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NATURAL AREAS SURVEY

UPDATE 2002 December

(Part 5 of Volume 3 of 3)

NOTE:

This Part 5 of Volume 3 of 3, Natural Areas Survey Update, 2002 December, is to be read in conjunction with the Natural Areas Survey Report, 1996 September, (Volume 1 of 3) and Natural Areas Survey Appendices, 1996 September, (Volume 2 of 3) and the Updates of 2001 December, 2000 December, 1999 December and 1998 February.

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NATURAL AREAS SURVEY UPDATE - PART 5 OF VOLUME 3 of 3

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1.0 INTRODUCTION

A Natural Areas Survey for the City of Mississauga was undertaken during 1995 and 1996 (Natural Areas Survey, 1996 September) which identified one hundred and forty-four natural areas representing the best remaining natural features in the City. Of these 144 natural areas, 141 were classified as either Significant Natural Sites, Natural Sites, or Natural Green Spaces, and three were classified as Residential Woodlands. In 1996 the 141 natural sites comprised 7.10% of the total area of the City. Also identified were 55 Special Management Areas (SMAs) and 40 Linkages. Definitions for these classifications are given in the Natural Areas Survey, 1996 September.

Since completion of the Natural Areas Survey in 1996 a number of development projects have been initiated within or adjacent to the natural areas originally identified. Programs to update the Natural Areas Survey have been undertaken each year commencing in 1998 to document any impacts from these recent developments. Each year natural areas in different quadrants of the City are reviewed. With the completion of last years work, all Wards in the City have been updated once since the initial study in 1996. This year marks the start of the second round of updates commencing with natural areas in Wards 5 and 6, as well as a limited number of additional areas identified as having possible changes.

The intent of updating the Natural Areas Survey is to review the current status of natural areas and update information on floristics, fauna, impacts, boundary changes and management needs. This report documents the methods used, summarizes changes to the natural areas, and provides some recommendations for the mitigation of impacts and management considerations.

2.0 METHODS

2.1 Background Review

The primary focus of this update was the 47 natural areas located in Wards 5 and 6. Also reviewed were 5 additional natural areas in the City. These additional sites have been the subject of recent Environmental Impact Studies (EISs) or Class Environmental Assessments, were inaccessible for field work in 2001, or are locations where Community Services projects have recently been undertaken. Information from the reports reviewed was incorporated into the Natural Areas System database and are listed in Appendix 1. In addition, 6 sites recently purchased by the City of Mississauga (in the Town of Milton) were investigated for descriptive purposes. These sites are documented in Appendix 2.

The background review was undertaken by a careful analysis of aerial photographs and review of reports (inventory reports, EISs, *etc.*) on natural areas undertaken since the last update study. Black and white aerial photographs from 2000 were used to identify impacts to natural area boundaries. Detailed field checks were made in natural areas where changes to boundaries were noted, or where there was a change in land use within 500 m of a natural area boundary, subject to obtaining permission to access the site. Where necessary, revisions to natural area boundaries were delineated on aerial photographs. These new boundaries were verified in the field and subsequently mapped on mylar plots provided by the City. All natural sites within Wards 5 and 6 were, at minimum, the subject of a "drive by" inspection, even if there was no indication of impacts from the aerial photograph analysis. Where changes to boundaries were noted in the field that were not present on the 2000 aerial photographs, 2002 aerial photographs were used to delineate boundary revisions.

Using this protocol, a list of 58 sites were identified as requiring field investigation for updating (Appendix 3). This includes: the 47 natural areas that occur in Wards 5 and 6, three Community Services projects, four sites that were subject to Environmental Impact Studies, one site that was subject to a Class Environmental Assessment, two sites from the 2001 update that were inaccessible due to road construction, and six sites purchased by the City of Mississauga (Note: some sites fell into more than one of the above categories thus they add up to more than 58).

2.2 Fieldwork

Field visits were made to 39 of the 58 sites identified. Natural areas NE7, ETO3, NE8, NE5, NE6, NE10, NE11, NE12, GT3, HO6, MV15, MV18, MV11, MB9, CE5, SP1 and CRR5 did not receive a field visit because permission to access these sites was not granted. Natural areas EC1, GT1 and MV14 were destroyed during 2002 for development and therefore field visits were not required.

Appendix 3 lists the reasons for fieldwork, and the date when fieldwork was conducted for each of the 39 natural areas. If there was no development within or adjacent to a natural area or there was no change in the boundaries (identified through aerial photograph interpretation and literature review), a site inspection from the road was conducted. A complete field evaluation was conducted at all natural areas (where access was provided) where the boundaries had changed based on the aerial photographs or where development had occurred either within or adjacent to the site. Landowner contact for natural areas in private ownership was undertaken by the City Planning and Building Department.

The following information was recorded on data sheets for each natural area that received a field visit:

- all flora and fauna species observed were recorded, and specimens collected;
- vegetation community descriptions were updated where necessary;
- evidence of disturbance, regeneration and management needs were noted; and
- the overall condition was qualitatively rated in comparison to other sites in the City.

In addition, the six sites recently purchased by the City were surveyed for amphibians and breeding birds in the spring and early summer, respectively. A copy of the field notes and field data sheets were provided to the City under separate cover for inclusion in the natural area files.

2.3 Analysis

The City of Mississauga database records and fact sheets for each natural area were updated based on the literature review and fieldwork carried out in 2002. Data collected for the six sites purchased by the City were not incorporated into the database. Hard copies of species lists and field notes were provided under separate cover to the City.

The incorporation of the Floristic Quality Assessment System for Southern Ontario (Oldham *et al.* 1995) into the database in 2001 allowed the naming conventions for floral species in the City to be updated to follow the Ontario Plant List (Newmaster *et al.* 1998). The provincial rarity ranks of floral and faunal species were also reviewed to determine the need for updating. Provincial rarity status was based on Natural Heritage Information Centre (NHIC 1997, 2002a, 2002b, 2002c, 2002d, 2002e). The natural areas summary table for the City (Table 4 in the Natural Areas Survey, 1996 September, Volume 1 of 3) was updated to allow a comparison of the revised sites within the entire City (see Table 1, page 6).

The Floristic Quality Indices (FQI) were updated for natural areas where the floral inventory changed between 1996 and 2002. For a summary of the methodology and interpretation of the Floristic Quality Assessment see the Natural Areas Survey, 1996 September, Volume 1 of 3. Overall, the ranking of the native mean coefficients (high > 4.00, medium = 3.3 to 3.99, low < 3.3) and Floristic Quality Indices (FQIs) (high > 40, medium = 30 to 39.99, low < 30) remained the same as in 1996.

Recent disturbances, threats and management needs were noted where they changed from the Natural Areas Survey, 1996 September, Volume 1 of 3, Natural Areas Survey, 1998 Update, (Volume 3 of 3), Natural Areas Survey, 1999 Update, (Volume 3 of 3), Natural Areas Survey, 2000 Update, (Volume 3 of 3), or Natural Areas Survey, 2001 Update, (Volume 3 of 3) reports. Recommendations for the mitigation of real or potential impacts that resulted from recent developments, including naturalization projects were provided.

2.4 Mapping

Boundary changes identified for natural areas were updated on mylar overlays provided by the City. Boundary delineation followed the approach used in the Natural Areas Survey, 1996 September, Volume 1 of 3. These revisions were subsequently digitized using MicroStation GeoGraphics format by the City of Mississauga, Geographic Technology Services. Updated surficial areas (hectares and acres) for the natural areas and vegetation communities were determined using GIS and incorporated into the database. Updated UTM coordinates for the natural areas and vegetation communities were also incorporated into the database.

3.0 NATURAL AREAS FRAMEWORK

Table 1 (page 6) summarizes the current information available for each natural area in the City of Mississauga. This table updates Table 4 in the Natural Areas Survey, 1996 September, Volume 1 of 3 and summarizes the following information:

- the classification of the natural areas;
- designation of the natural area as a significant feature (ANSI, ESA, evaluated wetland);
- size of the natural area in hectares and acres;
- the number of floral species;
- the proportion of the floral that is non-native;
- the native FQI and native mean coefficient;
- the number of vegetation communities;
- the number of provincially and regionally significant floral and faunal species;
- the number of birds, mammals, and herptiles;
- the number of Credit Valley Conservation species of conservation interest; and
- the condition of the natural areas.

Appendix 4 documents the changes that occurred in natural areas between 1996 and 2002 using the same categories. Some of the changes outlined in Appendix 4 are minor revisions while others are considered significant in the context of the natural areas program. Significant changes are considered to be:

- a change in the classification of a natural area (*e.g.*, from Significant Natural Site to Natural Site);
- a change in the designation of a natural area (*e.g.*, the removal or addition of ANSI status);
- a change of more than 25% in the original size of a natural area;
- a change in the FQI or native mean coefficient rank for a natural area (*e.g.*, a rank that decreases substantially such that its rank goes from high to medium);
- the addition of rare floral or faunal species (provincial, local and CVC); and
- the addition or deletion of a vegetation community.

Figure 1 (see page 15) shows the location of natural areas, Special Management Areas, Residential Woodlands (RW) and Linkages. This figure updates Figure 2 from the Natural Areas Survey, 1996 September, Volume 1 of 3. Due to the scale of mapping, Significant Natural Sites (SNS), Natural Sites (NS) and Natural Green Space (NGS) are not discriminated on this map, are all labelled as "natural area". The location of "minor natural features" and "shoreline reaches" are the same as in the Natural Areas Survey, 1996 September report.

Insert Table 1

Figure 1: Legend For Natural Area Framework for the City of Mississauga
(arranged by Planning District)

(Note: There are 137 natural areas and 3 Residential Woodlands identified on Figure 1, however 144 areas are listed below because 4 areas span two planning districts and are thus listed twice).

SOUTHDOWN

- 1. SD1
- 2. SD4
- 3. SD5 (Meadowwood)
- 150. SD7 (Lakeside)

CLARKSON-LORNE PARK

- 4. CL52 (Meadowwood)
- 5. CL1 (Meadowwood)
- 6. CL9 (Ratray Marsh)
- 7. CL8
- 8. CL15
- 9. CL16 (Jack Darling Park)
- 10. CL17 (Lorne Park Estates)
- 11. CL13
- 12. CL43
- 13. CL42
- 14. CL21 (Birch Glen)
- 15. CL39 (Whiteoaks)
- 16. CL22
- 17. CL30 (Lorne Park Prairie)
- 18. CL31 (Lornewood Creek Trail)
- 19. CL24 (Tecumseh)
- 20. CL26
- 24. CRR9 (Credit River Flats)

PORT CREDIT

- 21. PC1 (Rhododendron Gardens)
- 22. PC2 (Port Credit Memorial)
- 23. PC3

MINEOLA

- 24. CRR9 (Credit River Flats)
- 25. MI4
- 26. MI1
- 151. MI17 (Mary Fix)
- 152. MI7

LAKEVIEW

- 27. LV3 (Adamson Estate)
- 28. LV4 (Helen Molasy Memorial)
- 29. LV5
- 30. LV2
- 31. LV1
- 32. ETO8
- 33. LV14 (Lakeview Golf Course)
- 34. LV6
- 35. LV7 (Cawthra Woods)
- 36. ETO7

SHERIDAN PARK

- 37. SP1
- 38. SP3

SHERIDAN

- 39. SH6
- 40. CRR7
- 41. CRR8

ERINDALE

- 40. CRR7
- 41. CRR8
- 42. ER6
- 43. CRR6
- 156. ER7

COOKSVILLE

- 44. CV1 (Iroquois Flats)
- 45. CV2
- 46. CV12 (Richard Jones)
- 47. CV10
- 48. CV8 (Camilla)
- 153. CV6 (Stillmeadow)

DIXIE

- 36. ETO7
- 49. ETO6
- 50. AW1 (Willowcreek)

WESTERN BUSINESS PARK

- 51. WB1 (Erin Mills Twin Arena)

ERIN MILLS

- 52. EM30 (Tom Chater Memorial)
- 53. EM6 (King's Masting)
- 54. EM2 (South Common)
- 55. EM10
- 56. EM14
- 57. EM4
- 58. EM5 (Glen Erin Trail)
- 59. EM21 (Richard F.C. Mortensen)
- 154. CRR10

CREDITVIEW

- 60. CR1

FAIRVIEW

- 61. FV1
- 62. FV3

CITY CENTRE

- 63. CC1 (Bishopstoke Walk)

MISSISSAUGA VALLEY

- 64. MY1 (Mississauga Valley)
- 65. MY3 (Stonebrook)

Figure 1 continued

APPLEWOOD

- 50. AW1 (Willowcreek)
- 66. AW4 (Applewood Hills)
- 67. AW3 (Applewood Hills)
- 68. ETO5
- 49. ETO6

RATHWOOD

- 69. ETO4
- 70. RW5 (Applewood Hills)
- 71. RW6 (Applewood Hills)
- 72. RW4 (Rathwood District)
- 73. RW1
- 74. RW2 (Woodington Green)

CHURCHILL MEADOWS

- 75. CM7
- 76. CM9
- 78. CM12

CENTRAL ERIN MILLS

- 81. CE7 (Sugar Maple Woods)
- 82. CE9 (Quenippenon Meadows)
- 83. CE10 (Erin Wood)
- 84. CE5
- 85. CE1 (Woodland Chase Trail)
- 86. CE12 (Bonnie Brae)
- 87. CRR5
- 88. CRR4
- 155. CRR11

STREETSVILLE

- 89. SV12 (Bonnie Brae)
- 90. SV10
- 88. CRR4
- 91. SV1 (Turney Woods)
- 92. CRR3
- 93. CRR2

EAST CREDIT

- 87. CRR5
- 88. CRR4
- 92. CRR3
- 93. CRR2
- 94. EC22
- 96. EC13
- 155. CRR11

HURONTARIO

- 98. HO1
- 100. HO3 (Staghorn Woods)
- 101. HO6
- 102. HO7
- 103. HO9 (Britannia Woods)

NORTHEAST

- 104. NE4
- 105. NE3
- 107. NE1
- 108. NE6
- 109. NE5
- 110. NE7
- 69. ETO4
- 111. ETO3
- 112. NE8
- 113. NE10
- 114. NE11
- 115. NE12
- 116. ETO2
- 117. ETO1
- 118. NE9 (Wildwood)

LISGAR

- 119. LS1 (Lisgar Meadow Brook)
- 120. LS2
- 121. LS3 (Trelawny Woods)

MEADOWVALE

- 122. ME10 (Eden Woods)
- 123. ME12 (Lake Wabukayne)
- 124. ME11 (Lake Aquitaine)
- 125. ME9 (Maplewood)
- 126. ME8 (Windrush Woods)

MEADOWVALE BUSINESS PARK

- 127. MB9
- 128. MB7 (Mullet Creek)
- 129. MB8
- 130. MB3
- 132. MB4
- 133. MB6 (Totoredaca)
- 134. MB2
- 135. MB1

MEADOWVALE VILLAGE

- 136. MV19
- 137. CRR1 (Meadowvale C.A.)
- 138. MV18
- 139. MV2
- 141. MV12
- 142. MV14
- 143. MV11
- 144. MV15
- 93. CRR2

GATEWAY

- 146. GT3
- 147. GT2

MALTON

- 149. MA1

insert Figure 1: Natural Area Framework

3.1 Summary of Changes

Figure 2 illustrates the continued decrease between 1996 and 2002 in the proportion of the City occupied by the Natural Areas System. A detailed summary of the changes to natural area classification between 1996 and 2002 is provided in Appendix 5. The total number of natural areas has decreased from 141 in 1996 to 137 in 2002. The total area of the City identified as part of the natural area system in 2002 is 6.65%. This reflects a continuing decline in area from the 7.10% reported in 1996. This decrease represents an overall loss of 146.32 ha (360.66 a.) from 1996. Only the three Residential Woodlands remain unchanged in area between 1999 and 2002.

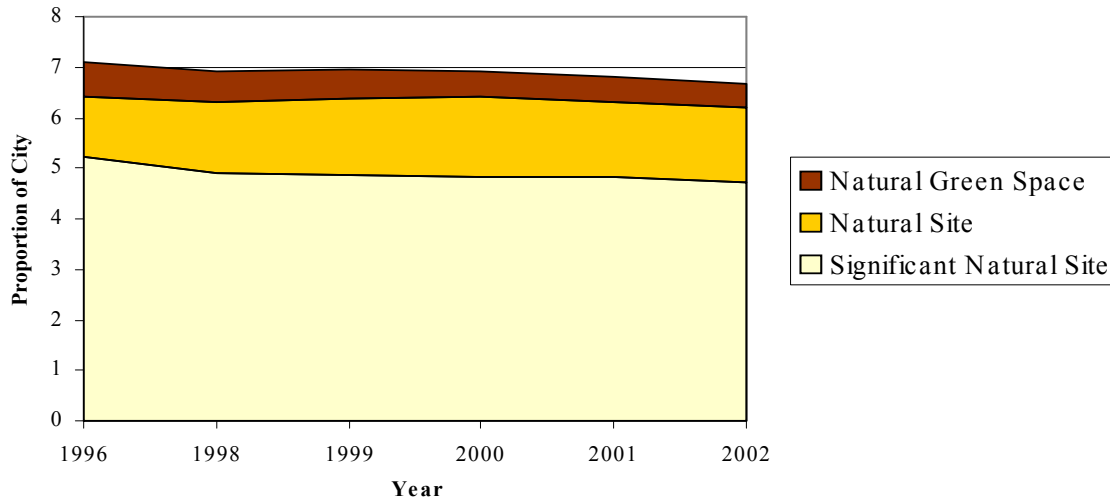


Figure 2: The Proportion of the City Contributed by Each Natural Area Classification Between 1996 and 2002. See Appendix 5 for a complete summary.

Five Special Management Areas associated with natural areas SP1, CE5, NE6, CRR10 and ETO3 were removed due to development, bringing the 2002 total down to 43. The number of Special Management Areas has decreased from the original number of 55 identified in 1996. The total number of Linkages remains the same (36) as in 2000.

One natural area ME12 (Lake Wabukayne) was upgraded in 2002 from natural green space to significant natural area due to a record of milk snake from the site in the late 1980s. Milk snake was designated provincially significant in 2002 (see section 4.4, for a discussion). Four natural areas have been substantially reduced in size as a result of development (MV2, NE8, ETO3 and SP1).

Changes to the three major landform types (valleyland, tableland, and wetland) in the City between 1996 and 2002 are presented in Figures 3 and 4. A detailed summary of the changes to the landform types is provided in Appendix 6.

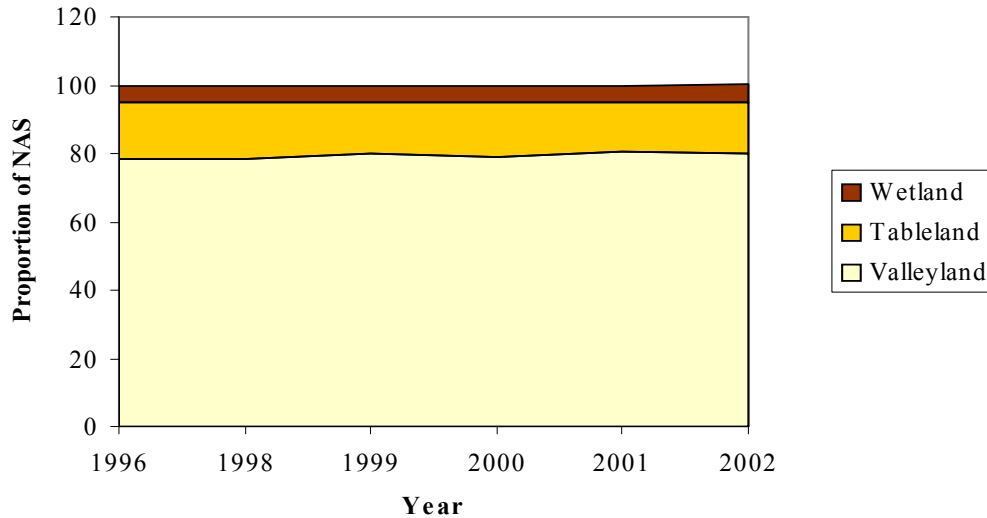


Figure 3: The Proportion of the Natural Areas System Contributed by Landform Type Between 1996 and 2002. See Appendix 6 for a complete summary.

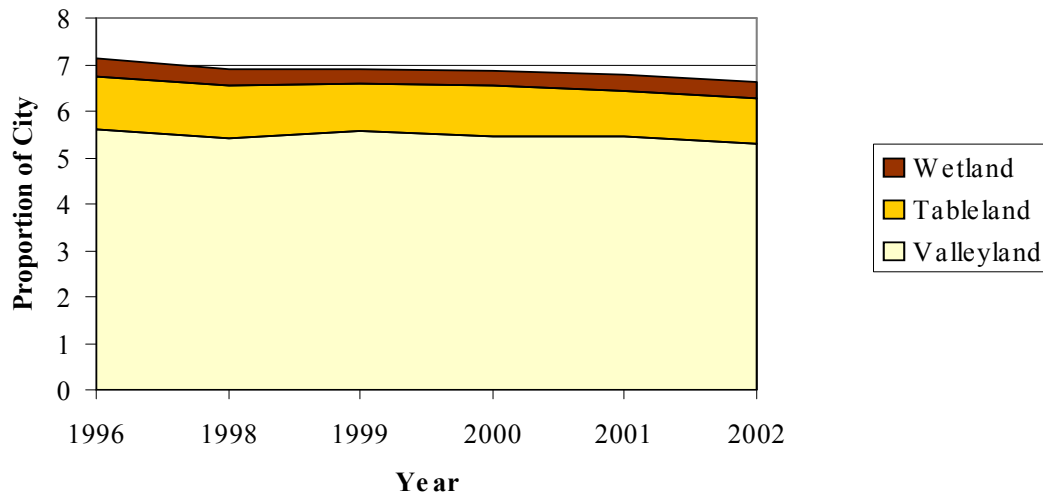


Figure 4: The Proportion of the City Contributed by Landform Type Between 1996 and 2002. See Appendix 6 for a complete summary.

Figure 3 illustrates that the majority of the natural areas system (80.3%) is associated with valleylands in 2002. This proportion has increased from approximately 78.4% of the system in 1996. The actual number of valleyland sites has decreased to 78 with the removal of natural area MV14. In addition, in 2002 there was a substantial decrease in the size of natural areas NE8 and ETO3 associated with Etobicoke Creek. These decreases were offset by increases in the size of natural areas NE9 (Mimico Creek) and CRR10 (Credit River).

In contrast, tablelands only account for 14.7% of the natural areas system in 2002 (Figure 3). This represents a continued decrease from 16.4% in 1996. The total number of tableland natural areas has decreased from 60 in 1996 to 52 in 2002, with the removal of nine tableland natural areas between 1996 and 2002. One tableland natural area (CV6) was added in 2000. This trend is also reflected in the proportion of tableland that is protected in the City, with steady decreases from 1.16% in 1996 to 0.97% in 2002 (Figure 4).

The proportion of the natural areas system associated with wetlands has remained more or less constant from 1996 at approximately 5.0% (Figure 3). The proportion of wetlands in the City has decreased marginally from 0.36% in 1996 to 0.33% in 2002 (Figure 4) with the removal of natural area EC1 for residential development in 2002.

The mean size of all three landscape types has been decreasing since 1996 due to the removal of portions of natural areas for development (Appendix 6). The exception to this is the mean size of wetlands which increased between 2001 and 2002 with the removal of EC1 which was smaller than the average wetland size. Currently the mean size of wetlands is 19.5 ha or 48.3 a. Tableland natural areas are generally very small (mean size of 5.4 ha or 13.3 a.) when compared to the valleyland areas (mean size of 19.2 ha or 47.4 a.).

Tableland natural areas (which are mainly wooded) tend to be discrete islands that have limited connections to other remnant natural features. Valleylands are better connected by virtue of the linearity of the landform and because they have historically been better protected from development. From a City-wide perspective, in 2002 only 0.97% of the landbase is represented in tableland natural areas. This reinforces the need to place a high priority on the protection of the remaining tableland features present within the City, and an emphasis on their management to maintain or improve their quality.

4.0 NATURAL ENVIRONMENT OVERVIEW

4.1 Vegetation Communities

The 49 vegetation communities described for the City (see Table 2 in the Natural Areas Survey, 1996 September, Volume 1 of 3) were compared between 1996 and 2002 (see Figure 5, as well as Appendices 7 and 8). In 2000, the Ecological Land Classification (ELC) (Lee *et al.* 1998) was applied to the vegetation communities described for the City. A list of the City's vegetation communities and their corresponding ELC vegetation community classification is provided in Appendix 5, Natural Areas Survey, 2000 Update, (Volume 3 of 3). To facilitate the comparison of vegetation communities between updates, the City designations are discussed in this report.

The vegetation communities have been grouped into six broad categories to facilitate discussion; valleylands, woodlands, successional, wetlands, anthropogenic and other. The category "other" was used for three communities (tall-grass prairie, beach and unknown) that did not easily fit into one of the other five categories. The most prevalent vegetation communities within the City remain those in the valleyland category. The tall-grass prairie community is still considered the only provincially rare vegetation community within the City.

Appendices 7 and 8 summarize the changes in the vegetation community categories between 1996 and 2002. Figure 5 highlights the significant decrease in the size of all vegetation community categories within the City from 7.96% in 1996 to 7.46% in 2002 (Note: this figure is higher than reported in section 3.1 due to the inclusion of wooded residential areas). Figure 5 also illustrates that the Anthropogenic category accounts for almost the same proportion of the city as the Woodland category with 1.12% and 1.39%, respectively. This loss of vegetation communities will result in a reduction in biodiversity in the City, contrary to the goals and objectives of the Natural Areas Survey, 1996 September.

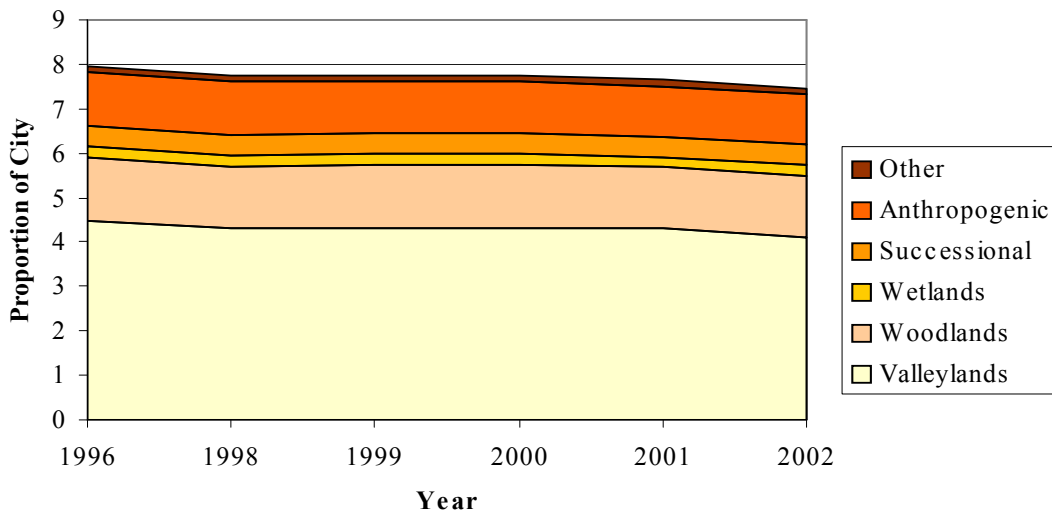


Figure 5: The Proportion of the City Contributed by Each Vegetation Community Category Between 1996 and 2002. See Appendices 7 and 8 for a complete summary.

Valleylands

Valleylands includes nine vegetation communities (listed in Appendices 7 and 8). Even though this category is termed valleylands, the boundaries of these vegetation communities do not necessarily follow floodplain boundaries. For example wooded slope could occur on valley slopes or above the top of bank (tableland is included as long as it contiguous with the valleyland). In 2002, this category comprised 4.11 % of the total City area (Figure 5). This category has seen a decrease in area between 1996 and 2002 of 98.7 ha (243.79 a.) (Table 2). More than half of this loss (59%) occurred between 2001 and 2002 with a decrease of 58.28 ha (143.95 a.). Four of the vegetation communities in this category continue to be the most widespread in the City: wooded slope, floodplain, wooded non-native valleyland, and open with open slopes valleyland.

Wooded slope valleylands (A) and floodplain valleylands (B) had substantial decreases in 2002 of 6.2 ha (15.31 a.) and 32.82 ha (81.07 a.), respectively (Appendix 7). This decrease can primarily be attributed to expansion of the Lester B. Pearson International Airport in natural areas ETO3 and NE8. Natural area MV2 on Fletcher's Creek was also substantially decreased as a result of residential development. Open with open slopes valleylands (K) decreased by 17.85 ha (44.09 a.) during this update. This decrease is largely attributable to the removal of MV14 for residential development.

Woodlands

Woodlands includes twenty vegetation communities (listed in Appendices 7 and 8), all of which occur outside of valleylands, although intermittent streams may be present within. In 2002, this category comprised 1.39 % of the total City area (Figure 5). This category has seen a total decrease between 1996 and 2002 of 18.11 ha (44.73 a.). However, between 2001 and 2002 this category saw an increase of 2.51 ha (6.20 a.) (Table 2). The majority of this increase can be attributed to the revision of vegetation communities within natural areas located along the Credit River. Eleven of the vegetation communities in this category (see Appendix 8 for a complete list) are considered uncommon in the City, each occupying less than 1% of the total area of natural areas or containing an uncommon "working-group" (Krahn *et al.* 1995). Six of these eleven communities can also be considered "at risk" in the City, each represented only in a single natural area. These communities are: sugar maple-eastern hemlock forest (GG); sugar maple-black cherry forest (II); sugar maple-American beech-eastern hemlock forest (LL); white pine-eastern hemlock-sugar maple forest (MM); American beech forest (PP); and black cherry-eastern hemlock-white ash forest (VV).

One woodland community, "oak-ash forest" (RR) decreased by 3.11 ha (7.68 a.) between 2001 and 2002 as a result of development removing GT1 and portions of SP1. The revision of vegetation communities in CRR2 resulted in an increase of 2.08 ha (6.59 a.) to "sugar maple-American beech forest" (DD). Two woodland communities were added to natural area CRR10, and as a result "oak-hickory forest" (SS) increased by 4.64 ha (11.46 a.) and "eastern hemlock forest" (NN) increased by 1.09 ha (2.69 a.). One woodland community, "sugar maple forest" (CC) decreased by 1.50 ha (3.71 a.) with the removal of a portion of natural area HO7. A number of other woodland communities saw small decreases (less than 1 hectare).

An emphasis should be placed on the protection and management of the remaining woodland vegetation communities. The continued loss of these communities will result in a subsequent loss of plant and animal species from the City. The additional pressures associated with development adjacent to natural areas will jeopardize the remaining communities even more (see section 5.0 for a discussion of disturbances related to development).

Successional

The successional category has six vegetation communities (listed in Appendices 7 and 8). This category has increased in size by 7.23 ha (17.86 a.) between 1996 and 2002 (Table 2). In 2002, this category comprised only 0.37 % of the total City area (Figure 5). Five of the vegetation communities in this category remain uncommon in the City occupying less than 1% of the total area of natural areas (Appendix 8). One of these five communities, birch forest (XX), can also be considered "at risk" in the City, as it is represented in a

single natural area.

"Old field" (C) increased by 11.37 ha (28.08 a.) between 2001 and 2002 with the conversion of portions of CE10 and MV19 to this community. This community was also added to natural areas CRR11, CRR10, and NE9 based on mapping revisions. "Early successional forest" (E) also increased by 3.44 ha (8.49a.) with mapping revisions to CRR10. Portions of this community were removed from natural areas HO7 and SP1 due to development.

The loss of successional communities from the City continues as a result of new developments because of the assumption that these types of communities do not contribute to the biodiversity of the City. However, these communities perform a number of important ecological functions: they provide habitat for a number of plant and animal species (including birds), they act as a buffer between forests and adjacent development, they provide structural diversity to a site (variation in the height of plant species provides a wider range of animal habitat), and they provide habitat for small mammals and insects which in turn provide a prey base for other species higher up the food chain.

Wetland

The wetland category is composed of six vegetation communities (listed in Appendices 7 and 8). Between 1996 and 2002 this category decreased in size by 11.21 ha (27.69 a.) to only 0.22% of the total City area (Table 2 and Figure 5). Between 2001 and 2002 this category increased marginally by 0.64 ha (1.58 a.). In addition to the removal of EC1 for development, a small wetland in natural area CE10 was reclassified to successional in 2002 due to a lack of plant species associated with wetland communities. Each of the vegetation communities in this category continue to be considered uncommon in the City occupying approximately 1% of the total area of natural areas (open water marsh is 1% and cattail marsh is 1.2%). One of these six communities, willow-buttonbush swamp thicket (X), can also be considered "at risk" in the City as it is represented in a single natural area.

Despite their small size wetland communities tend to contribute a disproportionately high amount of biodiversity of the City. A large number of both plant and animal species are restricted to this habitat. In addition to the outright removal of these communities for development there is also the concern that even if a wetland is retained within a subdivision, alterations to the hydrological and/or hydrogeological regime from the development will result in permanent conversion of the vegetation community from wetland to upland.

Anthropogenic

Anthropogenic is composed of five vegetation communities (listed in Appendices 7 and 8). The size of this category decreased between 1996 and 2002 by 25.98 ha (64.17 a.) and currently comprises 1.12% of the total City area (Table 2 and Figure 5). This is more than the amount of the City occupied by wetlands (0.22%) and successional (0.52%) communities combined. "Wooded residential" is still considered to be one of the largest communities in the City. The community "manicured" (F) decreased by 11.74 ha (29.00 a.) between 2001 and 2002 as a result of naturalization projects in natural areas CRR11, CRR2 and CRR3.

Other

The other category is composed of three vegetation communities (listed in Appendices 7 and 8): "beach", "tall grass prairie" and "unknown". This category remained substantially unchanged from 1996-2002 (see Table 2 and Figure 5).

Insert Table 2

4.2 Flora

The flora in the City of Mississauga database was updated in 2002 to conform to the Ontario Plant List (Newmaster *et al.* 1998), and by extension the Vascular Plant Flora of the Region of Peel (Kaiser 2001). The flora in the City of Mississauga continues to include a large number of plant species that have been planted in various natural areas, whereas Kaiser (2001) only includes the spontaneously occurring flora in the Region. With an ability to record these planted species in the database, valuable information is provided for future management initiatives in the City (*e.g.*, Norway maple control, *etc.*). For this reason discrepancies remain between the Vascular Plant Flora of the Region of Peel (Kaiser 2001) and the flora in the City of Mississauga.

Two plant species, yew (*Taxus baccata*) and English ivy (*Hedera helix*), not included in the Ontario Plant List but present in the City as garden escapes have been retained in the flora. One additional species, the hawthorn (*Crataegus scabrida*) is included within the hawthorn (*Crataegus schuettei*) in the Ontario Plant List, however (Kaiser 2001) has retained it as a distinct species. In this case, Kaiser (2001) was followed instead of the Ontario Plant List due to its local focus.

Changes to the native status of flora for Mississauga as a result of updates based on the Ontario Plant List (Newmaster *et al.* 1998) are summarized in Table 3. One new species, white bedstraw (*Galium mollugo*) was added to the flora of the City in 2002, based on field work and literature. The total number of species stands at 1112 (see database for a complete list). The total number of native species in Mississauga stands at 669 (60% of the flora) and non-natives number 443 (40% of the flora). Appendix 9 lists the plant specimens collected during fieldwork conducted in 2002.

Table 3: Changes to the Flora of the City of Mississauga Based on the Ontario Plant List

Common Name	Scientific Name	Non-native 2001	Non-native 2002
hybrid baneberry	<i>Actaea x ludovici</i>	no	yes
Canada blue grass	<i>Poa compressa</i>	no	yes
Jerusalem artichoke	<i>Helianthus tuberosa</i>	yes	no

One plant species, American ginseng (*Panax quinquefolius*) had its provincial rarity rank updated in 2002. This species is now considered to be nationally endangered by COSEWIC and has a provincial rank of S2 (down from the previous rank of S3). Aside from this species there were no changes to provincial rarity ranks, thus Appendix 5 from the Natural Areas Survey, 1998 Update, (Volume 3 of 3) report is considered to be current and is not provided in this report. There are no records of this species in the Natural Areas database and its current status in the City is unknown.

There were no changes in the regional rarity rankings for plant species in 2002. Of the 669 native species in the Mississauga flora, 37 (6%) are considered extirpated, 395 (59%) are rare (known from 1 to 3 locations in the City) or uncommon (known from 4 to 10 locations in the City), and 237 (35%) are common (known from more than 10 locations in the City).

Table 4 lists the plant species documented in natural areas in the literature reviewed in 2002 that are currently not confirmed as occurring in the City of Mississauga [*i.e.*, there are no confirmed specimens and they are not listed by Kaiser (2001)]. These species need to be confirmed prior to their inclusion in the flora of Mississauga.

Table 4: Flora Species Documented for the City of Mississauga That Require Confirmation

Numbers in the source column correspond to Appendix 1.

Scientific Name	Common Name	Site	Local Rank	NHIC Rarity	Source	Status in Kaiser (2001)
<i>Eleagnus umbellata</i>	Autumn olive	NE9	new	G? SE3	214	not documented from Peel
<i>Carex peckii</i>	white-tinged sedge	SP1	new	G4G5 S5	215	documented from Peel
<i>Crataegus mollis</i>	hawthorn	SP1	new	G5 S5	215	not documented from Peel
<i>Arctium minus</i> ssp. <i>nemorosum</i>	woodland burdock	CRR1	new	G?T? SE1?	212	not documented from Peel
<i>Aster puniceus</i> var. <i>firmus</i>	shining aster	CRR1	new	G5T5 SU	212	not documented from Peel
<i>Erigeron philadelphicus</i> ssp. <i>provancheri</i>	Philadelphia fleabane	CRR1	new	G5T1T2 SU	212	not documented from Peel
<i>Sonchus arvensis</i> ssp. <i>uliginosus</i>	perennial sow-thistle	CRR1	new	G?T? SE5	212	not documented from Peel
<i>Eleagnus commutata</i>	American silverberry	CRR1	new	G5 S5	212	not documented from Peel
<i>Glechoma tetrahit</i>	unknown	CRR1	new	no status	212	typing error could be <i>Glechoma hederacea</i> or <i>Galeopsis tetrahit</i>
<i>Prunella vulgaris</i> ssp. <i>vulgaris</i>	heal-all	CRR1	new	G5T? SE3	212	not documented from Peel
<i>Lilium bulbiferum</i>	orange lily	CRR1	new	G? SE1	212	not documented from Peel
<i>Carex normalis</i>	larger straw sedge	SP1	1	G5 S4	215	no previous record for this site
<i>Cynanchum nigrum</i>	black swallow-wort	SP1	new	G? SE?	215	not documented from Peel probably <i>Cynanchum rossicum</i>

4.3 Floristic Quality Assessment

Table 1 (page 6) provides the FQIs and native mean coefficients for all natural areas that were assessed, and changes are summarized in Appendix 4 (some of the changes noted in this appendix are significant in the context of the natural areas program while others are considered minor revisions). In 1996, 107 of the 144 natural areas were assessed. FQIs ranged from 2.68 to 80.10 and the native mean coefficients ranged from 1.20 to 4.82. In 2002, 116 of the 137 natural areas, and one residential woodland were assessed. Currently, the FQIs range from 2.68 to 80.10 and the native mean coefficients range from 1.20 to 4.57, both basically unchanged since 1996. High, medium and low values are defined in the Natural Areas report (page 28) Natural Areas Survey, 1996 September, Volume 1 of 3.

In 1996, the majority of natural areas fell in the medium range of native mean coefficients (3.3 to 3.99) and in the low range for the FQIs (<30.00). This is still the case in 2002 for both FQIs and native mean coefficients. Currently, 87 of the 117 (74%) natural areas assessed have low FQIs. While, 40 of the 117 (34%) natural areas assessed have low native mean coefficients (< 3.3) and 57 of the 117 (48%) natural areas assessed have medium native mean coefficients (3.3 to 3.99).

Lower native mean coefficients indicate an increase in the presence of native plant species characteristic of disturbed environments, and a commensurate decrease in plant species that indicate high quality habitat. Species with low coefficients tend to occur in a wide range of habitats and are not as susceptible to disturbance. In contrast, plant species with high coefficients tend to be conservative in their habitat requirements. The Natural Areas report, Natural Areas Survey, 1996 September, Volume 1 of 3, has a more complete explanation of native mean coefficients.

FQIs and native mean coefficients were re-calculated for 34 natural areas in 2002; *i.e.*, for those natural areas that had a change in their floral inventories. Of the natural areas evaluated in 2002, most (16) have medium mean coefficients and low FQI values. FQIs and native mean coefficients for the natural areas evaluated in 2002 are basically unchanged and likely represent minor revisions resulting from additional fieldwork.

4.4 Fauna

Except for one reptile species there has been no change to the significant wildlife species documented for the City. Eastern milk snake (*Lampropeltis triangulum triangulum*) found in the City has recently been designated as a species of national concern by COSEWIC. Aside from this one species there has been no change to the list of provincially significant fauna species and Appendix 5 in the Natural Areas Survey, 2001 Update, (Volume 3 of 3) is considered current.

There has been no change to the list of Credit Valley Conservation species of conservation interest (Credit Valley Conservation undated), thus Appendix 6 in the Natural Areas Survey, 2000 Update, (Volume 3 of 3) is considered current and is not provided here.

4.5 Significant Features

There are no changes to Areas of Natural and Scientific Interest (ANSIs) since they were last updated by the MNR, as reported in the 1998 update report.

5.0 CONDITION OF NATURAL AREAS

5.1 Condition

Generally, the natural areas within the City that were surveyed in 2002 continue to be in fair condition (see Table 1, page 6). Natural areas evaluated as in fair condition have moderate disturbances (few trails, limited dumping, some trampling, *etc.*) and an average number of non-native flora species typical of what can be expected in an urban natural area. The overall condition of the natural areas visited in 2002 remained largely unchanged from previous studies.

The drier than usual conditions that persisted from 1998 through the winter and spring of 1999 affected many natural areas, in particular tableland woodlots. The most prevalent effect was smaller populations of many native ground cover species. Other impacts included dry soil conditions, an increase in exposed soil, an apparent increase in the populations of non-native species and a loss of leaves from canopy trees. Normal to above normal levels of precipitation since 2000 appears to have ameliorated many of the drought impacts. During early summer fieldwork in 2002 an abundance of spring flora (*e.g.*, trilliums, bloodroot, and sedges) was noted in a number of natural areas.

One tableland woodlot (CE10) visited in 2002 was noted to have impacts associated with a change in the site hydrology (*e.g.*, change in habitat from wetland to successional, and potential loss of wetland species). In particular, the small cattail marsh located at the north east corner of the site was reclassified to old field this year due to a lack of plant species typical of wetland habitats. This change is more likely related to the surrounding residential development than the drought conditions of 1998/1999. The vegetation communities in another tableland woodlot (GT2) visited in 2002 are also changing as a result of hydrological impacts. In this case, there has been an impoundment of water at the south end of the woodlot due to the placement of an immense fill pile immediately south of the site which is blocking the drainage of water from the woodlot. At the time of the field visit in June standing water was present within the woodlot. Unless the fill pile is removed, or an alternate route is provided to drain water from this woodlot, the vegetation in this location (including the trees and understory species) will likely die.

5.2 Disturbances

As with the all of the other update surveys, the most common disturbances within natural areas are those associated with an increase in uncontrolled human use of natural areas following development in adjacent areas. Examples of these disturbances include: the creation of *ad hoc* trails, the use of mountain bikes (including the construction of some elaborate racing circuits), the presence of garbage, boundary encroachment, and vandalism (tree carving, tree cutting, spray paint). These disturbances have become more prevalent at all of the natural areas surveyed this year. The most notable impact to natural areas visited in 2002 was the presence of new mountain bike racing circuits in natural areas HO3 and SV1.

In a study of suburban forest fragments Matlack (1993) notes that 95% of all impacts occurred within 82m of a forest edge. With encroachment impacts (dumping of grass and garden waste, boundary infringement) typically occurring closer to forest edges than recreation related impacts (tree houses, fire pits, vandalism). He also noted in his study that human impacts are locally more damaging than natural edge effects (light, temperature) and their severity does not decrease with distance from the edge unlike natural edge effects. Of particular concern is mention of a number of studies in eastern deciduous forests that suggested that the recovery of soil and understorey vegetation could take 10 to 20 years after the cessation of traffic (Matlock 1993).

Documented impacts associated with intensive human use of natural areas include: the loss of understorey vegetation (particularly herbaceous species) (Friesen 1998, Matlock 1993); the loss of leaf litter, humus as well as moss species; and soil compaction in the top 5-15 cm (Matlock 1993). Together, these impacts result in alteration of the drainage and nutrient exchange properties (decomposition and nutrient cycles) of the site.

Observations at natural areas in Mississauga are consistent with these reports from the literature. Deterioration of the quality of Mississauga's natural areas can be expected to continue unless there is a substantial effort to manage natural areas through site specific Conservation Plans and community stewardship initiatives.

5.3 Development

Direct impacts from development have resulted in the removal of portions, as well as entire natural areas. Two natural areas (MV14 and GT1) were eliminated from the natural area system in 2002 as a result of development. In addition, 14 of the 52 natural areas surveyed in 2002 decreased in overall size due to development. Some of the associated indirect impacts that resulted from the removal of portions of natural areas included: increased light penetration in the remainder of the area, and changes in the vegetation structure. Other potential long-term impacts that could occur are: changes in moisture (soil and air); increased impacts from air pollution, temperature and precipitation within the natural area; as well as the less well documented impacts of increased light and noise pollution. Two natural areas (CE10 and GT2) visited in 2002 show evidence of impacts to hydrology, probably as a result of the surrounding development.

5.4 Non-native Species

There has been a continual increase in the proportion of non-native to native plant species in the natural areas surveyed between 1996 and 2002 (see Appendix 4). An increase in the presence and dominance of non-native species within the City's natural areas is a serious management concern. Without active management species such as Norway maple (*Acer platanoides*), garlic mustard (*Alliaria petiolata*), European buckthorn (*Rhamnus cathartica*), and others will result in a continued loss of native plant species in a number of natural areas. A City-wide strategy to deal with aggressive non-native species impacts needs to be formulated and management plans developed to remove the most invasive exotic species as soon as possible.

Naturalization projects initiated at a number of natural areas typically has involved leaving an area of unmowed grass to regenerate naturally. While the size of the natural areas increases as a result of this regeneration, this strategy also provides habitat for invasive plants such as purple loosestrife (*Lythrum salicaria*) and dog-strangling vine (*Cynachum rossicum*). In addition, if the natural area occurs in a valleyland its inherent ability to function as a linkage will promote the spread of these invasive species within the City.

As noted in previous studies, the dumping of discarded horticultural plants, largely as a result of encroachment where residents use the natural areas behind their house for compost and dumping yard waste, is a common vector for the introduction of non-native plants to natural areas. This was prevalent in most of the residential areas visited during this update.

6.0 CONCLUSIONS

After five years of update surveys covering the entire City, two serious trends have emerged. There has been a decrease in the quality of vegetation as indicated by an increase in the number of natural areas with lower native mean coefficients (section 4.3); and there has been a decrease in the amount of tableland (woodland and successional communities) and wetland habitats (section 3.1). Development between 1996 and 2002 has resulted in the loss of eleven natural areas and a substantial reduction in size (a loss of more than 1 ha) of 18 natural areas resulting in a total loss of 146.32 ha (360.66 a.) from the natural areas system. Two woodland vegetation communities have been lost, as a result of development removing the only two natural areas in which they were represented in the City (section 4.1). Eleven woodland communities, five successional communities and all six of the wetland vegetation communities are uncommon in the City occupying less than 1% of the total area of the natural areas system (Appendix 8). Of these, six of the woodland communities, one successional community and one wetland community are "at risk" in the City, occurring in only one natural area each. In addition, a longer-term conversion of vegetation community composition in a number of natural areas is also occurring, likely as a result of increased human disturbance and changes in hydrology resulting from development. These trends reinforce the urgent need to maintain and manage (and where possible restore) all of the remaining natural areas in the City. In particular, tableland natural areas (including woodlands, wetlands and successional vegetation communities) continue to be the most seriously threatened by development.

One positive trend is the naturalization projects undertaken by the City. The majority of naturalization projects initiated between 1996 and 2002 have involved leaving an area of unmowed grass adjacent to a watercourse or woodlot feature to regenerate naturally. While this approach will increase the overall size of the natural area in question, this initiative could be enhanced by taking an approach that includes long-term management will more likely result in a healthy natural area with a diversity of native plant and animal species.

7.0 RECOMMENDATIONS

1. All of the remaining natural areas in the City should be protected from development and managed to maintain the biodiversity of the City for future generations. Of particular importance is the protection and subsequent management of all woodlands, wetlands and successional habitats.
2. It is recommended that the City consider prioritizing the natural areas based on significance, representation, size and condition, and initiate Conservation Plans for those of greatest value.
3. Initiate greater control over natural areas to reduce impacts related to human use. This is best achieved through site-specific Conservation Plans. Issues addressed in the Conservation Plans should include, but not be limited to: access, encroachment, appropriate activities, non-native plant control, and restoration initiatives (see Natural Areas Survey, 1996 September, Volume 1 of 3 for a complete description of Conservation Plan requirements). Natural areas CM12, CM7 and CM9 are ideal candidates to have Conservation Plans developed prior to completion of the surrounding residential subdivisions.
4. Initiate a public education program in concert with community-based stewardship initiatives to involve local citizens in the conservation and management of natural areas, as outlined in the Natural Areas Survey, 1996 September, Volume 1 of 3. Key to this is demonstrating the ongoing degradation of woodland through careless and improper use.
5. Formulate a City-wide strategy to deal with non-native species and develop management initiatives to address the most invasive exotic species. Part of such a study should include an assessment of the feasibility of managing some aggressive exotics. Species that are a high priority are Norway maple, garlic mustard, purple loosestrife, dog-strangling vine, white poplar (*Populus alba*), Japanese knotweed (*Polygonum cuspidatum*) and white mulberry (*Morus alba*). At a minimum the City should immediately adopt policies to restrict or prevent the planting of invasive non-native plants, as well as providing encouragement and a mechanism for the City and the community to work together to remove such plants.
6. All naturalization (creation of natural habitat from manicured parkland) projects undertaken in natural areas by the City should involve both the planting/seeding of native species and the control of non-native species.
7. Continue and expand restoration (management of natural habitat) initiatives within natural areas. The prescribed burns at Lorne Park Prairie could be used as an education tool to gain community support for similar initiatives for the other natural areas that contain remnants of the Lorne Park Prairie: CL24, CL31 and CL22. In particular, White Oak Woods (CL39) appears to be an excellent candidate for restoration of the indigenous savannah community.
8. Update vegetation community mapping for CRR1 to reflect the ELC communities delineated in the Credit Valley Sanitary Sewer Extension EA (Totten Sims Hubicki Assoc 1997), this should include field work to verify the presence of the black maple lowland forest.

8.0 REFERENCES CITED

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- Totten Sims Hubicki Associates (1997) Limited and ESG International. 2002. Credit Valley Sanitary Sewer Trunk Extension Class Environmental Assessment. Environmental Study Report. Draft Report. Prepared for the Region of Peel.

Appendix 1: Reports Examined for Background Review

The format of this appendix follows Appendix 2 in the Natural Areas Survey, 1996 September, Volume 2 of 3. The numbers correspond to those used in the database for literature references.

- 210 North-South Environmental Inc. 2001. Credit Valley Wildlife Study. Prepared for the City of Mississauga.
- 211 Totten Sims Hubicki Associates (1997) Limited and ESG International. 2002. Credit Valley Sanitary Sewer Trunk Extension Class Environmental Assessment. Environmental Study Report. Draft Report. Prepared for the Region of Peel.
- 212 Totten Sims Hubicki Associates (1997) Limited and ESG International. 2002. Credit Valley Sanitary Sewer Trunk Extension Class Environmental Assessment. Environmental Study Report. Draft Report. Appendices. Prepared for the Region of Peel.
- 213 North-South Environmental Inc. 2001. Mississauga Garden Park Master Plan Ecological Report. Prepared for the City of Mississauga.
- 214 Sue Hayes (TRC). 2002. Facsimile dated April 22, 2002 to Lesley Pavan (City of Mississauga) containing flora and fauna species for Wildwood Park.
- 215 Natural Resource Solutions Inc. and G. O'Connor Consultants Inc. 2001. Scoped Environmental Impact Statement for R.R. Enterprises 2855 Speakman Drive. Part of Block A, R-Plan 823 and Part of Lots 34 and 35 Concession 1, South of Dundas Street, City of Mississauga, Regional Municipality of Peel.
- 216 Dillon Consulting Limited. 2001. Environmental Impact Study. NPS Investments. Prepared for the City of Mississauga.

Appendix 2: Assessment of Landholdings of the City of Mississauga in the Town of Milton
(for locations see attached map)

Name: Site 1
UTM: 5967 48267
Size: 14.93 ha (36.9 a.)

Location:

This site is located east of Ninth Line, south of Highway 407. The intermittent creeks on the site are part of a Sixteen Mile Creek tributary that forms natural area LS1 within the City.

Description:

This site is composed of active agricultural land and includes two intermittent creeks. There are 15 bird species documented from this site. Of these, five resident species are considered species of concern by the Credit Valley Conservation. These species are: killdeer, horned lark, common grackle, eastern meadowlark and savannah sparrow. All of these species are area-sensitive and depend on open field habitat, except for common grackle which requires patches of forest or thicket. These species are characteristic of agricultural habitats and with continued urban development some may not persist.

Recommendations:

Due to the presence of bird species considered of concern by the CVC this site would qualify as a Natural Site in the Natural Areas System and is a good candidate for the preparation of a Conservation Plan prior to the development of the surrounding lands. In particular, the Conservation Plan should address the habitat requirements of the species of concern. It is recommended that natural area LS1 located along the same tributary of Sixteen Mile Creek be extended to incorporate the intermittent creeks at this site. In addition, a buffer of natural vegetation should be established adjacent to the creeks to improve their ecological function.

Name: Site 2
UTM: 6014 48215
Size: 20.71 ha (51.17 a.)

Location:

This site is located west of Ninth Line, north of Eglinton Avenue.

Description:

This site is predominantly composed of abandoned agricultural land with interspersed hedgerows. An intermittent creek is located along the western property boundary and is associated with a small lowland ash forest. The lowland ash forest is dominated by red ash (*Fraxinus pennsylvanica*), which is typically 35cm in diameter at this site. Minor associates in the canopy include American elm (*Ulmus americana*) and bur oak (*Quercus macrocarpa*). The understory is dominated by garlic mustard, bedstraw (*Galium* sp.) and herb-Robert (*Geranium robertianum*). Woody debris is extensive in the understory.

There are 26 plant species documented for this site, of which 7 (26.9%) are introduced. Eighteen birds, white-tailed deer and American toad are also documented from this site. Of the 18 bird species, four resident species are considered species of concern by the Credit Valley Conservation. These species are: killdeer, savannah sparrow, barn swallow and gray catbird. All of these species are area-sensitive and depend on open field and thicket habitat. These species are characteristic of agricultural habitats and with continued urban

development some may not persist.

Impacts to the site are limited to minor dumping of agricultural refuse along the edges and the remains of an old wooden rail fence.

Recommendations:

Due to the presence of bird species considered of concern by the CVC this site would qualify as a Natural Site in the Natural Areas System and is a good candidate for the preparation of a Conservation Plan prior to the development of the surrounding lands. In particular, the Conservation Plan should address the habitat requirements of the species of concern.

Name: Site 4
UTM: 5997 48233
Size: 11.54 ha (28.51 a.)

Location:

This site is located west of Ninth Line, north of Britannia Road. This site is located approximately 150m west of natural area LS1.

Description:

This site is predominantly composed of an active horse farm (including buildings) with pastures. Natural features on the site are limited to a small pond and an intermittent creek. The pond is lined with cattails (*Typha angustifolia*) and the intermittent creek has a canopy of crack willow (*Salix fragilis*). The creek bed contains species adapted to wetter environments including forget-me-not (*Myosotis scorpioides*), ground ivy (*Glechoma hederacea*) and European impatiens (*Impatiens glandulifera*).

There are 12 plant species documented for this site, of which 5 (41.7%) are introduced. Two plant species documented from this site is considered uncommon in the City. These species are swamp buttercup (*Ranunculus hispidus* var. *caricetorum*) and lake-bank sedge (*Carex lacustris*) Twenty birds and gray squirrel are also documented from this site. Of the 20 bird species, four resident species are considered species of concern by the Credit Valley Conservation. These species are: killdeer, eastern kingbird, savannah sparrow and barn swallow. All of these species are area-sensitive and depend on open field, marsh and thicket habitat. These species are characteristic of agricultural habitats and with continued urban development some may not persist.

Impacts to the site are typical of agricultural areas and are predominantly composed of dumping of agricultural refuse along the edges and the presence of numerous non-native plant species.

Recommendations:

Due to the presence of bird species considered of concern by the CVC and the presence of an uncommon plant species this site would qualify as a Natural Site in the Natural Areas System and is a good candidate for the preparation of a Conservation Plan prior to the development of the surrounding lands. In particular, the Conservation Plan should address the habitat requirements of the species of concern.

Name: Site 5
UTM: 5993 48255
Size: 8.12 ha (20.06 a.)

Location:

This site is located west of Ninth Line, north of Derry Road.

Description:

This site is predominantly composed of active agricultural land (planted in winter wheat) interspersed with hedgerows and a small cattail marsh. An intermittent creek runs within the hedgerow located along the western property boundary. The cattail marsh is dominated by common cattail (*Typha angustifolia*). The hedgerows are dominated by red ash (*Fraxinus pennsylvanica*), white ash (*F. americana*) and American elm (*Ulmus americana*). Along the intermittent creek the hedgerow widens enough to support an understory composed of yellow avens (*Geum aleppicum*), smooth brome (*Bromus inermis* ssp. *inermis*), tall goldenrod (*Solidago altissima* var. *altissima*) and reed canary grass (*Phalaris arundinacea*). European buckthorn (*Rhamnus cathartica*) and riverbank grape (*Vitis riparia*) also become prevalent there.

There are 38 plant species documented for this site, of which 17 (44.7%) are introduced. One plant species, the sedge (*Carex molesta*), documented from this site is considered uncommon in the City. Nineteen birds, white-tailed deer and two amphibian species are also documented from this site. Of the 19 bird species, eight resident species are considered species of concern by the Credit Valley Conservation. These species are: killdeer, eastern wood-pewee, eastern kingbird, horned lark, bobolink, common grackle, savannah sparrow and northern mockingbird. All of these species are area-sensitive and depend on open field, marsh and thicket habitat except for wood-pewee, which requires forest habitat. These species are characteristic of agricultural habitats and with continued urban development some may not persist.

Impacts to the site are typical of agricultural areas and are predominantly composed of dumping of agricultural refuse along the edges and the presence of numerous non-native plant species.

Recommendations:

Due to the presence of bird species considered of concern by the CVC and an uncommon plant species this site would qualify as a Natural Site in the Natural Areas System and is a good candidate for the preparation of a Conservation Plan prior to the development of the surrounding lands. In particular, the Conservation Plan should address the habitat requirements of the species of concern.

Name: Site 7
UTM: 6018 48212
Size: 5.92 ha (14.63 a.)

Location:

This site is located immediately west of Ninth Line, north of Eglinton Avenue. This site is located in close proximity to natural areas CM7 and CM9.

Description:

This site is composed of a deciduous forest and old field. The deciduous forest is located adjacent to Ninth Line and the old field is located adjacent to Highway 407. The main tree canopy in this forest is dominated by sugar maple (*Acer saccharum* ssp. *saccharum*) in association with white ash (*Fraxinus americana*) and basswood (*Tilia americana*). Scattered white pine (*Pinus strobus*) and red oak (*Quercus rubra*) occur as a super canopy above the main tree canopy. The shrub layer is dominated by sugar maple saplings and choke

cherry (*Prunus virginia* ssp. *virginiana*). Regeneration of both ash and basswood is also occurring, however there is only minor regeneration of red oak present. The understory is dense and is dominated by running-strawberry (*Euonymus obovata*), herb-Robert (*Geranium robertianum*), and enchanter's nightshade (*Circaea lutetiana* ssp. *canadensis*).

The topography of the site is rolling and includes numerous depressions that are water filled in the spring. In these areas, silver maple and American elm dominate the canopy. The understory in these depressions is extremely depauperate due to the standing water, however jewelweed (*Impatiens capensis*) and fowl manna-grass (*Glyceria striata*) do occur.

There are 34 plant species documented for this site, of which 4 (11.8%) are introduced. Eight birds are also documented from this site.

Impacts to the site are typical of agricultural areas and are predominantly composed of dumping of agricultural refuse along the edges. There are few non-natives present at this site and currently there are no trails present.

Recommendations:

This site would qualify as a Natural Site in the Natural Areas System and is a good candidate for the preparation of a Conservation Plan prior to the development of the surrounding lands.

Name: Site 10
UTM: 5979 48249
Size: 1.17 ha (2.89 a.)

Location:

This site is located immediately west of Ninth Line, immediately south of Derry Road.

Description:

This site consists of the northern tip of a larger deciduous woodlot and an associated old field. The tree canopy is dominated by sugar maple (*Acer saccharum* ssp. *saccharum*) typically 30cm in diameter. A dense subcanopy of sugar maple and hop hornbeam (*Ostrya virginiana*) is also present.

The topography of the site is generally level, however there are a few depressions that appear as if they contain standing water in the spring. The shrub layer is dominated by sugar maple with scattered highbush cranberry (*Viburnum trilobum*) and gooseberries (*Ribes* spp.) are also present. The understory is quite diverse and includes Virginia waterleaf (*Hydrophyllum virginianum*), rosy sedge (*Carex rosea*) and Enchanter's nightshade (*Circaea lutetiana* ssp. *canadensis*).

There are 34 plant species documented for this site, of which 2 (5.9%) are introduced. Five birds are also documented from this site.

There are extensive impacts to this site associated with uncontrolled access. Dirt trails are common throughout including those used extensively by mountain bikes. Garbage is prevalent and an elaborate fort has been constructed on the site.

Recommendations:

This site would qualify as a Natural Site in the Natural Areas System and should have a Conservation Plan prepared that takes into account the larger woodland as a whole.

Insert Map Appendix 2

Appendix 2:

Assessment of Landholdings of the City of Mississauga in the Town of Milton

Insert Appendix 3

Insert Appendix 4

**Appendix 5: Comparison of Natural Area Classes for the City of Mississauga
between 1996 and 2002***

Comparison Categories	Year	Classification				TOTAL
		Significant Natural Site (SNS)	Natural Site (NS)	Natural Green Space (NGS)	Residential Woodland (RW)	
Number of Sites	1996	51	59	31	3	144
	1998	45	64	31	3	143
	1999	46	68	28	3	145
	2000	45	70	27	3	145
	2001	47	67	26	3	143
	2002	47	66	24	3	140
Total Area (ha)	1996	1530.17	349.92	197.05	252	2329.14
	1998	1423.39	426.35	171.55	252	2273.29
	1999	1425.44	445.66	160.18	239.93	2271.21
	2000	1416.56	456.57	148.86	237.42	2259.41
	2001	1413.16	433.64	145.89	237.42	2230.11
	2002	1388.21	428.56	133.63	237.42	2182.82
Total Area (acres)	1996	3779.52	864.30	486.71	621.67	5752.2
	1998	3517.15	1053.50	423.89	621.67	5616.21
	1999	3522.33	1101.25	395.81	592.88	5612.27
	2000	3498.98	1127.75	367.69	586.49	5580.91
	2001	3490.56	1071.04	360.36	586.49	5508.41
	2002	3416.55	1058.47	330.07	586.49	5391.54
Proportion of Natural Areas System	1996	74%	17%	9%	-	100%
	1998	70%	21%	9%	-	100%
	1999	70%	22%	8%	-	100%
	2000	70%	23%	7%	-	100%
	2001	71%	22%	7%	-	100%
	2002	71%	22%	7%	-	100%
Proportion of the City	1996	5.23%	1.2%	0.67%	-	7.10%
	1998	4.91%	1.41%	0.60%	-	6.92%
	1999	4.87%	1.52%	0.55%	-	6.94%
	2000	4.84%	1.56%	0.51%	-	6.91%
	2001	4.83%	1.48%	0.50%	-	6.81%
	2002	4.73%	1.46%	0.46%	-	6.65%

*Note: Residential Woodlands were not used in the calculations for proportion of natural areas system or proportion of the City.

Appendix 6: Comparison of Major Landform Types for the City of Mississauga between 1996 and 2002*

Comparison Categories	Year	Landform Type			TOTAL
		valleylands and associated tablelands	tablelands	wetlands and associated valleylands	
Number of Sites	1996	73	60	6	139
	1998	73	59	6	138
	1999	76	58	6	140
	2000	76	58	6	140
	2001	79	53	6	138
	2002	78	52	5	135
Total Area (ha)	1996	1626.3	339.9	103.7	2069.9
	1998	1588.0	328.5	100.4	2016.9
	1999	1622.1	301.6	100.3	2024
	2000	1594.8	319.7	100.3	2014.7
	2001	1593.9	291.2	100.3	1985.4
	2002	1555.3	285.2	97.7	1938.1
Total Area (acres)	1996	4017.0	839.5	256.1	5112.6
	1998	3923.9	811.6	248.1	4983.6
	1999	4008.2	745.3	247.9	5001.5
	2000	3939.2	789.5	247.8	4976.5
	2001	3936.9	719.3	247.8	4904.0
	2002	3841.6	704.3	241.3	4787.2
Mean Size (ha)	1996	22.3	5.7	17.3	-
	1998	21.8	5.6	16.7	-
	1999	21.3	5.2	16.7	-
	2000	20.2	5.3	16.7	-
	2001	19.4	5.3	16.7	-
	2002	19.2	5.4	19.5	-
Mean Size (acres)	1996	55.0	14.0	42.7	-
	1998	53.7	13.8	41.3	-
	1999	52.7	12.9	41.3	-
	2000	49.9	13.2	41.3	-
	2001	48.0	13.1	41.3	-
	2002	47.4	13.3	48.3	-

MISSISSAUGA NATURAL AREAS SURVEY

Comparison Categories	Year	Landform Type			TOTAL
		valleylands and associated tablelands	tablelands	wetlands and associated valleylands	
Proportion of Natural Areas System	1996	78.3%	16.4%	5.0%	99.7%
	1998	78.5%	16.2%	5.0%	99.7%
	1999	79.9%	14.8%	4.9%	99.7%
	2000	79.1%	15.8%	4.9%	99.8%
	2001	80.3%	14.7%	5.0%	100%
	2002	80.3%	14.7%	5.0%	100%
Proportion of the City	1996	5.60%	1.16%	0.36%	7.1%
	1998	5.43%	1.12%	0.34%	6.9%
	1999	5.55%	1.03%	0.34%	6.92%
	2000	5.45%	1.09%	0.34%	6.88%
	2001	5.45%	0.99%	0.34%	6.78%
	2002	5.31%	0.97%	0.33%	6.62%

*Note: Two small areas that did not readily fall into these three categories and the residential woodlands were omitted from this analysis so figures differ slightly from those provided elsewhere in the report.

Insert Appendix 7

Insert Appendix 8

Appendix 9: Flora Species Collected in Mississauga and Identified (June to August 2002)

Collections are currently held by North-South Environmental Inc., and will eventually be deposited in the herbarium at the University of Toronto, Erindale.

Number	Confirmed ID	Habitat	Location
02-201	<i>Carex blanda</i>	oak-hickory forest	GT2
02-202	<i>Galium mollugo</i>	oak-hickory forest	GT2
02-203	<i>Carex rosea</i>	oak-hickory forest	GT2
02-204	<i>Salix bebbiana</i>	successional area (was cattail marsh now old field)	CE10
02-205	<i>Oxalis stricta</i>	maple - oak forest	CE10
02-206	<i>Medicago sativa</i> ssp. <i>sativa</i>	open floodplain of Credit River	CRR11
02-207	<i>Solidago canadensis</i>	open floodplain of Credit River	CRR11
02-208	<i>Elymus repens</i>	open floodplain of Credit River	CRR11
02-209	<i>Carex</i> cf. <i>molesta</i>	ash forest	Site 5 (5973/48255)
02-210	<i>Carex stipata</i>	ash forest	Site 5 (5973/48255)
02-211	<i>Carex tribuloides</i>	oak-ash forest	CM7
02-212	<i>Carex bebbi</i>	ash forest	Site 5 (5973/48255)
02-213	<i>Phalaris arundinacea</i>	ash forest	Site 5 (5973/48255)
02-214	<i>Carex bebbi</i>	maple-ash forest	Site 7 (6018/48212)
02-215	<i>Carex lupulina</i>	maple-ash forest	Site 7 (6018/48212)
02-216	<i>Carex blanda</i>	young maple forest	Site 10 (5979/48249)
02-217	<i>Carex laxiflora</i>	maple - oak forest	CE10
02-218	<i>Carex rosea</i>	maple - oak forest	CE10
02-219	<i>Carex cephaloidea</i>	successional area (was cattail marsh now old field)	CE10
02-220	<i>Carex vulpinodea</i>	successional area (was cattail marsh now old field)	CE10
02-221	<i>Carex blanda</i>	oak-hickory-ash forest	CR1
02-222	<i>Carex radiata</i>	oak-hickory-ash forest	CR1
02-223	<i>Carex sparganoides</i>	oak-hickory-ash forest	CR1

Table 1: Summary of Natural Area Features, Significance and Condition

This table represents an update of Table 4 in the Natural Areas Survey, 1996 September, Volume 1 of 3. Classification abbreviations are as follows: SNS = Significant Natural Site, NS = Natural Site, NGS = Natural Greenspace, and RW = Residential Woodland. Native FQI and native mean C are defined in the Natural Areas Survey, 1996 September, Volume 1 of 3. Definitions for provincially significant species (prov. sig. species) and regionally significant species (reg. sig. species) are in the Natural Areas Survey, 1996 September, Volume 1 of 3, with updates as discussed in this report (section 4.0). See Section 4.4, Natural Areas Survey, 2000 Update, Volume 3 of 3, for a discussion of Credit Valley Conservation (CVC) Species of Conservation Interest. Condition is explained in Appendix 1, Natural Areas Survey, 1996 September, Volume 2 of 3. Abbreviations used in this table are as follows: n/a = not available. ↗ Areas evaluated in 2002. - Areas evaluated that changed between 1996 and 2002 (see Appendix 4 for a summary of the changes).

Site Number	Site Code	Classification	Designation	Area		Flora							Fauna					Condition
				(ha)	(acres)	total	# non-native (% non-native)	native FQI	native mean C	# vegetation communities	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
1	SD1	NS		19.35	47.78	96	26 (27.08%)	30.00	3.59	6		5	13	4	2			Fair
2	SD4	NS		26.59	65.67	65	14 (21.54%)	25.63	3.59	1		2						n/a
3	SD5	SNS		10.14	25.05	48	7 (14.58%)	28.74	4.49	3		3	3	1				Good
4	CL52	NGS		6.69	16.53	44	23 (52.27%)	14.84	3.24	1			11	1	2			Poor
5	CL1	SNS		3.59	8.86	48	7 (14.58%)	28.74	4.49	1		3	3	1				Good
6 .	CL9	SNS	ESA,ANSI, wetland	46.81	115.63	496	159 (32.06%)	80.10	4.36	13	1	133	199	22	21	1	8	Good
7	CL8	SNS	wetland	11.28	27.86	73	19 (26.03%)	22.73	3.09	8		5	14	10	1			Good
8	CL15	NS		0.83	2.05	46	9 (19.57%)	24.66	4.05	1		3	2	2				Fair
9	CL16	NS		8.52	21.04	147	44 (29.93%)	40.30	3.97	5		14	38	17			5	Fair-Poor
10	CL17	RW		33.48	82.7	73	15 (20.55%)			1		19			4			n/a
11	CL13	NS		8.42	20.79	74	43 (58.11%)	14.37	2.58	3		1	8					Poor
12	CL43	NS		4.14	10.24	71	12 (16.90%)	29.16	3.80	2		5	5	1				Fair-Poor
13	CL42	NS		8.88	21.93	115	33 (28.70%)	37.10	4.10	3		12	4	1				Fair-Poor
14	CL21	SNS	ESA,wetland	9.36	23.11	97	21 (21.65%)	38.66	4.43	3		20	2		1			Fair-Poor
15	CL39	SNS		12.9	31.87	266	78 (29.32%)	56.16	4.10	2		42	25	5	8			Fair
16	CL22	SNS	ESA,ANSI	17.78	43.92	134	46 (34.33%)	37.31	3.98	1	1	13	2	1	6			Good
17	CL30	SNS	ESA,ANSI	0.06	0.14	81	32 (39.51%)	28.00	4.00	1	1	20						Fair
18	CL31	SNS	ESA,ANSI	2.61	6.45	59	25 (42.37%)	19.04	3.26	1		2	4					Poor
19	CL24	SNS	ESA,ANSI	7.8	19.27	236	61 (25.85%)	59.23	4.48	4		36	10	1				Good
20	CL26	NS		2.01	4.96	178	66 (37.08%)	34.21	3.23	1		17	18	7				Fair

Table 1: continued

Site Number	Site Code	Classification	Designation	Area		Flora						Fauna					Condition	
				(ha)	(acres)	total	# non-native (% non-native)	native FQI	native mean C	# vegetation communities	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC
21	PC1	NS		1.09	2.68	92	44 (47.83%)	25.84	3.73	1		7	68	1				Poor
22	PC2	NGS		4.37	10.79	18	9 (50.00%)			1			5		1			Poor
23	PC3	NS		1.77	4.36	11	3 (27.27%)			1								n/a
24 .	CRR9	SNS	ESA,ANSI, wetland	25.63	63.3	45	15 (33.33%)	21.00	3.83	3		16	27	1	10		6	Fair
25	MI4	RW		153.28	378.61	28	16 (57.14%)			1		1						Fair
26	MI1	NS		5.63	13.91	16	5 (31.25%)			2			50					Fair
27	LV3	NS		3.55	8.76	83	33 (39.76%)	25.17	3.56	3		1	20	3				Fair
28	LV4	NS		1.09	2.68	44	24 (54.55%)	10.59	2.37	1		2	5					Poor
29	LV5	NGS		0.95	2.34					1								Poor
30	LV2	NS		2.09	5.17	26	10 (38.46%)	11.25	2.81	1			3					Poor
31	LV1	NS		14.22	35.12	93	37 (39.78%)	24.32	3.25	5		1	8					Fair
32	ETO8	SNS		16.67	41.17	86	32 (37.21%)	25.79	3.51	3		4	2	4	1			Fair
33	LV14	NGS		1.95	4.82	40	20 (50.00%)	13.42	3.00	1			1					Poor
34	LV6	NS		2.03	5.01	64	19 (29.69%)	25.19	3.76	1		4	1	1				Fair
35 .	LV7	SNS	ESA,ANSI, wetland	21.56	53.25	331	108 (32.63%)	62.88	4.21	2		61	67	7	5	1	3	Good
36 .	ETO7	SNS	ESA	27.37	67.61	97	33 (34.02%)	24.89	3.11	3		6	11	2	11	3	1	Fair
37 .	SP1	NS		7.17	17.7	185	73 (39.46%)	38.65	3.65	5		16	20	1				Fair
38	SP3	SNS		8.84	21.83	134	30 (22.39%)	40.89	4.01	5		11	5	2	1			Good
39	SH6	NS		6.44	15.91	80	37 (46.25%)	23.03	3.51	2		2	6	1				Poor
40 .	CRR7	SNS	ESA,ANSI	88.94	219.69	93	23 (24.73%)	34.90	4.17	3	1	10	29	5	7		8	Good
41	CRR8	SNS	ESA,ANSI, wetland	110.62	273.23	50	3 (6.00%)			4	1	30	38	6	8		6	Good
42	ER6	NS		1.31	3.24	46	18 (39.13%)	18.33	3.46	1			5	1				Poor
43 .	CRR6	SNS	ESA,ANSI	134.94	333.3	272	91 (33.46%)	61.74	4.59	4	2	64	67	7	18	1	10	Good
44	CV1	NS		1.71	4.22	52	25 (48.08%)	14.05	2.70	2			6	1				Fair
45	CV2	RW		50.66	125.14	143	42 (29.37%)	41.29	4.11	1		10	6	1				Fair
46	CV12	NS		6.99	17.27	213	93 (43.66%)	38.34	3.50	3		16	4	1				Fair
47	CV10	NS		4.26	10.53	51	22 (43.14%)	15.04	2.79	2		1	6	1				Poor

Table 1: continued

Site Number	Site Code	Classification	Designation	Area		Flora							Fauna					Condition
				(ha)	(acres)	total	# non-native (% non-native)	native FQI	native mean C	# vegetation communities	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
48	CV8	NS		8.04	19.85	60	25 (41.67%)	15.72	2.66	4		2	7	2				Poor
49	ETO6	SNS		9.52	23.52					3								Poor
50	AW1	NS		7.98	19.71	75	27 (36.00%)	22.41	3.23	3		2	10	1				Poor
51	WB1	NS		3.94	9.73	57	10 (17.54%)	26.11	3.81	5			5		1			Fair
52	EM30	NS		5.57	13.75	68	9 (13.24%)	30.98	4.03	5		7	7	8				Good
53	EM6	NS		1.07	2.65	58	14 (24.14%)	24.72	3.73	1		1	6	1				Fair
54	EM2	NS		4.9	12.09	74	15 (20.27%)	29.81	3.88	1			8	1				Fair
55	EM10	NS		3.73	9.22	54	13 (24.07%)	22.96	3.59	2			4	2				Fair
56	EM14	NS		9.19	22.7	74	36 (48.65%)	17.36	2.82	2			8					Poor
57	EM4	SNS	ESA,ANSI	42.98	106.17	235	62 (26.38%)	55.96	4.25	8	2	31	67	5	6		2	Good-Fair
58	EM5	NS		1.87	4.63	49	17 (34.69%)	22.27	3.94	1			4					Fair
59	EM21	NS		1.13	2.8	42	8 (19.05%)	19.89	3.41	1			2	1				Fair
60 .	CR1	SNS	ESA	4.9	12.1	70	11 (15.71%)	33.72	4.39	2		6	4	1				Fair
61	FV1	NS		2.11	5.22	54	11 (20.37%)	22.72	3.47	1		2	2					Fair
62	FV3	NS		6.76	16.71	100	39 (39.00%)	27.27	3.49	3			16	2				Fair
63	CC1	NS		3.18	7.84	145	48 (33.10%)	37.16	3.77	1		9	10	1				Fair
64	MY1	NS		13.44	33.2	133	42 (31.58%)	35.96	3.77	2		7	9	1				Fair
65	MY3	NGS		3.71	9.16	41	26 (63.41%)	6.45	1.67	1		1						Poor
66	AW4	NS		11.71	28.92	42	28 (66.67%)	8.29	2.21	1		2	3					Poor
67	AW3	NGS		7.92	19.57	52	30 (57.69%)	13.22	2.82	2			8	1				Poor
68	ETO5	SNS		7.72	19.06	53	31 (58.49%)	11.17	2.38	2		2	8	1				Poor
69 .	ETO4	SNS	ESA	58	143.27	149	41 (27.52%)	43.80	4.21	3		16	24	3	5		2	Fair
70	RW5	NS		3.51	8.68	54	26 (48.15%)	13.42	2.54	1		2	7	1				Poor
71	RW6	NS		7.31	18.06	51	28 (54.90%)	13.97	2.91	1		1	11	1				Poor
72	RW4	NS		1.09	2.68	44	7 (15.91%)	24.99	4.11	1			7	1				Fair
73	RW1	SNS		2.11	5.21	69	12 (17.39%)	34.04	4.51	1		3		1				Fair
74	RW2	NGS		3.9	9.63	34	20 (58.82%)	9.89	2.64	1			4					Poor
75 .	CM7	SNS		11.38	28.12	89	18 (20.22%)	35.13	4.17	3		3	15	1	5			Excellent
76 .	CM9	NS		3.37	8.34	64	12 (18.75%)	27.74	3.85	2		3	8	2				Good

Table 1: continued

Site Number	Site Code	Classification	Designation	Area		Flora							Fauna					Condition
				(ha)	(acres)	total	# non-native (% non-native)	native FQI	native mean C	# vegetation communities	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
77	CM11	REMOVED		0	0	22	1 (4.55%)	18.33	4.00	1			1					REMOVED
78	CM12	NS		5.77	14.25	82	16 (19.51%)	30.65	3.77	1		3	14	5	6			Good
79	CM17	REMOVED		0	0	25	4 (16.00%)	16.80	3.67	1			5					REMOVED
80	CM13	REMOVED		0	0	37	14 (37.84%)	16.26	3.39	1			1	1				REMOVED
81	CE7	SNS		10.08	24.9	98	30 (30.61%)	33.35	4.04	2		6	4	1	7			Good
82	CE9	NS		4.74	11.7	78	17 (21.79%)	32.52	4.16	3		5	10	2				Fair
83	CE10	SNS		18.2	44.95	111	23 (20.72%)	39.12	4.17	3		10	13	2	2			Good-Fair
84	CE5	NGS		5.47	13.5	13	8 (61.54%)	2.68	1.20	1								Poor
85	CE1	NGS		16.93	41.82	50	23 (46.00%)			2			3		5			Poor
86	CE12	NS		17.62	43.51	95	40 (42.11%)	22.52	3.04	2		1	13	3	1			Fair
87	CRR5	SNS		24.74	61.1	64	26 (40.63%)	21.09	3.42	2			15	2	2		2	Fair
88	CRR4	SNS	ESA,ANSI	21.17	52.29	54	22 (40.74%)	18.07	3.19	4		6	22	3	7	2	5	Good
89	SV12	NS		1.72	4.25	94	40 (42.55%)	22.05	3.00	1		1	14	3	1			Fair
90	SV10	NGS		3.04	7.5	40	20 (50.00%)	10.29	2.30	1			1		1			Poor
91	SV1	NS		4.57	11.29	102	23 (22.55%)	35.67	4.01	2		5	10	2				Fair
92	CRR3	SNS		68.94	170.28	91	31 (34.07%)	27.44	3.54	4		3	37	5	8	1	7	Fair
93	CRR2	SNS	ESA,ANSI	91.29	225.5	112	35 (31.25%)	33.85	3.86	9		3	45	9	11		11	Good
94	EC22	NS		2.32	5.73	75	9 (12.00%)	31.14	3.83	1		6	4	2				Fair-Poor
95	EC10	REMOVED		0	0	46	10 (21.74%)	21.83	3.64	2		1	2					REMOVED
96	EC13	SNS	wetland	4.61	11.39	169	27 (15.98%)	52.78	4.43	4		66	86	6	11		13	Excellent
97	EC1	REMOVED	ESA_wetland	0	0	10	4 (40.00%)	4.90	2.00	1		1	5		2			REMOVED
98	HO1	NS		1.2	2.97	33	7 (21.21%)	19.81	3.88	1			5	1				Fair-Poor
99	HO2	REMOVED		0	0	24	3 (12.50%)	18.77	4.10	2			3					REMOVED
100	HO3	NS		14.41	35.59	60	11 (18.33%)	26.43	3.78	3			13	2				Fair
101	HO6	NGS		8.5	21					1								Poor
102	HO7	NS		1.07	2.65	80	17 (21.25%)	30.62	3.86	2		4	8	1				Fair-Poor

Table 1: continued

Site Number	Site Code	Classification	Designation	Area		Flora						Fauna					Condition	
				(ha)	(acres)	total	# non-native (% non-native)	native FQI	native mean C	# vegetation communities	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC
103	HO9	SNS	ESA	11.34	28.01	207	55 (26.57%)	51.34	4.16	1		22	19	2	1			Good
104	NE4	NS		13.43	33.17	106	19 (17.92%)	34.31	3.68	5		9	8					Excellent
105	NE3	NGS		2.59	6.4	29	10 (34.48%)			2								Poor
106	NE2	REMOVED		0	0	55	10 (18.18%)	28.17	4.20	1		4	5					REMOVED
107	NE1	NGS		0.95	2.35	62	27 (43.55%)	17.24	2.91	1			4					Fair
108	NE6	NS		4	9.87	60	15 (25.00%)	24.00	3.58	2		1	4	1				Good
109	NE5	NGS		12.20	30.14	17	11 (64.71%)			1			1					Poor
110	NE7	NGS		2.76	6.82					1								Poor
111	ETO3	SNS		78.87	194.81	400	164 (41.00%)	56.35	3.67	4	1	59	7	5	5		3	Fair-Poor
112	NE8	NGS		2.98	7.37					1								Poor
113	NE10	NGS		8.27	20.42					1								Poor
114	NE11	NGS		5.63	13.9					1								Poor
115	NE12	NGS		6.49	16.02					1								Poor
116	ETO2	SNS		13.01	32.14	31	19 (61.29%)	7.22	2.08	1			3	1				Poor
117	ETO1	SNS		9.13	22.55	39	10 (25.64%)	15.00	2.79	4		1	4	2				Fair-Poor
118	NE9	NS		44.47	109.84	194	76 (39.18%)	37.74	3.47	4		27	38	3	4		5	Fair
119	LS1	SNS	wetland	28.47	70.32	111	39 (35.14%)	28.99	3.42	3		7	9	1				Good-Poor
120	LS2	NS		1.03	2.55	52	16 (30.77%)	23.50	3.92	1			5	1				Fair
121	LS3	NS		3	7.4	95	30 (31.58%)	28.16	3.49	3		4	4	1	2			Fair
122	ME10	SNS		2.92	7.22	64	17 (26.56%)	26.26	3.83	1		2	4	1				Fair
123	ME12	NGS		2.9	7.16	64	36 (56.25%)	14.55	2.75	1			8	2	7	1		Poor
124	ME11	NGS		4.36	10.78	56	27 (48.21%)	17.08	3.17	1		3	9	2	4			Poor
125	ME9	NS		2.39	5.9	54	13 (24.07%)	29.20	4.56	1		3	2	1				Fair
126	ME8	SNS		5.82	14.38	90	24 (27.67%)	31.27	3.85	1		4	5	3	4			Fair
127	MB9	NGS		6.6	16.31					1					2			Poor
128	MB7	NGS		10.45	25.8	35	20 (57.14%)	6.92	1.79	1			4					Poor
129	MB8	SNS		10.17	25.11	88	24 (27.27%)	30.25	3.78	2		4	5	3	4			Fair

Table 1: continued

Site Number	Site Code	Classification	Designation	Area		Flora						Fauna					Condition	
				(ha)	(acres)	total	# non-native (% non-native)	native FQI	native mean C	# vegetation communities	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC
130	MB3	NGS		4.91	12.13	26	15 (57.69%)	4.82	1.45	1			3		1			Poor
131	MB5	REMOVED		0	0	42	5 (11.90%)	23.67	3.89	1								REMOVED
132	MB4	NS		1.94	4.78	40	11 (27.50%)	19.31	3.59	1								Poor
133	MB6	SNS		23.76	58.68	100	18 (18.00%)	33.57	3.71	2		9	5	2	2			Good
134	MB2	NS		1.34	3.31	41	6 (14.63%)	23.66	4.00	1		1	1					Poor
135	MB1	NS		0.94	2.33	34	6 (17.65%)	22.87	4.32	1								Fair
136 .	MV19	SNS		22.93	56.64	212	56 (26.42%)	51.80	4.15	5		31	23	6	4			Good
137 .	CRR1	SNS	ESA	71.4	176.35	249	82 (32.93%)	48.66	3.77	5		37	29	4	7		4	Fair
138 .	MV18	NS		2.6	6.43	19	1 (5.26%)			2		1	7				2	Fair
139 .	MV2	SNS	ESA,ANSI	60.55	149.57	218	71 (32.57%)	47.33	3.90	5		19	67	15	4	1	14	Good-Fair
140	MV3	REMOVED		0	0	57	17 (29.82%)	23.40	3.70	1			6	2				REMOVED
141 .	MV12	NS		8.63	21.32	125	35 (28.00%)	36.26	3.82	2		7	8	4				Fair
142 .	MV14	REMOVED		0	0					1								REMOVED
143 ↗	MV11	NS		2.9	7.17	24	4 (16.67%)	17.44	3.90	1			1					Fair
144 ↗	MV15	NS		10.69	26.41	53	24 (45.28%)	14.48	2.69	2		1	7	1				Poor
145 .	GT1	REMOVED		0	0	41	10 (24.39%)	18.50	3.32	1		1	2					REMOVED
146 .	GT2	NS		7.2	17.78	68	11 (16.18%)	29.80	3.95	6		6	10	3	1			Good
147 .	GT3	NS		2.67	6.59	43	11 (25.58%)	18.74	3.31	2		1	1					Fair
148	GT4	REMOVED		0	0	206	56 (27.18%)	51.03	4.17	1		22	22	4	1			REMOVED
149 .	MA1	NS		24.06	59.42	61	31 (50.82%)	15.34	2.80	1		3	4					Poor
150	SD7	NGS		2.01	4.97	34	16 (47.06%)			2				1				Poor
151	MI17	SNS		6.04	14.92	145	44 (30.34%)	41.99	4.18	2		15	5	2	3			Fair
152	MI7	SNS		5.95	14.69	125	39 (31.20%)	39.90	4.30	2		7	1	4				Poor
153	CV6	NS		2.71	6.69	57	13 (22.81%)	20.80	3.14	1		1	2	1				Fair
154 .	CRR10	SNS	ESA,ANSI	65.25	161.16	361	130 (36.01%)	65.75	4.33	9	1	64	88	8	10	1	25	Good
155 .	CRR11	SNS	ESA	32.16	79.44	101	44 (43.56%)	24.64	3.26	4		3	19	2	5			Good
156	ER7	NS		3.15	7.78	50	17 (34.00%)	16.54	2.88	3		2	2	1				Poor

Table 1: continued

Table 2: Changes to the Area of Vegetation Communities 1996-2002

Vegetation Community Classification	Areal Change (1996 - 2002)		Areal Change (2001 - 2002)		Extent of Change and Reason (2000 - 2002)
	hectares	acres	hectares	acres	
Valleylands	- 98.7	- 243.79	- 58.28	- 143.95	Removal of portions of ETO3, NE8, SV10, NE5, MV2, CRR6 Removal of natural area MV14 Revision of communities in CRR10, CRR11, CRR3, ETO7, MV19
Woodlands	- 18.11	- 44.73	+ 2.51	+ 6.20	Removal of natural area GT1 Removal of portions of SP1, MV12, MV18, HO7, SV1 Addition of communities in CRR2, CRR10
Successional	+ 7.23	+ 17.86	+ 15.02	+ 37.10	Removal of portions of SP1, ETO3, NE6 Addition of communities in CRR10, CRR11, ETO7, MV19, NE9, CRR2 Conversion of portions of CE10 to successional
Wetland	- 11.21	- 27.69	+ 0.64	+ 1.58	Removal of natural area EC1 Addition of communities in CRR10, CRR2, NE9 Conversion of portion of CE10 to successional
Anthropogenic	- 25.98	- 64.17	- 11.62	- 28.70	Addition of communities at CRR10, CRR11 Revision of communities at CRR3 Conversion of portion of CRR2 to wetland
Other	- 0.16	- 0.35	no change	no change	not applicable

Appendix 3: Fieldwork Identified for Natural Areas and Date Completed

Natural areas for which the need for a field visit was identified based on aerial photograph interpretation and literature review. Natural areas are grouped into categories based on the type of change identified either within or adjacent to the natural area. Field Visit indicates the type of visit the natural area received, field work or a road side visit (see section 2.2 for an explanation). Ownership indicates whether the natural area is privately owned and therefore required access permission or whether it is a City owned site (*i.e.*, parkland or greenbelt).

Natural Area	Reason for Field Visit (Based on Review of Aerial Photographs and Literature)	Field Visit	Ownership	Comments
Minor Development Adjacent to Natural Areas				
ET01	industrial development adjacent	field work	parkland	20/08/02
HO3	residential development to the south - tableland woodlot last visited in 1995	field work	private/parkland	28/06/02 no access to east
Major Development Adjacent to Natural Areas				
HO9	residential development complete on east side of Kennedy Road	field work	parkland	27/06/02
GT2	Recreation Centre complete to south	field work	parkland	27/06/02
ETO4	industrial development adjacent	field work	parkland	20/08/02
MV12	residential development to south	field work	greenbelt	21/08/02
MV2	extensive residential development adjacent and road through natural area	field work	greenbelt	21/08/02
MV19	extensive residential development adjacent	field work	parkland	20/08/02
Minor Development Within Natural Areas				
NE7	parking lot expansion	road visit	greenbelt	20/08/02
MA1	parking lot expansion Goreway Drive and Derry Road	field work	greenbelt	20/08/02
Major Development Within Natural Areas				
ETO3	Pearson Airport Expansion	road visit	private	20/08/02
NE8	Pearson Airport Expansion	road visit	private	20/08/02
HO7	Community Centre development removed portion of natural area	field work	parkland	28/06/02
NE5	industrial development	road visit	greenbelt	27/06/02
NE6	Matheson Road extension and removal of SMA	road visit	private	20/08/02

Appendix 3: continued

Natural Area	Reason for Field Visit (Based on Review of Aerial Photographs and Literature)	Field Visit	Ownership	Comments
GT1	investigate remaining natural area within residential development	road visit	private	Removed 21/08/02
MV14	residential development within	road visit	private	Removed 21/08/02
SV10	portion removed immediately north of Tannery Street and Bellvue Street	field work	private/greenbelt	28/08/02
CE12	no change - last visited in 1998	field work	greenbelt	28/08/02
SV12	no change - last visited in 1998	field work	greenbelt	28/08/02
No Change				
ETO2	no change - last visited in 1998	field work	greenbelt	20/08/02
NE10	no change - last visited in 1998	road visit	greenbelt	20/08/02
NE11	no change - last visited in 1998	road visit	greenbelt	20/08/02
NE12	no change - last visited in 1998	road visit	greenbelt	20/08/02
GT3	no change - tableland woodlot last visited in 1995	road visit	private	20/08/02
HO6	no change - last visited in 1995	field work	private/greenbelt	no access
HO1	no change - tableland woodlot last visited in 1998	field work	parkland	28/06/02
MV15	no change - last visited 1995	road visit	private	20/08/02
MV18	no change - last visited 1995	road visit	private	21/08/02
MV11	no change - last visited 1995	road visit	private	20/08/02
MB9	no change - last visited 1995	road visit	private	21/08/02
EC1	no change - last visited 1995	road visit	private	27/06/02
EC13	residential development completed	field work	parkland	30/08/02
CR1	no change - tableland woodlot last visited in 1998	field work	parkland	28/06/02
CE5	no change - last visited in 1998	road visit	greenbelt	28/06/02

Appendix 3: continued

Natural Area	Reason for Field Visit (Based on Review of Aerial Photographs and Literature)	Field Visit	Ownership	Comments
CE10	no change - tableland woodlot	field work	parkland	28/06/02
SV1	no change - tableland woodlot	field work	parkland	28/06/02
CRR4	no change - last visited in 1995	field work	parkland	28/08/02
CRR5	no change - last visited in 1995	road visit	private	28/08/02
CRR3	no change - last visited in 1995	field work	parkland	21/08/02
CRR6	no change - last visited in 2001	field work	parkland	28/06/02
CRR11	no change - split from CRR6 in 2001	field work	parkland	05/07/02
Naturalization Program - Possible Expansion to Natural Area				
NE9	Investigate Naturalization Program	field work	parkland	20/08/02
LV7	Examine watermain easement for SMA designation	field work	parkland	30/08/02
CRR2	possible expansion of successional communities	field work	parkland	21/08/02
Proposed Development No Change on Aerial Photograph				
EC22	no change south ½ to be removed - tableland woodlot last visited in 1998	field work	parkland/private	21/08/02
SP1	industrial development proposed within woodlot	road visit	private	28/06/02
ETO7	industrial development proposed adjacent to floodplain	field work	private	30/08/02
CRR10	Adjust vegetation communities to reflect Garden Park description	field work	parkland	28/08/02
CRR1	Credit Valley Sanitary Sewer Preferred Alignment	field work	parkland	21/08/02
Field Work Postponed from 2001				
CM7	field work postponed due to road construction - tableland woodlot not visited since 1995	field work	parkland	28/08/02
CM9	field work postponed due to road construction - tableland woodlot not visited since 1995	field work	parkland	28/08/02
Addendum Field Work				
SITE 1	floodplain and old field possibility of linking with LS1	field work	City owned	05/07/02

Appendix 3: continued

Natural Area	Reason for Field Visit (Based on Review of Aerial Photographs and Literature)	Field Visit	Ownership	Comments
SITE 10	woodlot	field work	City owned	05/07/02
SITE 7	woodlot	field work	City owned	05/07/02
SITE 2	successional floodplain possible natural area	field work	City owned	05/07/02
SITE 4	successional floodplain possible natural area	field work	City owned	05/07/02
SITE 5	successional floodplain possible natural area	field work	City owned	05/07/02

Appendix 4: Comparison of Natural Areas (1996 and 2002)

Comparison of changes within natural areas evaluated in 2002. All changes between 1996 and 2002 are shown for natural area where changes occurred. Blank cells represent no change from the previous year. Abbreviations as follows: SNS = Significant Natural Site, NS = Natural Site, NGS = Natural Green Space, Increase = ↑, Decrease = ↓. Some of the increases or decreases are significant in the context of the natural areas program while others are considered minor. Native FQI and native mean coefficient as well as definitions for provincially and regionally significant species are defined in the Natural Areas Survey, 1996 September, Volume 1 of 3. Condition is explained in the Natural Areas Survey, 1996 September, Volume 1 of 3. Credit Valley Conservation (CVC) Species of Conservation Interest are discussed in Section 4.4, Natural Areas Survey, 2000 Update, Volume 3 of 3.

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition		
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC	
6	CL9	96	SNS	ESA,ANSI,wetland	46.89	115.82	491	156 (31.40%)	80.10	4.38	13	2	125	200	23	22	1	0	Good	
		98					1496	↑ 161 (32.3%)				↓ 0	↑ 132							
		99						1495		↓ 79.83	↓ 4.37			↓ 131						
		00				146.81	1115.63						↑ 1	↓ 130		↓ 22	↓ 21	↓ 0	↑ 8	
		01						1496	↓ 159 (32.1%)	↑ 79.86	↓ 4.35			↑ 133						
		02								↑ 80.10	↑ 4.36							↑ 1		
35	LV7	96	SNS	ESA,ANSI	21.56	53.25	292	101 (33.9%)	57.67	4.17	2	0	46	65	6	3	1	0	Good	
		98					↑ 300	↑ 103 (34.0%)	↑ 58.71	↑ 4.18			↑ 49	↑ 68	↑ 7	↑ 5				
		99		↑				↑ 331	↑ 110 (33.2%)	↑ 62.84	↑ 4.25			↑ 60						
		00							↓ 107 (32.3%)					↑ 61	↓ 67				↑ 3	
		01																		
		02							↑ 108 (32.6%)	↑ 62.88	↓ 4.21									
36	ETO7	96	SNS	ESA	27.18	67.13	84	35 (39.3%)	21.39	3.04	2	0	2	11	2	11	2	0	Fair	
		98																		
		99				↑ 27.36	↑ 67.59	↑ 96		↑ 25.1	↑ 3.21			↑ 4						
		00				↓ 21.14	↓ 52.29		↑ 36 (37.11%)					↑ 5					↑ 1	
		01																		
		02				↑ 27.37	↑ 67.61	↑ 97	↓ 33 (34.02%)	↓ 24.89	↓ 3.11	↑ 3		↑ 6				↑ 3		

Appendix 4: continued

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition			
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC		
37	SP1	96	NS		9.05	22.36	108	27 (24.3%)	33.99	3.8	5	0	11	4	1	0	0	0	Fair		
		98																			
		99																			
		00																			
		01																			
		02				↓ 7.17	↓ 17.7	↑ 185	↑ 73 (39.46%)	↓ 38.65	↓ 3.65			↑ 16	↑ 20						
43	CRR6	96	SNS	ESA,ANSI	213.66	527.74	269	88 (32.30%)	63.63	4.73	4	4	65	87	8	17	1	0	Good		
		98			↑ 213.22	↓ 526.64	↑ 277	↑ 91 (32.50%)	↑ 64.67	↑ 4.74		↓ 3	↑ 73								
		99					↑ 281	↓ 92 (32.70%)	↑ 65.03	↓ 4.73			↓ 72								
		00						↓ 91 (32.38%)										↑ 8			
		01				↓ 135.16	↓ 333.86	↓ 264	↓ 88 (33.33%)	↓ 61.21	↓ 4.61		↓ 2	↓ 62	↓ 67		↑ 18		↑ 10		
		02				↓ 134.94	↓ 333.3	↑ 272	↓ 91 (33.46%)	↑ 61.74	↓ 4.59			↑ 64		↓ 7					
60	CR1	96	SNS	ESA,ANSI	4.90	12.10	47	3 (4.3%)	29.55	4.45	2	0	2	1	0	0	0	0	Fair		
		98		↓ ESA																	
		99																			
		00																			
		01																			
		02						↑ 70	↑ 11 (15.71%)	↑ 33.72	↓ 4.39			↑ 6	↑ 4	↑ 1					
69	ETO4	96	SNS	ESA	58.00	143.32	128	35 (26.6%)	42.31	4.39	3	0	14	23	2	9	0	0	Fair		
		98					↑ 141	↑ 37 (26.2%)	↑ 43.93	4.31			↑ 15	↑ 24	↑ 3						
		99																			
		00						↓ 36 (25.53%)								↑ 5		↑ 2			
		01																			
		02						↑ 149	↑ 41 (27.52%)	↓ 43.80	↓ 4.21			↑ 16							
75	CM7	96	SNS		11.38	28.11	88	18 (20.5%)	34.78	4.16	3	0	5	15	1	5	0	0	Excellent		
		98																			
		99																			
		00																			
		01																			
		02						↑ 89		↑ 35.13	↑ 4.17			↓ 3				↑ 1			

Appendix 4: continued

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition	
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC
76	CM9	96	NS		3.37	8.32	62	12 (17.7%)	27.58	3.90	2	0	3	8	2	0	0	0	Good
		98																	
		99																	
		00																	
		01																	
		02						↑ 64		↑ 27.74	↓ 3.85								
83	CE10	96	SNS		18.2	44.95	73	13 (17.8%)	33.82	4.37	3	0	6	8	0	2	0	0	Good
		98					↑ 93	↑ 19 (20.4%)	↑ 36.04	↓ 4.19			↑ 7	↑ 9	↑ 2				↓ Good-Fair
		99						↑ 99		↑ 37.9	↓ 4.24			↑ 9	↑ 13				
		00																	
		01																	
		02						↑ 111	↑ 23 (20.72%)	↑ 39.12	↓ 4.17			↑ 10					
86	CE12	96	SNS		17.61	43.50	52	19 (34.6%)	17.76	3.09	2	1	0	4	1	0	0	0	Fair
		98	NS		↑ 19.33	↑ 47.80	↑ 91	↑ 39 (41.8%)	↑ 22.19	↓ 3.08		↓ 0	↑ 1	↑ 13	↑ 3	↑ 1			
		99																	
		00																	
		01																	
		02						↑ 95	↑ 40 (42.11%)	↑ 22.52	↓ 3.04								
88	CRR4	96	SNS	ESA,ANSI	24.69	60.97	11	2 (18.18%)	n/a	n/a	3	0	1	0	0	7	0	0	Good
		98																	
		99																	
		00																	
		01				↓ 21.17	↓ 52.29							↑ 19	↑ 3		↑ 1	↑ 5	
		02						↑ 54	↑ 22 (40.74%)	18.07	3.19	↑ 4		↑ 6	↑ 22		↑ 2		
89	SV12	96	SNS		17.61	43.50	52	19 (34.6%)	17.76	3.09	2	1	0	4	1	0	0	0	Fair
		98	NS		↑ 19.33	↑ 47.80	↑ 91	↑ 39 (41.8%)	↑ 22.19	↓ 3.08		↓ 0	↑ 1	↑ 13	↑ 3	↑ 1			
		99																	
		00																	
		01																	
		02						↑ 94	↑ 40 (42.55%)	↑ 22.05	↓ 3.00				↑ 14				

Appendix 4: continued

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition		
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC	
90	SV10	96	NGS		3.93	9.71	28	13 (42.9%)	9.55	2.47	1	0	0	1	1	0	0	0	Poor	
		98																		
		99																		
		00																		
		01																		
		02				↓ 3.04	↓ 7.50	↑ 40	↑ 20 (50.00%)	↑ 10.29	↓ 2.30					↓ 0	↑ 1			
91	SV1	96	SNS		5.62	13.88	67	16 (23.9%)	29.55	4.14	2	0	3	0	0	0	0	0	Fair	
		98	↓ NS		↓ 4.63	↓ 11.44	↑ 79	↑ 18 (22.8%)	↑ 31.75	↓ 4.07			↑ 4	↑ 7	↑ 2					
		99					↑ 94	↑ 22 (23.4%)	↑ 34.77	↓ 4.1			↑ 5	↑ 9						
		00																		
		01																		
		02				↓ 4.57	↓ 11.29	↑ 102	↑ 23 (22.55%)	↑ 35.67	↓ 4.01				↑ 10					
92	CRR3	96	SNS		68.94	170.28	34	5 (14.71%)	n/a	n/a	4	0	3	1	0	0	0	0	Fair	
		98					↑ 74	↑ 26 (35.10%)	25.26	3.65				↑ 7						
		99																		
		00																		
		01						↓ 25 (33.78%)	↓ 25.00	↓ 3.57				↑ 36	↑ 4	↑ 8		↑ 7		
		02						↑ 91	↑ 31 (34.07%)	↑ 27.44		↓ 3.54			↑ 37	↑ 5		↑ 1		
93	CRR2	96	SNS	ESA,ANSI	91.29	225.50	89	30 (30.00%)	32.94	4.29	8	0	3	13	9	10	0	0	Good	
		98					↑ 100	↑ 31 (31.00%)	↑ 32.99	↓ 3.97			↓ 2	↑ 14						
		99																		
		00																		
		01						↓ 30 (30.00%)	↓ 32.75	↓ 3.91				↑ 44		↑ 11		↑ 11		
		02						↑ 112	↑ 35 (31.25%)	↑ 33.85	↓ 3.86	↑ 9		↑ 3	↑ 45					
94	EC22	96	NS		2.59	6.4	39	4 (10.3%)	24	4.06	1	0	4	1	1	0	0	0	Fair	
		98			↓ 2.32	↓ 5.73	↑ 55	↑ 7 (12.7%)	↑ 25.26	↓ 3.65									↓ Fair-Poor	
		99					↑ 72	↑ 9 (12.5%)	↑ 30.62	↓ 3.86			↑ 6	↑ 4						
		00																		
		01																		
		02						↑ 75		↑ 31.14	↑ 3.83					2				

Appendix 4: continued

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition		
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC	
96	EC13	96	SNS	wetland	4.61	11.39	162	29 (16.7%)	50.73	4.4	4	0	68	89	6	11	0	0	Excellent	
		98					↑ 168		↑ 53.01	↑ 4.5			↓ 65							
		99																		
		00						↑ 27 (16.07%)						↓ 86					↑ 12	
		01																		
		02						↑ 169		↓ 52.78	↓ 4.43			↑ 66						↑ 13
97	EC1	96	SNS	ESA,ANSI,wetland	2.63	6.50	10	4 (40.0%)	4.90	2.00	1	0	1	13	0	3	0	0	Poor	
		98		ESA,wetland																
		99																		
		00																		
		01																		
		02	Removed																	
98	HO1	96	NS		1.20	2.96	20	5 (25.0%)	16.27	4.20	1	0	0	2	1	0	0	0	Fair	
		98					↑ 23		↑ 17.44	↓ 4.11				↑ 3					↓ Fair-Poor	
		99																		
		00																		
		01																		
		02						↑ 33	↑ 7 (21.21%)	↑ 19.81	↓ 3.88				↑ 5					
100	HO3	96	NS		14.41	35.59	49	9 (18.4%)	25.61	4.06	3	0	0	11	2	0	0	0	Fair	
		98					↑ 56	↑ 11 (19.6%)	↑ 25.79	↓ 3.84				↑ 12						
		99																		
		00																		
		01																		
		02						↑ 60		↑ 26.43	↓ 3.78				↑ 13					
102	HO7	96	NS		4.09	10.1	54	10 (16.7%)	26.53	4	3	0	4	0	0	0	0		Fair	
		98			↓ 2.11	↓ 5.21	↑ 59		↓ 26.43	↓ 3.78	↓ 2			↑ 2					↓ Fair-Poor	
		99					↑ 72	↑ 16 (22.2%)	↑ 29.13	↓ 3.89				↑ 6						
		00																		
		01																		
		02				↓ 1.07	↓ 2.65	↑ 80	↑ 17 (21.25%)	↑ 30.62				↑ 8	↑ 1					

Appendix 4: continued

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition			
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC		
114	NE11	96	NGS		6.07	14.99	0	0	n/a	n/a	1	0	0	0	0	0	0	0	Poor		
		98			↓ 5.72	↓ 14.13															
		99																			
		00																			
		01																			
		02				↓ 5.63	↓ 13.90														
116	ETO2	96	SNS		13.01	32.13	0	0	n/a	n/a	1	0	0	0	0	0	0	0	Poor		
		98					20	12 (60.0%)	3.54	1.25				↑ 2	↑ 1						
		99																			
		00																			
		01																			
		02						↑ 31	↑ 19 (61.29%)	↑ 7.22	↑ 2.08				↑ 3						
117	ETO1	96	SNS		10.40	25.69	0	0	n/a	n/a	2	0	0	0	0	0	0	0	Fair		
		98					37	11 (29.7%)	15.30	3.00	4		1	3	1				↓ Fair-Poor		
		99																			
		00																			
		01																			
		02				↓ 9.13	↓ 22.55	↑ 39	↓ 10 (25.64%)	↓ 15.00	↓ 2.79				↑ 4	↑ 2					
118	NE9	96	NS		45.21	111.67	46	24 (50.0%)	n/a	n/a	4	0	1	5	0	0	0	0	Fair		
		98			↓ 43.66	↓ 107.88	↑ 67	↑ 27 (40.3%)	20.55	3.25			↑ 5	↑ 12	↑ 1	↑ 1					
		99																			
		00																			
		01																			
		02				↑ 44.47	↑ 109.84	↑ 194	↑ 76 (39.18%)	↑ 37.74	↑ 3.47			↑ 27	↑ 38	↑ 3	↑ 4		↑ 5		
123	ME12	96	NGS		2.9	7.16	49	27 (55.10%)	12.00	2.62	1	0	0	7	2	7	0	0	Poor		
		98																			
		99																			
		00																			
		01						↑ 64	↑ 36 (56.25%)	↑ 14.55	↑ 2.75				↑ 8						
		02	↑ SNS															↑ 1			

Appendix 4: continued

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition		
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC	
142	MV14	96	NGS		4.55	11.24	0	0	n/a	n/a	1	0	0	0	0	0	0	0	Poor	
		98																		
		99																		
		00																		
		01																		
		02	Removed																	
145	GT1	96	NS		5.77	14.25	33	8 (24.2%)	17	3.4	1	0	0	0	0	0	0	0	Fair	
		98											↑ 1							
		99			↓ 1.95	↓ 4.82	↓ 41	↑ 10 (24.4%)	↑ 18.5	↓ 3.32				↑ 2						
		00																		
		01																		
		02	Removed																	
146	GT2	96	NS		7.20	17.78	41	6 (7.0%)	22.12	3.79	3	0	3	2	1	0	0	0	Good	
		98					↑ 56	↑ 10 (17.9%)	↑ 26.24	↑ 3.87	↑ 6		↑ 6	↑ 9	↑ 3	↑ 1				
		99																		
		00																		
		01																		
		02						↑ 68	↑ 11 (16.18%)	↑ 29.80	↑ 3.95				↑ 10					
147	GT3	96	NS		2.67	6.59	43	12 (25.6%)	19.04	3.42	2	0	1	1	0	0	0	0	Fair	
		98																		
		99																		
		00																		
		01																		
		02						↓ 11 (25.58%)	↓ 18.74	↓ 3.31										
149	MA1	96	NGS		25.79	63.70	0	0	n/a	n/a	1	0	0	0	0	0	0	0	Poor	
		98	NS		24.06	59.45	50	25 (50.0%)	14.00	2.80			3	2						
		99																		
		00																		
		01																		
		02						↑ 61	↑ 31 (50.82%)	↑ 15.34					↑ 4					

Appendix 4: continued

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition				
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species		CVC			
154	CRR10	96																				
		98																				
		99																				
		00																				
		01	SNS	ESA,ANSI	43.75	108.07	359	129 (35.93%)	65.28	4.30	2	1	64	88	8	9	1	25	Good			
		02			† 65.25	† 161.16	† 361	† 130 (36.0%)	† 65.75	† 4.33	† 9					† 10						
155	CRR11	96																				
		98																				
		99																				
		00																				
		01	SNS	ESA	32.16	79.44	0	0	n/a	n/a	2	0	0	12	1	5	0	0	Good			
		02					† 101	† 44 (43.56%)	† 24.64	† 3.26	† 4		† 3	† 19	† 2							

Appendix 7: Comparison of the Size of Vegetation Communities

A comparison of the area (in hectares) of vegetation communities mapped for the City of Mississauga from 1996 to 2002 (grouped according to six broad categories). Communities are based on classifications of Bakowsky (1995) and Kavanaugh and McKay-Kuja (1992) see Natural Areas Survey, 1996 September, Volume 1 of 3. See Appendix 5, Natural Areas Survey, 2000 Update, Volume 3 of 3, for a comparison of the vegetation communities with the Ecological Land Classification (Lee *et al.* 1998).

Code	Vegetation Community	# Occurrences						Area (hectares)					
		1996	1998	1999	2000	2001	2002	1996	1998	1999	2000	2001	2002
	Valleylands												
A	wooded slope	19	20	20	20	22	22	347.36	348.54	348.72	340.69	347.85	341.65
B	floodplain	22	21	21	21	23	23	458.42	426.21	426.10	426.10	426.32	393.50
G	golf course	4	4	4	4	4	4	101.18	101.19	101.19	101.13	101.13	99.73
J	wooded non-native valleylands	18	18	20	20	22	22	93.43	94.36	100.27	100.22	109.09	109.09
K	open with open slopes valleylands	31	32	33	33	33	33	229.02	210.58	217.50	217.62	215.34	197.49
L	wooded native valleylands	5	5	5	5	5	5	39.77	39.78	39.64	39.64	38.64	38.64
M	open with wooded slopes valleylands	2	2	2	2	1	1	5.26	5.25	5.25	5.25	0.82	0.82
N	open with manicured slopes valleylands	2	2	3	2	2	2	22.16	22.15	22.15	22.15	22.15	22.15
O	manicured with wooded slopes valleylands	1	1	1	1	0	0	5.17	5.17	5.17	5.17	0	0
	Totals							1301.77	1253.23	1265.99	1257.98	1261.35	1203.07
	Woodlands												
BB	red ash-American elm forest	14	15	15	15	16	16	35.32	35.61	37.35	37.16	36.40	36.40
CC	sugar maple forest	7	7	7	7	7	7	14.79	13.12	13.12	13.12	13.12	11.62
DD	sugar maple-American beech forest	15	16	16	17	16	16	108.35	102.44	100.07	100.07	95.15	97.23
EE	sugar maple-white ash forest	9	9	9	9	9	9	63.06	62.18	62.18	61.73	61.27	61.20
FF	sugar maple-red oak forest	10	10	10	9	9	9	42.48	44.96	44.96	43.12	42.76	42.70
GG	sugar maple-eastern hemlock forest	1	1	1	1	1	1	16.03	16.07	16.07	16.07	15.97	15.97
II	sugar maple-black cherry forest	1	1	1	1	1	1	1.93	1.94	1.94	1.94	1.94	1.94
KK	sugar maple-American beech-red oak forest	5	5	5	5	5	5	29.46	29.46	29.46	29.46	29.46	28.92
LL	sugar maple-American beech-eastern	1	1	1	1	1	1	4.44	4.45	4.44	4.45	4.45	4.45

Appendix 7: continued

Code	Vegetation Community	# Occurrences						Area (hectares)					
		1996	1998	1999	2000	2001	2002	1996	1998	1999	2000	2001	2002
Y	wet meadow	1	3	3	3	3	4	3.43	3.72	3.72	3.72	3.72	4.23
Z	willow-ash forest	2	2	2	2	2	2	0.55	0.56	0.56	0.56	0.56	0.56
AA	silver maple forest	5	5	5	5	3	3	18.59	18.14	18.14	17.58	7.24	7.24
	Totals							75.77	74.88	74.88	74.32	63.92	64.56
	Anthropogenic												
F	manicured	11	11	11	12	13	12	72.41	75.16	75.16	76.28	72.99	61.25
H	urban lake	2	2	2	2	2	2	7.26	7.26	7.26	7.26	7.26	7.26
I	wooded residential	3	3	3	3	3	3	251.59	251.59	239.93	237.43	237.43	237.43
T	plantation	11	11	11	13	12	13	21.58	21.57	21.60	21.73	20.80	20.92
UU	black walnut grove	1	1	1	1	1	1	0.17	0.17	0.17	0.17	0.17	0.17
	Totals							353.01	355.75	344.12	342.87	338.65	327.03
	Other												
R	beach	3	3	4	4	4	4	2.36	1.96	2.18	2.18	2.18	2.18
S	tall grass prairie	1	1	1	1	1	1	0.06	0.06	0.06	0.06	0.06	0.06
U	unknown	5	3	3	3	3	3	35.65	35.64	35.68	35.68	35.68	35.68
	Totals							38.07	37.66	37.92	37.92	37.91	37.91

Appendix 8: Comparison of the Proportion of Vegetation Communities

A comparison of the proportion of the vegetation communities within the Natural Areas System and the City of Mississauga from 1996 to 2002 (grouped according to six broad categories). Communities are based on classifications of Bakowsky (1995) and Kavanaugh and McKay-Kuja (1992) see Natural Areas Survey, 1996 September, Volume 1 of 3. See Appendix 5, Natural Areas Survey, 2000 Update, Volume 3 of 3, for a comparison of the vegetation communities with the Ecological Land Classification (Lee *et al.* 1998).

Code	Vegetation Community	Proportion of Natural Areas (%)						Proportion of City Area (%)					
		1996	1998	1999	2000	2001	2002	1996	1998	1999	2000	2001	2002
Valleylands													
A	wooded slope	14.92	15.33	15.35	15.08	15.40	15.12	1.19	15.33	15.35	1.16	1.19	1.17
B	floodplain	19.69	18.75	18.76	18.86	18.87	17.42	1.57	18.75	18.76	1.46	1.46	1.34
G	golf course	4.35	4.45	4.45	4.48	4.48	4.41	0.35	4.45	4.45	0.35	0.35	0.34
J	wooded non-native valleylands	4.01	4.15	4.42	4.44	4.83	4.83	0.32	4.15	4.42	0.34	0.37	0.37
K	open with open slopes valleylands	9.84	9.26	9.58	9.63	9.53	8.74	0.78	9.26	9.58	0.74	0.74	0.67
L	wooded native valleylands	1.71	1.75	1.75	1.75	1.71	1.71	0.14	1.75	1.75	0.14	0.13	0.13
M	open with wooded slopes valleylands	0.23	0.23	0.23	0.23	0.04	0.04	0.02	0.23	0.23	0.02	0	0
N	open with manicured slopes valleylands	0.95	0.97	0.97	0.98	0.98	0.98	0.08	0.97	0.97	0.08	0.08	0.08
O	manicured with wooded slopes valleylands	0.22	0.23	0.23	0.23	0	0	0.02	0.23	0.23	0.02	0	0
	Totals	55.92	55.12	55.74	55.68	55.83	53.25	4.47	55.12	55.74	4.30	4.31	4.11
Woodlands													
BB	red ash-American elm forest	1.52	1.57	1.64	1.64	1.61	1.61	0.12	1.57	1.64	0.13	0.12	0.12
CC	sugar maple forest	0.64	0.58	0.58	0.58	0.58	0.51	0.05	0.58	0.58	0.04	0.04	0.04
DD	sugar maple-American beech forest	4.65	4.51	4.41	4.43	4.21	4.30	0.37	4.51	4.41	0.34	0.33	0.33
EE	sugar maple-white ash forest	2.71	2.74	2.74	2.73	2.71	2.71	0.22	2.74	2.74	0.21	0.21	0.21
FF	sugar maple-red oak forest	1.82	1.98	1.98	1.91	1.89	1.89	0.15	1.98	1.98	0.15	0.15	0.15
GG	sugar maple-eastern hemlock forest	0.69	0.71	0.71	0.71	0.71	0.71	0.05	0.71	0.71	0.10	0.05	0.05
II	sugar maple-black cherry forest	0.08	0.08	0.08	0.09	0.09	0.09	0.01	0.08	0.08	0.01	0.01	0.01
KK	sugar maple-American beech-red oak forest	1.27	1.30	1.30	1.30	1.30	1.28	0.10	1.30	1.30	0.10	0.10	0.10
LL	sugar maple-American beech-eastern	0.19	0.20	0.19	0.20	0.20	0.20	0.02	0.20	0.19	0.02	0.02	0.02

