilities; b) an *existing building* containing kitchen and dining facilities'; and c) any other *existing* related *structures*.

Any public use plans for the Bolton Camp property must have regard for these zoning restrictions.

Map 5.2: Municipal zoning designations for the Bolton Camp property.

CHAPTER 6: NATURAL HERITAGE RESOURCES

Natural heritage includes the physical, chemical and biological elements of the natural environment – what is often termed "nature" or the "environment." A "Natural Heritage System" refers to the interactions and dependencies between and among the physical, chemical and biological elements of natural heritage. It is these interactions that control the hydrologic cycle and the quality of habitat for plants, animals, birds and fish.

The BRMT's natural heritage should not be considered in isolation. It is connected to the lands beyond its boundaries, as well as to the greater Humber River watershed. The increasing amount of land in the area being dedicated to urban use raises concern as to how its natural heritage value can be sustained.

6.1 Terrestrial Natural Heritage

The natural vegetation of the Southern slope region is limited more by its climate than any other set of factors. While climate will, in general, be the same over an area the size of that under consideration, microclimate may have a definite affect upon the success or failure of plantations or natural regeneration due to local drought, frost, aspect, radiation and other environmental factors.

6.1.1 Bolton Resource Management Tract Study Area Terrestrial Biological Inventory and Assessment (2008)

The terrestrial natural heritage component of this background report is taken from a Natural Heritage study for the BRMT. Any decisions made regarding the future management of the natural heritage features, trail systems and recreational uses for the BRMT should be based on the most current information which is provided in this report.

6.1.1.1 Introduction

This report describes the BRMT Study Area in the context of the Terrestrial Natural Heritage Program of the TRCA. The question that the report addresses is ***"How does the area surveyed at the BRMT site fit within the regional natural system, and how should its contribution to this system be protected and maximized?"*** The important message outlined by this question is that the health of the natural system is measured at the *regional* scale and specific sites must be considered together for their benefits at all scales; from the site to the larger system. The TRCA has developed a Terrestrial Natural Heritage Systems Strategy (TNHSS) for retaining and recovering natural heritage within its jurisdiction that incorporates target-setting at the regional level (TRCA, 2007d). A key component of the Strategy is the development of a target system that identifies a land base of desired natural cover. Although the objectives of the Strategy are based on making positive changes at all scales, the evaluation models were developed at the landscape scale using a combination of digital land cover mapping and field-collected data. Field-collected data also provides ground-level information in the application of the landscape models at the site scale. This report explains the results of vegetation community and flora and

fauna species inventories conducted at BRMT and, more importantly, will explain how this site-specific information fits into the regional Natural Heritage Strategy and targets.

The report is divided into several sections and sub-sections. The first section of the report is *broad scoped,* and includes the introduction followed by a sub-section providing background information on the Terrestrial Natural Heritage (TNH) Program. This information will assist the reader in understanding the science and rationale behind the Strategy and targets that are a key part of this program and the recommendations for this site. Also included in the first section of the report is the methodology for the collection of data pertaining to the site. Section 2 is *site-focused;* having examined the regional context, the reporting now describes the site and the results and analysis of information collected through both remote-sensing and field surveys. Section 3 combines results from Sections 1 & 2 to provide recommendations for the site in context with the regional natural heritage strategy and targets.

6.1.1.2 The Terrestrial Natural Heritage Program

Rapid urban expansion in the TRCA jurisdiction has led to continuous incremental loss of natural cover and species. In a landscape that probably supported 95 percent forest cover prior to European settlement, current mapping shows that only about 16 percent forest and wetland cover remains. Agricultural and natural lands are increasingly being urbanised while species continue to disappear. This represents a substantial loss of ecological integrity and ecosystem function that would be exacerbated in the future according to trends.

In the late 1990s the TRCA initiated the Terrestrial Natural Heritage (TNH) Program to address terrestrial biodiversity loss in the nine watersheds that compose its jurisdiction. It based this work on two landscape-level indicators: the quality distribution of natural cover and the quantity of natural cover. These indicators summarize changes that occurred in the historical natural system. The aim of the program is to create a conservation strategy that both protects elements of the natural system (vegetation communities, flora and fauna species) *before* they become rare and promotes greater ecological function of the natural system as a whole. This aim is accomplished through the TNH Strategy by setting targets – both short and long term (100 years) - for the two “indicators” to provide direction in planning at all scales (TRCA, 2006b). The two indicators and the targets that have been set for them are explained below. It is important to understand that each of the two indicators is interdependent; neither well-distributed, poor-quality natural cover, nor poorly-distributed good quality natural cover, achieves the desired conditions.

An example of the stress placed on the natural system is illustrated by a continent-wide study undertaken by the Cornell Lab of Ornithology. The study showed that scarlet tanagers (a bird species that requires mature deciduous forests) are less *area sensitive* in a landscape that still has a high percentage of forest cover than in a landscape where overall forest cover has been greatly reduced (Rosenburg *et al*., 1999). This example demonstrates how important it is to view development and management at the broader regional scale rather than solely at the site-specific level. The important issue is the cumulative loss of natural cover in the TRCA region that has resulted from innumerable site-specific decisions.

Landscape Indicators

The quality distribution and quantity of natural cover in a region are important determinants of the species distribution, vegetation community health and the provision of ecosystem services in that region. As agricultural and urban land uses replace natural cover, diminishing proportions of various natural vegetation communities and reduced populations of native species remain. Unforeseen stresses are then exerted on the remaining flora and fauna in the natural heritage system and they become rarer and may eventually be at risk of extirpation. This pattern ultimately lowers the ability of the land to support biodiversity and to maintain or enhance the quality of human life (e.g. through increased pollution and decreased space for recreation).

Base Mapping

The first step in evaluating a natural system or an individual patch is to interpret and map land cover using aerial photographs. The basic unit for the evaluation at all scales is the individual *habitat patch* in the region, which are then combined and evaluated as a system at any scale. A habitat patch is a continuous piece of habitat, as determined from aerial photo interpretation. TRCA maps habitat according to four broad categories: *forest*, *wetland*, *meadow*, and *coastal* (beach, dune, or bluff). At the regional level, the TRCA jurisdiction is made up of thousands of *habitat patches*. This mapping of habitat patches in broad categories is conducted through remote-sensing and is used in the evaluation of quality, distribution and quantity. It should not be confused with the more detailed mapping of vegetation communities that is obtained through field-surveys and that is used to ground-truth the evaluation (the latter follows in Section 2).

Quality Distribution of Natural Cover

Quality is not just viewed on its own across the watershed; distribution of this quality is considered at the same time. If the distribution of quality habitat is poor, then the distribution of species of concern will also be poor. Where these species occur there is often a high correlation to the range and quality of ecosystem services provided. Therefore, for a watershed to deliver the range of ecosystem services equally across the watershed and provide the habitat necessary to maintain a complex and dynamic terrestrial system, good quality habitat must be distributed evenly. By examining the quality of habitat across each subunit or subwatershed the distribution of quality habitat, or ‘quality distribution’ can be established.

Each habitat patch is evaluated according to three criteria: *size* (the number of hectares occupied by the patch), *shape* (edge-to-area ratio), and *matrix influence* (measure of the positive and negative impacts from surrounding land use)(TRCA, 2006a). A total score for each patch is obtained through a weighted average of the scores for the three criteria. This total score is used as a surrogate for the ‘quality’ of a habitat patch and is translated into a local rank (L-rank) ranging from L1-L5 based on the range of possible total scores from 3 to 15 points. Of these L-ranks, L1 represents the highest quality habitat and L5 the poorest.

Species presence or absence correlates to habitat patch size, shape and matrix influence (patch quality) (Kilgour, 2003). The quality target is based on attaining a quality of habitat patch throughout the natural system that would support, in the very long term, a broad range of biodiversity, more specifically a quality that would support the region’s fauna Species of Conservation Concern (Table 1).

Regional Target: The target for quality distribution is to increase the quality of patches in all subwatersheds while promoting the "good quality" (L2) average regionally (TRCA, 2007d).

Humber Watershed Target: Currently, the average quality of natural cover patches in the Humber Watershed is ranked as L3; the refined target system for the watershed seeks to increase this to an L2 average (by hectare of whole watershed) (TRCA, 2008b).

Table 6.1: Habitat Patch Quality, Rank and Species Response

Size, Shape and Matrix	Patch Rank	Fauna Species of Concern
Excellent	L1	Generally Found
Good	L2	Generally Found
Fair	L3	Generally Found
Poor	L4	Generally Not Found
Very Poor	L5	Generally Not Found

In addition to the three criteria that make up the total habitat patch score, another important measure to consider in assessing habitat patch quality is *forest interior* (the amount of forest habitat that is greater than 100 metres from the edge of the forest patch). A recognized distance for deep interior conditions occurs at 400 metres from the patch edge. Such conditions are a habitat requirement for several sensitive fauna species.

Quantity

The *quantity target* is largely the amount of forest and wetland cover necessary to achieve the quality distribution targets. This illustrates how the two targets are dependent on each other.

Regional Target: The quantity target of 30 per cent is the minimum forest and wetland cover required for the "good quality" average to be distributed, where possible, in the TRCA jurisdiction (TRCA, 2007d).

Based on 2002 orthophotography, 25 per cent of the land area in the TRCA jurisdiction consists of natural cover but this figure includes meadow and old field. Although historically the region would have consisted of up to 95 per cent forest cover, today only about 16 per cent is covered by forest and wetland. Of the remaining non-natural cover, 48 per cent is urban and 27 per cent is rural/agricultural.

Humber Watershed Target: The Humber Watershed covers 91,077 ha, of which 29,089 ha or 31.9 per cent is natural cover (including meadow and old field, 2007 figures). TRCA technicians have identified and refined a target natural heritage system that results in 35,493 ha of natural cover or 39 per cent of the total watershed area (TRCA, 2008b).

6.1.1.3 The Region Today

The region-level analysis of habitat patches shows that the present average patch quality across the TRCA jurisdiction is "fair" (L3). Forest and wetland cover is contained largely in the northern half of the TRCA jurisdiction, especially on the Oak Ridges Moraine; and the quantity is 16 per cent of the surface area of the TRCA jurisdiction. Thus the existing system stands below

the target that has been set for the region (30 per cent). It becomes increasingly important to recognise that **all** site-based decisions contribute to the condition of a region.

6.1.1.4 The Region in 100 Years

The targets for quality distribution and quantity fall short of the historic pre-settlement condition, which was likely an "excellent" patch quality (L1 rank) on average, with an even distribution and 100 per cent natural cover. Those historical conditions are not the regional vision any more than 100 per cent urban is desirable. Rather, the goal is to promote natural cover in a city region where urban communities, agriculture and natural cover function together as an ecosystem. The targets represent an important move toward the sustainability of regional biodiversity. Achieving the targets would reverse the current trend of declining species and vegetation communities and would improve the system's quality sufficiently to offset many impacts from further urban growth and intensification.

6.1.1.5 Vegetation Communities and Species

While the targets for the natural heritage system are derived from regional-scale information, the site surveys and ground-truthing provide important information that can be used in conjunction with the targets to plan decisions at the site level. A key component of the ground-truthing surveys is the scoring and ranking of vegetation communities and flora and fauna species to generate local (L) ranks (L1-L5)(TRCA, 2007e). Vegetation community scores and ranks are based on two criteria: *local occurrence* and the number of *geophysical requirements* or factors on which they depend. Flora species are scored using four criteria: *local occurrence*, *population trend*, *habitat dependence*, and *sensitivity to* impacts associated with *development*. Fauna species are scored based on seven criteria: *local occurrence*, *local population trend*, *continent-wide population trend*, *habitat dependence*, *sensitivity to development*, *area-sensitivity*, and *mobility restriction*. With the use of this ranking system, communities or species of *regional concern*, ranked L1-L3, now replace the idea of *rare* communities or species. Rarity (*local occurrence*) is still considered but is now one of many criteria that make up the L-ranks, making it possible to recognize communities or species of regional concern *before* they have become rare. Fauna species of regional concern are generally absent from the urban matrix.

Since much of the damage is irreversible once a community or species is considered rare, conservation efforts need to be exercised ***before*** a vegetation community or species reaches this state. This is why the regional targets are relevant at the site scale where cumulative impacts occur. In addition to the L1-L3 species, a large number of currently common or secure species at the regional level are considered of concern in the urban context. These are the species identified with a conservation rank of L4. Although L4 species are widespread and frequently occur in relatively intact urban sites, they are vulnerable to long-term declines.

6.1.1.6 Inventory Methodology

A biological inventory of the BRMT study area was conducted at the levels of habitat patch, vegetation community, and species (flora and fauna) according to the TRCA data collection methodology (TRCA, 2007c). Habitat patch mapping was excerpted from the regional 2002 mapping of broadly-defined patch categories (forest, wetland, meadow and coastal) and digitized using ArcView GIS software. For the purpose of keeping track of the survey status of

the different portions of the study area it was decided to break the whole of the BRMT into four blocks, A – D:

- Block A extends south from Old Church Road to Castlederg Sideroad
- Block B includes all areas to the south of Castlederg Sideroad, west of Duffy's Lane
- Block C includes the extensive portion between Duffy's Lane and Highway 50 to the south of Castlederg Sideroad
- Block D covers the small corridor of natural cover extending into the urban area to the east of Highway 50.

These blocks are described here as a means to easily describe the survey status but are not included on the maps of the site.

It should also be noted that the Campbell and Bolton Camp properties, acquired by TRCA in 2009 and 2011 respectively, were not captured in these inventories and any existing data for this site is considered 'historic'. The BRMT management plan will recommend an up-to-date inventory of this property. Any future management zones and recommendations should be adjusted accordingly at that time.

Vegetation communities and flora species were surveyed concurrently. Botanical fieldwork for the site was conducted in 2001 and 2007 (Table 2)[2]. Vegetation community designations were based on the Ecological Land Classification (ELC) and determined to the level of vegetation type (Lee et al., 1998). Community boundaries were outlined onto printouts of 2002 digital ortho-rectified photographs (ortho-photos) to a scale of 1:2000 and then digitized in ArcView. Flora regional species of concern (species ranked L1-L3) were mapped as point data along with the approximate number of individuals seen.

Fauna data were collected by the TRCA in April and June/July, 2001, 2005 and 2007. Blocks A and B were surveyed thoroughly in 2007, augmented by survey results from 2001; Block C was surveyed thoroughly in 2005, augmented by survey results from 2001; Block D has not been surveyed for fauna. The spring survey searched primarily for frog species of regional concern, but recorded, incidentally, the presence of any early-spring nocturnal bird species (owls and American woodcocks). The summer surveys were concerned primarily with the mapping of breeding bird species of regional concern. Songbirds are surveyed in June/July in order to obtain breeding bird data and to exclude migrants. The methodology for identifying confirmed and possible breeding birds follows Cadman *et al*. (1987). Fauna regional species of concern (species ranked L1-L3) and species of urban concern (L4) were mapped as point data.

Table 2: Schedule of the TRCA Biological Surveys of the BRMT Study Area, 2001 - 2007

Survey Item	**Dates**	**Time** (hours)
Patch/Landscape	2002 ortho-photos	21 hours

[2] Block A was surveyed in 2007. Blocks B and C were surveyed in 2001 with additional flora species information collected in 2007, while Block D was surveyed in 2001 with a very small portion in 2002.

Vegetation Communities & Flora Species	2001: Sep 17,18,19,20,21,25, 26,27,28; Oct 1,2,3,4,9,10,11, 15,17. 2002: Jun 12; 2007: May 10,14,16,28,29,30; Jun 11,13,15,18,25; Jul 12,23, 24,26,27,30,31; Aug 3, 8,9,10, 13,14,15; Sep 12	320 hours
Frogs & Wetland Birds	12, 13, 15 April, 2005. 2, 17, 18, 20, 22 April, 2007.	21.5 hours
Breeding Songbirds	14, 17, 18, 19 June, 2001. 1, 2, 17, 20, 21 June, 2005; 7 July, 2005. 1, 4, 6, 7, 21, 25, 26 June, 2007; 10, 11 July, 2007..	114 hours

6.1.2 Results and Discussion of BRMT Study Area

Information pertaining to the study area was collected through both remote-sensing and ground-truthing surveys. This information contains three levels of detail: habitat patch, vegetation community, and species (flora and fauna). Section 2 provides the information collected and its analysis in the context of the TNH strategy. Sub-section 2.1 gives an overview of the site location and general information about the site. Further sub-sections will present the findings and analysis under the headings of *habitat patch, vegetation communities, flora species,* and *fauna species.*

6.1.2.1 Site Location; Floristic and Physiographic Regions

The majority of the BRMT study area is on the main branch of the Humber River just upstream from Bolton in the Town of Caledon. It includes a small area of urban parkland within Bolton, but the vast majority of the land is rural. Most of the land is composed of relatively large blocks south of Castlederg Sideroad east and west of Duffy's Lane, and one large block north of Castlederg Sideroad west of Duffy's Lane. Additional parcels include the abovementioned urban riparian parkland within Bolton proper extending east of Regional Road 50, a former landfill on the west side of Humber Station Road north of Castlederg surrounded by plantation and forest, the Cedar Mains property east of Duffy's Lane and south of Old Church Road, and the Campbell and Bolton Camp properties west of the Caledon-King Townline on the north and south side of Columbia Way respectively. The site lies entirely within the Great Lakes - St. Lawrence floristic region, composed of mixed coniferous-deciduous forest.

The northern half of the site lies on the Oak Ridges Moraine, with the remainder extending down onto the South Slope physiographic region. The moraine boundary is south of Castlederg Sideroad and extends southwest, lying a short distance west of Duffy's Lane. The topography and hydrogeology is divided distinctly by the Oak Ridges Moraine boundary. On the moraine, the terrain is rolling with a fairly loosely-defined river valley. At the upstream end of BRMT, the moraine's sandy loam soils are evident, while as one approaches the boundary of the moraine, there is more of a till overlay. Wetlands are abundant, with numerous kettles in the till portion

and seepage headwater swamps along the valleys. The South Slope portion of BRMT, as one moves downstream toward Bolton, has clay loam soils on till with a deeply incised river valley. Wetlands are fewer in this area. As the Humber River exits the Oak Ridges Moraine, the valley includes some remarkably large and well-developed incised meanders, notably around Duffy's Lane.

6.1.2.2 Habitat Patch Findings for BRMT Study Area

The following details the study area according to the two natural system indicators used in designing the Terrestrial Natural Heritage System Strategy: the *quality distribution* and *quantity* of natural cover. Analysis was based on 2002 ortho-photos.

Quality Distribution of Natural Cover

The Humber River watershed, being the largest watershed in the TRCA jurisdiction, has extensive natural cover in the upper reaches, but the lower half of the watershed is heavily urbanized. The 32 per cent natural cover of the watershed is relatively high quality but poorly distributed. BRMT is in the upper watershed but is just upstream of the urbanizing boundary of the Bolton settlement area through which the Humber River passes. The downstream parts of BRMT actually have an urban matrix.

Habitat Patch Size and Shape

The study area is a fairly even mix of "fair" and "good" sized patches of natural cover. The best representation of large size patches being in the area to the east of Duffy's Lane, south of Castlederg Sideroad (Block C, surveyed primarily in 2005). "Good" size patches score 4 out of a possible 5 points (i.e. at least 50 ha for forests or 10 ha for wetlands. This implies that there are habitat patches of sufficient size to accommodate many area-sensitive fauna species.

The majority of the habitat patches have uneven boundaries and shapes and this results in a comparatively low incidence of Forest Interior habitat despite the large area of many of the forest patches. Nowhere within the study area does Forest Interior occur beyond 200 metres from the patch edge, although there are several places where the 100 metre threshold is reached. Such Forest Interior occurs throughout the site but with slightly more extensive examples in the western half of the site.

Habitat Patch Matrix Influence

Analysis based on the 2002 ortho-photos shows that the habitat in the study area is split as to Matrix Influence, with the area to the west of Duffy's Lane receiving a "good" score (i.e. scores four out of a possible five points), while the area to the east of Duffy's Lane receives a "fair" score (i.e. three out of five points). This can be attributed to the proximity of the town of Bolton to the south east of the site and the fact that the urban matrix associated with Bolton wraps around the extreme eastern extension of the site.

Habitat Patch Total Score

The BRMT study area scores primarily "fair" quality, with just one medium sized patch between Humber Station Road and Duffy's Lane (to the south of Castlederg Sideroad) scoring as a

“good” quality patch. The habitat quality of the forest component of BRMT is thus roughly equivalent to the average condition in the TRCA jurisdiction and should support some Species and Vegetation Communities of Concern, although not to the extent of higher quality sites just to the north such as Albion Hills and Palgrave.

Quantity of Natural Cover

The Humber watershed is approximately 903 square kilometres in size containing 32.1 per cent natural cover, including 18,208 hectares as forest (20 per cent, including successional) and 1413.4 hectares as wetland (1.55 per cent). Complete ELC coverage of BRMT resulted in a ground-truthed total of 773.8 ha vegetated natural cover in the study area: 371.6 ha forest, 221.4 ha successional, 93.0 ha wetland, 0.2 ha vegetated aquatic, 6.8 ha bluff and barren, and 80.8 ha meadow. This amounts to 2.7 per cent of the total natural cover in the Humber watershed.

6.1.2.3 Vegetation Community Findings for BRMT Study Area

Vegetation Community Representation

The complex geology and topography of BRMT along with a range of historic and current land uses (agriculture, woodlot, established settlement area) are reflected in a very diverse and complicated mosaic of vegetation communities. A total of 128 different ELC vegetation community types were described for the site. Six were present only as inclusions and/or complexes.

BRMT supports 53 types of forest, covering 371.6 hectares, including 18 plantation types covering 106.4 ha. Mature forests are found along the valley corridor and in several tableland woodlots. The most extensive are Fresh-Moist White Cedar - Hardwood Mixed Forest (FOM7-2), Fresh-Moist Sugar Maple – Hemlock Mixed Forest (FOM6-1), Fresh-Moist White Cedar Coniferous Forest (FOC4-1), and Dry-Fresh Sugar Maple – White Ash Deciduous Forest (FOD5-8). The predominance of mixed or coniferous component at BRMT (particularly when combined with the treed cedar swamps) is striking. Flora species of concern are frequently encountered in these forests; a rich spring ephemeral ground layer is evident in some of the sugar maple stands, and ferns are abundant in the mixed forests. A few species with Carolinian affinities occasionally appear in the deciduous forests (for example, running strawberry bush (*Euonymus obovata*), but the character of BRMT is generally more northern in character. Invasive, non-native flora are relatively few in the forests. Forest types younger in age include Fresh-Moist Poplar Deciduous Forest (FOD8-1) Fresh-Moist Ash Deciduous Forest (FOD7-2), Fresh-Moist White Elm Deciduous Forest (FOD7-1), and Fresh-Moist Manitoba Maple Deciduous Forest (FOD7-a). These tend to occur on the floodplain or along the edge of wetlands.

Red and white pine plantations (CUP3-1 and CUP3-2), are concentrated north of Castlederg Sideroad but present throughout, and occupy over 70 ha in total. Scots Pine Coniferous Plantation (CUP3-3) and various other types also occur.

Wetlands occupy 93 ha of the site. They are mostly but not entirely found on the Oak Ridges Moraine portion of BRMT, and occur in two main situations: kettles and seepage zones. Kettle wetlands occur in depressions where a layer of relatively impermeable till covers the sand and

gravel of the moraine. Numerous kettles occur in the vicinity of Humber Station Road north of Castlederg Sideroad, while some are found west of Duffy's Lane south of Castlederg. There are even a couple of kettle-like features on terraces in the valley east of Duffy's Lane. The kettles include a variety of shallow marshes, thicket swamps, and deciduous swamps, mostly on organic soils. One large kettle west of Humber Station Road features a Red Maple – Conifer Organic Mixed Swamp (SWM5-1). There are also a few examples of Black Ash Organic Deciduous Swamp (SWD5-1), Silver or Swamp Maple Organic Deciduous Swamp (SWD6-2, SWD6-3), and Swamp Maple Mineral Deciduous Swamp (SWD3-3). Willow Organic Thicket Swamp (SWT3-2), Broad-leaved Cattail Organic Shallow Marsh (MAS3-1A), and Reed Canary Grass Organic Shallow Marsh (MAS2-d) are more typical in the kettles. Past agricultural activity, with its inputs of silt and nutrients, along with natural succession may explain the absence of any true peatlands (kettle bogs) such as are found at Albion Hills and in the Oak Ridges Corridor Nature Reserve. Reed canary grass may have become dominant in a few wetlands as another result of agriculture.

Discharge areas along the Humber River and a few tributaries support seepage wetlands or headwater swamps. Various types of cedar swamp (pure or mixed stands, on mineral or organic soils) are the dominant cover type here and occupy 51.5 ha. The most extensive are west of Humber Station Road south of Castlederg Sideroad and along the Humber River north of Castlederg Sideroad.

The wetlands have the highest densities of flora species of concern at BRMT. Many of them have distinct northern affinities.

Vegetated aquatic habitats are restricted to a couple of small ponds of human origin. One, in the vicinity of Humber Station Road, supports a Pondweed Mixed Shallow Aquatic community (SAM1-4) with a range of aquatic macrophytes. This portion of the Humber River, although relatively clean, is largely un-vegetated (OAO1) with a couple of species of pondweed (*Potamogeton foliosus* and *P. crispus* (an exotic)).

Former agricultural lands (probably abandoned in the 1960s) include 80.8 ha of meadow dominated by tall goldenrod (*Solidago altissima*)(Native Forb Meadow (CUM1-A)) or smooth brome (*Bromus inermis*) and other European cool-season grasses (Exotic Cool-season Grass Graminoid Meadow (CUM1-b)). Most of the post-agricultural land, however, has advanced to various stages of succession (221.4 ha). Hawthorn Cultural Savannah (CUS1-1) and Native Mixed Sapling Regeneration Thicket (CUT1-A2) cover extensive areas. They are generally indicators of historic cattle pasture. Many of the successional areas have complexes and inclusions of young conifer plantation. These appear to have been planted in the late 1980's – early 1990's.

A few vegetation communities are the result of soil erosion and/or drought. A small amount of Treed Sand Barren (SBT1) occurs in the northern part of BRMT, while open and shrub clay barren (CBO1, CBS1) occurs in the south. Bluffs including White Cedar Treed Bluff (BLT1-A), Deciduous Treed Bluff (BLT1-B), Sumac-Willow Shrub Bluff (BLS1-A), and Mineral Open Bluff (BLO1) occur on some of the steeper valley slopes downstream of the Oak Ridges Moraine.

Vegetation Communities of Concern

The vegetation communities that occur in the TRCA jurisdiction are scored and given a local rank from L1 to L5. Vegetation communities with a rank of L1 to L3 are considered of regional concern in the jurisdiction while L4 communities are considered of concern in the urban portion of the jurisdiction. The ranks are based on two criteria: *local distribution* and *geophysical requirements* (TRCA, 2007e). BRMT is mostly rural, so L4 communities are not included in the discussion.

Thirty-seven of the 128 vegetation communities found at BRMT are of regional concern. These include three forest types, 27 wetlands 2 vegetated aquatic, and 6 bluff & barren communities. When considering the forest communities, however, their age and the diversity and quality of the understorey and ground layers are also important factors in addition to their ranks.

Three of the forest communities of regional concern, 16 of the wetland and aquatic communities, and 6 of the bluff / barren communities have a restricted *local distribution* (generally, they are restricted to six or fewer of the forty-four 10x10 km squares that encompass the TRCA jurisdiction). Most of these are unusual associations of common to moderately uncommon species such as Yellow Birch Organic Deciduous Swamp (SWD7-2), Rice Cut-grass Organic Shallow Marsh (MAS3-8), and Reed Canary Grass Organic Shallow Marsh (MAS3-d). The Fresh-Moist Poplar Mixed Forest (FOM8-1) is a type with northern affinities; generally being a mid-aged forest with conifers other than cedar being co-dominant with poplar. At BRMT, this is represented by a stand of trembling aspen (*Populus tremuloides*) and balsam fir (*Abies balsamea*). Similarly, swamps that are dominated by such species as hemlock (*Tsuga canadensis*) and yellow birch (*Betula alleghaniensis*) instead of cedar (Birch – Conifer Organic Mixed Swamp SWM6-1) are somewhat unusual and often include very old trees.

The geophysical requirements of communities in the TRCA jurisdiction make up the second criteria of the community L-rank. Vegetation communities develop under certain site conditions and may be restricted to particular locations based on slope aspect, hydrology, soil character (e.g. structure and nutrient status), and dynamic processes (e.g. erosion and flooding). Hydrological processes govern many communities. The coniferous and mixed swamps at BRMT are associated with a continuous flow of cool groundwater and often a northerly or easterly exposure. This is also true to some extent of the coniferous and mixed forests. On the other hand, kettle wetlands typically fill up over the winter with snowmelt and rain and dry down in the summer. Treed sand barrens on some of the higher kames (hills consisting of sand and gravel) are subject to drought.

Organic soils are characteristic of many of the wetlands (both kettle and headwater seeps). The build-up of muck and peat takes centuries. The shift in mineral soil type is evident as one moves downstream in BRMT; wetland and sand barren are more common upstream and characteristic of the Oak Ridges Moraine, while down towards Bolton proper, there are more bluffs and clay barrens characteristic of the South Slope.

Climate and land use changes may alter many of the vegetation communities at BRMT, particularly the wetlands. Increased evaporation, reduced vegetation cover, and increased silt and nutrient input are potential threats.

6.1.2.4 Flora Findings for BRMT Study Area

Flora Species Representation

A total of 620 flora species were found at the BRMT study area during the 2001 and 2007 field seasons (Appendix G). Of these, 18 occurred only as planted specimens and thus 602 can be considered naturally-occurring or established. There were 404 native, naturally-occurring species: 67 per cent of the total. Also, 162 species are of regional concern (ranking L1-L3). This is more typical of higher-quality sites in the TRCA jurisdiction and reflects BRMT's large size, mostly rural setting, and wide range of vegetation communities.

Flora Species of Concern

As with vegetation communities, flora species are considered of regional concern in the TRCA jurisdiction if they rank L1-L3 based on their scores for four criteria: local occurrence; population trend; habitat dependence; and sensitivity to development impacts. Most of the flora species of concern are not rare plants *per se*, since few of them rank as provincially rare (S1-S3); however, they are of 'conservation concern' due to their sensitivity to development and restriction to certain habitats or certain areas within the TRCA region. L4 ranked communities and species are considered to be of concern within the urban portion of the jurisdiction.

Almost all the flora species of concern (160 in total) are associated with specific vegetation communities and are therefore highly susceptible to changes in these communities. As a result they score relatively high in *habitat dependence*. Roughly, they are found in seven or fewer vegetation cohorts (groupings of vegetation types with similar floristic characteristics)(TRCA, 2008a). For example, the deciduous forests (FOD5, FOD6) support spring ephemerals (herbaceous plants that flower for a short period in the spring) such as broad-leaved spring beauty (*Claytonia caroliniana*) and squirrel corn (*Dicentra canadensis*). Certain sedges such as Hitchcock's sedge (*Carex hitchcockiana*) and thin-leaved sedge (*Carex cephaloidea*) are also characteristic. Richer and moister deciduous forests (often also mixed types with cedar such as FOM7-2) have many ferns such as Goldie's wood fern (*Dryopteris goldiana*), beech fern (*Phegopteris connectilis*), and maidenhair fern (*Adiantum pedatum*). Sometimes there are species with southern affinities in the richer forests: for example, running strawberry-bush (*Euonymus obovata*) and bladdernut (*Staphylea trifoliata*). On the other hand, cool mixed forests with hemlock (FOM6-1, FOM6-2) support such species of concern as Indian cucumber-root (*Medeola virginiana*) and rose-twisted stalk (*Streptopus roseus*). Pinesap (*Monotropa hypopithys*) is occasionally abundant in young-to-mid-aged white pine plantations (CUP3-2).

Wetland species found in kettle marshes and swamps (e.g. MAS3, SWT3, and some SWD3 and SWD6 types) include winterberry holly (*Ilex verticillata*), water arum (*Calla palustris*), rattlesnake grass (*Glyceria canadensis*) and many sedges (*Carex* spp.). The seepage headwater swamps (mostly SWC3 and SWM4) have a distinct set of often northern species such as balsam fir (*Abies balsamea*), three-seeded sedge (*Carex trisperma*), goldthread (*Coptis trifolia*), and twinflower (*Linnaea borealis*). A few species such as angelica (*Angelica atropurpurea*) and great St. Johnswort (*Hypericum ascyron*) appear to follow the banks of the Humber River in openings (intermediate between swamp and successional types of community).

Diverse aquatic flora is restricted to one pond near Humber Station Road south of Castlederg. Here occur fragrant water-lily (*Nymphaea odorata* ssp. *odorata*), and bushy naiad (*Najas flexilis*). One wetland in the eastern part of BRMT had been recorded as a Reed Canary Grass Organic Meadow Marsh (MAM3-2) in 2001, but had standing water and floating-leaved

pondweed (*Potamogeton natans*) in 2007. This is strange, because both surveys were in late summer during a very dry season. Perhaps intermittent thunderstorms had kept the water level high in 2007.

The sand and clay barren habitats (or often bare patches within plantations or successional habitats) support a few distinct species of regional concern, notably tower mustard (*Arabis glabra*), long-headed thimbleweed (*Anemone cylindrica*), and common juniper (*Juniperus communis*). Small yellow sedge (*Carex cryptolepis*) was also found in 2001 in a clayey opening.

Most of the flora species of concern (156 of 162) have specific *sensitivity to development* impacts; scoring 3 or more for this criterion. These impacts are indirect ones emanating from the surrounding land use or *matrix influence*. Note the clustering of highly sensitive plants in the more mature forests along the ravines amid a "fair" matrix influence. This is due to the sheltered character of the forest and the relative lack of public access or intrusion onto the site. Areas that have a history of land use disturbance, including agriculture, have fewer sensitive species. Several disturbances are noteworthy as possible impacts to be aware of:

Hydrological changes from nearby development can include drainage and drying or flooding from impeded drainage and increased stormwater. A very large proportion of the flora of concern at BRMT are wetland species and thus likely to be sensitive to such hydrological changes. This is particularly true of those found in the seepage mixed and coniferous swamps, which rely on a steady flow of cool ground water. Such species as bristle-stalked sedge (*Carex leptalea*) and a number of other sedges; goldthread (*Coptis trifolia*), and naked mitrewort (*Mitella nuda*) would be in this category. Certain trees such as hemlock (*Tsuga canadensis*) and most of the fern species (even those that are not restricted to swamps such as oak fern (*Gymnocarpium dryopteris*) and maidenhair fern (*Adiantum pedatum*) should also be considered sensitive to subtle changes in hydrological regime. The water level of kettle wetlands may also be altered by climate change and land use, thus affecting species such as hop sedge (*Carex lupulina*) and northern manna grass (*Glyceria borealis*).

Air pollution or changes to soil through nutrient-laden runoff alter the habitat and affect less-competitive wetland plants such as certain sedges (e.g. *Carex canescens*, *C. disperma*), and stiff marsh bedstraw (*Galium tinctorium*). These may be replaced by more aggressive species that can take advantage of increased disturbance and nutrient loading such as reed canary grass (*Phalaris arundinacea*). Trees such as white pine (*Pinus strobus*), hemlock (*Tsuga canadensis*), and balsam fir (*Abies balsamea*) and forest floor plants may be similarly affected even if they rank L4 as in the case of the first two trees named.

Disturbance caused by development and increased recreational use also facilitates the spread of invasive species. So far, BRMT is relatively lightly affected, but increased recreation pressures and deer browsing are likely to facilitate the spread of invasive alien species. Dog-strangling vine (*Cynanchum rossicum*) is already scattered across BRMT with over 30 small populations recorded, though it is not yet dominant anywhere[3]. Many of these populations are near Duffy's Lane between Castlederg Sideroad and Old Church Road. Dog-strangling vine is of particular concern as the plant appears to have a 'stealthy' establishment phase followed by rapid take-over of habitats. Early action is critical for control (TRCA, 2008a). Garlic mustard

3 Locations of dog-strangling vine at BRMT were mapped into the TRCA GIS database and may be made available for those interested in management of the property.

(*Alliaria petiolata*) is only in small infestations, but can be expected to spread rapidly with trail development and increased recreational use. It is mostly restricted to three areas: the margin of the Caledon Woods golf club on the Cedar Mains lands; the forest edge around a former agricultural field west of the Humber River north of Castlederg Sideroad (now being actively planted), and in disturbed lowland deciduous forests in the urban area of Bolton. This species, too, is in a fairly early stage of invasion. Buckthorn (*Rhamnus cathartica*) is present in many successional and young forest habitats, especially on the South Slope portion of BRMT. Finally, three ornamental species that have escaped from old homesteads are invading native forests here: lily-of-the-valley (*Convallaria majalis*), goutweed (*Aegopodium podagraria*), and periwinkle (*Vinca minor*). These three plants are capable of forming dense mono-specific ground cover in mature forests and replace native ground flora.

Many native plants cannot compete with invasives, especially when subjected to other stresses. For example, in open and semi-open areas, sky-blue aster (*Aster oolentangiensis*) and common juniper (Juniperus communis) are smaller and slower-growing than a number of invasive alien species. The same is true of many forest ground flora and woodland sedges (*Carex* spp.). Wetland invasion by reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites communis*), and hybrid cattail (*Typha* x *glauca*) is typically related to disturbances such as sediment, fertilizer, and road salt.

Increased populations of deer often occur in areas with light to moderate amounts of development. Field observations suggest that there has been a noticeable increase in deer between 2001 and 2007; the majority of forest communities surveyed in 2007 had noticeable deer browse. Over-browsing by deer affects many native species such as trillium (*Trillium* spp.) and tree regeneration. Ground hemlock (*Taxus canadensis*) is noticeably affected at BRMT and most plants seen were browsed to the point of decline. While some native plants, including many ferns, are spared by deer, many invasives are also avoided which can increase their rate of spread.

Butternut (*Juglans cinerea*) is found at BRMT in a couple of places. The species is now considered endangered because of an introduced canker disease that is rapidly killing off most individuals across its range. By using the Ontario Butternut Forest Health Protocol, it was determined that only a few trees at BRMT were deemed to be healthy in 2007.

An alteration of disturbance regimes can lead to the extirpation of species that require some form of disturbance. For example, foxglove beardtongue (*Penstemon digitalis*), tower mustard (*Arabis glabra*) and common juniper (*Juniperus communis*) require open habitats that may result from either anthropogenic grazing or natural fire. On the other hand, the saprophytic Indian pipe and pinesap (*Monotropa* spp.) require natural and undisturbed leaf-litter accumulation.

Increased access and use associated with recreational demand can also lead to increased trampling and soil compaction. Species that have a delicate stem and/or produce only a single set of leaves per growing season, such as starflower (*Trientalis borealis*) and trillium, are susceptible to trampling. Many forest ground flora are also in this category. This is of particular note since such mature forests that support such flora are particularly attractive to various trail users.

Finally, a few species are directly targeted by people for collection as edibles or for planting in their gardens. Wild leek (*Allium tricoccum*) is often eaten, and Michigan lily (*Lilium*

michiganense) and yellow lady's slipper (*Cypripedium calceolus* ssp. *parviflorum*) are showy flowers, often collected for garden use.

In response to loss of habitat and stresses from land use changes, susceptible flora exhibits a declining population trend and may become rare or even extirpated. Because of urbanization, most native flora species in the Toronto area are suspected to be undergoing slight declines as the total land base becomes smaller. Species that are considered rare according to the local occurrence criterion are found in fewer than 7 of the 44 10x10 km grid squares that cover the TRCA jurisdiction. The large size and intact habitat at BRMT supports some notable rare species which are known in only 1-3 places in the TRCA jurisdiction. Small yellow sedge (Carex cryptolepis) was found in 2001, and Goldie's wood fern (Dryopteris goldiana) in 2007. Of particular interest is the false mermaid (*Floerkea proserpinacoides*) found in 2007. This plant is a new recording for the TRCA jurisdiction.

6.1.2.5 Fauna Findings for the BRMT Study Area

Fauna Species Representation

The TRCA fauna surveys at the study area in 2001, 2005 and 2007 documented a total of 96 bird species, eleven mammals, and ten herpetofauna species (reptiles and amphibians). The TRCA also surveys for terrestrial crayfish, and one species was identified on the site bringing the total number of fauna species identified by the TRCA to 118. This total compares very favourably with other higher quality sites within the northern reaches of the TRCA jurisdiction such as Glen Major/East Duffins Headwaters (107 sp) and Palgrave Forest and Wildlife Area (102 sp). Refer to Appendix 3 for a list of the fauna species and their corresponding L-ranks.

Fauna Species of Concern

Fauna species, like vegetation communities and flora species, are considered of regional concern if they rank L1-L3 based on their scores for the seven criteria mentioned in section 1.1.4. As with flora, this type of ranking enables a pro-active, preventive approach, identifying where conservation efforts need to be made before a species becomes rare.

Fauna surveys in the study area have reported a total of 41 L1- L3 bird species including five L2 species (wild turkey, red-shouldered hawk, Canada warbler, golden-winged warbler and veery) and 36 L3 species. In addition there were six herpetofauna (three L2 and three L3) and three mammal species (one L2 and two L3) of concern together with the L2 ranked crayfish species; bringing the total to 51 fauna species of regional concern. Appendix E lists all of the fauna species reported from the study area, together with their associated ranks and scores.

Local occurrence is one of seven scoring criteria for fauna and is based on TRCA data and information from the Natural Heritage Information Centre (NHIC) of the Ontario Ministry of Natural Resources (OMNR). Using local occurrence as a measure of regional rarity, any species that is reported as a probable or confirmed breeder in fewer than ten of the forty-four 10km squares in the TRCA jurisdiction is considered regionally rare (scores 3-5 points for this criterion). Within the BRMT study area there are 17 species of regional concern (i.e. ranked L1 – L3) that are considered regionally rare. This is an extremely high total and is very close to the those found at Glen Major/ East Duffins Headwaters and Palgrave Forest and Wildlife Area. As is the case with flora, most regionally rare fauna species are impacted by other associated

factors that explain their vulnerability and need to be taken into account in conservation strategies.

Sensitivity to development is another criterion used to determine the L-rank of fauna species. A large number of impacts that result from local land use, both urban and agricultural, can affect the local fauna. These impacts, considered separately from the issue of actual habitat loss, can be divided into two distinct categories. The first involves changes that arise from local urbanization that directly affect the breeding habitat of the species in question. These changes alter the composition and structure of the vegetation communities; for example, the clearing and manicuring of the habitat such as the removal of dead wood and clearance of shrub understorey. The second category of impacts involves changes that directly affect individuals of the species in question. Examples include increased predation from an increase in the local population of predator species that thrive alongside human developments (e.g. blue jays, crows, squirrels, raccoons, and house cats); parasitism (from the facilitation of brown-headed cowbird access; a species which prefers more open, edge-type habitat); competition (for nest-cavities with bird species such as house sparrows and Eurasian starlings); flushing (causing disturbance and abandonment of nests); and sensitivity to pesticides.

Fauna species are considered to have a high sensitivity to development if they score 3 or more points (out of a possible five) for this criterion. At the study area, 48 of the 51 species that are ranked L1-L3 receive this score and are therefore considered sensitive to one or more of the impacts associated with development. These species are currently able to persist within the study area because the surrounding matrix for all but the south-eastern section is largely natural and agricultural.

The tendency for local urbanization to be accompanied by the 'clearing and tidying' of woodlands and thickets in the vicinity dramatically disrupts any species that is dependent on such scrub cover for nesting or foraging. Several of the bird species found at the study area nest low in the ground vegetation or on the ground and as such are highly susceptible both to increased predation from ground-foraging predators (house cats, raccoons) and to repeated flushing from the nest (by pedestrians, off-trail bikers and dogs) resulting in abandonment and failed breeding attempts. Such sensitive forest-bird species include American woodcock, ruffed grouse, black-and-white warbler, Nashville warbler, blue-winged warbler, ovenbird and veery. In addition, many of the open habitat species – bobolink, brown thrasher, northern harrier – and wetland species – Virginia rail- are also ground-nesters and would likewise be severely affected by any increase in pedestrian or dog traffic within their habitat. Various studies have shown that many bird species react negatively to human intrusion (i.e. the mere presence of people) to the extent that nest-abandonment and decreased nest-attentiveness lead to reduced reproduction and survival. One example of such a study showed that abundance was 48 per cent lower for hermit thrushes (a ground-nesting/foraging species) in intruded sites than in the control sites one-hectare circle in size (Gutzwiller, 1999). Elsewhere, a recent study reported that dog-walking in natural habitats caused a 35 per cent reduction in bird-diversity and a 41 per cent reduction in abundance, with even higher impacts on ground-nesting species (University of New South Wales, 2007).

Changes in the hydrology of the site will also affect the suitability of the habitat for bird species such as northern waterthrush and veery that prefer more moist conditions. The study area supports healthy populations of wood frogs, spring peepers and gray treefrogs that would be negatively affected by any changes in hydrology that decrease the breeding opportunities within

the site. These are species that have effectively been extirpated from much of the natural cover within the urbanized portions of the jurisdiction.

Area sensitivity is another of the seven criteria that are used to determine the local rank for fauna. Fauna species are scored for *area sensitivity* based on their requirement for a certain minimum size of preferred habitat. Species that require large tracts of habitat (>100 ha in total) score the maximum five points, while species that either show no minimum habitat requirement, or require < 1 ha in total, score one point. Species scoring three points or more (require 5+ ha in total) are deemed 'area sensitive' species. As mentioned in section 1.1, researchers have shown that for some species of birds, area sensitivity is a rather fluid factor; dependent and varying inversely with the overall percentage forest cover within the landscape surrounding the site where those species are found (Rosenburg *et al*., 1999).

A total of 34 of the 51 fauna species of regional concern that occur at BRMT are considered area sensitive. Three of these species - red-shouldered hawk, wild turkey and black-and-white warbler - are scored as requiring more than 100 ha of natural habitat. Currently, according to TRCA landscape analysis of the study area, the largest patch class represented on the site is smaller than 100 ha. However, the patch boundaries drawn by the analysis are entirely artificial and it would be more realistic to consider forest patches that are separated by, for example, the Humber River as single patches. This being the case, and understanding that the forest patch availability within the landscape surrounding the site is quite high, it is reasonable to expect representatives of some of the more area sensitive species to occur. As it is, the red-shouldered hawk report was mapped in the most extensive forest in the 2001 survey. The area requirements of this species, and of wild turkey, extend over the greater landscape and the study area contributes to this larger landscape requirement.

The other 31 'area sensitive' species require in excess of 20 ha of natural habitat and the habitat patches within the study area certainly fulfill such a requirement. Patch-size constraints are due to a variety of factors including foraging requirements and the need for isolation within a habitat block. In the latter case, regardless of the provision of a habitat patch of sufficient size, if that block is seriously and frequently disturbed by human intrusion, such species will be liable to abandon the site. This is particularly true of ground-nesting and foraging species such as wild turkey, American woodcock, ruffed grouse and ovenbird, and some of the larger raptors. It should also be noted that both long-eared owl and broad-winged hawk have been recorded within the vicinity of the study area.

Mobility restriction in fauna is a measure of the restricted physical ability or lacked predisposition of a species to move about within the landscape. This factor is also related to the connectivity of habitat within a landscape. Adult birds foraging for food during the nestling and fledgling stage of the breeding season provide an example of the need to move about freely within a landscape. Maintaining and improving the connectivity of natural cover (e.g. by reforestation of intervening lands) can positively influence the populations of mobility-restricted species by improving their foraging and dispersal potential. Eight of the L1–L3 species that were found at the study area, including brown creeper, winter wren and gray treefrog, show a requirement for continuity of habitat to facilitate mobility. These species scored three out of five points each for this criterion. In order for such species to persist existing connectivity throughout the various forest patches (or along other natural corridors) must be maintained to allow for effective genetic dispersal between these populations and other populations within the landscape.

The score for mobility restriction does not address the issue of species that habitually, and as a part of their life-cycle, move across a variety of habitat types. Such species will readily cross open ground (and so cannot be considered "mobility restricted") but in so doing expose themselves to potentially fatal encounters with predators and vehicular traffic. This is particularly true of highly vagile (mobile) mammals such as porcupine, and various herpetofauna that move considerable distances across the landscape as part of their annual breeding cycle (i.e. wood frogs, spring peepers, snapping turtles). Imposing higher vehicular traffic densities within the "home-range" of these species will certainly lead to a higher incidence of road-kill.

Fauna species that score greater than three points under the *habitat dependence* criterion are considered habitat specialists. These species exhibit a combination of very specific habitat requirements that range from the microhabitat (e.g. decaying logs, aquatic vegetation), through requirements for particular moisture conditions, vegetation structure or spatial landscape structures, to preferences for certain community series and macro-habitat types.

Within the list of L1- L3 fauna species occurring at the study area there are 18 species that score 3 or more points for *habitat dependence* (Map 14). The majority of these species are dependent on fairly specific forest habitat characteristics. Several species are highly dependent on mature mixed or deciduous forests with fairly extensive interior components and these species are well-represented with high numbers of breeding pairs; black-throated green warbler (19 territories), ovenbird (46 territories), scarlet tanager (at least 7 territories) and wood thrush (29 territories). Another very well-represented 'habitat dependent' species is the veery, with 31 territories. This species has a preference for forest with a particularly moist hydrology, which is well provided by the section of forest to the west of Duffy's Lane south of Castlederg Sideroad. In general, any changes to the local habitat such as the age characteristics of a forest or changes in hydrology may negatively impact species that are habitat specialists.

On the other hand, two highly 'habitat dependant' species, Canada warbler and Blackburnian warbler, are represented only by single territories. It is possible that these birds were unpaired and were unsuccessful at breeding as they could not be relocated on subsequent visits. Canada warbler is a particularly scarce species in TRCA's jurisdiction and requires forest patches with a thick, undisturbed understory. The other species, Blackburnian warbler, has a particular preference for a mature eastern hemlock component to the forest habitat. In both cases, such forest characteristics are present and it is therefore likely that some other factor is working against these species. This could simply be due to their overall low abundance within the jurisdiction, and BRMT represents the most southerly extent of their occurrence within the region. It may also be that the site is simply too far from the established core breeding areas within the region for these two species: Blackburnian warblers are well represented in the north-west of the region at Palgrave Forest and Wildlife Area, whereas Canada warbler is well-represented only in the extreme north-east of the region (the Glen Major/Secord complex).

Representation is essentially the presence or absence of a species at a site. However, beyond mere representation of single species, is the idea that a natural system can be considered as a healthy functioning system if there is an association of several species thriving within that system. Each habitat type supports particular species associations. As the quality of the habitat patch improves so will the representation of flora and fauna species within that habitat. In this way representative bio-diversity is an excellent measure of the health of a natural system. The presence of several habitat dependent species in good numbers, in particular species that are

dependent on mature forest, indicates that the forest habitat is functioning at a relatively high level within the BRMT study area.

6.1.3 Recommendations

The recommendations for the BRMT Study Area are given in relation to the regional targets for natural heritage in the TRCA jurisdiction (see section 1.1.1, also TRCA 2007b, 2007d). To reach the regional targets for quality distribution and quantity of natural cover, every site will require its own individualized plan of action. The following is a short summary of BRMT within the regional context, followed by specific recommendations for the site.

6.1.3.1 Summary

Located in the rural zone of the TRCA jurisdiction, with some local urban development occurring in the vicinity of the town of Bolton, BRMT is fairly representative of the average conditions for natural cover in this north-western section of the TRCA jurisdiction. The forest habitat patch quality is “fair” (L3)(Map D3). It is located within the relatively well-forested northern reaches of the Humber Watershed. The study area is dominated by forest cover (607 ha) but this is interspersed with a fairly large meadow component (106 ha) along with 8.5 ha of wetland.

Under current conditions BRMT supports 404 recorded species of native vascular plants, 162 of which are of regional concern. There are 118 species of breeding fauna, including 51 of regional concern. Given the overall “fair” Habitat Patch Quality of the site, the number of fauna Species of Concern is surprisingly high.

6.1.3.2 Site Recommendations

Expand the forested natural system at BRMT wherever current land-use permits in order to increase the quantity and quality of natural cover. Management of BRMT should strive towards meeting the refined target system presented for the Humber watershed. Regeneration and land acquisition are two options that would work at this site together with management of appropriate public uses, notably the trail system.

The following table illustrates the contributions made by the study area toward the quality distribution and quantity indicators along with site-specific recommendations for potential improvements and for reaching the refined target for natural cover in the Humber watershed. When considering the indicators in Table 3 it is important to keep in mind the varying degrees of interdependence between them. These indicators have been selected as a means for describing important aspects of a natural system; a system that exists as a whole, encompassing a network of closely related and inter-dependent factors. It would be incorrect and misleading to view any one of these indicators in isolation from the others.

Table 6.3: Summary and Recommendations for the BRMT Study Area by Indicator

INDICATOR	BRMT STUDY AREA SUMMARY		RECOMMENDATIONS
Quality Distribution	Size, Shape, & Forest Interior	34 area-sensitive forest-fauna species, three of which require in excess of 100 ha of forest	Reforest open land both within and adjacent to the site to increase habitat interior & improve size. This would improve the opportunities for species such as red-shouldered hawk and broad-winged hawk, and would bolster the already fairly healthy populations of forest songbirds.
	Matrix Influence	Matrix surrounding much of the site is largely agricultural and natural; to the south-east there has been some relatively recent urbanization associated with the town of Bolton. These mixed land-uses combine for a total matrix influence score of 3 out of 5 (fair). - 156 of the 162 flora species of regional concern are sensitive to development - 48 of the 51 fauna species of regional concern are sensitive to development, located in north-west section of TRCA jurisdiction where there is relatively little urbanization.	Mitigate impacts of public use. Plan any trails to limit damage to species and vegetation communities. cluster non-natural land uses to specific nodes on perimeter of area with buffer zones Convert nearby agricultural land and old field to forest and/or wetland, especially where such conversion will create a buffer against the urbanization that is occurring in the south-east corner of the site. Prevent further invasive species spread into high-quality natural areas, especially mature forests. Encourage stewardship from neighbouring landowners. Retain and restore natural cover TRCA's jurisdiction can retain a range of flora, fauna, and community types relatively diverse parts of jurisdiction such as this BRMT are protected.

Quantity	The study area contains 721 ha of natural cover. This contributes 2.5% to the total natural cover within the Humber watershed. Of this, 607 ha is forest and 8.5 ha are wetland; 3.3 and 0.6% of the watershed totals respectively.	Maximize natural cover at BRMT in order to protect flora, fauna and vegetation communities Maintain/enhance continuous links between habitat patches. -Recruit/encourage local stakeholders/landowners to restore riparian natural cover downstream of the study area in order to connect the site with other sites in the lower Humber watershed. Judicious positioning of restoration projects will have far reaching effects on all other Indicator categories.

Quality Distribution Recommendation

Increases to any one of the three landscape measures (size, shape or matrix influence) within the study area would improve the habitat patch total score, perhaps to the extent of introducing more “good” quality patches into the area. The expected results from such an increase in habitat patch score (and therefore quality) would be a subsequent improvement in the quality of the local natural system (reflected in the enhancement of the more sensitive communities and species). Efforts should be made to improve the *habitat patch total score* of the study area to the same level as currently exists in much of the upper reaches of the Humber watershed. In this case turning “fair” patches to “good”, thereby improving the function of the natural system locally, and bolstering the relatively healthy system that exists in the Humber watershed.

Optimize Patch Size & Shape, Forest Interior

The larger the habitat block, the more resilient the fauna and flora communities are to developments within the landscape. Restoration of open areas adjacent to and within the study area will enhance the overall size of the continuous forest blocks, leading in turn to an increase in the forest interior available for interior obligate species. This ‘forest-preferred’ strategy may involve a trade-off if there is a reduction in the size of meadow habitats currently supporting fauna species of concern such as vesper sparrow and field sparrow. Increasing the size of habitat patches (and thus enhancing forest interior) is an effective way of mitigating the negative effects of human disturbance since the impacts of such disturbance are spread and dissipated over a wider area of natural cover. Since it is very likely that human disturbance levels will increase in the future, the only way to protect the area’s natural system (e.g. the currently high numbers of sensitive breeding fauna) is to take early steps to mitigate the impacts. Increasing patch size and forest interior is the first step in achieving such mitigation.

Minimize Negative Matrix Influence

Urban land uses should be kept from intruding onto this site, particularly given the growth of the Village of Bolton enveloping the south-eastern portion of the property. Medium to high impact

land uses should be directed to the periphery of the site, and buffer zones should be identified around the forest and wetland habitats. Any further development within or in the vicinity of the study area will exert additional negative matrix influence on the remaining area by the loss of natural cover in the matrix and urbanization of agricultural lands. Serious impacts would inevitably arise from such land use changes. For example, there are generally lower levels of human disturbance and opportunistic predation by domestic cats within an agricultural matrix than in a developed matrix. The matrix influence scores for BRMT were calculated using landscape analysis from 2002 ortho-rectified photographs. Because this part of the Region of Peel is undergoing landscape changes in the form of urbanization, it is likely that the local matrix influence in the south-east corner has already deteriorated over the past three years.

The relatively large populations of fauna species of concern appear to be fairly evenly distributed throughout the entire study area. Although the extreme south-east corner has not been surveyed for fauna it is unlikely that this section accommodates as high a density of fauna species of concern since it will undoubtedly be influenced by the adjacent urban matrix. Every effort should be made to mitigate any negative matrix influence that might occur throughout the site. For example, a long-term planning approach would direct trail development away from any areas that hold particularly sensitive fauna and flora. Since a large proportion of the sensitive fauna on the site are ground-nesting forest birds, particular attention should be paid to the effects of off-leash dog walking and other activities that impose a high degree of stress on such breeding fauna.

Encouraging increased natural cover in adjacent lands can further enhance the matrix. Local stewardship outreach could inform neighbouring landowners on the value of natural cover. Community involvement in this local natural area could ensure that some human-influenced impacts on the communities and species would be diminished. Impacts from adjacent lands can be mitigated through measures such as the removal of invasive exotic species.

Because of the good condition and high biodiversity of BRMT, invasive species should be targeted for removal. Dog-strangling vine (*Cynanchum rossicum*) is in the early stages of invasion and it is of critical importance to start control efforts right away while they might still be effective (TRCA, 2008a). Garlic mustard (*Alliaria petiolata*) is also still localized and one of its populations is adjacent to an active restoration area. Slowly-expanding but dense populations of lily-of-the-valley (*Convallaria majalis*), goutweed (*Aegopodium podagraria*), and periwinkle (*Vinca minor*) present a longer-term threat to native forest flora. European buckthorn (*Rhamnus cathartica*) should be removed from successional areas.

The impacts of deer browsing are becoming noticeable within BRMT and need to be considered as well. Deer impacts are increasing in the TRCA jurisdiction and are now serious in the Rouge Park.

Quantity Recommendations

Increase Natural Cover to Achieve Quality Distribution Targets

In order to achieve the target for natural cover quality distribution there needs to be an adequate amount of natural cover. Insufficient natural cover in many urban parts of the TRCA jurisdiction such as the Don Valley has resulted in concentrated impacts on the remaining land base, as well as conflicts between various user groups.

The more natural cover that can be retained at within BRMT and vicinity, the better it can support a healthy level of biodiversity. The study area has a diversity of habitat types that includes a very high number of vegetation communities (128 vegetation types) and flora and fauna species that are of regional concern.

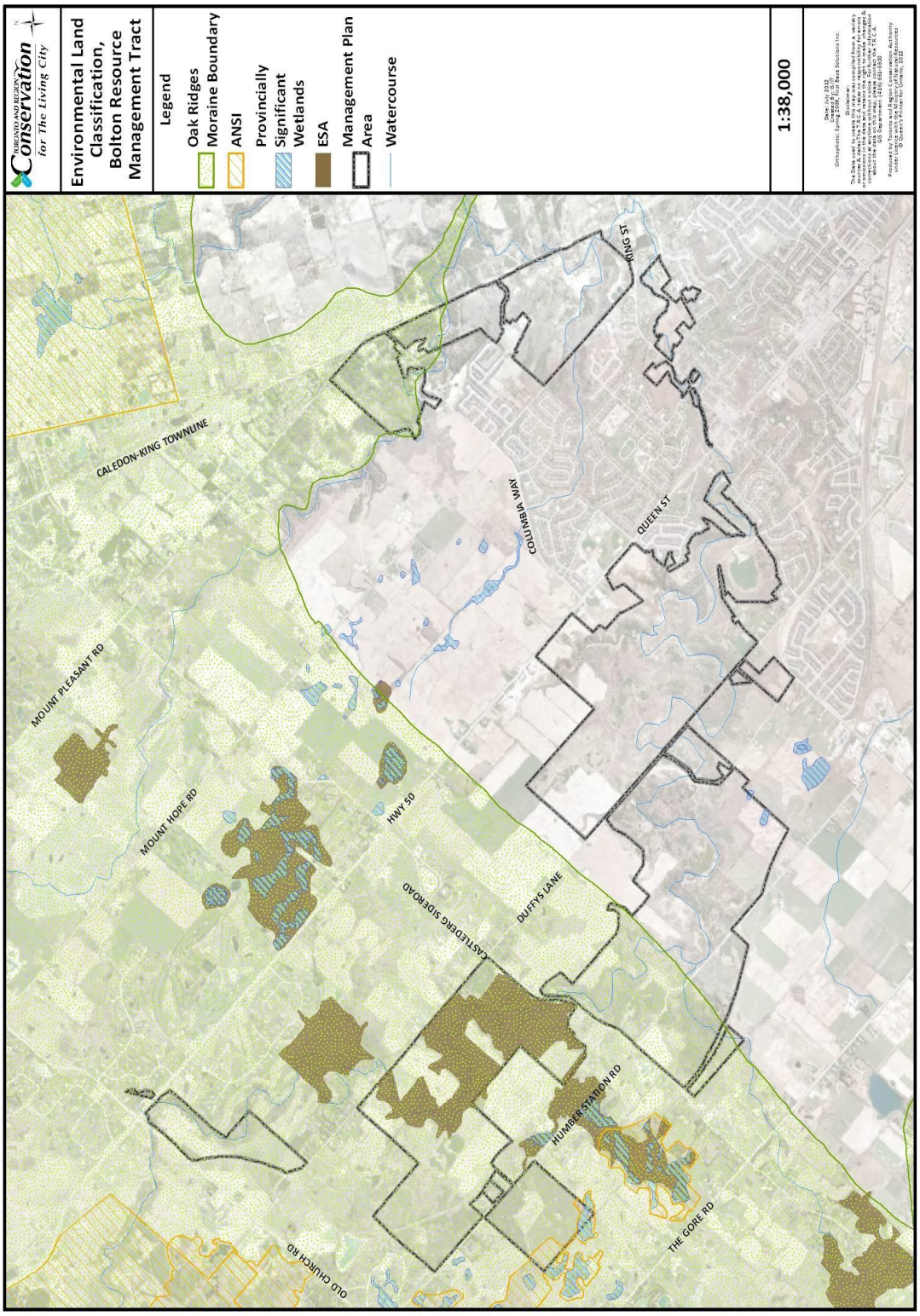
Improve Connectivity To Nearby Habitat

Restoration of agricultural and other open lands at this site would increase local natural cover, and will contribute to the regional natural cover. At the watershed level, it is important to maintain continuity of natural cover along the Humber River as it continues south through the urban landscape of Bolton connecting the site to the fauna communities further to the south. This aspect of habitat connectivity has immense implications at both the watershed and regional levels. Connectivity through natural cover along these potential corridors should be maintained and enhanced to improve the opportunities for dispersal of breeding and migrating fauna. The placement of restored habitat can be planned so as to maximize its benefits to habitat quality distribution, as well as connectivity and the protection of existing populations of species of concern.

6.1.2 Wetlands

A small section of the provincially significant Hockley Valley Wetland Complex is in the management plan area (Map 6.1). This complex includes numerous pockets of wetlands primarily to the west of Humber Station Road, east of The Gore Road, north of Castlederg Sideroad and south of Old Church Road. There are additional small pockets of wetland areas within the study area.

Map 6.1 Wetlands in BRMT



6.1.3 Geology

6.1.3.1 Physiography

The BRMT is located within the South Slope Till Plain physiographic region and on the Oak Ridges Moraine (ORM) (Chapman and Putnam, 1984).

The South Slope is 10-12km in width and runs parallel to the moraine, on the south side, for its entire length. This region is characterized by a glacial till plain (a mixture of different grain sizes ranging from clay to boulders, deposited directly by glacial ice) that gently slopes toward Lake Ontario (Chapman and Putnam, 1984). The slope is slightly drumlinized in the Humber River watershed, turning into gentle rolling till and then to a ground moraine of limited relief to the east. Major features of the slope include irregular eskers and kettle lakes. These isolated kettle depressions and lakes are scattered across this till plain. These depressions are believed to be relics of hollows formed by remnant, buried ice chunks that melted over a period of hundreds of years after the glaciers retreated from the area. The South Slope portion of the BRMT is a limestone till ground moraine of limited relief, overlain by clay loams. Susceptibility to erosion has hampered wide use for agriculture in the area; however dairy farms have been relatively successful. The South Slope rises to meet the Moraine at a height of approximately 274 metres (ASL) (MTRCA, 1984).

The moraine land serves as the source of streams which rise from springs along its edge. Forest cover helps retain water in the soil to maintain these springs. There are few streams directly on the moraine even though it is the headwaters source of many streams. The water drains vertically through the sands and gravel, then moves laterally when it reaches the less pervious clay. The lack of streams on the moraine limits opportunities for water-based recreation and limits its usefulness for agriculture. The ORM Complex, including the South Slopes, is within the area of high forest management potential as described by the MNR's Land Use Policy Guidelines (OMNR, 1983).

6.1.3.2 Soils

The natural vegetation found in an area is dependent on soil and climatic factors. The established vegetation, in turn, exerts influence on the further development of the soil and is an important factor in soil formation. The influence of vegetation on soil development varies with the vegetation present. Deciduous litter decomposes readily and is richer in plant nutrients while coniferous litter produces strongly leached soils. The natural vegetation found on the soils of the BRMT is the hard maple-beech-spruce association (MTRCA, 1984).

Five types of soils are found within BRMT – Bottomland, Muck, Pontypool Sandy Loam, Chinguacousy Clay Loam and King Clay Loam. Table 6.4 details the soil characteristics of the soils at BRMT. The dominant soil type in BRMT is King Clay Loam (approximately 75 per cent of the area). Its soil parent materials are angular limestone and some shale, with an overlaying till. Although it is a heavy textured soil, it is well drained as a result of the till materials present. However, it is very susceptible to erosion along steep slopes and lacks organic and phosphate elements. The degree to which these soils have been affected by erosion depends on past treatment and on the length and degree of slope. Sheet erosion can be arrested by sustaining

vegetation cover and by maintaining of adequate organic matter and fertility levels. This soil type is developed under a forest cover of soft maple and elm (MTRCA, 1984).

Table 6.4: Soil Characteristics within BRMT

Characteristic	Bottomland	Muck	Pontypool	Chinguacousy	King
Parent Materials	alluvial	organic	poorly sorted outwash	heavy textured shale and limestone till	heavy textured limestone and shale till
Natural Drainage	variable	very poor	good	imperfect	good
Topography	variable	depressional	irregular, steeply sloping	smooth, gentle sloping	smooth, moderately sloping
Surface Stoniness	variable	stone free	few stones	few stones	few stones
Surface Reaction	variable	neutral to alkaline	slightly alkaline to neutral	slightly acid to neutral	neutral
Main Fertility Needs	variable	*potash *phosphate	*organic matter *potash *phosphate	*organic matter phosphate	organic matter phosphate
Soil Type	variable	variable	sandy loam	clay loam	clay loam

* major requirement
Source: Hoffman and Richards, 1953.

Bottomland soils constitute approximately ten per cent of BRMT and are found along the Humber River and its tributaries. Drainage varies but it is usually poor and vegetation consists mainly of willow, elm and cedar (MTRCA, 1984).

Another ten per cent of the BRMT's soils are classified as Pontypool Sandy Loam. It is poorly sorted glacial-fluvial sands marked by smooth, predominantly steep slopes. The slopes, coarse in texture with pockets of gravel and till, make it well to excessively drained. This soil type is susceptible to wind erosion and is of low fertility. This soil developed under a forest cover of the maple-beech-spruce association.

Chinguacousy Clay Loam constitutes approximately four per cent of BRMT. The parent material is fairly high in limestone; however shale is present in such a quantity that it affects the profile developed. Its structure is gray-brown clay loam over a shale-like clay. The topography is smooth and gently sloping with little erosion. The drainage of this soil is imperfect, thus limiting the land for agriculture use. It is poorly drained and resistant to erosion which results in fast, severe runoff. Natural vegetation consists mainly of elm, soft maple with ash and oak also occurring.

There is one section of muck soil in the most westerly corner of BRMT. It is made up of well decomposed organic materials, with poor drainage. The land is usually under water for part of the season. Muck soil occurs in depressional topography.

BRMT is characterized by steeply rolling topography along the Humber and erosion prone soils throughout the area. Its vegetative cover minimizes erosion and sedimentation damage, increases water retention capabilities, and returns nutrients to the soil. Sedimentation increases as land moves from forest cover to urban development (MTRCA, 1984).

The physical, chemical and biological relations in the soil are affected by climate. Temperature influences the speed of chemical reactions and affects the weathering of mineral particles. An important factor in soil weathering and development is water that percolates through the soil material. Climate influences the growth of plants and often is a controlling factor in determining the vegetation that can be grown satisfactorily. *Section 1.4 Site Description* provides more detailed information on the climate of BRMT.

6.1.3.3 Quaternary Geology

The landforms and overburden geologic deposits for this area were formed by a succession of glacial (i.e., when the climate was cooler than today) and interglacial periods (i.e., when the climate was similar to that of today). These formations represent deposition over the last 25,000 years, and can be up to 30 metres thick in this area. There are four main geologic features present, including; a bedrock valley system that contains thick sand and gravel deposits, the Niagara Escarpment that forms the western boundary of the Humber River watershed, the Oak Ridges Moraine that forms the headwater of the watershed, and area where Quaternary sediments have eroded and largely in-filled with fining-upwards sequences of sand and silt. This erosive action is attributed to tunnel channel formation beneath glacial ice (Sharpe et al, 2004).

6.1.3.4 Bedrock Geology

In most of the Humber River watershed, the bedrock is part of the Georgian Bay Formation (interbedded limestone and shale). These rocks were deposited over Canadian Shield over a period of about 200 million years, beginning approximately 550 million years before present. The structures of the Paleozoic rock influence the groundwater resources and flow patterns. Glaciofluvial erosion may have enhanced these structures and valleys (Gilbert and Shaw, 1994).

Limestone bedrock units are generally more pervious than fine-grained shale. Limestone aquifers can yield a considerable amount of groundwater via water stored within fractures and joints. However, such bedrock is only found in the extreme upper reaches of the Main Humber River subwatershed, near Mono Mills.

Investigations have provided evidence that an underground buried channel called the Laurentian Valley exists in the Humber River watershed. This valley is part of a system that extends from Georgian Bay to Lake Ontario near Toronto (Spencer, 1881; Eyles *et al.,* 1993; Middleton, 2004). This valley system represents a pre-glacial, sub-aerial river system that carved a valley up to 1.5 km wide, and 70 m deep, with several associated tributary valleys. This has since been in-filled with sediments that form major regional aquifer systems (Davies and Holysh, Kassenaar and Wexler, 2006).

Beneath the ORM, the geometry of the bedrock surface remains poorly defined as few wells have been drilled into the bedrock. Investigation using location corrected water-wells, hydrogeological borehole data, and seismic reflection profiles, indicate a trunk and tributary valley system (Brennand *et al.,* 1997). In the portion of the Humber watershed within the Town of Caledon, valleys eroded into the Niagara Escarpment forming tributary valleys to the main Laurentian Channel. Two tributaries are interpreted to outlet groundwater along the shore of Lake Ontario with one outlet near Humber Bay. These bedrock valleys may contain productive aquifers.

6.1.3.5 Hydrogeology

Aquifers occur within more permeable sand and gravel outwash and fluvial deposits, while aquitards are formed by less permeable deposits such as the Halton Aquitard. The primary aquifer in this area is located in the sand and gravel deposits under the aquitard, and has been correlated with the Oak Ridges Moraine Aquifer Complex

The hydrostratigraphic units considered to influence groundwater flow within the Humber River watershed as a whole are as follows:

Recent deposits (Aquifer)
Halton Aquitard
Oak Ridges Aquifer Complex (ORAC) including ORAC silts
Newmarket Aquitard
Thorncliffe Aquifer Complex (TAC), including Tunnel Channel Aquifer
Sunnybrook Aquitard
Scarborough Aquifer Complex (SAC)
Weathered Bedrock (Aquifer).

Municipal wells located in the Humber Watershed tap into the ORAC, TAC, and SAC aquifer systems for potable drinking water supplies.

Land and water management recommendations in the BRMT Management Plan should strive to protect groundwater resources, especially given its location on the Oak Ridges Moraine.

6.2 Aquatic Resources and Conditions

6.2.1 Humber River

The Humber River stretches from the Niagara Escarpment and Oak Ridges Moraine south to Lake Ontario. First order streams (streams with no tributaries) constitute almost half of the 1,300 kilometres of watercourses in the watershed. At the mouth, the Humber River is a sixth order stream with a total drainage area of 903 square kilometres. Stream slopes range from the almost flat river mouth area to upwards of five per cent in the headwaters. The coarse sands and gravels in the Niagara Escarpment area and the Oak Ridges Moraine allow little surface run-off and substantial groundwater discharge to many headwater streams, keeping water temperatures cold and flows stable. The clay soils found in the middle sections of the watershed have a much higher run-off potential and as a result stream temperatures and flows fluctuate

more significantly throughout the year. The result of the variation in physical characteristics is a diversity of aquatic communities across the watershed.

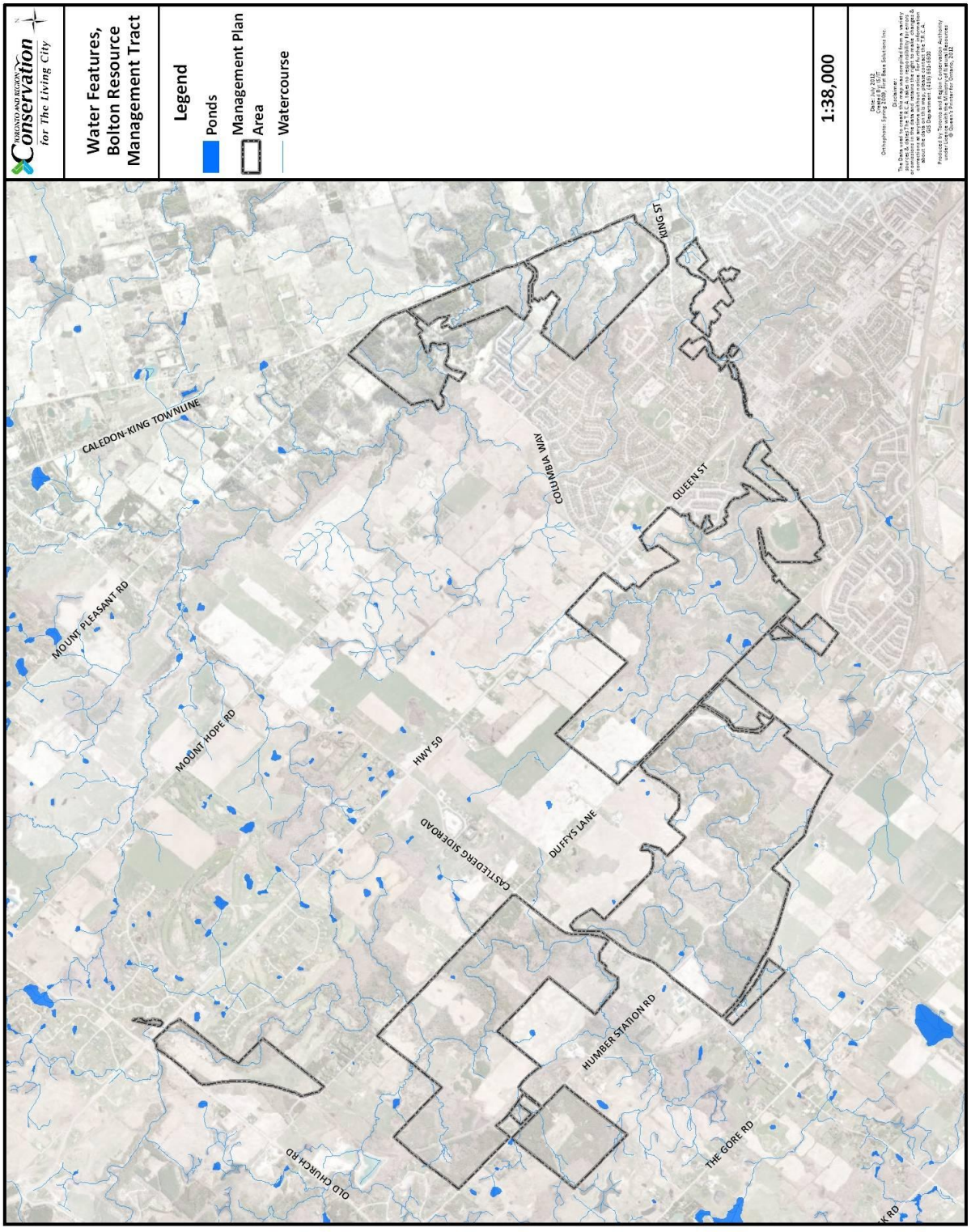
Over 20 large lakes and ponds and more than 600 smaller waterbodies are found throughout the watershed. The larger waterbodies, especially the deep kettle lakes, are oxygen deprived in the lower depths for part of the year. Many waterbodies are also high in nutrients and suspended particulates. Countless artificial ponds created as dugouts or by damming of a watercourse exist in the watershed. On-line ponds negatively impact the watercourse by allowing the water to warm excessively, halting the transport of sediment downstream by trapping it in the pond and obstructing fish movement.

Many side streams and freshets (seasonal flooding) feed the Humber River as it flows through the management plan area (Map 6.2) adding to some already significant erosion problems along the valley walls, destroying soil structure and preventing the establishment of new vegetation. Total vegetation removal has a negative effect on the hydrologic, biologic and aesthetic characteristics of the physical environment. Within the headwaters region of the Humber River, the loss of vegetation has had several implications including: a reduction in runoff control, stream flow augmentation and water quality maintenance; a reduction in fish and wildlife habitat; and a reduction in aesthetics.

When compared to impervious surface cover, forest cover results in a lower water yield, causing a lower annual streamflow and decreased ground water recharge. The most significant increase in watershed yield following cutting of the entire forest cover is experienced during spring snowmelt when incremental runoff volumes may reach 30 per cent of the annual yield. Forest cutting does not drastically affect major rainfall floods; however, it can have a significant effect on more frequent flood events through increased or decreased individual flood peaks caused by snowmelt or rainfall plus snowmelt. Maintaining different land uses in the upper Humber River appears appropriate to desynchronize snowmelt related peak flows to reduce flood potential through the snowmelt season. Forest cover may not be the major factor influencing runoff, but it must be considered in conjunction with soil type, stream and slope gradient, and other factors. The planting of the poorer classes of land not used for agriculture with trees specific to the site will contribute to and stabilize all aspects of environmental protection.

The surrounding land uses can affect the water resources and conditions. Thus, an important concern is how use of this land has and will affect the site’s drainage conditions and aquatic ecosystems.

Map 6.2: Aquatic Resources in BRMT



6.2.2 Fisheries

The *Humber River Fisheries Management Plan (2008)* is a cooperative resource management plan developed by the OMNR and the TRCA to protect and enhance the health of the Humber River watershed's aquatic resources. It is a resource document to be used to develop and implement rehabilitation projects and as a tool to guide and influence where development occurs.
Further analysis indicates that the fish communities in many areas of the watershed lack fish-eating fish and sensitive species, suggesting degraded conditions. The distributions of the sensitive coldwater species found in the watershed, which include brook trout and mottled sculpin, are restricted to the Upper Main Humber River subwatershed and portions of the East and West Humber River subwatersheds.

The physical characteristics of the Humber River Watershed vary from its headwaters to its mouth. The result is a diversity of aquatic communities across the watershed.

Over 110 instream barriers such as dams or weirs have been identified in the Humber River Watershed, though many more exist. These barriers have implications for water temperatures, river hydrology, flood control, bank erosion and fish passage. Some of the dams built in the 1800s are culturally significant because of their historical association with early European settlement. Barrier mitigation is a priority for the rehabilitation of the Humber River Watershed and has been pursued with some success. For example, the McFall dam in Bolton has also been altered to allow fish passage for resident species (OMNR, TRCA 2005).

Using the biological, physical and chemical data for the watershed, each watercourse and waterbody was classified into one of seven habitat categories:

- small riverine coldwater
- small riverine warmwater
- intermediate riverine coldwater
- intermediate riverine warmwater
- large riverine
- lacustrine
- estuarine.

Since the habitat categories are based upon general physical and chemical characteristics, each habitat category has the ability to support a certain fish community.

Once the types of aquatic habitats found in the watershed were established, management directions were defined. The Fisheries Management Plan addresses, at a watershed scale, accessibility (public lands), the protection of species of conservation concern, management of consumptive uses such as harvesting of baitfish, fish stocking, angling regulations and the provision of non-consumptive uses like fish viewing and education. The plan also explains how fisheries issues are dealt with from a development perspective.

Seven rehabilitation activities commonly used to address aquatic habitat degradation and resource use are also described. These activities include planting streamside vegetation, improving water quality, stabilizing flows, mitigating instream barriers, instream habitat improvements, natural channel design, and fish stocking.

Management direction for individual tributaries is provided at a subwatershed level. For each of the five major subwatersheds, the plan identifies habitat categories, impacts to the quality of habitats, recommended management strategies and target species. It also details the locations for public access, angling regulations, and fish stocking and transfer strategies.

The plan identifies many projects that need to be implemented to achieve the plan goals. Projects range from expensive and long term, to inexpensive projects that can be completed more readily. The plan also recognizes that new projects may arise as issues change or opportunities come up.

Ongoing fisheries research, changing attitudes and new regulations will affect management of the Humber River watershed. Consequently, the Fisheries Management Plan is designed to be a flexible document that will update information such as angling regulations changes, species recovery plans, implementation of habitat projects or as new fisheries data becomes available. This information will be updated every five years with a major review of the entire document scheduled for 2015.

Upper Main Humber River Subwatershed:

As defined in the Fisheries Management Plan, BRMT is a part of the Upper Main Humber River subwatershed. Many of the watercourses in this subwatershed are relatively undisturbed and in good health; however, countless small, private on and off-line ponds which are used primarily for irrigation, agriculture or recreation, are present. Protection of the existing resources such as riparian vegetation, wetlands, discharge/recharge areas, baseflow and water quality is the priority for this subwatershed. Rehabilitation of degraded habitats is also an important element in enhancing the aquatic ecosystem.

A total of 45 fish species have been found in this subwatershed historically including American brook lamprey, brook trout, migratory Atlantic salmon, redside dace, white sucker, creek chub, brook stickleback, fantail and rainbow darter and mottled sculpin. Two species found here, rainbow and brown trout, are introduced. In 2001, 32 fish species were found in the Upper Main Humber River subwatershed, including brook trout, rainbow and brown trout, and mottled sculpin. Native brook trout, a very sensitive species and popular game fish, exists in numerous tributaries where they may be separated from or live alongside naturalized brown trout.

Thirteen native species once found in the Upper Main Humber River subwatershed were not found in 2001, including Atlantic salmon and smallmouth bass. For species such as bluegill and smallmouth bass, it is possible that they have not been found due to the location and timing of surveys. Atlantic salmon, on the other hand, are known to be extirpated from the watershed.

The Redside Dace, a provincially endangered species under the *Endangered Species Act*, is present within the larger stream system that flows through the BRMT. This species and its habitat are regulated by the OMNR; any works (including stream and riparian restoration) within the regulated area *may* require a permit under the *Endangered Species Act*.

The Upper Main Humber River subwatershed contains six habitat categories: small riverine cold and warmwater, intermediate riverine cold and warmwater, large riverine and lacustrine. The following management zones apply to BRMT:

- Zone 1A (brook and brown trout, and Atlantic salmon); and
- Zone 1B (baseflow sensitive watercourses).

Table 6.5 contains detailed information about rehabilitation priorities for the Upper Main Humber River subwatershed.

Table 6.5: Rehabilitation priorities for the Upper Main Humber River subwatershed

		Management Zones	
		Zone 1A	Zone 1B
Description	Approximate Location	Headwaters to Bolton	All headwater tributaries of the watershed
	Stream Order	First to fifth	First
	Channel Slope	Moderate to high	High
	Target Fish Species	Brook and brown trout, Atlantic salmon	Contributing and seasonal in-situ habitat for Zone 1A
	Aquatic Habitat Category	Small Riverine Coldwater and Intermediate Riverine Coldwater	Small Riverine Coldwater
	Median IBI	Good	Not available
Management Direction	**Riparian Zone[1]:** Thermal benefits, erosion stability, habitat creation, and run-off filtration. **Delisting Target:** 75% of watercourse length with woody vegetation. Additional 164 km needed. Goal is 2 km annually.	**High Priority** – focus on Albion Hills, Glen Haffy, Palgrave, Cold Creek and other public lands. Private land stewardship is Centreville, Cold and Coffee Creeks; implement TRCA's Habitat Implementation Plan.	**Low Priority** – Cold Creek Conservation Area; implement TRCA's Habitat Implementation Plan.
	Wetland Creation and Rehabilitation Wetlands – Alternate run-off and increase infiltration. Habitat creation. Planting of aquatic vegetation, enhancing spawning habitats. **Delisting Target:** 75% of historical area. Additional 271 ha of wetlands.	**High Priority** – protect existing wetlands. Rehabilitate or restore wetlands where degraded or eliminated. **Medium Priority** – create wetlands identified in TRCA's Terrestrial Natural Heritage System Strategy and recently initiated projects to identify sites for wetlands creation in the Regions of Peel and York; implement TRCA's Habitat Implementation Plan.	**High Priority** – protect existing wetlands. **Medium Priority** – create wetlands identified in TRCA's Terrestrial Natural Heritage System Strategy and recently initiated projects to identify sites for wetlands creation in the Regions of Peel and York; implement TRCA's Habitat Implementation Plan.

	Habitat Rehabilitation Rehabilitate altered streams. Addition of tree stumps, logs, brush bundles for instream cover. **Target:** 150 pieces of woody material or equivalent per km.	**High Priority** – Continue work with Trout Unlimited in Centreville Creek and Ontario Stream's Upper Humber River Rehabilitation Project. **Medium Priority** – identify degraded reaches.	**Low Priority** – identify degraded reaches.
	Water Quantity and SWMP Retrofits Protect or enhance existing water budget. **Target:** Maximum 10% total impervious surface in management zone.	**High Priority** – existing quantity ponds to be retrofitted to include quality control. **High Priority** – stormwater pond outlets to have bottom draw outlets or sub-surface drainage. **High Priority** – protect or enhance existing water budget.	**High Priority** – protect or enhance existing water budget.
	Stream Baseflow **Target:** Protect 60% duration flow for June, July, August and September	**High Priority** – maintain or enhance existing baseflow.	**High Priority** – maintain or enhance existing baseflow.
	Water Quality Restrict livestock access and reduce agricultural runoff through the Rural Clean Water Program. Pollution prevention, lot level and conveyance controls, end of pipe controls.	**High Priority** – identify livestock access and manure storage locations. **High Priority** – reduce overland sediment run-off over all construction periods. **Medium Priority** – implement best management practices for all land uses.	Not applicable at this time.
	Natural Channel Design	**Low Priority** – alongside Highway 50 north of Palgrave	None identified
	Instream Barriers: Mitigate identified barriers or install bottom draw, if appropriate. Delisting Target: Free range for all native species from Lake Ontario to Highway 9, except	**High Priority** – mitigate Taylor Pond and assess mitigation options for Albion Hills CA pond. **High Priority** – mitigate private on-line ponds. **High Priority** – identify additional barriers and assess stream crossing for fish passage.	**Low Priority** – assess stream crossings for fish passage.

	where otherwise indicated.		
	Public Lands **Target:** All public lands accessible for angling.	Most public lands (Palgrave FWA, Albion Hills CA, Glen Haffy CA, Bolton RMT) are accessible, some restrictions apply. Access to private lands by permission only. **High Priority** – implement best management practices on all public lands; land acquisition; improve trail heads and access.	Cold Creek CA **High Priority** – implement best management practices on all public lands.
	Species of Conservation Concern	**Low Priority** – assess populations of Group 2 and 3 Priority Candidate Species	None recommended at this time.
	Angling Regulations and Enforcement	**Medium Priority** – increase enforcement and implement a Fish and Wildlife Guardian Program	None recommended
	Fish Stocking and/or Transfer: (1) encourage reintroduction of Atlantic salmon; (2) rehabilitative stocking of brown trout fry/fingerlings; (3) transfer migratory adult brown trout into the Upper Main Humber River.	**High Priority** – stock 40,000 brown trout between Zones 1A and 3 annually for 10 years. Introduce Atlantic salmon when sufficient donor stock exists.	None recommended.
	Baitfish Harvest	No changes recommended.	No changes recommended.
	Non-consumptive Uses Education and stewardship programs, signs and information kiosks.	**High Priority** – continue education programs associated with Watershed on Wheels golf course stewardship, continue work at Caledon East, Palgrave and Bolton Community Action Sites and establish new sites. **High Priority** – develop signs for fishway projects at Palgrave and McFall dam; information kiosks at major access points; maintain	None recommended at this time.

		viewing window at Palgrave fishway.	
	Monitoring and Surveys Fish passage at mitigated barriers, spawning surveys, distribution of Species of Concern and invasive species, additional aquatic community data; baseflow indicator sites.	**High Priority** – conduct aquatic habitat and species surveys in 2004 at Highway 9 east of St. Andrews Road, Coolihans Sideroad west of Centreville Creek Road, Innis Lake Road south of Patterson Sideroad, and Castlederg east of Mount Hope Road. **Medium Priority** – expand existing brook and brown trout spawning surveys to private lands, Cold Creek and north of Highway 9. **Medium Priority** – conduct surveys to determine mussel and rusty crayfish distributions. **Medium Priority** – complete U of T project to assess algae communities.	**High Priority** – determine location of this management zone in the subwatershed.

[1] Those areas currently vegetated with herbaceous vegetation are considered lower priority for restoration than manicured vegetated reaches. However, this does not mean that opportunities to establish woody riparian vegetation in currently vegetated areas will not be pursued.

Recreational Fishing Opportunities:

It should also be noted that BRMT has long been a destination for local anglers.

A fishing trail was constructed along the west side of the Humber River from the bend in the 6th Line (Duffy's Lane) to the northern most crossing of the 6th Line by the Humber in the fall of 1982. Use was by anglers and other hikers (MTRCA, 1984). However this trail has since been neglected and left as an informal route. The current alignment of the Humber Valley Heritage Trail follows a similar route to this trail and provides informal access to the fishing opportunities within the BRMT.

Angling is a popular form of recreation in the Humber and the management direction for the watershed is to allow access to the river for angling purposes on all public lands. The BRMT is a high priority area to implement best management practices to ensure appropriate angling activity occurs and must be considered in the BRMT Management Plan.

CHAPTER 7: CULTURAL HERITAGE RESOURCES

7.1 Archaeological Resources

To place the cultural history of the Bolton Resource Management Tract (BRMT) into a proper context, the following descriptions briefly encapsulate the Aboriginal cultural periods (and associated diachronic positions) for the archaeological record of this region.

PalaeoIndian Period – 10,000 to 7,000 B.C.
Twelve thousand years ago, as the glaciers retreated from Southern Ontario, nomadic peoples gradually moved into the areas recently vacated by the massive ice-sheets. These people lived in small family groups and it is presumed that they hunted caribou (*Rangifer tarandus)* and other fauna associated with the cooler environment of this time period. It should be remembered that as the glaciers melted at the end of the last ice age, the landscape of southern Ontario was very much like the tundra of the present day eastern sub-arctic. This reconstruction is substantiated by the discovery of a single caribou (*Rangifer tarandus)* toe bone at a site in Detroit and the presence of arctic hare (*Lepus arcticus*), arctic fox (*Alopex lagopus*) and a large ungulate at the Udora site. The Udora site is an Early PalaeoIndian Gainey Complex encampment that is approximately 10,900 years old, located near the south shore of Lake Simcoe.

During this time, the water levels and resultant shorelines of glacial Lake Algonquin (in the present day Lake Huron/Georgian Bay basin) and glacial Lake Iroquois (in the present day Lake Ontario basin) were fluctuating due to glacial retreat, accumulations of meltwater, and isostatic rebound due to the retreating glacial ice sheet. Traditionally, the PalaeoIndian occupation of Southern Ontario has been associated with these glacial lake shorelines. However, recent investigations in the Toronto area indicate that these peoples also exploited interior locations away from the glacial lakes.

Archaic Period – 7,000 to 1,000 B.C.
As the climate in Southern Ontario warmed, the Aboriginal populations adapted to these new environments and associated fauna. Thus, many new technologies and subsistence strategies were introduced and developed by the Archaic peoples of this time period. Woodworking implements such as groundstone axes, adzes and gouges began to appear, as did net-sinkers (for fishing), numerous types of spear points, and items made from native copper, which was acquired from the Lake Superior region. The presence of native copper on archaeological sites in Southern Ontario and adjacent areas suggests that Archaic groups were involved in long range exchange and interaction with one another. The trade networks evident at this time persisted between Aboriginal groups well after European contact.

To harvest the new riches of the warming climate, the Archaic bands of Southern Ontario followed an annual cycle, which exploited seasonably available resources in differing geographic locales within watersheds. For example, from spring through fall bands would have joined together and inhabited sites in lakeshore and marsh environments where abundant foodstuffs such as fish, waterfowl and wild rice enabled the establishment of larger multi-season occupations. As the seasons changed bands split into smaller groups and moved inland to

exploit alternate resources available during the fall and winter such as deer, rabbit, squirrel and bear, which thrived on the forested margins of these areas.

Initial Woodland Period – 1,000 B.C. to 700 A.D.

Early in the Initial Woodland period, band size and subsistence activities were generally consistent with the groups of the preceding Archaic period. Associated with the earliest components of this cultural period is the introduction of clay pots. Ceramic vessels used as cooking vessels may also have provided a simple means for long-term storage of foodstuffs. With the ability to store foodstuffs during times of plenty, the stress of harder times was greatly reduced, as it would have been possible to take advantage of the accumulated goods. Additionally, around 1,500 years ago, a revolutionary new technology, the bow and arrow, was introduced to Southern Ontario and radically changed the approach to hunting. These two technological innovations allowed for major changes in subsistence-settlement patterns. As populations became larger, camps and villages with more permanent structures were occupied longer and more consistently. Generally, these larger sites are associated with the gathering of two or more band groups into what are referred to as macrobands. Often these larger groups would reside in favourable locations to cooperatively take advantage of readily exploitable resources such as fish and game.

It was also during this period that more elaborate burial rituals such as cremation, burial mound construction (as indicated by the Serpent Mounds near Peterborough, Ontario, for example) and the interment of numerous exotic grave goods with the deceased began to take place. In fact, these goods, which include large caches of well-crafted lithic blades, sheets of mica, marine shells, shark teeth, silver and copper beads and artifacts such as platform smoking pipes and decorative ear ornaments, all indicate that the Initial Woodland period was one of increased trade and interaction between southern Ontario populations and groups as far away as the east coast and the Upper Ohio Valley.

Due to the seasonal mobility of the Initial Woodland bands, as seen with the previous Archaic and PalaeoIndian groups, their habitation sites do not display evidence of substantial structures, lengthy occupations, or extensive garbage deposits called middens. Therefore their visibility on the landscape is minimal, making them difficult for archaeologists to find. Thus, when they are happened upon, it is important for these sites to be properly investigated so that this crucial period of Aboriginal history can be better understood.

Ontario Iroquoians (Late Woodland) Period – 700 to 1651 A.D.

Around 700 A.D., maize (North American corn) was introduced into Southern Ontario from the south. With the development of horticulture as the predominant subsistence base, the Late Woodland period gave rise to a tremendous population increase and the establishment of permanent villages which were occupied from five to 30 years. These villages consisted of numerous longhouses, made from wooden posts placed in the ground and tied together at the top in an arch-like fashion. Although these windowless structures were only six metres wide (and the same in height), they extended anywhere from nine to 46 metres in length, providing shelter for up to 50 people. Quite often these villages, some of which are 1.2 to four hectares in size, were surrounded by multiple rows of palisades suggesting that defence was a community concern.

Aside from villages, Late Woodland peoples also inhabited hamlets and special purpose cabins and campsites that are thought to have been associated with larger settlements. A hamlet,

approximately a half hectare in size, consisted of a small scattering of longhouses that was occupied on a year-round basis by people who were related to those in the larger village but for various reasons lived outside of the settlement. Finally, there were special purpose campsites; locations that were temporarily used by Late Woodland peoples for activities such as hunting, fishing, or collecting various plant foods. Due to their short-term use, there are generally few artifacts or structural remains associated with these types of sites.

Around 1300 to 1450 A.D., a number of social changes were taking place in Iroquoian society. This is reflected in the fluorescence of smoking pipes (which have sacred connotations); certain burial rituals; increased settlement size; and distinct clustering of both longhouses within villages (clan development) and villages within a region (tribal development). One interesting socio-cultural phenomenon that occurred during this period as a result of the shift in emphasis from hunting to horticulture was a movement away from the traditional patrilineal and patrilocal societies of the preceding band-oriented groups to a matrilineal orientation, where women, as the major provider of food, played an integral role in political life.

After centuries of small-scale warfare and the gradual depletion of resources such as game, and lumber, as well as the depletion of soil nutrients required for maize cultivation, the Late Woodland groups inhabiting the shores of Lake Ontario moved northward towards Georgian Bay. It was these groups, eventually evolving into the Petun or *Tionontate* and Huron or *Wendat* nations, who were witnessed and documented by French missionaries and explorers during the early seventeenth century. Ultimately, these groups were dispersed through continued warfare with the League Iroquois, or *Hodenosaunee* from what is now Upper New York State, as they were struggling with population decline resulting from the spread of European diseases.

Post-Contact Period – 1651 to 1800s A.D.
Also called the Early Historic Period, these years are characterized by the arrival of a small number of Europeans interested in exploration, trade, and establishing missions, coupled with a gradual adoption of European materials by First Nations peoples. In terms of material culture, it is often difficult to distinguish between *Haudenosaunee*, *Anishinaabe*, *Métis* and colonial settler campsites during these early years. This is due to the interaction and adoption of each other's material goods and subsistence strategies which blur cultural boundaries. Such interaction was essential to early explorers and missionaries who relied on local people for survival strategies and knowledge of the local landscape. These permeable boundaries continued until the Crown established segregated reserves in the eighteenth and early nineteenth centuries for the *Haudenosaunee* and *Anishinaabe* communities who remained here while granting properties to European settlers.

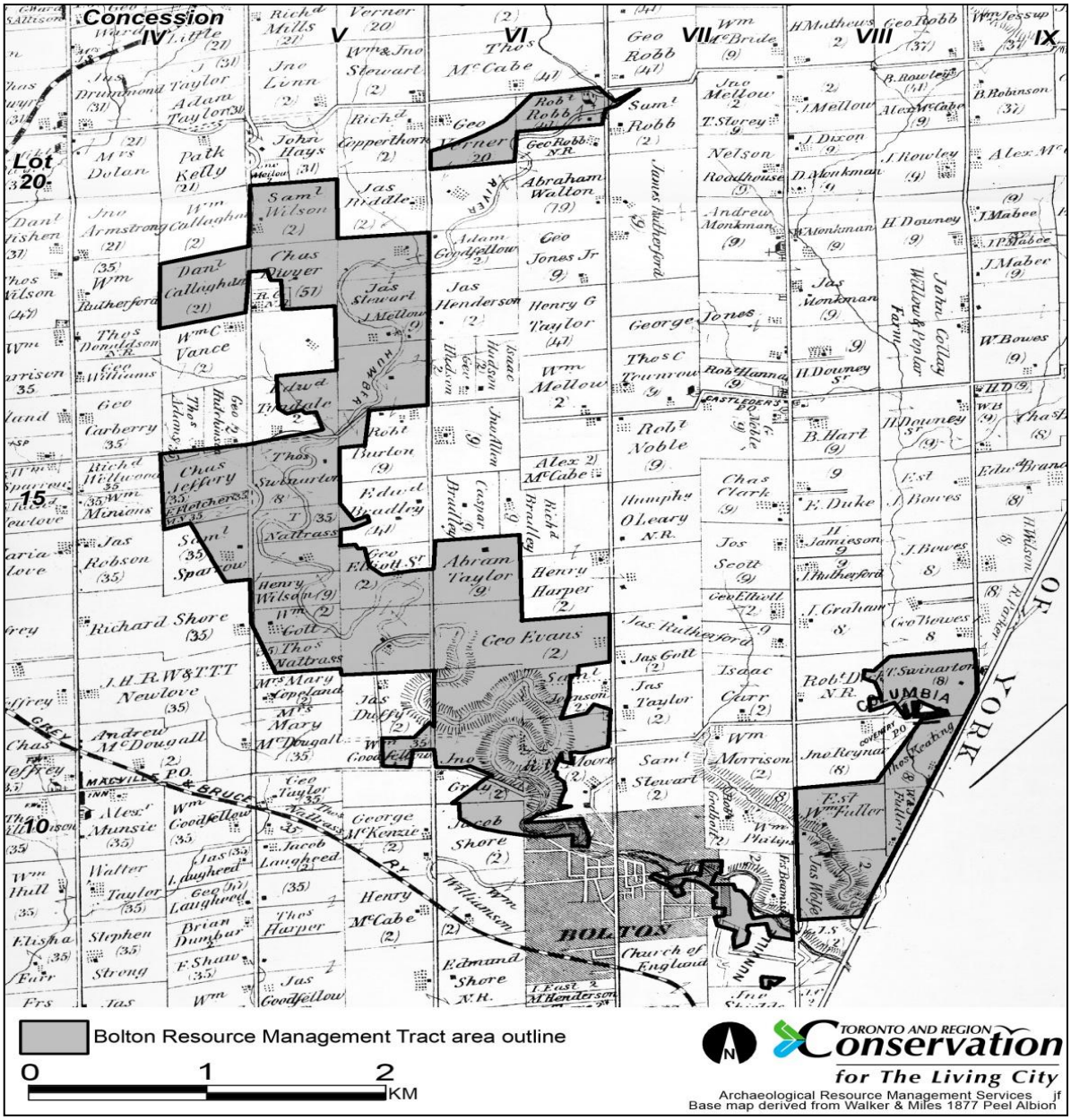
7.2 A Brief Historical Overview of the Local Area

A total of 27 lots and part lots make up the study area. This includes Lots 14, 15 and 18, Concession IV, Lots 11 through 19, Concession V, Lots 9 through 14 and Lot 20, Concession VI, Lots 7 through 9 and Lot 20 in Concession VII and Lots 8 through 11, Concession VIII. These properties are all situated in and around Bolton, in the Town of Caledon (**Figure 1**).

Introduction

Land use and settlement in the Bolton area was influenced by the presence of the Oak Ridges Moraine (ORM) and the South Slopes Till Plain. While the ORM was not suitable for agriculture, the soil of the South Slopes Till Plain proved fertile. A mixed-subsistence agriculture was the rule in early settlements of the South Slopes but grain became the major commodity and was soon exported from the lake ports. The grain growing period was one of prosperity, as the stony tills were cleared to make them suitable for the use of horse-drawn machinery (Western 1984:7).

Map 7.1: Nineteenth Century Property Ownership within the BRMT



Based upon census and assessment records, the majority of early homes were either log or frame construction although a few brick homes were located within the area. The local farms conducted mixed agriculture during the mid to late nineteenth century. Farm crops included grains (wheat, oats and barley), legumes (peas and clover), root crops (potatoes, carrots and turnip), orchard produce (apples, pears and plums) and hay. The main types of livestock enumerated in the returns included horses, oxen, cows, sheep and pigs. Some farmers did own one or more dogs and some kept bee hives. Other animals, such as cats and fowl, were never enumerated on the agricultural census returns although they must have been present on the farms within the area. Other activities included wool and cloth production, butter and cheese making and the manufacturing of maple sugar. Some flax was also grown and linen cloth was produced (Western 1984:7).

Brief Historical Summary

The area encompassing the BRMT is situated within the Town of Caledon which was once historic Albion Township in the former County of Peel. The lands which comprised the County of Peel were originally held by the native Mississauga Nation and alienated from them by the British as part of the "Mississauga Tract" purchase in 1818. They originally formed a part of the east riding of York in the Home District until the districts were abolished in May 1849. The Counties of York, Peel and Ontario were united for administrative purposes until the separation of Ontario County in 1851 and Peel County in 1865.

The lands in Peel were surveyed during late 1818 and early 1819 although it is unfortunate that the original Survey Diaries for Albion and Caledon are not available for study. We know from other surviving diaries, such as those for Toronto Township, that the survey teams worked through harsh weather conditions during the winter and spring of 1819 over difficult terrain which was often hilly and broken, sometimes swampy and always over-grown. Mosquitoes and other insects were a major nuisance during the warmer months.

Lands within this newly surveyed tract were immediately allotted for settlement. The government of Upper Canada was under pressure to acquire new lands for settlement following the War of 1812. At this time not only was there a large influx of immigration from Great Britain, Ireland and Scotland, but there were also adult children of the original United Empire Loyalists and veterans of the War of 1812 who were legally entitled to obtain grants of land from the Crown. All three of these groups – immigrants, Loyalists and their children and 1812 veterans – were well represented in the study area during the nineteenth century. The majority of the lands here were held by immigrants from Ireland and the north country of England, although some settlers of Scottish, Welsh and German origins also lived in the area. Fewer land holders were Loyalists and 1812 veterans who were often non-residents of the township and quickly disposed of their holdings to immigrant settlers, usually within the first year after obtaining the Crown patent. Some of the immigrant settlers had been farmers in their home country, although many were labourers and skilled tradesmen who took up farming in Upper Canada either as a means of augmenting their financial resources or simply for a change in their occupations. Several of the immigrants had seen some form of military service at home and a few were veterans of the Peninsula campaigns and had been present at major battles such as Waterloo. The population of the two townships at the time was mainly Protestant (Anglican, Methodist and Presbyterian) although a few Irish families belonging to the Roman Catholic Church also resided in the area.

The "Township Papers" provide a valuable source of information for the study area. These documents recorded information about the land and the first settlers who improved their

holdings prior to the granting of the Crown patents. From these papers we learn that several farm lots within the study area were considered “unfit for cultivation” either due to the hilly, broken terrain, poor soil quality or in other instances because the ground was low-lying and swampy. Some observations were made about the timber stands found on the various lots within each township, and in several cases lots were allocated to two or three different prospective settlers before the patent was finally granted. The “Township Papers” are also extremely valuable since they attest to the nature of the improvements made on the lands by each settler and the date by which the requisite “settlement duties” had been completed and the patent fees paid.

Both Albion and Caledon were heavily settled during the nineteenth century. A few of the farms were patented in 200 acre (81 hectares) tracts and the majority of these were former Crown or Clergy Reserves that were granted either to Kings’ College or to the Canada Company mainly during the period between 1828 and 1845. Some 200 acre (81 hectares) lots were patented to individual settlers. The remaining lots were patented in half lots of 100 acres (40.5 hectares) or even quarter lots of 50 acres (20 hectares).

Evidence from the “Township Papers,” census returns and assessment rolls indicates that practically every lot within the area contained one or more permanent dwelling houses and out-buildings such as barns, stables or sheds, by the mid nineteenth century. The earliest maps for these townships and most documentary records do not indicate the location of these structures. The first European built heritage within the study area dates from 1819 or 1820.

Other small businesses once flourished within the area and stores, inns, blacksmith shops and saddle and harness makers were indicated on the historical maps although the majority of these have disappeared. The villages within the area were mainly surveyed and developed in the period 1855 to 1877 and therefore the surviving built heritage within them dates from the second half of the nineteenth century to the present time.

A number of schools, churches and meeting houses and burial grounds were located within the area, some of which are still extant.

An additional feature which should be noted within the area is the presence of the “Caledon Trailway”. This occupies the route followed by the former Hamilton and North Western railway track which was constructed through the township between 1877 and 1879. This railway survived several mergers and became part of the Northern and Northwestern in 1879, the Grand Trunk in 1888 and Canadian National Railways in 1923. This track fell into disuse in the 1950s, and was acquired by the Town of Caledon in 1989. Although the area was cleaned up and the trailway was opened to the public in 1996, there could still be nineteenth century railway and other artifacts of archaeological or historical significance which have not been uncovered along the length of the trailway.

Conclusions

The area was heavily populated throughout the nineteenth century from the time of its initial settlement in 1819. Evidence from the various documentary sources indicates that nearly every lot contained one or more early settler cabins and out-buildings as well as structures dating from the latter half of the nineteenth century down to the present time. Industrial sites such as mill complexes, several schools, churches, burial grounds, inns and blacksmith shops were also noted on the historical maps. Mills were a key aspect of settlement in the area, which is

discussed below. The sites for some of these early structures is known while others yet remain to be uncovered which, with their associated middens, will provide opportunities for archaeological excavations, historical research, and a greater understanding of life in nineteenth century Peel County.

7.3 Heritage Resources

7.3.1 Archaeological Potential

The likelihood of finding archaeological sites within a defined area is known as “archaeological potential” and can be characterized as high, medium or low. In planning, determining the archaeological site potential provides an immediate indication that sites may be found within a project area. Consequently, it may be necessary to allocate time and resources for archaeological survey and mitigation.

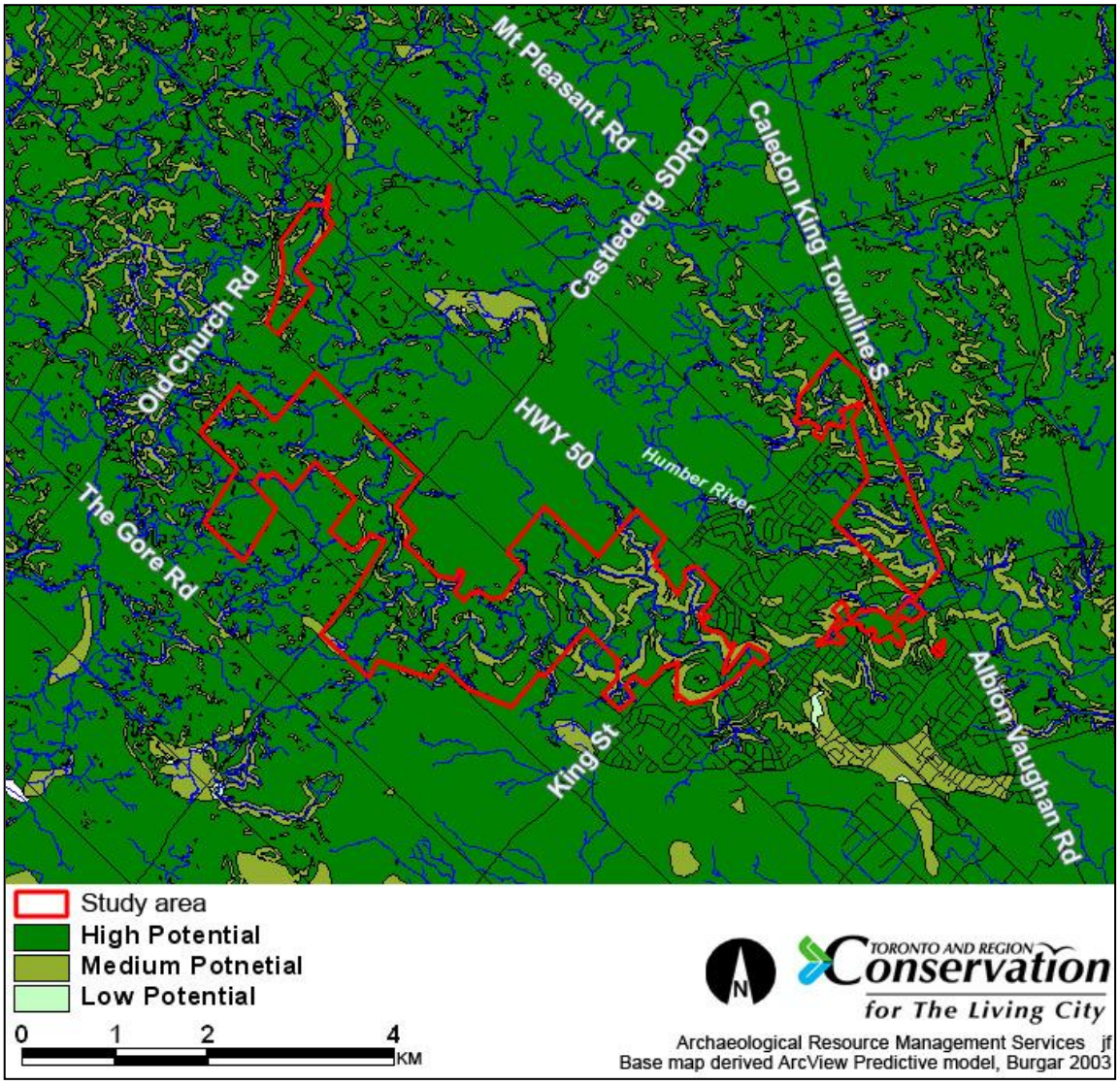
An integral component of TRCA’s Archaeological Master Plan (completed by Burgar in 1990) was the development of an Archaeological Site Predictive Model (ASPM). This model was designed for use by TRCA in land-use assessments prior to both passive and active development. The ASPM does not predict precise site locations; rather it presents a generalized view of the current understanding of Pre-Contact Aboriginal settlement patterns in the watershed and applies this knowledge to lands owned by TRCA.

The ASPM was based on statistical analyses of a well-defined database and mathematically derived variables. These variables include distance to water, soil drainage and topographic variability. An objective classification of sets of combined variables defined the parameters used to establish high, medium and low probability categories. These categories demonstrate the probability that an archaeological site is present in a given locality.

7.3.2 Application of the Predictive Model

An application of TRCA’s ASPM indicated that the entirety of the project area can be considered an area of medium to high potential for the presence of archaeological resources (**Figure 2**). This is based on distance to water, drainage and slope. The project area is centered on the main branch of the Humber River and includes its many tributaries. Furthermore, the majority of the project area is situated on King Clay Loam, although Pontypool Sandy Loam is present, both of which provide good drainage. Chinguacousey Clay Loam can be found in the southwest area of the BRMT, which has imperfect drainage and Bottomland and muck soil can be found in areas along the Humber River. These factors significantly add to the archaeological potential of the area. Within the Greater Toronto Area’s watersheds, nearly 80% of all known Aboriginal archaeological sites have been located within these high potential areas. Accordingly, there is a strong possibility that additional archaeological sites may be identified within the BRMT.

Map 7.2: Archaeological Potential of the BRMT



7.3.3 Known Archaeological Resources

Two methods were used to determine the potential of the BRMT to contain known or unknown cultural heritage resources. First, relevant modern and historic documents including those held at the Ministry of Tourism and Culture (MTC) were examined. Second, TRCA's ASPM (Burgar 2003) was applied to the project area (as described above in Section 1.3.2).

Archival research into historic and modern heritage documents was conducted to determine the presence of any previously reported archaeological sites in the BRMT. In addition, the modern database of recorded archaeological sites, held by the MTC was examined.

There are several sites registered both within the BRMT and in the vicinity surrounding the project area. These sites indicate that immediately after the glaciers receded from this part of

Southern Ontario, people resided in the area. Evidence of people from the PalaeoIndian Period through to the nineteenth century is an indication of the high appeal of this territory and it is certain that many more sites are located within the area.

A total of 37 sites were registered within the BRMT, of which 32 can be associated with Aboriginal activities and five are nineteenth century EuroCanadian sites. These include 23 isolated artifacts, all of which were lithic items with the exception of a single ball clay pipe fragment. These sites (excepting the Westlake site (AlGw-032) which was subjected to a full archaeological excavation) will likely warrant further investigation if future development is proposed as they received only limited investigation. **Table 1** lists these 37 sites.

Table 7.1: Archaeological Resources within the BRMT

Site Name	Borden #	Site Type	Affiliation	Lot	Concession	Researcher
Conolly	AlGw-026	Camp	Late Archaic	15	IV	Burgar 1987
Edge	AlGw-027	Camp	PalaeoIndian	15	IV	Burgar 1987
Belly	AlGw-025	Camp	Aboriginal	12	V	Burgar 1992
Westlake	AlGw-032	Camp	PalaeoIndian	12	V	Burgar 1988
N/A	N/A	Findspot	Late Archaic	12	V	Burgar 1988
N/A	N/A	Findspot	Aboriginal	12	V	Burgar 1988
N/A	N/A	Findspot	Aboriginal	12	V	Burgar 1988
Beesting	AlGw-028	Camp	Aboriginal	13	V	Burgar 1987
N/A	AlGw-085	Findspot	Aboriginal	17	V	Crinnion 2006
N/A	AlGw-084	Findspot	Aboriginal	17	V	Crinnion 2006
N/A	AlGw-156	Camp	Aboriginal	17	V	Jolly 2009
N/A	AlGw-157	Findspot	Aboriginal	17	V	Jolly 2009
Stewart	AlGw-148	Scatter	EuroCanadian	18	V	Jolly 2009
N/A	AlGw-153	Findspot	Late Archaic	18	V	Jolly 2009
N/A	AlGw-154	Findspot	Aboriginal	18	V	Jolly 2009
N/A	AlGw-155	Findspot	Aboriginal	18	V	Jolly 2009
N/A	AlGw-158	Findspot	Aboriginal	18	V	Jolly 2009
N/A	AlGw-159	Camp	Aboriginal	18	V	Jolly 2009
French	AlGw-005	Camp	Archaic	11	VI	Latta 1979
Grogan	AlGw-012	Camp	Multi-Component	11	VI	Latta 1979
N/A	AlGw-144	Findspot	Aboriginal	11	VI	Crinnion 2008
N/A	AlGw-145	Findspot	Aboriginal	11	VI	Crinnion 2008
N/A	AlGw-146	Findspot	Aboriginal	11	VI	Crinnion 2008
N/A	AlGw-147	Findspot	Aboriginal	11	VI	Crinnion 2008
N/A	N/A	Findspot	Aboriginal	12	VI	Burgar 1988
N/A	N/A	Findspot	Aboriginal	12	VI	Burgar 1988
N/A	N/A	Findspot	EuroCanadian	12	VI	Burgar 1988
N/A	AlGw-015	Camp	Early Woodland	12	VI	Latta 1979
N/A	AlGw-016	Findspot	Early Woodland	12	VI	Latta 1979
N/A	AlGw-134	Homestead	EuroCanadian	12	VI	Jolly 2008
N/A	AlGw-135	Findspot	Aboriginal	12	VI	Jolly 2008

N/A	AlGw-136	Findspot	Aboriginal	12	VI	Jolly 2008
N/A	AlGw-137	Homestead	EuroCanadian	12	VI	Jolly 2008
N/A	AlGw-138	Findspot	Aboriginal	12	VI	Jolly 2008
N/A	AlGw-161	Findspot	Aboriginal	13	VI	Jolly 2009
Taylor	AlGw-160	Homestead	EuroCanadian	14	VI	Jolly 2009
N/A	AlGw-088	Findspot	Aboriginal	8	XI	Crinnion 2006

Two sites are located on Lot 15, Concession IV. The first, the Late Archaic Conolly site (AlGw-026) was identified by a Brewerton Corner Notched point that is approximately 5,000 to 4,500 years old, a single bifacially worked scraper or spokeshave and two chert flakes. The nearby Edge site (AlGw-027) is a PalaeoIndian site and included a single spurred end scraper and a flake, both of which were manufactured from Collingwood chert.

Two sites and three isolated finds were located on Lot 12, Concession V. The first of these is known as the Belly site (AlGw-025). This site was located north of the PalaeoIndian Westlake Site (AlGw-032). A projectile point base and a medial point section were recovered, as was a single scraper and six chert flakes. However a lack of diagnostic material prevents identifying the cultural or temporal affiliation of this site. The aforementioned Westlake site (AlGw-032) is a PalaeoIndian campsite that was initially identified through pedestrian survey and was subsequently subjected to a full archaeological excavation. A total of 214 artifacts were recovered, which included five spurred end scrapers and a single channel flake. The latter item is a consequence of manufacturing the characteristic fluted points associated with PalaeoIndian peoples. Finally, three isolated finds were located just south of the Westlake site (AlGw-032) in the same field. These items included a single Normanskill projectile point that is about 4,500 to 3,800 years old, dating to the Late Archaic period as well as two chert flakes.

The Beesting site (AlGw-028) is located on Lot 13, Concession V. A single side scraper and two flakes were recovered. The lack of diagnostic artifactual material prevents a temporal or cultural association for this site.

One site and three isolated artifacts were located on Lot 17, Concession V during a pedestrian survey of Peel Region in 2005. These include three flakes registered as AlGw-156, a single scraper (AlGw-084), an isolated chert flake (AlGw-085) and an additional chert flake (AlGw-157) that exhibits possible usewear.

Two sites and four isolated finds were located on Lot 18, Concession V. These include three chert flakes registered as AlGw-159 and a EuroCanadian scatter of nineteenth century materials registered as the Stewart site (AlGw-148). The isolated finds include a Late Archaic Broad Point that dates to between 4,500 and 3,800 years ago (AlGw-153), a groundstone adze (AlGw-154), two flakes located close together, both displaying possible usewear (AlGw-155) and an additional isolated flake manufactured from Upper Bobcaygeon chert (AlGw-158).

Two sites and four isolated finds were located in Lot 11, Concession VI. The French site (AlGw-005) is an Archaic Period campsite defined by a single projectile point and four flakes, one which displays expedient retouch. In addition, extensive deposits of nineteenth century material were identified; however these were not registered as an archaeological site. The other site on this lot is the Grogan site (AlGw-012). This site was identified by a scatter of chert flakes and debris. Several projectile points were also recovered that include a Brewerton Side-Notched

point (5,000 to 4,500 BP), an Orient Fish-Tail point (3,700 to 2,700 BP) and a single triangular projectile point (1350 until the eighteenth century). The site has been registered as a multi-component site that can be dated to the Late Archaic through Early Woodland transition with Late Woodland elements. Of the isolated finds, three (AlGw-144, AlGw-145 and AlGw-146) are chert flakes and one (AlGw-147) is a non-diagnostic point fragment.

A single Early Woodland site (AlGw-015), two EuroCanadian sites (AlGw-134 and AlGw-137) and six isolated finds were located on Lot 12, Concession VI. AlGw-015 consists of three chert flakes and a single Meadowood style projectile point that dates to between 2,800 and 2,400 years ago. AlGw-134 and AlGw-137 are both proximal to a nearby nineteenth century structure and are likely related to the building. The isolated finds include an additional Meadowood projectile point (AlGw-016), a non-diagnostic projectile point fragment (AlGw-135), a broken biface (AlGw-136) and a single chert flake (AlGw-138). All of these items were located within two adjacent agricultural fields. Three additional isolated items were collected elsewhere but were not registered as sites. These include a single end scraper and one flake as well as a EuroCanadian pipe fragment manufactured from ball clay.

One isolated flake (AlGw-161) was located on Lot 13, Concession VI and the foundations of a nineteenth century farmhouse were identified nearby on Lot 14, Concession VI. These were registered with the MTC as the Taylor site (AlGw-160). Finally, one isolated flake (AlGw-088) was located on Lot 8, Concession VII.

In addition to the above mentioned sites, 13 archaeological sites and nine isolated finds were located within one kilometre of the boundaries of the BRMT. As with those sites located within the BRMT itself, many of these resources only received minimal investigation and will likely require further mitigation before any proposed development in the area.

Three isolated finds were located on Lot 13, Concession IV. These consist of three flakes of Onondaga chert (AlGw-317, AlGw-318 and AlGw-319), one of which exhibited retouch (AlGw-319).

Two sites were located on Lot 8, Concession V. AlGw-062 was identified as a possible Aboriginal campsite, however a lack of diagnostic artifacts prevents ascribing a temporal or cultural affiliation to this site. The other site, AlGw-063 is a EuroCanadian site and included a total of 260 EuroCanadian artifacts located over 2,500 square metres. These items could be dated to between 1840 and 1870.

AlGw-042 was located on Lot 9, Concession V. It is a EuroCanadian site consisting of 42 items dating to the nineteenth century. These include 35 fragments of ceramic tableware, three fragments of earthenware crockery, two shards of bottle glass, a single nail and one ceramic insulator.

Three isolated artifacts were located on Lot 10, Concession V. A single crude biface manufactured from Onondaga chert was recovered approximately 425 metres northwest of a single retouched Onondaga chert flake. The biface was registered as AlGw-038 and the flake was registered as AlGw-039. Unfortunately a temporal or cultural affiliation could not be attributed to these items. A broken projectile point that may be a Nettling point was also

identified and registered as AlGw-069. If it is indeed a Nettling Point, it would date to the Early Archaic Period, approximately 10,000 to 8,000 years ago.

The Hall Site (AlGw-068) was located on Lot 11, Concession V. This was a nineteenth century homestead that was completely excavated in 2002. The site location is currently situated beneath Albion Vaughan Road.

The Lotor Site (AlGw-031) is a Late Archaic Brewerton Phase site that included a single Brewerton Corner Notched point (5,000 to 4,500 BP), one drill fragment, one core fragment and five chert flakes. This site is located on Lot 14, Concession V.

A multi-component site was discovered on Lot 8, Concession VI and registered as AlGw-006. This site is composed of three distinct clusters that included both Late Archaic and Early Woodland elements. Artifacts included a single point fragment, one flake that possibly served as a burin, a single scraper, one core and nine chert flakes. In addition, an isolated side notched projectile point fragment that dates to the Middle Archaic was registered as the Jetron site (AlGw-056).

A nineteenth century site and an Archaic Period site were located on Lot 10, Concession VI. The former is the Moore Site (AlGw-60) which included 36 EuroCanadian items scattered across 50 square metres. The other is the Goodfellow site (AlGw-4), an Archaic campsite identified by the base of a corner-notched projectile point and a scatter of several chert flakes.

Two nineteenth century EuroCanadian sites were identified on Lot 8, Concession VII. The Burns - C. Saunders site (AlGw-019) consisted of a light scatter of ceramic shards while the Samuel Walford House (AlGw-051) includes a nineteenth century house of an unusual style. Samuel A. Walford was a chandler who also served as Clerk for the village of Bolton and likely worked from his home. Several outbuildings have since been removed and no other structures remain.

However, foundations likely exist beneath a nearby parking lot. A number of domestic remains surrounded the house.

A total of 24 Aboriginal artifacts were recovered in a ten metre by 25 metre scatter on Lot 10, Concession VII. The site was registered as AlGw-059. As none of the artifacts were diagnostic, the temporal and cultural affiliation for this site remains unknown.

An isolated point tip was recovered on Lot 11, Concession VII and registered as AlGw-036. This tip was tentatively identified as a Meadowood point fragment, dating to between 2,800 and 2,400 years ago, during the Early Woodland Period.

The Harper site (AlGw-003) is a multi-component campsite located on Lot 12, Concession VII. The site was identified by several Archaic Period projectile points and a single fluted point, representative of the PalaeoIndian Period.

One site was located on Lot 11, Concession VIII. Registered as the Swinarton site (AlGw-044), the site includes an Early Archaic point with a bifurcate base and one Middle Archaic Brewerton Corner Notched Point.

One EuroCanadian homestead was located on Lot 8, Concession XI and registered as the Loring site (AlGw-043).

Built Heritage

The BRMT and the area surrounding it contain several built heritage features identified by the local Heritage Board and included in the Built Heritage Resources Inventory (Stewart et al. 2008). The project area also includes the historic core of the village of Bolton, located at the intersection of Queen Street and King Street. Table 7.2 lists the nineteenth century structures located within the BRMT.

Table 7.2: Built Heritage Located Within the BRMT

Name	Lot	Concession	Address
EuroCanadian Mill	18	V	N/A
EuroCanadian Mill	9	VI	N/A
Steel Truss Bridge	9	VI	Glasgow Road
Bolton Woollen Mill	10	VI	N/A
McIntosh Saw Mill	10	VI	N/A
Hamlet of Glasgow	10	VI	N/A
EuroCanadian Mill	20	VI	N/A
Methodist Church	20	VI	1 Cedar Mains Drive
Shiloh Wesleyan Methodist Cemetery	20	VI	1 Cedar Mains Drive
EuroCanadian Mill	9	VII	N/A
Bolton Camp	8/9	VIII	13450 Caledon-King Townline
EuroCanadian Mill	11	VIII	N/A
EuroCanadian Mill	11	VIII	N/A
EuroCanadian Mill	11	VIII	N/A
Barn	N/A	N/A	7960 Castlederg Sideroad
Carriage House	N/A	N/A	7964 Castlederg Sideroad
Farm House	N/A	N/A	8070 Castlederg Sideroad
Farm House	N/A	N/A	14121 Duffys Lane
Farm House	N/A	N/A	600 Glasgow Road
School	N/A	N/A	14100 Mount Hope Road

Bolton village was once known as Bolton Mills. Early settlers emigrated mainly from England, the earliest being a carpenter named James Bolton who settled in the area in 1819 from Suffolk. His nephew George, arrived around 1822 and helped his uncle construct a small frame grist mill on the banks of the Humber “which had one run of stones” (Pope 1877:89). This attracted more settlers and by 1840 fourteen buildings with roofs were standing, including a blacksmith shop and hotel. George would later run a store out of a small log house which was later sold to Captain William Stearn. The Captain was also appointed as postmaster and would build a distillery around this time. There were no churches, however a Church of England minister frequently held services in a barn owned by the Captain. In 1842 the first school opened with up to 25 children in attendance. This structure would be replaced by a brick building in 1874 that was “erected at a cost of over $5,000” (Pope 1877:89). A mud brick church was finally built in 1843 and was followed by others, of varying denominations.

In 1872 the town severed itself from Albion and became a separate municipality and the first election for the municipal offices was held the following year. Several industries were growing, including William Dicks Agricultural Works, established in 1869 and “ranked among the first

manufactories of the county" (Pope 1877:89). A woollen factory and saw mill were soon standing and a Mr. J. Guardhouse ran a new grist mill with "three run of stones" (Pope 1877:89). The same individual also ran a general store. Soon the town contained a carriage factory, a brick cooper factory, a tannery and the aforementioned soap and candle factory owned by Messrs. Walford and Son, "whose soap is considered superior to that made in larger factories" (Pope 1877:89). By the 1870's the town was the home of many wealthy merchants.

The locations of nine nineteenth century mills can be found throughout the project area, all of which have been demolished and are now unregistered EuroCanadian archaeological sites. Two of these nine mills can be further identified as a woollen mill and a saw mill. Of the unidentified mills, one is located on Lot 18, Concession V, another on Lot 9, Concession VI, another on Lot 20, Concession VI and one on Lot 9, Concession VII, just upstream from the site of a grist mill, which was the first mill constructed in Bolton. It is possible that this latter mill is the building indicated in the Historical Atlas of Peel County (Walker and Miles 1877:56). Finally, three mills were once located on Lot 11, Concession VIII.

In addition to the aforementioned mills, a woollen mill and a saw mill were also located within the BRMT in the hamlet of Glasgow. Incorporated in 1872, the hamlet of Glasgow was already an established woolen manufacturing centre that sent products all around the world.

The Bolton Woollen Mill is located on Lot 10, Concession VI. This mill was established in 1859 and is now an unregistered historical archaeological site. The McIntosh Saw Mill was also located on this lot and concession. This mill was established in 1855 by James McIntosh, one of the first settlers in Glasgow. James McIntosh was the first to establish mills on the land and would operate the Glasgow Woolen and Saw mills between 1855 and 1863. Incidentally, McIntosh is interred in the nearby Laurel Cemetery. The mills eventually went through several owners, including Joshua Walshaw and his son, Edwin, before closing for good in 1923 due to a large fire. The land was later bought by Samuel and Louis Greenspoon in 1925 and served as a recreational area known as the Greenspoon Summer Resort and Social Club. It would thrive in this capacity for a quarter century until it was flooded by Hurricane Hazel in 1954. Later recreational uses for the area included ski facilities and an ice rink, which was also destroyed by a fire in early 1980s (Broadbent 2004).

A steel truss bridge, constructed sometime between 1910 and the 1920s is located on Lot 9, Concession VI. This bridge carries Glasgow Road over the Humber River and was manufactured by the Stratford Bridge Company. It is constructed of riveted steel and is known as a Warren or "pony truss" bridge. These bridges have a single span, wooden decks, lack overhead beams and sit on concrete abutments. Small wings on the outside of the bridge help to distribute the carrying load. These bridges were both sturdy and inexpensive and became popular in rural areas during the early twentieth century. An identical bridge is located just outside of the project area on Sneath Road in Lot 7, Concession VII. Both bridges have been designated.

A historic cemetery is located in the eastern half of Lot 20, Concession VI at 1 Cedar Mains Drive. It is known as the Shiloh Wesleyan Methodist Cemetery as well as the Cedar Mills Cemetery. A Methodist church is also associated with the cemetery. The church was constructed in 1857 by Samuel Robb, who also built a nearby grist mill. The property was eventually bought by Sidney Martin Blair who worked within the oil industry and bred cattle and

sheep on the grounds. Blair's two wives are buried in the cemetery as are several members of the Robb family.

The Bolton Camp, which straddles Lot 8 and 9, Concession VII at 13450 Caledon-King Townline is listed as a heritage property. In 1922, a social relief organization known as the Neighbourhood Workers Association of Toronto or TWA founded a camp for low income families on the property which would thrive for the better part of a century. In 1922, the only structures on the property were a farmhouse and a clubhouse which were destroyed by fire the following year. By the mid-1920s, the camp tents were replaced with cabins and dining halls and dormitories were constructed. Adjacent farms were purchased during the 1930s and by 1938 169 new buildings were erected, including an octagonal kindergarten building. The camp was rebuilt between 1968 and 1971 where new buildings were added and several of the original cabins were sold. The buildings have been vacant since 2000. The remaining structures are rare examples of summer camp architecture dating to the early part of the twentieth century, some of which exhibit steel tie-rod and tie-ring roof support system. A total of 24 heritage buildings have been listed and include the aforementioned octagonal kindergarten building, cabins, communal halls, and a steel pedestrian shelter.

Several additional structures within the study area have been identified by their associated municipal emergency number only. These include a barn dating to between 1800 and 1924 located at 7960 Castlederg Sideroad, a farmhouse dating to between 1850 and 1874 located at 7964 Castlederg Sideroad and a carriage house of an unknown date, located at 8070 Castlederg Sideroad. This latter structure was employed to provide shelter for coaches when they were not in use. Tools and accessories were also stored within the building. These buildings could range from sophisticated edifices to functional, spartan designs. An additional farmhouse of an undetermined age is located at 600 Glasgow Road and another farmhouse with an associated barn is situated at 14121 Duffy's Lane. This latter structure dates to between 1850 and 1874. Finally, a school building dating to between 1900 and 1924 is located at 14100 Mount Hope Road.

A number of heritage structures are also located within a one kilometre radius of the boundaries of the BRMT. These structures include a number of residences, mills and cemeteries as well as a three churches and a Masonic Lodge.

As with those areas situated within the BRMT, several demolished EuroCanadian mills have been identified but remain as unregistered archaeological sites. One is located on Lot 7, Concession VIII, another on Lot 9, Concession VI, one on Lot 7, Concession VII and one on Lot 8, Concession VII. A grist mill is situated on Lot 11, Concession VII and the Bolton Grist Mill is located on Lot 9, Concession VII. This was the first mill in Bolton, established in 1824.

The designated Duffy-Murray House is located on the eastern half of Lot 11, Concession V. The structure was constructed in 1845 and owned by Mrs. Elizabeth Duffy. It is a T-shaped, two storey log house with a brick façade, which was added in 1907. The structure has been minimally altered, however the shape and style has remained.

The Linn Octagonal House is located on Old Church Road on Lot 21, Concession V. This eight sided structure has been designated by the Town of Caledon local Heritage Board due to the rarity of the architectural style. The house was previously known as the Pinkney Octagonal

House and was built between 1875 and 1879. The foundation is cobblestone with stucco walls. Later, an addition was constructed for commercial purposes but now serves as a bedroom.

Lot 8, Concession VI has a number of heritage buildings and one cemetery known as the Plummer Family Burial Ground. A red and buff brick Italianate house is located at 34 Queen Street South. It has since been converted into offices. Its neighbor is a horizontal sided, late Italianate house located at 38 Queen Street South. A High Victorian Gothic house is also located at 102 King Street West. A Presbyterian Church constructed in a Gothic Revival style is located at 110 King Street West, on the south side of the street. This building dates to between 1875 and 1899.

Several heritage structures are situated on Nancy Street, also on Lot 8, Concession VI. These include two churches, the Bolton Wesleyan Methodist Church and the Christ Church Anglican Church. The former is a red and buff brick, Picturesque Gothic building that was constructed in 1876 with a concrete block addition added in 1978. The latter is Gothic Revival in style and displays battlements on the end tower. The street is also home to two High Victorian Gothic structures. One displays an early twentieth century enclosed porch and has been designated. The other is known as the Joseph Watson House, constructed in 1888 and located at 45 Nancy Street. Single examples of Gothic Revival, Edwardian Classical, and designated Italianate and Neoclassical houses are also present. Finally, True Blue Masonic Lodge No. 98 is situated at 16 Nancy Street and is also designated. The building was constructed in 1876 and is a good example of a late Victorian era Masonic hall. It has a metal gable roof and red brick veneer with radiated voussoirs over the windows and entrance. The interior of the lodge continues to exhibit late Victorian decoration. Incidentally, the lodge houses the oldest fraternal order still active in the Town of Caledon.

Lot 9, Concession VI includes a heritage structure at 105 King Street West. This is an “L” shaped Edwardian Classical building with an original verandah. The designated Shore-Nease Residence is also located on this lot at 34 Temperance Street. This High Victorian Gothic structure displays red and buff brick. Constructed around 1872, the house served as both a residence for the owners and an office for doctors, physicians and surgeons after a one-storey addition was added. The structure is an excellent example of a polychromactic house. Finally, a red brick building with limestone corners is situated at 4 Queen Street North. This commercial structure was built in 1893 and still exhibits the original storefront cornice.

A designated steel truss bridge, constructed during the first decade of the twentieth century is located on Lot 7, Concession VII. This bridge carries Sneath Road over the Humber River. Like the aforementioned bridge on Glasgow Road, it is constructed of riveted steel and is known as a Warren or “pony truss” bridge. These bridges have a single span, wooden decks, lack overhead beams and sit on concrete abutments. Small wings on the outside of the bridge help to distribute the carrying load. These bridges were both sturdy and inexpensive and became popular in rural areas during the early twentieth century.

Three cemeteries are situated on Lot 9, Concession VI. Straddling Lots 9 and 10, Concession VI sits the Laurel Hill Cemetery, which has been in use since 1893. The original stone entrance, constructed during the early twentieth century of randomly set stones still stands. A stone retaining wall with hooks for hitching horses also remains. A centograph called “Soldier in Flanders Field,” erected in 1921, was created by Emmanuel Hahn in memory of the soldiers who fought in the Great War. Hahn would later become internationally famous for his artwork.

The cemetery is also renowned for a red brick octagonal dead house, constructed in 1894, which was employed for storing caskets during the winter months. A small rectangular Italianate building still stands, which was originally employed as a public waiting room. Both of these buildings are currently used for storage. Over the years, the cemetery has become the local repository for re-internments from other historic cemeteries. The cemetery also contains a provincial plaque erected by the Archaeological and Historic Sites Board of Ontario titled “The Founding of Bolton.” An older cemetery is also located on the property. This consists of a hilltop burial ground surrounded by a cast iron fence within a grove of locusts. The Bolton Anglican-Methodist Cemetery is also situated just south of the Laurel Hill Cemetery. The southeast half of this cemetery is Anglican and the northwest side is Methodist. This latter cemetery is now marked with a cairn erected in 1972 that contains the original headstones.

Three structures are located on James Street on Lot 8, Concession VII. The first is located at 53 James Street. It is an Edwardian Classical building with cast iron features which were manufactured in a local foundry. The second is designated and known as the Lambert Bolton House, located at 65 James Street. It was constructed around 1867 for Lambert Bolton, Esquire, the grandson of the founder of the town. Lambert was a prominent citizen of Bolton who became the first Reeve of the town in 1873. The building is two and a half storeys, L-shaped and built in a polychromatic, High Victorian Gothic style. The third building is situated at 117 James Street. This is a late Regency, hip roofed cottage with a gable roofed rear addition. On the same lot, the Charles Bolton House is located at 159 Victoria Street and was constructed sometime during the 1840s. Nearby, at 114 Hemlock Street, a horizontal sided Italianate house is situated. Finally, at 94 King Street East, sits an aluminium sided Gothic Revival house with unusual classical features dating to between 1850 and 1874.

A number of structures and one cemetery are situated on Lot 9, Concession VII. The cemetery is known as the Albion Congregational Cemetery, situated just east of the Laurel Hill Cemetery. The east side of Queen Street North is home to a plastered, late Georgian, two storey commercial building with parapeted gables at 1 Queen Street North. Further north, at 11 through 25 Queen Street North is a six unit, red and buff brick two storey Italianate commercial block, also with a decorated parapet. The original Bolton Town Hall is located to the southeast and around the corner, at 15 King Street East and dates to between 1900 and 1924. Located at 97 King Street East, the McFall House is one of the oldest standing residential structures in Bolton and is directly related to mill activity. Constructed around 1843, this designated building was originally a one room plank home intended for use as a summer cottage. Subsequent additions enlarged the house. Designated by the Town of Caledon local Heritage Board, the Albion-Bolton Historic Society’s annual walking tour includes this building. The final structure is the designated Guardhouse-Goodfellow House, which was constructed around 1876 and located at 83 King Street East. This house is a good example of the Ontario Gothic architectural style. It was erected by one of the Bolton’s first wealthy and politically active citizens, George Bolton, the nephew of James Bolton, the founder of the town. He operated the first store in the village and would later become a fugitive due to his role in the 1837 Rebellion. The house is directly linked to Bolton’s milling history and because of this it was the first house in Bolton to have running water and electricity.

Lot 7, Concession VIII is home to the Shields House, located at 65 Sneath Road. This is a designated board and batten Regency cottage dating to between 1850 and 1874. On the north side of Columbia Way, on Lot 11, Concession VIII at 9938, Columbia Way, the Columbia Primitive Methodist Cemetery is located which dates to before 1850.

A number of heritage structures have been identified by their municipal emergency number rather than by lot and concession. These include 25 historic houses situated along King Street West that date to between 1875 and 1924. Another 18 historic homes are located along King Street East and date to between 1850 and 1924. Four homes are located on Albert Street and date to between 1875 and 1899. Five structures are located on Castlederg Sideroad and include three farmhouses and a farmstead that date to between 1850 and 1924. An isolated barn is also situated at 7236 Castlederg Sideroad that dates to between 1850 and 1874.

Two historic houses and a homestead are located along Columbia Way and date to between 1850 and 1874 and six historic farm houses are situated on Duffys Lane which date to between 1850 and 1945. Two houses dating to between 1900 and 1924 are located at 24 and 27 Hickman Street, respectively. A number of farm houses and farmsteads are situated along Highway 50 that date to between 1850 and 1945, as well as an isolated barn of an undetermined age. Four additional farm houses are located on Humber Station Road and date to between sometime prior to 1850 to 1945. Three houses, located on Mill Street, date to between 1850 and 1945. An industrial structure of an undetermined age is also located at 25 Mill Street. Two farm houses are located at 8575 and 8686 Old Church Road and date to between 1875 and 1899. Two houses are located at 18 and 31 Sackville Street, the first of which dates to between 1900 and 1924 while the date of the structure at 31 Sackville Street remains undetermined. A farmhouse dating to between 1900 and 1924 is located at 14509 Mount Pleasant Road.

Several farm structures are located along the Gore Road and include houses as well as an isolated barn and date to between 1875 and 1924.

7.4 Cultural Heritage Conclusions

The many archaeological sites and built heritage structures identified both within the BRMT and the vicinity of the project area help to characterize past human activities. Furthermore, archaeological investigations within and adjacent to the BRMT indicate that people have been living in the area since the end of the last ice-age. Should future archaeological investigations be undertaken within the BRMT, there is a strong possibility that new archaeological resources will be discovered.

CHAPTER 8: RECREATION, CONSERVATION EDUCATION AND TOURISM

This chapter identifies recreation, conservation education and tourism resources and opportunities in and surrounding the BRMT. An overview of greenspace, trails and regional recreational facilities is provided. The lands surrounding the BRMT are included as they may complement the greenspace, education, recreation and tourism opportunities within the planning area. Further, there may be opportunities to enhance these resources through linkages and partnerships.

8.1 Greenspace

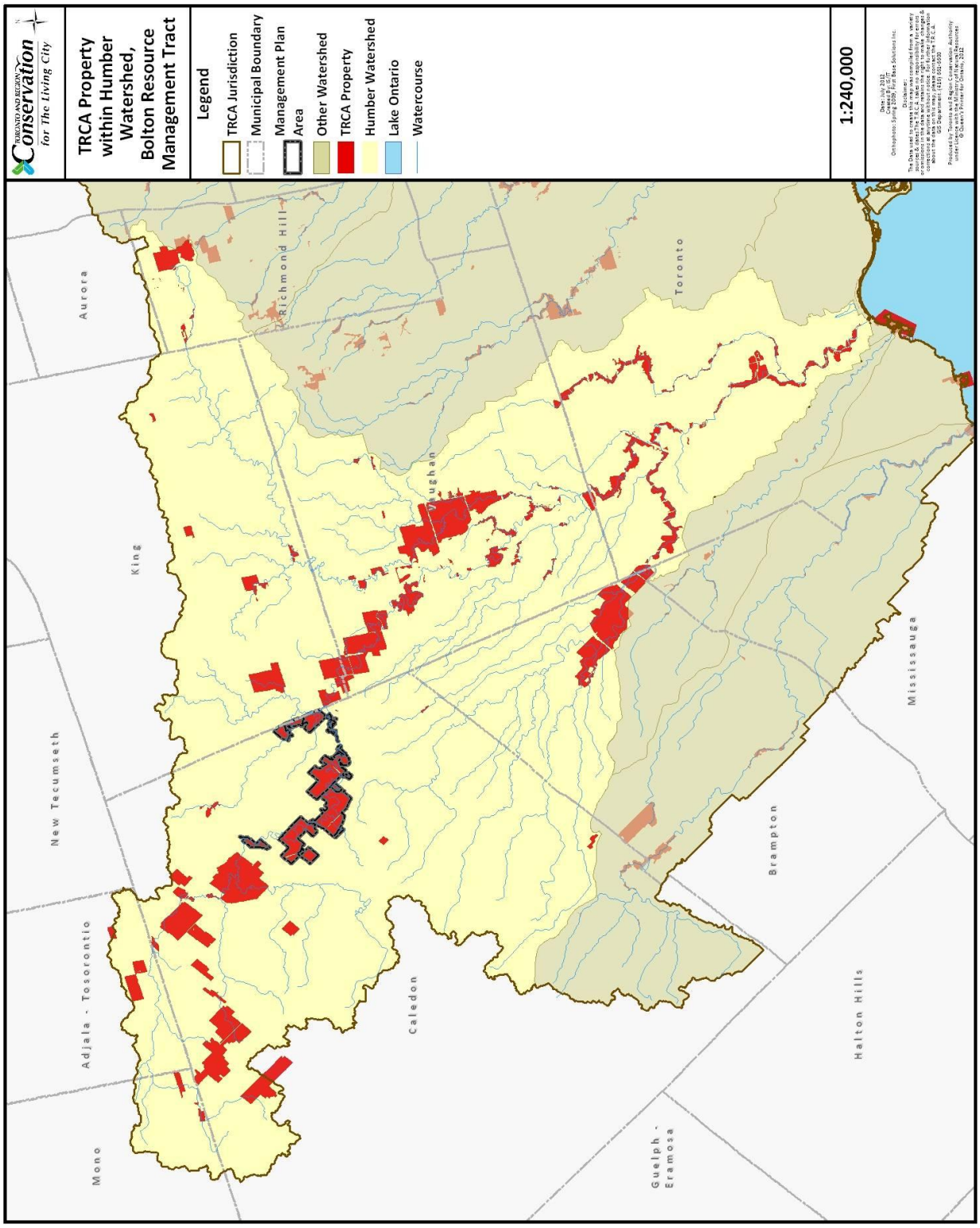
Toronto and Region Conservation Lands:

The TRCA owns or manages over 6700 hectares (ha) of land within the Humber River watershed, including 2750ha within the Town of Caledon (Map 8.1).

To the north in the Town of Caledon are three large TRCA properties; Albion Hills Conservation Area, Palgrave Forest and Wildlife Area and Glen Haffy Conservation Area. Albion Hills Conservation Area is 446 hectares and offers multi-use facilities such as a full-service campground, picnicking, nature trails, cross-country skiing trails, mountain bike trails, swimming, fishing, and paddleboat and canoe rentals. Palgrave Forest and Wildlife Area (306 hectares) offer opportunities for nature-based recreation such as hiking and biking, but is not staffed and does not have the infrastructure of an active conservation park. Glen Haffy Conservation Area is home to the Glen Haffy Rainbow Trout Hatchery. This park, at the intersection of the Niagara Escarpment and the Oak Ridges Moraine, offers fishing, picnicking, group camping and hiking.

To the south and east is a large complex of TRCA lands encompassing the Nashville Resource Management Tract, Cold Creek Conservation Area, Kortright Centre for Conservation, Boyd Conservation Area, and Boyd North and Glassco Park. The Nashville Resource Management Tract and Cold Creek Conservation Area, (720 and 160 hectares respectively), are passive-use properties like Palgrave Forest and Wildlife Area. The Kortright Centre for Conservation is located in 325 hectares of woodlands, and features a variety of educational and interpretive activities focusing on nature, sustainability and renewable energy. Boyd North and Glassco Park encompass 688 hectares of greenspace, and together with Boyd Conservation Area, provide nature-based recreation in the form of trails.

Map 8.1: TRCA Property in the Humber River Watershed



Municipal Parks and Open Space

Municipalities provide parks, recreation and cultural facilities and programs through various departments such as the Departments of Parks and Recreation and/or Culture. Each municipality typically develops parks and recreation master plans which guide development for parks, open space, recreation and culture. These documents also provide inventory information related to the number of recreational facilities and infrastructure and coordinate recreation service delivery.

Town of Caledon parks and trails are managed, maintained and constructed by the Town's Public Works Department, while the Town's Recreation Department directs the recreation programs and services that are offered at Caledon's parks and recreation facilities. There are over 70 district/special purpose, neighbourhood and community parks totalling more than 300 acres managed by the Town of Caledon (Table 8.1). District/special purpose parks offer specialized facilities and amenities allowing them to be rented for organized use. Community parks are larger spaces provided in settlement areas that include parking, amenities and informal recreational opportunities. Neighbourhood parks/parkettes are small parks located within neighbourhoods and intended for use by local residents, typically containing playgrounds (Town of Caledon, 2007).

Table 8.1: Town of Caledon District, Special Purpose and Community Parks

Community Name	Park Name	Outdoor Sports Facilities	Additional Features
Alton	Alton Park	baseball	playground, picnic tables, shelter, washrooms, open space
Belfountain	Belfountain Tennis Courts	tennis	open space
Bolton	North Hill Park	baseball	playground, picnic tables, washrooms, open space, trail
	Sunkist Woods	none	Humber Valley Heritage Trail
	Dicks Dam Park	soccer, beach volleyball	playground, picnic tables, portalet, open space, splash pad, Humber Valley Heritage Trail
	Ted Houston Park	baseball	playground, picnic tables, washrooms
	Edelweiss Park and Bolton Tennis Courts	soccer, tennis	picnic tables, shelter, washrooms, open space
	R.J.A. Potts Memorial Park	bocce, basketball	playground, picnic tables, shelter, washrooms, open space, splash pad, trail
	Adam Wallace Memorial Park	basketball	playground, picnic tables, washrooms, open space, splash pad
	Jack Garrett Soccer Park	soccer	portalet
	Caledon Leash-Free (Dog) Park		picnic tables, open space, trail
Caledon East	Caledon East Park and Tennis Courts	baseball, soccer, tennis	playground, picnic tables, shelter, washrooms, open space, trail
	Caledon East Soccer Complex	soccer	picnic tables, washrooms, open space, trail
Caledon Village	Caledon Village Tennis	tennis	shelter, open space

	Courts		
	John Alexander Park	baseball	playground, picnic tables, portalet, open space, splash pad, trail
	Caledon Fairgrounds – Sid Coburn Diamond	baseball	picnic table, shelter, washrooms
Cheltenham	Charles Haines Park	baseball	playground, picnic tables, shelter, washrooms, open space
Inglewood	Inglewood Park	baseball	playground, washrooms
	Inglewood Tennis Courts	tennis	picnic tables
Mono Mills	Lions Park	baseball	playground, picnic tables, open space
	Victoria Parks Community Centre and Park	baseball, tennis	playground, picnic tables, open space
Palgrave	Palgrave Park	baseball, lacrosse, rugby	playground, picnic tables, shelter, washrooms, open space
	Palgrave Tennis Courts	tennis	picnic tables, washrooms
Valleywood	Lina Marino Park	soccer	playground, picnic tables, open space, trail

Source: Town of Caledon, 2007.

8.1.3 Municipal Recreational Facilities

In addition to lands traditionally considered as public open space, golf courses, schools, utility corridors and other lands can be used by the public for passive recreational activities. Furthermore, major destinations and sports complexes are used by the public for recreational purposes and can be also tourist attractions.

The Town of Caledon operates three indoor pools – Caledon Central Pool in Caledon Village, Mayfield Pool at Bramalea and Mayfield Roads, and the pool at the Caledon Centre for Recreation and Wellness in Bolton. The Town also operates four arenas – Mayfield Recreation Complex Arena, Lloyd Wilson Centennial Arena, Caledon Community Complex Arena and Albion Bolton Community Arena. See table 8.1 for other recreational facilities with Caledon.

8.1.4 Local Greenspace and Bolton Resource Management Tract

The various parks and facilities within the Town of Caledon are complementary in nature to the BRMT. Many of the small parkettes are located within housing developments and are considered natural areas. Although not as valuable in terms of their natural heritage, these areas currently provide spaces for people to walk their dogs on-leash and to cycle.

A leash free park, located on Coleraine Drive in the Town of Bolton, is another valuable recreation amenity for area dog-owners. Given the environmental sensitivity of much of the BRMT and other TRCA lands, off-leash dog areas may not be an appropriate use and further provision of these amenities should be explored on municipal lands.

In addition, several of the larger parks such as R.J.A Potts Memorial Park, provide activities complementary to those not offered at the BRMT, such as sports facilities, playgrounds, picnic tables, open space as well as trails.

8.2 Town of Caledon Attractions

The town of Caledon has many natural attractions including the Forks of the Credit Provincial Park which is a part of the Niagara Escarpment Biosphere Reserve. It provides for hiking in its rolling pastureland that narrows through a deep gorge in the Credit Valley. Spectacular geological features include falls, kame hills and kettle lakes. Picnicking, fishing, cross-country skiing and snowshoeing are some of the activities permitted in the park.

Daniel's Ark Wildlife Preserve in Bolton is an MNR-licensed Canadian wildlife species zoological preserve. The preserve also offers a Canadian Wildlife Zoo Tour, snowshoeing, skating, ice fishing, lake fishing and picnicking. The preserve is also a wonderful place for artists wanting to depict Canadian wildlife.

8.3 Educational Institutions

Elementary and Secondary Schools
Peel District School Board operates 15 schools in the Town of Caledon including four elementary schools and one secondary school in Bolton: Allan Drive Middle School, Ellwood Memorial Public School, James Bolton Public School and Macville Public School. The only public secondary school in Bolton is Humberview Secondary School.

The Dufferin-Peel Catholic District School Board also operates seven schools in the Town of Caledon including five in Bolton: Holy Family Elementary School, Pope John Paul II Elementary School, St. John The Baptist Elementary School, St. Michael Catholic Secondary School and St. Nicholas Elementary School.

Outdoor and Environmental Education Centres
TRCA operates several environmental education facilities within its jurisdiction, the closest to BRMT being Albion Hills Field Center. Located within Albion Hills Conservation Area, TRCA's Albion Hills Field Centre offers a wide range of programs designed to provide outdoor and environmental education to participants with hands-on experiences in a safe and supportive outdoor setting. Many of the programs are designed to meet Ontario curriculum expectations and provide real-life applications of what is being learned in the classroom. These programs are primarily directed at children and are essential to the development of strong and green communities. The center boasts a panoramic view of the rolling topography of Caledon hills and the extensive mix of coniferous plantations, meadows, wetlands and deciduous woodlots.

Although the Peel District Public School Board does not operate any outdoor education centres, the Dufferin-Peel Catholic District School Board has dedicated one school to providing full-time outdoor education. To compensate, the Region of Peel provides environmental education through its Peel Children's Water Festival (PCWF). The PCWF features over 50 educational, water-related and curriculum-appropriate activities. Every year approximately 5,000 students in grades two to five from Mississauga, Brampton and Caledon, 1,000 adult teachers/chaperones, 500 high school volunteers and 2,000 to 3,000 members of the public (approximately 10,000 people in total) attend the week-long festivities. Although there is no permanent facility for this

program, the PCWF has been hosted at TRCA's Heart Lake Conservation Area, in the City of Brampton, since 2002.

8.4 Trail Systems

Existing Trails in Bolton Resource Management Tract:

Humber Valley Heritage Trail
The HVHT was formed by the Humber Valley Heritage Trail Association (HVHTA) in 1995. The HVHT is a pedestrian-only trail, which generally follows the Humber River and highlights natural and cultural features within the Upper Main Humber River watershed. Several sections of the HVHT follow the route of an older, now-abandoned trail known as the Wendy Bennet Trail. HVHTA members maintain the trail under management agreement with TRCA, and are dedicated to promoting environmental education, passive recreation and the protection of the Humber Valley. The trail crosses the Humber River at several locations and the terrain of the trail varies from steep slopes with stairs to rolling fields and meadows. The route offers spectacular views of the Humber River valley and a diversity of natural habitats. See Map 8.2 for the alignment of the HVHT

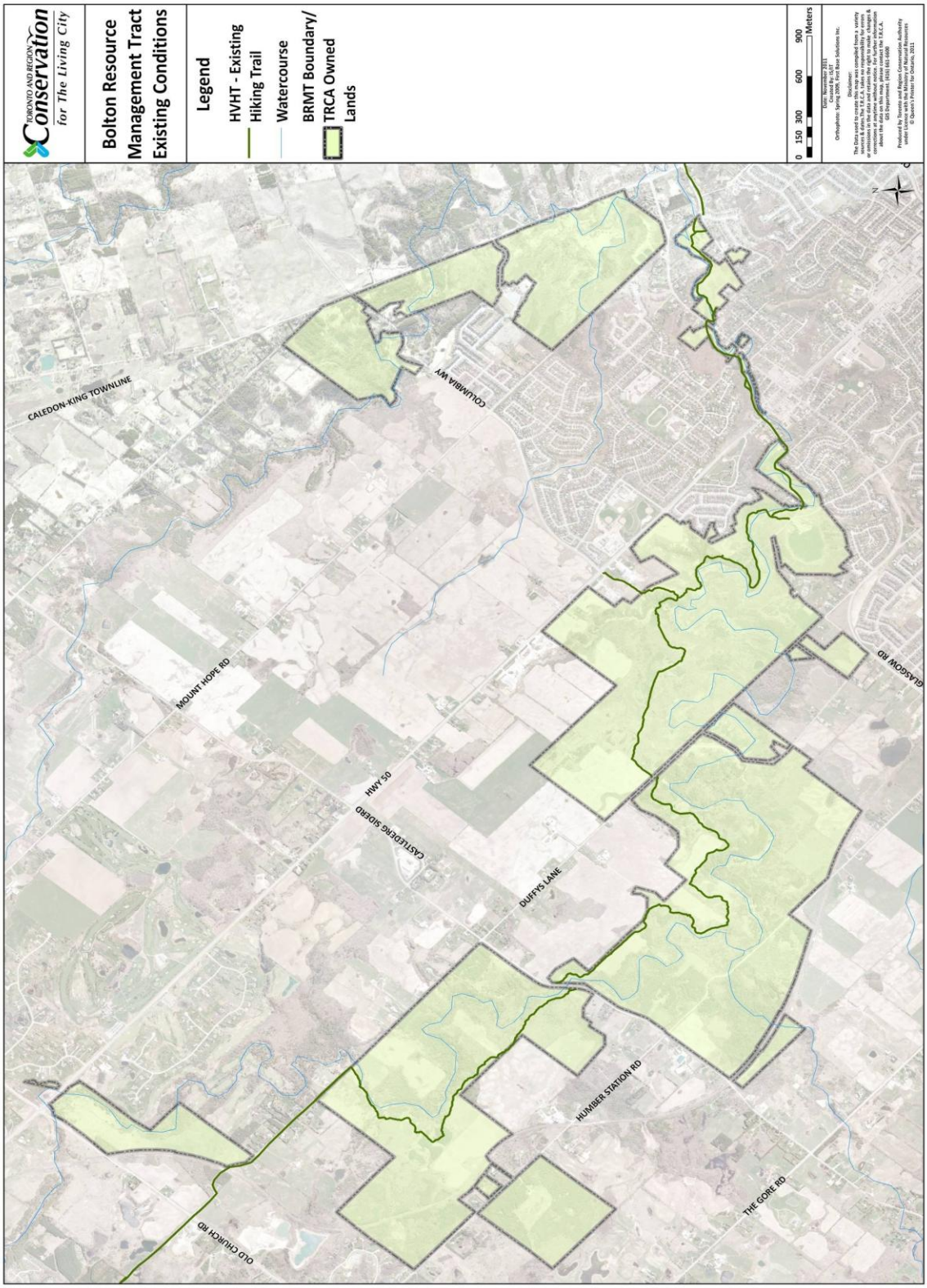
Trails in the Town of Caledon:

There are over 260 km of publicly accessible trails within the Town of Caledon including 105 km of the Bruce Trail. The Town of Caledon currently owns and maintains the 35 km of the Caledon Trailway, and a 1 km portion of the Etobicoke Creek Trail.

Located at the intersection of the Oak Ridges Moraine and Niagara Escarpment, the Town of Caledon is home to a number of high-quality recreation trail systems that offer local and inter-regional trail experiences. Some of these existing trail systems are described below. See Map 8.3 Existing Trails in the Town of Caledon and Map 8.4 Trail Connectivity [from the Town of Caledon's Trails Master Plan (2010)] for more information.

The Caledon Trailway
The Caledon Trailway follows the path of an abandoned rail line that once linked Hamilton with Barrie. The Town of Caledon purchased 35 km of rail section in 1989 and it became the first officially designated portion of the Trans Canada Trail in 1995. The first Trans Canada Trail Pavilion in the country was built in Caledon East in 1996. This is a multi-use trail, ideal for walking, cycling, and horseback riding, and cross-country skiing in winter. This stretch of the Trans Canada Trail provides non-motorized users an opportunity to view rivers, creeks, forests and agricultural landscapes.

Map 8.2: Existing Trails in BRMT



The Bruce Trail
The Bruce Trail is the oldest and longest continuous footpath in Canada. Officially established in 1967, it runs along the Niagara Escarpment from Niagara to Tobermory, spanning 880 km, plus 400 km of side trails. The mission of the Bruce Trail Conservancy is to provide a public footpath along the Niagara Escarpment and promote protection of the Escarpment and appreciation of its natural beauty. Approximately 37 km of the Bruce Trail can be found within the Humber River watershed. In the fall of 2004, a section of the Bruce Trail was re-routed in Caledon resulting the Main Trail being removed from the Caledon Trailway, although links to the Trailway are maintained as side trails. This side-trail passes through Glen Haffy Conservation Area, other TRCA land parcels and into Palgrave Forest and Wildlife Area.

Oak Ridges Moraine Trail
The Oak Ridges Moraine Trail was a project initiated in 1992 to "expand, secure, develop, manage and maintain...a continuous recreational trail along the Oak Ridges Moraine, from the Niagara Escarpment [in the west] to the Northumberland Forest [in the east]" (Oak Ridges Trail Association, 2004). The Oak Ridges Moraine Trail presently exists as a continuous trail extending over 200 km in an east-west direction across the Oak Ridges Moraine. Portions of the trail are ideally situated in the Natural Core and Natural Linkages Areas, while other portions will need to be relocated or constructed in order to achieve the best possible trail alignment. Open year-round to hiking, certain sections of the Oak Ridges Moraine Trail provide excellent wintertime cross-country skiing. The trail alignment allows users to pass through forests, valleys, open-fields and along streams and lakes. This type of trail alignment showcases the many varieties of trees, plants, birds and animal life that exist along the Oak Ridges Moraine

Within the Humber River watershed, in King Township and the Town of Caledon, the Great Pine Ridge Trail extension of the Oak Ridges Moraine Trail extends for 11.3 km.

Great Pine Ridge Trail
In 1973, the Great Pine Ridge Trail (GPRT) was mapped and ridden by equestrians from the Trent River in the east to the Niagara Escarpment in the west with a portion of the trail running over the Oak Ridges Moraine. The Trail incorporates both existing local trails and road sections. Within the Humber River watershed, approximately 42.0 km of this trail pass through the Town of Caledon and the Township of King, and provides links to the Bruce Trail, Caledon Trailway/Trans Canada Trail and the Oak Ridges Moraine Trail. The only designated users are equestrians; however, the trail is known to be used by hikers and mountain bikers.

Trans Canada Trail
The Trans Canada Trail is a federal undertaking that was conceived in 1992 as a part of Canada's 125th year of confederation. It was publicly launched in 1994 as a trail that would unite the country. The Trans Canada Trail is a shared-use recreational trail that winds its way across Canada. Once completed, it will be the longest trail of its kind in the world, spanning approximately 21,500 kilometres and will include 36 km of the Caledon Trailway.

The Town of Caledon is responsible for the maintenance and development of the Caledon Trailway, a linkage in the Trans Canada Trail. This 36-kilometre trail is enjoyed year-round for passive uses such as walking, hiking, mountain biking, horseback riding and cross-country skiing. The trail is situated at the intersection of four provincially significant greenway corridors – it stretches from Terra Cotta to Palgrave and allows users to experience the Niagara

Escarpment, the Credit and Humber Rivers, and Caledon and Albion Hills (part of the Oak Ridges Moraine).

Town of Caledon's Trails Master Plan Update:

Below are some excerpts from the Town of Caledon's Trails Master Plan (2010) including the purpose, vision and principles. See Appendix H for a full list of Master Plan recommendations:

> The Trails Master Plan Update focuses on providing a long term planning document which guides the planning, design, development and maintenance of Town-owned trails as well, encourages ongoing partnerships with the many other private and public trail providers in Caledon to ensure an overall network that is safe, diverse, protects the natural environment and is well connected. In addition, the Master Plan includes public input to define user needs and identify trail connection opportunities.
>
> The Master Plan is a beneficial planning document because it:
>
> - Establishes a comprehensive inventory of the existing trails network throughout the Town of Caledon;
> - Identifies permitted uses on Town-owned trails;
> - Defines important recreational, open space linkages;
> - Defines guidelines for appropriate levels of service for maintenance of trails; and
> - Supports both the Town's and Region's objective to provide alternative modes of transportation.
>
> The Vision of the Master Plan is:
>
> ***To achieve a high quality and variety of trails in the Town of Caledon, accessing and connecting points of interest while protecting, preserving and enhancing community health and the environment.***
>
> The Vision is supported by the following **Principles**:
>
> **To protect:**
> - The trail user by providing safe serviceable trails.
> - The environment in sensitive and significant areas.
>
> **To preserve:**
> - A sustainable integrated public trails network
> - The peaceful co-existence with others sharing our trail environment.
> - Sustainable and well-used trails.
>
> **To enhance:**
> - Trails as an alternative transportation system.
> - Year round and varied uses.
> - User interest.
> - Direct pedestrian access from places of residence.
> - Face to face contact.
> - Access to our natural and cultural heritage.

- The north-south linkages of the trail network.

To establish:

- An inter-connected trail network that connects all areas of Caledon.
- Well-implemented and monitored trails.
- Partnerships where development and cost sharing opportunities could exist.
- Trails as an integral part of new development areas.
- Strong links to trails provided by others within Caledon as well as, to surrounding municipalities, regional, provincial and national trail networks.

TRCA and the Town of Caledon already have a strong partnership in the protection of natural and cultural heritage resources, as well as in the provision of high-quality nature-based recreation opportunities. The BRMT Management Plan and associated Trail Plan should aim to support the goals and recommendations of Caledon's Trails Master Plan Update, just as the Trails Master Plan Update supports TRCA trail and recreation objectives.

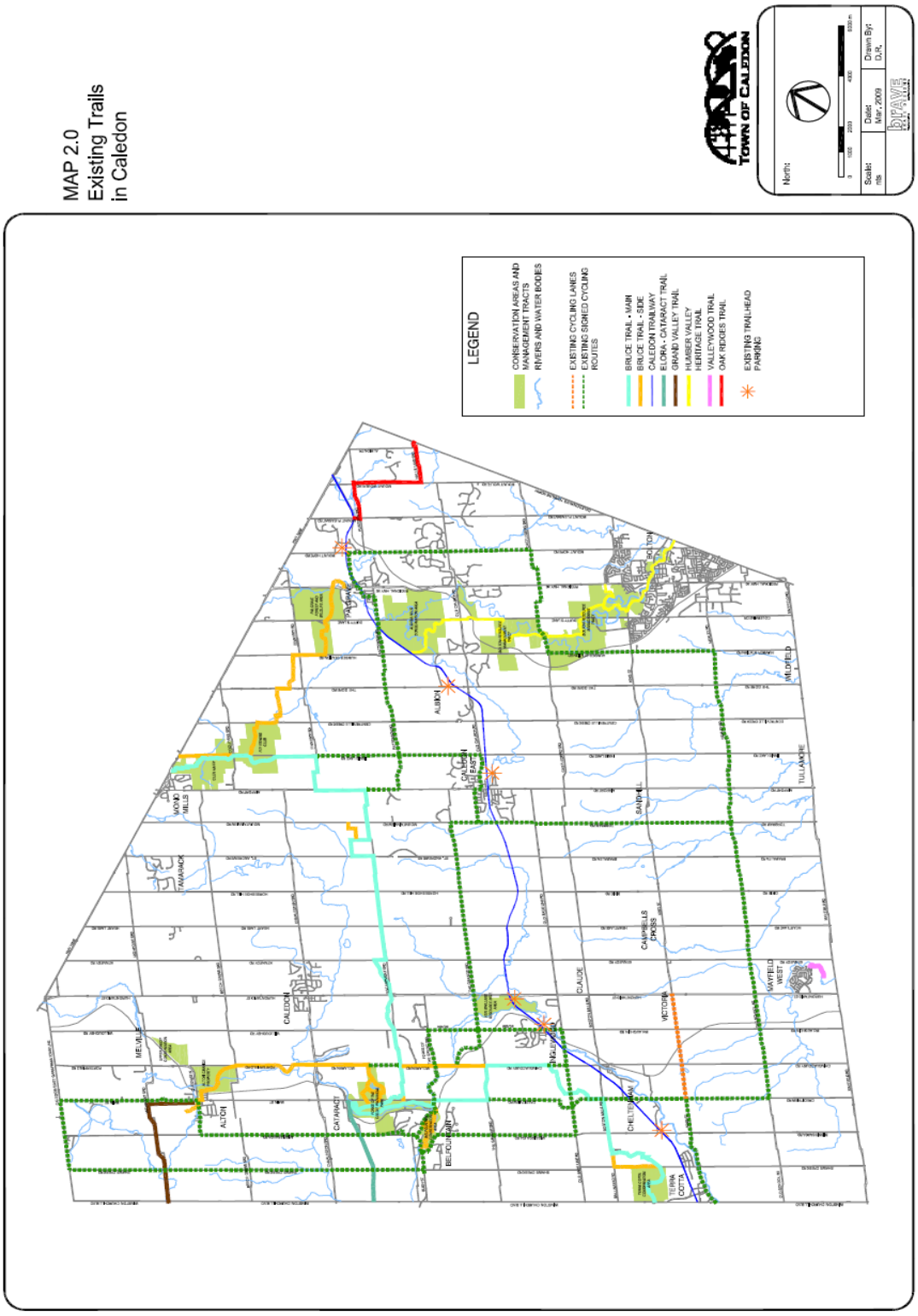
8.4.3 Inter-Regional Trails

There a number of significant inter-regional trails that run through the Town of Caledon. The BRMT is very well situated just to the south of a number of these including the Caledon Trail Way, Trans-Canada Trail, Oak Ridges Moraine Trail and Bruce Trail. The Humber Valley Heritage Trail (HVHT) currently provides a pedestrian-only link to these trails from downtown Bolton through the BRMT. Any future trail planning should investigate the potential for multi-use trail connections in the BRMT along the Humber River in order to provide a diversity of trail-based recreation opportunities, as well as to further link publically accessible greenspace throughout the watershed.

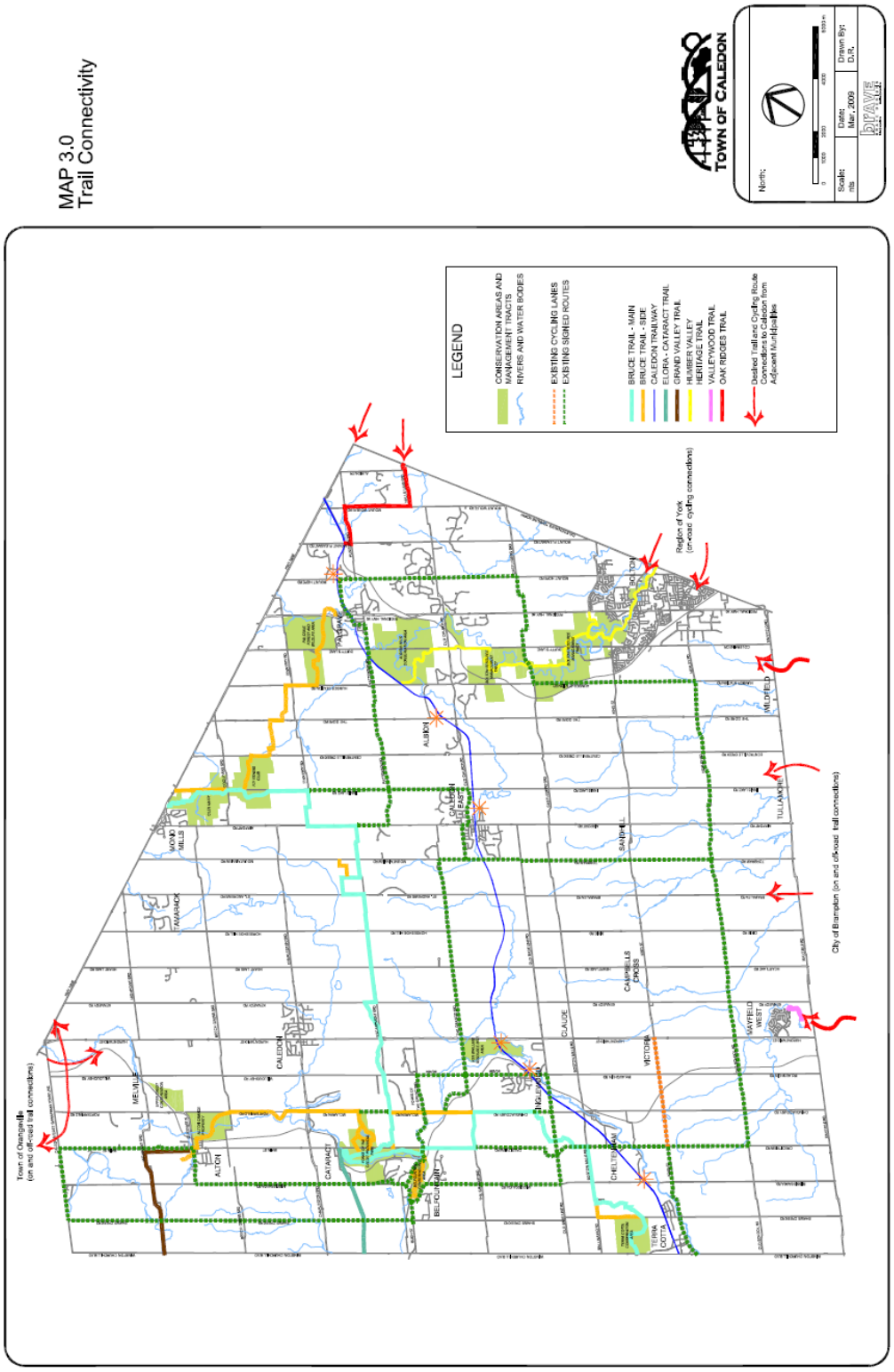
8.5 Additional Public Use Opportunities

BRMT is an excellent trail and angling resource in the Town of Caledon. Given the increasing population in the area, BRMT has the potential to become a key feature of the local tourism economy. While portions of the tract may be sensitive to over-use or to particular uses, there is potential to promote BRMT for its many natural and recreational features and as part of a multifaceted tourism experience could draw more visitors to the area. Opportunities exist to promote BRMT to naturalist clubs, hiking clubs and regional tourism associations.

Map 8.3 Existing Trails in the Town of Caledon



Map 8.4 Trail Connectivity



CHAPTER 9: NEXT STEPS

9.1 Phase Two and Three of the Management Planning Process

Phase Two of the BRMT Management Planning Process is complete and included the following:

1. Identify generally, the vision/purpose of BRMT.
2. Evaluate the property based on the available background information and identify:
    a. the natural resources and potential enhancements, existing outdoor recreation/education uses;
    b. linkages between BRMT and surrounding communities;
    c. potential access points;
    d. the landscape's ability to sustain proposed uses; and
    e. areas requiring protection and restoration.
3. Facilitate a wide range of opportunities for public input.
4. Document the community's opinion and recommendations for the future management of BRMT.
5. Make recommendations to facilitate future management activities and identify potential management zones.
6. Establish draft Management Zones

Phase Three of the BRMT Management Planning Process is the development of the actual management plan and consists of the following steps:

1. Develop draft trail plan and draft management recommendations for the property
2. Host one advisory committee meeting to review draft trail plan and management recommendations.
3. Complete draft background report and management plan
4. Host one advisory committee meeting to review draft management plan
5. Finalize management plan
6. Host one public meeting to review final draft plan.
7. Obtain partners and TRCA Board endorsement of plan.
8. Circulate a study newsletter update.

Draft management zones for the property have already been established with input from the Advisory Committee, interest groups and the general public. These management zones are distinguished by a graduated level of ecological protection, management and operational criteria and acceptable levels of public use. These zones will provide a framework with which Management Recommendations can be established to ensure that the integrity and diversity of the tract are maintained and enhanced by any management actions.
The Advisory Committee will review the draft Management Plan and make recommendations. In addition, a public meeting hosted by TRCA staff will allow for public review of the draft plan and input.

While Phase One and Two are complete, Phase Three will continue to be undertaken with the assistance of the Advisory Committee.

9.2 Composition of the Management Plan Advisory Committee

The advisory committee for the BRMT Management Plan includes representatives from TRCA, the Region of Peel, the Town of Caledon, the Humber Watershed Alliance, recreational user groups, local residents, and other interested parties.

The advisory committee will assist TRCA in finalizing the Terms of Reference, and determining appropriate management zones and management recommendations for BRMT, in keeping with the Humber Watershed Alliance's strategy. This committee will provide technical input and assist TRCA with the public consultation program regarding the management plan.

In summary, the advisory committee will be responsible for the following major functions:
Provide technical expertise and advice to TRCA throughout the development of the Management Plan;
Ensure that appropriate staff and members at their respective municipalities, agencies or organizations are adequately informed throughout the process;
Provide comment, advice and input to suggestions brought to the advisory committee;
Assist in the identification of current outstanding issues involving BRMT and make suggestions as to appropriate ways of resolving them;
Assist with plan implementations; and
Assist TRCA in presentations and public forums, where appropriate.

9.3 Public Participation

The development and use of BRMT will be important to area residents and user groups. Consequently, they must have a meaningful way of providing input to the planning process. To facilitate a wide range of opportunities for input, TRCA will use many methods to generate a high level of awareness.

The public participation component will include the following:

- Presentation or discussions with key interest groups or citizens, upon request. The list of interest groups and citizens will be expanded through local municipal planning department and advisory committee input;
- Information sessions/mailings to the public, including ratepayer/user groups to identify a broad range of potential needs and opportunities for the area;
- Public meetings to present the background information, proposed management zones and advisory committee recommendations.

In addition, there will be an opportunity for public participation at TRCA Board meetings.

9.4 Conclusion

The final result of the management planning process will be a well-researched management plan representative of the ecological, social and economic interests of the BRMT property, TRCA, local municipal governments, and the local residents and users of the property. The final management plan document will include recommendations and implementation plans, as well as the results of the advisory committee meetings and discussions, and public input. The hope is that, through this planning process, BRMT will be able to provide a healthy, diverse environment for the ongoing ecological processes and human enjoyment.

Additionally, it should be noted that this management plan will reflect the values and guidelines of the watershed plan for the Humber Watershed Alliance, and that it will aim to incorporate the broader goals and objectives of the watershed strategy to ensure that BRMT functions as a healthy component of the overall watershed.

APPENDIX A: BRMT SITE SECUREMENT AND PROTECTION PLAN

Site Securement and Protection Report
Bolton Resource Management Tract

Introduction

Developing the Site Securement and Protection Plan (SSPP) is part of the Management Planning process for the Bolton Resource Management Tract (BRMT), which includes primary lands along the main Humber River as well as the Campbell and Bolton Camp properties in the Cold Creek subwatershed. The primary focus of this SSPP is identifying any safety concerns, encroachments, trail conditions, access points and boundary fence conditions within these properties that may be a safety concern or provide the opportunity for unauthorized uses. Implementing the recommendations outlined in the SSPP is an important step in evaluating the condition of the BRMT in order to exercise TRCA's due diligence in eliminating safety and environmental concerns from TRCA lands.

Dates of Site Securement and Protection Inventories & Audits

The site securement and protection inventories and audits were conducted over a two year period from 2009-2011. In 2009 the BRMT proper was inventoried specifically for encroachments and trail conditions, but at the time no other infrastructure conditions were noted. In 2011 that the BRMT was audited again, at which time all aspects of infrastructure were assessed. Similarly in 2009, the Campbell Property was inventoried for all aspects of site securement, including trails and the boundary was audited again in 2011. The Bolton Camp was inventoried for site securement and protection and trail conditions in 2012 and is scheduled for another audit in 2014.

Data Collection Methodology

Geospatial data was collected using the Trimble GeoXT 6000 series handheld GPS (Global Position System) unit.

The geospatial data allows for:

- Accurate and up-to-date representations of features and trails within the tract
- In the field evaluation of property ownership delineation to identify encroachments.
- Spatial representation of encroachment locations and the ability to determine problem areas.
- Precise mapping of linear and point data

When completing field surveys TRCA staff assign a condition to the various features being recorded. The Table A1 outlines how the conditions of the various features are evaluated.

Table A1: Condition Categories for Features in TRCA Data Dictionary

	Good	Fair	Poor	Needs Repair
Fencing	Upright, Undamaged, Solid Posts	Upright, Some damage, Posts compromised, Sections may lean	Failing/falling down, Badly Damaged, Posts are broken/missing	NA
Structural	Appears new,	Established,	Possibly old,	N/A

Encroachment	Undamaged	May be damaged	Damaged, Disintegrating	
Gates	Undamaged, Secure	Fairly secure	Damaged, Insecure	Repairs necessary to increase security

Findings

Fencing – Bolton Resource Management Tract**

Type	Condition	Length (metres)	Unauthorized Access	Recommendations
Farm	Good	8607	Yes	Repair and install fence where required
Farm	Fair	3876	Yes	Repair and install fence where required
Farm	Poor	885	Yes	Repair and install fence where required
Farm	Needs Repair	361	Yes	Repair and install fence where required
Wood	Fair	279	Yes	Repair and install fence where required
Chain Link	Good	1332	Yes	Repair and install fence where required
Total Fence= 15,340 metres				

**Due to the large size of the BRMT, fencing locations are not included in this table. See map for fencing conditions and locations.

The Campbell Property

Location	Type	Condition	Length (metres)	Unauthorized Access	Recommendations
Mt. Pleasant Road	Farm	Fair	699	Yes	Repair and install fencing where required
Northern Boundary	Farm	Good	645	Yes	Repair and install fencing where required
Western	Farm	Fair	66	Yes	Repair and install

Boundary					fence where required
	Total Fence= 1,410 metres				

The Bolton Camp

Location	Type	Condition	Length (metres)	Unauthorized Access	Recommendations
Caledon-King Townline	Farm	Good	479	Yes	Repair and install fence where required
	Farm	Fair	753	Yes	Repair and install fence where required
	Chain-link	Good	38	Yes	Repair and install fence where required
Columbia Way	Farm	Fair	39	Yes	Repair and install fence where required
Western Boundary	Farm	Needs Repair	119	Yes	Repair and install fence where required
Western Boundary	Farm	Fair`	229	Yes	Repair and install fence where required
Western Boundary	Farm	Good	246	Yes	Repair and install fence where required
Western Boundary	Chain-link	Good	264	Yes	Repair and install fence where required
King Road	Farm	Good	108	No	Audit in 2014
King Road	Farm	Fair	98	No	Audit in 2014
Total Fence= 2,373 metres					

Fencing Resolution Methodology

1. For all areas where there is no fencing, or where the condition has been noted as ‘Needs Repair’ or ‘Poor’, fencing will be installed or repaired where necessary.
2. Where fencing has been noted to be ‘Good’ or ‘Fair’ these areas will be monitored in the future to ensure that the condition has not deteriorated.
3. There are some locations where fencing is not required due to the property boundary location i.e. through the Humber River or along a farmer’s field. See Map A1 for more details.

Encroachments

Bolton Resource Management Tract

Waste Type Encroachment	Industrial Waste	Household Waste	Yard Waste	Other
Total: 10	1	3	3	3

Structural Type Encroachment	Mowing	Hunting Blinds
Total: 1	1	3

The Campbell Property

Structural Encroachment Total	Play structure
1	1

Waste Encroachment Total	Automotive Waste	Industrial waste
2	1	1

The Bolton Camp

There were no encroachments found during the boundary audit of the Bolton Camp. However, fire pits and large amounts of plastic bottles were observed at various locations, suggesting unauthorized access and use is occurring.

Encroachment Resolution Methodology

1. Any encroachment noted to be coming from a residential property bordering the TRCA property will be investigated. The homeowner will be sent a letter informing them of TRCA's encroachment policy and kindly asking them to remove the encroachment.

2. If there are encroachments noted that are not attached to any specific person or persons, TRCA staff will remove the encroachment and dispose of the waste as appropriate.

Access and Gates

The Bolton Resource Management Tract

Location	Type	Status	Access From	Gate	Locked	Status of Gate
Old Church Road	Large (>5m)	Authorized	Old Church Road	Yes	No	Needs Repair
	Large (>5m)	Authorized	Old Church Road	Yes	Yes	Good
Cedar Mains Drive	Large (>5m)	Authorized x2	Cedar Mains Drive	Yes	Yes	Good
	Medium (1-3m)	Unauthorized	Cedar Mains Drive	No	N/A	N/A
Internal	Medium (1-3m)	Unauthorized	Golf Course	No	N/A	N/A
	Large (>5m)	Authorized	TRCA Restoration Field	No	N/A	N/A
Duffy's Lane	Large (>5m)	Authorized Trees Ontario Field	Duffy's Lane	Yes	Yes	Good
	Large (>5m)	Authorized X2	Duffy's Lane	Yes	Yes	Good
	Large (>5m)	Authorized	Duffy's Lane	Yes	Yes	Good
Castlederg Sideroad	Medium (1-3m)	Authorized X2	HVHT Access	No	N/A	N/A
Humber Station Road	Small (<1m)	Authorized	HVHT Access	No	N/A	N/A
	Large (>5m)	Authorized	Humber Station Road	Yes	Yes	Fair
	Large (>5m)	Authorized	Humber Station Road	No	N/A	Fair
	Large	Authorized	Humber Station	Yes	Yes	Good

	(>5m) Large (>5m)	x3 Authorized x4	Road Private Homes	No	N/A	N/A
Duffy's Lane	Large (>5m) Medium (1-3m) Medium (1-3m)	Unauthorized Unauthorized X3 Authorized X2	Duffy's Lane Duffy's Lane HVHT Access	No No No	N/A N/A N/A	N/A N/A N/A
Highway 50	Large (>5m) Medium (1-3m) Large (>5m)	Authorized Authorized Unauthorized	Highway 50 HVHT Access/Caledon Works Yard Highway 50	No No No	N/A N/A N/A	N/A N/A N/A
Glasgow Road	Large (>5m)	Authorized	Dicks Dam Park	No	N/A	N/A
Sackville Street	Medium (1-3m)	Authorized	Sackville Street	No	N/A	N/A
Glasgow Road	Large (>5m)	Authorized	Glasgow Road	No	N/A	N/A

The Campbell Property

Location	Type	Status	Access From	Gate	Locked	Status of Gate
Mt. Pleasant Road	Medium (1-3m) Medium	Unauthorized X2 Authorized	Mt. Pleasant Road Mt. Pleasant Road	No No	N/A N/A	N/A N/A
Property Boundary	Medium (1-3m)	Unauthorized	Private Property	No	N/A	N/A
Columbia Way	Large (>5m) Large (>5m)	Authorized Unauthorized	Columbia Way Columbia Way	Yes No	Yes N/A	Good N/A

The Bolton Camp

Location	Type	Status	Access From	Gate	Locked	Status of Gate
Caledon-King Townline	Large (>5m)	Unauthorized X3	Caledon-King Townline	Yes	Yes	Good
	Small (<1m)	Unauthorized Hole in Fence X4	Caledon-King Townline	Yes	Yes	Good
	Large (>5m)	Unauthorized	Caledon-King Townline	Yes	Yes	Fair
Columbia Way	Small (<1m)	Unauthorized Hole in Fence	Private Residence	No	N/A	N/A
Crestridge Drive	Medium (1-3m)	Unauthorized	Crestridge Drive	No	N/A	N/A
	Medium (1-3m)	Unauthorized	Crestridge Drive	No	N/A	N/A
Mt. Hope Road	Large (>5m)	Unauthorized	Mount Hope Road	Yes	Yes	Good
Western Boundary	Small (<1m) X2	Unauthorized	Silvermoon Ave & Silvervalley Drive	No	N/A	N/A
King Road	Large (>5m)	Unauthorized	King Road	Yes	Yes	Fair

Access Resolution Methodology

1. Where possible, post signage at each authorized access point identifying the lands as being owned and operated by TRCA.

2. Install No Trespassing signs along boundary where unauthorized access is occurring.

3. Repair fencing where unauthorized access is occurring.

Trails

Bolton Resource Management Tract

Trail Type	Trail Length (metres)
Humber Valley Heritage Trail	13,876
Unauthorized Double Track Good (3-5m)	3,447
Unauthorized Double Track Good (1-3m)	1,364
Unauthorized Double Track Bad (3-5m)	1,805
Road (Gravel)	147
Total Trail Length= 20,639 metres	

The Campbell Property

Trail Type	Trail Length (metres)
Unauthorized – Single Track	1,173
Unauthorized – Double Track	4,521
Road	171
Total Trail Length= 5,865 metres	

The Bolton Camp

Trail Type	Length (metres)
Road	2,487
Double Track (3-5m)	6,806
Single Track (1-3m)	1,782
Total Trail Length=11,075 metres	

Trail Mitigation Recommendations

1. Where unauthorized trails exist it is recommended that these be closed and signs be posted indicting where authorized trails exist.

2. Remove any bike stunts that exist.

Work Completed 2009 - 2012

Based on inventories and audits at the Bolton Resource Management Tract, the Campbell Property and the Bolton Camp, TRCA staff conducted clean-up activities and fencing was installed along many of the suggested areas. The following is a list of work that has been completed and/or scheduled to be completed in 2012.

The Bolton Resource Management Tract

- Fence installation 1,280 metres (Completed 2011)
- Clean up garbage at Bateman Lane 20 Yards (Completed 2012)

- Garbage removal along Duffy's Lane (Completed 2012)

The Campbell Property

- Remove waste from dumping area(Completed 2011)
- Trail clearing and closing 1km (Completed 2012)
- Fencing the Caledon-King Townline boundary (2012)

The Bolton Camp

- Secure buildings where necessary (Completed 2012)
- Repair rooftop of buildings (Completed 2012)
- Removed general waste from buildings (Completed 2012)
- Hazard tree removal (Completed 2012)
- Install fencing (2012-2013)

Recommendations

The following are recommendations going forward for the Bolton Resource Management Tract, the Campbell Property and the Bolton Camp.

Bolton Resource Management Tract

Priority Level	Public Safety	Environmental Health	Site Securement
High (Immediate Resolution)			• Install fencing where required
Medium (Short term resolution 12-18 months)	• Monitor trail conditions		• Follow-up on encroachment mitigation
Low (Long term resolution 18-24 months)		• Follow-up on encroachment mitigation	• Map new fencing • Continue to inform neighbours of TRCA's Encroachment Policy

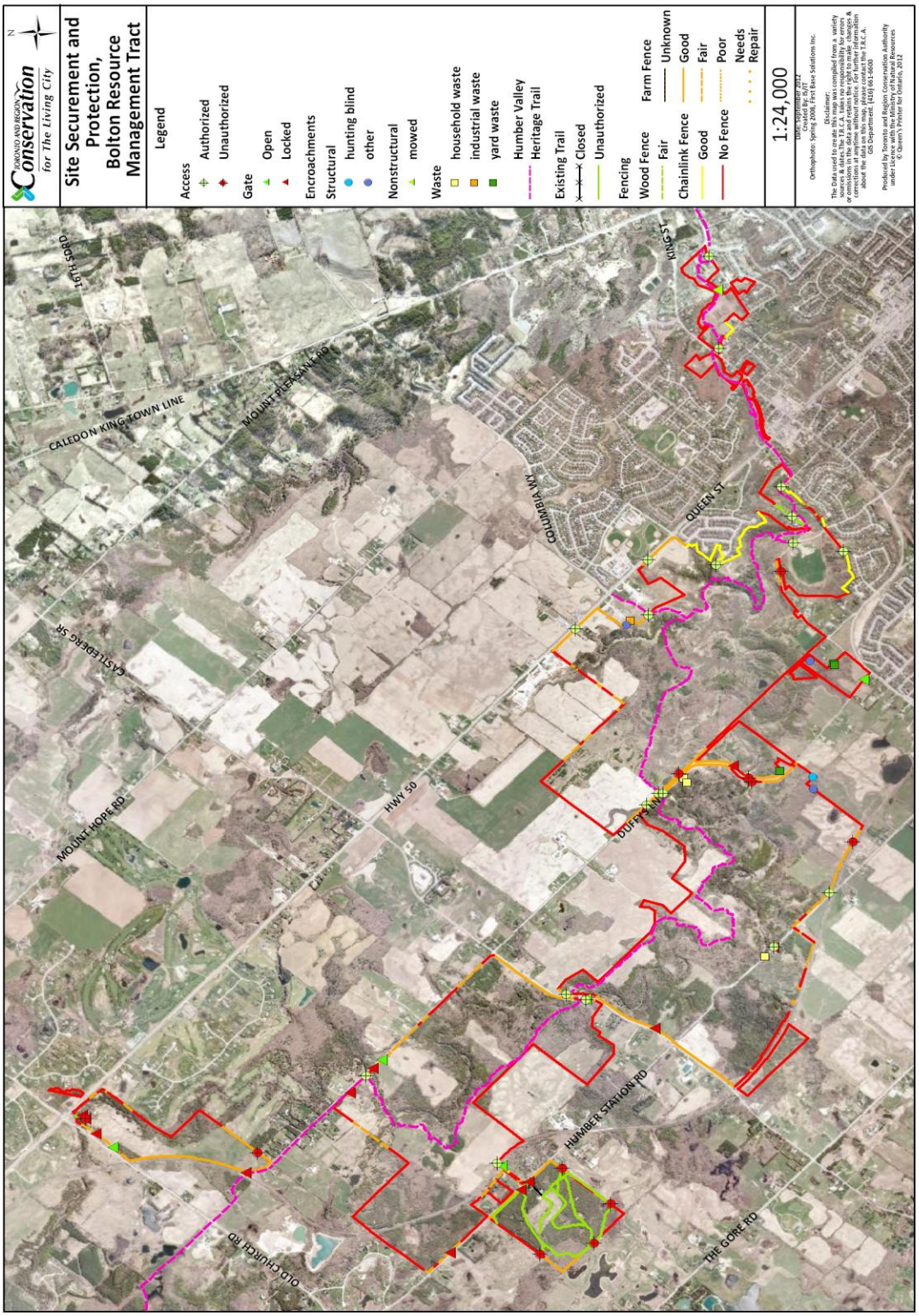
The Campbell Property

Priority Level	Public Safety	Environmental Health	Site Securement
High (Immediate Resolution)			• Close unauthorized access points
Medium (Short term resolution 12-18 months)			• Install fencing where required
Low (Long term resolution 18-24 months)			

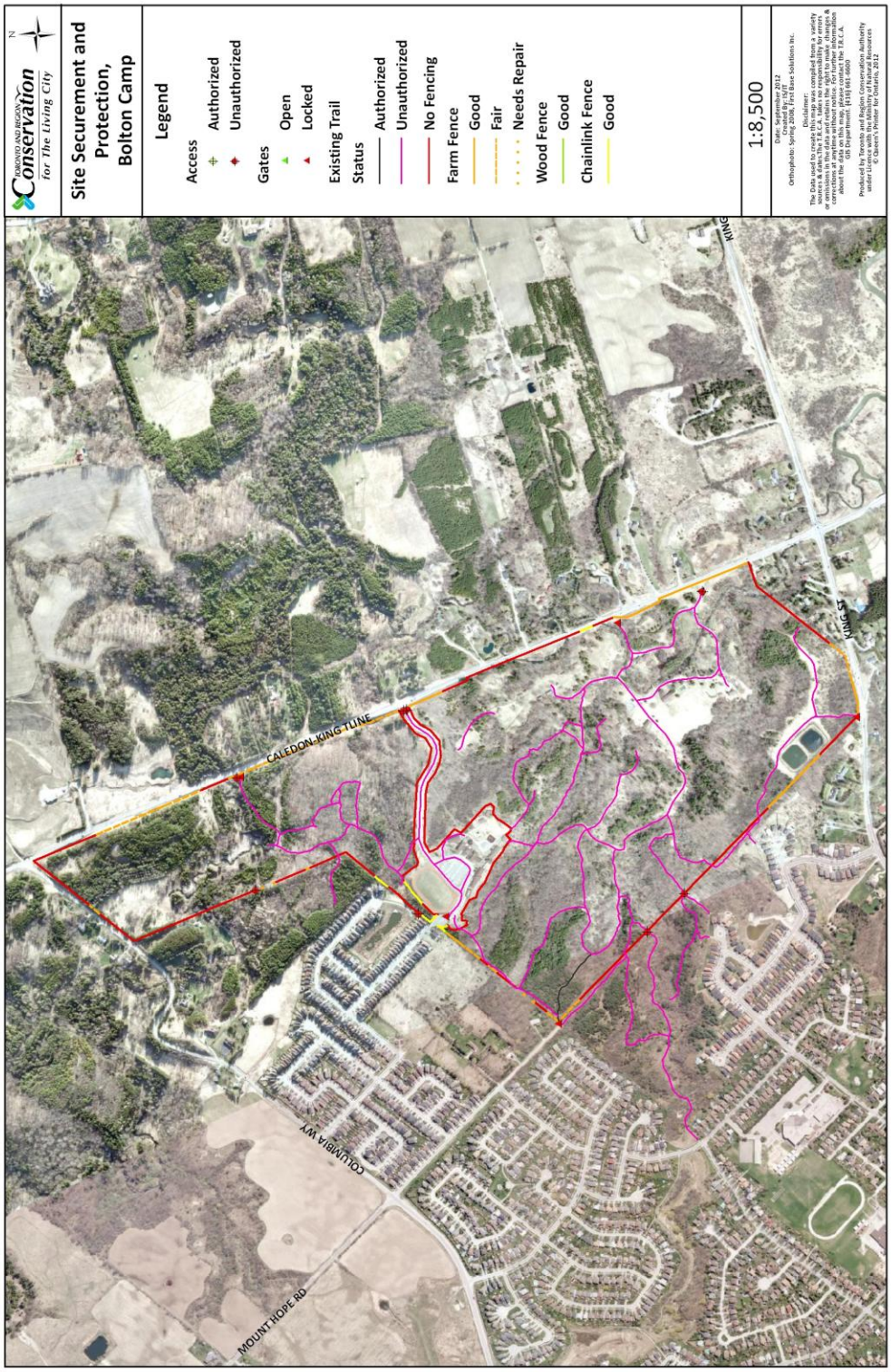
The Bolton Camp

Priority Level	Public Safety	Environmental Health	Site Securement
High (Immediate Resolution)	• Secure or remove buildings	• Clean up party areas	• Determine authorized access points
Medium (Short term resolution 12-18 months)			• Install fencing where required • Inform neighbouring residents of TRCA property acquisition
Low (Long term resolution 18-24 months)			

Map A1: BRMT Site Securement



Map A2: Bolton Camp Site Securement



APPENDIX B: REGION OF PEEL OFFICIAL PLAN

The following are excerpts from the Region of Peel Official Plan (2012), Office Consolidation, that relate to the development and implementation of the BRMT Management Plan. Regional Official Plan Amendment (ROPA) 21B, adopted by Regional Council and as modified by the Provincial decision, has been appealed to the Ontario Municipal Board (OMB) in its entirety and subject to final decision by the OMB. Appealed sections are highlighted in yellow and provincial modifications noted.

CHAPTER 2: THE NATURAL ENVIRONMENT

2.1.2 Goal

To create and maintain a system of viable, well-functioning environmental features to ensure a healthy, resilient and self-sustaining natural environment within *Peel Region*.

2.1.3 Policies

It is the policy of *Regional Council* to:

2.1.3.1 Rationalize the regulatory framework for the natural environment across *the Region* on an *ecosystem* basis, *jointly* with the area municipalities, conservation authorities and provincial agencies, to increase the defensibility and effectiveness of protection measures.

2.1.3.2 *Protect*, maintain and enhance the quality and *integrity* of *ecosystems*, including air, water, land and biota *jointly* with the area municipalities, conservation authorities and provincial agencies.

2.1.3.3 Identify and regulate *development* on lands exposed to *natural hazards jointly* with the area municipalities, provincial agencies and conservation authorities.

2.1.3.4 Adopt policies and establish programs for the *restoration* of the natural environment in *Peel jointly* with the area municipalities, conservation authorities and provincial agencies.

2.1.3.5 Ensure, *jointly* with the area municipalities and the conservation authorities in consultation with the Department of Fisheries and Oceans, that no negative impacts, as defined in the Provincial Policy Statement, occur to fish habitat as a result of *development* and *site alterations.*

2.1.3.6 Encourage the area municipalities, in consultation with the conservation authorities, to promote and enforce soil conservation measures on developing sites.

2.2 LARGE ENVIRONMENTAL SYSTEMS

Large environmental systems interact with smaller *ecosystems*, including localized plant and animal communities. This Plan considers *airsheds*, *watersheds*, groundwater resources, the Lake Ontario Waterfront, *Bioregions*, *the Greenbelt*, the *Niagara Escarpment* and the *Oak Ridges Moraine* as the relevant large environmental systems which *Peel* has a part in *protecting*.

2.2.1 General Objectives

2.2.1.1 To recognize and promote the connections between local *ecosystem* functions and large environmental systems and contribute to the protection of these larger non-localized systems.

2.2.1.2 To conserve, restore and enhance *integrity* of *Peel*'s air, water and land resources.

2.2.2 General Policies

It is the policy of *Regional Council* to:

2.2.2.1 ~~Study and *protect* the overall *integrity of Peel's ecosystems* which are part of larger biotic (living) and abiotic (non-living) systems~~.

Study, recognize and protect the overall integrity of Peel's ecosystems which are part of connected biotic (living) and abiotic (non-living) systems providing local and larger scale natural functions. (Adopted ROPA 21B)

2.2.2.2 Study and create databases for the larger environmental systems.

2.2.2.3 Participate in, and *support*, broader scale environmental studies in order to assess the carrying capacity of *ecosystems* and the potential cumulative effects of *development* in areas where *development* is likely to have a major impact on the *integrity* of broader *ecosystems* and the Greenlands System in *Peel* (see Section 2.3).

2.2.4 Watersheds

2.2.4.1 Policies

It is the policy of *Regional Council* to:

2.2.4.1.1 Promote and participate in *watershed plans* and *subwatershed plans* within *Peel Region*.

2.2.4.1.2 Determine *jointly* with the area municipalities, conservation authorities and provincial agencies the requirement for a *subwatershed* plan where planning initiatives are likely to have a *significant* immediate or cumulative impact on water resources and related natural systems in a *watershed* or *subwatershed*. Such a determination shall include consideration of the Water Resources policies contained in Section 3.4 of this Plan.

2.2.4.1.3 Determine *jointly* with the area and neighbouring municipalities, conservation authorities, and other provincial agencies, a schedule prioritizing the need for *watershed* and *subwatershed plans* in *Peel Region*.

2.2.4.1.4 Work *jointly* with the area and neighbouring municipalities, conservation authorities, and other provincial agencies to determine planning and monitoring information requirements for inclusion in *watershed* and *subwatershed plans*.

2.2.4.1.5 Work *jointly* with the conservation authorities, the area municipalities and, where applicable, the Niagara Escarpment Commission to integrate *subwatershed* planning and monitoring information on a regional and *watershed* basis, in order to assess the cumulative effects of land use changes and the implementation of *subwatershed plans*.

2.2.4.1.6 Integrate ground and surface water quality and/or quantity monitoring conducted by Regional departments with *watershed* and *subwatershed plans* and other environmental monitoring, including the analysis of cumulative effects.

2.2.5 Groundwater

2.2.5.1 Policies

It is the policy of *Regional Council* to:

2.2.5.1.1 *Protect*, maintain and enhance the *integrity* of *ecosystems* through the proper planning and management of groundwater resources and related natural systems in *Peel*.

2.2.5.1.2 Work with the area municipalities, conservation authorities and other provincial agencies to *protect*, maintain and enhance groundwater resources.

2.2.7 Bioregions

Bioregions are landscape units, the extents of which are defined by the biological processes that occur within these areas. Lands and waters within *bioregions* share climatic and many ecological similarities. A bioregional unit helps to focus attention on the interdependency and internal links that exist within the natural environment.

The Greater Toronto *Bioregion* (see Figure 1 in the Appendix), has been defined as the area of land bounded by Lake Ontario, the *Niagara Escarpment* and the *Oak Ridges Moraine*. Most of *Peel*'s land area is within the Greater Toronto *Bioregion*. However, large areas in the north of Caledon are part of other *bioregions*, some of which are functionally related to the *Oak Ridges Moraine*, the *Niagara Escarpment*, the Greenbelt and other systems to the north, east and west. Thus, *the Region* must address many different inter-regional *ecosystem* linkages and functions.

2.2.7.1 Policy

It is the policy of *Regional Council* to promote coordinated planning initiatives that recognize, *protect*, restore and enhance *ecosystem integrity* in a bioregional context *jointly* with

the area municipalities, conservation authorities, Niagara Escarpment Commission and neighbouring municipalities.

2.3 GREENLANDS SYSTEM IN PEEL

The Greenlands System in *Peel*, which consists of Core Areas, Natural Areas and Corridors, and Potential Natural Areas and Corridors, is intended to *support* and express *the Region*'s vision for the protection of the natural environment. The recognition, protection and stewardship of this system will *support* and strengthen the *integrity* and long-term sustainability of the *ecosystems* in *Peel* and neighbouring municipalities. *The Region*, the area municipalities, the conservation authorities, the Niagara Escarpment Commission and other partners share the responsibility for implementing this vision through the policy framework set out in this Plan. This will ensure the achievement of complementary regional and area municipal objectives and policies in a consistent framework.

Appealed

~~***Wetlands***~~ (Adopted ROPA 21B)

~~*Wetlands* are lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case, the presence of abundant water has caused the formation of hydric soils (soils in which there is an abundance of moisture) and has favoured the dominance of either hydrophytic or water tolerant plants. The four main categories of wetland are swamps, marshes, bogs and fens. *Wetlands* perform many functions, including the provision of recharge and discharge zones for groundwater flow systems, attenuating *flood* flows, trapping sediment, preventing bank erosion and providing wildlife habitats.~~

Appealed

~~***Woodlands***~~ (Adopted ROPA 21B)

~~*Woodlands* are complex *ecosystems* comprised of communities of trees, shrubs, ground vegetation and immediate environmental conditions on which they depend. *Woodlands* provide a range of *ecosystem* functions including: attenuating *flood* flows; trapping air and water borne sediment; preventing erosion and stabilizing steep slopes; providing shade for cold water fisheries; enhancing *groundwater recharge areas*; providing habitat; and promoting species diversity. *Woodlands* may also contain remnants of old growth forests. *Woodlands* are important because of their scarcity in *Peel* and the rest of the *Greater Toronto Area*. Forest management using good forestry practices is an acceptable activity within *woodlands*.~~

Appealed

~~***Environmentally Sensitive or Significant Areas***~~ (Adopted ROPA 21B)

~~*Environmentally Sensitive or Significant Areas* are places where *ecosystem* functions or features warrant special protection. These may include, but are not limited to, rare or unique plant or animal populations or habitats, plant or animal communities, or concentrations of ecological functions. *Environmentally Sensitive or Significant Areas* are identified by the conservation authorities according to their established criteria.~~

Appealed

~~***Areas of Natural and Scientific Interest***~~ (Adopted ROPA 21B)

Areas of Natural and Scientific Interest are areas of land and water containing natural *landscapes* or features of provincial significance, having values related to natural heritage appreciation, scientific study or education.

Life Science *Areas of Natural and Scientific Interest* are those areas identified by the Ministry of Natural Resources for their high quality representation of important provincial biotic attributes.

Earth Science *Areas of Natural and Scientific Interest* are those areas identified by the Ministry of Natural Resources for their high quality representation of important provincial geological attributes.

Habitats of Vulnerable, Threatened and Endangered Species (Adopted ROPA 21B)

Appealed

Habitats of *vulnerable, threatened and endangered species*, and other species of special conservation concern are habitats of those species which have been listed by the Ministry of Natural Resources as occurring in sufficiently low population numbers, restricted geographic areas, or are sufficiently threatened by human activities, that their continued occurrence in Ontario is a matter of general conservation concern. The actual species falling into this category of conservation concern vary from region to region in the province, as well as over time, depending on ongoing research, recovery or mitigation efforts. Endangered species are listed in the Regulations under the provincial Endangered Species Act. Current lists of threatened and vulnerable species and species of conservation concern are maintained by the Ministry of Natural Resources.

Valley and Stream Corridors (Adopted ROPA 21B)

Appealed

Valley and stream corridors are the natural resources associated with the river systems characterized by their landform, features and functions, and include associated ravines. Valley corridors are distinguished from stream corridors by the presence of a distinct landform. Naturally vegetated *Flood Plains* can attenuate *flood* flows. Due to the inherent hazards of valley lands they have remained mainly undeveloped and vegetated. *Valley and stream corridors* are natural linkages in the *landscape* having important ecological functions, providing habitat for fish and wildlife and acting as corridors for movement.

Shorelines (Adopted OPA 21B)

Appealed

The *shorelines* include bluffs and lands in immediate contact with, or in seasonally inundated areas adjacent to, lakes, rivers and streams. The *littoral zone* is the area along the shore of a lake from the water's edge into the water to a depth where there is a 2% loss of light at the bottom. Both the *shoreline* and *littoral zone* are important habitats at the boundary between terrestrial and aquatic *ecosystems*. Due to height and location, *shorelines* may in some instances also be associated with slope and/or erosion hazards. (Also see the definition of *Regulatory Shoreline* in the Glossary).

Natural Corridors (Adopted ROPA 21B)

Appealed

Natural corridors are naturally vegetated or potentially revegetated lands that connect, link or border critical ecological attributes and functions and also provide ecological functions

~~such as habitat, migration routes, hydrological flow, connections or buffering from adjacent impacts. Certain *woodlands*, waterbodies, watercourses, valleylands, riparian zones, *shorelines*, and portions of the *Niagara Escarpment* natural heritage system, and intervening *adjacent lands* function as *natural corridors* in the Greenlands System.~~

~~***Fish and Wildlife Habitats*~~ (Adopted ROPA 21B)

Appealed

~~*Fish and wildlife habitats* are areas of the natural environment where plants, animals, fish and other organisms derive life support functions such as cover, protection, reproductive support, food and water. These habitats may be important on a year-round or seasonal basis. *Fish and wildlife habitats* that are afforded protection include *wetlands*, *woodlands*, *Environmentally Sensitive or Significant Areas*, *Areas of Natural and Scientific Interest*, portions of the *Niagara Escarpment* and the *Oak Ridges Moraine*, and *valley and stream corridors*.~~

(Adopted ROPA 21B)

The elements of the Greenlands System in *Peel* include *Areas of Natural and Scientific Interest* (ANSIs), *Environmentally Sensitive or Significant Areas* (ESAs), Escarpment Natural Areas, Escarpment Protection Areas, *fish and wildlife habitat*, *habitats of threatened and endangered species*, *wetlands*, *woodlands*, *valley and stream corridors*, *shorelines*, *natural lakes*, *natural corridors*, *groundwater recharge and discharge areas*, open space portions of the *Parkway Belt West Plan*, and other natural features and functional areas. These elements are to be interpreted, identified and protected in accordance with the policies of this Plan. Brief descriptions of the elements outlining their importance to the Greenlands System are provided below. Formal definitions are provided in the Glossary.

Appealed

Areas of Natural and Scientific Interest

Areas of Natural and Scientific Interest (ANSIs) are areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education. ANSIs are evaluated and identified as either provincially or regionally *significant* by the Ministry of Natural Resources. Two types of ANSIs are identified: life science and earth science. Life science ANSIs are significant representative areas of Ontario's biodiversity and natural landscapes. Earth science ANSIs contain significant representative examples of bedrock, fossil and landform features which are important to the scientific understanding of ongoing geologic processes.

Environmentally Sensitive or Significant Areas

Appealed

Environmentally Sensitive or Significant Areas (ESAs) are places where *ecosystem* functions or features warrant special protection. These may include, but are not limited to, rare or unique plant or animal populations or habitats, plant or animal communities, or concentrations of ecological functions. *Environmentally Sensitive or Significant Areas* are identified by the conservation authorities according to their established criteria.

Escarpment Natural Areas

Appealed

Escarpment Natural Areas include Escarpment slopes and related landforms in a relatively natural state; the most significant stream valleys and *wetlands* associated with the Escarpment, provincially *significant* life science ANSIs; and forested lands 300 metres back from the

Escarpment brow. These areas are designated in the Niagara Escarpment Plan as Escarpment Natural Areas because they contain the most significant natural and scenic areas of the Escarpment.

Escarpment Protection Areas

Appealed

carpment Protection Areas are important because of their visual prominence and their environmental significance. Included in this designation are Escarpment features that have been significantly modified by land use activities such as agriculture or residential development, land needed to buffer prominent Escarpment Natural Areas, and natural areas of regional significance.

Fish Habitat and Wildlife Habitat

Appealed

sh habitat and wildlife habitat are areas of the natural environment where plants, animals, fish nd other organisms derive life support functions such as cover, protection, reproductive support, food and water. These habitats may be important on a year-round or seasonal basis. In addition to providing ecological functions that support species survival and biodiversity, *fish and wildlife habitat* contributes to the Region's economy and quality of life through wildlife-based tourism, wildlife viewing, nature appreciation, fishing and hunting. *Fish and wildlife habitat* that are afforded protection include, **but are not limited to,** *wetlands*, *woodlands*, *Environmentally Sensitive or Significant Areas*, *Areas of Natural and Scientific Interest*, portions of the *Niagara Escarpment* and the *Oak Ridges Moraine*, and *valley and stream corridors*. (Provincial Modification in bold)

Habitats of Threatened and Endangered Species

Appealed

Habitats of *threatened and endangered species*, and other species of concern are habitats of ose species which have been listed by the Ministry of Natural Resources as occurring in sufficiently low population numbers, restricted geographic areas, or are sufficiently threatened by human activities, that their continued occurrence in Ontario is a matter of general conservation concern. The actual species falling into this category of conservation concern vary from region to region in the province, as well as over time, depending on ongoing research, recovery or mitigation efforts. Endangered and threatened species are listed in the Regulations under the provincial Endangered Species Act. Current lists of extirpated, endangered, threatened and special concern species are maintained by the Ministry of Natural Resources.

Natural Corridors

Appealed

latural corridors are lands that are in a natural state or that have the potential to be restored to natural state that connect, link or border natural features and areas and also provide ecological functions such as habitat, migration routes, hydrological flow, connections or buffering from adjacent impacts. Certain *woodlands*, waterbodies, watercourses, valleylands, riparian zones, *shorelines*, and portions of the *Niagara Escarpment* natural heritage system, and intervening lands function as *natural corridors* in the Greenlands System. *Natural corridors* on lands that are not in a natural state, but have the potential to be restored to a natural state to

improve the integrity and function of the Greenlands System, are identified through the preparation of natural heritage studies in accordance with *area municipal official plan* policy.

Shorelines

Appealed

The *shorelines* include bluffs and lands in immediate contact with, or in seasonally inundated areas adjacent to, lakes, rivers and streams. The *littoral zone* is the area along the shore of a lake from the water's edge into the water to a depth where there is a 2 percent loss of light at the bottom. Both the *shoreline* and *littoral zone* are important habitats at the boundary between terrestrial and aquatic *ecosystems*. Due to height and location, *shorelines* may in some instances also be associated with slope and/or erosion hazards. (Also see the definition of *Regulatory Shoreline* in the Glossary).

Valley and Stream Corridors

Appealed

Valley and stream corridors are the natural resources associated with river systems and are characterized by their landform, features and functions, and include associated ravines. Valley corridors and their associated ravines are distinguished from stream corridors by the presence of a distinct landform. Due to the inherent hazards of valley lands they have remained mainly undeveloped and vegetated. *Valley and stream corridors* are natural linkages in the *landscape* having important ecological functions, providing habitat for fish and wildlife and acting as corridors for movement.

Wetlands

Appealed

Wetlands perform many functions, including the provision of groundwater recharge and discharge, attenuating *flood* flows, trapping sediment, preventing coastal, shoreline and bank erosion and providing *wildlife habitat* for a diversity of species. The four major types of *wetlands* are swamps, marshes, bogs and fens.

Woodlands

Appealed

~~*Woodlands* are *ecosystems* and immediate environmental conditions on which they depend.~~ ***Woodlands* are *ecosystems* comprised of treed areas and the immediate biotic and abiotic environmental conditions on which they depend.** *Woodlands* provide a range of *ecosystem* functions including: attenuating *flood* flows; trapping air and water borne sediment; preventing erosion and stabilizing steep slopes; providing shade for cold water fisheries; enhancing *groundwater recharge areas*; providing habitat; and supporting species diversity. *Woodlands* are important because of their scarcity in *Peel* and the rest of the Greater Toronto Area. In addition to their ecological functions, *woodlands* are valued for their economic, social, and aesthetic benefits. (Provincial Modification in bold)

The following objective and policies address the identification, protection and maintenance of the Greenlands System and *restoration* and *rehabilitation* that may enhance the Greenlands System and the natural environment in *Peel*.

2.3.1 Objective

To identify, *protect* and *support* the *restoration* and *rehabilitation* of the Greenlands System in *Peel*.

2.3.2 Policies

It is the policy of *Regional Council* to:

2.3.2.1 Define the Greenlands System in *Peel* as being made up of:

a) Core Areas, which are shown generally on Schedule A, and which are *protected* in this Plan and in the *area municipal official plans*.

b) Natural Areas and Corridors, which will be interpreted, *protected* and shown, *as appropriate*, in the *area municipal official plans*; and

c) Potential Natural Areas and Corridors, which will be interpreted, *protected* and shown, *as appropriate*, in the *area municipal official plans*. Potential Natural Areas and Corridors will be analyzed to determine their functional role in supporting and enhancing the *integrity* of the Greenlands System in *Peel*.

Reference should be made to the *area municipal official plans* and related documents for a detailed interpretation of the location and extent of the Core Areas, Natural Areas and Corridors and Potential Natural Areas and Corridors.

2.3.2.2 **Core Areas** (Adopted ROPA 21B)

Appealed

Define the Core Areas of the Greenlands System in *Peel* as:

a) ~~*Provincially* significant wetlands (Class 1-3)~~; (Adopted ROPA 21B)

b) *significant* coastal wetlands; (Adopted ROPA 21B)

~~b) *woodlands* that are a minimum of 30 hectares (75 acres) in area~~;

c) Core *woodlands* meeting one or more of the criteria in Table 1; (Adopted ROPA 21B)

~~c)~~ d) *Environmentally Sensitive or Significant Areas*;

~~d)~~ e) Provincial Life Science *Areas of Natural and Scientific Interest*;

~~e)~~ ~~habitats of *vulnerable, threatened or endangered species*~~; (Adopted ROPA21B)

Appealed

f) *significant* habitats of *threatened and endangered species*; (Adopted ROPA 21B)

~~f)~~ g) Escarpment Natural Areas of the Niagara Escarpment Plan; and

~~g)~~ h) ~~Only those *valley and stream corridors* shown on Schedule A associated with the main branches of the Credit River, the Etobicoke Creek, the Mimico Creek, the West Humber River and the Humber River and with the other identified watercourses draining directly to Lake Ontario; except for those portions in the Rural Service Centres and the rural settlements in the Rural System as designated in an *area municipal official plan*. These *valley and stream corridors* are continuous linkages connecting to other elements of the Greenlands System Core Areas. The width of all of these *valley and stream corridors* shall be determined in accordance with the definition in the Glossary of this Plan. Their length shall be determined in accordance with Schedule A.~~ (Adopted ROPA 21B)

Core *valley and stream corridors* meeting one or more of the criteria in Table 2. The limit of Core *valley and stream corridors* shall be determined *jointly* with the area municipalities in consultation with relevant agencies and in accordance with the definition in the Glossary of this Plan and the criteria in Table 2 to recognize the unique urban and rural character of the *region*. Core *valley and stream corrido*rs include the main branches, *major tributaries* and other ~~r~~es associated with the Credit River, the Etobicoke Creek, the Mimico Creek, the West Humber River and the Humber River and with the other identified watercourses draining directly to Lake Ontario, except for those portions in the Rural Service Centres and the rural settlements in the Rural System as designated in an *area municipal official plan*. These *valley and stream corridors* are continuous linkages connecting to other elements of the Greenlands System Core Areas. (Adopted ROPA 21B)

Appealed

~~2.3.2.3 Direct the area municipalities, in consultation with the ~~l~~ation authorities, the Ministry of Natural Resources and the Niagara Escarpment Commission, to include objectives and policies in their official plans for the interpretation, protection, *enhancement*, proper management and stewardship of the Core Areas of the Greenlands System in *Peel* which conform to the intent of this Plan, have regard to provincial policies and are consistent with the Niagara Escarpment Plan, where applicable~~ (Adopted ROPA 21B)

Appealed

2.3.2.3 For the purposes of defining the Core Areas of the Greenlands System for ~~l~~ aggregate resource extraction uses within the Rural System, define Core ~~l~~*ands* as all *woodlands* that are a minimum of 30 hectares in size and exclude as Core *valley and stream corridors* all *valley and stream corridors* that have a drainage area of less than125 hectares. (Provincial Modification in bold)

Appealed

2.3.2.~~3~~ 4 Direct the area municipalities, in consultation with the conservation authorities, ~~p~~rovince and the Niagara Escarpment Commission, to include objectives and policies in ~~o~~fficial plans for the interpretation, protection, *enhancement*, proper management and *stewardship* of the Core Areas of the Greenlands System in *Peel* which conform to the intent of this Plan, consistent with provincial policy, the Niagara Escarpment Plan, the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan, where applicable. (Adopted ROPA 21B)

2.3.2.4 5 The area municipalities may define local core areas and policies in their Official Plans which will, at a minimum, incorporate the Core Areas of the Greenlands System in *Peel*.

2.3.2.5 Prohibit *development* and *site alterations* within the Core Areas of the Greenlands System in *Peel*, except for:

Appealed

a) *development* permitted within approved Two Zone and/or *al Policy Areas* for *Flood Plains* as outlined in provincial policy;

minor development, minor *site alterations* and passive *recreation*;

c) essential servicing;

d) works for conservation purposes; and

e) compatible *recreation* within the Urban System, as shown on Schedule D.

These exceptions may be permitted through an approved *area municipal official plan* or the Niagara Escarpment Plan where applicable, in consultation with *the Region*, the conservation authorities, the Niagara Escarpment Commission and other relevant agencies, provided that the policies which permit such uses and activities are in conformity with the objectives and policies of this Plan. (Adopted ROPA 21B)

(Adopted ROPA 21B)

2.3.2.5 6 Prohibit *development* and *site alteration* within the Core Areas of the Greenlands System in *Peel*, except for:

forest, fish and wildlife management;

Appealed

ervation and *flood* or erosion control projects, but only if they have been demonstrated to be necessary in the public interest and after all reasonable alternatives have been considered;

essential infrastructure exempted, pre-approved or authorized under an environmental assessment process;

passive *recreation*;

e) *minor development* and *minor site alteration;*

f) existing uses, buildings or structures;

g) expansions to *existing buildings or structures*;

h) uses, buildings and structures accessory to *existing* and permitted uses including *existing* agricultural uses;

h) accessory uses, buildings or structures; (Provincial modification in bold)

i) a new single residential dwelling on an *existing lot of record*, provided that the dwelling would have been permitted by the applicable planning legislation or zoning by-law on the date ~~of adoption of Regional Official Plan Amendment 21B.~~ **the Regional Official Plan Amendment 21B came into effect.** A new dwelling built after the ~~date of adoption~~ **Regional Official Plan Amendment 21B came into effect** in accordance with this policy shall be deemed to be an *existing building or structure* for the purposes of the exceptions permitted in clauses g) and h) above. (Provincial Modification in bold)

Appealed

The above exceptions may be permitted in accordance with the policies in an approved *area municipal official plan* or the Niagara Escarpment Plan where applicable, in consultation with *the Region*, the conservation authorities, the Niagara Escarpment Commission and other relevant agencies, provided that the policies which permit such uses and activities are in conformity with the objectives and policies of this Plan. (Adopted ROPA 21B)

When developing policies for permitted exceptions, the area municipalities are directed to:

Appealed

i) ~~The area municipalities are directed to~~ adopt appropriate policies to allow the exceptions subject to it being demonstrated that there is no reasonable alternative location outside of the Core Area and the use, *development* or *site alteration* is directed away from the Core Area feature to the greatest extent possible; and the impact to the Core Area feature is minimized and any impact to the feature or its functions that cannot be avoided is mitigated through restoration or enhancement to the greatest extent possible; and (Adopted ROPA 21B)

ii) ~~When developing policies to allow the exceptions, the area municipalities shall give consideration to~~ consider appropriate implementation tools and mechanisms including the existing tools and mechanisms of other agencies. (Adopted ROPA 21B)

Appealed

In addition to the above policies, permitted exceptions within *significant wetlands*, *significant coastal wetlands* and *significant* habitat of *threatened and endangered species* within the Core Areas of the Greenlands System, may only be considered in accordance with provincial and federal legislation and policies (e.g. Endangered Species Act). (Proposed Modification in bold)

Appealed

2.3.2.~~6~~ 7 Ensure that the Core Areas of the Greenlands System in *Peel*, as described in Policy 2.3.2.2 **and 2.3.2.3** and as further detailed in the *area municipal official plans* and related planning documents, are not damaged or destroyed. In the event that portions of the Core Areas are damaged or destroyed, there shall be no adjustment to the boundary or redesignation of these areas in the *area municipal official plans* and *the Region* will require replacement or *rehabilitation* of the ecological features, functions and/or landforms. *Regional Council* will *support* the area municipalities in applying this policy to other environmental features that are *protected* in an approved area official plan. (Provincial Modification in bold)

Appealed

~~2.3.2.7 Direct the area municipalities to interpret *woodlands* to include plantations except where a more detailed environmental study has demonstrated that the plantation does not exhibit the characteristics necessary to satisfy the definition of *woodlands* in~~

~~this Plan, in which case, the plantation shall not be considered to be a *woodland* for the purposes of this Plan.~~ (Adopted ROPA 21B)

Appealed

~~2.3.2.8 Direct the area municipalities to require environmental impact s for *development*, *site alterations* and new and expanded mineral aggregate extraction sites proposed on lands adjacent to Core Areas of the Greenlands System.~~

~~This requirement may be reduced if detailed *development* criteria have been applied to a site through a comprehensive *joint* planning process, a comprehensive environmental impact study, on the basis of a *subwatershed* plan, or if an appropriate scoping exercise has been *jointly* undertaken or *supported* by the relevant agencies.~~

Appealed

~~2.3.2.9 Determine planning and monitoring information requirements for usion in environmental impact studies *jointly* with area municipalities and other agencies.~~

Appealed

~~2.3.2.10 Allow established agricultural activities on *adjacent lands* without an environmental impact study.~~ (Adopted ROPA 21B)

Appealed

~~2.3.2.7~~ 8 Allow the continuation of *existing agricultural uses* in accordance with *normal n practices* within the Greenlands System. (Adopted ROPA 21B) (Renumbered through Provincial Modification)

2.3.2.~~11 8~~ 9 **Natural Areas and Corridors** (Adopted ROPA 21B)

Appealed

Define the Natural Areas and Corridors of the Greenlands System *el* as:

a) ~~Class 4 to 7wetlands~~ evaluated non-provincially *significant wetlands*; (Adopted ROPA 21B)

~~*woodlands* that are greater than 3 hectares (7.4 acres) in area up to 30 hectares (75 acres)~~; NAC *woodlands* meeting one or more of the criteria in Table 1; (Adopted ROPA 21B)

significant wildlife habitat meeting one or more of the criteria in Figure 5; (Adopted ROPA 21B)

fish habitat; (Adopted ROPA 21B)

e) regionally *significant* life science *Areas of Natural and Scientific Interest* ; (Adopted ROPA 21B)

f) provincially *significant* earth science *Areas of Natural and Scientific Interest.* (Adopted ROPA 21B)

~~e)~~ g) Escarpment Protection Areas of the Niagara Escarpment Plan;

~~d)~~ h) the Lake Ontario *shoreline* and *littoral zone* and other *natural lakes* and their *shorelines*;

Appealed

~~*alley and stream corridors* that have a drainage area of 125 hectares (1/2 square mile) r which have not been defined as part of the Core Areas;~~ any other *valley and stream corridors* that have not been defined as part of the Core Areas; (Adopted ROPA 21B)

~~f)~~ j) *headwater* source and discharge areas; and

~~g)~~ k) any other natural features and functional areas interpreted as part of the Greenlands System Natural Areas and Corridors by the individual area municipalities, in consultation with the conservation authorities and the Ministry of Natural Resources, including, *as appropriate*, elements of the Potential Natural Areas and Corridors.

2.3.2.~~12 9~~ 10 **Potential Natural Areas and Corridors** (Adopted ROPA 21B)

Appealed

Define Potential Natural Areas and Corridors of the Greenlands in *Peel*, subject to the provisions of policy ~~2.3.2.11 (g)~~, 2.3.2.~~8~~ 9 (k) as: (Adopted ROPA 21B)

a) unevaluated *wetlands*;

b) *cultural woodlands* and *cultural savannahs* within the Urban System and Rural Service Centres meeting one or more of the criteria in Table 1. The evaluation of *cultural woodlands* and *cultural savannahs* is also subject to policy 2.3.2.~~18~~ 19; (Adopted ROPA 21 B)

~~b)~~ c) ~~all other *woodlands;*~~ any other woodlands greater than 0.5 hectares (1.24 acres); (Adopted ROPA 21B)

~~c)~~ d) ~~Provincial Earth Science *Areas of Natural and Scientific Interest*; provincially and~~ regionally significant earth science *Areas of Natural and Scientific Interest*; (Adopted ROPA 21B)

~~d)~~ e) sensitive *groundwater recharge areas*;

Appealed

~~e) *valley and stream corridors* that have a drainage area of less than 125 hectares (1/2 square mile);~~ (Adopted ROPA 21B)

f) portions of *Historic shorelines*;

g) open space portions of the *Parkway Belt West Plan* Area;

h) potential ESA's identified as such by the conservation authorities; and

i) any other natural features and functional areas interpreted as part of the Greenlands System Potential Natural Areas and Corridors, by the individual area municipalities in consultation with the conservation authorities.

2.3.2.~~13~~ ~~10~~11 ~~Direct the area municipalities, in consultation with the conservation authorities, the Ministry of Natural Resources and the Niagara Escarpment Commission, to include objectives and policies in their official plans for the interpretation, protection, *restoration*, *enhancement*, proper management and stewardship of the Natural Areas and Corridors and Potential Natural Areas and Corridors having regard to provincial policies, the requirements of this Plan, and local considerations and consistent with the Niagara Escarpment Plan, where applicable.~~ (Adopted ROPA 21B)

Appealed

Direct the area municipalities, in consultation with the conservation authorities and the Niagara Escarpment Commission, to include objectives and policies in their official plans for the interpretation, protection, *restoration*, *enhancement*, proper management and *stewardship* of the Natural Areas and Corridors and Potential Natural Areas and Corridors which conform to the intent of this Plan, consistent with provincial policy, the Niagara Escarpment Plan, the Greenbelt Plan, and local considerations, where applicable. (Adopted ROPA 21B)

2.3.2.~~14~~ ~~11~~ 12 *Support* the area municipalities in consultation with the conservation authorities, the Niagara Escarpment Commission, where applicable, and the Ministry of Natural Resources to define the boundaries of the Greenlands System in *Peel* in terms of functions, landforms, attributes, linkages, critical elements, and *rehabilitation* and natural habitat *restoration* opportunities, including the preparation of technical documents. (Adopted ROPA 21B)

Appealed

Wetlands (Adopted ROPA 21B)

2.3.2.~~15~~ ~~12~~13 Recognize the environmental value of all *wetlands* as part of the Greenlands System in *Peel* and *support* their identification and protection through the land use planning process, *as appropriate*.

Appealed

2.3.2.~~16~~ ~~13~~14 Direct the area municipalities in conjunction with the conservation authorities and the Ministry of Natural Resources to study and evaluate unevaluated *wetlands* and *protect* them, *as appropriate*.

Appealed

Valley and Stream Corridors (Adopted ROPA 21B)

2.3.2.~~17~~~~14~~ 15 Recognize the environmental value of all *valley and stream corridors* as part of the Greenlands System in *Peel* and *support* their identification and protection through the land use planning process, *as appropriate*. Appropriate policies for *valley and stream corridors* through Rural Service Centres and rural settlement areas and/or *Special Policy areas* for *Flood Plains* will be contained in the *area municipal official plans*. These policies shall ensure that the *integrity* of the *valley and stream corridors* are maintained, including valley walls, landforms, habitats and steep slopes.

Appealed

Appealed

2.3.2.~~1815~~16 ~~Direct the conservation authorities, *jointly* with the area municipalities, to continue to refine the boundaries of *valley and stream corridors* including *headwater* areas, and setbacks from the watercourses and corridor limits, including appropriate alterations approved through *subwatershed* studies or comparable environmental and/or engineering studies and field work~~.

(Adopted ROPA 21B)

Appealed

Direct the area municipalities, in consultation with the conservation authorities, to continue to refine the boundaries of *valley and stream corridors*; establish setbacks and buffers for watercourses, and *valley and stream corridors*; and define *headwater* areas through *subwatershed* or broad scale environmental studies. Alterations to *valley and stream corridors* identified as Natural Areas and Corridors may be considered subject to recommendations in a *subwatershed* or broad scale environmental study and on the basis of detailed site specific environmental, engineering or planning studies and field work where such alterations contribute to the overall enhancement of the Greenlands System. (Adopted ROPA 21B)

Appealed

2.3.2.~~1916~~ 17 ~~Direct the area municipalities, in their official plans, to generally prohibit new *development*, *site alterations* and the establishment or expansion of aggregate extraction sites in *valley and stream corridors* that have a drainage area of 125 hectares (1/2 square mile) or greater and are identified as Natural Areas and Corridors in this Plan, except for:~~
(Adopted ROPA 21B)

~~a) *development* permitted within approved Two Zone and/or *Special Policy Areas* for *Flood Plains* as outlined in .provincial policy;~~

~~*minor development*, minor *site alterations* and passive *recreation*;~~

~~c) essential servicing;~~

~~d) works for conservation purposes; and~~

~~e) compatible *recreation* within the Urban System, as shown on Schedule D.~~

~~These exceptions may be permitted through an approved *area municipal official plan* or the Niagara Escarpment Plan where applicable, in consultation with *the Region*, the conservation authorities, the Niagara Escarpment Commission and other relevant agencies. These uses and activities may be permitted by the area municipalities in these corridors, provided that the policies which permit such uses and activities are in conformity with the objectives and policies of this Plan.~~

Appealed

In addition to *development* and *site alteration* permitted in accordance with Section 2.3.2.~~5~~6, permit the following within Core *valley and stream corridors* unless an *area municipal official plan* is more restrictive than the Regional Official Plan:
(AdoptedROPA 21B)

a expansion to existing compatible active *recreation* within the Urban System as shown on Schedule D

(Adopted ROPA 26)

b) *development* permitted within approved Two Zone and *Special Policy Area flood plains*; and

c) compatible small scale urban *agricultural*, *agricultural-related* and *secondary uses*, buildings and structures within the Urban System as shown on Schedule D. (Adopted ROPA 21B)

Appealed

eptions shall not be permitted within *significant wetlands* and *significant* habitat of *endangered and threatened species,* and shall not be permitted within other *significant* natural features unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions and that *restoration* and *enhancement* of the Greenlands System and *natural hazards* are addressed in accordance with sections 2.4 and 2.5 of this Plan. (Adopted ROPA 21B) Expansions to existing compatible active *recreation* uses shall be designed and implemented to provide net environmental benefits to the Greenlands System. (Adopted ROPA 26)

Woodlands (Adopted ROPA 21B)

Appealed

2.3.2.~~17~~ 18 ~~Direct the area municipalities to interpret *woodlands* to include *plantations* except where a more detailed environmental study has demonstrated that the *plantation* does not exhibit the characteristics necessary to satisfy the definition of *woodlands* in this Plan, in which case, the *plantation* shall not be considered to be a *woodland* for the purposes of this Plan.--~~

Direct the area municipalities to define *woodlands* to include *plantations* in accordance with the definition in this Plan and to evaluate them in accordance with the criteria in Table 1 and policies in section 2.3.2 of this Plan. *Plantations* shall be identified as Core *woodland* if they are a *naturalized plantation* and they meet one or more criteria for Core *woodland* in Table 1. For the purpose of measuring *woodland* patch size when *woodlands* contain Core *woodland* and non-Core *plantation* communities, patch size shall be measured to include all contiguous *woodland* communities. (Provincial Modification – in bold)

Appealed

2.3.2.~~18~~ 19 Direct the area municipalities to interpret *woodlands* to include *cultural woodlands* and *cultural savannahs*. The interpretation, significance and level of protection of *cultural woodlands* and *cultural savannahs* shall be determined in accordance with policy 2.3.2.~~10~~11 and the criteria in Table 1. Within the Urban System and Rural Service Centres, as shown on Schedule D, the significance and protection of these woodlands will require an additional evaluation through natural heritage studies required by the area municipalities in consultation with relevant agencies to evaluate and confirm the quality and function of the woodlands. *Cultural woodlands* and *cultural savannahs* within the Urban System and Rural Service Centres that are confirmed to have *significant* ecological values that contribute to the *integrity* and function of the Greenlands System are recommended to be identified and protected in accordance with the policies of this Plan.

Appealed

2.3.2.~~19~~ 20 Direct the area municipalities to include or develop criteria and thresholds for *woodlands* identified as Natural Areas and Corridors and Potential Natural Areas and Corridors in accordance with Section 2.3.2.~~10~~11 and the criteria in Table 1 and to consider criteria and

thresholds based on environmental, physiographic, social and economic factors. (Adopted ROPA 21B)

Appealed

2.3.2.21 Exclude as Core *woodlands* and *significant woodlands*, *plantations* that

a) managed for production of fruits, nuts, Christmas trees or nursery stock;

b) managed for tree products with an average rotation of less than 20 years (e.g. hybrid willow or poplar); or

c) established and continuously managed for the sole purpose of complete removal at rotation, as demonstrated with documentation acceptable to the *Region* or area municipality, without a *woodland restoration* objective.

Additional exclusions may be considered for treed communities which are dominated by invasive non-native tree species such as buckthorn (*Rhamnus* species), Norway maple (*Acer platanoides*), or others deemed to be highly invasive, that threaten the ecological functions or biodiversity of native communities. Such exceptions should be supported by site-specific studies that consider 1) the degree of threat posed; 2) any potential positive and/or negative impact on the ecological functions or biodiversity of nearby or adjacent native communities; and 3) the projected natural succession of the community. Communities where native tree species comprise approximately 10 percent or less of the tree crown cover and approximately 100 or fewer stems of native tree species of any size per hectare would be candidates for exclusion. (Provincial Modification in bold)

Appealed

Appealed

2.3.2.22 Consider allowing new or expanded mineral aggregate extraction sites in *woodlands* if the *woodland* is *early successional habitat* or *young plantation* and provided that progressive and final *rehabilitation* will result in no loss of *woodland* area and function. If mitigation of the loss of woodland area or function is not possible on-site due to excavation below water table, off-site mitigation that contributes to the function and ecological integrity of the Greenlands System is to be considered as early in the operation as practical. The new or expanded mineral aggregate extraction site that is allowed within *early successional habitat* or *young plantation* shall not affect the status of the retained portion of the *woodland* to remain as Core Woodland or *significant woodland*. . New or expanded mineral aggregate extraction sites within the Greenbelt Plan or Oak Ridges Moraine Conservation Plan areas are subject to additional policy requirements in Sections 2.2.9 and 2.2.10 of this Plan. (Provincial Modification in bold)

Landforms (Adopted ROPA 21B)

2.3.2.~~20~~ 23 Encourage the area municipalities to *protect significant* landforms, *landscapes*, vistas and ridgelines, *as appropriate*.

Appealed

2.3.2.~~21~~ 24 Promote planning, design and construction practices, which conserve landform, particularly within the Oak Ridges Moraine Conservation Plan Area and the Niagara Escarpment Plan Area, and to *protect* ecological features, forms and/or functions from the disruption or destruction of landform.

Environmental Impact Studies (Adopted ROPA 21B)

2.3.2.~~22~~ 25 Direct the area municipalities to require environmental impact studies for *development and site alteration* within and on *adjacent lands* to the Greenlands System and to include policies in their official plans that *development* and *site alteration* shall not be permitted unless the ecological functions of the *adjacent lands* have been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural feature or its functions, or the requirements of Section 2.3.2.~~5~~6 have been satisfied.

Appealed

This requirement for environmental impact studies may be reduced if detailed development criteria have been applied to a site through a *subwatershed* study, a comprehensive environmental impact study, or if an appropriate scoping exercise has been completed by the area municipality in consultation with the relevant agencies."

APPENDIX C: TOWN OF CALEDON OFFICIAL PLAN

The following are extracts from the Corporation of the Town of Caledon's Official Plan (2008). Please note that the emphases are taken directly from the document, and are not those of the Toronto and Region Conservation Authority.

2.0 STRATEGIC DIRECTION
2.2 PRINCIPLES, STRATEGIC DIRECTION AND GOALS

3.0 GENERAL POLICIES

3.1 ECOSYSTEM PLANNING AND MANAGEMENT

3.1.2 Ecosystem Objectives

3.1.2.1 Ecosystem Objectives

3.1.2.1.1 To protect, maintain, and, as appropriate, enhance and restore ecosystem functions and processes vital to the integrity of communities (both natural and cultural), particularly in relation to:

air quality;
groundwater quality and quantity, recharge and discharge;
surface water quality and quantity;
soil fertility; and
biota.

3.1.2.1.2 To protect, maintain, and, as appropriate, enhance and restore ecosystem attributes and values, including:
connectivity;
viability / self-sustainability;
biological diversity;
dynamics; and
aesthetics (natural scenery).

3.1.2.1.3 To protect, maintain, and, as appropriate, enhance and restore physical and biological systems and features that support ecosystem integrity and associated functions, processes, attributes and values, including:
bedrock and surficial geology;
landforms, topography and soils;
groundwater and aquifers;
surface water systems including: watersheds and subwatersheds; rivers and streams (permanent and intermittent); valley and stream corridors; and, lakes and ponds;
fisheries and wildlife;
wetlands and woodlands; and

ANSIs and ESAs.

3.1.2.2 Ecosystem Planning Objectives

3.1.2.2.2 To identify, protect, maintain, and, as appropriate, enhance and restore ecosystem forms, functions and integrity within Caledon through the implementation of appropriate designations, policies and programs.

3.1.2.2.4 To foster public awareness and education regarding Caledon's environment including this Plan's ecosystem principle, goal and objectives.

3.1.2.2.5 To recognize that humans are an integral consideration in ecosystem planning, and to develop policies and programs with respect to the on-going human interactions with the natural environment.

3.1.2.2.7 To promote an holistic, ecosystem based philosophy at all levels of government.

3.1.2.2.8 To ensure that natural hazards are addressed through the planning process.

3.1.4 General Polices

3.1.4.1 All development uses shall be subject to the ecosystem principle, goal, objectives, planning strategy, policies and performance measures contained in this Plan.

3.1.4.4 Natural Core Areas and Natural Corridors shall be designated Environmental Policy Area (EPA), and development within and adjacent to EPA shall be subject to the general policies of section 3.1.4, the performance measures of Section 3.1.5, and the detailed land use policies of Section 5.7.

3.1.4.6 All development proposals within, containing and adjacent to EPA shall be required to conduct, appropriate environmental studies/investigations, up to, and including and EIS & MP, in accordance with the provisions of Section 5.7.

3.1.4.11 Where the Town's environmental policies and performance measures are more restrictive than those contained in a higher level of planning document, the more restrictive policies shall apply, provided they conform with the intent of the upper level policy document.

3.1.4.12 Naturally occurring hazard, such as flooding, erosion and slope instability, which have the potential to negatively affect human health and property, shall be addressed through the planning process to the satisfaction of the Town and other relevant agencies. Where such hazards occur on lands within Natural Core Areas and Corridors, they are designated EPA and are subject to the detailed land use policies in Section 5.7.

3.1.4.13 The Town shall encourage initiatives to restore degraded ecosystems throughout the municipality and may require appropriate enhancement/restoration works through the development approvals process. Such enhancement/restoration initiatives shall be

implemented through an Environmental Impact Study and Management Plan (EIS & MP), where required pursuant to Sections 3.1.5 and 5.7, or through an approved Forest Management or Environmental Management Plan, or comparable document. Environmental management and restoration initiatives shall adhere to the ecosystem principle, goal, objectives, planning strategy, policies and performance measures contained in this Plan, and shall be subject to the Town's approval, as required, or the approval of another appropriate agency, prior to implementation.

3.1.5 Performance Measures

3.1.5.4 Wetlands

3.1.5.4.1 New development within Wetland Core Areas is prohibited in accordance with Section 5.7, with the exception of the permitted uses as specified in policy 5.7.3.1.2.

3.1.5.4.3 New development may be permitted on Wetland Adjacent Lands in accordance with Section 5.7 and the requirements of other relevant agencies.

3.1.5.4.5 The quality and quantity of surface water entering Wetland Core Areas shall be maintained and, where appropriate, enhanced and restored, to the satisfaction of the Town, the relevant Conservation Authority, the Niagara Escarpment Commission, where applicable, and the Ministry of Natural Resources.

3.1.5.4.6 Management and restoration of Wetland Core Areas, Other Wetlands and Wetland Adjacent Lands shall adhere to the Town's ecosystem principle, goal, objectives, policies and performance measures, as well as any relevant policies or guidelines established by the Ministry of Natural Resources, the Conservation Authority and the Niagara Escarpment Plan, where applicable, and shall generally be implemented through an approved management plan.

3.1.5.6 Environmentally Significant Areas (ESAs)

3.1.5.6.1 New development within ESA's is prohibited in accordance with Section 5.7, with the exception of the permitted uses as specified in policy 5.7.3.1.2.

3.1.5.6.2 New development will not be permitted within Potential ESAs until such areas have been evaluated and their status as an ESA is properly assessed by the appropriate Conservation Authority. Potential ESAs which are identified through further evaluation as satisfying the criteria for ESA designation shall be placed in an EPA designation and shall be subject to the policies of Section 5.7.

3.1.5.6.3 Management and restoration of ESAs shall adhere to the Town's ecosystem principle, goal, objectives, policies and performance measures, as well as any policies or guidelines established by the relevant Conservation Authority and the Niagara Escarpment Plan, where applicable.

3.1.5.9 Vulnerable, Threatened, and Endangered Species

3.1.5.9.1 New development areas necessary for the continued health and survival of vulnerable, threatened and endangered species is prohibited in accordance with Section 5.7, with the exception of the permitted uses as specified in policy 5.7.3.1.2.

3.1.5.9.3 Management and restoration of sites containing vulnerable, threatened and endangered species shall adhere to the Town's ecosystem principle, goal, objectives, policies and performance measures, as well as any policies or guidelines established by the Ministry of Natural Resources and the Niagara Escarpment Plan, where applicable.

3.1.5.12 Groundwater

3.1.5.12.1 New development must ensure that the quality and quantity of groundwater recharge and discharge and the flow distribution of groundwater (including ground water - surface water interconnections and contributions to stream baseflow) are protected, maintained, and, where appropriate, enhanced and restored.

3.1.5.12.2 Areas of groundwater recharge capability, and groundwater discharge zones, as identified through broader scale studies, shall be subject to further detailed hydrogeological study requirements. Critical recharge and discharge areas, as identified through such studies, shall be excluded from development and placed in an appropriate restrictive land use designation such as EPA.

3.1.5.12.5 New development shall not negatively impact the quality and quantity of groundwater aquifers.

3.1.5.12.8 Appropriate consideration shall be given to the cumulative effects of development and water taking on the water budget of an affected area.

3.1.5.14 Natural Slopes

3.1.5.14.1 The Town encourages the conservation of steep slopes and slope instability areas.

3.1.5.14.3 Slopes which possess inherent instabilities or other characteristics that may pose a serious threat to human health and property shall generally be excluded from development and placed in an appropriate restrictive designation such as EPA.

3.1.5.14.4 The alteration of existing slopes and landforms shall be minimized, and significant topographic features shall generally be preserved and incorporated into new developments as appropriate.

5.0 TOWN STRUCTURE & LAND USE POLICIES

5.3 RURAL ESTATE RESIDENTIAL

5.3.1 Introduction

It is the intent of this Plan to recognize Rural Estate Residential plans of subdivision within the Town which have been registered, draft approved or those which have been committed by the

Town prior to approval of this Plan. These Rural Estate Residential subdivisions are outlined on Schedule F, Rural Estate Residential Areas. In addition, the Town is providing for future estate residential development within a comprehensive, environmentally responsible policy framework through the establishment of an Estate Residential Community.

5.3.2 General Policies
5.3.2.1 The predominant use of land outlined as Rural Estate Residential on Schedule F, is single family dwellings on large lots. Apartments-in-houses as per Section 3.4.3.6 of this Plan, shall be permitted in Rural Estate Residential. Garden Suites as per Section 6.2.13.3 of this Plan, shall be
permitted in Rural Estate Residential. The emphasis is on minimum disturbance of the natural setting and environment offering a distinctly "rural" atmosphere to those people not wishing to live in continuously built-up urban areas.

5.3.2.2 In order to provide for a variety of housing types and living styles within the Town and recognizing the demand for Rural Estate Residential development, the Palgrave Estate Residential Community has been outlined in Schedule "A", Land Use Plan. Development within this Policy Area shall be in accordance with Section 7.1 and Section 7.10 of this Plan and subsections thereof.

5.3.2.3 Rural Estate residential plans of subdivision, other than those shown on Schedule A, Land Use Plan, Schedule F, Rural Estate Residential Areas, or in the Palgrave Estate Residential Community, will not be permitted.

5.3.2.4 Estate Residential Development may occur on a condominium basis, and shall be subject to all municipal standards.

5.3.2.5 Rural Estate Residential uses shall be included in a separate zoning category in the implementing Zoning By-law.

5.3.2.6 Development in the Orangeville Airport Estate Area shall have a minimum lot area of 0.17 of a hectare with an average lot size of 0.3 of a hectare. 5.3.2.7 Lands identified on Schedule F as Rural Estate Residential Areas that are within the ORMCPA shall also be subject to the policies of Section 7.10. Notwithstanding any other policy of Section 5.3.2, where the policies of Section 7.10 are more restrictive than those contained in Section 5.3.2, the more restrictive policies shall apply.

5.3.3 Bolton Golf Course Estate Residential
5.3.3.1 The Bolton Golf Course, being part of Lots 18, 19 and 20, Concession 6 (formerly Albion Township), is designated Bolton Golf Course Estate Residential, as shown on Schedule A, Land Use Plan.

5.3.3.2 The integration of the existing golf course with an estate residential plan of subdivision is recognized as a compatible and permitted use in this Area.

5.3.3.3 In view of Section 5.3.3.2, the golf course fairways may encroach upon the rear portions of estate residential lots, by means of easement or other acceptable manner, so as to achieve

an integrated land use design between the estate residential subdivision and the golf course. The design of the subdivision will take into account, among other things, acceptable separation or adequate landscape buffering between the Bolton Golf Course Fairway and the Structure Envelopes.

5.3.3.4 The nature of fairway encroachment on the rear portion of estate lots shall be registered on title of all created lots in the Bolton Golf Course Estate Residential area and shall specify, among other matters, requirements and responsibilities pertaining to:
a) Access to fairways and surrounding grounds by golf course participants during the normal golfing season;
b) Maintenance of fairways and surrounding grounds;
c) Nuisances associated with the golf course operation; and
d) Any other studies, restrictions or requirements deemed appropriate by the Town of Caledon.

5.3.3.5 The nature and density of development in the Bolton Golf Course Estate Residential area shall be governed by the following development policies:

5.3.3.5.1 Environmental
a) A Structure Envelope must be shown for each lot on any proposed plan of subdivision. The Structure Envelope should identify only the optimal area of the lot for structures but should provide ample space for estate residential and accessory uses.
b) No Structure Envelope will be permitted inside a regional flood line. In addition, no part of a lot inside a regional flood line may be counted in the calculation of net lot area.
c) No Structure Envelope will be situated such that it interferes with the normal operation and maintenance of the golf course, except for septic tank tile beds which may encroach the golf course where necessary.
d) Structure Envelopes will generally be restricted to areas with slopes of 10 per cent or less. However, Structure Envelopes may include areas with an 11-15 per cent slope, and occasionally greater than a 15 per cent slope, in order to permit the advantageous siting of a house designed for steep slopes. In all cases the Structure Envelope must include a suitable area for a sewage disposal system.
e) Estate residential development adjacent to water course and physiographic formations that collect or discharge groundwater will incorporate any environmental protection measures necessary to ensure the maintenance of high water quality and sufficient quantity of water to the satisfaction of the Town, the Ministry of Natural Resources and the appropriate Conservation Authority.
f) Written approval of the Toronto and Region Conservation Authority
will be required to:
i) construct any building or structure or permit any building or structure to be constructed in or on a pond or swamp or in any area susceptible to flooding during a regional storm;
ii) place or dump fill or permit fill to be placed or dumped in a fill regulated area whether such fill is already located in or upon such area, or brought to or on such area from some other place or places; or,
iii) straighten, change, divert or interfere with the existing channel of a river, creek, stream or watercourse, where also requires the approval of the Ministry of Natural Resources, pursuant to Section 10 of *The Lakes and Rivers Improvement Act*.

5.3.3.5.2 Heritage
a) An estate residential plan of subdivision for this Area will be circulated to the Town of Caledon Heritage Committee and the Regional Archaeologist of the Ministry of Culture and Recreation for their comment prior to approval.

5.3.3.5.3 Servicing
a) Every lot in an estate residential plan of subdivision must be serviced with a private sewage disposal system for the treatment of domestic wastes. Each system must conform to the standards of and be approved by the Ministry of the Environment or its designated agents.
b) An applicant for an estate residential plan of subdivision will be required to undertake any studies deemed necessary to assess the probability of contamination of wells on nearby properties by septic system leachate or other source of contamination likely to be caused by the proposed development. Based on the results of such studies the applicant may be required to carry out any redesign of remedial works necessary to minimize the probability of contamination.
c) Schedule H, Palgrave Policy Area Water Servicing, establishes water servicing areas for the Palgrave Policy Area identified as Regional Water Service Area and Well Service Area. Schedule H also shows the extent of the existing Regional water supply system. A minor alteration to the boundaries of the Regional Water Service Area to include the Bolton Golf Course Estate Residential, if approved by the Region of Peel, will not require an Amendment to this Plan.

5.3.3.5.4 Transportation
a) Internal subdivision roads in the Estate Residential Area should follow the topography of the site, and the locations of access points onto Provincial Highways, Regional Arterial and Rural Collector Roads will be coordinated by the Town and other authorities having jurisdiction; with the number of such access points being limited.
b) Access to individual residential lots in the Bolton Golf Course Estate Residential area shall be from internal subdivision roads rather than from higher level roads.

5.3.3.6 Notwithstanding Section 5.3.3.5, the maximum number of lots for the Albion Fairways property (being parts of the East Halves of Lots 18, 19 and 20, Concession 6, formerly Albion Township) in the Bolton Golf Course Estate Residential area shall not exceed 75 estate residential lots with a minimum net lot area of 0.6 hectares (1.5 acres). The net lot density shall not exceed 40 units per 100 acre Township Half Lot.

5.3.3.7 Application requirements for approval of an estate residential plan of subdivision for the Bolton Golf Course Estate Residential area, shall be the same as those required for estate residential subdivisions in the Palgrave Estate Residential Community. These requirements are listed under Section 7.1.18 of this Plan.

5.3.3.8 The Bolton Golf Course Estate Residential area shall also be subject to the policies of Section 7.10 (Oak Ridges Moraine Conservation Plan). Notwithstanding any other policy of Section 5.3.3, where the policies of Section 7.10 are more restrictive than those contained in Section 5.3.3, the more restrictive policies shall apply.

5.7 ENVIRONMENTAL POLICY AREA (EPA)

5.7.3 Policies

5.3.7.1 General

5.7.3.1.1 New development is prohibited within areas designated EPA on the Land Use Schedules to this Plan, with the exception of the permitted uses as specified in policy 5.7.3.1.2.

5.7.3.1.2 The uses permitted in EPA shall be limited to: legally existing residential and agricultural uses; a building permit on a vacant lot of record; portion of new lots; activities permitted through approved Forest Management and Environmental Management Plans; limited extractive industrial; non-intensive recreation; and, essential infrastructure. Detailed policies with respect to each of their permitted uses are provided in Sections 5.7.3.1 to 5.7.3.7 inclusive.

All lands designated EPA in this Plan shall be zoned in a separate classification in the implementing Zoning By-law which conforms to the provisions of this designation.

5.7.3.1.6 Lands designated EPA are not to be damaged or destroyed, unless as a result of an approved permitted use pursuant to Section 5.7.3.1.2 above. In the event that an EPA is damaged or destroyed without required approvals, there shall be no adjustment to the boundary or redesignation of these areas, and the Town and Region of Peel will require replacement or rehabilitation of the affected ecosystem features, functions and/or landforms.5.7.3.1.8 In order to facilitate environmental conservation and management, the Town generally discourages fragmentation of ownership of EPA lands and shall strive, through the planning process, to ensure that EPA lands are retained in larger privately or publicly owned blocks.

5.7.3.1.9 It is not intended that all EPA lands shall be purchased or otherwise brought into public ownership, nor that all EPA lands shall be open and accessible to public use. However, it may be determined that certain EPA lands should be in public ownership or accessible to the public. In such cases, the Town, or other relevant agencies, shall explore option for bringing these lands into public ownership or providing appropriate public access to these lands.

5.7.3.4 Non-Intensive Recreation

5.7.3.4.2 It is recognized that certain public agencies, such as the Town and the Conservation Authorities, are major providers of recreational opportunities. Where such opportunities are provided on lands which are designated EPA, they must be planned and managed in a manner which adheres to the Town's ecosystem principle, goal, objectives, policies and performance measures.

5.8 OPEN SPACE AND RECREATION

5.8.2 Objectives

5.8.2.1 To develop and maintain a system of parks and publicly accessible open spaces which provide for a diversity of recreational and leisure opportunities for a range of age and interest groups.

5.8.2.3 To identify and develop a comprehensive recreational system in the Town through the preparation and implementation of a Caledon Greenways Strategy.

5.8.2.4 To participate in, and support, where appropriate, the initiatives of other agencies and interest groups in establishing or expanding interconnected linear and other recreational open space systems within Caledon, and at a broader scale.

5.8.3 General Policies

5.8.3.1 The Town shall ensure that all natural environment based recreational activities are consistent with the environmental policies and performance measures of this Plan.
5.8.3.3 It is the policy of the Town to encourage the development of a comprehensive open space recreational system within the municipality, which links watersheds, regional landforms and connects to external trail and open space networks. This system may include components of the Ecosystem Framework where appropriate, and shall be encouraged to integrate these trail networks and open space systems where feasible.
5.8.3.7 The Town shall, in consultation with other government, and non-government agencies, explore options for initiating a Caledon Greenways Strategy. This Strategy could, among other things, identify opportunities to establish a comprehensive, Town-wide recreational trails system and could include other important considerations such as the potential economic benefits of enhanced tourism, and the potential impacts of increased recreational uses on the natural environment.

5.9 TRANSPORTATION
5.9.11 Bicycle Routes and Pedestrian Paths
5.9.11.1 The Town will encourage the development of a system of bicycle routes and pedestrian paths to link major public open space, activity centres, and the transportation network.
Consideration will be given to bikeway/walkway paths as part of the transportation system in the implementation of the Parks and Recreation Master Plan.

5.10 SETTLEMENTS

7.0 SECONDARY PLANS & OTHER DETAILED AREA POLICIES
Specific secondary plans and secondary policies for certain geographically contained neighborhoods or communities are located in Chapter 7. These policies should be read in conjunction with earlier Chapters of the Plan.

7.1 PALGRAVE ESTATE RESIDENTIAL COMMUNITY
As described in Section 5.3 a Palgrave Estate Residential Community has been established as outlined on Schedules A and G. The policies of Section 7.1 provide for the orderly development of an estate residential community within a comprehensive environmental planning framework.
All plans of subdivision that have been formally received for circulation by the Region of Peel and have progressed on the required environmental studies to the satisfaction of the Town prior to Councils date of adoption of Section 7.1 of the Official Plan will be processed in accordance with policies contained in Official Plan Amendment #5, adopted by Council May 1980.
In the case of conflict between the detailed policies contained in Section 7.1 of this Plan and the policies contained in Sections 3.1 and 5.7, the policies of Section 7.1 shall prevail.
The Palgrave Estate Residential Community is wholly located within the ORMCPA. In addition to conforming to the provisions of Section 7.1, all development must conform to the applicable provisions of Section 7.10. In the case of conflict between the provisions of Section 7.1 and Section 7.10,

the more restrictive policies shall prevail.

7.2 Bolton South Hill Residential\
7.2.7 Environmental Policy Area

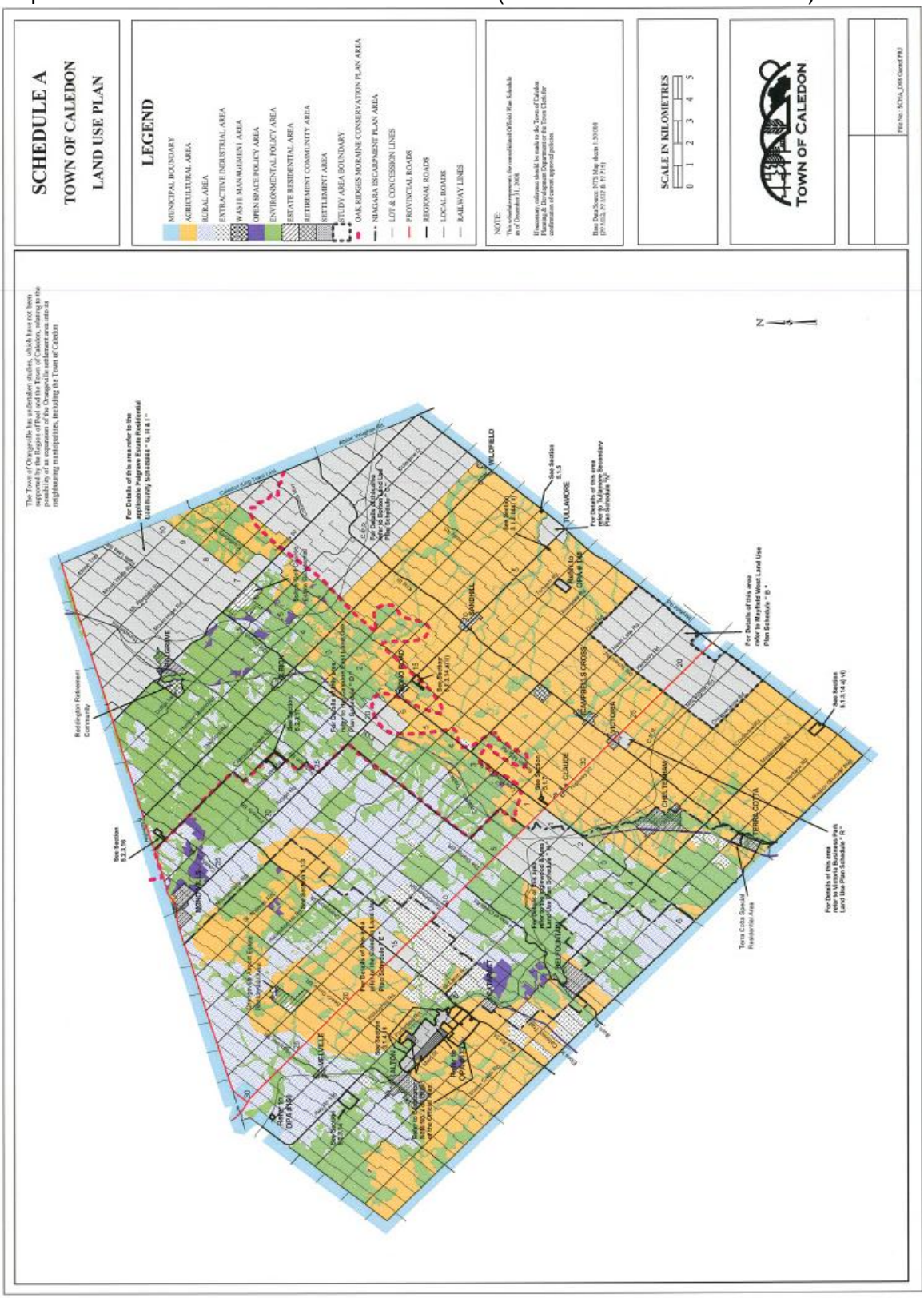
7.2.7.1 The policies of Section 3.1.5 Environmental Performance Measures and 5.7 Environmental Policy Area shall be complied with.

7.2.7.2 Policies in The Toronto Region Conservation Authority report, "Floodplain Planning Policy Review - M.T.R.C.A. Flood Susceptible Sites" shall be considered when dealing with the existing flood vulnerable development in the vicinity of Old King Road and Sneath Road.

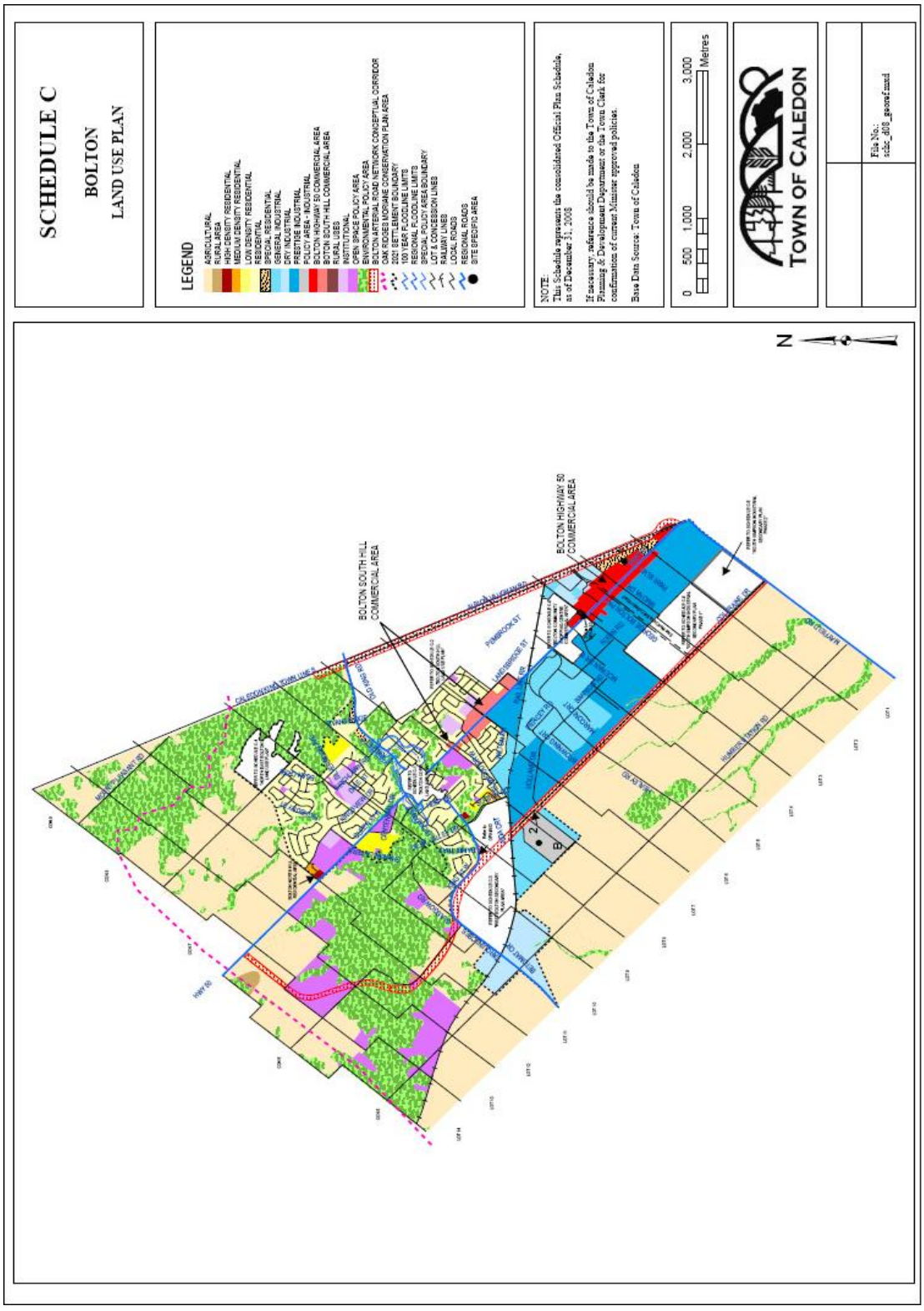
7.2.7.3 A 30 metre vegetation buffer strip on the Humber River and a 15 metre natural vegetation buffer strip on the tributaries of the Humber River shall be provided to the approval of the Ministry of Natural Resources. Variation to those setbacks shall be permitted without an amendment to this plan subject to the approval of the Ministry of Natural Resources.

7.2.7.4 Existing residential development is recognized and may be zoned for its existing use.

Map C1 Town of Caledon Land Use Plan (Schedule A from Official Plan)

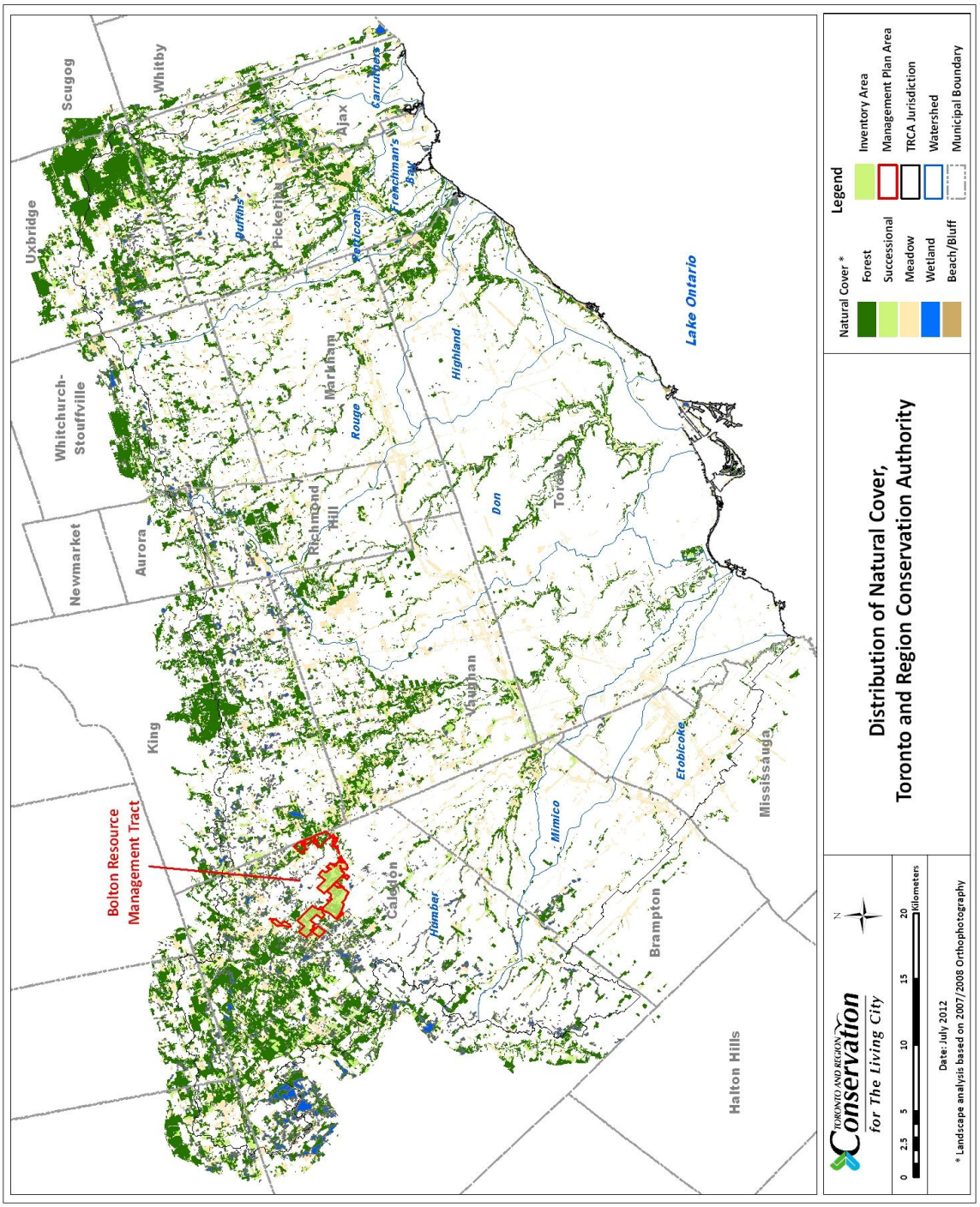


Map C2 Bolton Land Use Plan (Schedule C from Official Plan)

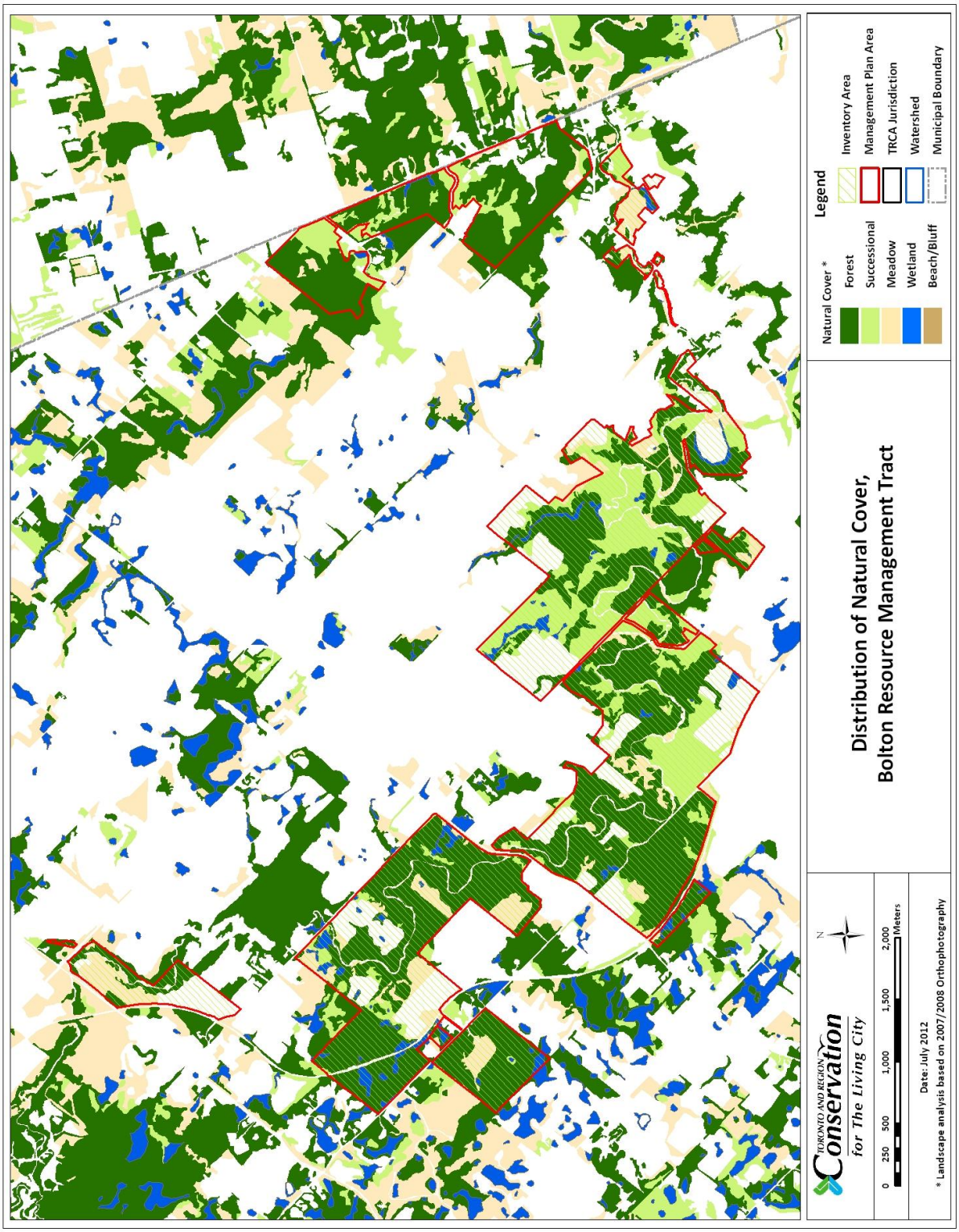


APPENDIX D: NATURAL HERITAGE MAPS

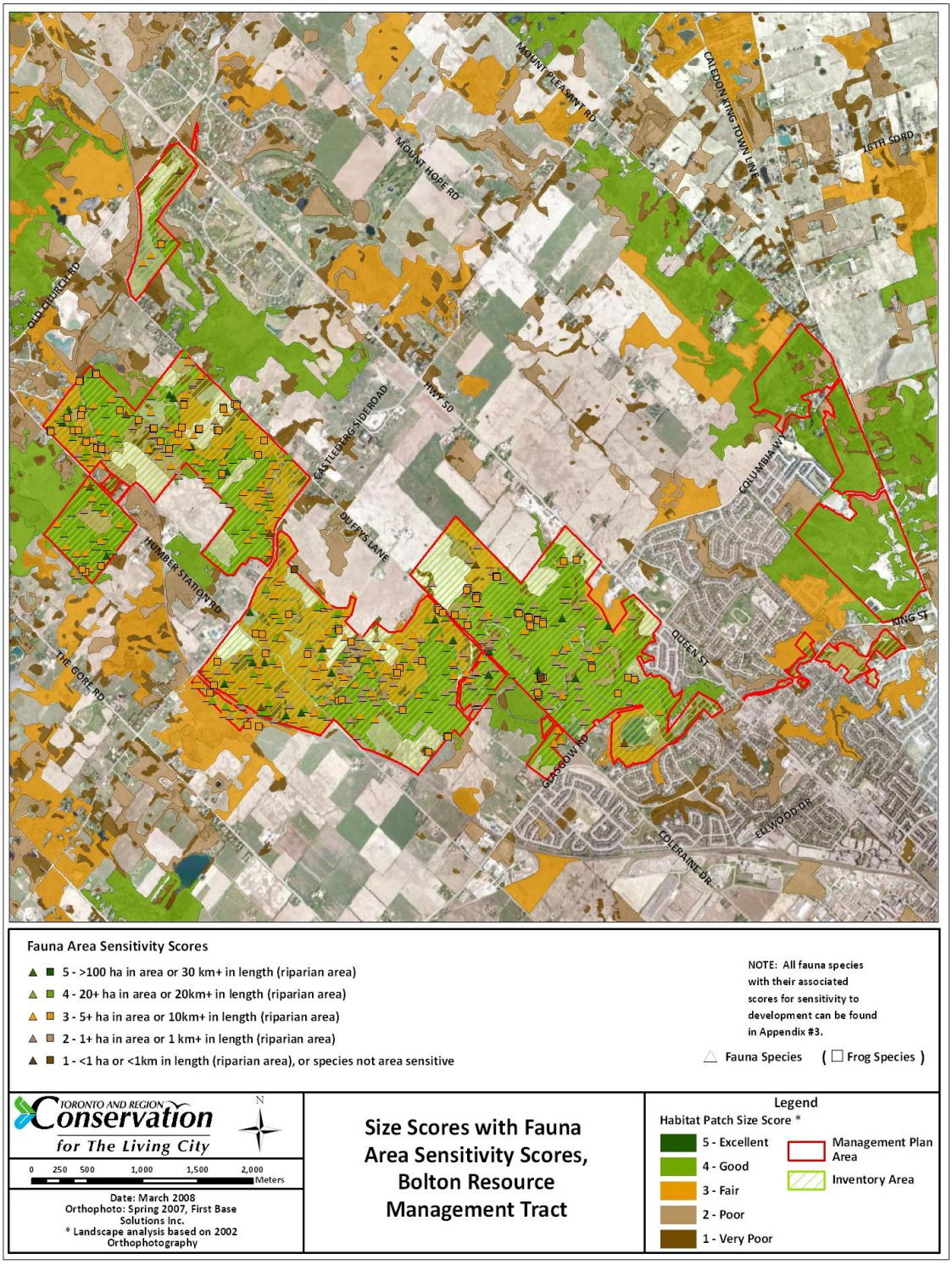
Map D1: TRCA - Distribution of Natural Cover



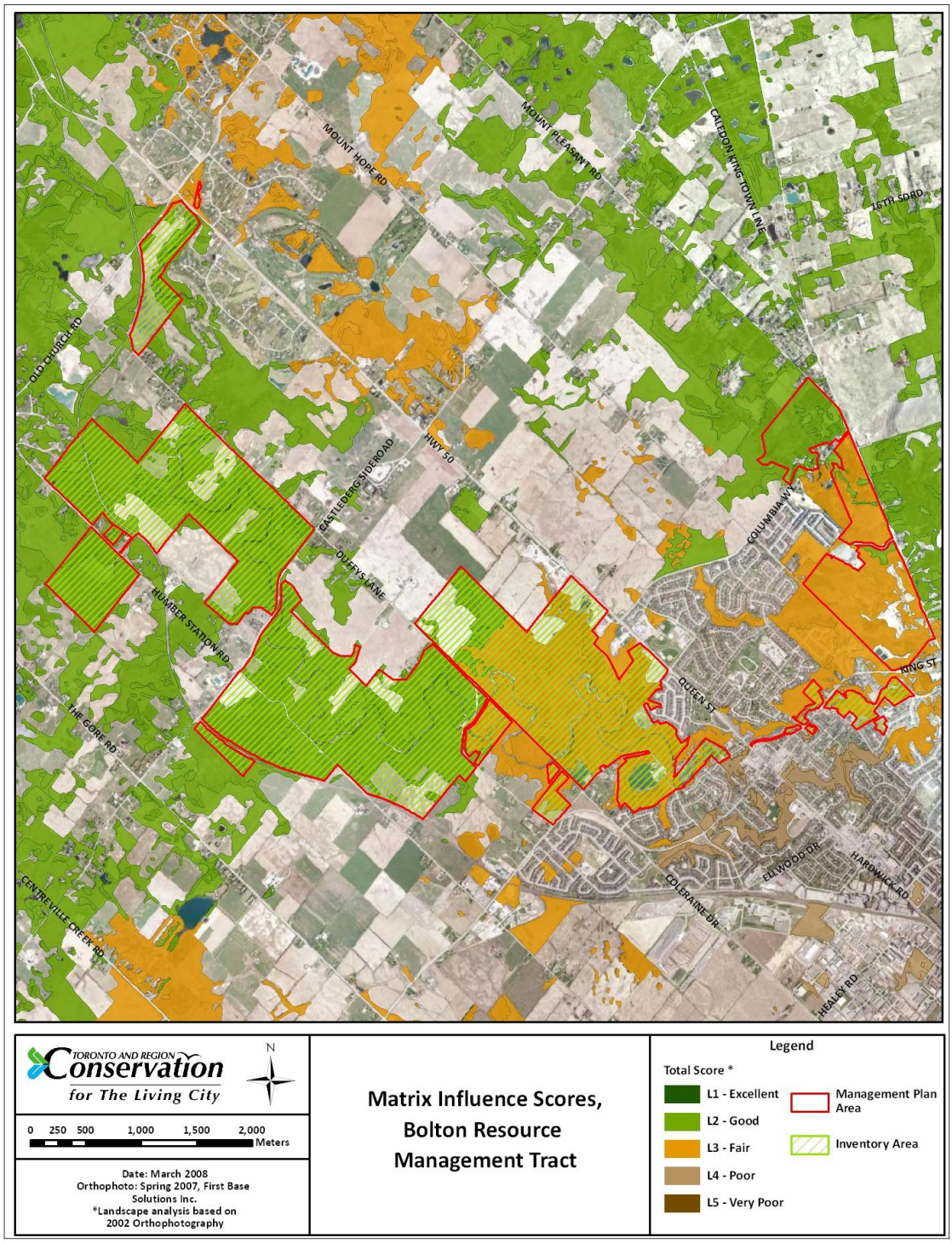
Map D2: BRMT - Distribution of Natural Cover



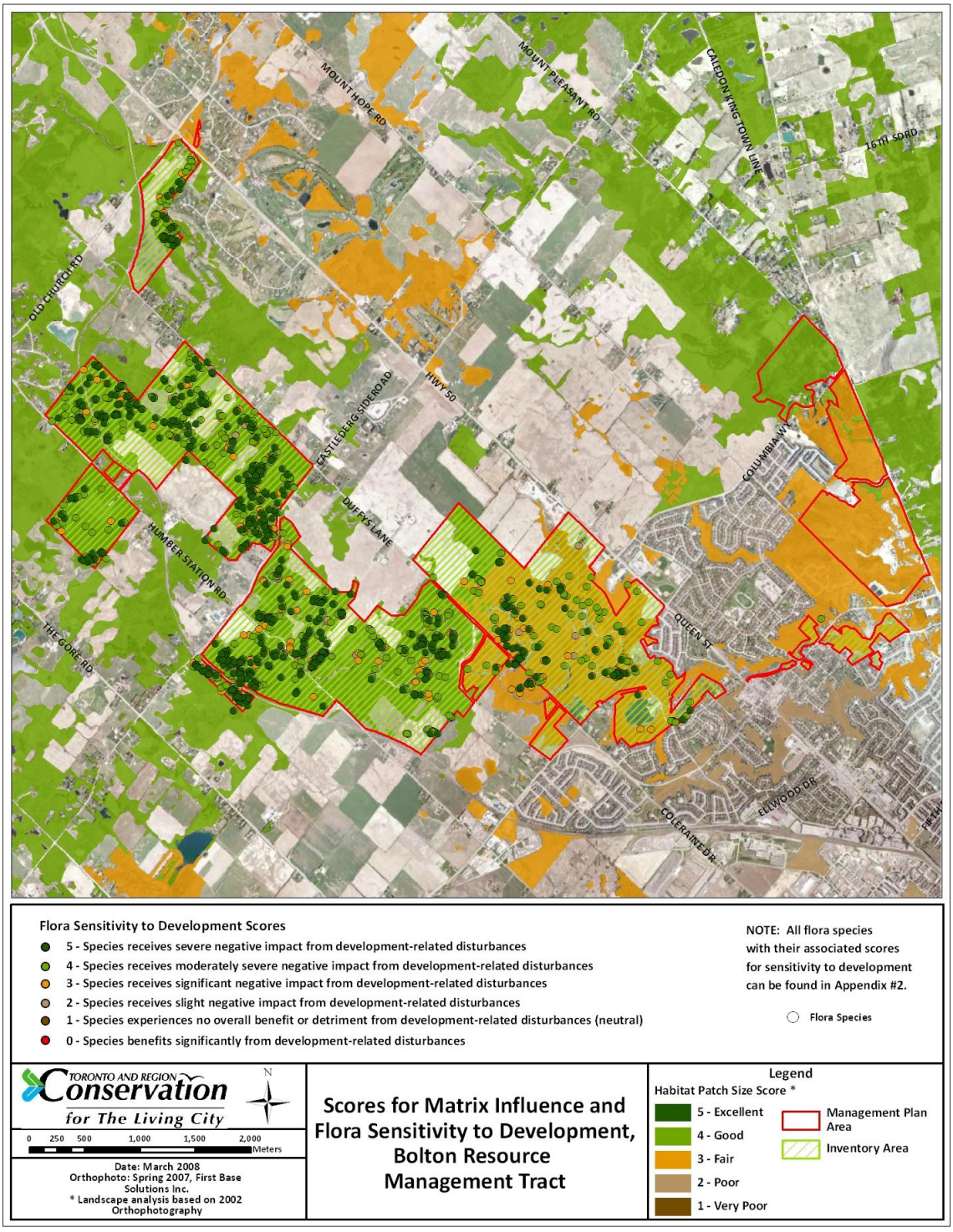
Map D3: BRMT - Habitat Patch Size Scores with Fauna Area Sensitivity Scores



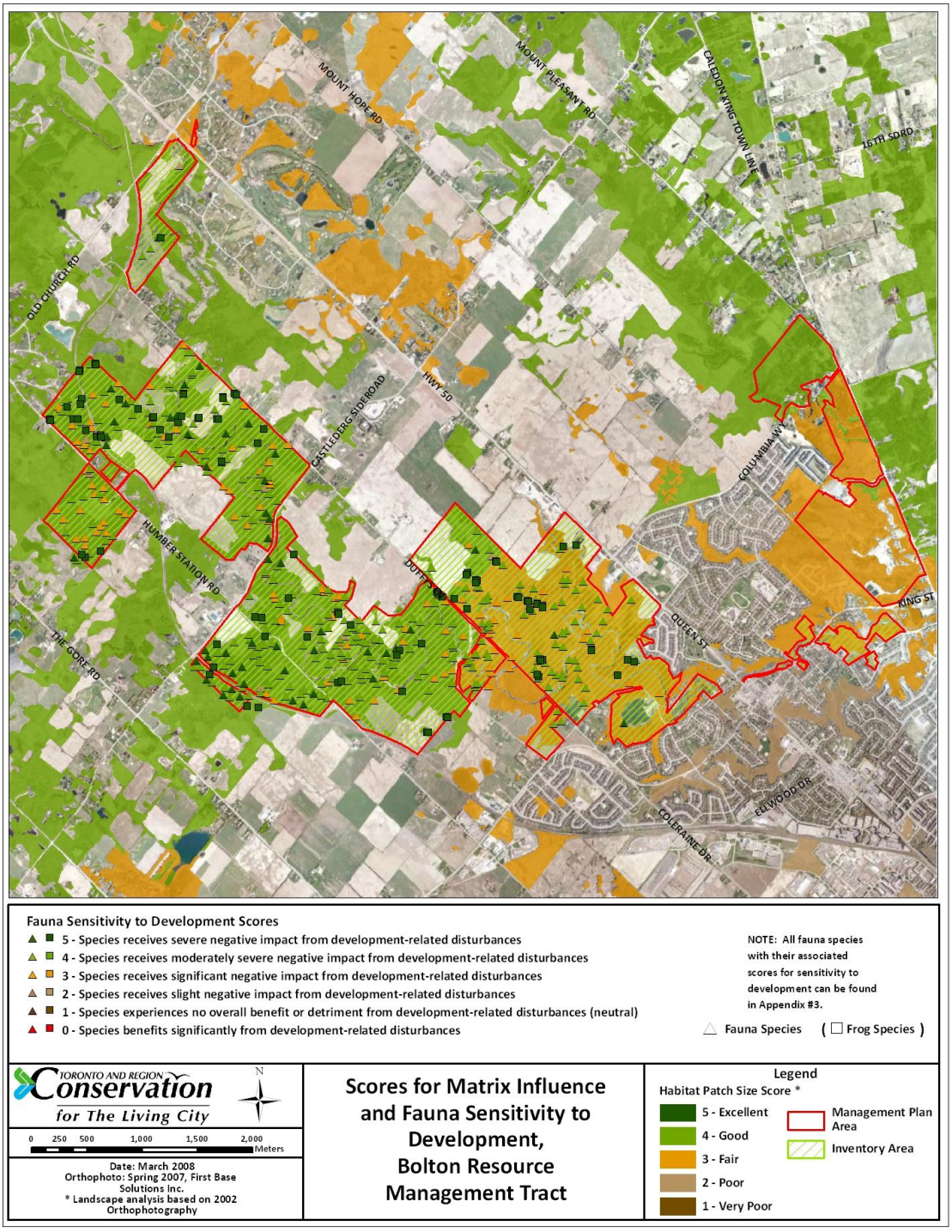
Map D4: BRMT - Matrix Influence Scores



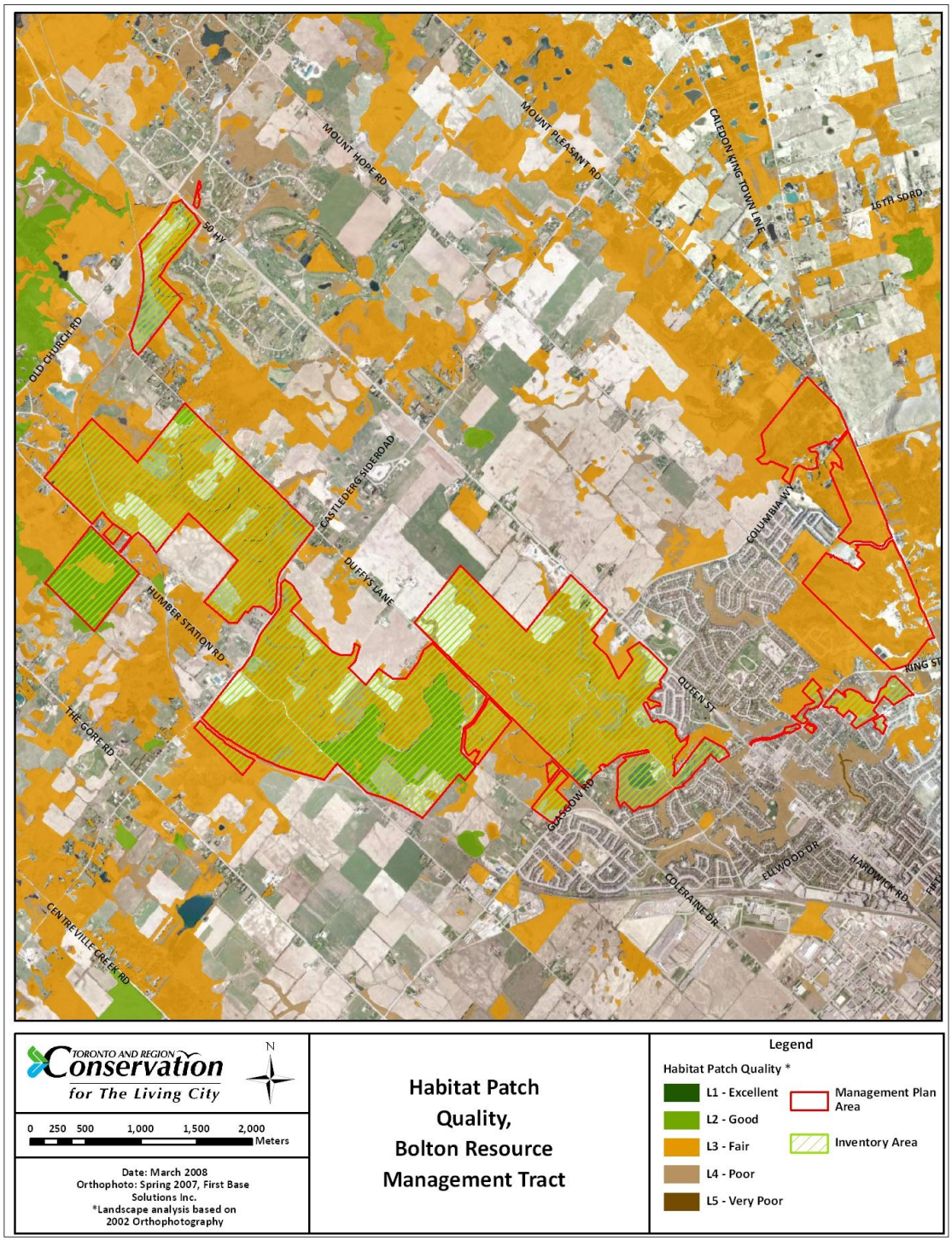
Map D5: BRMT - Flora Sensitivity to Development Scores



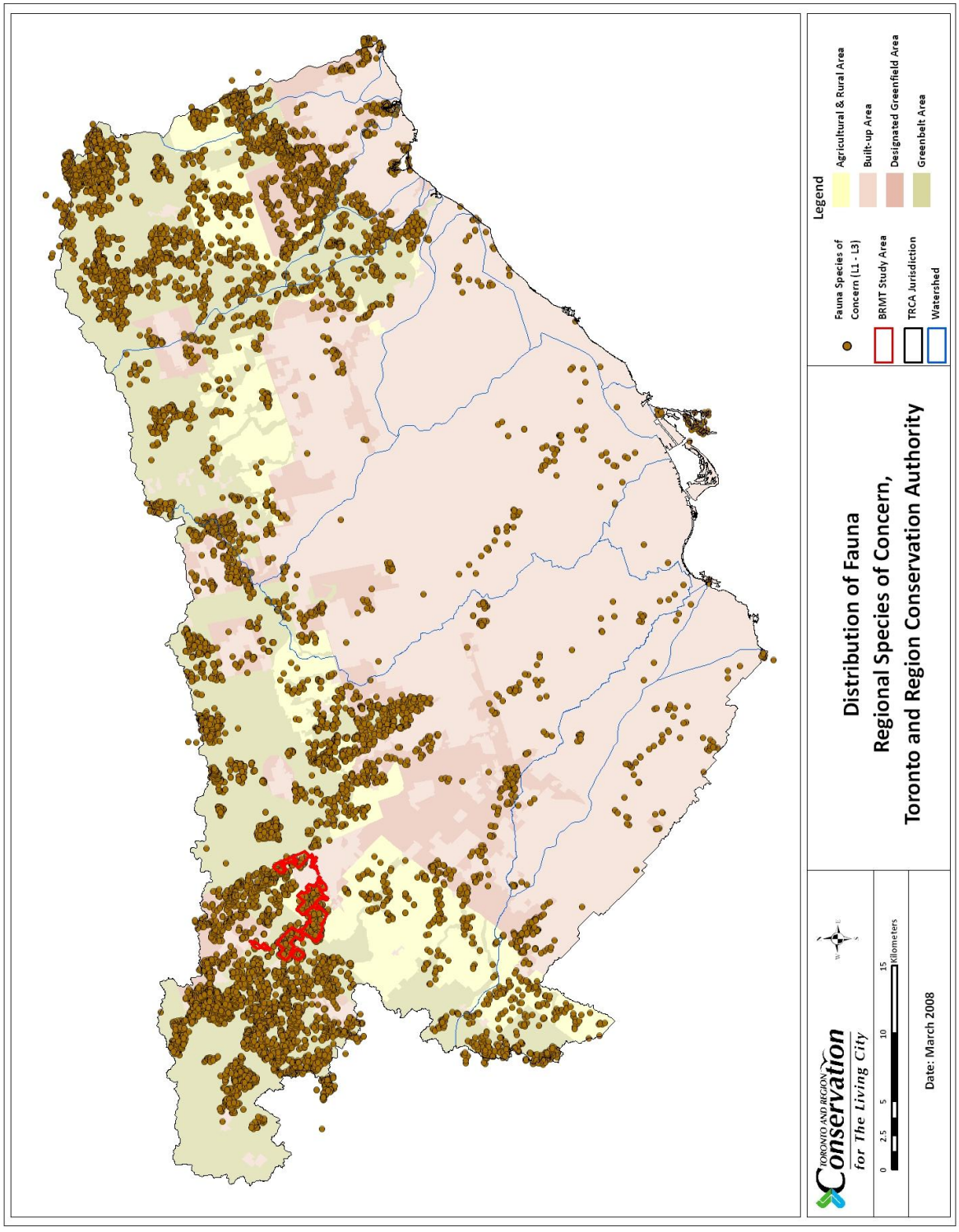
Map D6: BRMT - Fauna Sensitivity to Development Scores



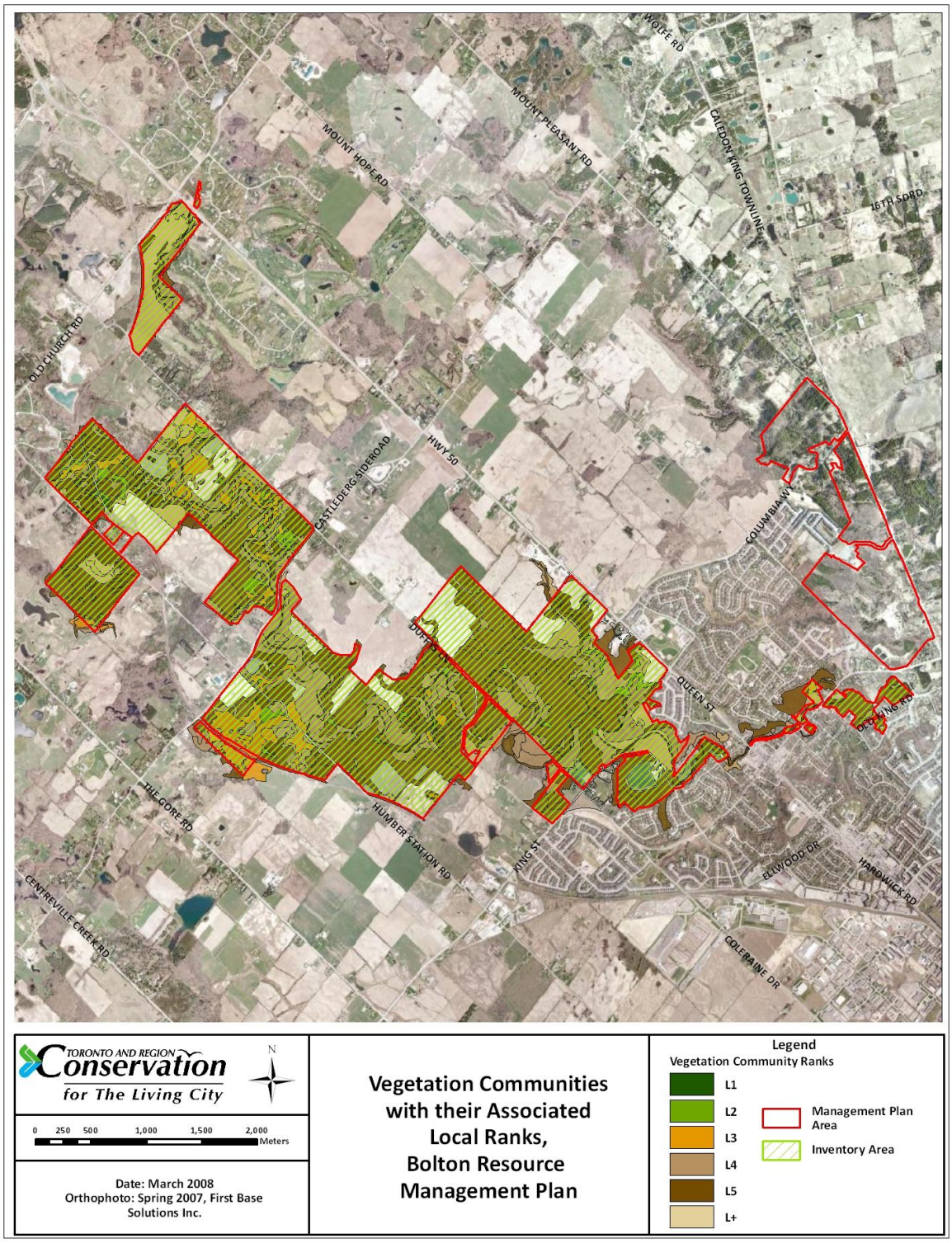
Map D7: BRMT -Habitat Patch Quality



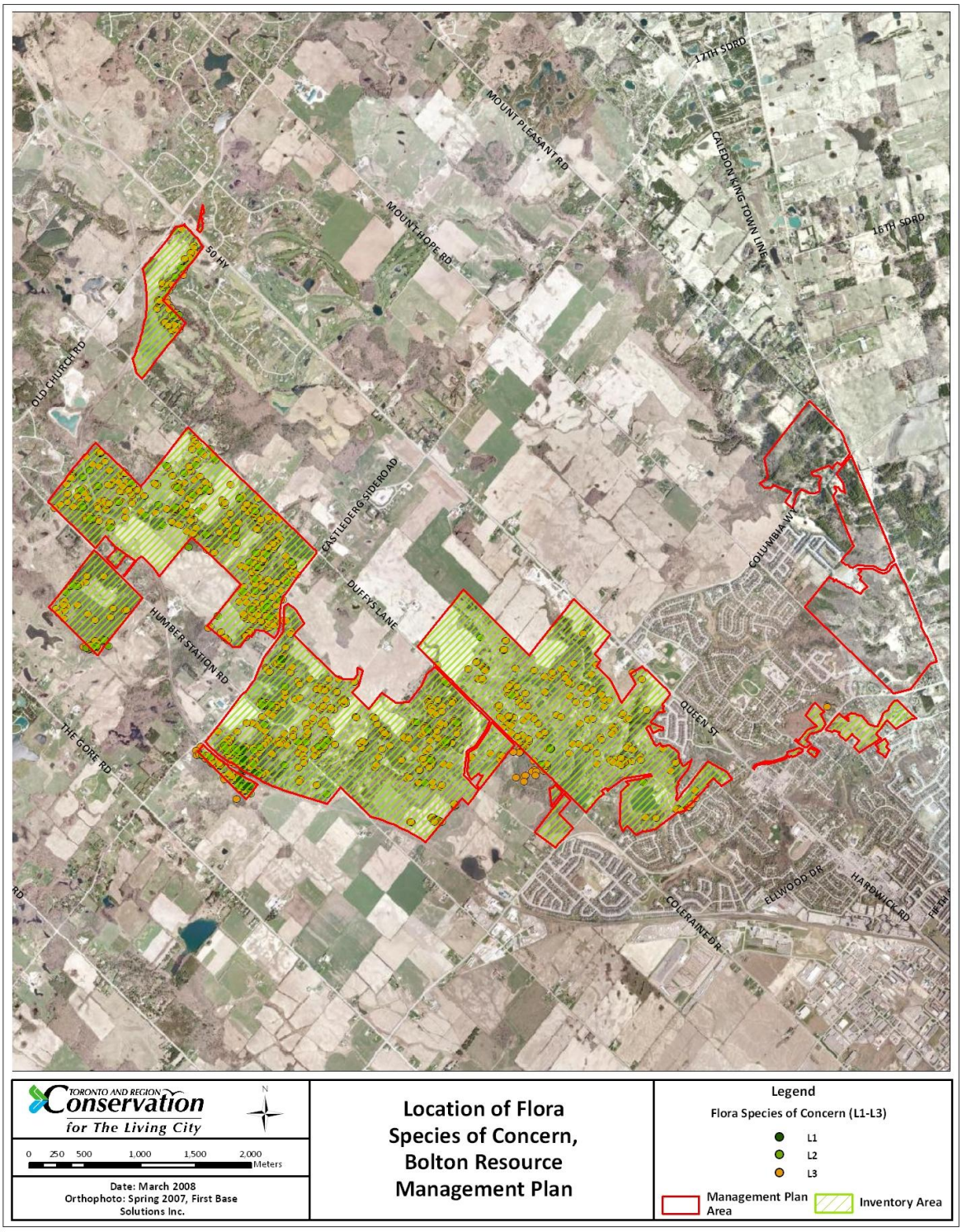
Map D8: BRMT - Distribution of Fauna Regional Species of Concern - TRCA



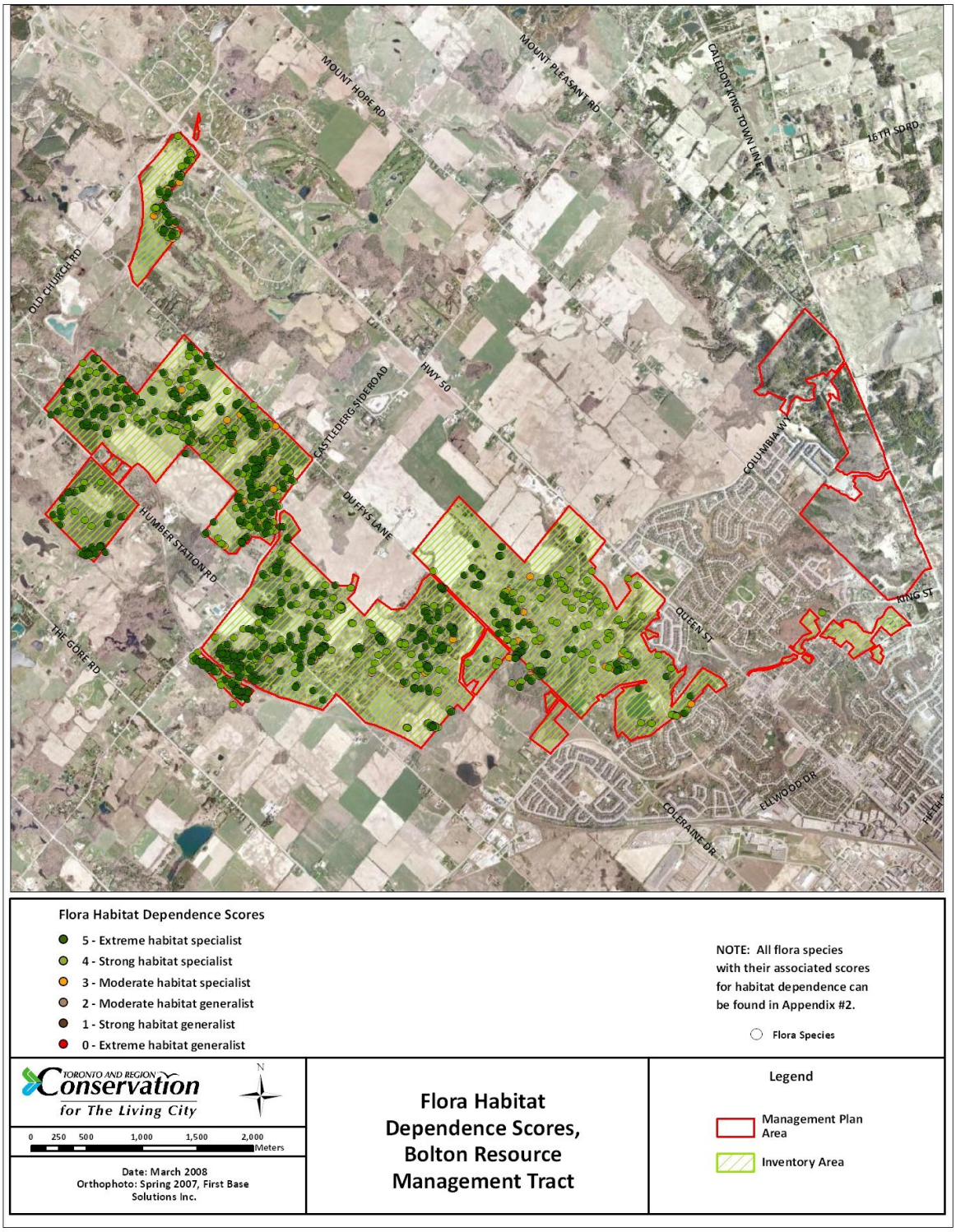
Map D9: BRMT - Vegetation Communities with Associated Local Ranks



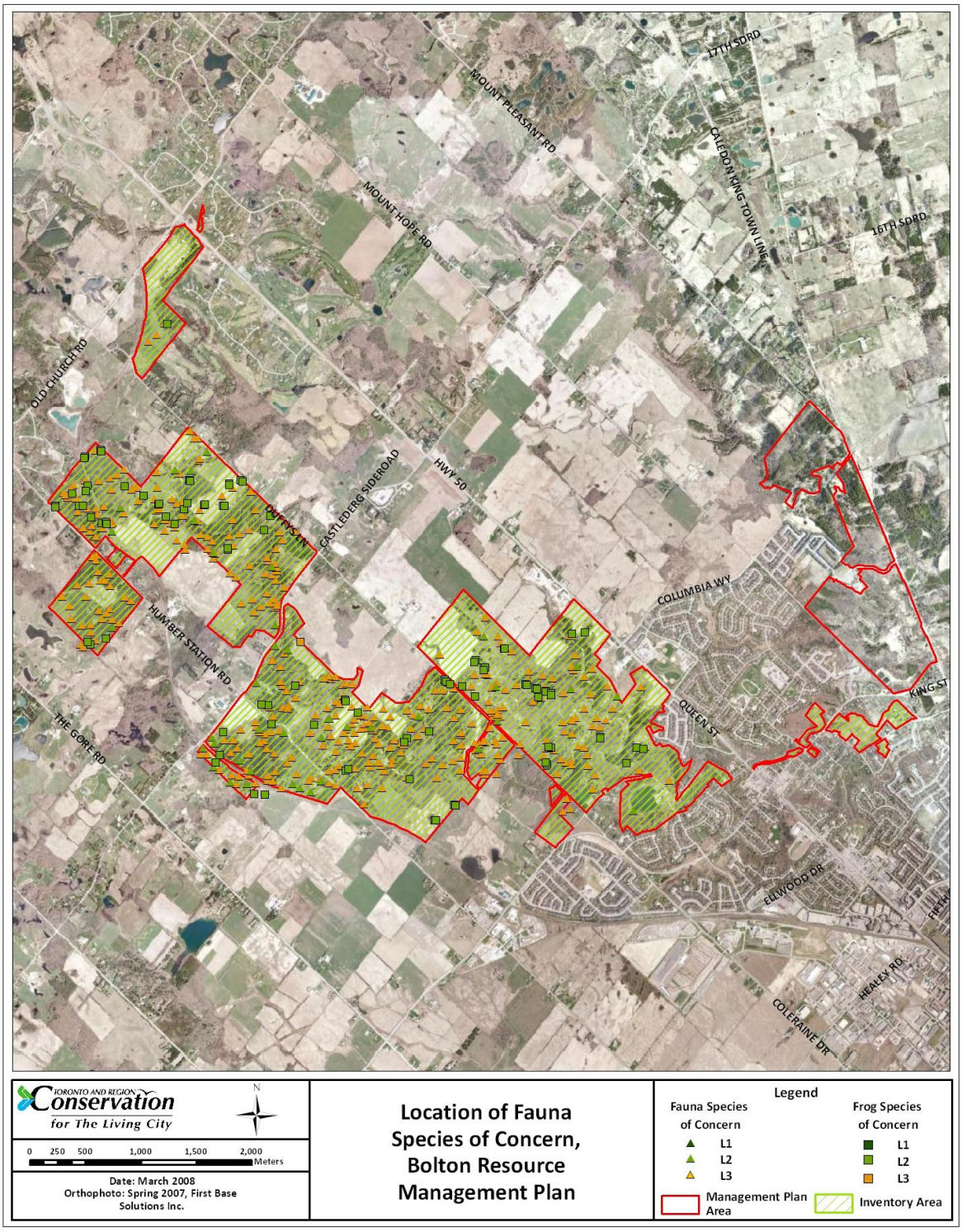
Map D10: BRMT - Location of Flora Species of Concern



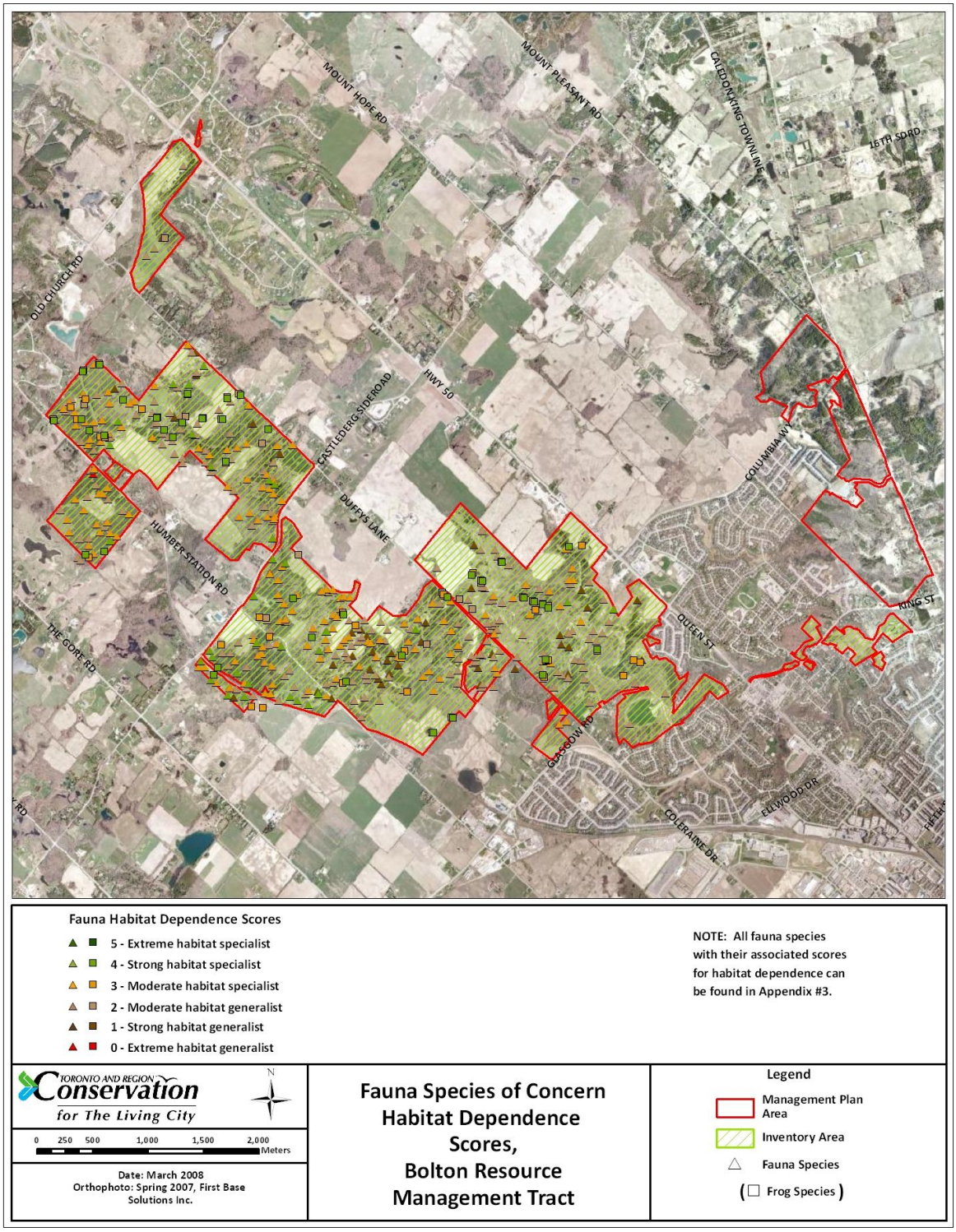
Map D11: BRMT - Flora Habitat Dependence Scores



Map D12: BRMT - Locations of Fauna Species of Concern



Map D13: BRMT - Fauna Species of Concern Habitat Dependence Scores



APPENDIX E: FAUNA SPECIES LIST

COMMON NAME	CODE	Scientific Name	number of	LO	PTn	PTt	HD	AS	MR	STD	+	TS	L-rank	A	B	C	D
Survey Species: **species for which the TRCA protocol effectively surveys.**																	
Birds																	
Canada warbler	CAWA	*Wilsonia canadensis*	*2*	3	3	2	3	3	2	4	0	20	L2	*1*	1		n/s
golden-winged warbler	GWWA	*Vermivora chrysoptera*	*2*	4	3	3	2	3	2	4	0	21	L2			2	n/s
red-shouldered hawk	RSHA	*Buteo lineatus*	*1*	3	2	3	3	5	1	3	1	21	L2			1	n/s
veery	VEER	*Catharus fuscescens*	*31*	2	3	3	4	3	2	5	1	23	L2	*10*	21		n/s
wild turkey	WITU	*Meleagris gallopavo*	*7*	3	1	0	4	5	2	4	1	20	L2	*2*	3	2	n/s
American redstart	AMRE	*Setophaga ruticilla*	*21*	2	3	2	2	2	2	3	0	16	L3	*2*	9	10	n/s
American woodcock	AMWO	*Scolopax minor*	*14*	0	2	3	2	3	2	4	0	16	L3	*3*	5	6	n/s
black-and-white warbler	BAWW	*Mniotilta varia*	*18*	2	1	2	2	5	2	4	1	19	L3	*6*	8	4	n/s
black-billed cuckoo	BBCU	*Coccyzus erythropthalmus*	*5*	1	3	2	2	3	2	3	0	16	L3	*1*	2	2	n/s
Blackburnian warbler	BLBW	*Dendroica fusca*	*1*	3	1	2	4	3	2	3	0	18	L3	*1*			n/s
black-throated green warbler	BTNW	*Dendroica virens*	*19*	2	2	2	3	3	2	4	0	18	L3	*8*	11		n/s

blue-winged warbler	BWWA	*Vermivora pinus*	*9*	3	2	1	2	3	2	4	0	17	L3		3	6	n/s
bobolink	BOBO	*Dolichonyx oryzivorus*	*7*	0	3	2	2	3	1	4	0	15	L3	*5*		2	n/s
brown creeper	BRCR	*Certhia americana*	*11*	1	2	2	2	3	3	3	0	16	L3	*10*	1		n/s
brown thrasher	BRTH	*Toxostoma rufum*	*11*	1	4	3	1	2	2	4	0	17	L3	*1*	4	6	n/s
clay-colored sparrow	CCSP	*Spizella pallida*	*1*	4	3	2	2	2	1	2	0	16	L3			1	n/s
chestnut-sided warbler	CSWA	*Dendroica pensylvanica*	*1*	3	2	2	2	3	2	4	0	18	L3		1		n/s
Cooper's hawk	COHA	*Accipiter cooperii*	*3*	2	2	2	3	4	1	2	0	16	L3	*2*	1		n/s
eastern towhee	EATO	*Pipilo erythropthalmus*	*6*	2	3	2	1	2	2	4	0	15	L3		4	2	n/s
field sparrow	FISP	*Spizella pusilla*	*28*	1	3	3	2	2	1	4	0	16	L3	*5*	8	15	n/s
green heron	GRHE	*Butorides virescens*	*1*	2	2	2	2	2	2	3	0	15	L3		1		n/s
least flycatcher	LEFL	*Empidonax minimus*	*1*	2	3	3	1	2	2	3	0	16	L3		1		n/s
Nashville warbler	NAWA	*Vermivora ruficapilla*	*32*	3	1	2	2	2	2	4	0	16	L3	*7*	12	13	n/s
northern harrier	NOHA	*Circus cyaneus*	*1*	3	2	2	2	4	1	3	0	17	L3			1	n/s
northern waterthrush	NOWA	*Seiurus noveboracensis*	*9*	1	1	2	2	3	2	5	1	17	L3	*5*	4		n/s
ovenbird	OVEN	*Seiurus aurocapillus*	*46*	0	2	3	3	4	2	4	0	18	L3	*20*	23	3	n/s
pileated woodpecker	PIWO	*Dryocopus pileatus*	*5*	1	2	2	3	4	2	3	0	17	L3	*2*		3	n/s
pine warbler	PIWA	*Dendroica pinus*	*35*	1	1	2	3	4	2	3	0	16	L3	*18*	14	3	n/s
purple finch	PUFI	*Carpodacus purpureus*	*2*	4	4	3	0	1	1	2	0	15	L3	*1*	1		n/s
ruffed grouse	RUGR	*Bonasa umbellus*	*9*	1	3	2	1	3	2	5	1	18	L3	*5*	3	1	n/s

scarlet tanager	SCTA	*Piranga olivacea*	*7*	1	2	3	3	4	2	3	0	18	L3	*5*	1	1	n/s
sharp-shinned hawk	SSHA	*Accipiter striatus*	*3*	1	2	2	3	4	1	3	0	16	L3		3		n/s
vesper sparrow	VESP	*Pooecetes gramineus*	*7*	3	3	3	2	2	1	4	0	18	L3	*3*	2	2	n/s
Virginia rail	VIRA	*Rallus limicola*	*2*	1	2	2	2	2	3	4	0	16	L3	*2*			n/s
white-throated sparrow	WTSP	*Zonotrichia albicollis*	*8*	2	3	2	1	2	2	4	0	16	L3	*1*	6	1	n/s
winter wren	WIWR	*Troglodytes*	*5*	2	2	3	2	3	3	3	0	18	L3	*4*	1		n/s
wood duck	WODU	*Aix sponsa*	*3*	2	1	1	3	3	1	4	0	15	L3	*1*		2	n/s
wood thrush	WOTH	*Hylocichla mustelina*	*29*	0	3	3	3	3	2	4	0	18	L3	*3*	19	7	n/s
yellow-billed cuckoo	YBCU	*Coccyzus americanus*	*6*	3	3	2	2	2	2	3	0	17	L3	*3*	2	1	n/s
yellow-rumped warbler	YRWA	*Dendroica coronata*	*9*	3	1	2	2	3	2	3	0	16	L3	*7*	2		n/s
yellow-throated vireo	YTVI	*Vireo flavifrons*	*1*	4	2	2	1	3	2	3	0	17	L3		1		n/s
alder flycatcher	ALFL	*Empidonax alnorum*	*not mapped*	2	1	2	2	1	2	4	0	14	L4	X	X	X	n/s
bank swallow	BANS	*Riparia riparia*	*not mapped*	3	2	2	2	1	1	2	0	13	L4		X		n/s
belted kingfisher	BEKI	*Ceryle alcyon*	*not mapped*	0	3	2	2	2	2	2	0	13	L4	X		X	n/s
blue-grey	BGGN	*Polioptila*	*1*	3	1	0	1	3	2	2	0	12	L4			1	n/s
common yellowthroat	COYE	*Geothlypis trichas*	*not mapped*	0	2	2	2	1	2	4	0	13	L4	X	X	X	n/s
eastern bluebird	EABL	*Sialia sialis*	*not mapped*	4	2	1	2	2	1	2	0	14	L4	X			n/s
eastern meadowlark	EAME	*Sturnella magna*	*not mapped*	0	3	2	2	3	1	3	0	14	L4	X		X	n/s
eastern phoebe	EAPH	*Sayornis phoebe*	*not mapped*	1	2	2	2	1	2	1	0	11	L4	X	X	X	n/s
eastern wood-pewee	EAWP	*Contopus virens*	*not mapped*	0	4	2	1	2	2	2	0	13	L4	X	X	X	n/s

gadwall	GADW	*Anas strepera*	*not mapped*	5	1	1	1	1	1	4	0	14	L4			X	n/s
great horned owl	GHOW	*Bubo virginianus*	*not mapped*	2	2	2	1	2	2	1	0	12	L4		X	X	n/s
great crested flycatcher	GCFL	*Myiarcyhus crinitus*	*not mapped*	0	2	3	1	3	2	2	0	13	L4	X	X	X	n/s
gray catbird	GRCA	*Dumetella carolinensis*	*not mapped*	0	3	1	1	1	2	3	0	11	L4	X	X	X	n/s
hairy woodpecker	HAWO	*Picoides villosus*	*not mapped*	0	2	1	2	3	2	2	0	12	L4	X	X	X	n/s
indigo bunting	INBU	*Passerina cyanea*	*not mapped*	0	2	2	2	1	1	3	0	12	L4	X	X	X	n/s
mourning warbler	MOWA	*Oporornis philadelphia*	*44*	0	2	2	2	2	2	4	0	14	L4	10	20	14	n/s
northern flicker	NOFL	*Colaptes auratus*	*not mapped*	0	3	2	0	1	2	3	0	11	L4	X	X	X	n/s
northern rough-winged swallow	NRWS	*Stelgidopteryx serripennis*	*not mapped*	3	2	3	2	1	1	1	0	13	L4	X		X	n/s
red-breasted nuthatch	RBNU	*Sitta canadensis*	*not mapped*	1	1	1	3	3	2	2	0	13	L4	X	X	X	n/s
red-eyed vireo	REVI	*Vireo olivaceus*	*not mapped*	0	2	2	1	2	2	3	0	12	L4	X	X	X	n/s
rose-breasted grosbeak	RBGR	*Pheucticus ludovicianus*	*not mapped*	0	2	2	2	3	2	3	0	14	L4	X	X	X	n/s
ruby-throated hummingbird	RTHU	*Archilocus colubris*	*not mapped*	3	2	2	1	1	1	2	0	12	L4		X		n/s
savannah sparrow	SAVS	*Passerculus sandwichensis*	*not mapped*	0	3	1	2	1	1	3	0	11	L4	X	X	X	n/s
spotted sandpiper	SPSA	*Actitis macularius*	*not mapped*	1	2	3	2	1	1	4	0	14	L4			X	n/s
swamp sparrow	SWSP	*Melospiza georgiana*	*not mapped*	0	1	2	2	1	2	5	1	14	L4	X	X		n/s
tree swallow	TRES	*Tachycineta bicolor*	*not mapped*	0	2	2	2	1	1	3	0	11	L4	X		X	n/s
turkey vulture	TUVU	*Cathartes aura*	*1*	2	1	1	2	1	1	2	0	10	L4	1			n/s

white-breasted nuthatch	WBNU	*Sitta carolinensis*	*not mapped*	1	2	1	3	3	2	2	0	14	L4	X	X	X	n/s
American crow	AMCR	*Corvus brachyrhynchos*	*not mapped*	0	2	1	0	1	1	1	0	6	L5	X	X	X	n/s
American goldfinch	AMGO	*Carduelis tristis*	*not mapped*	0	2	2	0	1	1	1	0	7	L5	X	X	X	n/s
American robin	AMRO	*Turdus migratorius*	*not mapped*	0	1	2	0	1	1	1	0	6	L5	X	X	X	n/s
Baltimore oriole	BAOR	*Icterus galbula*	*not mapped*	0	2	2	0	1	1	1	0	7	L5	X	X	X	n/s
barn swallow	BARS	*Hirundo rustica*	*not mapped*	0	2	2	2	1	1	1	0	9	L5	X	X	X	n/s
black-capped chickadee	BCCH	*Poecile atricapillus*	*not mapped*	0	1	1	1	1	2	0	0	6	L5	X	X	X	n/s
blue jay	BLJA	*Cyanocitta cristata*	*not mapped*	0	4	2	0	1	1	0	0	8	L5	X	X	X	n/s
brown-headed cowbird	BHCO	*Molothrus ater*	*not mapped*	0	2	2	0	1	1	1	0	7	L5	X	X	X	n/s
Canada goose	CANG	*Branta canadensis*	*not mapped*	0	1	0	1	1	1	0	0	4	L5			X	n/s
cedar waxwing	CEDW	*Bombycilla cedrorum*	*not mapped*	0	1	2	0	1	1	2	0	7	L5	X	X	X	n/s
chimney swift	CHSW	*Chaetura pelagica*	*not mapped*	0	3	3	1	1	1	0	0	9	L5		X		n/s
chipping sparrow	CHSP	*Spizella passerina*	*not mapped*	0	2	2	0	1	1	1	0	7	L5	X	X	X	n/s
common grackle	COGR	*Quiscalus quiscula*	*not mapped*	0	3	2	0	1	1	1	0	8	L5	X	X	X	n/s
downy woodpecker	DOWO	*Picoides pubescens*	*not mapped*	0	2	1	1	1	2	1	0	8	L5	X	X	X	n/s
eastern kingbird	EAKI	*Tyrannus tyrannus*	*not mapped*	0	2	2	1	2	1	1	0	9	L5	X	X	X	n/s
house finch	HOFI	*Carpodacus mexicanus*	*not mapped*	0	2	0	0	1	1	0	0	4	L5	X			n/s
house wren	HOWR	*Troglodytes aedon*	*not mapped*	0	2	1	1	1	2	1	0	8	L5	X	X	X	n/s

killdeer	KILL	*Charadrius vociferus*	*not mapped*	0	2	2	1	1	1	2	0	9	L5	X			n/s
mallard	MALL	*Anas platyrhynchos*	*not mapped*	0	1	2	1	1	1	3	0	9	L5	X		X	n/s
mourning dove	MODO	*Zenaida macroura*	*not mapped*	0	2	1	0	1	1	0	0	5	L5	X	X	X	n/s
northern cardinal	NOCA	*Cardinalis cardinalis*	*not mapped*	0	2	1	0	1	2	2	0	8	L5	X	X	X	n/s
red-tailed hawk	RTHA	*Buteo jamaicensis*	*not mapped*	0	2	2	1	2	1	1	0	9	L5	X	X	X	n/s
red-winged blackbird	RWBL	*Agelaius phoeniceus*	*not mapped*	0	2	2	0	1	1	3	0	9	L5	X	X	X	n/s
song sparrow	SOSP	*Melospiza melodia*	*not mapped*	0	2	2	0	1	2	2	0	9	L5	X	X	X	n/s
warbling vireo	WAVI	*Vireo gilvus*	*not mapped*	0	1	2	0	1	2	2	0	8	L5	X			n/s
yellow warbler	YWAR	*Dendroica petechia*	*not mapped*	0	1	1	1	1	2	3	0	9	L5	X	X	X	n/s
European starling	EUST	*Sturnus vulgaris*	*not mapped*										L+	X		X	n/s
Herpetofauna																	
gray treefrog	TGTF	*Hyla versicolor*	*10*	2	2	3	2	3	3	5	1	21	L2	4	3	3	n/s
spring peeper	SPPE	*Pseudacris crucifer*	*47*	1	2	3	3	3	2	5	1	20	L2	18	14	15	n/s
wood frog	WOFR	*Rana sylvatica*	*41*	0	2	3	4	3	2	5	1	20	L2	20	10	11	n/s
northern leopard f	LEFR	*Rana pipiens*	*2*	0	3	2	2	1	2	5	1	16	L3		1	1	n/s
eastern red-backed salamander*	RBSA	*Plethodon cinereus*	*2*	1	2	2	3	1	3	5	1	18	L3	2			n/s
American toad	AMTO	*Bufo americanus*	*not mapped*	0	2	2	1	1	2	4	0	12	L4	X		X	n/s
green frog	GRFR	*Rana clamitans*	*not mapped*	0	2	2	1	1	2	4	0	12	L4	X	X	X	n/s

Incidental																	
Mammals																	
porcupine	PORC	*Erithizon dorsatum*	*2*	3	2	3	3	4	2	4	0	21	L2		1	1	n/s
beaver	BEAV	*Castor canadensis*	*4*	2	2	1	1	2	3	4	0	15	L3		1	3	n/s
meadow jumping mouse	MJMO	*Zapus hudsonius*	*2*	4	2	2	1	2	3	3	0	17	L3			2	n/s
eastern chipmunk	EACH	*Tamias striatus*	*not mapped*	0	2	2	1	2	2	3	0	12	L4	X	X	X	n/s
eastern cottontail*	EACO	*Sylvilagus floridanus*	*not mapped*	1	2	2	0	2	2	4	0	13	L4		X	X	n/s
red squirrel	RESQ	*Tamiasciurus hudsonicus*	*not mapped*	2	2	2	0	1	2	2	0	11	L4	X	X	X	n/s
white-tailed deer	WTDE	*Odocoileus virginianus*	*not mapped*	1	2	2	1	3	1	2	0	12	L4	X	X	X	n/s
coyote*	COYO	*Canis latrans*	*not mapped*	1	1	1	0	1	1	1	0	6	L5	X		X	n/s
gray squirrel	GRSQ	*Sciurus carolinensis*	*not mapped*	0	2	2	0	1	2	0	0	7	L5	X	X	X	n/s
raccoon	RACC	*Procyon lotor*	*not mapped*	0	2	1	1	1	1	1	0	7	L5	X	X	X	n/s
striped skunk	STSK	*Mephitis mephitis*	*not mapped*	1	2	2	0	2	1	1	0	9	L5	X	X		n/s
Herpetofauna																	
snapping turtle*	SNTU	*Chelydra serpentina*	*1*	1	3	2	2	1	2	4	0	15	L3			1	n/s
eastern gartersnake	EAGA	*Thamnophis sirtalis sirtalis*	*not mapped*	0	2	2	1	1	2	3	0	11	L4			X	n/s
midland painted turtle*	MPTU	*Chrysemys picta marginata*	*not mapped*	1	2	2	1	1	2	4	0	13	L4	1		X	n/s
Invertebrates																	
"chimney" crayfish*	CHCR	*Fallicambarus fodiens*	*3*	1	3	4	2	1	4	5	1	21	L2			3	n/s

LEGEND	-																
*=local occurrence unknown																	
LO = local occurrence		MR = mobility restriction															
PTn = population trend, continent-wide		STD = sensitivity to development															
PTt = population trend, TRCA		AP = additional points															
HD = habitat dependence		TS = total score															
AS = area sensitivity		L-rank = TRCA Rank, April 2003															

APPENDIX F: VEGETATION COMMUNITIES

	Appendix 1: List of Vegetation Communities Found in Bolton Tract Study Area 2001 & 2007															
Ldscp			**area**	**Local**	**Geophy.**	**Total**	**Local**									
	ELC	**Vegetation Type**	**# ha**	**Distrib.**	**Requir.**	**Score**	**Rank**	**year**								
	Code	(* indicates present as inclusion and/or complex only)					**(2002-01)**	2001	2007	L1	L2	L3	L4	L5	L+
		Forest	***371.6***												
2.5	FOC1-a	Dry-Fresh Scots Pine Coniferous Forest	0.1	4	0	4	L+		x						0.1
4	FOC2-2	Dry-Fresh White Cedar Coniferous Forest	1.7	2	2	4	L4	x	x				1.7		
6	*FOC3-1	*Fresh-Moist Hemlock Coniferous Forest		2	2	4	L4	i							
9	FOC4-1	Fresh-Moist White Cedar Coniferous Forest	33.1	2	2	4	L4	x	x				33.1		
10	FOC4-2	Fresh-Moist White Cedar - Hemlock Coniferous Forest	3.7	2	2	4	L4	x					3.7		
17	FOM2-2	Dry-Fresh White Pine - Sugar Maple Mixed Forest	3.2	2	0	2	L5	x						3.2	
21	FOM3-2	Dry-Fresh Hemlock - Sugar Maple Mixed Forest	1.4	2	2	4	L4	x					1.4		
24	FOM4-	Dry-Fresh White	0.1	3	1	4	L4		x				0.1		

	1	Cedar - Paper Birch Mixed Forest													
25	FOM4-2	Dry-Fresh White Cedar - Poplar Mixed Forest	3.8	3	1	4	L4	x	x				3.8		
26	FOM4-A	Dry-Fresh White Cedar - Hardwood Mixed Forest	0.4	3	1	4	L4		x				0.4		
31	FOM6-1	Fresh-Moist Sugar Maple - Hemlock Mixed Forest	34.7	2	2	4	L4	x	x				34.7		
32	FOM6-2	Fresh-Moist Hemlock - Hardwood Mixed Forest	2.7	3	2	5	L3	x	x			2.7			
34	FOM7-1	Fresh-Moist White Cedar - Sugar Maple Mixed Forest	3.7	2	2	4	L4	x	x				3.7		
35	FOM7-2	Fresh-Moist White Cedar - Hardwood Mixed Forest	55.3	2	2	4	L4	x	x				55.3		
37	FOM8-1	Fresh-Moist Poplar Mixed Forest	1.7	5	2	7	L2	x			1.7				
54	FOD3-1	Dry-Fresh Poplar Deciduous Forest	1.7	2	0	2	L5	i	x					1.7	
58	FOD4-2	Dry-Fresh White Ash Deciduous Forest	3.9	2	0	2	L5	x						3.9	
69	FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest	15.3	1	0	1	L5	x	x					15.3	
70	FOD5-2	Dry-Fresh Sugar Maple - Beech Deciduous Forest	8.6	1	0	1	L5	x	x					8.6	
74	FOD5-6	Dry-Fresh Sugar Maple - Basswood Deciduous Forest	3.9	4	0	4	L4	x	x				3.9		

75	FOD5-7	Dry-Fresh Sugar Maple - Black Cherry Deciduous Forest	5.1	3	0	3	L4	x	x				5.1		
76	FOD5-8	Dry-Fresh Sugar Maple - White Ash Deciduous Forest	26.6	2	0	2	L5	x	x					26.6	
78	FOD5-10	Dry-Fresh Sugar Maple - Paper Birch - Poplar Deciduous Forest	6.2	2	1	3	L4	x	x				6.2		
82	FOD6-1	Fresh-Moist Sugar Maple - Ash Deciduous Forest	8.2	2	0	2	L5	x	x					8.2	
84	FOD6-3	Fresh-Moist Sugar Maple - Yellow Birch Deciduous Forest	0.4	4	2	6	L3		x			0.4			
85	FOD6-4	Fresh-Moist Sugar Maple - White Elm Deciduous Forest	0.1	2	0	2	L5		x					0.1	
86	FOD6-5	Fresh-Moist Sugar Maple - Hardwood Deciduous Forest	3.4	2	0	2	L5	x	x					3.4	
88	FOD7-1	Fresh-Moist White Elm Lowland Deciduous Forest	5.0	2	0	2	L5	x	x					5.0	
89	FOD7-2	Fresh-Moist Ash Deciduous Forest	5.7	2	0	2	L5	x	x					5.7	
90	FOD7-3	Fresh-Moist Willow Lowland Deciduous Forest	0.4	1	0	1	L5	x						0.4	
93	FOD7-a	Fresh-Moist Manitoba Maple Lowland Deciduous Forest	5.0	2	0	2	L5	x	x					5.0	
94	FOD7-b	Fresh-Moist Norway Maple Deciduous	1.0	4	0	4	L+	x							1.0

		Forest													
97	FOD7-E	Fresh-Moist Hawthorn - Apple Deciduous Forest	5.2	2	0	2	L5		x					5.2	
100	FOD8-1	Fresh-Moist Poplar Deciduous Forest	13.5	2	0	2	L5	x	x					13.5	
102	FOD8-B	Fresh-Moist Paper Birch Deciduous Forest	0.5	3	0	3	L4		x				0.5		
116	CUP1-5	Silver Maple Deciduous Plantation	0.2	2	0	2	L5	x						0.2	
119	*CUP1-A	*Restoration Deciduous Plantation		2	0	2	L5		c						
120	CUP1-b	Willow Deciduous Plantation	0.4	4	0	4	L+	x							0.4
121	CUP1-c	Black Locust Deciduous Plantation	1.8	3	0	3	L+	x	x						1.8
123	CUP2-1A	Black Walnut - Conifer Mixed Plantation	0.3	4	0	4	L5	x						0.3	
124	*CUP2-A	*Restoration Mixed Plantation		3	0	3	L5		c						
130	CUP2-G	Ash - Conifer Mixed Plantation	4.2	3	0	3	L5	x	x					4.2	
130.5	CUP2-h	Horticultural Mixed Plantation	1.7	3	0	3	L+		x						1.7
	CUP2-I	Red Oak - Conifer Mixed Plantation	2.9	5	0	5	L5		x					2.9	
132	CUP3-1	Red Pine Coniferous Plantation	22.3	2	0	2	L5	x	x					22.3	
133	CUP3-2	White Pine Coniferous Plantation	51.0	2	0	2	L5	x	x					51.0	

134	CUP3-3	Scotch Pine Coniferous Plantation	5.9	1	0	1	L+	x	x						5.9
137	CUP3-8	White Spruce - European Larch Coniferous Plantation	0.3	2	0	2	L5	x						0.3	
142	CUP3-C	White Spruce Coniferous Plantation	4.6	2	0	2	L5	x	x					4.6	
144	CUP3-e	Norway Spruce Coniferous Plantation	0.1	2	0	2	L+	i	i						0.1
145	CUP3-F	Tamarack Coniferous Plantation	0.3	4	0	4	L5	x						0.3	
146	CUP3-G	White Cedar Coniferous Plantation	0.4	3	0	3	L5		x					0.4	
147	CUP3-H	Mixed Conifer Coniferous Plantation	9.9	2	0	2	L5	x	x					9.9	
		Successional	***221.4***												
178	*CUT1-1	*Sumac Deciduous Thicket		1	0	1	L5	i							
182	*CUT1-5	*Raspberry Deciduous Thicket		2	0	2	L5	i	i						
184	CUT1-A1	Native Deciduous Sapling Regeneration Thicket	2.7	1	0	1	L5	x	ci					2.7	
185	CUT1-A2	Native Mixed Sapling Regeneration Thicket	44.0	2	0	2	L5	x	x					44.0	
186	CUT1-A3	Coniferous Sapling Regeneration	4.5	2	1	3	L4	x					4.5		

		Thicket													
187	CUT1-b	Buckthorn Deciduous Thicket	1.9	3	0	3	L+	x							1.9
188	CUT1-c	Exotic Deciduous Thicket	4.2	4	0	4	L+	x	x						4.2
192	CUH1-A	Treed Hedgerow	5.7	1	0	1	L5		x					5.7	
196	CUS1-1	Hawthorn Successional Savannah	80.5	2	0	2	L5	x						80.5	
197	CUS1-2A	White Cedar Successional Savannah	12.7	3	1	4	L4	x	x				12.7		
202	CUS1-A1	Native Deciduous Successional Savannah	27.1	2	0	2	L5	x	x					27.1	
204	CUS1-b	Exotic Successional Savannah	3.1	2	0	2	L+	x	x						3.1
209	CUW1-A1	White Cedar Successional Woodland	8.6	3	1	4	L4	x	x				8.6		
211	CUW1-A3	Native Deciduous Successional Woodland	12.3	2	0	2	L5	x	x					12.3	
212	CUW1-b	Exotic Successional Woodland	10.5	2	0	2	L+	x	x						10.5
214	CUW1-D	Hawthorn Successional Woodland	3.5	2	0	2	L5	x	x					3.5	
		Wetland	***93.0***												
216	SWC1-1	White Cedar Mineral Coniferous Swamp	2.6	2	2	4	L4	x	x				2.6		
217	SWC1-2	White Cedar - Conifer Mineral Coniferous Swamp	0.4	4	2	6	L3		x			0.4			
221	SWC3-	White Cedar	8.6	2	3	5	L3	x	x			8.6			

	1	Organic Coniferous Swamp													
222	SWC3-2	White Cedar - Conifer Organic Coniferous Swamp	7.3	3	3	6	L3	x				7.3			
228	SWCA-A	Hemlock Organic Coniferous Swamp	0.1	5	3	8	L2		x		0.1				
230	SWM1-1	White Cedar - Hardwood Mineral Mixed Swamp	6.2	2	2	4	L4	x	x				6.2		
238	SWM3-2	Poplar - Conifer Mineral Mixed Swamp	2.3	3	2	5	L3	x				2.3			
240	SWM4-1	White Cedar - Hardwood Organic Mixed Swamp	26.4	2	3	5	L3	x	x			26.4			
242	SWM5-1	Red Maple - Conifer Organic Mixed Swamp	0.4	3	3	6	L3		x			0.4			
244	SWM6-1	Birch - Conifer Organic Mixed Swamp	2.2	4	3	7	L2		x		2.2				
249	SWD2-1	Black Ash Mineral Deciduous Swamp	1.1	3	2	5	L3		x			1.1			
255	SWD3-3	Swamp Maple Mineral Deciduous Swamp	0.2	3	1	4	L4	x					0.2		
256	SWD3-4	Manitoba Maple Mineral Deciduous Swamp	0.2	3	1	4	L4		x				0.2		
258	SWD4-1	Willow Mineral Deciduous Swamp	0.4	1	0	1	L5	x	x					0.4	
260	SWD4-3	Paper Birch - Poplar Mineral Deciduous Swamp	1.8	2	1	3	L4	x	x				1.8		
264	SWD5-1	Black Ash Organic Deciduous Swamp	2.1	5	3	8	L2	x	x		2.1				

267	SWD6-2	Silver Maple Organic Deciduous Swamp	0.5	5	3	8	L2	x	x		0.5				
268	SWD6-3	Swamp Maple Organic Deciduous Swamp	0.3	5	3	8	L2		x		0.3				
270	SWD7-1	Paper Birch - Poplar Organic Deciduous Swamp	3.3	4	3	7	L2	x	x		3.3				
271	SWD7-2	Yellow Birch Organic Deciduous Swamp	1.1	4	3	7	L2		x		1.1				
274	SWT2-1	Alder Mineral Thicket Swamp	0.2	2	2	4	L4	x					0.2		
275	SWT2-2	Willow Mineral Thicket Swamp	0.9	1	0	1	L5		x					0.9	
278	SWT2-5	Red-osier Mineral Thicket Swamp	2.0	2	0	2	L5	x	x					2.0	
285	SWT3-1	Alder Organic Thicket Swamp	1.2	3	4	7	L2		x		1.2				
286	SWT3-2	Willow Organic Thicket Swamp	2.7	3	3	6	L3	x	x			2.7			
289	SWT3-5	Red-osier Organic Thicket Swamp	0.1	2	3	5	L3		x			0.1			
290	SWT3-7	Winterberry Organic Thicket Swamp	0.7	5	4	9	L1		x	0.7					
319	MAM2-2	Reed Canary Grass Mineral Meadow Marsh	3.8	2	0	2	L5	x	x					3.8	
320	MAM2-3	Red-top Mineral Meadow Marsh	1.6	2	1	3	L4	x					1.6		
323	MAM2-6	Broad-leaved Sedge Mineral Meadow Marsh	0.03	3	1	4	L4	x					0.03		
324	*MAM2-7	*Horsetail Mineral Meadow Marsh		3	2	5	L3		i						
325	MAM2-	Jewelweed Mineral	0.1	2	1	3	L4	x					0.1		

	9	Meadow Marsh													
326	MAM2-10	Forb Mineral Meadow Marsh	3.7	2	1	3	L4	x	x				3.7		
335	MAM3-2	Reed Canary Grass Organic Meadow Marsh	0.4	2	2	4	L4	x	x				0.4		
341	MAM3-9	Forb Organic Meadow Marsh	0.4	3	3	6	L3		x			0.4			
344	MAS2-1A	Broad-leaved Cattail Mineral Shallow Marsh	0.6	2	1	3	L4	x	x				0.6		
345	MAS2-1b	Narrow-Leaved Cattail Mineral Shallow Marsh	0.7	1	0	1	L5	x						0.7	
346	MAS2-2	Bulrush Mineral Shallow Marsh	0.04	2	1	3	L4		x				0.04		
348	MAS2-4	Broad-leaved Sedge Mineral Shallow Marsh	0.2	3	1	4	L4	x					0.2		
351	MAS2-8	Rice Cut-grass Mineral Shallow Marsh	0.04	2	1	3	L4		x				0.04		
352	MAS2-9	Forb Mineral Shallow Marsh	0.02	2	1	3	L4		x				0.02		
362	MAS3-1A	Broad-leaved Cattail Organic Shallow Marsh	5.0	2	3	5	L3	x	x			5.0			
364	MAS3-2	Bulrush Organic Shallow Marsh	0.1	5	3	8	L2		x		0.1				
366	MAS3-4	Broad-leaved Sedge Organic Shallow Marsh	0.3	4	3	7	L2	x			0.3				
368	MAS3-8	Rice Cut-grass Organic Shallow Marsh	0.1	5	3	8	L2		x		0.1				
370	MAS3-10	Forb Organic Shallow Marsh	0.1	4	3	7	L2		x		0.1				

376	MAS3-d	Reed Canary Grass Organic Shallow Marsh	0.5				L3?		x			0.5			
		Aquatic	***0.2***												
386	SAM1-2	Duckweed Mixed Shallow Aquatic	0.04	4	1	5	L3		x			0.04			
388	SAM1-4	Pondweed Mixed Shallow Aquatic	0.1	5	2	7	L2	x			0.1				
424	OAO1	Open Aquatic (deep or riverine)	20.1				L5	x	x						
425	OAO1-T	Turbid Open Aquatic (disturbed)	0.3				L+	x	x						
		Dynamic (Bluff and Barren)	***6.8***												
405	BLO1	Mineral Open Bluff	0.1	2	2	4	L4	x					0.1		
160	BLS1-A	Sumac - Willow Shrub Bluff	0.6	3	2	5	L3	x				0.6			
164	BLT1-A	White Cedar Treed Bluff	5.4	4	3	7	L2	x	x		5.4				
165	BLT1-B	Deciduous Treed Bluff	0.1	3	2	5	L3	x				0.1			
407	CBO1	Open Clay Barren	0.1	3	4	7	L2	x			0.1				
167	CBS1	Shrub Clay Barren	0.3	3	4	7	L2	x	i		0.3				
169	SBT1	Treed Sand Barren	0.2	5	5	10	L1		x	0.2					
		Meadow	***80.8***												
421	CUM1-A	Native Forb Meadow	35.1	1	0	1	L5	x	x					35.1	
422	CUM1-b	Exotic Cool-season Grass Graminoid Meadow	45.7	1	0	1	L+	x	x						45.7
423	CUM1-c	Exotic Forb Meadow	0.1	1	0	1	L+		x						0.1
		Total vegetated natural cover	**773.8**							0.89	19	59	198	421	76

		L1	0.9																	
		L2	19.1		final QA/QC completed in prep for site report					2	17	17	34	39	13					
		L3	58.9													1i				
		L4	197.6																	
		L5	421.0																	
		L+	76.4																	

APPENDIX G: FLORA SPECIES LIST

Appendix 2: List of Flora Species Found in Bolton Tract Study Area in 2007 (all blocks)

cf. in the species name indicates the species found was most likely named correctly but could not be confirmed
pL… in the rank column indicates that the species was only found planted and not regenerating

Scientific name	Common Name	Local Distribution 1 - 5	Population Trend 1-5	Habitat Dependence 0-5	Sensitivity to Development 0-5	Total Score 2-20	Rank TRCA Apr.2003	2001	2007
Linnaea borealis ssp. longiflora	twinflower	4	5	5	5	19	L1	x	x
Osmunda claytoniana	interrupted fern	4	5	5	5	19	L1	x	
Arabis glabra	tower mustard	4	4	5	4	17	L2		x
Botrychium dissectum	cut-leaved grape fern or moonwort	4	4	5	5	18	L2	x	x
Botrychium virginianum	rattlesnake fern	3	5	5	5	18	L2	x	x
Calla palustris	water arum	3	5	5	5	18	L2		x
Caulophyllum thalictroides	blue cohosh	5	3	5	4	17	L2		x
Coptis trifolia (C. groenlandica)	goldthread	3	5	5	5	18	L2	x	x
Cypripedium calceolus var. parviflorum (C. parviflorum)	smaller yellow lady's slipper	3	4	5	5	17	L2		x
Cystopteris tenuis (Cystopteris fragilis var.mackayi)	Mackay's fragile fern	3	4	5	5	17	L2		x
Dicentra cucullaria	Dutchman's breeches	3	4	5	5	17	L2		x
Diphasiastrum digitatum	ground cedar or	3	5	5	5	18	L2		x

(Lycopodium digitatum)	crowfoot club-moss								
Dryopteris clintoniana	Clinton's wood fern	3	5	5	4	17	L2		x
Dryopteris goldiana	Goldie's fern	5	4	5	4	18	L2		x
Dulichium arundinaceum	three-way sedge	3	4	5	5	17	L2		x
Floerkia proserpinacoides	false mermaid	5	4	4	4	17	L2		x
Glyceria borealis	northern manna grass	3	4	5	5	17	L2	x	x
Glyceria canadensis	rattlesnake grass	4	4	5	5	18	L2		x
Huperzia lucidula (Lycopodium lucidulum)	shining club-moss	3	5	5	5	18	L2	x	x
Medeola virginiana	Indian cucumber-root	3	5	4	5	17	L2	x	x
Monotropa hypopithys	pinesap	3	4	5	5	17	L2	x	x
Najas flexilis	bushy naiad	4	4	5	5	18	L2	x	x
Nymphaea odorata ssp. odorata	fragrant water lily	4	5	5	4	18	L2	x	x
Osmunda cinnamomea	cinnamon fern	2	5	5	5	17	L2	x	x
Osmunda regalis var. spectabilis	royal fern	3	5	5	5	18	L2	x	
Polypodium virginianum (P. vulgare)	rock polypody	4	4	5	5	18	L2		x
Abies balsamea	balsam fir	2	3	4	5	14	L3	x	x
Adiantum pedatum	northern maidenhair fern	2	3	5	5	15	L3	x	x
Agrostis scabra	ticklegrass	4	3	4	4	15	L3		x
Allium tricoccum	wild leek or ramps	2	3	4	4	13	L3	x	x
Alnus incana ssp. rugosa (A. rugosa)	speckled or tag alder	3	4	4	5	16	L3	x	x
Alopecurus aequalis	short-awned foxtail	3	4	5	4	16	L3		x
Anemone acutiloba (Hepatica acutiloba)	sharp-lobed hepatica	2	4	4	5	15	L3	x	x
Anemone cylindrica	long-fruited thimbleweed	3	4	3	4	14	L3		x

Angelica atropurpurea	angelica	4	3	4	3	14	L3	x	x
Aquilegia canadensis	wild columbine	2	4	3	5	14	L3		x
Aralia racemosa ssp. racemosa	spikenard	3	4	4	3	14	L3	x	x
Aster oolentangiensis (A. azureus)	sky-blue or azure aster	4	3	4	3	14	L3		x
Aster urophyllus (A. sagittifolius)	arrow-leaved aster	4	3	4	3	14	L3		x
Bromus ciliatus (B. canadensis)	fringed brome grass	3	4	4	5	16	L3	x	x
Cardamine concatenata (Dentaria lacinata)	cut-leaved toothwort	2	3	5	4	14	L3		x
Carex alopecoidea	foxtail or brown-headed wood sedge	3	3	4	4	14	L3	x	x
Carex atherodes	awned sedge	4	3	5	4	16	L3		x
Carex brevior	short-fruited sedge	4	3	4	3	14	L3		x
Carex brunnescens ssp. brunnescens	brownish sedge	3	3	4	4	14	L3	x	x
Carex canescens ssp. canescens	silvery sedge	4	4	5	3	16	L3		x
Carex cephaloidea	thin-leaved sedge	4	2	5	3	14	L3		x
Carex cephalophora	oval-headed sedge	5	2	5	3	15	L3		x
Carex comosa (C. pseudo-cyperus var. comosa)	bristly sedge	3	3	5	4	15	L3		x
Carex crinita	fringed sedge	3	4	4	4	15	L3	x	x
Carex cryptolepis	small yellow sedge	5	3	2	5	15	L3	x	
Carex diandra	lesser panicled sedge	4	3	5	4	16	L3		x
Carex disperma	two-seeded or soft-leaved sedge	3	3	5	4	15	L3	x	x
Carex eburnea	bristle-leaved sedge	3	4	4	4	15	L3	x	x

Carex grisea	grey sedge	5	2	4	3	14	L3		x
Carex hirtifolia	pubescent or hairy-leaved sedge	3	3	5	3	14	L3	x	x
Carex hitchcockiana	Hitchcock's sedge	4	3	5	3	15	L3		x
Carex interior	inland or prairie star sedge	3	2	5	4	14	L3	x	x
Carex laevivaginata	smooth-sheathed sedge	2	4	4	4	14	L3	x	x
Carex laxiculmis var. laxiculmis	spreading or weak wood sedge	5	2	5	3	15	L3		x
Carex leptalea ssp. leptalea	bristle-stalked sedge	3	3	5	4	15	L3	x	x
Carex leptonervia (C. laxiflora var. leptonervia)	few- or fine-nerved wood sedge	4	3	4	3	14	L3		x
Carex lupulina	hop sedge	2	4	4	4	14	L3	x	x
Carex plantaginea	plantain-leaved sedge	3	4	5	4	16	L3	x	x
Carex scabrata	rough sedge	3	3	4	3	13	L3	x	x
Carex tribuloides	blunt broom sedge	5	2	4	3	14	L3		x
Carex trisperma var. trisperma	three-seeded sedge	3	3	5	4	15	L3		x
Carex tuckermanii	Tuckerman's sedge	3	4	4	4	15	L3	x	x
Chelone glabra	turtlehead	3	3	4	4	14	L3		x
Chrysosplenium americanum	golden saxifrage	3	3	5	4	15	L3		x
Cicuta bulbifera	bulblet-bearing water-hemlock	3	3	5	4	15	L3		x
Cinna arundinacea	tall wood reed	3	4	5	2	14	L3	x	
Cinna latifolia	nodding wood reed	3	3	5	3	14	L3	x	x
Circaea alpina	smaller enchanter's nightshade	2	4	5	4	15	L3		x
Claytonia caroliniana	broad-leaved	3	4	5	4	16	L3		x

	spring beauty								
Clintonia borealis	yellow clintonia or bluebead lily	2	5	4	5	16	L3	x	x
Cornus rugosa	round-leaved dogwood	3	4	4	3	14	L3	x	x
Deparia acrostichoides (Athyrium thelypterioides)	silvery glade fern or spleenwort	4	4	5	3	16	L3		x
Dicentra canadensis	squirrel-corn	2	4	5	4	15	L3		x
Dirca palustris	leatherwood	3	4	5	4	16	L3	x	x
Dryopteris cristata	crested wood fern	2	4	4	4	14	L3	x	x
Eleocharis smallii (E. palustris)	Small's or creeping spike-rush	3	4	5	3	15	L3		x
Elymus canadensis	Canada wild rye	4	2	5	3	14	L3		x
Epilobium leptophyllum	narrow-leaved willow-herb	3	5	4	4	16	L3		x
Equisetum fluviatile	water horsetail	2	4	5	4	15	L3	x	x
Equisetum pratense	meadow or thicket horsetail	4	4	5	3	16	L3	x	x
Equisetum scirpoides	dwarf scouring rush	2	4	5	5	16	L3	x	x
Equisetum sylvaticum	woodland horsetail	3	3	5	4	15	L3	x	x
Euonymus obovata (E. obovatus)	running strawberry-bush	3	4	4	4	15	L3		x
Galium tinctorium	stiff marsh bedstraw	5	4	4	3	16	L3		x
Galium trifidum var. trifidum	small bedstraw	4	4	4	3	15	L3		x
Glyceria septentrionalis	eastern manna grass	3	3	5	4	15	L3	x	x
Gymnocarpium dryopteris	oak fern	2	3	5	5	15	L3	x	x
Hydrocotyle americana	marsh pennywort	3	4	4	4	15	L3	x	x
Hypericum ascyron	great St.Johnswort	4	4	5	2	15	L3	x	x
Ilex verticillata	winterberry	3	4	4	5	16	L3	x	x
Iris versicolor	blue flag	2	5	4	5	16	L3	x	x
Juglans cinerea	butternut	2	4	4	4	14	L3	x	x

Juniperus communis	common juniper	3	3	4	4	14	L3	x	x
Lactuca biennis	tall blue lettuce	4	4	2	4	14	L3		x
Larix laricina	tamarack	3	4	4	4	15	L3	x	x
Lemna trisulca	star or ivy-leaved duckweed	3	4	5	3	15	L3		x
Lilium michiganense	Michigan or Turk's cap lily	3	4	3	5	15	L3		x
Lobelia inflata	Indian tobacco	4	4	4	4	16	L3		x
Lobelia siphilitica	great blue lobelia	3	3	4	4	14	L3		x
Lonicera canadensis	fly honeysuckle	3	4	3	4	14	L3		x
Luzula acuminata	hairy wood rush	5	3	4	3	15	L3		x
Lysimachia thyrsiflora	tufted loosestrife	3	3	4	4	14	L3		x
Menispermum canadense	moonseed	3	4	4	3	14	L3	x	x
Mimulus ringens	square-stemmed monkey-flower	5	2	3	4	14	L3		x
Mitchella repens	partridgeberry	2	4	4	5	15	L3	x	x
Mitella nuda	naked mitrewort	2	4	5	5	16	L3	x	x
Monarda didyma	bee-balm or Oswego tea	5	3	4	2	14	L3	x	x
Monotropa uniflora	Indian-pipe	2	4	5	5	16	L3	x	x
Myosotis laxa	smaller forget-me-not	5	4	3	4	16	L3		x
Oryzopsis asperifolia	white-fruited or rough-leaved mountain-rice	2	4	4	5	15	L3	x	x
Oryzopsis racemosa	black-fruited mountain-rice	3	3	5	4	15	L3		x
Osmorhiza claytonii	woolly sweet cicely	3	4	4	4	15	L3		x
Oxalis acetosella ssp. montana (O. montana)	pink wood-sorrel	4	3	4	4	15	L3		x
Phegopteris connectilis	northern or long beech fern	3	3	5	5	16	L3	x	x
Picea glauca	white spruce	3	5	4	3	15	L3	xp	x
Pilea fontana	spring clearweed	3	4	4	4	15	L3	x	x

Poa alsodes	grove meadow grass or woodland poa	4	3	5	3	15	L3		x
Polygonatum pubescens	downy Solomon's seal	2	4	5	5	16	L3		x
Polygonum amphibium (P. natans; P. coccineum)	water smartweed	2	4	4	4	14	L3		x
Polystichum acrostichoides	Christmas fern	2	3	5	5	15	L3	x	x
Potamogeton foliosus	leafy pondweed	3	3	5	4	15	L3	x	x
Potamogeton natans	floating pondweed	3	4	5	3	15	L3	x	x
Pyrola elliptica	shinleaf	2	4	4	4	14	L3	x	x
Ranunculus pensylvanicus	bristly buttercup	4	3	4	3	14	L3		x
Ribes triste	swamp red currant	3	4	4	5	16	L3	x	x
Rumex acetosella ssp. acetosella	sheep sorrel	3	2	5	4	14	L3		x
Salix lucida	shining willow	2	4	5	3	14	L3	x	x
Salix petiolaris	slender willow	3	3	5	3	14	L3	x	x
Schizachne purpurascens ssp. purpurascens	purple or false melic grass	3	3	3	5	14	L3	x	x
Scirpus cyperinus	woolly bulrush or wool-grass	2	3	4	5	14	L3	x	x
Scirpus pendulus	drooping, nodding, or red bulrush	3	4	5	4	16	L3	x	
Sisyrinchium montanum	blue-eyed grass	3	3	4	4	14	L3	x	x
Sparganium emersum ssp. emersum (S. chlorocarpum)	green-fruited bur-reed	3	3	5	4	15	L3	x	x
Sparganium eurycarpum	giant or great bur-reed	3	4	5	4	16	L3		x
Spiraea alba	meadowsweet or wild spiraea	3	4	4	3	14	L3	x	x
Spirodela polyrhiza (Lemna polyrhiza)	greater duckweed	3	4	5	2	14	L3	x	
Sporobolus cryptandrus	sand dropseed	4	2	5	3	14	L3		x

Staphylea trifolia	bladdernut	4	3	4	3	14	L3	x	
Stellaria longifolia	long-leaved chickweed	5	3	4	3	15	L3		x
Streptopus roseus	rose twisted-stalk	2	4	4	5	15	L3		x
Taxus canadensis	Canada yew or ground hemlock	2	4	4	5	15	L3	x	x
Trientalis borealis ssp. borealis	star-flower	2	4	4	5	15	L3	x	x
Trillium erectum	red trillium or stinking Johnny	2	4	3	5	14	L3	x	x
Trillium grandiflorum	white trillium	1	4	4	5	14	L3		x
Veronica americana	American speedwell or brooklime	3	3	4	4	14	L3		x
Veronica catenata (V. anagallis-aquatica ssp. catenata)	water speedwell (native)	5	3	4	4	16	L3		x
Veronica scutellata	marsh speedwell	3	2	5	4	14	L3		x
Viburnum acerifolium	maple-leaved viburnum	2	3	4	5	14	L3		x
Viola affinis	Le Conte's violet	3	4	4	3	14	L3		x
Viola canadensis	Canada violet	3	4	4	4	15	L3		x
Viola cucullata	marsh blue violet	3	3	4	4	14	L3		x
Viola macloskeyi ssp. pallens	northern white violet	4	4	4	3	15	L3		x
Viola renifolia	kidney-leaved violet	4	4	5	3	16	L3	x	x
Viola rostrata	long-spurred violet	3	4	4	3	14	L3		x
Wolffia borealis	northern or dotted water-meal	4	4	5	2	15	L3		x
Wolffia columbiana	columbia water-meal	3	4	5	2	14	L3		x
Acer rubrum	red maple	2	4	2	5	13	L4	x	x
Acer saccharinum	silver maple	2	2	4	3	11	L4	x	x
Acer saccharum ssp. nigrum	black maple	3	3	3	2	11	L4	x	x

Acer spicatum	mountain maple	2	3	4	4	13	L4	x	x
Acer x freemanii (A. rubrum x saccharinum)	Freeman's or hybrid swamp maple	h	h	h	h		L4	x	x
Actaea pachypoda	white baneberry	2	3	4	3	12	L4		x
Alisma plantago-aquatica (A. triviale)	water-plantain	2	2	5	2	11	L4	x	x
Amelanchier laevis	smooth serviceberry	3	2	4	3	12	L4		x
Amelanchier sp.	serviceberry	2		4	3		L4		x
Antennaria howellii ssp. howellii	field or Howell's pussytoes	4	2	3	3	12	L4		x
Apocynum androsaemifolium	spreading dogbane	2	3	3	3	11	L4		x
Arisaema triphyllum	Jack-in-the-pulpit	1	3	3	4	11	L4		x
Asarum canadense	wild ginger	2	3	4	3	12	L4	x	x
Asclepias incarnata ssp. incarnata	swamp milkweed	2	3	4	3	12	L4		x
Betula alleghaniensis (B. lutea)	yellow or curly birch	1	4	3	5	13	L4	x	x
Betula papyrifera	paper or white birch	1	4	2	4	11	L4	x	x
Boehmeria cylindrica	false nettle	2	4	4	3	13	L4		x
Bromus latiglumis	eared or tall brome	2	2	5	2	11	L4		x
Calamagrostis canadensis	Canada blue joint	2	2	4	3	11	L4		x
Caltha palustris	marsh marigold	2	4	3	4	13	L4		x
Cardamine diphylla (Dentaria diphylla)	broad- or two-leaved toothwort	2	3	4	4	13	L4		x
Cardamine pensylvanica	bitter cress	2	2	4	3	11	L4		x
Cardamine x maxima (C. concatenata x diphylla)	hybrid toothwort	h	h	h	h		L4		x
Carex albursina (C. laxiflora var. latifolia)	white bear sedge	2	3	5	3	13	L4	x	x
Carex arctata	nodding wood	2	4	2	3	11	L4		x

	sedge								
Carex aurea	golden-fruited sedge	3	2	4	4	13	L4		x
Carex communis	fibrous-rooted sedge	2	4	3	3	12	L4		x
Carex deweyana	Dewey's sedge	2	4	3	3	12	L4		x
Carex gracillima	graceful sedge	4	3	4	2	13	L4	x	x
Carex hystericina (C. hystricina)	porcupine sedge	2	3	2	5	12	L4		x
Carex intumescens	bladder sedge	3	4	3	2	12	L4		x
Carex lacustris	lake-bank sedge	3	3	3	4	13	L4	x	x
Carex laxiflora	loose-flowered sedge	3	3	4	3	13	L4		x
Carex peckii (C. nigromarginata var. elliptica)	Peck's sedge	3	2	4	3	12	L4		x
Carex pedunculata	early-flowering sedge	2	3	3	3	11	L4	x	x
Carex pensylvanica	Pennsylvania sedge	2	4	3	4	13	L4	x	x
Carex projecta	necklace or loose-headed oval sedge	4	2	4	3	13	L4		x
Carex pseudo-cyperus	pseudocyperus sedge	1	3	3	4	11	L4	x	x
Carex retrorsa	retrorse sedge	2	3	3	4	12	L4	x	x
Carex sparganioides	bur-reed sedge	2	2	5	2	11	L4		x
Carex sprengelii	long-beaked sedge	3	4	4	2	13	L4		x
Carex stricta	tussock sedge	2	3	3	4	12	L4	x	
Carex tenera	straw sedge	3	3	3	3	12	L4		x
Carpinus caroliniana ssp. virginiana	blue beech or American hornbeam	2	3	4	2	11	L4	x	x
Carya cordiformis	bitternut hickory	2	4	4	2	12	L4	x	x
Caulophyllum giganteum	long-styled blue	2	3	4	4	13	L4	x	x

(C. thalictroides var. giganteum)	cohosh								
Celastrus cf. scandens	climbing or American bittersweet	3	2	3	4	12	L4		x
Cornus amomum ssp. obliqua	silky dogwood	3	3	5	2	13	L4	x	x
Cornus foemina ssp. racemosa (C. racemosa)	grey dogwood	5	2	4	2	13	L4		x
Corylus cornuta (C. rostrata)	beaked hazel	2	4	3	4	13	L4		x
Crataegus macracantha (C. succulenta var. macracantha)	long-spined hawthorn	2	2	4	3	11	L4	x	
Cystopteris bulbifera	bulblet fern	1	4	4	4	13	L4	x	x
Danthonia spicata	poverty oat grass	2	4	3	4	13	L4	x	x
Diervilla lonicera	bush honeysuckle	2	3	2	4	11	L4	x	x
Dryopteris intermedia (D. spinulosa var. intermedia)	evergreen wood fern	2	4	3	3	12	L4	x	x
Dryopteris marginalis	marginal wood fern	1	3	3	4	11	L4	x	x
Eleocharis obtusa	blunt spike-rush	3	2	5	2	12	L4		x
Elymus hystrix (Hystrix patula)	bottle-brush grass	2	2	4	3	11	L4		x
Elymus riparius	riverbank wild rye	2	2	5	2	11	L4		x
Epilobium coloratum	purple-leaved willow-herb	3	3	4	2	12	L4	x	x
Equisetum variegatum ssp. variegatum	variegated scouring-rush	3	2	5	3	13	L4		x
Eupatorium perfoliatum	boneset	1	3	4	3	11	L4	x	x
Fagus grandifolia	American beech	1	4	3	4	12	L4	x	x
Festuca subverticillata (F. obtusa)	nodding fescue	4	2	4	3	13	L4	x	x
Fraxinus nigra	black ash	2	4	4	3	13	L4	x	x
Galium aparine	cleavers	3	3	4	2	12	L4		x
Galium palustre	marsh bedstraw	2	2	4	3	11	L4		x

Glyceria grandis	tall manna grass	2	3	4	2	11	L4	x	x
Hydrophyllum canadense	Canada waterleaf	3	3	4	3	13	L4		x
Juncus effusus ssp. solutus	soft rush	2	4	4	3	13	L4		x
Juncus nodosus	knotted rush	3	2	5	3	13	L4		x
Juncus torreyi	Torrey's rush	4	2	4	2	12	L4		x
Lycopus americanus	American or cut-leaved water-horehound	2	4	3	3	12	L4		x
Lycopus uniflorus	northern water-horehound or bugleweed	2	3	3	3	11	L4		x
Maianthemum canadense	Canada mayflower	2	4	1	5	12	L4	x	x
Mitella diphylla	mitrewort	2	3	4	4	13	L4		x
Panicum acuminatum var. acuminatum	hairy panic grass	2	3	3	3	11	L4		x
Penstemon digitalis	foxglove beard-tongue	4	2	4	2	12	L4		x
Physalis heterophylla	clammy ground-cherry	3	2	3	3	11	L4		x
Pinus strobus	white pine	1	4	3	4	12	L4	x	x
Podophyllum peltatum	May-apple	2	3	3	3	11	L4	x	x
Polygonum pensylvanicum	pink or Pennsylvania smartweed	4	2	4	1	11	L4		x
Populus grandidentata	large-toothed aspen	2	3	4	3	12	L4	x	x
Prunella vulgaris ssp. lanceolata	heal-all (native?)	4	2	2	3	11	L4		x
Prunus pensylvanica	pin cherry	3	4	3	3	13	L4		x
Pteridium aquilinum var. latiusculum	eastern bracken	2	4	2	4	12	L4	x	x
Quercus macrocarpa	bur oak	1	4	3	3	11	L4	x	x
Quercus rubra	red oak	1	4	2	4	11	L4	xp	x
Ranunculus hispidus var. caricetorum (R.	swamp buttercup	2	4	4	3	13	L4		x

septentrionalis)									
Rorippa palustris ssp. fernaldiana (R. islandica var. fernaldiana)	Fernald's marsh cress	3	2	4	2	11	L4	x	x
Rosa blanda	smooth wild rose	3	2	3	3	11	L4		x
Rubus pubescens	dwarf raspberry	2	3	3	5	13	L4	x	x
Rudbeckia hirta (R. serotina)	black-eyed Susan	2	4	4	3	13	L4	x	x
Sagittaria latifolia	common arrowhead	2	2	5	4	13	L4	x	x
Salix amygdaloides	peach-leaved willow	2	2	5	3	12	L4	x	x
Salix bebbiana	beaked or Bebb's willow	1	4	4	4	13	L4	x	x
Salix discolor	pussy willow	2	3	4	3	12	L4	x	x
Scirpus microcarpus (S. rubrotinctus)	barber-pole sedge or bulrush	2	2	4	3	11	L4	x	x
Scirpus validus	soft-stemmed bulrush	2	2	5	3	12	L4	x	x
Sium suave	water-parsnip	2	2	4	4	12	L4	x	x
Thelypteris palustris var. pubescens	marsh fern	2	4	2	4	12	L4	x	x
Thuja occidentalis	white cedar	1	4	1	5	11	L4	x	x
Tiarella cordifolia	foam-flower	2	3	3	4	12	L4	x	x
Tsuga canadensis	eastern hemlock	1	4	3	5	13	L4	x	x
Typha latifolia	broad-leaved cattail	1	4	4	4	13	L4	x	x
Viola selkirkii	Selkirk's or spurred violet	3	3	4	3	13	L4		x
Waldsteinia fragarioides	barren strawberry	2	4	4	3	13	L4	x	x
Acalypha virginica var. rhomboidea	three-seeded mercury	2	1	3	0	6	L5		x
Acer saccharum ssp. saccharum	sugar maple	1	3	0	2	6	L5	x	x
Achillea millefolium ssp. lanulosum	woolly yarrow	1	2	1	1	8	L5		x

Actaea rubra	red baneberry	2	3	2	3	10	L5		x
Agrimonia gryposepala	agrimony	2	2	0	2	6	L5		x
Ambrosia artemisiifolia	common ragweed	1	1	4	0	6	L5		x
Amphicarpaea bracteata	hog-peanut	2	2	2	2	8	L5		x
Anemone canadensis	Canada anemone	1	2	2	2	7	L5	x	x
Anemone virginiana	common thimbleweed	2	3	0	3	8	L5		x
Apocynum cannibinum var. cannibinum	Indian-hemp dogbane	2	2	3	2	9	L5		x
Aralia nudicaulis	wild sarsaparilla	2	3	2	3	10	L5	x	x
Asclepias syriaca	common milkweed	1	2	0	1	4	L5	x	x
Aster cordifolius	heart-leaved aster	1	1	0	1	3	L5	x	x
Aster ericoides ssp. ericoides (Virgulus ericoides)	heath aster	1	1	2	1	5	L5	x	x
Aster lanceolatus ssp. lanceolatus	panicled or tall white aster	1	2	2	1	6	L5	x	x
Aster lateriflorus	calico or one-sided aster	1	2	3	2	8	L5	x	x
Aster macrophyllus	big-leaved aster	1	3	2	3	9	L5	x	x
Aster novae-angliae (Virgulus novae-angliae)	New England aster	1	2	2	1	6	L5	x	x
Aster puniceus var. puniceus	swamp or purple-stemmed aster	2	2	3	2	9	L5	x	x
Athyrium filix-femina var. angustum	northeastern lady fern	1	3	1	3	8	L5	x	x
Bidens cernuus	nodding bur-marigold	2	2	3	3	10	L5	x	x
Bidens frondosus	common or devil's beggarticks	1	1	4	0	6	L5	x	x
Bidens tripartitus (B. connatus, B. comosus)	three-parted beggar's ticks	2	2	4	2	10	L5	x	x
Carex bebbii	Bebb's sedge	1	2	4	3	10	L5	x	x
Carex blanda (C. laxiflora var. blanda)	common wood sedge	2	2	0	2	6	L5	x	x
Carex cristatella	crested sedge	2	2	4	1	9	L5	x	x

Carex granularis	meadow sedge	1	2	1	3	7	L5		x
Carex radiata (formerly C. rosea)	stellate or straight-styled sedge	2	2	2	2	8	L5	x	x
Carex rosea (formerly C. convoluta)	curly-styled sedge	2	2	3	2	9	L5	x	x
Carex stipata	awl-fruited sedge	2	3	2	2	9	L5		x
Carex vulpinoidea	fox sedge	1	2	4	1	8	L5		x
Cicuta maculata	spotted water-hemlock	2	2	2	2	8	L5	x	x
Circaea lutetiana ssp. canadensis (C. quadrisulcata)	enchanter's nightshade	1	1	1	1	4	L5	x	x
Clematis virginiana	virgin's bower	2	2	1	3	8	L5		x
Clinopodium vulgare (Satureja vulgaris)	dogmint or wild basil	2	3	1	2	8	L5		x
Conyza canadensis (Erigeron canadensis)	horse-weed	1	1	2	0	4	L5		x
Cornus alternifolia	alternate-leaved dogwood	2	2	1	2	7	L5	x	x
Cornus stolonifera	red osier dogwood	1	2	0	3	6	L5	x	x
Crataegus punctata	dotted hawthorn	2	2	3	3	10	L5	x	x
Cryptotaenia canadensis	honewort	2	2	4	1	9	L5		x
Dryopteris carthusiana (D. spinulosa)	spinulose wood fern	1	3	2	2	8	L5	x	x
Echinocystis lobata	wild cucumber	2	2	1	1	6	L5		x
Eleocharis erythropoda (E. calva; E. palustris var. calva)	creeping or red-stemmed spike-rush	2	2	3	1	8	L5	x	x
Elymus virginicus var. virginicus	Virginia wild rye	2	2	3	2	9	L5	x	x
Epilobium ciliatum ssp. ciliatum	sticky willow-herb	2	2	2	1	7	L5		x
Equisetum arvense	field or common horsetail	1	2	1	1	5	L5	x	x
Equisetum hyemale ssp. affine	scouring rush	2	2	1	2	7	L5		x

Erigeron annuus	annual or daisy fleabane	2	2	0	1	5	L5		x
Erigeron philadelphicus ssp. philadelphicus	Philadelphia fleabane	2	2	0	1	5	L5		x
Erythronium americanum ssp. americanum	yellow trout-lily	1	3	3	2	9	L5	x	x
Eupatorium maculatum ssp. maculatum	spotted Joe-Pye weed	1	2	3	3	9	L5	x	x
Eupatorium rugosum	white snakeroot	2	2	2	1	7	L5	x	x
Euthamia graminifolia (Solidago graminifolia)	grass- or narrow-leaved goldenrod	1	1	4	1	7	L5	x	x
Fragaria virginiana (sensu lato)	wild strawberry	1		2	1		L5	x	x
Fraxinus americana	white ash	1	2	0	3	6	L5	x	x
Fraxinus pennsylvanica var. pennsylvanica	red ash	2	2	2	3	9	L5	x	
Galium asprellum	rough bedstraw	2	2	4	2	10	L5		x
Galium triflorum	sweet-scented bedstraw	2	2	2	2	8	L5		x
Geum aleppicum (G. strictum)	yellow avens	2	3	2	2	9	L5		x
Geum canadense	white avens	2	2	1	2	7	L5		x
Glyceria striata	fowl manna grass	2	2	1	2	7	L5	x	x
Hackelia virginiana	Virginia stickseed	4	2	0	2	8	L5		x
Helianthus tuberosus	Jerusalem artichoke	2	1	2	0	5	L5		x
Hydrophyllum virginianum	Virginia waterleaf	1	2	1	2	6	L5	x	x
Impatiens capensis (I. biflora)	orange touch-me-not (spotted jewelweed)	1	2	0	2	5	L5	x	x
Juglans nigra	black walnut	1	1	2	1	5	L5	x	x
Juncus articulatus	jointed rush	2	2	4	2	10	L5		x
Juncus bufonius	toad rush	3	1	4	1	9	L5		x
Juncus dudleyi	Dudley's rush	2	2	3	1	8	L5	x	x
Juncus tenuis	path rush	2	2	1	1	6	L5		x
Juniperus virginiana	red cedar	4	1	4	1	10	L5	x	x

Laportea canadensis	wood nettle	2	3	2	2	9	L5	x	x
Leersia oryzoides	rice cut grass	2	2	3	2	9	L5	x	x
Lemna minor	common or lesser duckweed	2	2	4	2	10	L5	x	x
Lysimachia ciliata	fringed loosestrife	1	2	2	2	7	L5		x
Maianthemum racemosum ssp. racemosum (Smilacina racemosa)	false Solomon's seal	2	3	2	3	10	L5	x	x
Maianthemum stellatum (Smilacina stellata)	starry false Solomon's seal	2	2	1	3	8	L5		x
Matteuccia struthiopteris var. pensylvanica	ostrich fern	1	2	2	2	7	L5	x	x
Mentha arvensis ssp. borealis	wild mint	1	2	3	2	8	L5		x
Monarda fistulosa	wild bergamot	2	2	2	2	8	L5		x
Muhlenbergia mexicana	common muhly grass	2	2	0	1	5	L5	x	x
Oenothera biennis	common or hairy evening-primrose	2	1	1	1	5	L5		x
Onoclea sensibilis	sensitive fern	2	3	1	3	9	L5	x	x
Ostrya virginiana	ironwood	1	3	2	2	8	L5	x	x
Panicum capillare	panic or witch grass	2	1	4	1	8	L5		x
Parthenocissus inserta (P. vitacea)	thicket creeper	2	2	0	1	5	L5	x	x
Phryma leptostachya	lopseed	2	2	3	2	9	L5		x
Pilea pumila	dwarf clearweed	2	2	1	1	6	L5		x
Plantago rugelii	red-stemmed or Rugel's plantain	2	2	0	1	5	L5		x
Poa palustris	fowl meadow-grass	2	2	3	2	9	L5	x	x
Populus balsamifera ssp. balsamifera	balsam poplar	1	2	3	2	8	L5	x	x
Populus deltoides	cottonwood	2	1	4	1	8	L5		x
Populus tremuloides	trembling aspen	1	3	1	3	8	L5	x	x

Prenanthes altissima	tall wood lettuce	2	3	2	2	9	L5		x
Prunus serotina	black cherry	1	2	0	2	5	L5	x	x
Prunus virginiana ssp. virginiana	choke cherry	1	2	0	1	4	L5	x	x
Ranunculus abortivus	small-flowered or kidneyleaf buttercup	1	3	1	2	7	L5		x
Ranunculus recurvatus var. recurvatus	hooked buttercup	2	3	2	3	10	L5		x
Ranunculus sceleratus	cursed crowfoot	2	2	3	2	9	L5		x
Rhus rydbergii (R. radicans ssp. rydbergii)	poison ivy (shrub form)	1	2	0	2	5	L5	x	x
Rhus typhina	staghorn sumach	1	1	2	2	6	L5	x	x
Ribes americanum	wild black currant	2	3	2	2	9	L5		x
Ribes cynosbati	prickly gooseberry	2	3	2	2	9	L5		x
Rubus allegheniensis	common blackberry	2	3	0	1	6	L5	x	x
Rubus idaeus ssp. melanolasius (R. strigosus)	wild red raspberry	1	1	0	1	3	L5	x	x
Rubus occidentalis	wild black raspberry	2	1	0	1	4	L5	x	x
Rubus odoratus	purple-flowering raspberry	2	2	2	2	8	L5		x
Salix eriocephala (S. rigida; S. cordata misapplied)	narrow heart-leaved or Missouri willow	1	1	3	1	6	L5	x	x
Salix exigua (S. interior)	sandbar willow	2	1	5	2	10	L5		x
Sambucus canadensis	common elderberry	2	3	2	2	9	L5	x	x
Sambucus racemosa ssp. pubens (S. pubens)	red-berried elder	1	3	2	2	8	L5	x	x
Sanguinaria canadensis	bloodroot	1	3	3	3	10	L5		x
Scirpus atrovirens	black-fruited or dark green bulrush	2	2	4	2	10	L5		x
Scutellaria galericulata	common skullcap	2	2	3	3	10	L5		x

(S. epilobiifolia)									
Scutellaria lateriflora	mad-dog skullcap	2	2	3	3	10	L5		x
Smilax herbacea	carrion-flower	2	3	2	2	9	L5		x
Solidago altissima	tall goldenrod	1	2	0	0	3	L5	x	x
Solidago caesia	blue-stemmed goldenrod	1	2	4	2	9	L5	x	x
Solidago canadensis var. canadensis	Canada goldenrod	1	2	0	1	4	L5	x	x
Solidago flexicaulis	zig-zag goldenrod	1	1	3	2	7	L5	x	x
Solidago gigantea	late goldenrod	2	1	1	1	5	L5	x	x
Solidago nemoralis ssp. nemoralis	grey goldenrod	2	2	2	2	8	L5	x	x
Solidago rugosa ssp. rugosa	rough-stemmed goldenrod	3	2	2	2	9	L5	x	x
Thalictrum dioicum	early meadow rue	1	3	3	2	9	L5		x
Thalictrum pubescens (T. polygamum)	tall meadow rue	2	3	2	2	9	L5		x
Tilia americana	basswood	1	4	2	3	10	L5	x	x
Ulmus americana	white elm	1	4	0	2	7	L5	x	x
Urtica dioica ssp. gracilis (U. procera)	American stinging nettle	2	3	2	2	9	L5	x	x
Verbena hastata	blue vervain	2	2	4	2	10	L5		x
Verbena urticifolia	white vervain	2	2	2	2	8	L5		x
Viburnum lentago	nannyberry	2	3	1	2	8	L5	x	x
Viola conspersa	dog violet	2	2	0	2	6	L5	x	x
Viola pubescens	stemmed yellow violet	2	3	1	2	8	L5		x
Viola sororia	common blue violet	1	2	0	2	5	L5		x
Vitis riparia	riverbank grape	1	1	0	0	2	L5	x	x
Acer ginnala	Amur maple	+	+	+	+		L+		x
Acer platanoides	Norway maple	+	+	+	+		L+	x	x
Aegopodium podagraria	goutweed or herb-Gerard	+	+	+	+		L+	x	x
Aesculus hippocastanum	horse-chestnut	+	+	+	+		L+		x

Agrostis gigantea (A. stolonifera var. major; A. alba)	redtop	+	+	+	+		L+	x	x
Alliaria petiolata (A. officinalis)	garlic mustard	+	+	+	+		L+	x	x
Allium vineale ssp. vineale	field or wild garlic	+	+	+	+		L+		x
Alnus glutinosa	black or European alder	+	+	+	+		L+		x
Alnus incana ssp. incana	European grey alder	+	+	+	+		L+		x
Arabis procurrens	running rockcress	+	+	+	+		L+		x
Arctium minus ssp. minus	common burdock	+	+	+	+		L+		x
Arenaria serpyllifolia	thyme-leaved sandwort	+	+	+	+		L+		x
Artemisia vulgaris	mugwort or wormwood	+	+	+	+		L+		x
Asparagus officinalis	asparagus	+	+	+	+		L+		x
Barbarea vulgaris	winter cress or yellow rocket	+	+	+	+		L+		x
Berberis thunbergi	Japanese barberry	+	+	+	+		L+		x
Berberis vulgaris	common or European barberry	+	+	+	+		L+		x
Berteroa incana	hoary alyssum	+	+	+	+		L+		x
Betula pendula (B. verrucosa)	European white or silver birch	+	+	+	+		L+		x
Brassica rapa (B. campestris)	turnip	+	+	+	+		L+		x
Bromus inermis ssp. inermis	smooth brome grass	+	+	+	+		L+	x	x
Calamagrostis epigejos	feathertop	+	+	+	+		L+		x
Camelina microcarpa	small-seeded false flax	+	+	+	+		L+		x
Campanula rapunculoides	creeping bellflower	+	+	+	+		L+		x
Campanula sp.? (or Scrophulariaceae)	unidentified specimen & photo	+	+	+	+		L+		x

	(#80)								
Capsella bursa-pastoris	shepherd's purse	+	+	+	+		L+		x
Caragana arborescens	Siberian pea-shrub	+	+	+	+		L+		x
Carduus acanthoides	plumeless thistle	+	+	+	+		L+		x
Carduus nutans ssp. nutans	nodding thistle	+	+	+	+		L+		x
Carex spicata	spiked or European meadow sedge	+	+	+	+		L+		x
Celastrus cf. orbiculatus	oriental or Asiatic bittersweet	+	+	+	+		L+		x
Centaurea jacea	brown knapweed	+	+	+	+		L+		x
Centaurea maculosa	spotted knapweed	+	+	+	+		L+	x	x
Centaurea nigra	black knapweed	+	+	+	+		L+		x
Cerastium fontanum (C. vulgatum)	mouse-ear chickweed	+	+	+	+		L+		x
Cerastium tomentosum	snow-on-the-mountain or snow-in-summer	+	+	+	+		L+		x
Chaenorrhinum minus	dwarf snapdragon	+	+	+	+		L+		x
Chelidonium majus	celandine	+	+	+	+		L+		x
Chenopodium album var. album	lamb's quarters	+	+	+	+		L+		x
Chrysanthemum leucanthemum	ox-eye daisy	+	+	+	+		L+		x
Cichorium intybus	chicory	+	+	+	+		L+		x
Cirsium arvense	creeping (Canada) thistle	+	+	+	+		L+	x	x
Cirsium vulgare	bull thistle	+	+	+	+		L+		x
Convallaria majalis	lily-of-the-valley	+	+	+	+		L+	x	x
Coronilla varia	crown vetch	+	+	+	+		L+		x
Cotoneaster acutifolius	Peking cotoneaster	+	+	+	+		L+		x
Crataegus monogyna	English hawthorn	+	+	+	+		L+		x
Crataegus monogyna x	English hybrid	+	+	+	+		L+		x

punctata	hawthorn								
Crepis tectorum	narrow-leaved hawk's beard	+	+	+	+		L+		x
Crocus verna	crocus	+	+	+	+		L+		x
Cynanchum rossicum (C. medium; Vincetoxicum rossicum))	dog-strangling vine or pale swallow-wort	+	+	+	+		L+	x	x
Cynoglossum officinale	hound's tongue	+	+	+	+		L+		x
Dactylis glomerata	orchard grass	+	+	+	+		L+	x	x
Daphne mezereum	daphne	+	+	+	+		L+		x
Daucus carota	Queen Anne's lace or wild carrot	+	+	+	+		L+	x	x
Dianthus armeria	Deptford pink	+	+	+	+		L+		x
Dipsacus fullonum ssp. sylvestris	teasel	+	+	+	+		L+	x	x
Echinochloa crusgalli	barnyard grass	+	+	+	+		L+		x
Echium vulgare	viper's bugloss or blueweed	+	+	+	+		L+		x
Elaeagnus angustifolia	Russian olive	+	+	+	+		L+		x
Elaeagnus commutata	silver-berry	+	+	+	+		L+		x
Elaeagnus umbellata	autumn olive	+	+	+	+		L+	x	x
Elymus repens (Agropyron repens; Elytrigia repens)	quack grass	+	+	+	+		L+	x	x
Epilobium parviflorum	small-flowered willow-herb	+	+	+	+		L+		x
Epipactis helleborine	helleborine	+	+	+	+		L+	x	x
Erysimum cheiranthoides	wormseed mustard	+	+	+	+		L+		x
Euonymus europaea (E. europaeus)	European spindle-tree	+	+	+	+		L+		x
Euphorbia cyparissias	cypress spurge	+	+	+	+		L+		x
Festuca pratensis (F. elatior var. pratensis)	meadow fescue	+	+	+	+		L+		x
Festuca rubra ssp. rubra (F. prolifera)	red fescue	+	+	+	+		L+		x

Forsythia suspensa	weeping forsythia	+	+	+	+		L+		x
Galeopsis tetrahit	hemp-nettle	+	+	+	+		L+		x
Galium mollugo	white bedstraw or wild madder	+	+	+	+		L+		x
Geum urbanum	urban avens or herb Bennett	+	+	+	+		L+	x	x
Glechoma hederacea	creeping Charlie or ground-ivy	+	+	+	+		L+	x	x
Hemerocallis fulva	orange day-lily	+	+	+	+		L+		x
Hesperis matronalis	dame's rocket	+	+	+	+		L+	x	x
Hieracium aurantiacum	orange hawkweed or devil's paint-brush	+	+	+	+		L+		x
Hieracium caespitosum ssp. caespitosum (H. pratense)	yellow or field hawkweed	+	+	+	+		L+	x	x
Hieracium pilosella	mouse-ear hawkweed	+	+	+	+		L+		x
Hieracium piloselloides (H. florentinum)	smooth yellow hawkweed or king devil	+	+	+	+		L+		x
Hordeum jubatum ssp. jubatum	squirrel-tail barley	+	+	+	+		L+		x
Hypericum perforatum	common St. Johnswort	+	+	+	+		L+		x
Inula helenium	elecampane	+	+	+	+		L+	x	x
Iris germanica	garden iris	+	+	+	+		L+		x
Iris pseudacorus	yellow flag	+	+	+	+		L+		x
Lactuca serriola (L. scariola)	prickly lettuce	+	+	+	+		L+		x
Lamium maculatum	spotted dead-nettle	+	+	+	+		L+		x
Larix decidua	European larch	+	+	+	+		L+	xp	x
Lathyrus latifolius	everlasting pea	+	+	+	+		L+		x
Leonurus cardiaca ssp. cardiaca	motherwort	+	+	+	+		L+		x

Lepidium campestre	field pepper-grass	+	+	+	+		L+		x
Linaria vulgaris	toadflax, butter-and-eggs	+	+	+	+		L+		x
Lithospermum officinale	Eurasian gromwell	+	+	+	+		L+		x
Lolium perenne	perennial rye	+	+	+	+		L+		x
Lonicera morrowii	Morrow's honeysuckle	+	+	+	+		L+		x
Lonicera tatarica	Tartarian honeysuckle	+	+	+	+		L+		x
Lonicera x bella (L. morrowi x tatarica)	hybrid shrub or Bell's honeysuckle	+	+	+	+		L+	x	x
Lotus corniculatus	bird's foot trefoil	+	+	+	+		L+		x
Lysimachia nummularia	moneywort	+	+	+	+		L+	x	x
Lythrum salicaria	purple loosestrife	+	+	+	+		L+		x
Malus pumila (M. domestica; Pyrus malus)	apple	+	+	+	+		L+	x	x
Matricaria matricarioides	pineappleweed	+	+	+	+		L+		x
Matricaria recutita (M. chamomilla)	wild chamomile	+	+	+	+		L+		x
Medicago lupulina	black medick	+	+	+	+		L+		x
Medicago sativa ssp. falcata	alfalfa	+	+	+	+		L+		x
Melilotus alba	white sweet clover	+	+	+	+		L+	x	x
Melilotus officinalis	yellow sweet clover	+	+	+	+		L+		x
Mirabilis nyctaginea (Oxybaphus nyctaginea)	wild four o'clock	+	+	+	+		L+		x
Miscanthus sacchariflorus	eulalia or Amur silver grass	+	+	+	+		L+		x
Myosotis scorpioides	true or European forget-me-not	+	+	+	+		L+	x	x
Nasturtium microphyllum (N. officinale var. microphyllum)	watercress (small-leaved)	+	+	+	+		L+	x	x
Nepeta cataria	catnip	+	+	+	+		L+		x
Pachysandra terminalis	Japanese spurge	+	+	+	+		L+		x

Paeonia officinalis L.	peony	+	+	+	+		L+		x
Phleum pratense	timothy grass	+	+	+	+		L+	x	x
Pinus banksiana	Jack pine	+	+	+	+		L+		x
Pinus sylvestris	Scots pine	+	+	+	+		L+	x	x
Plantago lanceolata	English plantain	+	+	+	+		L+		x
Plantago major	broad-leaved or common plantain	+	+	+	+		L+		x
Poa compressa	Canada or flat-stemmed blue grass	+	+	+	+		L+	x	x
Poa pratensis ssp. pratensis	Kentucky blue grass	+	+	+	+		L+		x
Polygonum aviculare (P. monspeliense)	prostrate knotweed	+	+	+	+		L+		x
Polygonum convolvulus	black bindweed	+	+	+	+		L+		x
Polygonum cuspidatum (Reynoutria japonica)	Japanese knotweed	+	+	+	+		L+	x	x
Polygonum persicaria	lady's thumb	+	+	+	+		L+	x	x
Populus alba	white poplar (including cultivars)	+	+	+	+		L+		x
Potamogeton crispus	curly pondweed	+	+	+	+		L+		x
Potentilla recta	rough-fruited or sulphur cinquefoil	+	+	+	+		L+		x
Pulmonaria officinalis	lung-wort	+	+	+	+		L+		x
Pyrus communis	pear	+	+	+	+		L+		x
Ranunculus acris	tall buttercup	+	+	+	+		L+		x
Ranunculus repens	creeping buttercup	+	+	+	+		L+		x
Ratibida columnifera	prairie coneflower	+	+	+	+		L+		x
Rhamnus cathartica	common or European buckthorn	+	+	+	+		L+	x	x
Ribes rubrum	garden red currant	+	+	+	+		L+		x
Robinia pseudoacacia	black locust	+	+	+	+		L+	x	x
Rosa canina	dog rose	+	+	+	+		L+		x

Rosa multiflora	multiflora or Japanese rose	+	+	+	+		L+		x
Rosa rubiginosa (R. eglanteria)	sweet brier rose	+	+	+	+		L+		x
Rudbeckia triloba	brown-eyed Susan or thin-leaved coneflower	+	+	+	+		L+	x	x
Rumex crispus	curly dock	+	+	+	+		L+		x
Salix alba	white willow	+	+	+	+		L+		x
Salix fragilis	crack willow	+	+	+	+		L+	x	
Salix x rubens (S. alba x fragilis)	European tree willow	+	+	+	+		L+	x	x
Saponaria officinalis	bouncing Bet or soapwort	+	+	+	+		L+		x
Scilla siberica	scilla or Siberian squill	+	+	+	+		L+		x
Sedum acre	mossy stonecrop	+	+	+	+		L+		x
Sedum spurium	false stonecrop	+	+	+	+		L+		x
Sedum telephium	live-forever	+	+	+	+		L+		x
Setaria glauca (S. pumila)	yellow foxtail	+	+	+	+		L+		x
Setaria viridis	green foxtail	+	+	+	+		L+		x
Silene pratensis (S. alba; S. latifolia; Lychnis alba)	evening lychnis	+	+	+	+		L+		x
Silene vulgaris (S. cucubalus; S. latifolia)	bladder campion	+	+	+	+		L+		x
Sinapis arvensis (Brassica kaber)	charlock	+	+	+	+		L+		x
Solanum dulcamara	bittersweet nightshade	+	+	+	+		L+	x	x
Sonchus arvensis ssp. arvensis	glandular perennial or field sow-thistle	+	+	+	+		L+		x
Sonchus asper ssp. asper	spiny sow-thistle	+	+	+	+		L+		x
Sorbaria sorbifolia	false spiraea	+	+	+	+		L+		x
Sorbus aucuparia	European	+	+	+	+		L+		x

	mountain-ash or rowan								
Stellaria graminea	grass-leaved chickweed or stitchwort	+	+	+	+		L+		x
Stellaria media	common chickweed or starwort	+	+	+	+		L+		x
Syringa vulgaris	common lilac	+	+	+	+		L+	x	x
Tanacetum vulgare	tansy	+	+	+	+		L+		x
Taraxacum officinale	dandelion	+	+	+	+		L+		x
Thlaspi arvense	penny-cress	+	+	+	+		L+		x
Torilis japonica	hedge-parsley	+	+	+	+		L+		x
Tragopogon dubius	lemon-yellow goat's beard	+	+	+	+		L+		x
Tragopogon pratensis ssp. pratensis	meadow goat's beard	+	+	+	+		L+		x
Trifolium pratense	red clover	+	+	+	+		L+		x
Trifolium repens	white clover	+	+	+	+		L+		x
Tussilago farfara	coltsfoot	+	+	+	+		L+	x	x
Typha angustifolia	narrow-leaved cattail	+	+	+	+		L+	x	x
Typha x glauca (T. angustifolia x latifolia)	hybrid cattail	+	+	+	+		L+	x	x
Ulmus glabra	Scotch elm	+	+	+	+		L+		x
Valeriana officinalis	common valerian	+	+	+	+		L+		x
Verbascum thapsus	common mullein	+	+	+	+		L+		x
Veronica anagallis-aquatica	water speedwell (European)	+	+	+	+		L+		x
Veronica arvensis	corn speedwell	+	+	+	+		L+		x
Veronica longifolia	long-leaved speedwell	+	+	+	+		L+		x
Veronica officinalis	common speedwell	+	+	+	+		L+		x
Viburnum lantana	wayfaring tree	+	+	+	+		L+		x
Viburnum opulus	guelder-rose/Eu	+	+	+	+		L+		x

	highbush cranberry								
Vicia cracca	cow, tufted, or bird vetch	+	+	+	+		L+		x
Vinca minor	periwinkle	+	+	+	+		L+		x
Viola arvensis	field pansy or Johnny jump-up	+	+	+	+		L+		x
Acer negundo	Manitoba maple	+?	+?	+?	+?		L+?	x	x
Agrostis stolonifera (A. alba var. palustris)	creeping bent grass	+?	+?	+?	+?		L+?	x	x
Atriplex patula (A. patula var. hastata)	halberd-leaved orache or spearscale	+?	+?	+?	+?		L+?		x
Geranium robertianum	herb Robert	+?	+?	+?	+?		L+?	x	x
Oxalis dillenii	deflexed yellow wood-sorrel	+?	+?	+?	+?		L+?		x
Oxalis stricta (O. europaea; O. fontana)	common or upright yellow wood-sorrel	+?	+?	+?	+?		L+?		x
Phalaris arundinacea	reed canary grass	+?	+?	+?	+?		L+?	x	x
Phragmites australis (P. communis)	common, giant, or great reed	+?	+?	+?	+?		L+?		x
Polygonum hydropiper	water- or marsh-pepper	+?	+?	+?	+?		L+?		x
Potentilla norvegica	rough cinquefoil	+?	+?	+?	+?		L+?		x
Sporobolus vaginiflorus	ensheathed dropseed	+?	+?	+?	+?		L+?		x
Veronica peregrina	purslane speedwell	+?	+?	+?	+?		L+?		x
Pinus resinosa	red pine	4	5	5	5	19	pL1	xp	xp
Quercus alba	white oak	3	5	4	5	17	pL2		xp
Physocarpus opulifolius	ninebark	5	2	5	4	16	pL3	xp	xp
Amelanchier arborea (A. canadensis misapplied)	downy serviceberry or Juneberry	2	2	4	3	11	pL4		xp
Fraxinus pennsylvanica var. subintegerrima	green ash	2	2	2	3	9	pL5		xp

Catalpa speciosa	northern catalpa	+	+	+	+		pL+		xp
Euonymus alatus (E. alata)	winged spindle-tree	+	+	+	+		pL+		xp
Juglans ailantifolia (Juglans sieboldiana)	Japanese walnut	+	+	+	+		pL+		xp
Juniperus x media (J. chinensis x sabina; J. x pfitzeriana)	pfitzer or ornamental juniper	+	+	+	+		pL+		xp
Picea abies	Norway spruce	+	+	+	+		pL+	xp	xp
Picea pungens	Colorado spruce	+	+	+	+		pL+	xp	xp
Pinus mugo	mugho pine	+	+	+	+		pL+		xp
Populus x canadensis (P. deltoides x nigra)	Carolina poplar	+	+	+	+		pL+	xp	xp
Ribes odoratum	buffalo or golden currant	+	+	+	+		pL+		xp
Salix caprea	goat or European pussy willow	+	+	+	+		pL+		xp
Salix purpurea	purple osier or basket willow	+	+	+	+		pL+		xp
Salix x sepulcralis (S. alba var. vitellina x babylonica)	weeping willow	+	+	+	+		pL+	xp	xp
Weigela sp.	weigela	+	+	+	+		pL+		xp

APPENDIX H: TOWN OF CALEDON TRAILS MASTER PLAN UPDATE: RECOMMENDATIONS

10.0 Recommendations

Recommendations for the Trails Master Plan Update are divided into timeline priorities that are defined by short term (0-3years), medium term (4-6 years), long term (7-10 years) or on-going.

Trail Planning

- The Trails Master Plan Update is intended to be an adaptable document to take advantage of new development opportunities or changes in priorities. The document should be reviewed in five-years time to ensure that the study continues to remain a relevant document for establishing trail networks. **Medium term**
- Trail development within Caledon shall be done following all Town, regional and provincial polices. **On-going**
- Many of Caledon's established communities such as Bolton, Inglewood and Caledon East have conceptual trail plans already established to guide trail development in these communities. Typically the trail plans were defined as part of the completion of Secondary Plans. These Secondary Plans are to be referred to when looking to expand trails or re-develop trails within these communities. **On-going**
- New residential, commercial and industrial development and redevelopment proposals will integrate planning for efficient movement of people. **On-going**
- Road reconstruction proposals will consider improvements to both cycling and pedestrian networks as an extension to road works. **On-going**
- The Trails Master Plan Update shall be referenced in other relevant Town planning documents. **On-going**
- Town-owned lands and road right-of-ways that are considered surplus shall not be sold until it can be determined if they can be used to establish a trail-link. **On-going**
- Where opportunities arise which allow for the Town to enter into agreements for the establishment of trail connections within utility corridors, rail right-of-ways and rehabilitated quarry lands, they shall be considered. **On-going**
- New development areas that are to include on-road cycling facilities shall also ensure appropriate pedestrian ways are established within the road right-of-way to address non-bicycle trail movement. **On-going**
- The level of service benchmarks for primary trails of 0.8 kilometres per 1,000 population will be included as part of the next Official Plan review. **Medium term**
- In order to meet the future population projections and the Town's benchmark for providing 0.8kms of trail per 1000 population, it is recommended that 2.5km of trail is built per year and/or a total of 49.7km over the next 20 years. **On-going**
- New sidewalks, walkways and paths proposed within settlement areas shall be included in the secondary planning process or as development opportunities arise. Funding for urban pedestrian ways may be addressed within subdivision development agreements and site plans. **On-going**
- A primary north-south multi-use trail link is needed between Bolton and the Caledon Trailway as well as between the Caledon Trailway and the Elora Cataract Trail. Investigation is required to determine the best way to establish these links. **Medium term**

- City of Brampton, the Town of Orangeville and Dufferin County have approved Trail Master Plans that illustrate potential connections to Caledon. The Region of York has a Pedestrian and Cycling Master Plan, which identifies both cycling and trail connections to the Town of Caledon. Communication and coordination with the adjacent municipalities needs to occur to ensure proper connections are established between Caledon trails and adjacent municipalities. **On-going**
- The Town should proactively search out and acquire desirable trail corridors. Joint ventures with the conservation authorities or various government agencies should be encouraged whenever possible. **On-going**
- While low-volume rural roads provide quick and easy trail opportunities for pedestrians, hikers, and equestrian users, efforts should be made to accommodate these users on off-road trails. For safety purposes trail platforms should be encouraged behind the ditches wherever possible. Widening strips from new rural development may provide for enhanced roadside trail cross-sections. **On-going**
- In order to optimize all available land uses, consideration should be given to developing trail corridors within enhanced road right-of-ways, existing parks, storm water management areas and greenway corridors. Where appropriate, coordination with the school boards, conservation authorities and provincial parks should occur to determine opportunities for trail connections within these public sector lands. **On-going**
- The Town shall continue to build strong and effective partnerships with local trail associations and public and private agencies. **On-going**
- Coordination and input is required from the Caledon agricultural and farming community in the planning and implementation of on-road bicycle facilities. Education and signage methods should be considered to communicate with bicyclists on road etiquette and safety around farm equipment. **Short term**
- Future updates to the study should include an inventory of the existing urban trails. **Medium term**

Trail Development must first Protect, Preserve and Enhance the Natural Environment

- The natural landscape and environment is the essence of what attracts people to trails. If woodlots, steep slopes and surface hydrology are not protected the integrity of the trail system and the Town's natural landscape will deteriorate. **On-going**
- Trail development does not occur within areas identified as hazard lands. These include features such as steep slopes and areas that receive seasonal flooding. **On-going**
- Trail planning initiatives must protect, preserve and enhance the valuable natural and historic features and environmentally sensitive lands. **On-going**
- Where conservation policy supports trail access into environmentally sensitive areas for the purpose of public education, trail development shall include special measures to protect the environment from negative impact. **On-going**
- Trail development and management must have regard for private property, heritage sites and areas of interest in the community. **On-going**

Trails in Caledon must Support Community, Agriculture, Recreation, Tourism and Education

- Caledon's agriculture is highly valued. Trails, which encourage the exposure and understanding of people toward agriculture, are to be encouraged. **On-going**

- Trails are an important tourism resource that should be marketed. Promotion of Caledon's trails can generate economic gain for Caledon's commercial and retail markets. A marketing strategy should be established. **Medium term**
- Education about the natural environment, the social and historical dimensions of our communities, happens through active or passive means. In an effort to inform trail users, interpretive signage and academic activities should be included as part of any trail development project. **On-going**

Trails in Caledon should be Developed Using Efficient and Effective Standards of Design and Use

- Trail development standards and details should be prepared for inclusion in the Public Works & Engineering Development Standards, Polices and Guidelines. All standards should have regard for Conservation Authority guidelines as they are important partners for trail development and environmental preservation. **Short term**
- A standard for trail markers, symbols and interpretive signage must be established and adopted by all trail associations. **Medium term**
- Safety of the trail user should not be compromised. Road crossings must be highly visible and signed in advance. Major crossings should be grade separated. **On-going**
- Information signs and maps should be placed at all main trail entry points, with details about the permitted uses, the proper trail etiquette, and safety tips for road crossings and wildlife warnings if applicable. Trail maps should be created for posting on the Town web-site and on signs at key points on the trails. **Medium term**

Trails in Caledon should be maintained to Sustainable Service Levels

- All trails will be adequately supported through annual operating budgets, providing the necessary resources to maintain the trail system. **On-going**
- Service levels should first address public safety, then environmental protection and then aesthetic values. **On-going**
- Service levels should be proportional to use. More use attracts higher service levels. **On-going**
- Service levels should be suited to intended uses. Not all trails need the same amenities. **On-going**
- Service levels should be sustainable. Funding, and operating practices need to be assured and regulated. Where services are offered by others the Town should assure consistency of quality. **On-going**
- Higher service levels can be provided by user groups. With Town approval, trail associations and user groups may provide enhanced trail services and promote trail development. **On-going**
- The Town should encourage sustainable service levels for the full range of trails in the network. **On-going**

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