The Soils of Middlesex County

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THE SOILS OF MIDDLESEX COUNTY

Volume 1

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ONTARIO CENTRE FOR
SOIL RESOURCE EVALUATION*

by

T. P. Hagerty and M. S. Kingston
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* The Ontario Centre for Soil Resource Evaluation serves as a coordinating body between three member agencies working in the areas of soil inventory, interpretation, and research. It is made up of components of the Land Resource Division, Centre for Land and Biological Resources Research of Agriculture Canada, Resources Management Branch of the Ontario Ministry of Agriculture and Food and the Department of Land Resource Science of the University of Guelph.

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PREFACE

The soil information presented in this report and on the accompanying maps was collected during the resurvey of Middlesex County. The County was originally surveyed in the 1920's and was published in 1931 at a very general scale of 1:126,720 (1). The decision to resurvey Middlesex County was made in response to the increased demands for more detailed soil information. In addition, specific information on slope and natural drainage, necessary for many interpretations was not included in the original survey. The 1:50,000 map scale used in the resurvey, depicts more precisely, the soil and landscape features in a given area. The soils mapped in the resurvey are also better characterized, both physically and chemically, than in the original survey.

During the course of the resurvey, preliminary soil maps and soil capability ratings for common field crops were published. The final soil report and maps replace all previously published soil survey information for the County.

The soil report consists of two volumes. Volume 1 contains background information on the geology, physiography and climate of Middlesex County and generalized descriptions of the individual soil association members. Soil interpretations for agricultural capability for general field crops, specialty crop suitability, and potential erosion from water are also contained in Volume 1. In addition, there are two appendices in Volume 1. Appendix 1 contains generalized profile descriptions for most soil association members. Appendix 2 includes four keys which will assist extension personnel, consultants and others in identifying soil landscape units in the field.

Volume 2 contains detailed morphological, chemical and physical descriptions of some typical examples of the mapped soils. A table of engineering properties is also provided for these soils. Statistical summaries of the data collected during the field mapping are also presented. The Appendix provides a graphical display of the variability in textures of surface horizons for most soils.

In addition to the soil report, there are three soil maps published at a scale of 1:50,000.

HOW TO USE THE SOIL REPORT AND MAPS

At a scale of 1:50,000 the soil maps provide an indication of the dominant soils occurring in an area. They do not, however, provide sufficient detail to be applied at a field level or on a site specific basis because inclusions of soils, not identified in the symbol, may occur in the delineation. Figure 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Beyond the field or site level, the report and soil maps provide a useful overview of the regional variation of the soils in the County. It will allow resource managers to extrapolate research findings, transfer management practices to similar soil types, target soil conservation efforts, and help address other soil related issues.

To use the soil report and maps most efficiently, the following steps are suggested:

1. Locate your area of interest on the index map (Figure 2, Volume 1). Note the number or name of the soil map on which your area of interest is located.
2. Obtain the appropriate soil map and locate your site. Natural and cultural features on the map, such as streams, roads, and lot and concession numbers should aid in locating the site.
3. Note the symbols marked within the boundaries of the delineation where your site is located. An explanation of how to interpret the landscape units, represented in a map symbol, appears on all the soil maps under the heading Key to the Symbols of Map Delineations.
4. If the area of land under consideration is approaching the minimum delineation size (12 ha), or less, an on-site identification of soils should be undertaken. Appendix 2 contains four keys which assist in the identification of landscape units in the field.
5. Consult the legend on the map to help interpret the landscape units in your area of interest. The legend provides information on soil components, slopes, parent materials, and drainage.
6. If more information is required on the soil components, it can be obtained from the generalized description of each soil association and its drainage members in Volume 1 of the soil report. In addition, generalized statistical information for selected soils is contained in Appendix 1 of Volume 1.
7. For detailed morphological, chemical and physical descriptions of typical examples of soil association members, as well as tables of statistical means and engineering test data, refer to Volume 2 of the soil report. Some data on the variability of surface textures for each soil sampled is contained in the Appendix of Volume 2.
8. For soil interpretations such as soil capability for common field crops, soil suitability for specialty crops, and soil erosion interpretations, refer to Volume 1.

It is important to recognize that each soil exhibits a range of properties and that the boundaries between delineations, even though they represent the best estimate of where soils change, may only be approximately located. It should also be understood that inclusions of soils not identified in the delineation symbol, may comprise up to 20% of each delineation.

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GENERAL DESCRIPTION OF THE AREA

General Information

The location of Middlesex County is shown in Figure 1. The municipal boundaries, main built-up areas and the soil map coverage of the County is shown in Figure 2.

The physiography and geology of the Middlesex County area has been mapped and is described in detail in various publications (2,3,4,5,6,7,8,9,10,11,12).

The physiographic and surficial geologic information which is pertinent to the nature and distribution of soils in Middlesex County, has been generalized and is presented in Figures 3 and 4. The correlation between surficial materials, associated landforms, soil names from the original 1:126,720 scale map, and current soil associations used in this report, is given in Table 1.

In addition, Figures 5 to 9 are schematic cross-sectional diagrams which depict some of the more important soil landscape relationships in the County. Figure 5 illustrates the general relationship between soils and geologic materials along a line running from west to east in the northwest corner of the County. The soils developed on the Rannoch and Tavistock till, in the vicinity of the Lucan Moraine, are shown in Figure 6. Figure 7 indicates the soils associated with the Ekfrid Clay Plain, the Caradoc Sand Plain, and the transitional zone between these two areas. In Figure 8, the soil landscape relationships of the Ingersoll Moraine and Dorchester Sand Plain are illustrated. Lastly, Figure 9 depicts the general distribution of soil landscapes, north of London, on the broad terraces adjacent to the modern Thames River.

Table 1. Correlation of soil associations with landforms, surficial geology and soil names from the original Middlesex County soil map (1931)

Soil association	Associated landforms (2)	Surficial geology (3,4,5,6,7, 8,9,10,11,12)	Original soil names (1)
Bennington	Clay plains	Veneer of shallow water glaciolacustrine material over glaciolacustrine deep water deposits	Brookston Clay Loam, Haldimand Clay Loam
Bennington.T	Moraines, ground moraines	Veneer of shallow water glaciolacustrine material over Port Stanley, Rannoch and St. Joseph Tills	Huron Silt Loam, Perth Silt Loam, Brookston Silt Loam
Blackwell	Clay plains	Glaciolacustrine deep water deposits	Brookston Clay Loam, Muck
Bookton	Glaciolacustrine sand plains and deltas, small dunes on clay plains, abandoned shorelines	Veneer of shallow water sands and eolian sands over glaciolacustrine deep water deposits	Berrien Sandy Loam, Berrien Sand
Bookton.T	Moraines, ground moraines	Veneer of shallow water sands and eolian sands over Port Stanley, Rannoch, and St. Joseph Tills	Berrien Sandy Loam, Brookston Clay Loam Sand Spot Phase
Brant	Glaciolacustrine plains or deltas, older high level floodplain terraces	Glaciolacustrine shallow to deep water deposits	Tuscola Silt Loam
Brantford	Clay plains	Glaciolacustrine deep water deposits, Southern Till	Brookston Clay Loam, Haldimand Clay Loam

Table 1. Correlation of soil associations with landforms, surficial geology and soil names from the original Middlesex County soil map (1931) (continued)

Soil association	Associated landforms (2)	Surficial geology (3,4,5,6,7, 8,9,10,11,12)	Original soil names (1)
Bryanston	Moraines, ground moraines	Tavistock Till London Loam,	Guelph Loam, Parkhill Loam
Burford	Spillways, river terraces, glaciofluvial deltas, kames, abandoned shorelines	Gravelly and cobbly glaciofluvial outwash deposits, ice contact stratified drift, and glaciolacustrine beach deposits	Burford Gravelly Loam, Gilford Gravelly Loam
Caledon	Spillways, river terraces, glaciofluvial deltas, abandoned shorelines	Veneer of sand over gravelly and cobbly fluvial outwash deposits, ice contact stratified drift, and glaciolacustrine beach deposits	Burford Gravelly Loam, Gilford Gravelly Loam
Fox	Glaciolacustrine sand plains, spillways, kames	Glaciolacustrine shallow water deposits, glaciofluvial outwash and deltaic deposits	Fox Sandy Loam, Fox Fine Sandy Loam
Honeywood	Moraines, ground moraines	Veneer of shallow water glaciolacustrine material over Tavistock Till	Guelph Loam, London Loam, Parkhill Loam
Huron	Moraines, ground moraines	Rannoch, St. Joseph and Southern Tills	Huron Clay Loam, Perth Clay Loam, Brookston Clay Loam
Melbourne	Clay plains	Glaciolacustrine deep water deposits	Haldimand Clay Loam
Muriel	Moraines, ground moraines	Port Stanley Till Perth Clay Loam,	Huron Clay Loam, Brookston Clay Loam
Plainfield	Sand plains, duned sand plains	Eolian deposits Plainfield Sand	Oshtemo Sand,
Teeswater	Spillways, river terraces, glaciofluvial deltas	Veneer of shallow water glaciolacustrine material over outwash, ice contact stratified drift, and gravelly deltaic materials	Burford Gravelly Loam, Gilford Gravelly Loam
Walsher	Glaciolacustrine plains or deltas	Veneer of shallow water glaciolacustrine and deltaic material over shallow to deep water glaciolacustrine materials	Not applicable
Walsher.T	Shallow sandy outwash deposits on moraines and ground moraines	Veneer of shallow water glaciolacustrine and deltaic material over Tavistock Till	Not applicable
Wattford	Sand plains	Glaciolacustrine shallow water deposits	Fox Fine Sandy Loam, Berrien Sand

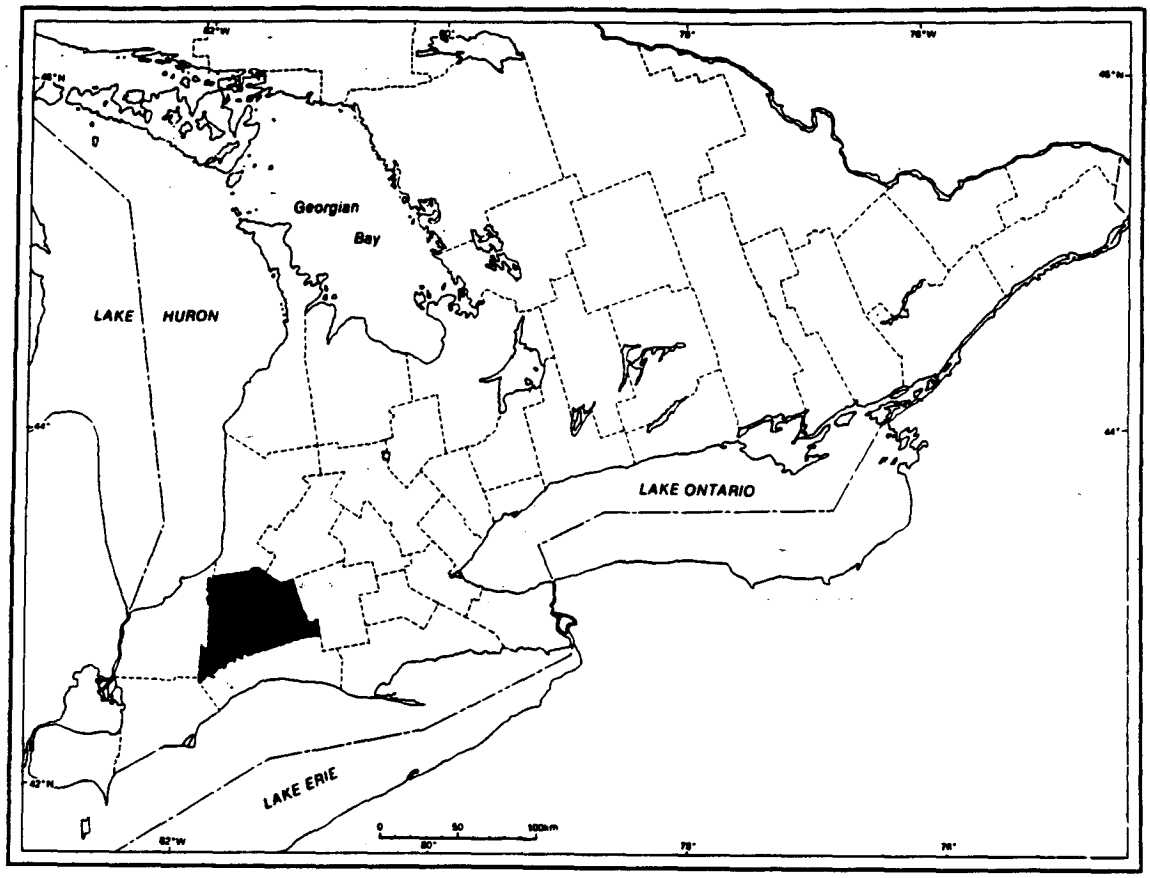


Figure 1. General location of Middlesex County

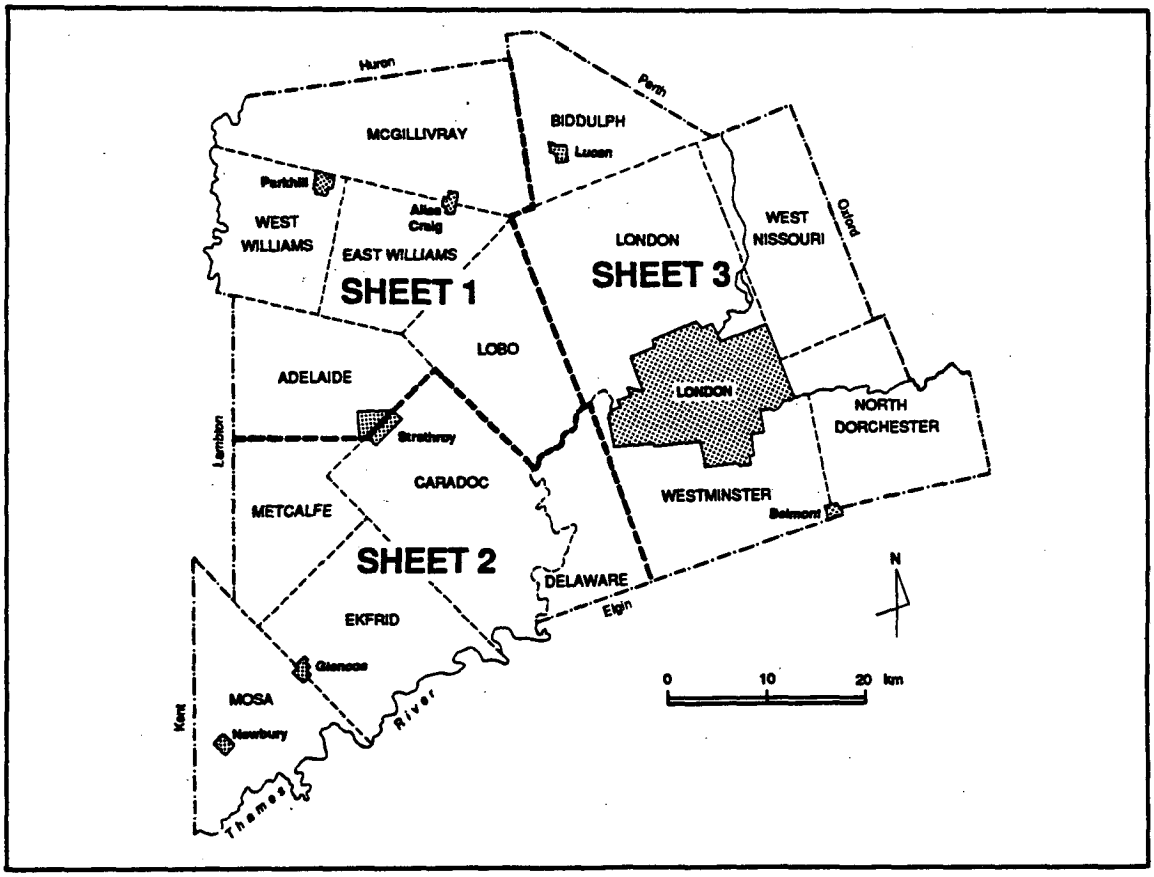


Figure 2. Soil map index and municipalities of Middlesex County

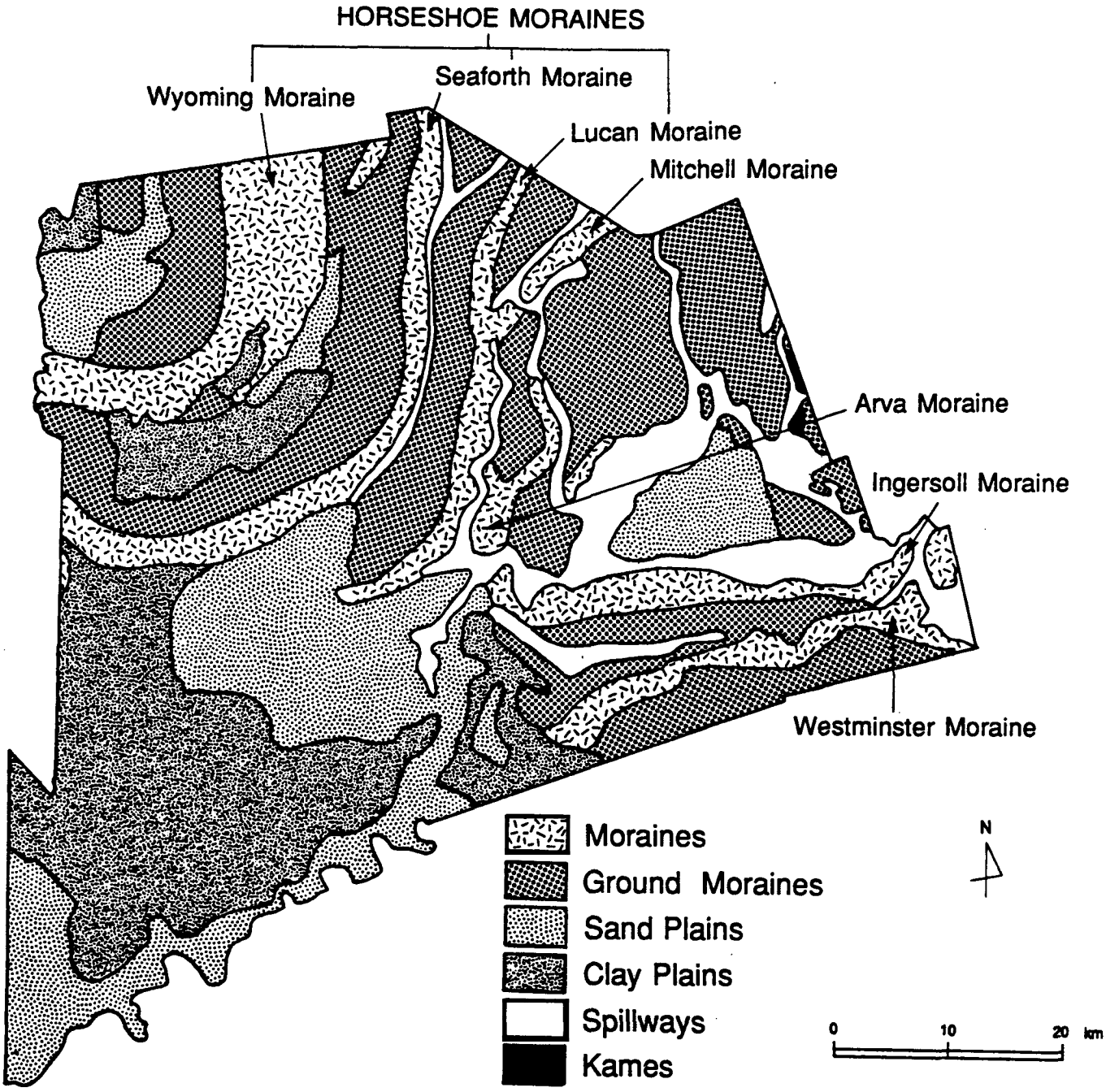


Figure 3. Some important physiographic features in Middlesex County

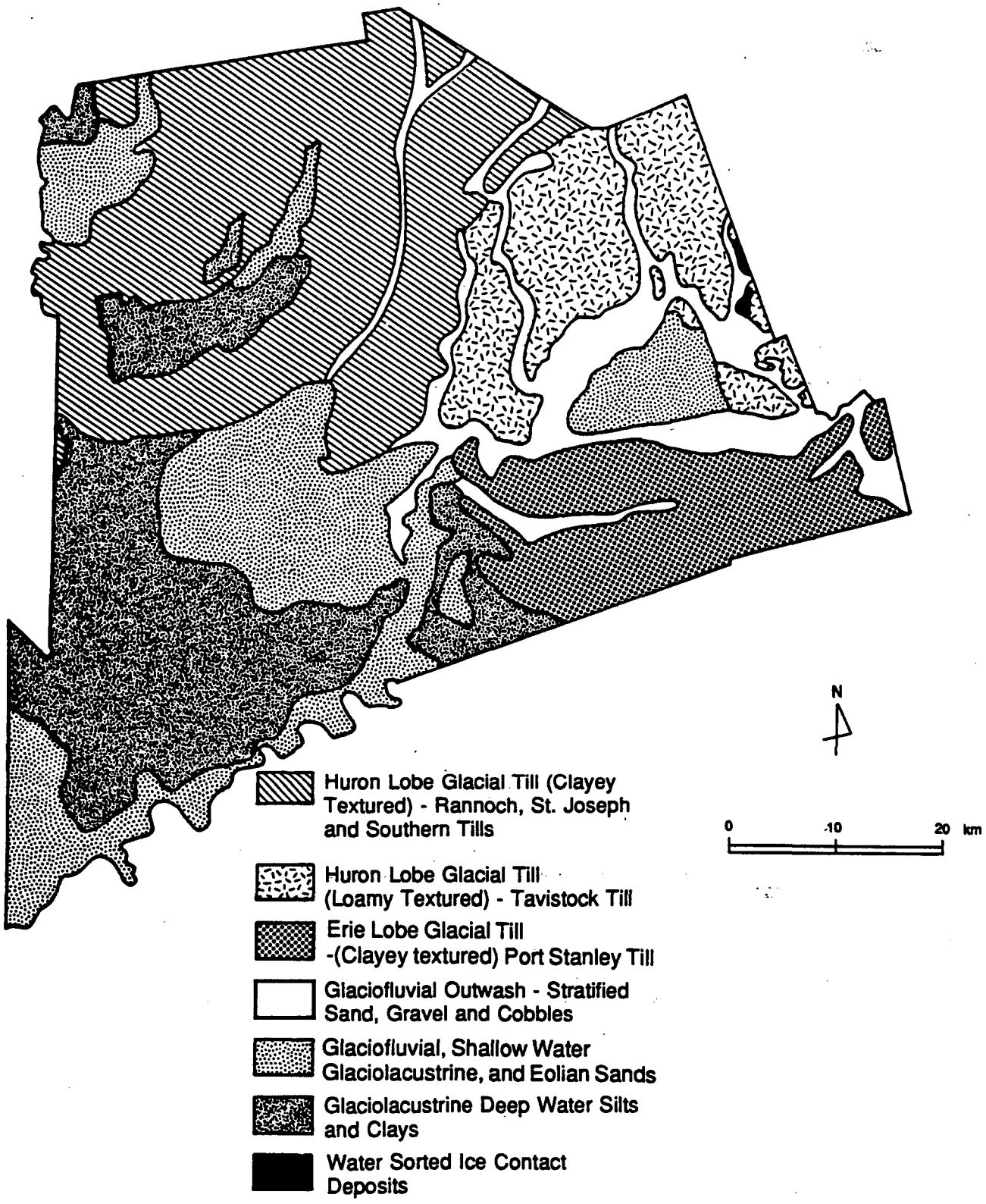


Figure 4. Generalized surficial geology of Middlesex County

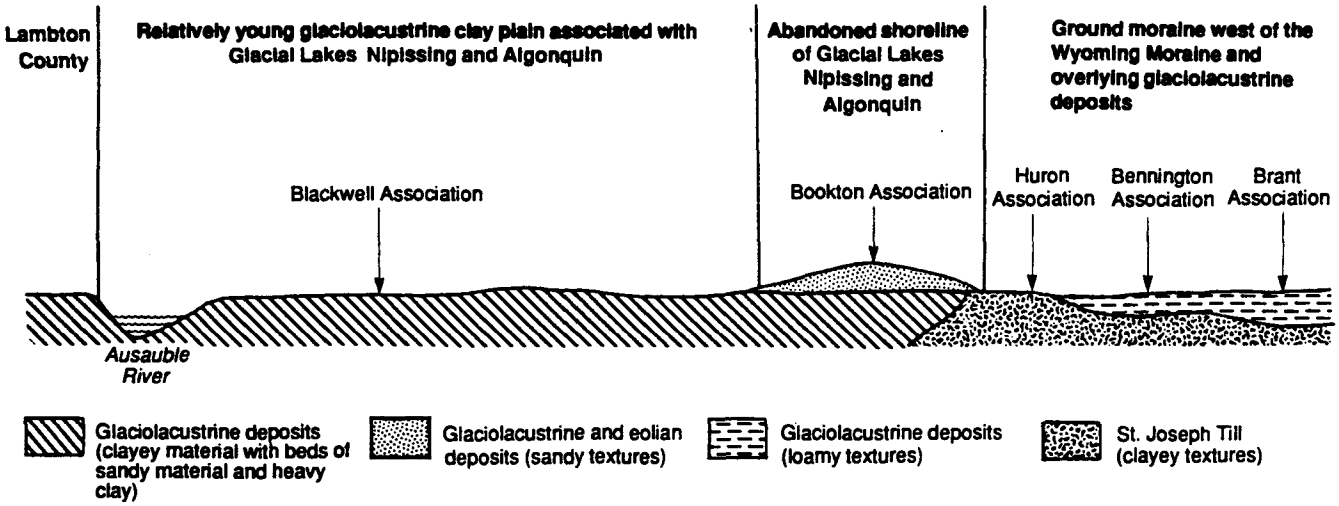


Figure 5. Schematic cross-section showing soil landscapes in the extreme northwestern portion of Middlesex County

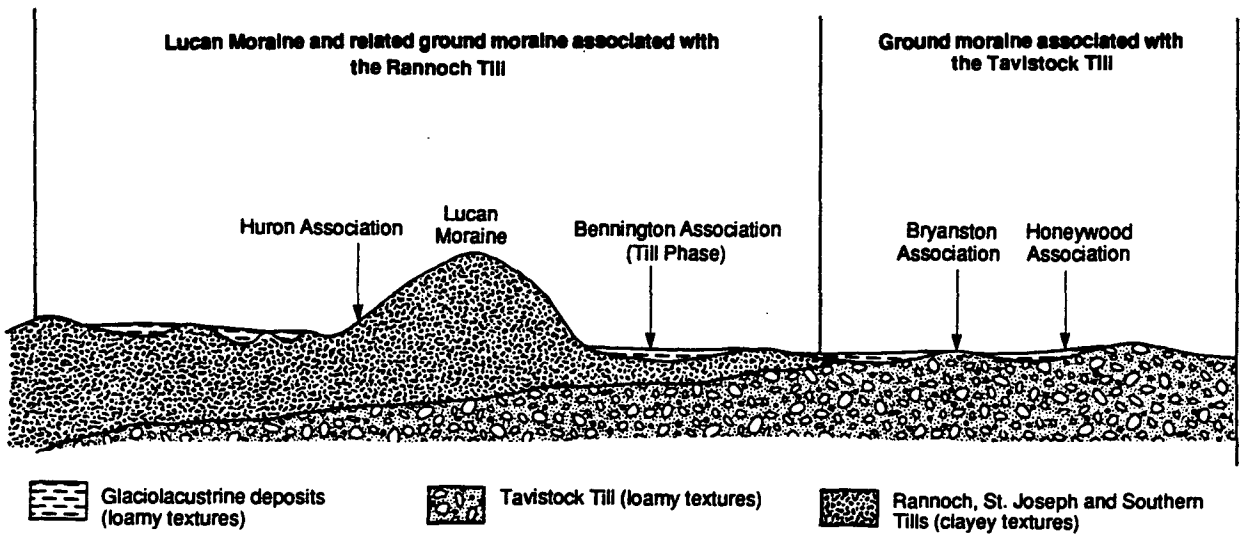


Figure 6. Schematic cross-section showing the relationship of soil landscapes in the vicinity of the Lucan Moraine

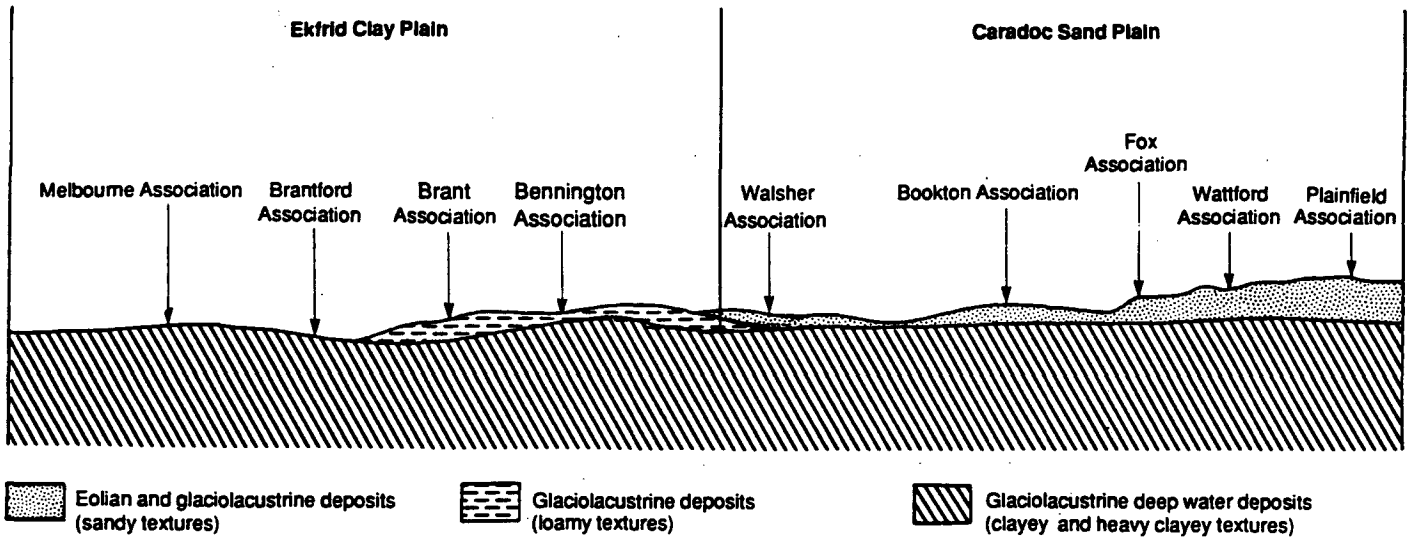


Figure 7. Schematic cross-section showing the relationship of soil landscapes on the Ekfrid Clay Plain and the Caradoc Sand Plain

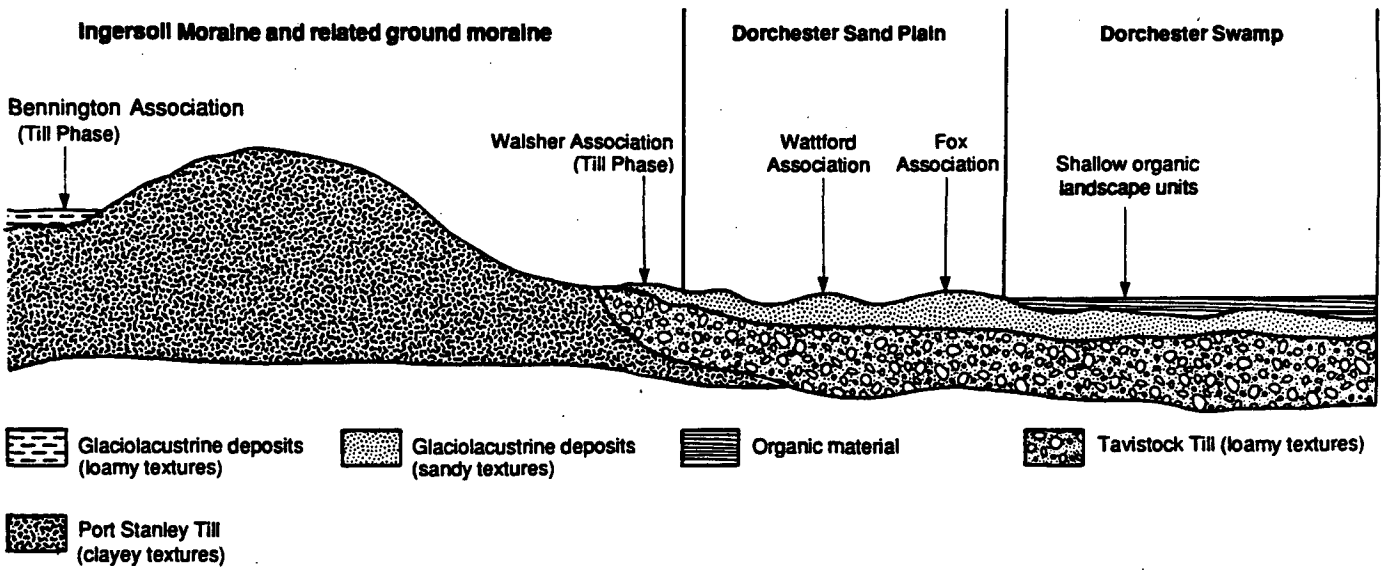


Figure 8. Schematic cross-section showing the relationship of soil landscapes on the Ingersoll Moraine and the Dorchester Sand Plain

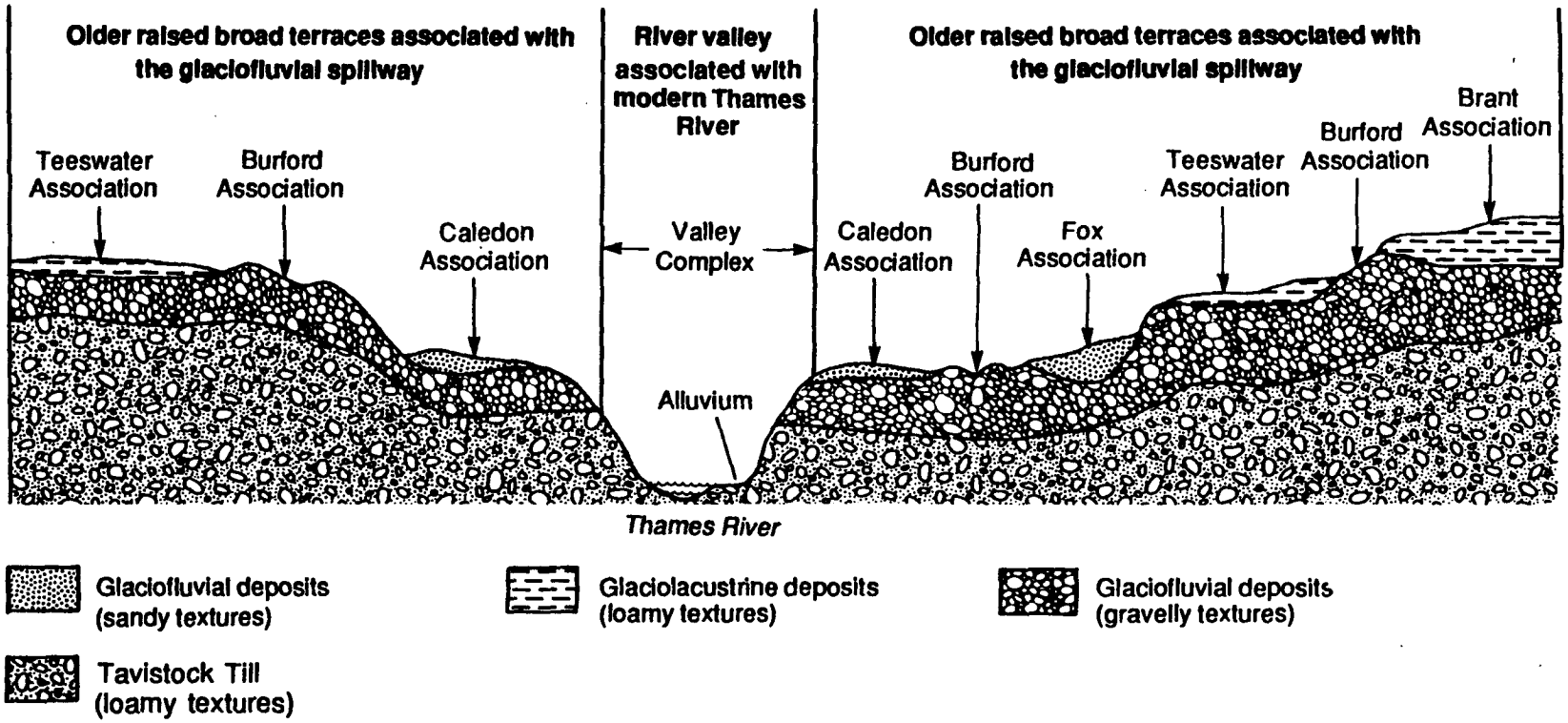


Figure 9. Schematic cross-section showing the relationship of soil landscapes in the glacial spillways of the Thames River Valley

Climate

Middlesex County is located within three climatic regions as defined by Brown et al. (13). Figure 10 indicates the approximate boundaries between the Lake Erie Counties Region, the South Slopes Region, and the Lake Huron - Georgian Bay Region. Selected climatic data from Middlesex County for each Region is presented in Table 2 (13,14).

Figure 10. Climatic regions of Middlesex County

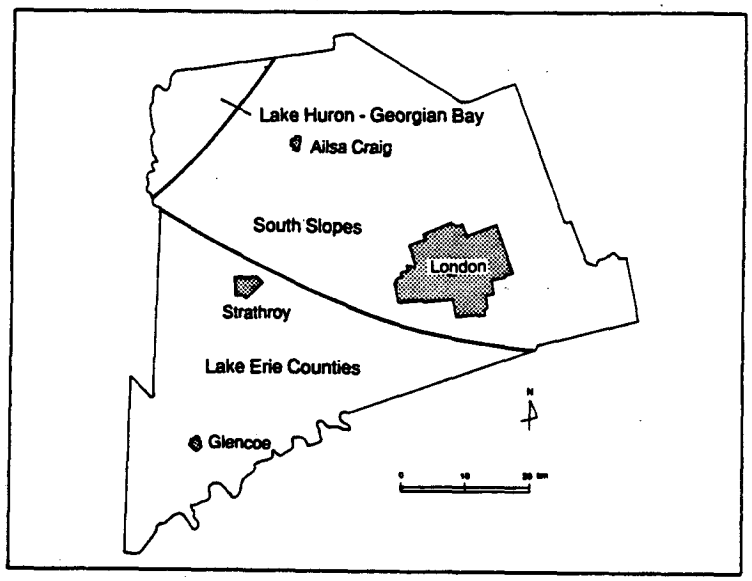


Table 2. Climatic data from Middlesex County

Parameters	Lake Erie Counties	Estimated ranges South Slopes	Lake Huron Georgian Bay
Mean Annual Temperature (°C)*	8 - 9	7 - 8	7 - 8
Mean Daily Minimum Temperature for January (°C)*	-8 to -9	-8 to -10	-8 to -9
Mean Daily Maximum Temperature for July (°C)*	27 - 28	26 - 27	26 - 27
Mean Date of Last Occurrence of Spring Frost (0°C)**	May 8 - 12	May 12 - 17	May 7 - 12
Frost Free Days***	150 - 155	140 - 150	150 - 160
Mean Date of First Occurrence of Fall Frost (0°C)***	Oct. 10 - 12	Oct. 5 - 10	Oct. 10 - 15
Corn Heat Units (average)***	3000 - 3100	2900 - 3000	3000 - 3100
Mean Annual Precipitation (cm)*	84 - 91	91 - 97	86 - 89
Mean Snowfall (cm)*	125 - 160	160 - 240	160 - 200
Mean May to September Precipitation (cm)*	36 - 40	40 - 42	38 - 40

* *Based on climatic data for the period 1931 - 1960 (13).*
** *Based on climatic data for the period 1951 - 1980 (14).*
*** *Based on climatic data for the period 1951 - 1980.*

HOW THE SOILS WERE MAPPED AND CLASSIFIED

Soil Mapping

Soil mapping in Middlesex County, was undertaken in a series of stages. First, a sampling program, stratified according to materials mapped on the original 1931 soil map and the surficial geology maps for the area, was undertaken. Laboratory data from this sampling program was used to develop the soil legend.

Using the legend as a guide, tentative soil boundaries were determined by stereoscopic examination of aerial photographs (scale 1:30,000). Field verification of the boundaries and the predicted soil landscape units followed.

Field checking was done along all public roads. Periodic examinations of the soils were made, especially where stereoscopic interpretations indicated major changes.

Soil probes and Dutch augers were the tools most commonly used to investigate the soils. Soils were usually checked and described to a depth of 1 metre. Deeper examinations were occasionally undertaken, usually at the site of deep road or bank cuts. Guidelines and nomenclature for soil site descriptions were mainly obtained from the *Canadian Soil Information System (CanSIS) Manual for Describing Soils in the Field* (15), *Munsell Colour Charts* (16), and the *Ontario Institute of Pedology Field Manual for Describing Soils* (17). Soil samples were periodically collected for laboratory analyses, to verify or supplement field observations.

The field data and the soil boundaries on the aerial photographs were used to compile the soil maps on 1:50,000 topographic base maps. Preliminary soil maps and soil capability ratings for common field crops were published. The necessary revisions were made and the final maps were then prepared to accompany this report. The maps were digitized to provide hectarages for each soil type and to facilitate the production of computer-derived interpretive maps.

Survey Intensity Level and Map Reliability

The survey intensity level provides an indication of the level of precision associated with the survey. It relates to the number of field checks per unit area mapped, the number of delineations on the map having at least one inspection, the methodology used to establish soil boundaries. Since it usually has an associated publication scale, it also implies a minimum size area which can be portrayed on the map.

Survey intensity level (SIL) ranges from 1, for detailed surveys at large scales such as 1:10,000, to 5 for small scale surveys at scales such as 1:250,000 (18). The survey intensity level of the Middlesex County survey is level 3. However, the density of delineations on the maps and close proximity of site inspections is such that the survey is approaching the minimum requirements of a SIL 2 survey.

Due to cartographic limitations the minimum size area which can be delineated on a soil map is 0.5 cm^2. At a scale of 1:50:000, the minimum size delineation represents about 12 hectares. Although some of the map units are approaching the minimum size, the average delineation size represents approximately 70 hectares.

Given that the Middlesex County survey has a SIL of 3 and is at a scale of 1:50,000, all of the soil materials, drainages, and slopes occurring in a delineation cannot necessarily be described by the map symbol. In some instances, the areal extent of the soil landscape was less than 12 hectares and therefore not indicated on the map. In addition, some aspects of soil variability were not sufficiently predictable to be properly identified in the map symbol. As a result, unmapped inclusions of soil material, drainage conditions and slope may occur in any map delineation. Although there areal extent is usually limited, they can occupy up to 20% of a delineation, where the soils and topography are highly variable.

The delineation boundaries were checked at intervals in the field but primarily extrapolated from aerial photographs. At least one site inspection was completed in most of the delineations. The frequency of inspections was increased in areas where the soil landscape was less predictable in order to improve the reliability of the maps.

Because of the scale and SIL, the most appropriate use of the soil maps is for planning at the County, township or watershed level, or for broad targeting of soil-related agricultural programs. The maps are not sufficiently detailed for making site specific land assessments, such as individual farm fields. In such cases, additional on-site investigation of the soils are recommended.

Figures 14, 15, 16 and 17 are keys which can be used to verify map delineation symbols and identify unmapped inclusions in the field.

Soil Classification

The Canadian System of Soil Classification (19) classifies soils taxonomically according to the type, degree of development and sequence of soil horizons present in the soil profile. Factors affecting soil formation and therefore the development of soil horizons include: parent material, climate, topography, vegetation, and time.

The soils of Middlesex County have developed in soil parent materials ranging in texture from heavy clays to coarse gravels. Many of the differences in texture and soil structure have been influenced by the various processes which deposited the materials.

The original soil parent materials in Middlesex County are highly calcareous and alkaline. However, the soils which have developed on these materials are less calcareousbecause of the leaching action of water on soil bases, especially calcium. This leaching action, along with associated soil weathering, causes the developmentof soil horizons near the soil surface. These horizons differ from each other in properties such as texture, colour, thickness, structure and consistence.

Variations in drainage also cause differences between soils developed in the same parent materials. Soil materials which are seasonally saturated by soil water, develop orange and rust-coloured blotches called mottles. Mottles are caused by the reaction of weathering products to alternating wet and dry conditions. Under prolonged periods of saturation, gley colours develop. These are bluish-grey colours caused by the reduction of iron compounds in the soil. Soil drainage is determined from texture and the distribution of mottles and gley colours, if present (15, 17). Seven drainage classes have been defined, ranging from very rapidly drained to very poorly drained (15). Figure 11 is a schematic diagram which depicts the distribution of mottles and gley colours for selected drainage classes.

Soil horizons are usually designated as A, B, and C horizons, and subdivided further when more detailed descriptions are required (19). Figure 12 shows some common horizons and classifications of soils in Middlesex County.

The A horizon is a surface horizon, which can be further subdivided into the Ap or Ah or Ae horizons (19). Ah horizons are dark-coloured and usually have high organic matter contents. Ap horizons occur where Ah horizons have been cultivated, and usually constitute the topsoil, or plough layer. Ae horizons are leached, light-coloured, and have lower organic matter contents than Ap or Ah horizons. Some or all of the Ae horizon materials are often incorporated into the plough layer, especially when ploughing is deep.

B horizons are usually more reddish, finer-textured, and more compact that A horizons. When they contain significantly more clay than overlying A horizons they are called Bt horizons (19). When they differ from A horizons mainly by colour or structure differences, they are called Bm horizons (19). Most well-drained soils in Middlesex County have Bt horizons that are overlain by Ae or Bm horizons, as shown in Figure 11. On moderately to severely eroded slopes, B horizons are often exposed at the surface.

C horizons underlie B horizons in normal soil profiles, as shown in Figure 11. They are composed of soil parent material that has undergone relatively little weathering compared with the A and B horizons. In Middlesex County, C horizons are moderately to strongly calcareous because they contain free carbonates. They are called Ck horizons because these carbonates exhibit visible effervescence when contacted with dilute hydrochloric acid (19). If the texture or origin of C horizons is significantly different from those of overlying A or B horizons, e.g. lacustrine sand over clay till, the C horizon is designated as a IIC horizon. C horizons are usually exposed only on roadcuts or on certain severely eroded slopes.

Imperfectly drained soils have the same type and sequence of horizons as well drained soils as shown in Figure 12. Because they are wetter for longer periods of time, "gley" conditions develop. These conditions usually cause mottling in the Ae, Bm or Bt horizons. The horizons are then designated as Aegj, Bmgj and Btgj horizons (19).

Most poorly drained mineral soils in Middlesex County have grey or bluish-grey colours, often with yellowish-brown mottles. As Figure 12 shows the B and C horizons of these poorly drained profiles are usually designated as Bg and Ckg horizons (19).

There are some very poorly drained organic soils in the County that have more than 40 cm of surface organic soil, and contain at least 30 percent

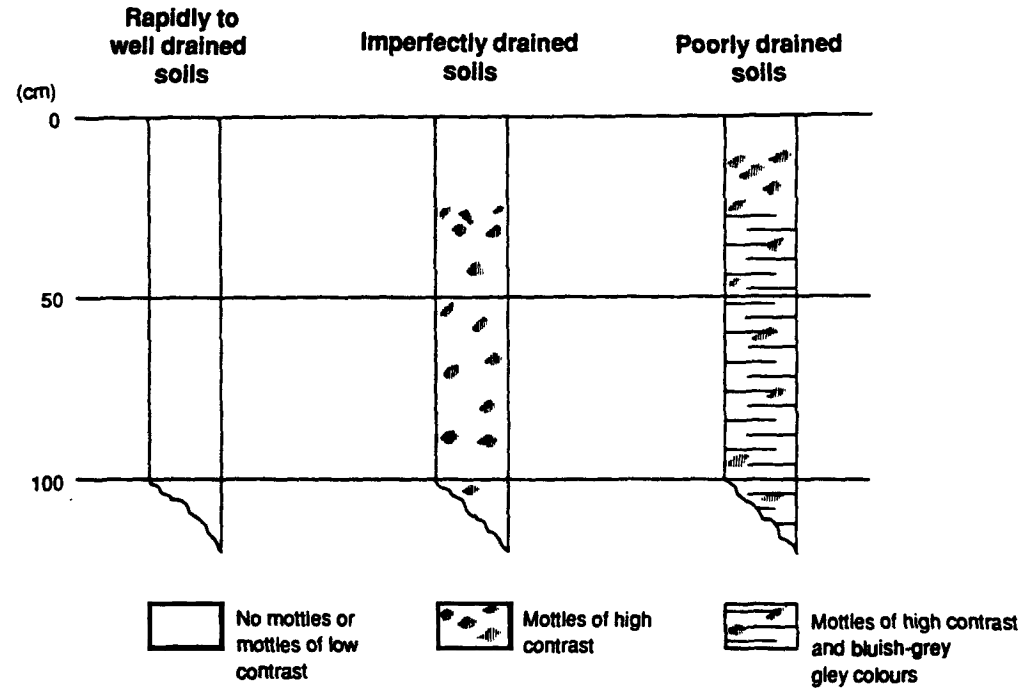


Figure 11. Distribution of mottles and gley colours for various soil drainages

organic matter. Horizons of organic soils are called O horizons. Different lowercase suffixes are used, e.g. Oh,Om, Of, depending on the degree of decomposition of the organic materials (19).

The Canadian System of Soil Classification is a hierarchial system consisting of orders, great groups, subgroups, families and series (19). In Middlesex County, the system was used to determine the typical classification, down to the subgroup level, for selected soils. This information is reported in Volume 2, following the heading Usual Classification. This classification should not be considered to be the only one which can occur, but rather the one which most commonly occurs in Middlesex County.

Soil Orders

Soil orders that have been noted in Middlesex County are the Luvisolic, Brunisolic, Gleysolic, Regosolic and Organic orders.

Most well and imperfectly drained soils in the County have been classified in the Luvisolic order. In uncultivated area, they are characterized by light-coloured eluvial horizons and brown or reddish-coloured illuvial B horizons in which clay has accumulated. In cultivated fields the eluvial horizon has often been incorporated into the plough layer.

Soils of the Brunisolic order, which lack the same degree of horizon development as Luvisols, are present in Middlesex County. They seem to be most prevalent in some imperfectly drained soils, and in soils that are relatively young in age, such as alluvial floodplain soils and eolian sands.

Most poorly drained soils in the County were classified in the Gleysolic order. These soils are associated with high groundwater conditions during some period of the year. In the heavier clayey soils, groundwater frequently occurs as disconnected lenses. Such groundwater lenses commonly "perch" on relatively impermeable lower horizons. These soils have at least one grey or bluish-grey horizon, and usually have highly contrasting prominent mottles within 50 cm of the surface.

Soils belonging to the Regolsolic order occur throughout the County on small, localized areas of severely eroded slopes, colluvial depressions and alluvial floodplains. They are characterized by weakly developed soil horizons or the lack of horizon development.

Soils of the Organic order are saturated by water for prolonged periods of time. They are characterized by organic matter contents greater than 30 % and a minimum thickness of 40 cm of organic material. They were mapped primarily in the Dorchester Swamp.

Soil Great Groups and Subgroups

In Middlesex County, soils that belong to the Luvisolic order are classified in the Grey Brown Luvisol great group. Well-drained soils of this group can be classified into the Orthic Grey Brown Luvisol subgroup and the Brunisolic Grey Brown Luvisol subgroup. Imperfectly drained soils are classified in the Gleyed Grey Brown Luvisol subgroup and the Gleyed Brunisolic Grey Brown Luvisol subgroup. Schematic diagrams of some of these classifications are shown in Figure 12.

Brunisolic soils of the County are mainly classified into the Melanic Brunisol great group. These can be further subdivided into the Orthic, Eluviated or Gleyed Melanic Brunisol subgroups. The horizon sequence the Orthic and the Gleyed Melanic Brunisols is illustrated in Figure 12. A few of the Brunisolic soils are classified in the Eutric Brunisol great group, where they can be further subclassified into Orthic, Eluviated or Gleyed Eutric Brunisol subgroups.

Most Gleysolic order soils in the County are classified into the Humic Gleysol great group. Most of these are subclassified into the Orthic Humic Gleysol subgroup, and a few into the Rego Humic Gleysol subgroup. Figure 12 shows a schematic diagram of an Orthic Humic Gleysol profile.

Soils of the Organic order, mapped in the County, were classified in either the Mesisol or Fibrisol great groups. Many of these were subclassified in Terric subgroups because of their relative shallowness over mineral soils.

Soil Mapping System

The mapping system used in Middlesex County is based on soil associations. The term, soil association, refers to a natural grouping of mineral soils which occur together in a characteristic pattern over a geographic region. In Middlesex County soil associations share a consistent parent material, but have variable properties because of differences in drainage. For most associations there are three named soils, which represent the poorly drained soil, the imperfectly drained soil and the better drained soil. The drainage for the latter soil can range from very rapidly drained to moderately well-drained. The soil association is usually named after the best drained soil in the association. In Middlesex County there is one exception, the Blackwell Association, which is named after its only member, the poorly drained Blackwell soil. The soil associations are identified by a two letter code e.g. HU is the designation for the Huron Association. The areal extent of each association is listed in Table 3.

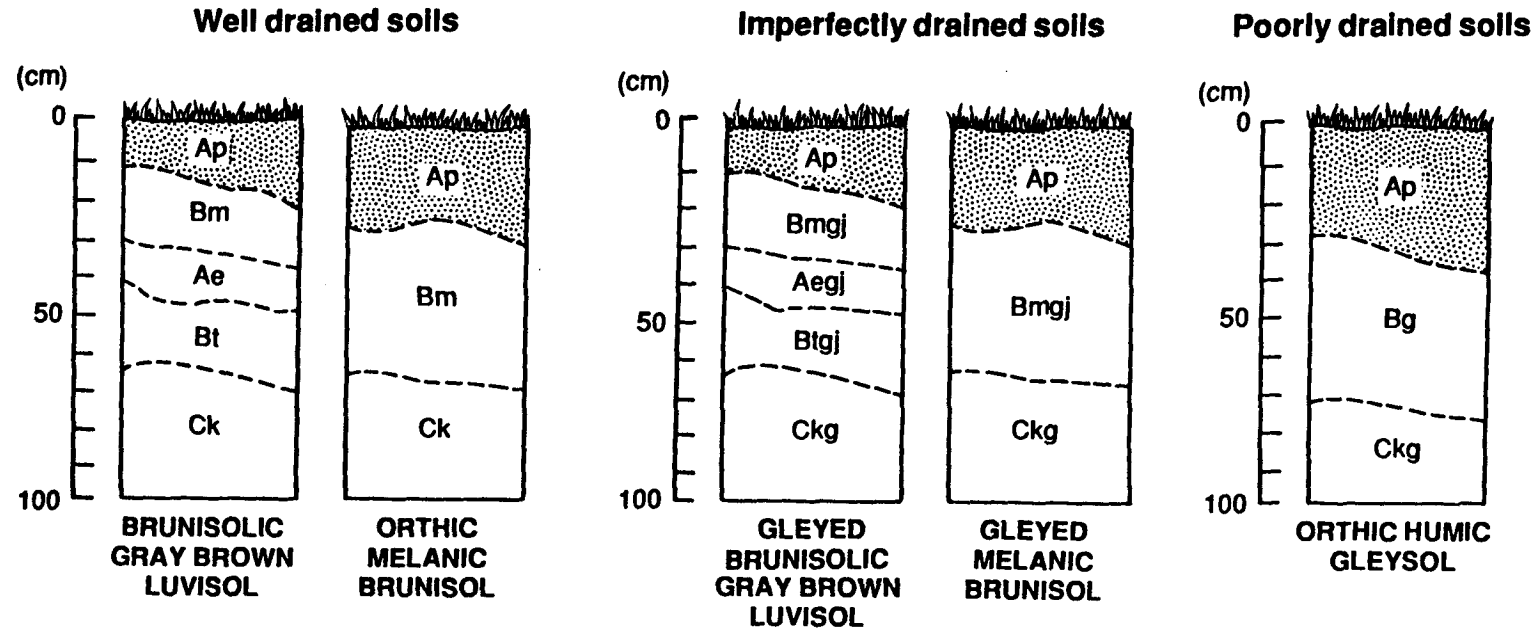
Soil Map Units

The individual soils of an association were grouped to form soil landscape units. The imperfectly drained member and the better drained soil form one grouping. The poorly drained soil of the same association is mapped as a separate component. The soil landscape units are labelled with a two letter code which identifies the name of the soil association followed by a number which indicates the soil drainage components present. The landscape units and their areal extent is listed in Table 3.

For most soil associations in Middlesex County there are four landscape units. For example, in the Huron Association, the HU4 landscape unit consists of moderately well-drained Huron soils and imperfectly drained Perth soils. In landscape units numbered 4, the relative proportion of each drainage member is not defined. The HU8 landscape unit consists of poorly drained Brookston soils. The remaining landscape units, HU6 and HU9, are composed of the former two landscape units in various proportions. The HU6 landscape unit is dominantly comprised of moderately well to imperfectly drained soils, with a significant component of poorly drained soils. The HU9 landscape unit consists of a dominant component of Brookston soils and a significant component of Huron and Perth soils. In landscape units numbered 6 and 9, the term dominant describes the component which occurs over approximately 60% of the landscape unit. The term significant indicates the component which occupies approximately 40% of the landscape unit. The relative proportions of the components can, however, vary, by as much as 20%, because of inclusions.

The landscape units for each soil association in Middlesex County are shown in the legend on the soil maps. In the Soil Association and Landscape Unit Key which follows, only the rapid - well - imperfectly drained landscape units (e.g. HU4) and the poorly drained landscape units (e.g. HU8) are listed.

The delineations on the soil map contain a symbol, which consists of landscape units and their respective slopes. The two types of symbols used on the Middlesex County soil maps are the simple and complex symbols. Examples of both



Ah, Ap dark coloured, mineral, surface horizons, enriched with organic matter. (p - man modified eg. plow layer)

Ae light coloured near surface horizon due to loss of iron, aluminium, organic matter or clay

Bt brownish, subsurface horizon, enriched with clay that has been moved from the Ae horizon.

Bm brownish subsurface horizon with only slight addition of iron, aluminum or clay.

Bmgj brownish subsurface horizon with only slight addition of iron, aluminum or clay and some mottling indicative of short periods of saturation.

Bg horizons with grey gley colours and/or mottling indicative of longer periods of saturation.

Ck relatively unweathered material from which the soil profile has developed; containing calcium and/or magnesium carbonates that will effervesce with dilute HCl.

Roman Numerals

Roman Numerals preceeding the horizon designation indicate a significant change in texture (mode of deposition) within the profile, e.g. where silt loam occures over silty clay, the horizons of silty clay are preceeded by II e.g. IIBt. Examples of this may be found in some of the soil descriptions found in Vol. 2 of this report.

Figure 12. Some common horizons and classifications of soils in Middlesex County

Table 3. Areal extent of soil associations and landscape units mapped in Middlesex County

Soil association name	Areal extent (hectares)	Landscape unit	Areal extent (hectares)
Alluvium (AL)	1,873	ALU	1,873
Bennington (BN)	16,657	BN4	2,290
		BN4.T	10,946
		BN6	191
		BN6.T	289
		BN8	266
		BN8.P	17
		BN8.T	1,729
		BN9	387
		BN9.T	542
Blackwell (BA)	1,278	BA8	1,278
Bookton (BO)	14,277	BO4	7,067
		BO4.T	3,971
		BO6	257
		BO6.T	316
		BO8	1,703
		BO8.T	849
		BO9	119
		BO9.T	34
Brant (BT)	20,388	BT4	12,812
		BT6	1,861
		BT8	4,540
		BT8.P	142
		BT9	1,033
Brantford (BF)	44,092	BF4	22,667
		BF6	13,719
		BF8	4,824
		BF9	2,882
Bryanston (BR)	18,034	BR4	16,910
		BR6	887
		BR8	42
		BR9	195
Burford (BU)	3,854	BU4	3,832
		BU8	22
Caledon (CA)	4,679	CA4	4,451
		CA6	78
		CA8	139
		CA9	11
Eroded Channel (ER)	11,511	ER	11,511
Fox (FO)	3,984	FO4	3,420
		FO6	141
		FO8	268
		FO8.P	16
		FO9	139

Table 3. Areal extent of soil associations and landscape units mapped in Middlesex County (continued)

Soil association name	Areal extent (hectares)	Landscape unit	Areal extent (hectares)
Honeywood (HY)	14,466	HY4	9,574
		HY6	3,511
		HY8	719
		HY9	662
Huron (HU)	73,408	HU4	51,456
		HU6	13,148
		HU8	4,869
		HU9	3,935
Melbourne (ME)	4,053	ME4	2,641
		ME6	531
		ME8	772
		ME9	109
Muriel (MU)	22,189	MU4	19,225
		MU6	1,624
		MU8	910
		MU8.P	37
		MU9	393
Not Mapped (NM)	22,410	NM	22,410
Organic soils	2,169	OD1	249
		OD2	182
		OD3	154
		OS1	1,161
		OS2	298
		OU1	126
Plainfield (PL)	21,834	PL4	14,465
		PL6	1,984
		PL8	3,892
		PL9	1,492
Teeswater (TE)	2,768	TE4	2,370
		TE6	140
		TE8	241
		TE9	17
Valley Complex (VC)	18,051	VC	18,051
Walsher (WA)	2,260	WA4	1,047
		WA4.T	870
		WA6	19
		WA6.T	193
		WA8	45
		WA8.T	34
		WA9	52
Wattford (WF)	7,948	WF4	5,710
		WF6	427
		WF8	1,057
		WF8.P	270
		WF9	484

types are shown in the Key to Symbols of Map Delineations section on the soil maps.

For simple symbols consisting of only one landscape unit numbered either 4 or 8, and a single slope class, at least 80% of the delineation is described by the symbol. The areal extent of the dominant landscape unit and slope class of most complex symbols, is approximately 60%, although it can range from 40% to 80% in an individual delineation depending on the extent of the inclusions. Within the same delineation, the significant landscape unit and slope class represents approximately 40% of the area of the delineation. In an individual delineation it can range between 20% and 40%, because of inclusions. For complex symbols consisting of two landscape units which are numbered 4, the areal extent of the dominant landscape unit and slope class is approximately 70%. The significant landscape unit and slope class represents approximately 30% of the area of the delineation. The relative proportions can, however, vary, by as much as 20% because of inclusions.

If more detailed information on the variability and areal extent of landscape units and slopes within a specific delineation is required, a site assessment is necessary. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Soil Phases

Two phase designations were mapped in Middlesex County. The till phase distinguishes soil developed in glacial till, from those with similar soil properties developed in glaciolacustrine deposits. It has been used with the Bennington, Bookton and Walsher associations. e.g. BO8.T is the till phase of the BO8 landscape unit. Soils with 15 - 40 cm of peaty soil material overlying mineral soil were identified by the peaty phase. e.g. BT9.P is the peaty phase of the BT9 landscape unit.

Miscellaneous Landscape Units

There are a number of land designations, too variable or complex to designate as soil landscape units, that are listed as miscellaneous landscape units. Four types have been mapped and described including: Alluvium (ALU); Eroded Channel (ER); Not Mapped (NM); and Valley Complex (VC).

GENERAL DESCRIPTION OF THE SOILS

Soil Association and Landscape Unit Key

A. Soils Developed on Glacial Till Deposits

I. Silty clay loam and silty clay till parent materials deposited by glaciation from Lake Erie
   Muriel Association (MU)
   a) Moderately well to imperfectly drained (MU4)
   b) Poorly drained (MU8)

II. Silty clay loam and silty clay till parent materials deposited by glaciation from Lake Huron
   Huron Association (HU)
   a) Moderately well to imperfectly drained (HU4)
   b) Poorly drained (HU8)

III. Silt loam and loam till parent materials
   Bryanston Association (BR)
   a) Well to imperfect (BR4)
   b) Poorly drained (BR8)

IV. 40 to 100 cm loamy sediments over silty clay loam or silty clay till parent materials
   Bennington Association (BN)
   a) Well to imperfectly drained (BN4.T)
   b) Poorly drained (BN8.T)

V. 40 to 100 cm sandy sediments over clayey till parent materials
   Bookton Association (BO)
   a) Well to imperfectly drained (BO4.T)
   b) Poorly drained (BO8.T)

VI. 40 to 100 cm loam and silt loam over loamy till
   Honeywood Association (HY)
   a) Well to imperfectly drained (HY4)
   b) Poorly drained (HY8)

B. Soils Developed on Glaciolacustrine Deposits

I. Loamy sand and sand parent materials
   Fox Association (FO)
   a) Rapid to imperfectly drained (FO4)
   b) Poorly drained (FO8)

II. Fine sandy loam, very fine sandy loam, and loamy very fine sand parent materials
   Wattford Association (WF)
   a) Well to imperfectly drained (WF4)
   b) Poorly drained (WF8)

III. Silt loam, loam and very fine sandy loam parent materials
   Brant Association (BT)
   a) Well to imperfectly drained (BT4)
   b) Poorly drained (BT8)

IV. 40 to 100 cm of sandy sediments over loamy parent materials
   Walsher Association (WA)
   a) Well to imperfectly drained (WA4)
   b) Poorly drained (WA8)

V. Mostly silty clay and silty clay loam parent materials
   Brantford Association (BT)
   a) Moderately well to imperfectly drained (BT4)
   b) Poorly drained (BT8)

VI. 40 to 100 cm of loamy sediments over silty clay loam or silty clay parent materials
   Bennington Association (BN)
   a) Well to imperfectly drained (BN4)
   b) Poorly drained (BN8)

VII. 40 to 100 cm of sandy sediments over clayey parent materials
   Bookton Association (BO)
   a) Well to imperfectly drained (BO4)
   b) Poorly drained (BO8)

VIII. At least 15 cm of heavy clay in silty clay and clay parent materials
   Melbourne Association (ME)
   a) Moderately well to imperfectly drained (ME4)
   b) Poorly drained (ME8)

IX. Poorly structured silty clay loam and silty clay parent materials with high surface organic matter contents and occasional horizons of heavy clay
   Blackwell Association (BA)
   a) Poorly drained (BA8)

C. Soils Developed on Glaciofluvial Deposits

I. Gravelly and cobbly outwash parent materials
   Burford Association (BU)
   a) Rapid to imperfectly drained (BU4)
   b) Poorly drained (BU8)

II. 40 to 100 cm loamy sediments over gravelly and cobbly outwash parent materials
   Teeswater Association (TE)
   a) Well to imperfectly drained (TE4)
   b) Poorly drained (TE8)

III. 40 to 100 cm sandy sediments over gravelly and cobbly outwash parent materials
   Caledon Association
   a) Well to imperfectly drained (CA4)
   b) Poorly drained (CA8)

D. Soils Developed on Eolian Deposits

I. Fine sand parent materials
   Plainfield Association (PL)
   a) Rapid to imperfectly drained (PL4)
   b) Poorly drained (PL8)

E. Soils Developed on Organic Deposits

I. Organic sediments 40 to 160 cm deep over mineral materials
   Shallow Mesic Organic Soils (OS1)
   Shallow Humic Organic Soils (OS2)

II. Organic sediments greater than 160 cm deep over mineral materials
   Deep Mesic Organic Soils (OD1, OD2, OD3)

III. Undifferentiated organic sediments of variable depths
   Undifferentiated Organic Soils (OU1)

F. Miscellaneous Landscape Units

I. Recent alluvial deposits (ALU)

II. Eroded channel (ER)

III. Not mapped (NM)

IV. Valley complex (VC)

Soil Descriptions

The soil descriptions provide an overview of the characteristics of the soils of Middlesex County. They are arranged in alphabetical order by soil association. There is a brief discussion of the origin of the soil materials and the textural characteristics of each association. The members of the association are identified, followed by the landscape units mapped in the County. The general soil properties of the individual soils are discussed. Data cited was extracted from the generalized and detailed soil descriptions in Volume 2. The moisture characteristics of the soils are described according to the guidelines in the *CanSIS Manual for Describing Soils in the Field* (15). Estimates of water-holding capacity were extrapolated from water retention data obtained from the detailed soil descriptions (22, 23). Variations in the soil materials for the association are noted. Soil variability within map delineations is also indicated. The capability for common field crops and suitability for special crops are summarized, and where applicable, soil management concerns are indicated.

Bennington Association

General Description

The Bennington Association has developed on level to nearly level and occasionally very gently sloping glaciolacustrine clay plains, where glaciolacustrine silt loam and loam has been deposited as overburden. The depth of the overlying material ranges from 40 to 100 cm. The till phase of the Bennington Association occurs on undulating to hummocky topography associated with moraines, where ponded meltwater has deposited loamy glaciolacustrine material on clayey glacial till. The gravel and weathered shale content of the till ranges from 2% to 15%.

Bennington Association Members

The Bennington Association is comprised of three drainage members: the well-drained Bennington soil, the imperfectly drained Tavistock soil and the poorly drained Maplewood soil. The association is named after the well-drained member.

Bennington Association Landscape Units

The Bennington Association landscape units describe the commonly occurring groupings of Bennington, Tavistock and Maplewood soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
BN4	Well to imperfect	Bennington and/or Tavistock soils		
BN4.T	Well to imperfect	Bennington till phase and/or Tavistock till phase soils		
BN6	Well to imperfect	Bennington and/or Tavistock soils	Poor	Maplewood soils
BN6.T	Well to imperfect	Bennington till phase and/or Tavistock till phase soils	Poor	Maplewood till phase soils
BN8	Poor	Maplewood soils		
BN8.P	Very poor	Maplewood peaty phase soils		
BN8.T	Poor	Maplewood till phase soils		
BN9	Poor	Maplewood soils	Well to imperfect	Bennington and/or Tavistock soils
BN9.T	Poor	Maplewood till phase soils	Well to imperfect	Bennington till phase and/or Tavistock till phase soils

On the 1:50,000 soil maps for Middlesex County, Bennington and Tavistock soils are grouped together. Both soils may not, however, be present in all of the map delineations which include a well to imperfectly drained component (BN4, BN4.T, BN6, BN6.T, BN9, BN9.T). As a general guide, only well-drained Bennington soils occur in map delineations where the associated slopes are Classes D or d, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although Bennington and Tavistock soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of Bennington soils were determined from data collected at sites where well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Tavistock soils. Maplewood soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Bennington soils which have developed in glaciolacustrine sediments usually have an average thickness of 19 cm and a mean organic matter content of 4.0%. The pH of the A horizon is usually neutral. In Bennington till phase soils the surface horizons average 23 cm thick, with a mean organic matter content of 5.4%. Surface textures are usually silt loam, and loam. The textural variability of surface horizons for all sampled Bennington soils is presented in the Appendix of Volume 2. Subsoil B horizons, including a clay-enriched Bt horizon, which often occurs immediately above the clayey material, have developed in the upper 40 to 100 cm of loamy sediments. The average depth of the overburden to the underlying glaciolacustrine sediments is 68 cm. In till phase soils the average thickness of the loamy overburden is 72 cm. Layers of loamy material may occur within the clayey subsoil.

The surface horizons of Tavistock and Tavistock till phase soils are approximately 23 cm thick. The mean organic matter content is 4.0% and 4.4%, respectively. The pH is usually neutral and the textures range from silt loam to loam. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Tavistock soils. The sequence of horizons is similar to that described for Bennington soils. Distinct to prominent rust-coloured mottles caused by seasonal saturation, are present in the B and IICk horizons. The contact between the loamy and clayey glaciolacustrine materials is at an average depth of 71 cm. The average thickness of the loamy overburden in Tavistock till phase soils is 72 cm. Layers of loamy material may also occur within the clayey subsoil.

The average thickness of the surface horizons of Maplewood soils is approximately 25 cm. The mean organic matter content of the A horizons is 4.2% and the pH usually ranges from slightly acid to neutral. The surface texture is usually silt loam and loam. The variability in texture of the surface horizon samples for Maplewood soils is displayed graphically in the Appendix of Volume 2. The soil profile tends to be poorly developed, usually without a Bt horizon. Prominent mottles and blue-grey gley colours occur within the 0 - 50 cm zone. The average depth of the contact of the loamy surficial material and the glaciolacustrine clayey sediments is 62 cm. Layers of loamy material may occur in the clayey subsoil.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Bennington soils have high moisture-holding capacities. They are usually moderately permeable through the upper loamy horizons, but permeability decreases significantly at the contact of the loamy and clayey sediments. Surface runoff is moderate to high, depending on the steepness of the slope.

Tavistock soils have high moisture-holding capacities. Their permeability is similar to the Bennington soils. During wet periods in the spring and fall, the upper portions of the profile may be saturated, as water becomes perched on top of the underlying clayey sediments, which are less permeable. Surface runoff is moderate to high, depending on the steepness of the slope.

Maplewood soils have high moisture-holding capacities. They are usually slowly permeable. High groundwater levels are often present in these soils, sometimes extending into the growing season. High perched watertables caused by the clayey subsoil are also common.

Soil Variability

In delineations where well to imperfectly drained landscape units are mapped (BN4, BN4.T, BN6, BN6.T, BN9, BN9.T), Bennington soils are usually associated with upper slope positions on moderately sloping topography. Tavistock soils generally occur on the mid to lower slope positions of level to gently sloping topography. Although level to depressional areas within map delineations usually consist of poorly drained Maplewood soils, very poorly drained, peaty phase soils are mapped in some depressional areas. These soils occur in the BN6, BN6.T, BN8, BN8.T, BN9 and BN9.T landscape units.

Bennington Association soils occur throughout the County. The till phase of these soils is mapped more extensively than Bennington Association soils developed in glaciolacustrine materials. Till phase soils are primarily associated with the moraines in the northwest corner of the County and with the till deposits south of the Ingersoll Moraine.

In areas where the depth of the loamy overburden is variable, the Bennington Association landscape units may be mapped in close proximity to landscape units of the Brant, Huron and Brantford Associations. Although the original thickness of the loamy materials was a result of depositional processes, intensive tillage has reduced the depth of the loamy overburden, especially on upper slope positions. As a result, there are delineations which contain well to imperfectly drained Bennington Association landscape units with Huron or Brantford Association landscape units.

Land Use/Management Comments

Bennington and Tavistock soils are rated Class 1 for common field crops, where topography is not a limitation. On steeper slopes the high erodiblity of the loamy surface textures causes the soils to be rated lower.

Maplewood soils have a wetness limitation, because they tend to be saturated during critical times for planting and harvesting in the spring and fall. These soils require tile drainage in order to reach their capability for common field crops. They are rated Class 2W. Peaty phase soils are rated Class 5W.

Because Maplewood soils have loamy surface textures and seasonally high moisture contents, they are susceptible to compaction and wheel rutting. These problems are more difficult to avoid in the BN6 and BN9 landscape units, where the poorly drained soils can be intermingled with the Bennington and Tavistock soils.

Although Bennington Association soils are used extensively for the production of common field crops in Middlesex County, they are suitable for a variety of special crops. The ratings for selected special crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

In order to reduce the potential for erosion, conservation management practices should be used on Bennington Association soils.

Blackwell Association

General Description

The Blackwell Association has developed on level to nearly level topography and consist of highly variable, poorly structured, clayey glaciolacustrine material which is greater than 100 cm deep.

Blackwell Association Members

Unlike all other soil associations in Middlesex County, the Blackwell Association consists of only poorly drained Blackwell soils.

Blackwell Association Landscape Unit

There is only one landscape unit mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
BA8	Poor	Blackwell soils		

General Soil Characteristics

The average thickness of surface horizons of Blackwell soils is 33 cm. Noticeably very dark in colour, the mean organic matter content of these horizons is 11%. The pH of the surface horizons ranges from neutral to mildly alkaline. Surface textures are usually silt loam, silty clay loam and silty clay. The variability of textures in surface horizons of all sampled Blackwell soils is presented in the Appendix of Volume 2. Grey, gley-coloured B and Ck horizons have massive structure, with few cracks and channels to conduct water and provide aeration. Completely intact spiral shells 2.5 cm in length, were embedded in the clayey parent material at several sites.

The calcareous Ck horizon of Blackwell soils consists of materials laid down by Glacial Lakes Algonquin and Nipissing. On a geological time scale, the materials are relatively young, as these lakes were the last in a series of lake phases leading to the development of the modern Great Lakes. Due to their low elevation the materials were probably continually saturated from the time of deposition. Only in recent decades have these soils been drained and cultivated for agriculture. Their high organic matter levels and poorly developed structure are due to the prolonged period of saturation and the relatively young age of the parent materials.

The typical horizon sequence for Blackwell soils is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Although Blackwell soils have high moisture-holding capacities, they can be droughty during dry periods because of insufficient moisture release for plant use. They are very slowly permeable because of high clay content and poorly developed soil structure. The few large, deep cracks which do exist, close when the soil material becomes saturated, effectively sealing the soil. Surface runoff is usually slow.

Soil Variability

The clayey-textured parent material usually ranges from heavy clay to silty clay loam, although layers of sandy and loamy textures may occur at depth. Crop yields tend to be higher in areas where the latter textures are present.

The occurrence of Blackwell soils is restricted to a small clay plain adjacent to the Ausable River in McGillivray Township.

Land Use/Management Comments

Blackwell soils are rated Class 4DW for common field crops due to structural and wetness limitations. Open ditches have been used to drain the area with some success. Tile drainage may be less effective due to the very slow permeability of these soils.

Because these soils tend to be wet during planting and harvesting periods, subsoil compaction is usually present. Such degradation lowers permeability and increases wetness and summer droughtiness problems.

Recent land clearing has resulted in an increase in the area of Blackwell soils in agricultural production. Although the dark-coloured surface horizons seems to suggest they might be suitable for horticultural crops, they are rated as unsuitable for most special crops because of their heavy textures, poor soil structure and poor drainage. The ratings for selected special crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Bookton Association

General Description

The Bookton Association occurs on shallow sandy knolls on nearly level to very gently sloping glaciolacustrine clay plains, where sandy-textured eolian, fluvial, or shallow water glaciolacustrine material has been deposited as overburden. They also occur on shallow sand plains and in transitional areas between deep sandy deposits and the clay plains. The depth of the overlying material ranges from 40 to 100 cm. Both the upper and lower parent materials are usually stonefree. The till phase of the Bookton Association occurs on undulating to hummocky topography associated with moraines, where sandy-textured material overlies clayey till. The gravel content of the till ranges from 1% to 9%.

Bookton Association Members

The Bookton Association is comprised of three drainage members: the well-drained Bookton soil, the imperfectly drained Berrien soil and the poorly drained Wauseon soil. The association is named after the well-drained member.

Bookton Association Landscape Units

The Bookton Association landscape units describe the commonly occurring groupings of Bookton, Berrien and Wauseon soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
BO4	Well to imperfect	Bookton and/or Berrien soils		
BO4.T	Well to imperfect	Bookton till phase and/or Berrien till phase soils		
BO6	Well to imperfect	Bookton and/or Berrien soils	Poor	Wauseon soils
BO6.T	Well to imperfect	Bookton till phase and/or Berrien till phase soils	Poor	Wauseon till phase soils
BO8	Poor	Wauseon soils		
BO8.T	Poor	Wauseon till phase soils		
BO9	Poor	Wauseon soils	Well to imperfect	Bookton and/or Berrien soils
BO9.T	Poor	Wauseon till phase soils	Well to imperfect	Bookton till phase and/or Berrien till phase soils

On the 1:50,000 soil maps for Middlesex County, the Bookton and Berrien soils have been grouped together. Both soils may not, however, be present in all of the map delineations which include a well to imperfectly drained component (BO4, BO4.T, BO6, BO6.T, BO9, BO9.T). As a general guide, only well-drained Bookton soils occur in map delineations where the associated slopes are Classes D or d, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Bookton and Berrien soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Bookton soils were determined from the data collected at the sites where well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Berrien soils. Wauseon soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Bookton soils which have developed in glaciolacustrine sediments usually have an average thickness of 23 cm and a mean organic matter content of 3.8%. The pH of the A horizon is usually neutral. In the Bookton till phase soils the surface horizons average 24 cm thick, with a mean organic matter content of 3.0%. Surface textures are usually fine sandy loam, fine sand and loamy fine sand. The textural variability of surface horizons for all sampled Bookton soils is presented in the Appendix of Volume 2. Subsoil B horizons have developed in the upper 40 to 100 cm of sandy sediments. The average depth to the underlying glaciolacustrine or till material is 76 cm. Calcareous IICk horizons mainly consist of glaciolacustrine silty clay loam or silty clay. In the Bookton till phase soil, the texture of the IICk horizons is usually clay loam.

The surface horizons of Berrien soils which have formed in glaciolacustrine materials usually have an average thickness of 24 cm and a mean organic matter content of 3.8%. The pH is neutral and surface textures are mainly fine sandy loam, fine sand and loamy fine sand. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Berrien soils. Distinct to prominent, rust-coloured mottles caused by seasonal saturation, are present in the B and C horizons. Calcareous Ck horizons usually occur in the sandy overburden in both the Berrien and Berrien till phase soils. The contact of the sandy and clayey glaciolacustrine materials is at an average depth of 73 cm. The average thickness of the sandy overburden in the Berrien till phase soil is 65 cm.

The average thickness of the surface horizons of Wauseon soils is approximately 25 cm. The mean organic matter content of the A horizons is 5.7%. In Wauseon till phase soils it is 4.7%. The pH of the surface horizon is usually neutral. Surface textures are usually fine sandy loam, fine sand and loamy fine sand. The variability in texture of the surface horizon samples for Wauseon soils is displayed graphically in the Appendix of Volume 2. Prominent mottles and blue-grey gley colours occur within the 0 to 50 cm zone. Calcareous Ck horizons are present in the sandy overburden in the both Wauseon and Wauseon till phase soils. The average depth of the overburden is 71 cm over the clayey glaciolacustrine or till material.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

The upper sandy horizons of Bookton soils have low moisture-holding capacities which may result in droughty conditions during dry periods, especially where the sandy overburden tends to be deep. They are usually rapidly permeable through the sandy horizons, and moderately to very slowly permeable in the clayey subsoil. Surface runoff is slow on level to gently sloping Bookton soils, but increases on moderate to strong slopes.

The sandy overburden of Berrien soils has a low moisture-holding capacity, which may result in summer droughtiness. The underlying clayey materials are moderately to very slowly permeable. Percolating water tends to perch temporarily at the contact between the sandy overburden and the underlying clay. Berrien soils usually have slow surface runoff.

Wauseon soils have low moisture-holding capacities in the surface sands. The moisture-holding capacities in the subsoil clays are high. The sandy overburden is rapidly permeable, but the underlying clayey material is moderately to very slowly permeable. Percolating water tends to persist at the contact between the sandy material and the clayey subsoil for prolonged periods in Wauseon soils. Poor drainage may also be due to a locally high groundwater level. Surface runoff is slow.

Soil Variability

The sandy overburden of Bookton Association soils consists of all sandy textures, with the exception of very fine sandy loam. Layers of heavy clay may be present in the underlying clayey glaciolacustrine material in the southern portions of Ekfrid, Mosa and Caradoc Townships. Thin, discontinuous layers of gravel are sometimes present at the contact between the till and the sandy overburden in the till phase soils.

In delineations where well to imperfectly drained landscape units are mapped (BO4, BO4.T, BO6, BO6.T, BO9, BO9.T), Bookton soils are usually associated with upper slope positions on moderately sloping topography. Berrien soils generally occur on the mid to lower slope positions of level to gently sloping topography. Level to depressional areas within map delineations usually consist of poorly drained

Wauseon soils. These soils occur in the BO6, BO6.T, BO8, BO8.T, BO9, and BO9.T landscape units.

Bookton Association soils are mapped throughout the County. The till phase soils of the Bookton Association mainly occur on the Wyoming, Seaforth and Lucan Moraines in the northwest portion of the County and the Ingersoll Moraine in the southwest. Small isolated areas of these soils were mapped elsewhere in the County, where limited areas of clayey till occur.

In areas where the depth of the sandy overburden is variable, the Bookton Association landscape units may be mapped in close proximity to soils of the Fox, Huron, Muriel and Brantford Associations.

Land Use/Management Comments

Bookton soils are rated Class 2M for common field crops, due to droughtiness limitations. Their capability for these crops decreases on steeper slopes. The imperfectly drained Berrien soils have no limitations and are rated as Class 1 on level to nearly level topography. Wauseon soils require tile drainage in order to reach their capability for common field crops. They are rated Class 2W.

Although Bookton Association soils are used extensively for the production of general field crops in Middlesex County, they are suitable for a variety of special crops. The ratings for selected crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Soil erosion, caused by both water and wind, is a concern on Bookton and Berrien soils. Conservation practices such as minimum tillage, crop rotations which incorporate cover crops, and the planting of shelter belts should be considered.

Brant Association

General Description

The Brant Association has developed on nearly level to moderately sloping glaciolacustrine plains where the depth of loam, silt loam, and very fine sandy loam material is greater than 100 cm. They are usually stonefree and may have stratification or varving at depth.

Brant Association Members

The Brant Association is comprised of three drainage members: the well-drained Brant soil, the imperfectly drained Tuscola soil and the poorly drained Colwood soil. The association is named after the well-drained member.

Brant Association Landscape Units

The Brant Association landscape units describe the commonly occurring groupings of Brant, Tuscola and Colwood soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
BT4	Well to imperfect	Brant and/or Tuscola soils		
BT6	Well to imperfect	Brant and/or Tuscola soils	Poor	Colwood soils
BT8	Poor	Colwood soils		
BT8.P	Very poor	Colwood peaty phase soils		
BT9	Poor	Colwood soils	Well to imperfect	Brant and/or Tuscola soils

On the 1:50,000 soil maps for Middlesex County, the Brant and Tuscola soils have been grouped together. Both soils may not, however, be present in all of the delineations which include a well to imperfectly drained component (BT4, BT6, BT9). As a general guide, only well-drained Brant soils occur in delineations where the associated slopes are Classes D or d, or steeper. Both soils are usually present on all other slope classes. If it is necessary to determine the soil drainage components in a delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Brant and Tuscola soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Brant soils were determined from the data collected at the sites where well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Tuscola soils. Colwood soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Brant soils have an average thickness of 28 cm and a mean organic matter content of 3.8%. The pH of the surface horizon ranges from neutral to mildly alkaline. Surface textures are usually silt loam, loam and very fine sandy loam. The textural variability of surface horizons for all sampled Brant soils is presented in the Appendix of Volume 2. Subsoil B horizons have similar textures. The calcareous Ck horizons, that underlie the B horizons are also loamy and may outcrop at the surface on severely eroded slopes.

Tuscola soils have a mean surface horizon thickness of 28 cm and an average organic matter content of 4.5%. The pH of A horizons ranges from neutral to mildly alkaline. Surface textures are mainly silt loam, loam and very fine sandy loam. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Tuscola soils. The depth of the subsoil B horizons varies,

but the average depth of contact with the calcareous Ck horizons is 61 cm. The presence of the Ck horizon at or near the surface is usually due to severe erosion. Distinct or prominent rust-coloured mottles occur in the B and Ck horizons.

The surface horizons of Colwood soils usually have higher organic matter contents than Brant and Tuscola soils. The average thickness of the surface horizons is 25 cm. The pH of the A horizons ranges from neutral to mildly alkaline. Surface textures are usually silt loam, loam and very fine sandy loam. The variability in texture of surface horizon samples for Colwood soils is displayed graphically in the Appendix of Volume 2. The underlying B horizons have gley colours with distinct or prominent rust-coloured mottles. Calcareous Ck horizons commence at about 60 cm.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Brant soils have high moisture-holding capacities. They are usually moderately permeable. Surface runoff is moderate to high, depending on the steepness of the slopes. If compacted or clayey layers are present, surface runoff will be higher and the moisture holding-capacity will be reduced.

Tuscola soils have high moisture-holding capacities and are commonly moderately permeable. Subsoil horizons may be slowly permeable when compacted layers are present. Surface runoff is moderate to high, depending on the steepness of the slope. If compacted or clayey layers occur, surface runoff will be higher. Although Tuscola soils are saturated during wet periods, this is a temporary condition, which does not adversely affect plant growth in most crops.

Colwood soils have high moisture-holding capacities. They are moderately to slowly permeable. Because of locally high groundwater levels, they usually remain saturated for significant periods of time each year. Surface runoff is usually slow.

Soil Variability

In delineations where well to imperfectly drained landscape units are mapped (BT4, BT6, BT9), Brant soils are usually associated with upper slope positions on moderately sloping topography. Tuscola soils generally occur on the mid to lower slope positions of level to gently sloping topography. Although level to depressional areas within map delineations usually consist of poorly drained Colwood soils, very poorly drained, peaty phase soils are mapped in some depressional areas. These soils occur in the BT6, BT8 and BT9 landscape units.

Brant Association soils occur throughout the County, mainly in transitional areas between glaciolacustrine clay plains and shallow water glaciolacustrine sand deposits and in other area of shallow water deposits. They are mapped in close proximity to soils of the Wattford and Brantford Associations.

Although the texture of Brant Association soils is usually loam and silt loam, layers of sandy or clayey-textured material may occur in the parent material. Organic matter contents of surface horizons in the well-drained Brant soils and the imperfectly drained Tuscola soils may be lower on the upper and crest positions on slopes that have been eroded. Clay-enriched Bt horizons are present in some Brant and Tuscola soils in Middlesex County. However, there are also a significant portion in which a Bt horizon does not occur in the 0 to 100 cm zone.

Land Use/Management Comments

Brant and Tuscola soils are rated as Class 1 for common field crops, where topography is not a limitation. They are among the most productive soils in the County. Because of the high erodibility of the loamy surface materials, they are rated lower where the slopes are very gently sloping or steeper.

Colwood soils require tile drainage in order to reach their capability for common field crops. They are rated Class 2W. Peaty phase soils are rated Class 5W.

Because of the loamy textures and seasonally high moisture contents, Colwood soils are susceptible to compaction and wheel rutting. These problems are more difficult to avoid in BT6 and BT9 landscape units, especially where the poorly drained soils are intermingled with the Brant and Tuscola soils.

Although Brant Association soils are used extensively for the production of common field crops in Middlesex County, they are suitable for a variety of special crops. Asparagus, potatoes, and some vegetables are grown in the Sylvan area in West Williams Township. The ratings for selected special crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Brant Association soils are highly erodible due to their silt loam and loam surface textures. The relatively shallow average depth to carbonates on some soils is evidence of past erosion and is common even on nearly level slopes. In order to reduce the potential for erosion, conservation management practices should be considered on Brant Association soils.

Brantford Association

General Description

The Brantford Association has developed on level to very gently sloping glaciolacustrine plains. They also occur on steeper slopes, in dissected areas adjacent to stream courses and where glaciolacustrine material was deposited as a veneer on morainal landforms. The textures of the parent material are usually silty clay loam, silty clay, and clay. In general, they have very high silt contents and little or no gravel.

Brantford Association Members

The Brantford Association is comprised of three drainage members: the moderately well-drained Brantford soil, the imperfectly drained Beverly soil and the poorly drained Toledo soil. The association is named after the moderately well-drained member.

Brantford Association Landscape Units

The Brantford Association landscape units describe the commonly occurring groupings of Brantford, Beverly and Toledo soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
BF4	Moderately well to imperfect	Brantford and/or Beverly soils		
BF6	Moderately well to imperfect	Brantford and/or Beverly soils	Poor	Toledo soils
BF8	Poor	Toledo soils		
BF9	Poor	Toledo soils	Moderately well to imperfect	Brantford and/or Beverly soils

On the 1:50,000 soil maps for Middlesex County, the Brantford and Beverly soils have been grouped together. Both soils may not, however, be present in all of the delineations which include a moderately well to imperfectly drained component (BF4, BF6, BF8). As a general guide, only well-drained Brantford soils occur in delineations where the associated slopes are Classes D or d, or steeper. Both soils are usually present on all other slope classes. If it is necessary to determine the soil drainage components in a delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Brantford and Beverly soils are grouped on the soil map, the individual soil names were assigned at each site inspection. The characteristics of the Brantford soils were determined from the data collected at the sites where moderately well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Beverly soils. Toledo soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Brantford soils have an average thickness of 22 cm and a mean organic matter content of 4.7%. The pH of the surface horizon is usually neutral, although occasionally pH values in the slightly acid and mildly alkaline ranges were measured. Surface textures are usually silt loam, clay loam and silty clay loam. The textural variability of surface horizons for sampled Brantford soils is presented in the Appendix of Volume 2. Subsoil B horizons usually include a clay-enriched Bt horizon above the calcareous Ck horizons. The average depth to the Ck horizon is 51 cm.

Beverly soils have a mean surface horizon thickness of 22 cm and an average organic matter content of 4.4%. The pH of the surface horizon is similar to that of the Brantford soils. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface

horizons for all sampled Beverly soils. A Bt horizon is usually present. Distinct or prominent mottles commonly occur in the subsoil horizons. Although the depth of the B horizons varies, the average depth of the contact with the calcareous Ck horizons is 55 cm.

The surface horizons of Toledo soils usually average 23 cm in thickness with mean organic matter contents of 5.4%. The pH of the A horizon is commonly neutral. The variability in texture of the surface horizon samples for Toledo soils is displayed graphically in the Appendix of Volume 2. Because they are saturated for extended periods, blue-grey gley colours and mottles occur in the subsoil horizons within the 0 to 50 cm zone. Bg horizons usually extend to an average depth of 61 cm, where the calcareous Ck horizons begin.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Brantford soils have high moisture-holding capacities, but can exhibit summer droughtiness. The amount of water available for crop growth is limited, because of their high clay contents. During extended dry periods, these soils tend to shrink and crack, which increases evaporation from the subsoil and facilitates the movement of water from the rooting zone. They are slowly to moderately permeable, depending on the incidence of cracking and on the amount of subsoil compaction that has taken place. Where compaction is severe, groundwater may perch above the compacted zone for periods of time. Surface runoff from Brantford soils is generally rapid.

Beverly soils have high moisture-holding capacities. The upper horizons are saturated for a portion of the growing season, especially where clay-enriched Bt horizons or compacted layers are present. They may be droughty, particulary during extended dry periods. Beverly soils are slowly to moderately permeable, depending on the amount of subsoil compaction that has taken place. Surface runoff is usually rapid.

Toledo soils have high moisture-holding capacities and are usually slowly permeable. Groundwater levels are near the surface much of the year, subsiding somewhat during the growing season. Because of the slow permeability of these soils, perched watertables may occur. Surface runoff ranges from moderate to rapid.

Soil Variability

In delineations where moderately well to imperfectly drained landscape units are mapped (BF4, BF6, BF9), Brantford soils are usually associated with upper slope positions on moderately sloping topography. Beverly soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Level to depressional areas within map delineations usually consist of poorly drained Toledo soils. These soils occur in the BF6, BF8, BF9 landscape units.

Brantford Association soils are mapped throughout the County. The most extensive areas occur in Metcalfe, Ekfrid and the western portion of Caradoc townships.

Although the texture of Brantford Association soils usually ranges from silty clay loam to silty clay, layers of loam and silt loam may occur in the subsoil material. These soils often occur in close proximity to soils of the Brant Association. Some Brantford Association soils have a cap of loamy-textured material. In areas where the depth of the loamy surficial material is greater than 40 cm, these soils are mapped with soils of the Bennington Association. Brantford Association soils which have very high clay contents frequently occur in close proximity to soils of the Melbourne Association.

Land Use/Management Comments

Brantford and Beverly soils are rated Class 2D for common field crops until topography becomes a limiting factor for management. Because of their high clay contents, these soils are susceptible to compaction, especially if heavy machinery is used on wet soils. In compacted soils, summer droughtiness may result. Beverly soils which are compacted may have increased wetness problems. Beverly soils can benefit from surface and tile drainage.

Toledo soils require tile drainage to reach their capability for common field crops. They are rated Class 3W. In order to minimize soil degradation from compaction and wheel rutting, heavy machinery should not be used on wet Toledo soils. These problems are more difficult to avoid in the BF6 and BF9 landscape units, especially where the poorly drained soils are intermingled with the Brantford and Beverly soils.

Brantford Association soils are used predominantly for the production of common field crops such as corn in Middlesex County. In Ekfrid Township, livestock operations are common and Brantford Association soils are used for pasture and forage crops. Brantford Association soils have limited suitability for special crops. The ratings for selected crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation are also indicated.

In order to reduce the potential for water erosion, conservation management practices should be considered on Brantford Association soils. Soils with loamy surface textures or on steep slopes are the most susceptible to erosion.

Bryanston Association

General Description

The Bryanston Association has developed in the loamy-textured till, on nearly level to undulating topography. The gravel content of the till is greater than 10%. Cobbles and stones are common.

Bryanston Association Members

The Bryanston Association is comprised of three drainage members: the well-drained Bryanston soil, the imperfectly drained Thorndale soil and the poorly drained Nissouri soil. The association is named after the well-drained member.

Bryanston Association Landscape Units

The Bryanston Association landscape units describe the commonly occurring groupings of Bryanston, Thorndale and Nissouri soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
BR4	Well to imperfect	Bryanston and/or Thorndale soils		
BR6	Well to imperfect	Bryanston and/or Thorndale soils	Poor	Nissouri soils
BR8	Poor	Nissouri soils		
BR9	Poor	Nissouri soils	Well to imperfect	Bryanston and/or Thorndale soils

On the 1:50,000 soil maps for Middlesex County, the Bryanston and Thorndale soils have been grouped together. Both soils may not, however, be present in all of the map delineations which include a well to imperfectly drained component (BR4, BR6, BR8). As a general guide, only well-drained Bryanston soils occur in map delineations where the associated slope is class D or d, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Bryanston and Thorndale soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Bryanston soils were determined from the data collected at the sites where well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Thorndale soils. Nissouri soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Bryanston soils have an average thickness of 21 cm and a mean organic matter content of 4%. The pH of the surface horizon is usually in the neutral range, although severely eroded soils are mildly alkaline. Surface textures are usually silt loam and loam. The textural variability of surface horizons for sampled Bryanston soils is presented in the Appendix of Volume 2. Subsoil B horizons usually include a clay-enriched Bt horizon above the calcareous Ck horizon. The average depth to the Ck horizon is 42 cm.

Thorndale soils have a mean surface horizon thickness of 26 cm and an average organic matter content of 4.3%. The pH of surface horizons is usually in the neutral range. Surface textures are mainly silt loam and loam. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Thorndale soils. A Bt horizon is usually present. Distinct or prominent mottles commonly occur in the subsoil B horizons. The depth of the

B horizons varies, but the average depth to the contact with the calcareous Ck horizons is 48 cm.

The surface horizons of Nissouri soils usually average 28 cm in thickness and have a mean organic matter content of 4.8%. The pH of A horizons is commonly neutral. Surface textures are usually silt loam and loam. The variability in texture of the surface horizon samples for Nissouri soils is displayed graphically in the Appendix of Volume 2. Because they are saturated for extended periods, blue-grey gley colours and mottles occur in the subsoil horizons within the 0 to 50 cm zone. Bg horizons usually extend to an average depth of 43 cm, where the calcareous Ck horizons begin.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Bryanston soils have high moisture-holding capacities. They are usually moderately permeable. Surface runoff is moderate, increasing significantly on steeper slopes. If compacted layers are present, surface runoff will be higher and the moisture holding-capacity will be reduced.

Thorndale soils have high moisture-holding capacities and are moderately permeable. Subsoil horizons may be slowly permeable where compacted layers are present. Surface runoff is generally moderate. If compacted layers occur, surface runoff will be higher. Although Thorndale soils are saturated during wet periods, this is a temporary condition, which does not adversely affect crop growth.

Nissouri soils have high moisture-holding capacities. They are moderately permeable. Because of high groundwater levels, they usually remain saturated for long periods of time each year. Surface runoff is usually slow.

Soil Variability

In delineations where well to imperfectly drained landscape units are mapped (BR4, BR6, BR9), Bryanston soils are usually associated with upper slope positions on moderately sloping topography. Thorndale soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Nearly level to depressional areas within map delineations usually consist of poorly drained Nissouri soils. These soils occur in the BR6, BR8, BR9 landscape units.

Bryanston Association soils are mapped mainly in the Townships of Biddulph, London, West Nissouri, and North Dorchester, where the Tavistock Till has been deposited. They also occur in clayey-textured till areas, where the till has been washed by glacial meltwater. The washed till is usually loamy-textured.

Organic matter contents of surface horizons in the well-drained Bryanston soils and the imperfectly drained Thorndale soils may be lower on the upper and crest positions on slopes that have been eroded. In severely eroded areas, the calcareous Ck horizon may be at or near the surface. Although the texture of the parent material is usually silt loam and loam, it can also be a clay loam. However, clay contents rarely exceed 30%.

Bryanston Association soils commonly occur with soils of the Honeywood Association and till phase soils of the Walsher Association. In transitional areas between the loamy-textured Tavistock Till and clayey-textured Huron Lobe tills, they are mapped with soils of the Muriel Association and till phase soils of the Bennington Association.

Land Use/Management Comments

Bryanston and Thorndale soils are rated Class 1 for common field crops, where topography is not a limitation. They are among the most productive soils in the County. Because of the high erodibility of the loamy surface textures, they are rated lower where the slopes are very gently sloping or steeper.

Nissouri soils require tile drainage in order to reach their capability for common field crops. They are rated Class 2W. Because of the loamy textures and seasonally high moisture contents, Nissouri soils are susceptible to compaction and wheel rutting. These problems are more difficult to avoid in the BR6 and BR9 landscape units, especially where the poorly drained soils are intermingled with the Bryanston and Thorndale soils.

Stone piles at the edges of fields indicate that the removal of stones has been a common management practice on Bryanston Association soils. However, the occurrence of surface stones observed during the field mapping was not sufficient to warrant a stoniness limitation.

Although Bryanston Association soils are used extensively for the production of common field

crops in Middlesex County, they are suitable for a variety of special crops. Currently apples are being grown on these soils. The ratings for selected special crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Bryanston Association soils are highly erodible due to their silt loam and loam surface textures. Although they usually occur on fairly subdued topography, the slopes tend to be long and continuous, increasing their susceptibility to erosion. The relatively shallow average depth to carbonates on some soils is evidence of past erosion and is common even on nearly level slopes. In order to reduce the potential for erosion, conservation management practices should be considered on Bryanston Association soils.

Burford Association

General Description

The Burford Association has developed on gravelly, sandy to loamy-textured, glaciofluvial outwash deposits. Cobble-sized coarse fragments are also present in the outwash materials. In the subsoil, the gravel content is greater than 20% and beds of sand are common. The gravelly material is overlain by thin caps, less than 40 cm in thickness, of sandy or loamy-textured material.

Burford Association Members

The Burford Association is comprised of three drainage members: the rapidly drained Burford soil, the imperfectly drained Brisbane soil and the poorly drained Gilford soil. The association is named after the rapidly drained member.

Burford Association Landscape Units

The Burford Association landscape units describe the commonly occurring groupings of Burford, Brisbane and Gilford soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
BU4	Rapid to imperfect	Burford and/or Brisbane soils		
BU8	Poor	Gilford soils		

On the 1:50,000 soil maps for Middlesex County, the Burford and Brisbane soils have been grouped together. Although both soils may be present in BU4 landscape units, only the rapidly drained Burford soils occurred in most of the delineations. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Burford and Brisbane soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Burford soils were determined from the data collected at the sites where rapidly drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Brisbane soils. Gilford soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Burford soils have an average thickness of 20 cm and a mean organic matter content of 3.2%. The pH of the surface horizon ranges from neutral to mildly alkaline. Surface textures are usually loam and fine sandy loam. The variability in textures in surface horizons of sampled Burford soils is presented inthe Appendix of Volume 2. The subsoil B horizons are usually thin and weakly-developed. They are often dark-brownish in colour. The average depth to the calcareous parent material is 40 cm. It is strongly calcareous.

Brisbane and Gilford soils have a similar sequence of horizons, except that distinct or prominent mottles occur within 50 cm of the surface. Gilford soils also exhibit gley colours in the 0 to 50 cm zone.

The typical horizon sequence for Burford soils is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Moisture-holding capacities of Burford, Brisbane and Gilford soils are low due to the coarse texture and high gravel content of the parent materials. Where these soils have loamy surface textures, their water-holding capacity is somewhat higher. Burford Association soils are rapidly permeable. Although surface runoff is usually slow, it increases where Burford soils occur on steeper.

Because Gilford soils usually occur in lower or depressional landscape positions, they are subject to high groundwater levels. They usually remain saturated for relatively long periods of time each year.

Soil Variability

The Burford and Brisbane soils have been mapped mainly in the glaciofluvial spillways associated with the modern Thames River. Although they usually occur on nearly level to undulating topography, they are also mapped on terraces with steeper slopes. Gilford soils are restricted to low-lying depressional areas.

In areas where the overburden is sandy-textured and variable in depth, Burford Association soils are mapped with Caledon Association soils. Burford Association soils with loamy-textured surface materials often occur in close proximity to soils of the Teeswater Association.

Land Use/Management Comments

Burford and Brisbane soils are rated Class 2FM for common field crops due to droughtiness and fertility limitations. Their capability for these crops decreases on steeper slopes. Gilford soils require tile drainage to reach their capability for common field crops. They are rated Class 2W.

Although Burford Association soils are mainly used for the production of common field crops and for pasture in Middlesex County, they are also suitable for a variety of special crops. The ratings for selected special crops are presented in Tables 5, 6 and 7. The effects of tile drainage and irrigation on the ratings are also indicated

Conservation management practices should be considered on Burford Association soils, especially for those soils which have loamy-textured surface materials.

Many of the delineations, where Burford Association soils have been mapped, contain gravel pit excavations.

Caledon Association

General Description

The Caledon Association has developed on nearly level to undulating topography where 40 to 100 cm of sandy-textured material overlies gravelly, glaciofluvial outwash material. Cobble-sized coarse fragments also occur in the outwash materials. The gravelly parent material is highly calcareous, often containing coatings and deposits of secondary carbonates in macropores and along root channels. Alternating layers of gravelly material and sand are common in the subsoil.

Caledon Association Members

The Caledon Association is comprised of three drainage members: the rapidly to well-drained Caledon soil, the imperfectly drained Camilla soil and the poorly drained Ayr soil. The association is named after the rapidly to well-drained member.

Caledon Association Landscape Units

The Caledon Association landscape units describe the commonly occurring groupings of Caledon, Camilla and Ayr soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
CA4	Rapid to imperfect	Caledon and/or Camilla soils		
CA6	Rapid to imperfect	Caledon and/or Camilla soils	Poor	Ayr soils
CA8	Poor	Ayr soils		
CA9	Poor	Ayr soils	Rapid to imperfect	Caledon and/or Camilla soils

On the 1:50,000 soil maps for Middlesex County, the Caledon and Camilla soils have been grouped together. Both soils may not, however, be present in all of the map delineations which include a rapidly to imperfectly drained component (CA4, CA6, CA9). As a general guide, only rapidly to well-drained Caledon soils occur in map delineations where the associated slopes are Classes C or c, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Caledon and Camilla soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Caledon soils were determined from the data collected at the sites where rapidly to well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Camilla soils. Ayr soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Caledon soils have an average thickness of 24 cm and a mean organic matter content of 3.0%. The pH of surface horizons ranges from neutral to mildly alkaline. Surface textures are usually fine sandy loam, sandy loam and loamy sand. The variability in textures in surface horizons of sampled Caledon soils is presented in the Appendix of Volume 2. Subsoil B horizons usually include a clay-enriched Bt horizon above the calcareous Ck horizon. The average depth to the calcareous glaciofluvial material is 75 cm. It is strongly calcareous.

Camilla soils have a mean surface horizon thickness of 23 cm and an average organic matter content of 3.3%. The pH of the surface horizon ranges from neutral to mildly alkaline. Surface textures are mainly fine sandy loam, sandy loam and loamy sand. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Camilla soils. A Bt horizon is usually present immediately above the contact with the

calcareous parent material. Distinct or prominent mottles commonly occur in the subsoil horizons. The average depth to the calcareous IICk horizons is 78 cm.

Ayr soils have a similar sequence of horizons, except that the Bt horizon is usually absent and subsoil Bg horizons are present. Distinct or prominent mottles occur in the 0 - 50 cm zone. Ayr soils also have gley colours.

The typical horizon sequence for the Caledon and Camilla soils is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Moisture-holding capacities of Caledon, Camilla and Ayr soils are low due to the coarse texture of the overburden and high gravel content of the parent materials. Depending on the thickness of the clay-enriched Bt horizons, the moisture-holding capacity may be slightly increased. Caledon Association soils are rapidly permeable. Although surface runoff is usually slow, it increases with steepness of slope. Ayr soils are saturated for significant periods each year, because of high groundwater levels.

Soil Variability

In delineations where rapidly to imperfectly drained landscape units are mapped (CA4, CA6, CA9), Caledon soils are usually associated with upper slope positions on undulating to hummocky topography. Camilla soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Nearly level to depressional areas, with locally high watertables, usually consist of poorly drained Ayr soils. These soils occur in the CA6, CA8, CA9 landscape units.

Caledon Association soils are mapped throughout the County. They are most commonly associated with the raised terraces of the Thames River. Large areas of Caledon Association soils also occur north of London, in the vicinity of Fanshawe Lake. In the Komoka area, they have developed on the sands and gravels of large glaciofluvial deltas.

Although the textures of the overburden of Caledon Association soils are usually sandy loam, loamy sand and fine sandy loam, layers of coarse sand also occur. The gravelly subsoil often contains beds of gravel-free sandy material. Occasionally the pH of the surface horizon is in the medium acid range.

In areas where the depth of the sandy-textured overburden is variable, Caledon Association soils are mapped in close proximity to soils of the Burford and Fox Associations.

Land Use/Management Comments

Caledon and Camilla soils are rated Class 2FM for common field crops, where topography is not a limiting factor. Low cation exchange capacities, which are related to their sandy textures, contribute to fertility limitations. Moisture limitations are due to the low moisture-holding capacities of these soils.

Ayr soils require tile drainage to reach their capability for common field crops. They are rated Class 2W.

Although Caledon Association soils are mainly used for the production of common field crops in Middlesex County, they are also suitable for a variety of special crops. The ratings for selected special crops are presented in Tables 5, 6 and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Soil erosion, caused by both water and wind, is a concern on Caledon and Camilla soils. Conservation practices such as minimum tillage, crop rotations which incorporate cover crops, and the planting of shelter belts should be considered.

Many of the delineations, where Caledon Association soils have been mapped, contain gravel pit excavations.

Fox Association

General Description

The Fox Association has developed in shallow water glaciolacustrine and glaciofluvial deposits on level to gently sloping topography. They consist mainly of loamy sand and sand, and occasional layers of sandy loam. The parent material may contain small amounts of gravel.

Fox Association Members

The Fox Association is comprised of three drainage members: the rapidly drained Fox soil, the imperfectly drained Brady soil and the poorly drained Granby soil. The association is named after the rapidly drained member.

Fox Association Landscape Units

The Fox Association landscape units describe the commonly occurring groupings of Fox, Brady and Granby soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
FO4	Rapid to imperfect	Fox and/or Brady soils		
FO6	Rapid to imperfect	Fox and/or Brady soils	Poor	Granby soils
FO8	Poor	Granby soils		
FO8.P	Very poor	Granby peaty phase soils		
FO9	Poor	Granby soils	Rapid to imperfect	Fox and/or Brady soils

On the 1:50,000 soil maps for Middlesex County, the Fox and Brady soils have been grouped together. Both soils may not, however, be present in all of the map delineations which include the rapidly to imperfectly drained component (FO4, FO6, FO9). As a general guide, only rapidly drained Fox soils occur in map delineations where the associated slopes are Classes C or c, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Fox and Brady soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Fox soils were determined from the data collected at the sites where rapidly drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Brady soils. Granby soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Fox soils have an average thickness of 23 cm and a mean organic matter content of 3.1%. The pH of the surface horizon ranges from medium acid to neutral. Surface textures are usually sandy loam and loamy sand. The textural variability of surface horizons for sampled Fox soils is presented in the Appendix of Volume 2. Subsoil B horizons usually include a reddish-coloured, clay-enriched Bt horizon above the calcareous Ck horizon. The texture of the Bt horizon is usually sandy loam. Because the contact between the Bt horizon and the Ck horizon is usually very wavy, Bt horizons sometimes occur at depths greater than 1 metre. Although the mean depth to the top of the Ck horizon is 68 cm, the range varies from 35 cm to 106 cm.

Brady soils have a mean surface horizon thickness of 28 cm and an average organic matter content of 3.4%. The pH of the surface horizon ranges from medium acid to neutral. Surface textures are mainly sandy loam and loamy sand.

The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Brady soils. A Bt horizon is usually present, although it may occur below 100 cm. Distinct or prominent mottles commonly occur in the subsoil horizons. The average depth of the contact with the calcareous Ck horizons is 68 cm.

Granby soils usually lack a clay-enriched Bt horizon. Distinct or prominent mottles and blue-grey gley colours occur in the subsoil.

The typical horizon sequence for Fox and Brady soils are presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Fox soils have low moisture-holding capacities and are rapidly permeable because of their sandy textures. The presence of a well-developed Bt horizon within the 0 to 100 cm zone, will slightly increase the moisture-holding capacity. Although Fox soils tend to be droughty, they have higher moisture-holding capacities than other sandy-textured soils without Bt horizons, such as Plainfield soils. Surface runoff is usually slow, except on steeper slopes.

Brady soils have low moisture-holding capacities and are rapidly permeable. Surface runoff is usually slow. Although they are subject to high watertables during wet periods, this is a temporary condition, which does not adversely affect crop growth.

Granby soils are subject to prolonged saturation, because of high watertables. Saturated conditions delay the warming of the soil in the spring and can restrict root growth.

Soil Variability

In delineations where rapidly to imperfectly drained landscape units are mapped (FO4, FO6, FO9), Fox soils are usually associated with upper slope positions on nearly level to gently sloping topography. Brady soils generally occur on the mid to lower slope positions. Although level to depressional areas usually consist of poorly drained Granby soils, very poorly drained, peaty phase soils were mapped in some depressional areas. These soils occur in the FO6, FO8, FO9 landscape units.

Fox Association soils are mapped throughout the County. They have developed on glaciofluvial terraces associated with the Thames and Ausable Rivers and along many of the smaller creeks. They are also found on the shallow water glaciolacustrine sand plains in Caradoc, Mosa and North Dorchester townships.

Although Fox Association soils consist mainly of loamy sand and sand, occasional layers of gravelly material, coarse sand and fine sandy loam also occur. The Bt horizon may be absent or at a depth greater than 1 metre in some Fox Association soils. These soils tend to be draughtier than Fox Association soils with a Bt horizon within 1 metre.

Fox Association soils occur in proximity to the soils of the Wattford, and Plainfield Associations. On the raised terraces of the Thames River, they are associated with Caledon and Burford Association soils.

Land Use/Management Comments

On level to nearly level slopes, Fox soils are rated Class 2FM for common field crops, due to droughtiness and fertility limitations. Fertility limitations are common on sandy-textured soils, because they tend to have a low cation exchange capacity. Droughtiness limitations of Fox soils can be overcome by irrigation, where high-value specialty crops justify the cost.

Brady soils are rated Class 2F, where topography is not a limiting factor. Low cation exchange capacities, which are related to their sandy textures, contribute to fertility limitations.

Granby soils require tile drainage in order to reach their capability for common field crops. They are rated Class 2W.

Although Fox Association soils are used for the production of common field crops Middlesex County, they are also suitable for a variety of special crops. Tobacco is currently being grown on Fox and Brady soils. The ratings for selected special crops are presented in Tables 5, 6 and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Soil erosion, caused by both water and wind, is a concern on Fox and Brady soils. Conservation practices such as minimum tillage, crop rotations which incorporate cover crops, and the planting of shelter belts should be considered.

Honeywood Association

General Description

The Honeywood Association has developed on level to very gently sloping till plains, where 40 to 100 cm of glaciolacustrine silt loam and loam overlies loamy-textured glacial till. The average gravel content of the till is approximately 10%.

Honeywood Association Members

The Honeywood Association is comprised of three drainage members: the well-drained Honeywood soil, the imperfectly drained Embro soil and the poorly drained Crombie soil. The association is named after the well-drained member.

Honeywood Association Landscape Units

The Honeywood Association landscape units describe the commonly occurring groupings of Honeywood, Embro and Crombie soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
HY4	Well to imperfect	Honeywood and/or Embro soils		
HY6	Well to imperfect	Honeywood and/or Embro soils	Poor	Crombie soils
HY8	Poor	Crombie soils		
HY9	Poor	Crombie soils	Well to imperfect	Honeywood and/or Embro soils

On the 1:50,000 soil maps for Middlesex County, the Honeywood and Embro soils have been grouped together. Both soils may not, however, be present in all of the delineations which include a well to imperfectly drained component (HY4, HY6, HY9). As a general guide, only well-drained Honeywood soils occur in delineations where the associated slope is class D or d, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Honeywood and Embro soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Honeywood soils were determined from the data collected at the sites where well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Embro soils. Crombie soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Honeywood soils usually have an average thickness of 23 cm and a mean organic matter content of 5.4%. The pH of the A horizons ranges from neutral to mildly alkaline. Surface textures are usually silt loam and loam. The textural variability of surface horizons for all sampled Honeywood soils is presented in the Appendix of Volume 2. Subsoil B horizons have developed in the upper 40 to 100 cm of loamy sediments. Calcareous IICk horizons have developed in silt loam and loam-textured till. The average depth to the underlying till material is 71 cm.

The surface horizons of Embro soils usually have an average thickness of 25 cm and a mean organic matter content of 4.4%. The pH of the A horizons ranges from neutral to mildly alkaline. Surface textures are mainly silt loam and loam. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Embro soils. Distinct to prominent rust-coloured mottles are

present in the B and C horizons. Calcareous IICk horizons have developed in silt loam and loam-textured till. The contact of the glaciolacustrine materials and the till is at an average depth of 69 cm in Embro soils.

Crombie soils usually have relatively high organic matter contents in the surface horizons, averaging 5.5%. The mean thickness of the A horizons is 29 cm. The pH of the surface horizon ranges from neutral to mildly alkaline. Surface textures are usually silt loam and loam. The variability in texture of the surface horizon samples for Crombie soils is displayed graphically in the Appendix of Volume 2. Prominent mottles and blue-grey gley colours occur within 50 cm of the surface. Calcareous IICk horizons have developed in the loamy-textured till.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Because they are loamy-textured, Honeywood soils have high moisture-holding capacities. They are usually moderately permeable, although permeability may be lower if compacted layers are present. Surface runoff is moderate, increasing to rapid on steeper slopes.

Embro soils have high moisture-holding capacities and are commonly moderately permeable. Subsoil horizons are less permeable, if compacted layers are present. Surface runoff is moderate to rapid, depending on the steepness of the slope. Although Embro soils are saturated during wet periods, this is a temporary condition, which does not adversely affect crop growth.

Crombie soils have high moisture-holding capacities. They are moderately to slowly permeable. Because of high local groundwater levels, they usually remain saturated for relatively long periods. Saturated conditions delay the warming of the soil in the spring and can restrict root growth. Surface runoff is usually slow.

Soil Variability

In delineations where well to imperfectly drained landscape units are mapped (HY4, HY6, HY9), Honeywood soils are usually associated with upper slope positions on nearly level to very gently sloping topography. Embro soils generally occur on the mid to lower slope positions. Level to depressional areas with locally high watertables usually consist of poorly drained Crombie soils. These soils occur in the HY6, HY8, HY9 landscape units.

Honeywood Association soils occur predominantly in London, West Nissouri, Biddulph and North Dorchester Townships. In addition, small areas of these soils have been mapped in Lobo and Delaware Townships.

Organic matter contents of surface horizons in the well-drained Honeywood soils and the imperfectly drained Embro soils may be lower on the upper and crest positions on slopes that have been eroded. In severely eroded areas, calcareous IICk horizons may be at or near the surface. Although the texture of the parent material is usually silt loam and loam which have less than 27% clay, the clay content can range up to 30%.

In areas where the depth of the loamy-textured glaciolacustrine overburden is variable, Honeywood Association soils are mapped in close proximity to soils of the Bryanston and Brant Associations. Bryanston soils occur where the depth of the overlying material ranges between 0 - 40 cm. In areas where the thickness of the glaciolacustrine material exceeds 100 cm, Brant soils are mapped. Because these soils occur on similar topography, it may be necessary to increase the intensity of site inspections in some areas, in order to determine the extent of these associations.

Land Use/Management Comments

Honeywood and Embro soils are rated Class 1 for common field crops, where topography is not a limitation. They are among the most productive soils in the County. Because of the high erodibility of the loamy surface textures, they are rated lower where the slopes are very gently sloping or steeper.

Crombie soils require tile drainage to reach their capability for common field crops. They are rated Class 2W. Because of the loamy textures and seasonally high moisture contents, Crombie soils are susceptible to compaction and wheel rutting. Compaction lowers permeability, increases surface runoff and potential erosion, and under certain conditions, restricts root development of crops. It is more difficult to avoid compaction in HY6 and HY9 landscape units, especially where the poorly drained soils are intermingled with the Honeywood and Embro soils.

Although Honeywood Association soils are used extensively for the production of common field crops in Middlesex County, they are suitable for a variety of special crops. Sweet corn is grown in London, West Nissouri, and North Dorchester Townships. Some apples are also grown on Honeywood soils. The ratings for selected special crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Honeywood Association soils are highly erodible due to their silt loam and loam surface textures. Although they usually occur on fairly subdued topography, the slopes tend to be long and continuous, increasing their susceptibility to erosion. The relatively shallow average depth to carbonates on some soils is evidence of past erosion and is common even on nearly level slopes. In order to reduce the potential for erosion, conservation management practices should be considered on Honeywood Association soils.

Huron Association

General Description

The Huron Association has developed on nearly level to very gently sloping till plains and gently to moderately sloping moraines, deposited by the Huron Lobe glaciation. The till parent material often has a faint pinkish colour, derived from red shale, which was ground and mixed by the glacier. Although the texture is usually silt clay loam and silty clay, it is also occasionally clay loam. The average gravel content is approximately 5%, but it can range up to 20%.

Huron Association Members

The Huron Association is comprised of three drainage members: the moderately well-drained Huron soil, the imperfectly drained Perth soil and the poorly drained Brookston soil. The association is named after the moderately well-drained member.

Huron Association Landscape Units

The Huron Association landscape units describe the commonly occurring groupings of Huron, Perth and Brookston soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
HU4	Moderately well to imperfect	Huron and/or Perth soils		
HU6	Moderately well to imperfect	Huron and/or Perth soils	Poor	Brookston soils
HU8	Poor	Brookston soils		
HU9	Poor	Brookston soils	Moderately well to imperfect	Huron and/or Perth soils

On the 1:50,000 soil maps for Middlesex County, the Huron and Perth soils have been grouped together. Both soils may not, however, be present in all of the map delineations which include a moderately well to imperfectly drained component (HU4, HU6, HU9). As a general guide, only moderately well-drained Huron soils occur in map delineations where the associated slopes are Classes D or d, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Huron and Perth soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Huron soils were determined from the data collected at the sites where moderately well-drained Huron soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Perth soils. Brookston soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Huron soils have an average thickness of 25 cm and a mean organic matter content of 4.8%. The pH of the surface horizon is usually neutral, although in eroded areas it is mildly alkaline. Surface textures are usually silt loam, loam and silty clay loam. The textural variability of surface horizons for sampled Huron soils is presented in the Appendix of Volume 2. Subsoil B horizons usually include a clay-enriched Bt horizon above the calcareous Ck horizon. The Bt horizon is usually thin and often weakly developed. The average depth to the Ck horizon is 50 cm. Huron soils usually have well-developed structure, with numerous interconnecting cracks and planar voids.

Perth soils have a mean surface horizon thickness of 25 cm and an average organic matter content of 4.4%. The pH of the surface horizon is usually neutral. In eroded areas, the pH of the A horizon is mildly alkaline. Surface textures are mainly silt loam, loam and silty clay loam. The Appendix of Volume 2 contains textural triangles

which show the variability in texture of surface horizons for all sampled Perth soils. A thin Bt horizon is usually present. Distinct or prominent mottles commonly occur in the upper subsoil B horizons, because of perched watertables. The depth of the subsoil B horizons varies, but the average depth of the contact with the calcareous Ck horizons is 45 cm. The structure of Perth soils is usually well-developed, with numerous interconnecting cracks and planar voids.

The surface horizons of Brookston soils usually average 24 cm in thickness with mean organic matter contents of 5.0%. The pH of the A horizon is commonly neutral to mildly alkaline. Surface textures are usually silt loam, loam and silty clay loam. The variability in texture of the surface horizon samples for Brookston soils is displayed graphically in the Appendix of Volume 2. Because they are saturated for extended periods, blue-grey gley colours and mottles occur in the subsoil horizons within the 0 to 50 cm zone. Bg horizons usually extend to an average depth of 52 cm, where they contact the calcareous Ck horizons. A clay-enriched Bt horizon does not usually occur. Soil structure of Brookston soils is generally less developed than in the Huron and Perth soils.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Huron soils have moderate to high moisture-holding capacities. They are moderately to slowly permeable. Surface runoff is moderate to rapid, depending on the steepness of the slope.

Perth soils have moderate to high moisture-holding capacities. The upper horizons are saturated for part of the growing season, especially if compacted subsoil layers are present. They are moderately to slowly permeable. Surface runoff is moderate, except on steeper slopes, where it is rapid.

Brookston soils have moderate to high moisture-holding capacities and are moderately to slowly permeable. Groundwater levels are at or near the surface for significant time periods, subsiding somewhat during the growing season. Perched water levels are caused by locally high watertables or the presence of compacted subsoil layers. Saturated conditions delay the warming of the soil in the spring and can restrict root growth. Surface runoff is moderate to slow.

Soil Variability

In delineations where the moderately well to imperfectly drained landscape unit is mapped (HU4, HU6, HU9), Huron soils are usually associated with upper slope positions on moderately to very gently sloping topography. Perth soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Level to depressional areas within map delineations usually consist of poorly drained Brookston soils. These soils occur in the HU6, HU8, HU9 landscape units.

Huron Association soils are mainly located in the northwest section of the County, in McGillivray, West Williams, East Williams, Lobo, Adelaide, Biddulph, and London Townships. They are also developed in small areas of Huron Till, which occur in West Nissouri Township.

The texture of Huron Association soils is generally silty clay loam, silty clay and clay loam. However, silt loam and loam textures are common in the surface horizons. These loamy textures are usually less than 40 cm in thickness. Variability in the surface texture of Brookston soils is greatest in areas where eroded material from upslope Huron and Perth soils has accumulated.

Organic matter contents of surface horizons in the well-drained Huron soils and the imperfectly drained Perth soils may be lower on the upper and crest positions on slopes that have been eroded. In severely eroded areas, the calcareous Ck horizons may be at or near the surface.

Huron Association soils are often mapped together with till phase soils of the Bennington Association. In areas along the Lucan Moraine, in London Township, where there is a transition zone from the clayey till parent material of the Huron Association to the loamy till parent material of the Bryanston Association, Huron Association soils are mapped in close proximity to soils of the Bryanston and Honeywood Associations.

Land Use/Management Comments

Where topography is not a limitation, the Huron and Perth soils are rated Class 2D for common field crops. Because of their high clay contents, these soils are susceptible to compaction, especially if heavy machinery is used on wet soil. In compacted soils, summer droughtiness may result. Perth soils which are compacted may have increased wetness problems. Perth soils would benefit from tile drainage.

Brookston soils require tile drainage in order to reach their capability for common field crops. They are rated Class 3W. In order to minimize

soil degradation from compaction, heavy machines should not be used on wet Brookston soils.

Stone piles along fence rows indicate that stone picking has been a common management practice on Huron Association soils. However, the occurrence of surface stones observed during the field mapping was not sufficient to warrant a stoniness limitation.

Huron Association soils are used primarily for the production of common field crops such as corn in Middlesex County. In McGillivray Township, some cole crops and rutabagas are produced on these soils. Suitability ratings for selected specialty crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation are also indicated.

Soil conservation practices should be considered on Huron Association soils, especially for those soils with loamy surface textures or on steeper slopes.

Melbourne Association

General Description

The Melbourne Association has developed on nearly level to level glaciolacustrine plains where at least 15 cm of heavy clay is present in silty clay and clay-textured materials. The heavy clay layer usually occurs in the subsoil B horizons.

Melbourne Association Members

The Melbourne Association is comprised of three drainage members: the moderately well-drained Melbourne soil, the imperfectly drained Ekfrid soil and the poorly drained Strathburn soil. The association is named after the moderately well-drained member.

Melbourne Association Landscape Units

The Melbourne Association landscape units describe the commonly occurring groupings of Melbourne, Ekfrid and Strathburn soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
ME4	Moderately well to imperfect	Melbourne and/or Ekfrid soils		
ME6	Moderately well to imperfect	Melbourne and/or Ekfrid soils	Poor	Strathburn soils
ME8	Poor	Strathburn soils		
ME9	Poor	Strathburn soils	Moderately well to imperfect	Melbourne and/or Ekfrid soils

On the 1:50,000 soil maps for Middlesex County, the Melbourne and Ekfrid soils have been grouped together. Both soils may not, however, be present in all of the delineations which include a moderately well to imperfectly drained component (ME4, ME6, ME9). As a general guide, only moderately well-drained Melbourne soils occur in delineations where the associated slopes are Classes E or e, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Melbourne and Ekfrid soils are grouped on the soil map, the individual soil names were assigned at each site inspection. The characteristics of the Melbourne soils were determined from the data collected at the sites where moderately well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Ekfrid soils. Strathburn soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Melbourne soils have an average thickness of 18 cm and a mean organic matter content of 5.8%. The pH of the surface horizon ranges from slightly acid to neutral. Surface textures are usually silty clay loam and silty clay. The textural variability of surface horizons for sampled Melbourne soils is presented in the Appendix of Volume 2. Subsoil B horizons usually include a clay-enriched Bt horizon above the calcareous Ck horizons. The clay content of the Bt horizon is usually between 55% and 65%. The average depth to the Ck horizon is 52 cm.

Ekfrid soils have a mean surface horizon thickness of 21 cm and an average organic matter content of 4.9%. The pH of the surface horizon ranges from mildly acid to neutral. Surface textures are mainly silty clay loam and silty clay. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Ekfrid soils. The Bt horizon is well-developed, usually containing between 45% and 64% clay. Rust-coloured mottles

commonly occur in the upper subsoil B horizons, because of perched watertables. The depth of the subsoil B horizons varies, but the average depth of the contact with the calcareous Ck horizons is 60 cm.

The surface horizons of Strathburn soils usually average 22 cm in thickness with mean organic matter contents of 7.0%. The pH of the A horizon is commonly slightly acid to neutral. Surface textures are usually silty clay loam and silty clay. The variability in texture of the surface horizon samples for Strathburn soils is displayed graphically in the Appendix of Volume 2. Subsoil B horizons usually include a Btg horizon with clay contents ranging from 54% to 69%. Because they are saturated for extended periods, blue-grey gley colours and mottles occur in the subsoil horizons within the 0 to 50 cm zone. The average depth to the calcareous Ck horizons is 71 cm.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Melbourne soils have high moisture-holding capacities, but they can be droughty during the summer, because of a limited supply of available water. During extended dry periods these soils tend to shrink and crack. When saturated, Melbourne soils are very slowly to slowly permeable. Surface runoff is usually rapid. If surface cracking is severe, the permeability of these soils will be higher and the surface runoff will be lower.

Ekfrid soils have high moisture-holding capacities. The upper horizons are saturated for a portion of the growing season, especially where clay-enriched Bt horizons and compacted layers are present. They may be droughty, particularly during extended dry periods. Ekfrid soils are slowly to moderately permeable, depending on the incidence of cracking and on the amount of subsoil compaction that has taken place. Surface runoff is usually rapid.

Strathburn soils have high water-holding capacities and are usually slowly permeable. Groundwater levels are near the surface much of the year, subsiding somewhat during the growing season. Perched watertables occur above the clayey subsurface horizons. Surface runoff is usually rapid. If surface cracking is severe, the permeability of these soils will be higher and the surface runoff will be lower.

Soil Variability

In delineations where the moderately well to imperfectly drained landscape unit is mapped (ME4, ME6, ME9), Melbourne soils are usually associated with upper slope positions on moderately to very gently sloping topography. Where the clay plain is dissected by tributaries of the Thames River, Melbourne soils occur on more rolling topography. Ekfrid soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Level to depressional areas within map delineations usually consist of poorly drained Strathburn soils. These soils occur in the ME6, ME8, ME9 landscape units.

Melbourne Association soils occur mainly in the southern portions of Ekfrid, Caradoc and Mosa Townships and to a lesser extent in East Williams and West Williams Townships, on glaciolacustrine plains near the Ausable River.

Although the clay content of the Bt horizons of Melbourne Association soils is usually between 55% and 65%, it ranges from 45% to 69%.

Melbourne Association soils are commonly mapped together with soils of the Brantford Association. Because the subdued topography characteristic of map delineations containing Melbourne and Brantford Association soils, it may be necessary to increase the intensity of site inspections in order to determine a reliable estimate of the extent of these associations. Field mapping indicated an increase in the frequency of Melbourne Association soils in the southern portion of the Ekfrid Clay Plain, near the Thames River.

Land Use/Management Comments

Melbourne and Ekfrid soils are rated Class 3D, because of their high clay contents. It is important to avoid compaction, as much as possible, by not using heavy machinery on wet soils. Compaction increases wetness problems and can increase summer droughtiness. Where these soils occur on steeper slopes they are susceptible to erosion due to rapid surface runoff. Conservation management practices should be considered, especially where Melbourne soils occur on steep slopes.

Strathburn soils are rated require tile drainage in order to reach their capability for common field crops. They are rated Class 3DW. Because the

movement of water through the soil profile is somewhat obstructed by the Bt horizon, tile drainage may be of limited effectiveness in these soils. Surface drainage should be considered as an alternative in these areas.

Strathburn soils are susceptible to compaction and wheel rutting. If heavy equipment is used on these soils when they are wet, their structural and wetness problems will become more severe. Theseproblems are more difficult to avoid in the ME6 and ME9 landscape units, where the poorly drained soils are intermingled with the Melbourne and Ekfrid soils.

Melbourne Association soils are used predominantly for pasture. Livestock and poultry operations are common. Some field crops are grown on moderately well to imperfectly drained soils of the ME4 landscape unit. Melbourne Association soils are unsuitable for most horticultural crops. The ratings for selected special crops are presented in Tables 5, 6 and 7. The effects of tile drainage and irrigation on the ratings is also indicated.

Muriel Association

General Description

The Muriel Association has developed on nearly level to very gently sloping ground moraines and very gently to moderately sloping terminal moraines of the Erie Lobe glaciation. Their texture is usually silty clay loam, silty clay and clay loam. Although the gravel content of the till can be as high as 24%, it generally ranges from 2% to 6%.

Muriel Association Members

The Muriel Association is comprised of three drainage members: the moderately well-drained Muriel soil, the imperfectly drained Gobles soil and the poorly drained Kelvin soil. The association is named after the moderately well-drained member.

Muriel Association Landscape Units

The Muriel Association landscape units describe the commonly occurring groupings of Muriel, Gobles and Kelvin soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
MU4	Moderately well to imperfect	Muriel and/or Gobles soils		
MU6	Moderately well to imperfect	Muriel and/or Gobles soils	Poor	Kelvin soils
MU8	Poor	Kelvin soils		
MU8.P	Very poor	Kelvin peaty phase soils		
MU9	Poor	Kelvin soils	Moderately well to imperfect	Muriel and/or Gobles soils

On the 1:50,000 soil maps for Middlesex County, the Muriel and Gobles soils have been grouped together. Both soils may not, however, be present in all of the map delineations which include a moderately well to imperfectly drained component (MU4, MU6, MU9). As a general guide, only moderately well-drained Muriel soils occur in map delineations where the associated slopes are Classes D or d, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Muriel and Gobles soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Muriel soils were determined from the data collected at the sites where moderately well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Gobles soils. Kelvin soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Muriel soils have an average thickness of 22 cm and a mean organic matter content of 3.4%. The pH of the surface horizon is usually neutral, although in severely eroded areas it is mildly alkaline. Surface textures are usually silt loam, loam and silty clay loam. The textural variability of surface horizons for sampled Huron soils is presented in the Appendix of Volume 2. Subsoil horizons usually include a clay-enriched Bt horizon above the calcareous Ck horizon. The Bt horizon is usually thin and often weakly developed. The average depth to the Ck horizon is 52 cm. Huron soils usually have well-developed structure, with numerous interconnecting cracks and voids.

Gobles soils have a mean surface horizon thickness of 25 cm and an average organic matter content of 3.3%. The pH of the surface horizon is

usually neutral. In severely eroded areas, the pH of the A horizon is mildly alkaline. Surface textures are mainly silt loam, loam and silty clay loam. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Gobles soils. A thin Bt horizon is usually present. Distinct or prominent mottles commonly occur in the upper B horizons, because of perched watertables. The depth of the subsoil B horizons varies, but the average depth of the contact with the calcareous Ck horizons is 52 cm. The structure of Gobles soils is usually well-developed, with numerous interconnecting cracks and voids.

The surface horizons of Kelvin soils usually average 21 cm in thickness with a mean organic matter content of 4.3%. The pH of the A horizon is commonly neutral, although it can be mildly alkaline in severely eroded areas. Surface textures are usually silty clay loam, loam and silty clay loam. The variability in texture of the surface horizon samples for Kelvin soils is displayed graphically in the Appendix of Volume 2. Because they are saturated for extended periods, blue-grey gley colours and mottles occur within the 0 to 50 cm zone. Bg horizons usually extend to an average depth of 52 cm, where they contact the calcareous Ck horizons. A clay-enriched Bt horizon does not usually occur. Soil structure of Kelvin soils is generally not as well-developed as in the Muriel and Gobles soils.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Muriel soils have moderate to high moisture-holding capacities. They are moderately to slowly permeable. Surface runoff is moderate to rapid, depending on the steepness of the slope.

Gobles soils have moderate to high moisture-holding capacities. The upper horizons are saturated for part of the growing season, especially if compacted subsoil layers are present. They are moderately to slowly permeable. Surface runoff is moderate, except on steeper slopes, where it is rapid.

Kelvin soils have moderate to high moisture-holding capacities and are moderately to slowly permeable. Groundwater levels are at or near the surface for significant time periods, subsiding somewhat during the growing season. Saturated conditions delay the warming of the soil in the spring and can restrict root growth. Surface runoff is moderate to slow.

Soil Variability

In delineations where the moderately well to imperfectly drained landscape unit is mapped (MU4, MU6, MU9), Muriel soils are usually associated with upper slope positions on moderately to very gently sloping topography. Gobles soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Although level to depressional areas within map delineations usually consist of poorly drained Kelvin soils, very poorly drained, peaty phase soils are mapped in some depressional areas. These soils occur in the MU6, MU8, MU9 landscape units.

Muriel Association soils occur mainly south of the Ingersoll Moraine, in North Dorchester and Westminster Townships. They are also mapped in small areas of Erie Lobe Till, which occur in the southern portion of the County.

The texture of Muriel Association soils is generally silty clay loam, silty clay and clay loam. However, silt loam and loam textures are common in the surface horizons. These loamy textures are usually less than 40 cm in thickness. Variability in the surface texture of Kelvin soils is greatest in areas where eroded material from upslope Huron and Perth soils has accumulated.

Organic matter contents of surface horizons in the well-drained Muriel soils and the imperfectly drained Gobles soils may be lower on the upper and crest positions on slopes that have been eroded. In severely eroded areas, the calcareous Ck horizon may be at or near the surface.

Muriel Association soils are often mapped together with till phase soils of the Bennington Association.

Land Use/Management Comments

Where topography is not a limitation, the Muriel and Gobles soils are rated Class 2D for common field crops. Because of their high clay contents, these soils are susceptible to compaction, especially if heavy machinery is used on wet soils. In compacted soils, summer droughtiness may result and wetness problems may increase. Gobles soils would benefit from tile drainage.

Kelvin soils require tile drainage in order to reach their capability for common field crops. They are rated Class 3W. In order to minimize soil degradation from compaction, heavy machines

should not be used on Kelvin soils under wet conditions. Peaty phase soils are rated Class 5W.

Stone piles along fence rows indicate that stone picking has been a common management practice on Muriel Association soils. However, the occurrence of surface stones observed during the field mapping was not sufficient to warrant a stoniness limitation.

Muriel Association soils are used primarily for the production of common field crops such as corn in Middlesex County. Livestock operations are also present. Suitability ratings for selected specialty crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation are also indicated.

Soil conservation practices should be considered on Muriel Association soils, especially for those soils with loamy surface textures or on steeper slopes.

Plainfield Association

General Description

The Plainfield Association has developed on level to very gently sloping eolian sand plains and on gently to moderately sloping sand dunes. The sand plains were originally shallow water glaciolacustrine deposits, which have been modified by wind to a depth greater than 100 cm. Soil textures are almost always fine sand and loamy fine sand, with total sand contents usually ranging between 80% and 90%.

Plainfield Association Members

The Plainfield Association is comprised of three drainage members: the rapidly drained Plainfield soil, the imperfectly drained Walsingham soil and the poorly drained Waterin soil. The association is named after the rapidly drained member.

Plainfield Association Landscape Units

The Plainfield Association landscape units describe the commonly occurring groupings of Plainfield, Walsingham and Waterin soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
PL4	Rapid to imperfect	Plainfield and/or Walsingham soils		
PL6	Rapid to imperfect	Plainfield and/or Walsingham soils	Poor	Waterin soils
PL8	Poor	Waterin soils		
PL9	Poor	Waterin soils	Rapid to imperfect	Plainfield and/or Walsingham soils

On the 1:50,000 soil maps for Middlesex County, the Plainfield and Walsingham soils have been grouped together. Both soils may not, however, be present in all of the map delineations which include a rapidly to imperfectly drained component (PL4, PL6, PL9). As a general guide, only rapidly drained Plainfield soils occur in map delineations where the associated slopes are Classes C or c, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Plainfield and Walsingham soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Plainfield soils were determined from the data collected at the sites where rapidly drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Walsingham soils. Waterin soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Plainfield soils have an average thickness of 23 cm and a mean organic matter content of 3.3%. The pH of the surface horizon ranges from strongly acid to neutral. Surface textures are usually fine sand and loamy fine sand. The textural variability of surface horizons for sampled Plainfield soils is presented in the Appendix of Volume 2. Subsoil B horizons occasionally include thin, weakly-developed, clay-enriched layers. They are reddish-coloured and usually less than 2 cm thick. Although the mean depth to the calcareous Ck horizon is 72 cm, the range varies from 40 cm to 110 cm.

Walsingham soils have a mean surface horizon thickness of 21 cm and an average organic matter content of 3.5%. The pH of the surface horizon ranges from strongly acid to neutral. Surface textures are mainly fine sand and loamy fine sand. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Walsingham soils. Thin, weakly-developed, clay-enriched bands are

sometimes present in the subsoil B horizons. Distinct or prominent mottles commonly occur in the upper B horizons, because of perched watertables. Although the average depth of the contact with the calcareous Ck horizons is 81 cm, it ranges from 40 to 87 cm.

The surface horizons of Waterin soils usually average 25 cm in thickness with a mean organic matter content of 4.3%. The pH of the surface horizon commonly ranges from slightly acid to neutral. Surface textures are usually fine sand and loamy fine sand. The variability in texture of surface horizon samples for Waterin soils is displayed graphically in the Appendix of Volume 2. Distinct or prominent mottles and blue-grey gley colours occur in the subsoil. Although the average depth of the contact with the calcareous Ck horizons is 69 cm, it ranges from 41 to 120 cm.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Plainfield soils have low moisture-holding capacities and therefore tend to have droughtiness problems. Permeability is medium to high, and as a result surface runoff is slow, except on steeper slopes.

Walsingham soils have low moisture-holding capacities. During dry periods, they tend to be droughty. During wet periods they are subject to temporarily high watertables. Permeability is medium to high. Surface runoff is slow on level to nearly level slopes, but increases on steeper slopes.

In an unsaturated state, the soil moisture characteristics of Waterin soils are similar to the properties of the Plainfield and Walsingham soils. However, these soils usually occupy lower or depressional landscape positions. Because Waterin soils have locally high watertables, they are subject to prolonged saturation. Saturated conditions delay the warming of the soil in the spring and can restrict root growth. In areas where less permeable material occurs immediately below 100 cm, saturated conditions are due to perched watertables.

Soil Variability

In delineations where the rapidly to imperfectly drained landscape unit is mapped (PL4, PL6, PL9), Plainfield soils are usually associated with upper slope positions on moderately to very gently sloping topography. Walsingham soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Level to depressional areas within map delineations usually consist of poorly drained Waterin soils. These soils occur in the PL6, PL8, PL9 landscape units.

Plainfield Association soils are mapped throughout the County. However, the largest extent is on the sand plains in Caradoc and Mosa Townships.

Although thin, weakly-developed textural B horizons occur at depth in Plainfield soils mapped in other counties, the Plainfield Association soils in Middlesex County do not generally contain a Bt horizon within the 0 to 100 cm zone. They may be absent or at a depth greater than 1 metre in Plainfield and Walsingham soils.

The very fine sand content of Plainfield Association soils mapped in Middlesex County is highly variable. This reflects, in part, the extent to which the glaciolacustrine parent materials have been modified by wind. In Mosa Township, Plainfield Association soils tend to have very fine sand contents greater than 40%. The moisture-holding capacity of these soils is somewhat higher than other Plainfield Association soils which have lower amounts of very fine sand.

Plainfield Association soils with high very fine sand contents occur in close proximity to Wattford Association soils. In the Strathroy area, Plainfield Association soils have developed on large dunes. In other areas of the County they occur on sandy-textured ridges, less than 1 metre in height. In these areas that are mapped with soils of the Brantford and Melbourne Association

Land Use/Management Comments

On level to nearly level slopes, Plainfield soils are rated Class 3F for common field crops. Fertility limitations are common on sandy-textured soils, because they tend to have low cation exchange capacities. Other limitations include low surface horizon pH and seasonal droughtiness. Where high-value specialty crops justify the cost, irrigation can be used to overcome droughtiness problems.

Walsingham soils are rated Class 3F for common field crops, where topography is not a limitation. They have low natural fertility and during extended dry periods may also have droughtiness problems.

Waterin soils require tile drainage in order to reach their capability for common field crops. They are rated Class 3W.

Plainfield Associations soils in Middlesex County are used for the production of common field crops and special crops including tobacco, asparagus, and woody ornamental nursery crops. Irrigation is a necessity for the latter crops. The ratings for selected special crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Soil erosion, caused by both water and wind, is a concern on Plainfield and Walsingham soils. Conservation practices such as minimum tillage, crop rotations which incorporate cover crops, and the planting of shelter belts should be considered.

Teeswater Association

General Description

The Teeswater Association has developed on nearly level to very gently sloping topography where 40 to 100 cm of silt loam and loam-textured glaciolacustrine material overlies gravelly and cobbly glaciofluvial outwash material. The gravelly parent material is highly calcareous, often containing coatings and deposits of secondary carbonates in macropores and along root channels. Alternating layers of gravelly material and sand are common in the subsoil.

Teeswater Association Members

The Teeswater Association is comprised of three drainage members: the well-drained Teeswater soil, the imperfectly drained Fanshawe soil and the poorly drained Ballymote soil. The association is named after the well-drained member.

Teeswater Association Landscape Units

The Teeswater Association landscape units describe the commonly occurring groupings of Teeswater, Fanshawe and Ballymote soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
TE4	Well to imperfect	Teeswater and/or Fanshawe soils		
TE6	Well to imperfect	Teeswater and/or Fanshawe soils	Poor	Ballymote soils
TE8	Poor	Ballymote soils		
TE9	Poor	Ballymote soils	Well to imperfect	Teeswater and/or Ballymote soils

On the 1:50,000 soil maps for Middlesex County, the Teeswater and Fanshawe soils have been grouped together. Both soils may not, however, be present in all of the map delineations which include a well to imperfectly drained component (TE4, TE6, TE9). As a general guide, only well-drained Teeswater soils occur in map delineations where the associated slopes are Classes D or d, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Teeswater and Fanshawe soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Teeswater soils were determined from the data collected at the sites where well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Fanshawe soils. Ballymote soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Teeswater soils have an average thickness of 24 cm and a mean organic matter content of 2.5%. The pH of the surface horizon ranges from neutral to mildly alkaline. Surface textures are usually silt loam. The variability in textures in surface horizons of sampled Teeswater soils is presented in the Appendix of Volume 2. Subsoil B horizons usually include a well-developed, reddish-coloured, clay-enriched Bt horizon above the calcareous Ck horizon. The average depth to the strongly calcareous glaciofluvial material is 60 cm.

Fanshawe soils have a mean surface horizon thickness of 32 cm and an average organic matter content of 5.2%. The pH of the surface horizon ranges from neutral to mildly alkaline. Surface textures are mainly silt loam. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Fanshawe soils. A well-developed, reddish-coloured Bt horizon is usually present immediately above the calcareous parent material.

Distinct or prominent mottles commonly occur in the upper subsoil B horizons, because of perched watertables. The average depth to the strongly calcareous IICk horizons is 58 cm.

The average thickness of the surface horizons of Ballymote soils is approximately 22 cm. The mean organic matter content of the A horizons is 7.4% and the pH usually ranges from neutral to mildly alkaline. Surface textures are mainly silt loam. The variability in texture of surface horizon samples for Ballymote soils is displayed graphically in the Appendix of Volume 2. The soil profile tends to be poorly developed, usually without a Bt horizon. Prominent mottles and blue-grey gley colours occur within the upper 50 cm zone. The average depth of the contact of the loamy material and the calcareous glaciofluvial sediments is 65 cm.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Teeswater soils have high moisture-holding capacities in the loamy overburden. Permeability is moderate, but may be lower if subsoil compaction has occurred in the loamy material. Permeability increases in the underlying gravelly outwash material. Surface runoff is moderate to high and increases on steeper slopes.

Fanshawe soils have high water-holding capacities and are moderately permeable in the loamy overburden. Subsoil horizons may be slowly permeable when compacted layers are present. Perched watertables can occur at the contact between the loamy upper material and the underlying gravelly sediments. Surface runoff is moderate to high, depending on the steepness of the slope. If compacted layers occur, surface runoff will be higher. Fanshawe soils are temporarily saturated during wet periods.

Ballymote soils have high moisture-holding capacities and are moderately to slowly permeable in the loamy overburden. Because these soils usually occur in lower or depressional landscape positions, they are subject to high groundwater levels. They usually remain saturated for relatively long periods of time each year. The underlying gravelly sediments facilitate the downward movement of water under saturated conditions. Surface runoff is usually slow.

Soil Variability

In delineations where the well to imperfectly drained landscape unit is mapped (TE4, TE6, TE9), Teeswater soils are usually associated with upper slope positions on nearly level to very gently sloping topography. Fanshawe soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Level to depressional areas within map delineations usually consist of poorly drained Ballymote soils. These soils occur in the TE6, TE8, TE9 landscape units.

Teeswater Association soils are commonly mapped on the raised terraces of the north branch of the Thames River. In the Fanshawe Lake and Komoka areas, they have developed on glaciofluvial deltas.

The textures of the overburden are usually silt loam and loam. The texture of the Bt horizons in Teeswater and Fanshawe soils ranges from silty clay loam to clay loam. The gravelly subsoil often contains beds of gravel-free sandy material.

In areas where the depth of the loamy overburden is variable, Teeswater Association soils are mapped in close proximity to soils of the Burford and Brant Associations.

Land Use/Management Comments

Teeswater and Fanshawe soils are rated Class 1 for common field crops, where topography is not a limiting factor. On steeper slopes the high erodibility of the loamy surface textures causes the soils to be rated lower.

Ballymote soils require tile drainage to reach their capability for common field crops. They are rated Class 2W. Because of the loamy textures and seasonally high moisture contents, Ballymote soils are susceptible to compaction and wheel rutting. These problems are more difficult to avoid in the TE6 and TE9 landscape units, where the poorly drained soils can be intermingled with the Teeswater and Fanshawe soils. Compaction lowers permeability and available moisture content, increases surface runoff and potential erosion, and under certain conditions, restricts root development of crops.

Although Teeswater Association soils are used for the production of common field crops in Middlesex County, they are suitable for a variety of special crops, especially where the loamy overburden is deep. The ratings for selected special crops are presented in Tables 5, 6 and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Teeswater Association soils are highly erodible, due to their silt loam and loam textures. Evidence of erosion is common even on nearly level slopes. Although Teeswater Association soils usually occur on fairly subdued topography, soil conservation practices which reduce potential erosion should be considered.

Many of the delineations, where Teeswater Association soils have been mapped, contain gravel pit excavations.

Walsher Association

General Description

The Walsher Association has developed on nearly level to very gently sloping glaciolacustrine plains, where 40 to 100 cm of sandy-textured material has been deposited as overburden. The underlying material consists of silt loam and loam-textured glaciolacustrine sediments. Both the upper and lower parent materials are usually stonefree. The till phase of the Walsher Association occurs on nearly level to very gently sloping ground moraine, where 40 to 100 cm of sandy-textured material has been deposited as overburden. The gravel content of the underlying loamy-textured till ranges up to 28%.

Walsher Association Members

The Walsher Association is comprised of three drainage members: the well-drained Walsher soil, the imperfectly drained Vittoria soil and the poorly drained Silver Hill soil. The association is named after the well-drained member.

Walsher Association Landscape Units

The Walsher Association landscape units describe the commonly occurring groupings of Walsher, Vittoria and Silver Hill soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
WA4	Well to imperfect	Walsher and/or Vittoria soils		
WA4.T	Well to imperfect	Walsher till phase and/or Vittoria till phase soils		
WA6	Well to imperfect	Walsher and/or Vittoria soils	Poor	Silver Hill soils
WA6.T	Well to imperfect	Walsher till phase and/or Vittoria till phase soils	Poor	Silver Hill till soils
WA8	Poor	Silver Hill soils		
WA8.T	Poor	Silver Hill till phase soils		
WA9	Poor	Silver Hill soils	Well to imperfect	Walsher and/or Vittoria soils

On the 1:50,000 soil maps for Middlesex County, the Walsher and Vittoria soils have been grouped together. Both soils may not, however, be present in all of the map delineations which includes a well to imperfectly drained component (WA4, WA4.T, WA6, WA6.T, WA8, WA8.T). As a general guide, only well-drained Walsher soils occur in map delineations where the associated slopes are Classes D or d, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Walsher and Vittoria soils are grouped on the soil map, the individual soil names were assigned at each site inspection. The characteristics of the Walsher soils were determined from the data collected at the sites where well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Vittoria soils. Silver Hill soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Walsher soils developed in glaciolacustrine sediments usually have an average thickness of 30 cm and a mean organic matter content of 2.6%. The pH of the A horizons ranges from neutral to slightly acid. Surface textures are usually fine sandy loam, loamy sand and sandy loam. The textural variability of surface horizons for all sampled Walsher soils is presented in the Appendix of Volume 2. Subsoil horizons have developed in the upper 40 to 100 cm of sandy sediments, including a clay-enriched Bt horizon, which often occurs immediately above the loamy parent material. The texture of the overburden is usually fine sandy loam and loamy fine sand. The average depth to the underlying calcareous material is 61 cm.

The surface horizons of Vittoria soils developed in glaciolacustrine sediments have a mean thickness of 25 cm and an average organic matter content of 3.4%. In Vittoria till phase soils the surface horizons average 27 cm thick and the mean organic matter content is 3.2%. The pH usually ranges from neutral to slightly acid. Surface textures are mainly fine sandy loam, loamy sand and sandy loam. The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Vittoria soils. The sequence of horizons is similar to that described for the Walsher soils. Distinct to prominent rust-coloured mottles caused by seasonal saturation, are present in the B and C horizons. The contact of the sandy and loamy materials is at an average depth of 72 cm.

Silver Hill soils have dark-coloured A horizons. Surface textures are usually fine sandy loam, loamy sand and sandy loam. The variability in texture of the surface horizon samples is displayed graphically in the Appendix of Volume 2. The soil profile tends to be poorly developed, usually without a Bt horizon. Prominent mottles and blue-grey gley colours occur within the upper 50 cm zone. The average thickness of the sandy overburden is 93 cm.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Walsher soils have high moisture-holding capacities, relative to other sandy soils, because of the fine sandy loam in the upper horizons and the loamy textures in the subsoil. They are usually rapidly permeable through the sandy materials, but permeability decreases significantly at the contact with the underlying loamy sediments. If these materials are varved or stratified glaciolacustrine deposits, the permeability will be lower. Surface runoff ranges from slow on level areas, to rapid on steeper slopes.

Vittoria soils have high moisture-holding capacities. Their permeability is similar to the Walsher soils. During wet periods in the spring and fall, the upper portions of the profile may be saturated, as water becomes perched on top of the underlying loamy which are less permeable. Surface runoff is moderate to high, depending on the steepness of the slope.

Silver Hill soils have high moisture-holding capacities. They are usually slowly permeable. High groundwater levels are often present in these soils, sometimes extending into the growing season. High perched watertables caused by the loamy subsoil are also common. Surface runoff is usually slow.

Soil Variability

In delineations where the well to imperfectly drained landscape unit is mapped (WA4, WA4.T, WA6, WA6.T, WA9, WA9.T), Walsher soils are usually associated with upper slope positions on nearly level to very gently sloping topography. Vittoria soils generally occur on the mid to lower slope positions of level to very gently sloping topography. Level to depressional areas within map delineations usually consist of poorly drained Silver Hill soils. These soils occur in the WA6, WA6.T, WA8, WA8.T, WA9 and WA9.T landscape units.

Walsher Association soils are mapped throughout the County. The till phase soils occur mainly in West Nissouri and London Townships, where sandy-textured material overlies the loamy Tavistock till.

Organic matter contents of surface horizons in the well-drained Walsher and imperfectly drained Vittoria soils may be lower on the upper and crest positions on slopes that have been eroded. In these areas, the pH of the surface horizon was

usually mildly alkaline. In severely eroded areas, the calcareous Ck horizons may be at or near the surface.

In areas where the depth of the sandy overburden is variable, the Walsher Association soils occur in close proximity to soils of the Plainfield, Wattford and Brant Associations. Soils of the Bryanston Association are mapped together with the till phase soils of the Walsher Association.

Land Use Management Comments

Walsher soils are rated Class 2M for common field crops, due to droughtiness. Moisture deficiencies can be overcome with irrigation, where high-value specialty crops justify the cost. Vittoria soils have no limitations on level to nearly level topography and are therefore rated Class 1.

Silver Hill soils require tile drainage to reach their capability for common field crops. They are rated Class 2W.

Although Walsher Association soils are used for the production of common field crops in Middlesex County, they are suitable for a variety of special crops. Walsher and Vittoria soils are presently being used to grow asparagus. The ratings for selected special crops are presented in Tables 5, 6 and 7. The effects of tile drainage and irrigation on the ratings are also indicated.

Soil erosion, caused by both water and wind, is a concern on Walsher and Vittoria soils. Conservation practices such as minimum tillage, crop rotations which incorporate cover crops, and the planting of shelter belts should be considered.

Wattford Association

General Description

The Wattford Association has developed on nearly level to gently sloping deep, glaciolacustrine sands, which often have been modified by wind. In general, the textures of the parent material are fine sandy loam, very fine sandy loam and very fine sand.

Wattford Association Members

The Wattford Association is comprised of three drainage members: the well-drained Wattford soil, the imperfectly drained Normandale soil and the poorly drained St. Williams soil. The association is named after the well-drained member.

Wattford Association Landscape Units

The Wattford Association landscape units describe the commonly occurring groupings of Wattford, Normandale and St. Williams soils mapped in Middlesex County.

Landscape unit	Dominant soil drainage component	Dominant soil component	Significant soil drainage component	Significant soil component
WF4	Well to imperfect	Wattford and/or Normandale soils		
WF6	Well to imperfect	Wattford and/or Normandale soils	Poor	St. Williams soils
WF8	Poor	St. Williams soils		
WF8.P	Very poor	St. Williams peaty phase soils		
WF9	Poor	St. Williams soils	Well to imperfect	Wattford and/or Normandale soils

On the 1:50,000 soil maps for Middlesex County, the Wattford and Normandale soils have been grouped together. Both soils may not, however, be present in all of the map delineations which includes a well to imperfectly drained component (WF4, WF6, WF8). As a general guide, only well-drained Wattford soils occur in map delineations where the associated slopes are Classes C or c, or steeper. Both soils may be present on all other slope classes. If it is necessary to determine the soil drainage components in a map delineation, a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of landscape units in the field.

Although the Wattford and Normandale soils are grouped on the soil maps, the individual soil names were assigned at each site inspection. The characteristics of the Wattford soils were determined from the data collected at the sites where well-drained soils were identified. Data acquired at imperfectly drained sites were used to describe the properties of Normandale soils. St. Williams soils were characterized from data collected at poorly drained sites.

The following description will discuss the individual characteristics of the drainage members. Their composite properties, however, determine the inherent range of characteristics of the association and its landscape units.

General Soil Characteristics

The surface horizons of Wattford soils have an average thickness of 23 cm and a mean organic matter content of 3.6%. The pH of the surface horizons is usually neutral. Surface textures are usually very fine sandy loam, fine sand and fine sandy loam. The textural variability of surface horizons for sampled Wattford soils is presented in the Appendix of Volume 2. Subsoil horizons include clay-enriched Bt horizons, which are variable in thickness and clay content. They are usually reddish-coloured and occur above the calcareous Ck horizons. The mean depth to the calcareous Ck horizons is 55 cm.

Normandale soils have a mean surface horizon thickness of 22 cm and an average organic matter content of 3.9%. The pH of the surface horizons is usually neutral. Surface textures are mainly very fine sandy loam, fine sand and fine sandy loam.

The Appendix of Volume 2 contains textural triangles which show the variability in texture of surface horizons for all sampled Normandale soils. Bt horizons, which are variable in thickness and clay content, often occur immediately above the contact with the calcareous parent material. Distinct or prominent mottles commonly occur in the upper subsoil B horizons, because of perched water tables. The average depth to the calcareous Ck horizons is 72 cm.

The surface horizons of St. Williams soils usually average 29 cm in thickness and have relatively high organic matter contents. Surface horizons are usually very fine sandy loam, fine sand and fine sandy loam. The variability in texture of surface horizon samples for St. Williams soils is dispalyed graphically in the Appendix of Volume 2. The pH of the surface horizons is commonly neutral. Distinct or prominent mottles and blue-grey gley colours occur in the subsoil. The average depth of the contact with the calcareous Ck horizons is 51 cm.

The typical horizon sequence for each of the drainage members is presented in Appendix 1. Mean values are reported for the individual horizons for the following characteristics: horizon thickness; texture, including gravel, sand, silt and clay contents; organic matter content; pH and percentage calcium carbonate.

Soil Moisture Characteristics

Wattford soils have low to moderate moisture-holding capacities. Although the presence of a Bt horizon within the 0 to 100 cm zone will increase the moisture-holding capacity, Wattford soils tend to be droughty during dry periods. They are usually rapidly to moderately permeable. Surface runoff ranges from slow on level areas, to moderate on gently sloping topography.

Normandale soils have low to moderate moisture-holding capacities. Where a Bt horizon occurs within 100 cm, these soils will have a higher moisture-holding capacity. The upper horizons are saturated for part of the growing season, especially if compacted subsoil layers are present. Normandale soils are usually rapidly to moderately permeable. Surface runoff is slow to moderate, depending on the steepness of the slope.

St. Williams soils have low to moderate moisture-holding capacities. They are rapidly to moderately permeable. Because these soils usually occur in lower or depressional landscape positions, high groundwater levels are often present, sometimes extending into the growing season. Saturated conditions delay the warming of the soil in the spring and can restrict root growth. In areas where less permeable material occurs immediately below 100 cm, saturated conditions are due to perched watertables. Surface runoff is usually slow.

Soil Variability

In delineations where the well to imperfectly drained landscape unit is mapped (WF4, WF6, WF9), Wattford soils are usually associated with upper slope positions on nearly level to very gently sloping topography. Normandale soils generally occur on the mid to lower slope positions of nearly level to gently sloping topography. Although level to depressional areas within map delineations usually consist of poorly drained St. Williams soils, very poorly drained, peaty phase soils were mapped in some depressional areas. These soils occur in the WF6, WF8, WF9 landscape units.

Although Wattford Association soils are mapped throughout the County, the largest extent of these soils occurs on the sand plains in Mosa, Caradoc and North Dorchester Townships.

Because Wattford Association soils have developed in transitional areas between eolian sand plains and loamy glaciolacustrine deposits, the texture of these soils is highly variable. Horizons of silt loam and loam are common in Wattford soils mapped in close proximity to Brant Association soils. In areas where eolian sands predominate, Wattford Association soils can have layers of fine sand and very fine sand. These soils are mapped together with soils of the Plainfield Association.

Wattford Association soils mapped in the western part of Mosa Township have fine sand textures with high very fine sand contents. Generally, the amount of very fine sand exceeds 30%. Bt horizons are usually weakly-developed or at depths greater than 100 cm in these soils.

Land Use/Management Comments

Where topography is not a limiting factor, Wattford soils are rated Class 2M, due to droughtiness limitations. Moisture deficiencies can be overcome with irrigation, where high-value specialty crops justify the cost. Normandale soils are rated Class 1 for common field crops on level to nearly level topography.

St. Williams soils require tile drainage in order to reach their capability for common field crops. They are rated Class 2W. Peaty phase soils are rated Class 5W.

Although Wattford Association soils are generally used for the production of common field crops in Middlesex County, they are suitable for a variety of special crops. In the Newburg area, they are being used for the production of asparagus. Tobacco is also being grown on these soils. The ratings for selected special crops are presented in Tables 5, 6, and 7. The effects of tile drainage and irrigation are also indicated.

Wattford Association soils are susceptible to water and wind erosion because they have high fine sand and very fine sand contents. Conservation practices such as minimum tillage, crop rotations, which incorporated cover crops, and the planting of shelter belts should be considered on Wattford and Normandale soils.

Organic Soil Landscape Units

Organic soils contain at least 40 cm of material which has approximately 30% or more organic matter. In Middlesex County they have developed in low lying depressional areas, and in areas adjacent to stream courses. They are very poorly drained, with the watertable at or near the surface for most of the year.

The intensity of inspection and sampled sites was significantly less than for the mineral soils in the County. Soil descriptions are based on organic soil landscape units because the individual organic soils were not named. Generalized and detailed soil descriptions for the landscape units are presented in Volume 2.

Limnic material, consisting mainly of diatomaceous earth or marl, commonly occurred immediately above the contact with the mineral subsoil. Diatomaceous earth mainly consists of the siliceous shells of minute algae, known as diatoms. Marl is composed of the shells of aquatic animals and calcium carbonate precipitated in water. Although the limnic material was usually present as a thin layer, its maximum recorded thickness was 100 cm.

The organic soil landscape units were not rated for their capability for producing horticultural or common field crops. They are not used extensively for agriculture, except for an area east of London along Highway 2, where vegetable crops are grown. Extensive clearing and drainage would be necessary before they could be used for agriculture. In addition, it would be helpful to have a method of controlling the subsurface water level, following drainage, in order to prevent erosion by wind of the surface organic horizon.

Two different types of organic soil landscape units were identified based on the depth of the organic material overlying the mineral soil. The deep organic soil landscape units consist of organic material to a depth greater than 160 cm. Shallow organic soil landscape units have 40 to 160 cm of organic material. These landscape units were further subdivided based on the degree of decomposition of the organic materials and the origin and sequence of organic materials. There are three deep organic soil landscape units (OD1, OD2, OD3) and two shallow landscape units (OS1, OS2). Organic soils areas which were not characterized because of their limited extent, or organic soils which did not meet the criteria of the deep or shallow landscape units were identified as an undifferentiated organic soil landscape unit (OU1).

General Soil Descriptions

OD1 Landscape Unit

OD1 landscape units are comprised dominantly of moderately decomposed sedge fen peat to a depth greater than 160 cm. Sedge fen peat is derived mainly from sedges and reeds. The mean organic matter content of the organic material ranges from 65% to 88% and the pH varies from 6.0 to 6.5. The depth to the underlying mineral soil is variable, often exceeding the depth of sampling. Where the mineral material was sampled, the texture was usually silt loam and sand.

OD2 Landscape Unit

OD2 landscape units consist of moderately decomposed woody sedge fen peat and occasionally woody forest peat succeeding to sedge fen peat, overlying mineral material. The depth of the organic materials is greater than 160 cm. Woody sedge fen peat is commonly deposited in swamps where sedges and reeds are the dominant vegetation, but woody shrubs and trees are also present. Woody forest peat is composed dominantly of woody materials derived mainly from tree species and usually indicates a well established cover of mature trees. The organic materials have a mean organic matter content ranging from 59% to 75% and pH values between 5.7 and 6.2. Generally, the depth to the underlying mineral soil exceeded the depth of sampling.

OD3 Landscape Unit

OD3 landscape units are comprised of woody forest peat and woody sedge fen peat to a depth greater than 160 cm. The nature of these materials suggest that the history of vegetation has been relatively constant. Some variation in the density of the present forest cover was noted. The average organic matter content of the organic materials is 48% to 70% and the pH varies from 5.9 to 6.2. Generally, the depth to the underlying mineral soil exceeded the depth of sampling.

OS1 Landscape Unit

OS1 landscape units are dominantly comprised of moderately decomposed organic materials, with occasional horizons of well or poorly decomposed materials. The origin of the organic material is highly variable, ranging from sedge fen peat, woody sedge fen peat to woody fen peat. The thickness of the organic material ranges from 40 to 160 cm. The mean organic matter content of the

organic materials is between 57% and 61% and pH varies from 5.7 to 6.1. The texture of the underlying mineral soil is variable.

OS2 Landscape Unit

OS2 landscape units consist predominantly of 40 to 160 cm of dominantly well decomposed organic material. Occasional horizons of moderately or poorly decomposed organic material also Frequently, the organic material is too decomposed to determine its origin. The mean organic matter content of the organic materials ranges from 52% and 65% and pH varies from 5.4 to 6.2. Although the texture of the underlying mineral soil is usually sand, loam textures also occurred. The extent of OS2 landscape units in the County is limited.

OU1 Landscape Unit

OU1 landscape units are comprised of organic deposits of variable depths and undetermined origin and level of decomposition. This designation was applied to organic soil landscape units which did not meet the criteria of the deep or shallow landscape units. It was also used to identify organic deposits which were not characterized because of their limited extent.

Miscellaneous Landscape Units

Miscellaneous landscape units describe areas where the soils and topography are highly variable and where the soil landscape has been modified and is being used for non-agricultural purposes. They were not rated for their capability/suitability for crop production or erosion potential. Four miscellaneous landscape units have been mapped in Middlesex County.

Alluvium (ALU)

Alluvium landscape units are mapped in the floodplains of rivers and streams. Alluvial soils have a range of drainages, although most soils are imperfectly or poorly drained. Textures are highly variable, both laterally and with depth. In areas where alluvium has been mapped along the major rivers and there are steep valley walls, it is commonly enclosed within a valley complex landscape unit. In smaller stream courses, alluvium landscape units are often mapped in areas where the valley walls are less steep.

Eroded Channel (ER)

Eroded channel landscape units are used to delineate the valleys of small streams and creeks. They are usually narrow with steep sides and only a few feet deep. Minor inclusions of alluvium may also occur. In areas where eroded channels have been mapped along the tributaries of major rivers, they often connect downstream with valley complex landscape units.

Not Mapped (NM)

Not mapped landscape units are mapped where the soils have been disturbed, modified, or permanently withdrawn from agricultural use. For example, it includes urban areas, gravel and sand excavations and recreational areas.

Valley Complex (VC)

Valley complex landscape units are used to delineate the valleys of the Thames and Ausable Rivers and their major tributaries. The valley sides are usually high and moderate to very steeply sloping. The valley bottom consists of level to nearly level floodplain. Alluvium units are mapped in areas where the floodplain is sufficiently broad. Along the terraces of the Thames River in Caradoc, Ekfrid and Mosa Townships, soil landscape units are mapped within valley complex units.

SOIL INTERPRETATIONS FOR AGRICULTURE

A. Agricultural Capability Classification For Common Field Crops

(1) Capability Classification for Mineral Soils

The Canada Land Inventory classification system of land capability for agriculture is described in CLI Report No. 2 (20). It groups mineral soils into seven classes according to their potential for agricultural use for common field crops and on the nature of their limitations. Common field crops include corn, oats, wheat, barley, and perennial forage crops such as alfalfa, grasses, and birdsfoot trefoil.

The best soils, with no significant limitations for crop use are designated Class 1. Soils designated Classes 2 to 6 have decreasing capability for common field crops, and Class 7 soils have no agricultural potential. A brief outline of each agricultural capability class follows.

Soil Capability Classes

Class 1 - Soils in this class have no significant limitations in use for crops. These soils occur on level to very gently sloping topography. They are deep, well to imperfectly drained, and hold moisture and plant nutrients well. They can be managed and cropped without difficulty. Under good management they are moderately high to high in productivity for a wide range of common field crops.

Class 2 - Soils in this class have moderate limitations that restrict the range of crops, or require moderate conservation practices. These soils are deep, and may not hold moisture and nutrients as well as Class 1 soils. The limitations are moderate, and the soils can be managed and cropped with little difficulty. Under good management, they are moderately high to high in productivity for common field crops.

Class 3 - Soils in this class have moderately severe limitations that restrict the range of crops, or require special conservation practices. The limitations are more severe than for Class 2 soils. They affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. Under good management, they are fair to moderately high in productivity for common field crops.

Class 4 - Soils in this class have severe limitations that restrict the range of crops or require special conservation practices, or both. The limitations seriously affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. The soils are low to fair in productivity for common field crops, but may have higher productivity for a specially adapted crop.

Class 5 - Soils in this class have very severe limitations that restrict their capability to produce perennial forage crops, and improvement practices are feasible. The limitations are so severe that the soils are not capable of use for sustained production of annual field crops. The soils are capable of producing native or tame species of perennial forage plants, and may be improved by use of farm machinery. The improvement practices may include clearing of bush, cultivating, seeding, fertilizing or water control.

Class 6 - Soils in this class are only capable of producing perennial forage crops, and improvement practices are not feasible. These soils provide some sustained grazing for farm animals but the limitations are so severe, that improvements by the use of farm machinery are impractical. The terrain may be unsuitable for the use of farm machinery, or the soils may not respond to improvement, or the grazing season may be very short.

Class 7 - Soils in this class have no capability for arable culture, or permanent pasture. This class includes marsh, rockland and soil on very steep slopes.

Soil Capability Subclasses

Subclasses are divisions, within classes, that have the same kind of limitations for agricultural use as a result of soil and climate. Thirteen different kinds of limitations have been recognized, at the subclass level, and are described in CLI Report No. 2 (20). Only those subclasses used to classify the soils of Middlesex County are listed below. Guidelines for determining most subclasses were obtained from CLI Report No. 2 (20). Assistance in determining subclasses W, M, and D were obtained from a computer based model developed by R. A. McBride (21,22,23). Guidelines for determining subclass E were

determined after consultation with G. J. Wall, Agriculture Canada (personal communication).

Subclass D - Undesirable subsurface soil structure and/or permeability.

Subclass E - Erosion damage, or potential damage from erosion, limits agricultural use of the land.

Subclass F - Low natural fertility, which may or may not be possible to correct by additions of fertilizers or manure.

Subclass I - Inundation by flooding of streams or lakes limits agricultural use.

Subclass M - Moisture limitations due to low moisture holding capacities, cause droughtiness that limits agricultural use.

Subclass S - Adverse soil characteristics. Used when two or more of the limitations represented by Subclasses D, F, M are present, or when two of the limitations represented by Subclasses D, F, M, are present and some additional limitation occurs, for example T.

Subclass T - Adverse topography due to steepness, or complexity of slopes, limits agricultural use, by increasing the cost of farming over that on level land, by decreasing the uniformity of growth and maturity of crops, and by increasing the potential for erosion by water.

Subclass W - Excess water, other than from flooding, limits use for agriculture. The excess water may be due to poor drainage, a high water table, seepage, or runoff from surrounding areas.

Assumptions

Before using the soil capability tables, it is important to have an understanding of the following assumptions, upon which the classification is based:

(a) The soils will be well-managed and cropped under a largely mechanized system.

(b) Land requiring improvements, eg. drainage, that can be done economically by the farmer himself, is classed according to its limitations or hazards, in use, after the improvements have been made.

(c) The following are not considered: distances to market, kind of roads, location or size of farms, type of ownership, cultural patterns, skills or resources of individual operators, and hazard of crop damage by storm.

(d) The classification does not include capabilities for special crops, such as soybeans or tobacco, or for horticultural crops.

(e) Capability classes are subject to change, as new information on properties, behaviour and responses of soils becomes available. In some cases, technological advances may also necessitate changes.

(2) Capability Classification For Organic Soils

The previous discussion on soil capability classification applies only to mineral soils and cannot be used for organic soils. Several capability systems have been devised for organic soils, which focuses on intensive horticultural use (24,25). However, because current agricultural activities on organic soils in Middlesex County are limited, and the characterization of the organic landscape units was based only on depth, degree of decomposition and origin of the organic material, the organic landscape units listed in Table 4 are designated as Not Rated.

(3) How to Determine Capability Ratings from the Soil Map

The agricultural capability ratings are presented in alphabetical order by soil association in Table 4. The individual soils which belong to the association and their drainage classes are listed following the name of the association. Capability ratings are listed by landscape unit for each slope class. For landscape units numbered 8, a single rating is given because these landscape units consist predominantly of poorly drained soils.

For landscape units numbered 4, the capability rating is presented as a range, because these landscape units are composed of the imperfectly and better-drained soils of an association. The capability rating is a combination of the individual ratings for the imperfectly drained soil and the better-drained soil.

For landscape units numbered 6 and 9, which have dominant and significant drainage components, the CLI rating for each drainage component must be determined separately. In Table 4, the ratings for the dominant drainage component are listed first, followed by the ratings for the significant drainage component.

In all cases where a range in the capability ratings is indicated, one of the ratings will appear in bold-face type. This convention identifies the capability rating of the most commonly occurring drainage class and association member in a landscape unit on a specific slope class. It is based on the typical distribution of soils and drainage classes with topography for all landscape units

with the same delineation symbol on the 1:50,000 soil maps. For example, on A, B and b slopes, BO4 landscape units mainly consist of imperfectly drained Berrien soils which are rated Class 1.

Because the extent of imperfectly and better-drained soils varies within individual delineations, it is recommended that the ratings in bold-face type be used only to ascertain a regional overview of the agricultural capability. They should not be used in larger scale studies. In those situations, a site investigation is recommended in order to determine the extent of each of the drainage classes. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of soils in the field. Once the relative proportion of individual soils has been determined, the CLI ratings for the individual soils can be assigned using Table 4.

The following four examples outline the steps for determining the appropriate capability rating for delineations on the 1:50,000 soil map.

Example 1. $\frac{\text{BO8.T}}{\text{b}}$

1. Using the Key to Symbols of Map Delineations on the border of the soil map, this delineation consists of a landscape unit with a single soil drainage component (BO8), with a soil phase (T), and it occurs on slope class b.
2. Using the soil legend on the border of the soil map, the soil landscape unit belongs to the Bookton Association (BO) and the dominant drainage component is poor. There is no significant drainage component.
3. To determine the capability rating from Table 4, locate the Bookton Association and the BO8.T landscape unit in column 1. The soil associations are listed in alphabetical order in the table and the landscape units appear in numerical order following the association name.
4. Move horizontally to the column entitled Capability classification by slope class. In this example, the slope class is b. Therefore, the capability rating is Class 2W. The rating in brackets is the capability class which would be assigned to the BO8.T landscape unit if tile drainage was not in place, or was not feasible. The rating for the BO8.T landscape unit would then be Class 4W.

Example 2. $\frac{\text{BO6.T}}{\text{d} > \text{b}}$

1. Using the Key to Symbols of Map Delineations on the border of the soil map, the delineation consists of a landscape unit with dominant and significant soil drainage components (BO6), with a soil phase (T). The dominant drainage component occurs on d slopes and the significant component is associated with b slopes.
2. Using the Soil Legend on the border of the soil map, the soil landscape unit belongs to the Bookton Association (BO), the dominant drainage component is well to imperfect and the significant drainage component is poor.
3. To determine the capability ratings from Table 4, locate the Bookton Association and the BO6.T landscape unit in column 1. The soil associations are listed in alphabetical order in the table and the landscape units appear in numerical order following the association name.
4. Move horizontally to the column entitled Capability classification by slope class. In this example, the slope class of the well to imperfectly drained component is d. Therefore, the capability rating of the dominant component is Class 3T. Because the slope class of the poorly drained component is b, the capability rating of the significant component is 2W. The rating in brackets is the capability class which would be assigned to the poorly drained component of the BO6.T landscape unit if tile drainage was not in place, or was not feasible. The rating for the significant component would then be Class 4W. The capability rating of the BO6.T landscape unit d and b slopes would therefore be either 3T > 2W or 3T > 4W, depending on the feasibility of drainage.

Example 3. $\frac{\text{BO4.T} > \text{HU4}}{\text{d} > \text{b}}$

1. Using the Key to Symbols of Map Delineations on the border of the soil map, the delineation consists of two landscape units. The dominant landscape unit is the BO4.T unit and it occurs on b slopes. The significant landscape unit is the HU4 unit, which is also associated with b slopes.
2. Using the Soil Legend on the border of the soil map, the dominant soil landscape unit belongs to the Bookton Association (BO), and it is well to imperfectly drained. The significant soil landscape unit is a member of the Huron Association (HU), and it is also well to imperfectly drained.

3. To determine the capability ratings from Table 4, locate the Bookton Association and the BO4.T landscape unit in column 1. The soil associations are listed in alphabetical order in the table and the landscape units appear in numerical order following the association name.

4. Move horizontally to the column entitled Capability classification by slope class. In this example, the slope class of the well to imperfectly drained landscape unit is b. Therefore, the capability rating of the dominant landscape unit ranges from Classes 2M-1.

5. Repeating steps 3 and 4 for the HU4 landscape unit, the rating for the significant landscape unit is 2D.

6. Combining the ratings for the individual landscape units the capability rating for the delineation symbol, $\frac{\text{BO4.T} > \text{HU4}}{\text{c}}$, is

   2M-1 > 2D.

7. It is possible to generalize the capability rating, if the purpose for determining the ratings is to ascertain a regional overview of the agricultural capability. Assuming that this is the situation, the rating for the dominant drainage component could be simplified to Class 1 and the rating for the delineation symbol would therefore be 1 > 2D.

Example 4. $\frac{\text{BO4} > \text{BF8}}{\text{d} > \text{b}}$

1. Using the Key to Symbols of Map Delineations on the border of the soil map, the delineation consists of two landscape units. The dominant landscape unit is the BO4 unit and it occurs on d slopes. The significant landscape unit is the BF8 unit, which is associated with b slopes.

2. Using the Soil Legend on the border of the soil map, the dominant soil landscape unit belongs to the Bookton Association (BO), and it is well to imperfectly drained. The significant soil landscape unit is a member of the Brantford Association (BF), and it is poorly drained.

3. To determine the capability ratings from Table 4, locate the Bookton Association and the BO4 landscape unit in column 1. The soil associations are listed in alphabetical order in the table and the landscape units appear in numerical order following the association name.

4. Move horizontally to the column entitled Capability classification by slope class. In this example, the slope class of the well to imperfectly drained landscape unit is d. Therefore, the capability rating of the dominant landscape unit ranges from Classes 3T.

5. Repeating steps 3 and 4 for the BF8 landscape unit, the rating for the significant landscape unit is 3W. The rating in brackets is the capability class which would be assigned to the BF8 landscape unit if tile drainage was not in place, or was not feasible. The rating for the BF8 landscape unit would then be Class 5W.

6. Combining the ratings for the individual landscape units the capability rating for the delineation symbol, $\frac{\text{BO4} > \text{BF8}}{\text{d} > \text{b}}$, is

   3T > 3W, or if drainage is not feasible, the rating is 3T > 5W.

Table 4. Agricultural land capability for common field crops in Middlesex County

Landscape unit	Dominant drainage component *	Significant drainage component *	Capability classification by slope classes A,B,b	C	c	D	d	E	e	F,f	G,g
Alluvium											
ALU			Not Rated								
Bennington Association (W-Bennington; I-Tavistock; P-Maplewood)											
BN4	W-I		2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T
BN4.T	W-I		2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T
BN6	W-I		2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T
		P	2W	2WE	2WT		(4W)**				
BN6.T	W-I		2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T
			2W	2WE	2WT	P	(4W)**				
BN8***	P		2W	2WE	2WT		(4W)**				
BN8.T	P		2W	2WE	2WT		(4W)**				
BN9	P		2W	2WE	2WT		(4W)**				
		W-I	2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T
BN9.T	P		2W	2WE	2WT		(4W)**				
		W-I	2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T
Blackwell Association (P-Blackwell)											
BA8	P		4DW	4DW	4DW		(5W)**				
Bookton Association (W-Bookton; I-Berrien; P-Wauseon)											
BO4	W-I		2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
BO4.T	W-I		2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
BO6	W-I		2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
		P	2W	2W	2WT		(4W)**				
BO6.T	W-I		2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
		P	2W	2W	2WT		(4W)**				
BO8	P		2W	2W	2WT		(4W)**				
BO8.T	P		2W	2W	2WT		(4W)**				
BO9	P		2W	2W	2WT		(4W)**				
		W-I	2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
BO9.T	P		2W	2W	2WT		(4W)**				
		W-I	2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
Brant Association (W-Brant; I-Tuscola; P-Colwood)											
BT4	W-I		1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
BT6	W-I		1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
		P	2W	2WE	2WT		(4W)**				
BT8***	P		2W	2WE	2WT		(4W)**				
BT9	P		2W	2WE	2WT		(4W)**				
		W-I	1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T

* *Drainage classes: R-Rapid; W-Well; MW-Moderately well; I-Imperfect; P-Poor; VP-Very poor*

** *Capability ratings of poorly drained soils if drainage improvements are not feasible. The ratings apply to all slope classes.*

*** *Capability rating of very poorly drained peaty phase soils is 5W" if drainage improvements are not feasible.*

Table 4. Agricultural land capability for common field crops in Middlesex County (continued)

Landscape unit	Dominant drainage component *	Significant drainage component *	Capability classification by slope classes A,B,b	C	c	D	d	E	e	F,f	G,g
Brantford Association (MW-Brantford; I-Beverly; P-Toledo)											
BF4	MW-I		2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
BF6	MW-I		2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
		P	3W	3W	3W		(5W)**				
BF8	P		3W	3W	3W		(5W)**				
BF9	P		3W	3W	3W		(5W)**				
		MW-I	2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
Bryanston Association (W-Bryanston; I-Thorndale; P-Nissouri)											
BR4	W-I		1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
BR6	W-I		1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
		P	2W	2WE	2WT		(4W)**				
BR8	P		2W	2WE	2WT		(4W)**				
BR9	P		2W	2WE	2WT		(4W)**				
		W-I	1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
Burford Association (R-Burford; I-Brisbane; P-Gilford)											
BU4	R-I		2FM-2F	2FM-2F	2ST-2FT	2ST-2FT	3T-3T	3T	4T	5T	6T
BU8	P		2W	2W	2WT		(4W)**				
Caledon Association (R-W-Caledon; I-Camilla; P-Ayr)											
CA4	R-I		2FM-2F	2FM-2F	2ST-2FT	2ST-2FT	3T-3T	3T	4T	5T	6T
CA6	R-I		2FM-2F	2FM-2F	2ST-2FT	2ST-2FT	3T-3T	3T	4T	5T	6T
		P	2W	2W	2WT		(4W)**				
CA8	P		2W	2W	2WT		(4W)**				
CA9	P		2W	2W	2WT		(4W)**				
		R-I	2FM-2F	2FM-2F	2ST-2FT	2ST-2FT	3T-3T	3T	4T	5T	6T
Eroded Channel											
ER			Not Rated								
Fox Association (R-Fox; I-Brady; P-Granby)											
FO4	R-I		2FM-2F	2FM-2F	2ST-2FT	2ST-2FT	3T-3T	3T	4T	5T	6T
FO6	R-I		2FM-2F	2FM-2F	2ST-2FT	2ST-2FT	3T-3T	3T	4T	5T	6T
		P	2W	2W	2WT		(4W)**				
FO8***	P		2W	2W	2WT		(4W)**				
FO9	P		2W	2W	2WT		(4W)**				
		R-I	2FM-2F	2FM-2F	2ST-2FT	2ST-2FT	3T-3T	3T	4T	5T	6T

* *Drainage classes: R-Rapid; W-Well; MW-Moderately well; I-Imperfect; P-Poor; VP-Very poor*

** *Capability ratings of poorly drained soils if drainage improvements are not feasible. The ratings apply to all slope classes.*

*** *Capability rating of very poorly drained peaty phase soils is 5W" if drainage improvements are not feasible.*

Table 4. Agricultural land capability for common field crops in Middlesex County (continued)

Landscape unit	Dominant drainage component *	Significant drainage component *	Capability classification by slope classes A,B,b	C	c	D	d	E	e	F,f	G,g
Honeywood Association (W-Honeywood; I-Embro; P-Crombie)											
HY4	W-I		1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
HY6	W-I		1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
		P	2W	2W	2WT		(4W)**				
HY8	P		2W	2W	2WT		(4W)**				
HY9	P		2W	2W	2WT		(4W)**				
		W-I	1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
Huron Association (MW-Huron; I-Perth; P-Brookston)											
HU4	MW-I		2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
HU6	MW-I		2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
		P	3W	3W	3W		(5W)**				
HU8	P		3W	3W	3W		(5W)**				
HU9	P		3W	3W	3W		(5W)**				
		MW-I	2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
Melbourne Association (MW-Melbourne; I-Ekfrid; P-Strathburn)											
ME4	MW-I		3D-3D	3D-3D	3DT-3DT	3DT-3DT	3DT-3DT	4T	4T	5T	6T
ME6	MW-I		3D-3D	3D-3D	3DT-3DT	3DT-3DT	3DT-3DT	4T	4T	5T	6T
		P	3DW	3DW	3DW		(5W)**				
ME8	P		3DW	3DW	3DW		(5W)**				
ME9	P		3DW	3DW	3DW		(5W)**				
		MW-I	3D-3D	3D-3D	3DT-3DT	3DT-3DT	3DT-3DT	4T	4T	5T	6T
Muriel Association (MW-Muriel; I-Gobles; P-Kelvin)											
MU4	MW-I		2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
MU6	MW-I		2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
		P	3W	3W	3W		(5W)**				
MU8***	P		3W	3W	3W		(5W)**				
MU9	P		3W	3W	3W		(5W)**				
		MW-I	2D-2D	2DE-2DE	2DT-2DT	3T-3T	3T-3T	4T	4T	5T	6T
Not Mapped											
NM			Not Rated								
Organic Soils											
OD1	VP		Not Rated								
OD2	VP		Not Rated								
OD3	VP		Not Rated								
OS1	VP		Not Rated								
OS2	VP		Not Rated								
OU1	VP		Not Rated								

* *Drainage classes: R-Rapid; W-Well; MW-Moderately well; I-Imperfect; P-Poor; VP-Very poor*

** *Capability ratings of poorly drained soils if drainage improvements are not feasible. The ratings apply to all slope classes.*

*** *Capability rating of very poorly drained peaty phase soils is 5W** if drainage improvements are not feasible.*

Table 4. Agricultural land capability for common field crops in Middlesex County (continued)

Landscape unit	Dominant drainage component *	Significant drainage component *	Capability classification by slope classes A,B,b	C	c	D	d	E	e	F,f	G,g
Plainfield Association (R-Plainfield, I-Walsingham; P-Waterin)											
PL4	R-I		3F-3F	3F-3F	3F-3F	3F-3F	3FT-3FT	3FT	4T	5T	6T
PL6	R-I		3F-3F	3F-3F	3F-3F	3F-3F	3FT-3FT	3FT	4T	5T	6T
		P	3W	3W	3W		(4W-5W)**				
PL8	P		3W	3W	3W		(4W-5W)**				
PL9	P		3W	3W	3W		(4W-5W)**				
		R-I	3F-3F	3F-3F	3F-3F	3F-3F	3FT-3FT	3FT	4T	5T	6T
Teeswater Association (W-Teeswater; I-Fanshawe; P-Ballymote)											
TE4	W-I		1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
TE6	W-I		1-1	2E-2E	2T-2T	3T	3T-3T	4T	4T	5T	6T
		P	2W	2WE	2WT		(4W)**				
TE8	P		2W	2WE	2WT		(4W)**				
TE9	P		2W	2WE	2WT		(4W)**				
		W-I	1-1	2E-2E	2T-2T	3T-3T	3T-3T	4T	4T	5T	6T
Valley Complex											
VC			Not Rated								
Walsher Association (W-Walsher; I-Vittoria; P-Silver Hill)											
WA4	W-I		2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
WA4.T	W-I		2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
WA6	W-I		2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
		P	2W	2W	2WT		(4W)**				
WA6.T	W-I		2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
		P	2W	2W	2WT		(4W)**				
WA8	P		2W	2W	2WT		(4W)**				
WA8.T	P		2W	2W	2WT		(4W)**				
WA9	P		2W	2W	2WT		(4W)**				
		W-I	2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
WA9.T	P		2W	2W	2WT		(4W)**				
		W-I	2M-1	2M-1	2MT-2T	2MT-2T	3T-3T	3T	4T	5T	6T
Wattford Association, (W-Wattford; I-Normandale; P-St. Williams)											
WF4	W-I		2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T
WF6	W-I		2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T
		P	2W	2WE	2WT		(4W)**				
WF8***	P		2W	2WE	2WT		(4W)**				
WF9	P		2W	2WE	2WT		(4W)**				
		W-I	2M-1	2ME-2E	2MT-2T	3T-3T	3T-3T	4T	4T	5T	6T

* *Drainage classes: R-Rapid; W-Well; MW-Moderately well; I-Imperfect; P-Poor; VP-Very poor*

** *Capability ratings of poorly drained soils if drainage improvements are not feasible. The ratings apply to all slope classes.*

*** *Capability rating of very poorly drained peaty phase soils is 5W" if drainage improvements are not feasible.*

(4) Agricultural Land Capability for Soil Map Delineation Symbols

Table 5 lists the capability ratings for the unique symbols in the delineations on the 1:50,000 soil maps. Before using Table 5 it is important to have an understanding of the assumptions upon which it is based.

(a) The ratings for the map delineation symbols were determined using Table 4. Where the rating for a landscape unit was given as a range in Table 4, the most commonly occurring rating, as indicated by the bold-face type, was used. For example, in the Bookton Association, the rating for BO4 landscape units on C slopes, in Table 4, is 2M-1. Since the second rating in the range appears in bold-face type, the rating used in Table 5 is Class 1.

(b) The ratings for the poorly drained landscape units assume that tile drainage is feasible or in place. For example, in the Bennington Association, the rating used in Table 5 for BN8 landscape units on C slopes is Class 2WE.

(c) The areal extent of the dominant and significant landscape units indicated in Table 5, is based on the typical distribution of soil drainages with topography for each map delineation symbol. If the exact proportion of the dominant and significant landscape units within specific map delineations is required a site investigation is recommended. Figures 14 to 17 in Appendix 2 are keys which will assist in the identification of soils in the field. Once the relative proportion of individual soils has been determined, the CLI ratings for the individual soils can be assigned using Table 4.

Given these assumptions, Table 5 can be used to determine a regional overview of the agricultural capability of Middlesex County. In areas where a site investigation has taken place or for large scale studies, it is more appropriate to use Table 4 to determine the agricultural capability ratings.

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
ALU	100	-	NR	
BA8/B	100	-	4DW	
BA8/b	100	-	4DW	
BA8>BF8/B	60	40	4DW	3W
BF4/A>b	60	40	2D	2D
BF4/B	100	-	2D	
BF4/B>c	60	40	2D	2DT
BF4/C	100	-	2DE	
BF4/C>B	60	40	2DE	2D
BF4/C>d	60	40	2DE	3T
BF4/D	100	-	3T	
BF4/D>C	60	40	3T	2DE
BF4/b	100	-	2D	
BF4/b>B	60	40	2D	2D
BF4/b>C	60	40	2D	2DE
BF4/b>c	60	40	2D	2DT
BF4/b>d	60	40	2D	3T
BF4/c	100	-	2DT	
BF4/c>b	60	40	2DT	2D
BF4/c>d	60	40	2DT	3T
BF4/d	100	-	3T	
BF4/d>c	60	40	3T	2DT
BF4>BN4/B	70	30	2D	1
BF4>BN4/C	70	30	2DE	2E
BF4>BN4/b	70	30	2D	1
BF4>BN4/c	70	30	2DT	2T
BF4>BN4/c>d	70	30	2DT	3T
BF4>BN8/b	60	40	2D	2W
BF4>BO4.T/b	70	30	2D	1
BF4>BO4/B	70	30	2D	1
BF4>BO4/C	70	30	2DE	1
BF4>BO4/b	70	30	2D	1
BF4>BO4/b>C	70	30	2D	1
BF4>BO4/b>c	70	30	2D	2T
BF4>BO4/c	70	30	2DT	2T
BF4>BO4/c>b	70	30	2DT	1
BF4>BO4/c>d	70	30	2DT	3T
BF4>BO4/d>c	70	30	3T	2T
BF4>BO8/b	60	40	2D	2W
BF4>BT4/B	70	30	2D	1
BF4>BT4/C>D	70	30	2DE	3T
BF4>BT4/b	70	30	2D	1

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
BF4>BT4/c	70	30	2DT	2T
BF4>BT8/A	60	40	2D	2W
BF4>BT8/b	60	40	2D	2W
BF4>BU4/B	70	30	2D	2FM
BF4>BU4/b	70	30	2D	2FM
BF4>BU4/c	70	30	2DT	2ST
BF4>FO4/b>d	70	30	2D	3T
BF4>FO4/c>b	70	30	2DT	2F
BF4>FO8/C>B	60	40	2DE	2W
BF4>HU4/b	70	30	2D	2D
BF4>ME4/B	70	30	2D	3D
BF4>ME4/b	70	30	2D	3D
BF4>ME4/c	70	30	2DT	3DT
BF4>ME8/B>b	60	40	2D	3DW
BF4>ME8/b	60	40	2D	3DW
BF4>ME8/c	60	40	2DT	3DW
BF4>ME8/c>b	60	40	2DT	3DW
BF4>PL4/b	70	30	2D	3F
BF4>PL4/b>c	70	30	2D	3F
BF4>PL4/c>d	70	30	2DT	3FT
BF4>PL4/d	70	30	3T	3FT
BF4>PL8/c>b	60	40	2DT	3W
BF4>WF4/c	70	30	2DT	2MT
BF6/A	60	40	2D	3W
BF6/B	60	40	2D	3W
BF6/C>b	60	40	2DE	3W
BF6/b	60	40	2D	3W
BF6/c	60	40	2DT	3W
BF6/c>B	60	40	2DT	3W
BF6/c>b	60	40	2DT	3W
BF6/d>b	60	40	3T	3W
BF6/d>c	60	40	3T	3W
BF8/B	100	-	3W	
BF8/B>A	60	40	3W	3W
BF8/b	100	-	3W	
BF8/b>c	60	40	3W	3W
BF8/c>b	60	40	3W	3W
BF8>BO4.T/b>c	60	40	3W	2T
BF8>BO8/B	60	40	3W	2W
BF8>BO8/B>b	60	40	3W	2W
BF8>BO8/b	60	40	3W	2W
BF8>BT4/b	60	40	3W	1
BF8>BT8/B	60	40	3W	2W
BF8>BT8/b>c	60	40	3W	2WT
BF8>FO4/b>c	60	40	3W	2ST
BF8>ME8/b	60	40	3W	3DW
BF8>PL4/B	60	40	3W	3F
BF8>PL4/b	60	40	3W	3F
BF8>PL8/B	60	40	3W	3W
BF8>PL8/b	60	40	3W	3W
BF8>WF4/b	60	40	3W	1
BF9/B	60	40	3W	2D
BF9/b	60	40	3W	2D
BF9/b>B	60	40	3W	2D
BF9/b>c	60	40	3W	2DT
BF9/c	60	40	3W	2DT
BN4.T/B>C	60	40	1	2E
BN4.T/C	100	-	2E	
BN4.T/b	100	-	1	
BN4.T/b>c	60	40	1	2T
BN4.T/c	100	-	2T	
BN4.T/d>C	60	40	3T	2E
BN4.T>BF8/c>b	70	30	2T	3W
BN4.T>BT4/B	70	30	1	1
BN4.T>BT4/B>C	70	30	1	2E
BN4.T>BT4/b	70	30	1	1
BN4.T>BT4/b>c	70	30	1	2T
BN4.T>BT4/c	70	30	2T	2T
BN4.T>BT4/c>b	70	30	2T	1
BN4.T>BT8/B	60	40	1	2W
BN4.T>BT8/D>B	60	40	3T	2W
BN4.T>BT8/b	60	40	1	2W
BN4.T>HU4/B>C	70	30	1	2DE
BN4.T>HU4/b	70	30	1	2D
BN4.T>HU4/b>c	70	30	1	2DT
BN4.T>HU4/c	70	30	2T	2DT
BN4.T>HU4/c>b	70	30	2T	2D
BN4.T>HU4/c>d	70	30	2T	3T
BN4.T>HU8/b	60	40	1	3W
BN4.T>HY4/b	70	30	1	1
BN4.T>HY4/c	70	30	2T	2T
BN4.T>MU4/B	70	30	1	2D

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
BN4.T>MU4/B>C	70	30	1	2DE
BN4.T>MU4/B>c	70	30	1	2DT
BN4.T>MU4/C	70	30	2E	2DE
BN4.T>MU4/C>D	70	30	2E	3T
BN4.T>MU4/D	70	30	3T	3T
BN4.T>MU4/b>B	70	30	1	2D
BN4.T>MU4/b>C	70	30	1	2DE
BN4.T>MU4/b>c	70	30	1	2DT
BN4.T>MU4/c	70	30	2T	2DT
BN4.T>MU4/c>B	70	30	2T	2D
BN4.T>MU4/c>C	70	30	2T	2DE
BN4/C	100	-	2E	
BN4/D	100	-	3T	
BN4/b	100	-	1	
BN4/c	100	-	2T	
BN4/c>D	60	40	2T	3T
BN4>BF4/B>c	70	30	1	2DT
BN4>BF4/b	70	30	1	2D
BN4>BF4/c>d	70	30	2T	3T
BN4>BF8/b	60	40	1	3W
BN4>BO4.T/b	70	30	1	1
BN4>BO4/b	70	30	1	1
BN4>BT4/B	70	30	1	1
BN4>BT4/B>C	70	30	1	2E
BN4>BT4/b	70	30	1	1
BN4>BT4/b>c	70	30	1	2T
BN4>BT4/c	70	30	2T	2T
BN4>BT4/c>b	70	30	2T	1
BN4>WF4/b	70	30	1	1
BN6.T/B	60	40	1	2W
BN6.T/C>b	60	40	2E	2W
BN6.T/b	60	40	1	2W
BN6.T/c>b	60	40	2T	2W
BN6/B	60	40	1	2W
BN6/b	60	40	1	2W
BN6/c	60	40	2T	2WT
BN8.P>MU8/B>C	60	40	5W	3W
BN8.T/B	100	-	2W	
BN8.T/b	100	-	2W	
BN8.T>BT8/B	60	40	2W	2W
BN8.T>HU4/B	60	40	2W	2D
BN8.T>HU4/b	60	40	2W	2D
BN8.T>MU4/B>D	60	40	2W	3T
BN8.T>MU4/B>c	60	40	2W	2DT
BN8.T>MU4/b>C	60	40	2W	2DE
BN8.T>MU8/B	60	40	2W	3W
BN8.T>MU8/b	60	40	2W	3W
BN8.T>OD3/b	60	40	2W	NR
BN8.T>OS1/B	60	40	2W	NR
BN8/B	100	-	2W	
BN8/b	100	-	2W	
BN9.T/B	60	40	2W	1
BN9.T/B>C	60	40	2W	2E
BN9.T/B>c	60	40	2W	2T
BN9.T/b	60	40	2W	1
BN9.T/b>c	60	40	2W	2T
BN9/b	60	40	2W	1
BN9/b>c	60	40	2W	2T
BO4.T/B	100	-	1	
BO4.T/C>b	60	40	1	1
BO4.T/b	100	-	1	
BO4.T/b>c	60	40	1	2T
BO4.T/c	100	-	2T	
BO4.T/c>b	60	40	2T	1
BO4.T/d	100	-	3T	
BO4.T>BN8/b	60	40	1	2W
BO4.T>BT4/b	70	30	1	1
BO4.T>FO4/C	70	30	1	2FM
BO4.T>FO4/b	70	30	1	2F
BO4.T>HU4/C>b	70	30	1	2D
BO4.T>HU4/b	70	30	1	2D
BO4.T>HU4/b>c	70	30	1	2DT
BO4.T>HU4/c	70	30	2T	2DT
BO4.T>HU4/c>b	70	30	2T	2D
BO4.T>HU4/d	70	30	3T	3T
BO4.T>HU8/B	60	40	1	3W
BO4.T>HU8/c	60	40	2T	3W
BO4.T>MU4/C	70	30	1	2DE
BO4.T>MU4/D>C	70	30	2MT	2DE
BO4.T>MU4/c	70	30	2T	2DT
BO4.T>MU8/b>c	60	40	1	3W
BO4.T>PL4/b>A	70	30	1	3F

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
BO4.T>PL4/c	70	30	2T	3F
BO4.T>WF4/b	70	30	1	1
BO4/B	100	-	1	
BO4/b	100	-	1	
BO4/c	100	-	2T	
BO4/c>b	60	40	2T	1
BO4/d	100	-	3T	
BO4/d>c	60	40	3T	2T
BO4>BF4/B	70	30	1	2D
BO4>BF4/C>B	70	30	1	2D
BO4>BF4/b	70	30	1	2D
BO4>BF4/b>c	70	30	1	2DT
BO4>BF4/c	70	30	2T	2DT
BO4>BF4/c>d	70	30	2T	3T
BO4>BF4/d>c	70	30	3T	2DT
BO4>BF8/C>B	60	40	1	3W
BO4>BF8/b	60	40	1	3W
BO4>BF8/c	60	40	2T	3W
BO4>BF8/c>b	60	40	2T	3W
BO4>BF8/d>c	60	40	3T	3W
BO4>BN4/c	70	30	2T	2T
BO4>BT4/b	70	30	1	1
BO4>BT4/b>c	70	30	1	2T
BO4>BT4/c	70	30	2T	2T
BO4>FO4/b>c	70	30	1	2ST
BO4>FO4/c	70	30	2T	2ST
BO4>FO4/c>b	70	30	2T	2F
BO4>FO4/d>c	70	30	3T	2ST
BO4>ME4/c	70	30	2T	3DT
BO4>MU8/b	60	40	1	3W
BO4>PL4/B	70	30	1	3F
BO4>PL4/B>C	70	30	1	3F
BO4>PL4/B>c	70	30	1	3F
BO4>PL4/b>c	70	30	1	3F
BO4>PL4/c	70	30	2T	3F
BO4>PL4/c>d	70	30	2T	3FT
BO4>WF4/B>d	70	30	1	3T
BO4>WF4/c>b	70	30	2T	1
BO6.T/B	60	40	1	2W
BO6.T/b	60	40	1	2W
BO6.T/c	60	40	2T	2WT
BO6.T/c>b	60	40	2T	2W
BO6/b	60	40	1	2W
BO6/c>b	60	40	2T	2W
BO6/d>b	60	40	3T	2W
BO8.T/B	100	-	2W	
BO8.T/b	100	-	2W	
BO8.T>CA4/b	60	40	2W	2F
BO8.T>OS1/b	60	40	2W	NR
BO8.T>PL4/b	60	40	2W	3F
BO8/B	100	-	2W	
BO8/b	100	-	2W	
BO8>BF8/B	60	40	2W	3W
BO8>BF8/b	60	40	2W	3W
BO8>BF8/b>c	60	40	2W	3W
BO8>FO4/B>d	60	40	2W	3T
BO8>PL4/b>c	60	40	2W	3F
BO8>PL8/B	60	40	2W	3W
BO8>PL8/b	60	40	2W	3W
BO8>PL8/c	60	40	2WT	3W
BO8>WF8/b	60	40	2W	2W
BO9.T/b	60	40	2W	1
BO9/b	60	40	2W	1
BO9/b>c	60	40	2W	2T
BR4/B	100	-	1	
BR4/C	100	-	2E	
BR4/C>B	60	40	2E	1
BR4/C>D	60	40	2E	3T
BR4/C>b	60	40	2E	1
BR4/C>c	60	40	2E	2T
BR4/C>d	60	40	2E	3T
BR4/D	100	-	3T	
BR4/D>C	60	40	3T	2E
BR4/D>E	60	40	3T	4T
BR4/D>c	60	40	3T	2T
BR4/D>d	60	40	3T	3T
BR4/E>C	60	40	4T	2E
BR4/E>D	60	40	4T	3T
BR4/b	100	-	1	
BR4/b>C	60	40	1	2E
BR4/b>c	60	40	1	2T
BR4/c	100	-	2T	

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
BR4/c>D	60	40	2T	3T
BR4/c>b	60	40	2T	1
BR4/c>d	60	40	2T	3T
BR4/d	100	-	3T	
BR4/d>C	60	40	3T	2E
BR4/d>E	60	40	3T	4T
BR4/d>b	60	40	3T	1
BR4/d>c	60	40	3T	2T
BR4/d>e	60	40	3T	4T
BR4/e	100	-	4T	
BR4>BN4.T/C>b	70	30	2E	1
BR4>BN4.T/c>d	70	30	2T	3T
BR4>BT4/B	70	30	1	1
BR4>BT4/B>b	70	30	1	1
BR4>BT4/C>B	70	30	2E	1
BR4>BT4/C>b	70	30	2E	1
BR4>BT4/D>c	70	30	3T	2T
BR4>BT4/E>D	70	30	4T	3T
BR4>BT4/b	70	30	1	1
BR4>BT4/c	70	30	2T	2T
BR4>BT4/c>b	70	30	2T	1
BR4>BT4/c>d	70	30	2T	3T
BR4>BT8/C>B	60	40	2E	2W
BR4>BU4/D>C	70	30	3T	2FM
BR4>BU4/d>e	70	30	3T	4T
BR4>CA4/c	70	30	2T	2ST
BR4>HU4/B	70	30	1	2D
BR4>HU4/B>C	70	30	1	2DE
BR4>HU4/D>C	70	30	3T	2DE
BR4>HU4/c>d	70	30	2T	3T
BR4>HU8/c>b	60	40	2T	3W
BR4>HY4/B	70	30	1	1
BR4>HY4/B>C	70	30	1	2E
BR4>HY4/B>b	70	30	1	1
BR4>HY4/C	70	30	2E	2E
BR4>HY4/C>B	70	30	2E	1
BR4>HY4/C>D	70	30	2E	3T
BR4>HY4/C>b	70	30	2E	1
BR4>HY4/C>c	70	30	2E	2T
BR4>HY4/C>d	70	30	2E	3T
BR4>HY4/D>C	70	30	3T	2E
BR4>HY4/D>E	70	30	3T	4T
BR4>HY4/b	70	30	1	1
BR4>HY4/b>B	70	30	1	1
BR4>HY4/b>C	70	30	1	2E
BR4>HY4/b>c	70	30	1	2T
BR4>HY4/c	70	30	2T	2T
BR4>HY4/c>b	70	30	2T	1
BR4>HY8/B	60	40	1	2W
BR4>HY8/C	60	40	2E	2W
BR4>HY8/C>B	60	40	2E	2W
BR4>HY8/C>b	60	40	2E	2W
BR4>HY8/b>B	60	40	1	2W
BR4>HY8/c>b	60	40	2T	2W
BR4>HY8/d>b	60	40	3T	2W
BR4>MU4/c	70	30	2T	2DT
BR4>TE4/B	70	30	1	1
BR4>TE4/C>B	70	30	2E	1
BR4>TE4/b>d	70	30	1	3T
BR4>WA4.T/b	70	30	1	1
BR4>WF4/d>e	70	30	3T	4T
BR6/B	60	40	1	2W
BR6/C>B	60	40	2E	2W
BR6/C>b	60	40	2E	2W
BR6/b	60	40	1	2W
BR6/c	60	40	2T	2WT
BR6/c>b	60	40	2T	2W
BR6/d>b	60	40	3T	2W
BR6/d>c	60	40	3T	2WT
BR8/B	100	-	2W	
BR8>HY8/B	60	40	2W	2W
BR9/B	60	40	2W	1
BR9/b>d	60	40	2W	3T
BT4/B	100	-	1	
BT4/B>C	60	40	1	2E
BT4/B>c	60	40	1	2T
BT4/C	100	-	2E	
BT4/C>B	60	40	2E	1
BT4/C>D	60	40	2E	3T
BT4/D	100	-	3T	
BT4/b	100	-	1	
BT4/b>c	60	40	1	2T

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
BT4/c	100	-	2T	
BT4/c>b	60	40	2T	1
BT4/c>d	60	40	2T	3T
BT4/d	100	-	3T	
BT4/d>b	60	40	3T	1
BT4/d>e	60	40	3T	4T
BT4/e	100	-	4T	
BT4/e>d	60	40	4T	3T
BT4/e>f	60	40	4T	5T
BT4>BF4/b	70	30	1	2D
BT4>BF4/c	70	30	2T	2DT
BT4>BF4/c>b	70	30	2T	2D
BT4>BF4/c>d	70	30	2T	3T
BT4>BF8/c>B	60	40	2T	3W
BT4>BN4.T/B	70	30	1	1
BT4>BN4.T/B>b	70	30	1	1
BT4>BN4.T/C	70	30	2E	2E
BT4>BN4.T/C>b	70	30	2E	1
BT4>BN4.T/b>C	70	30	1	2E
BT4>BN4.T/b>c	70	30	1	2T
BT4>BN4.T/c	70	30	2T	2T
BT4>BN4.T/c>C	70	30	2T	2E
BT4>BN4/b	70	30	1	1
BT4>BN4/b>c	70	30	1	2T
BT4>BN4/c	70	30	2T	2T
BT4>BO4.T/C	70	30	2E	1
BT4>BO4.T/b>c	70	30	1	2T
BT4>BO4/b	70	30	1	1
BT4>BO4/b>c	70	30	1	2T
BT4>BO4/c	70	30	2T	2T
BT4>BR4/B>C	70	30	1	2E
BT4>BR4/B>c	70	30	1	2T
BT4>BR4/C>B	70	30	2E	1
BT4>BR4/C>b	70	30	2E	1
BT4>BR4/b	70	30	1	1
BT4>BR4/b>B	70	30	1	1
BT4>BR4/c>B	70	30	2T	1
BT4>BR4/d>b	70	30	3T	1
BT4>BR4/d>e	70	30	3T	4T
BT4>BU4/D>E	70	30	3T	3T
BT4>BU4/b>c	70	30	1	2ST
BT4>BU4/c>b	70	30	2T	2FM
BT4>CA4/c	70	30	2T	2ST
BT4>CA4/c>b	70	30	2T	2F
BT4>CA4/c>d	70	30	2T	3T
BT4>FO4/b>c	70	30	1	2ST
BT4>HU4/b	70	30	1	2D
BT4>HU4/c>b	70	30	2T	2D
BT4>HU8/b	60	40	1	3W
BT4>HY4/B>C	70	30	1	2E
BT4>HY4/B>b	70	30	1	1
BT4>HY4/B>c	70	30	1	2T
BT4>HY4/b	70	30	1	1
BT4>HY4/b>B	70	30	1	1
BT4>HY4/c	70	30	2T	2T
BT4>HY4/c>b	70	30	2T	1
BT4>HY8/b	60	40	1	2W
BT4>MU4/B>C	70	30	1	2DE
BT4>MU4/D	70	30	3T	3T
BT4>MU4/b	70	30	1	2D
BT4>OS1/B	60	40	1	NR
BT4>PL4/b	70	30	1	3F
BT4>PL4/b>c	70	30	1	3F
BT4>PL4/c	70	30	2T	3F
BT4>PL8/c>b	60	40	2T	3W
BT4>TE4/B	70	30	1	1
BT4>TE4/B>b	70	30	1	1
BT4>TE4/C	70	30	2E	2E
BT4>TE4/C>B	70	30	2E	1
BT4>TE4/b	70	30	1	1
BT4>TE4/c>b	70	30	2T	1
BT4>WA4.T/B>C	70	30	1	1
BT4>WA4/B>c	70	30	1	2T
BT4>WA8/c	60	40	2T	2WT
BT4>WF4/D>C	70	30	3T	2ME
BT4>WF4/c	70	30	2T	2MT
BT4>WF4/c>b	70	30	2T	1
BT4>WF4/e	70	30	4T	4T
BT4>WF8/c	60	40	2T	2WT
BT6/B	60	40	1	2W
BT6/B>b	60	40	1	2W
BT6/C>B	60	40	2E	2W

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
BT6/C>b	60	40	2E	2W
BT6/b	60	40	1	2W
BT6/b>B	60	40	1	2W
BT6/c	60	40	2T	2WT
BT6/c>b	60	40	2T	2W
BT8.P/B	100	-	5W	
BT8.P>MU4/B>D	60	40	5W	3T
BT8/B	100	-	2W	
BT8/b	100	-	2W	
BT8/c	100	-	2WT	
BT8>BF4/b	60	40	2W	2D
BT8>BF4/b>C	60	40	2W	2DE
BT8>BF8/B	60	40	2W	3W
BT8>BN4.T/B	60	40	2W	1
BT8>BN4/B	60	40	2W	1
BT8>BN8.T/B	60	40	2W	2W
BT8>BN8.T/b	60	40	2W	2W
BT8>BN8/B	60	40	2W	2W
BT8>BT8.P/B	60	40	2W	5W
BT8>HU4/B>D	60	40	2W	3T
BT8>HU4/b	60	40	2W	2D
BT8>HU4/b>d	60	40	2W	3T
BT8>HY4/B	60	40	2W	1
BT8>HY4/b	60	40	2W	1
BT8>HY8/B	60	40	2W	2W
BT8>HY8/b	60	40	2W	2W
BT8>MU4/B>C	60	40	2W	2DE
BT8>MU4/B>D	60	40	2W	3T
BT8>MU4/B>c	60	40	2W	2DT
BT8>MU4/b>c	60	40	2W	2DT
BT8>OD2/A	60	40	2W	NR
BT8>OD2/b	60	40	2W	NR
BT8>OU1/b	60	40	2W	NR
BT8>PL8/b	60	40	2W	3W
BT8>TE4/B	60	40	2W	1
BT8>TE4/b	60	40	2W	1
BT8>TE8/B	60	40	2W	2W
BT8>WF4/B	60	40	2W	1
BT9/B	60	40	2W	1
BT9/B>C	60	40	2W	2E
BT9/B>D	60	40	2W	3T
BT9/B>b	60	40	2W	1
BT9/b	60	40	2W	1
BT9/c	60	40	2WT	2T
BU4/B	100	-	2FM	
BU4/B>C	60	40	2FM	2FM
BU4/C	100	-	2FM	
BU4/C>D	60	40	2FM	2ST
BU4/C>d	60	40	2FM	3T
BU4/D	100	-	2ST	
BU4/D>E	60	40	2ST	3T
BU4/E	100	-	3T	
BU4/F>D	60	40	5T	2ST
BU4/b	100	-	2FM	
BU4/b>c	60	40	2FM	2ST
BU4/c	100	-	2ST	
BU4/c>d	60	40	2ST	3T
BU4/d	100	-	3T	
BU4/d>c	60	40	3T	2ST
BU4/d>e	60	40	3T	4T
BU4/e	100	-	4T	
BU4/f	100	-	5T	
BU4>BR4/C>B	70	30	2FM	1
BU4>BT4/G>B	70	30	6T	1
BU4>CA4/B	70	30	2FM	2F
BU4>CA4/C>B	70	30	2FM	2F
BU4>CA4/C>D	70	30	2FM	2ST
BU4>CA4/D>C	70	30	2ST	2FM
BU4>CA4/b	70	30	2FM	2F
BU4>CA4/c	70	30	2ST	2ST
BU4>CA4/c>b	70	30	2ST	2F
BU4>CA4/c>d	70	30	2ST	3T
BU4>FO4/G>e	70	30	6T	4T
BU4>TE4/B	70	30	2FM	1
BU4>TE4/C>B	70	30	2FM	1
BU4>TE4/b>d	70	30	2FM	3T
BU4>TE4/c	70	30	2ST	2T
BU4>TE4/c>b	70	30	2ST	1
BU8/b	100	-	2W	
CA4/B	100	-	2F	
CA4/B>C	60	40	2F	2FM
CA4/B>b	60	40	2F	2F

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
CA4/B>c	60	40	2F	2ST
CA4/C	100	-	2FM	
CA4/C>B	60	40	2FM	2F
CA4/C>b	60	40	2FM	2F
CA4/D	100	-	2ST	
CA4/b	100	-	2F	
CA4/b>c	60	40	2F	2ST
CA4/c	100	-	2ST	
CA4/c>b	60	40	2ST	2F
CA4/d	100	-	3T	
CA4/d>c	60	40	3T	2ST
CA4/d>e	60	40	3T	4T
CA4>BN4.T/b>c	70	30	2F	2T
CA4>BO4.T/c	70	30	2ST	2T
CA4>BO4/B>b	70	30	2F	1
CA4>BT4/D>E	70	30	2ST	4T
CA4>BU4/C>B	70	30	2FM	2FM
CA4>BU4/C>b	70	30	2FM	2FM
CA4>BU4/E>C	70	30	3T	2FM
CA4>BU4/E>D	70	30	3T	2ST
CA4>BU4/b	70	30	2F	2FM
CA4>BU4/c	70	30	2ST	2ST
CA4>BU4/c>b	70	30	2ST	2FM
CA4>BU4/c>d	70	30	2ST	3T
CA4>BU4/d	70	30	3T	3T
CA4>BU4/d>E	70	30	3T	3T
CA4>BU4/d>b	70	30	3T	2FM
CA4>FO4/C>b	70	30	2FM	2F
CA4>FO4/b	70	30	2F	2F
CA4>FO4/b>C	70	30	2F	2FM
CA4>FO4/c	70	30	2ST	2ST
CA4>FO4/c>b	70	30	2ST	2F
CA4>HU4/B>C	70	30	2F	2DE
CA4>PL4/b	70	30	2F	3F
CA4>PL4/d	70	30	3T	3FT
CA4>TE4/C	70	30	2FM	2E
CA4>TE4/D	70	30	2ST	3T
CA4>TE4/b>d	70	30	2F	3T
CA4>TE4/c>b	70	30	2ST	1
CA6/c	60	40	2ST	2WT
CA6/c>b	60	40	2ST	2W
CA8/b	100	-	2W	
CA9/b	60	40	2W	2F
ER	100	-	NR	
FO4/B	100	-	2F	
FO4/B>C	60	40	2F	2FM
FO4/C	100	-	2FM	
FO4/C>b	60	40	2FM	2F
FO4/D	100	-	2ST	
FO4/D>E	60	40	2ST	3T
FO4/b	100	-	2F	
FO4/b>A	60	40	2F	2F
FO4/b>c	60	40	2F	2ST
FO4/c	100	-	2ST	
FO4/c>b	60	40	2ST	2F
FO4/c>d	60	40	2ST	3T
FO4/d	100	-	3T	
FO4/d>b	60	40	3T	2F
FO4/d>c	60	40	3T	2ST
FO4>BF4/c	70	30	2ST	2DT
FO4>BN4/C	70	30	2FM	2E
FO4>BO4.T/B>C	70	30	2F	1
FO4>BO4/C	70	30	2FM	1
FO4>BO4/b	70	30	2F	1
FO4>BO4/b>c	70	30	2F	2T
FO4>BO4/c>b	70	30	2ST	1
FO4>BO8/b>c	60	40	2F	2WT
FO4>BR4/d	70	30	3T	3T
FO4>BT4/C>d	70	30	2FM	3T
FO4>BT4/d	70	30	3T	3T
FO4>BU4/c>B	70	30	2ST	2FM
FO4>CA4/B	70	30	2F	2F
FO4>CA4/B>C	70	30	2F	2FM
FO4>CA4/C	70	30	2FM	2FM
FO4>CA4/D>C	70	30	2ST	2FM
FO4>CA4/b	70	30	2F	2F
FO4>CA4/b>c	70	30	2F	2ST
FO4>CA4/c	70	30	2ST	2ST
FO4>CA4/c>b	70	30	2ST	2F
FO4>CA4/d>b	70	30	3T	2F
FO4>CA4/d>c	70	30	3T	2ST
FO4>MU4/b>c	70	30	2F	2DT

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
FO4>MU4/c	70	30	2ST	2DT
FO4>TE4/b>c	70	30	2F	2T
FO4>WF4/b>C	70	30	2F	2ME
FO6/b	60	40	2F	2W
FO6/c	60	40	2ST	2WT
FO8>FO8.P/B	60	40	2W	5W
FO8>OU1/B	60	40	2W	NR
FO8>WF8/B	60	40	2W	2W
FO8>WF8/b	60	40	2W	2W
FO9/B	60	40	2W	2F
FO9/B>c	60	40	2W	2ST
FO9/b	60	40	2W	2F
HU4/B	100	-	2D	
HU4/B>C	60	40	2D	2DE
HU4/B>b	60	40	2D	2D
HU4/C	100	-	2DE	
HU4/C>D	60	40	2DE	3T
HU4/C>b	60	40	2DE	2D
HU4/C>c	60	40	2DE	2DT
HU4/D	100	-	3T	
HU4/D>C	60	40	3T	2DE
HU4/D>E	60	40	3T	4T
HU4/D>c	60	40	3T	2DT
HU4/E	100	-	4T	
HU4/E>D	60	40	4T	3T
HU4/b	100	-	2D	
HU4/b>B	60	40	2D	2D
HU4/b>C	60	40	2D	2DE
HU4/b>c	60	40	2D	2DT
HU4/b>d	60	40	2D	3T
HU4/c	100	-	2DT	
HU4/c>D	60	40	2DT	3T
HU4/c>b	60	40	2DT	2D
HU4/c>d	60	40	2DT	3T
HU4/c>e	60	40	2DT	4T
HU4/d	100	-	3T	
HU4/d>C	60	40	3T	2DE
HU4/d>b	60	40	3T	2D
HU4/d>c	60	40	3T	2DT
HU4/d>e	60	40	3T	4T
HU4/e	100	-	4T	
HU4/e>f	60	40	4T	5T
HU4>BF4/b	70	30	2D	2D
HU4>BF4/c>d	70	30	2DT	3T
HU4>BN4.T/B	70	30	2D	1
HU4>BN4.T/B>C	70	30	2D	2E
HU4>BN4.T/C>B	70	30	2DE	1
HU4>BN4.T/C>b	70	30	2DE	1
HU4>BN4.T/b	70	30	2D	1
HU4>BN4.T/b>B	70	30	2D	1
HU4>BN4.T/b>c	70	30	2D	2T
HU4>BN4.T/c	70	30	2DT	2T
HU4>BN4.T/c>D	70	30	2DT	3T
HU4>BN4.T/c>b	70	30	2DT	1
HU4>BN4.T/c>d	70	30	2DT	3T
HU4>BN4.T/d	70	30	3T	3T
HU4>BN4/b	70	30	2D	1
HU4>BN8.T/B	60	40	2D	2W
HU4>BN8.T/B>b	60	40	2D	2W
HU4>BN8.T/C>b	60	40	2DE	2W
HU4>BN8.T/b	60	40	2D	2W
HU4>BN8.T/c>B	60	40	2DT	2W
HU4>BN8.T/c>b	60	40	2DT	2W
HU4>BO4.T/C>D	70	30	2DE	2MT
HU4>BO4.T/b	70	30	2D	1
HU4>BO4.T/b>c	70	30	2D	2T
HU4>BO4.T/c	70	30	2DT	2T
HU4>BO4.T/c>b	70	30	2DT	1
HU4>BO4/b	70	30	2D	1
HU4>BO8.T/c>b	60	40	2DT	2W
HU4>BR4/B	70	30	2D	1
HU4>BR4/C>D	70	30	2DE	3T
HU4>BR4/b	70	30	2D	1
HU4>BR4/b>B	70	30	2D	1
HU4>BR4/c	70	30	2DT	2T
HU4>BR4/c>D	70	30	2DT	3T
HU4>BR4/c>b	70	30	2DT	1
HU4>BR4/c>d	70	30	2DT	3T
HU4>BR4/d>c	70	30	3T	2T
HU4>BT4/C>b	70	30	2DE	1
HU4>BT4/D>c	70	30	3T	2T
HU4>BT4/b	70	30	2D	1

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
HU4>BT4/c	70	30	2DT	2T
HU4>BT4/c>b	70	30	2DT	1
HU4>BT4/d	70	30	3T	3T
HU4>BU4/b	70	30	2D	2FM
HU4>BU4/c	70	30	2DT	2ST
HU4>CA4/b	70	30	2D	2F
HU4>TE4/c	70	30	2DT	2T
HU6/B	60	40	2D	3W
HU6/C	60	40	2DE	3W
HU6/C>B	60	40	2DE	3W
HU6/C>b	60	40	2DE	3W
HU6/D>c	60	40	3T	3W
HU6/b	60	40	2D	3W
HU6/b>B	60	40	2D	3W
HU6/c	60	40	2DT	3W
HU6/c>B	60	40	2DT	3W
HU6/c>b	60	40	2DT	3W
HU6/d>b	60	40	3T	3W
HU6/d>c	60	40	3T	3W
HU8/B	100	-	3W	
HU8/B>c	60	40	3W	3W
HU8/b	100	-	3W	
HU8/b>c	60	40	3W	3W
HU8>BF8/b	60	40	3W	3W
HU8>BN4.T/B	60	40	3W	1
HU8>BN4.T/b	60	40	3W	1
HU8>BN4.T/c	60	40	3W	2T
HU8>BN8/B	60	40	3W	2W
HU8>BO4.T/B	60	40	3W	1
HU8>BO8.T/A	60	40	3W	2W
HU8>BO8.T/B	60	40	3W	2W
HU8>BO8.T/b	60	40	3W	2W
HU8>BT8/B	60	40	3W	2W
HU8>BT8/b	60	40	3W	2W
HU9/B	60	40	3W	2D
HU9/B>c	60	40	3W	2DT
HU9/b	60	40	3W	2D
HU9/b>c	60	40	3W	2DT
HU9/b>d	60	40	3W	3T
HU9/c	60	40	3W	2DT
HY4/B	100	-	1	
HY4/C	100	-	2E	
HY4/C>d	60	40	2E	3T
HY4/D>C	60	40	3T	2E
HY4/b	100	-	1	
HY4/b>C	60	40	1	2E
HY4/b>c	60	40	1	2T
HY4/d	100	-	3T	
HY4/d>C	60	40	3T	2E
HY4/d>e	60	40	3T	4T
HY4/e	100	-	4T	
HY4>BN4.T/b>B	70	30	1	1
HY4>BN4.T/c	70	30	2T	2T
HY4>BN4.T/c>d	70	30	2T	3T
HY4>BR4/B	70	30	1	1
HY4>BR4/B>C	70	30	1	2E
HY4>BR4/B>b	70	30	1	1
HY4>BR4/C	70	30	2E	2E
HY4>BR4/C>E	70	30	2E	4T
HY4>BR4/C>b	70	30	2E	1
HY4>BR4/b	70	30	1	1
HY4>BR4/b>B	70	30	1	1
HY4>BR4/b>c	70	30	1	2T
HY4>BR4/c	70	30	2T	2T
HY4>BR4/c>D	70	30	2T	3T
HY4>BR4/c>b	70	30	2T	1
HY4>BT4/B	70	30	1	1
HY4>BT4/C>D	70	30	2E	3T
HY4>BT4/b	70	30	1	1
HY4>BT4/b>B	70	30	1	1
HY4>BT4/b>c	70	30	1	2T
HY4>BT4/c>b	70	30	2T	1
HY4>BT8/B	60	40	1	2W
HY4>BT8/b	60	40	1	2W
HY4>BT8/b>B	60	40	1	2W
HY4>BT8/c	60	40	2T	2WT
HY4>HU4/B	70	30	1	2D
HY4>TE4/B	70	30	1	1
HY4>TE4/C>B	70	30	2E	1
HY4>TE4/c	70	30	2T	2T
HY4>WA4.T/B	70	30	1	1
HY4>WA4.T/C>B	70	30	2E	1

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
HY6/B	60	40	1	2W
HY6/B>b	60	40	1	2W
HY6/C>b	60	40	2E	2W
HY6/b	60	40	1	2W
HY6/b>B	60	40	1	2W
HY6/c>b	60	40	2T	2W
HY8/B	100	-	2W	
HY8/b	100	-	2W	
HY8>BR4/B>C	60	40	2W	2E
HY8>BR4/b	60	40	2W	1
HY8>BT8.P/B	60	40	2W	5W
HY8>BT8/B	60	40	2W	2W
HY9/B	60	40	2W	1
HY9/B>c	60	40	2W	2T
HY9/b	60	40	2W	1
HY9/b>c	60	40	2W	2T
ME4/B	100	-	3D	
ME4/b	100	-	3D	
ME4/c	100	-	3DT	
ME4/c>B	60	40	3DT	3D
ME4/c>b	60	40	3DT	3D
ME4/d	100	-	3DT	
ME4>BF4/B>b	70	30	3D	2D
ME4>BF4/C>D	70	30	3D	3T
ME4>BF4/b	70	30	3D	2D
ME4>BF4/b>c	70	30	3D	2DT
ME4>BF4/c>d	70	30	3DT	3T
ME4>BF8/d>c	60	40	3DT	3W
ME4>BO4/b	70	30	3D	1
ME4>BO4/b>c	70	30	3D	2T
ME4>BO4/c	70	30	3DT	2T
ME4>BO4/c>b	70	30	3DT	1
ME4>WF4/b>c	70	30	3D	2MT
ME6/b	60	40	3D	3DW
ME6/c	60	40	3DT	3DW
ME6/c>b	60	40	3DT	3DW
ME8>BF4/b	60	40	3DW	2D
ME8>BF4/b>C	60	40	3DW	2DE
ME9/b	60	40	3DW	3D
MU4/B	100	-	2D	
MU4/C	100	-	2DE	
MU4/C>B	60	40	2DE	2D
MU4/C>D	60	40	2DE	3T
MU4/C>c	60	40	2DE	2DT
MU4/C>d	60	40	2DE	3T
MU4/D	100	-	3T	
MU4/D>C	60	40	3T	2DE
MU4/D>E	60	40	3T	4T
MU4/E>C	60	40	4T	2DE
MU4/E>D	60	40	4T	3T
MU4/E>F	60	40	4T	5T
MU4/F	100	-	5T	
MU4/F>D	60	40	5T	3T
MU4/b	100	-	2D	
MU4/b>c	60	40	2D	2DT
MU4/c	100	-	2DT	
MU4/c>D	60	40	2DT	3T
MU4/c>b	60	40	2DT	2D
MU4/c>d	60	40	2DT	3T
MU4/d	100	-	3T	
MU4/d>C	60	40	3T	2DE
MU4/d>b	60	40	3T	2D
MU4/d>c	60	40	3T	2DT
MU4/d>e	60	40	3T	4T
MU4/e	100	-	4T	
MU4/e>d	60	40	4T	3T
MU4>BF4/c	70	30	2DT	2DT
MU4>BN4.T/C	70	30	2DE	2E
MU4>BN4.T/C>B	70	30	2DE	1
MU4>BN4.T/C>D	70	30	2DE	3T
MU4>BN4.T/C>c	70	30	2DE	2T
MU4>BN4.T/D>C	70	30	3T	2E
MU4>BN4.T/b>B	70	30	2D	1
MU4>BN4.T/b>c	70	30	2D	2T
MU4>BN4.T/c	70	30	2DT	2T
MU4>BN4.T/c>B	70	30	2DT	1
MU4>BN4.T/c>b	70	30	2DT	1
MU4>BN4.T/c>d	70	30	2DT	3T
MU4>BN4.T/d>B	70	30	3T	1
MU4>BN8.T/B	60	40	2D	2W
MU4>BN8.T/C>B	60	40	2DE	2W
MU4>BN8.T/C>b	60	40	2DE	2W

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
MU4>BN8.T/D>B	60	40	3T	2W
MU4>BN8.T/c>B	60	40	2DT	2W
MU4>BN8.T/c>b	60	40	2DT	2W
MU4>BO4.T/C>B	70	30	2DE	1
MU4>BO4.T/D>E	70	30	3T	3T
MU4>BO4.T/c>b	70	30	2DT	1
MU4>BO4/B>c	70	30	2D	2T
MU4>BO4/F	70	30	5T	5T
MU4>BO4/b>A	70	30	2D	1
MU4>BO4/c	70	30	2DT	2T
MU4>BT4/c	70	30	2DT	2T
MU4>BT4/c>b	70	30	2DT	1
MU4>BT8/c>b	60	40	2DT	2W
MU4>BT8/d>C	60	40	3T	2WE
MU4>BT8/d>b	60	40	3T	2W
MU4>BU4/C>B	70	30	2DE	2FM
MU4>FO8/c>b	60	40	2DT	2W
MU4>OD3/E>B	60	40	4T	NR
MU4>OU1/E>B	60	40	4T	NR
MU4>OU1/d>b	60	40	3T	NR
MU4>PL4/b>c	70	30	2D	3F
MU4>WF4/c	70	30	2DT	2MT
MU6/B	60	40	2D	3W
MU6/B>b	60	40	2D	3W
MU6/C>B	60	40	2DE	3W
MU6/C>b	60	40	2DE	3W
MU6/D>C	60	40	3T	3W
MU6/b	60	40	2D	3W
MU6/b>c	60	40	2D	3W
MU6/c	60	40	2DT	3W
MU6/c>b	60	40	2DT	3W
MU6/d>b	60	40	3T	3W
MU8.P/B	100	-	5W	
MU8.P>OS1/B	60	40	5W	NR
MU8.P>OS2/B	60	40	5W	NR
MU8/B	100	-	3W	
MU8/b	100	-	3W	
MU8>BO4.T/B	60	40	3W	1
MU8>BO4.T/b>c	60	40	3W	2T
MU8>BO8.T/b	60	40	3W	2W
MU8>OS1/B	60	40	3W	NR
MU9/B	60	40	3W	2D
MU9/b	60	40	3W	2D
MU9/b>C	60	40	3W	2DE
MU9/b>c	60	40	3W	2DT
NM	100	-	NR	
OD1/B	100	-	NR	
OD1>BO4/B>c	60	40	NR	2T
OD1>MU8/B	60	40	NR	3W
OD1>OS1/B	60	40	NR	NR
OD2/A	100	-	NR	
OD2/B	100	-	NR	
OD2>FO4/B>C	60	40	NR	2FM
OD3/B	100	-	NR	
OD3/b	100	-	NR	
OS1/A>b	60	40	NR	NR
OS1/B	100	-	NR	
OS1>BN8/B	60	40	NR	2W
OS1>PL8/B	60	40	NR	3W
OS2/B	100	-	NR	
OS2/b	100	-	NR	
OS2>BT8/B	60	40	NR	2W
OU1/B	100	-	NR	
OU1>MU8/B	60	40	NR	3W
PL4/B	100	-	3F	
PL4/B>c	60	40	3F	3F
PL4/C	100	-	3F	
PL4/b	100	-	3F	
PL4/b>c	60	40	3F	3F
PL4/c	100	-	3F	
PL4/c>b	60	40	3F	3F
PL4/c>d	60	40	3F	3FT
PL4/d	100	-	3FT	
PL4/d>c	60	40	3FT	3F
PL4>BF4/B>c	70	30	3F	2DT
PL4>BF4/b	70	30	3F	2D
PL4>BF4/b>c	70	30	3F	2DT
PL4>BF4/c	70	30	3F	2DT
PL4>BF4/c>b	70	30	3F	2D
PL4>BF8/b	60	40	3F	3W
PL4>BF8/c>b	60	40	3F	3W
PL4>BO4.T/C>B	70	30	3F	1

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
PL4>BO4.T/C>b	70	30	3F	1
PL4>BO4/B	70	30	3F	1
PL4>BO4/b	70	30	3F	1
PL4>BO4/b>c	70	30	3F	2T
PL4>BO4/c	70	30	3F	2T
PL4>BO4/c>D	70	30	3F	2MT
PL4>BO4/c>b	70	30	3F	1
PL4>BO4/c>d	70	30	3F	3T
PL4>BO4/d>C	70	30	3F	1
PL4>BO4/d>c	70	30	3FT	2T
PL4>BO8.T/b	60	40	3F	2W
PL4>BO8/b	60	40	3F	2W
PL4>BO8/b>A	60	40	3F	2W
PL4>BO8/c>B	60	40	3F	2W
PL4>BO8/c>b	60	40	3F	2W
PL4>BT4/b	70	30	3F	1
PL4>BT4/b>c	70	30	3F	2T
PL4>BT4/c	70	30	3F	2T
PL4>BT8/c>b	60	40	3F	2W
PL4>CA4/c	70	30	3F	2ST
PL4>FO4/c>b	70	30	3F	2F
PL4>ME4/b>c	70	30	3F	3DT
PL4>WF4/b	70	30	3F	1
PL4>WF4/b>c	70	30	3F	2MT
PL4>WF4/c>d	70	30	3F	3T
PL4>WF8/B	60	40	3F	2W
PL6/b	60	40	3F	3W
PL6/c	60	40	3F	3W
PL6/c>b	60	40	3F	3W
PL6/d>c	60	40	3FT	3W
PL8/B	100	-	3W	
PL8/b	100	-	3W	
PL8/c	100	-	3W	
PL8>BO8.T/b	60	40	3W	2W
PL8>WF4/b>c	70	30	3W	2MT
PL9/B	60	40	3W	3F
PL9/b	60	40	3W	3F
PL9/b>c	60	40	3W	3F
PL9/c	60	40	3W	3F
TE4/B	100	-	1	
TE4/C	100	-	2E	
TE4/C>b	60	40	2E	1
TE4/D	100	-	3T	
TE4/D>C	60	40	3T	2E
TE4/b	100	-	1	
TE4/b>c	60	40	1	2T
TE4/c	100	-	2T	
TE4/c>D	60	40	2T	3T
TE4/d>b	60	40	3T	1
TE4>BF4/B	70	30	1	2D
TE4>BR4/d	70	30	3T	3T
TE4>BT4/B	70	30	1	1
TE4>BT4/b	70	30	1	1
TE4>BT4/c	70	30	2T	2T
TE4>BT4/c>B	70	30	2T	1
TE4>BT8/B	60	40	1	2W
TE4>BT8/c>b	60	40	2T	2W
TE4>BU4/B	70	30	1	2FM
TE4>BU4/B>C	70	30	1	2FM
TE4>BU4/B>c	70	30	1	2ST
TE4>BU4/C	70	30	2E	2FM
TE4>BU4/C>B	70	30	2E	2FM
TE4>BU4/D>C	70	30	3T	2FM
TE4>BU4/b	70	30	1	2FM
TE4>BU4/b>c	70	30	1	2ST
TE4>BU4/c>D	70	30	2T	2ST
TE4>BU4/d>B	70	30	3T	2FM
TE4>CA4/B	70	30	1	2F
TE4>HY4/b	70	30	1	1
TE4>HY4/c>b	70	30	2T	1
TE6/B	60	40	1	2W
TE6/C>B	60	40	2E	2W
TE6/c>b	60	40	2T	2W
TE8>BT8/B	60	40	2W	2W
TE8>CA8/B	60	40	2W	2W
TE9/b	60	40	2W	1
VC	100	-	NR	
WA4.T/C	100	-	1	
WA4.T/b>C	60	40	1	1
WA4.T/c>b	60	40	2T	1
WA4.T>BN4.T/C>b	70	30	1	1
WA4.T>BR4/B>C	70	30	1	2E

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
WA4.T>BR4/B>b	70	30	1	1
WA4.T>BR4/C>B	70	30	1	1
WA4.T>BR4/e	70	30	4T	4T
WA4.T>BT4/B	70	30	1	1
WA4.T>BT8/b	60	40	1	2W
WA4.T>BU4/C	70	30	1	2FM
WA4.T>CA4/C>B	70	30	1	2F
WA4.T>CA4/b>c	70	30	1	2ST
WA4.T>HY4/B	70	30	1	1
WA4.T>HY4/b>c	70	30	1	2T
WA4.T>TE4/C>b	70	30	1	1
WA4.T>WF4/d	70	30	3T	3T
WA4/c	100	-	2T	
WA4>BO4/B>c	70	30	1	2T
WA4>BR4/B>C	70	30	1	2E
WA4>BT4/B>C	70	30	1	2E
WA4>BT4/b	70	30	1	1
WA4>BT4/c>b	70	30	2T	1
WA4>BT8/C>b	60	40	1	2W
WA4>BT8/c>B	60	40	2T	2W
WA4>CA8/d>b	60	40	3T	2W
WA4>WF4/B	70	30	1	1
WA6.T/C>B	60	40	1	2W
WA6.T/c>b	60	40	2T	2W
WA6/b	60	40	1	2W
WA8.T>OU1/B	60	40	2W	NR
WA8/b	100	-	2W	
WA8>BT8.P/b	60	40	2W	5W
WA9/B	60	40	2W	1
WF4/B	100	-	1	
WF4/C	100	-	2ME	
WF4/C>B	60	40	2ME	1
WF4/C>D	60	40	2ME	3T
WF4/C>c	60	40	2ME	2MT
WF4/D	100	-	3T	
WF4/D>C	60	40	3T	2ME
WF4/b	100	-	1	
WF4/b>c	60	40	1	2MT
WF4/c	100	-	2MT	
WF4/c>B	60	40	2MT	1
WF4/c>D	60	40	2MT	3T
WF4/c>b	60	40	2MT	1
WF4/c>d	60	40	2MT	3T
WF4/d	100	-	3T	
WF4/d>c	60	40	3T	2MT
WF4>B08/c	60	40	2MT	2WT
WF4>BF4/c>b	70	30	2MT	2D
WF4>BF8/b	60	40	1	3W
WF4>BF8/c	60	40	2MT	3W
WF4>BF8/d>c	60	40	3T	3W
WF4>BN4/c>d	70	30	2MT	3T
WF4>BO4.T/B	70	30	1	1
WF4>BO4.T/C>B	70	30	2ME	1
WF4>BO4.T/b>c	70	30	1	2T
WF4>BO4/c	70	30	2MT	2T
WF4>BO4/c>b	70	30	2MT	1
WF4>BO8/c	60	40	2MT	2WT
WF4>BO8/c>b	60	40	2MT	2W
WF4>BR4/B	70	30	1	1
WF4>BT4/b>c	70	30	1	2T
WF4>BT4/c	70	30	2MT	2T
WF4>BT4/d	70	30	3T	3T
WF4>BT8/B	60	40	1	2W
WF4>BT8/C>B	60	40	2E	2W
WF4>BT8/b	60	40	1	2W
WF4>BU4/D>E	70	30	3T	3T
WF4>CA4/B	70	30	1	2F
WF4>CA4/c>B	70	30	2MT	2F
WF4>FO4/B>C	70	30	1	2FM
WF4>FO4/D	70	30	3T	2ST
WF4>FO4/b	70	30	1	2F
WF4>HU4/d	70	30	3T	3T
WF4>HU4/d>c	70	30	3T	2DT
WF4>PL4/c	70	30	2MT	3F
WF4>PL4/c>b	70	30	2MT	3F
WF4>TE4/B>b	70	30	1	1
F4>WA4.T/B	70	30	1	1
WF4>WA4.T/C>B	70	30	2ME	1
WF4>WA4.T/C>b	70	30	2ME	1
WF4>WA4/B	70	30	1	1
WF4>WA4/c>b	70	30	2MT	1
WF6/C>B	60	40	2ME	2W

Table 5. Agricultural land capability for soil map delineation symbols in Middlesex County (continued)

Map delineation symbol	Areal extent		CLI rating		Map delineation symbol	Areal extent		CLI rating	
	Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit		Dominant landscape unit	Significant landscape unit	Dominant landscape unit	Significant landscape unit
WF6/b	60	40	1	2W	WF8>FO8/B	60	40	2W	2W
WF6/c	60	40	2MT	2WT	WF8>PL4/B>c	60	40	2W	3F
WF6/c>b	60	40	2MT	2W	WF8>PL4/b>c	60	40	2W	3F
WF6/d>c	60	40	3T	2WT	WF8>PL8/B	60	40	2W	3W
WF8.P/B	100	-	5W		WF8>PL8/b	60	40	2W	3W
WF8.P>OS2/b	60	40	5W	NR	WF8>WA8.T/B	60	40	2W	2W
WF8/B	100	-	2W		WF9/B	60	40	2W	1
WF8/C>b	60	40	2WE	2W	WF9/B>C	60	40	2W	2ME
WF8/b	100	-	2W		WF9/b	60	40	2W	1
WF8/b>c	60	40	2W	2WT	WF9/b>c	60	40	2W	2MT
WF8/c	100	-	2WT		WF9/c	60	40	2WT	2MT
WF8>BT8/B	60	40	2W	2W					

(5) Areal Extent of Agricultural Capability Classes

The areal extent of each agricultural capability class is presented in Table 6. The hectares were determined using the capability ratings in Table 5, in combination with the hectarages for the individual map delineations shown on the 1:50,000 soil maps. The area of each map delineation was calculated by a geographic information system.

Table 6. Areal Extent of Agricultural Capability Classes in Middlesex County

Agricultural Capability Class	Areal Extent by Map Sheets (hectares)			
	Sheet 1 (McGillivray, West Williams, Adelaide, East Williams, Lobo Townships)	Sheet 2 (Caradoc, Delaware, Metcalfe, Ekfrid, Mosa Townships)	Sheet 3 (Biddulph, London, North Dorchester, West Nissouri, Westminster Townships)	Total Hectares by Agricultural Capability Class
Class 1	7,292	7,367	31,097	45,756
Class 2	55,395	44,654	57,023	157,072
Class 3	21,128	37,520	10,473	69,121
Class 4	1,552	125	1,783	3,460
Class 5	35	68	658	761
Class 6	-	-	38	38
Class 7	-	-	-	-
Not Rated*	13,289	11,967	30,757	56,013
Total Area	98,691	101,701	131,829	332,221

* *Includes organic landscape units, alluvium, eroded channels and valley complexes. Most soils within these map units would have an agricultural capability rating of of Classes 5, 6 or 7. Not mapped areas are included in the not rated category. The areas occupied by lakes, rivers and other water bodies are not included.*

Using the total hectares of agricultural capability classes presented in Table 6, the relative percentage of the total land area of the County in each class can be determined. They are as follows: 13.8% is Class 1; 47.3% is Class 2; 20.8% is Class 3; 1.0% is Class 4; 0.2% is Class 5; 0.01% Class 6; 0% Class 7 and 16.9% is Not Rated.

B. Agricultural Suitability Classification For Special Crops

The Canada Land Inventory (CLI) classification system of land capability for agriculture is designed for common field crops, such as forages, small grains and corn. It does not include field crops such as soybeans and tobacco, or horticultural crops. These crops are referred to as "special crops".

Since a large portion of Middlesex County is used for the production of special crops, a suitability classification system was devised for selected crops for the soil landscape units mapped in the County. Classes and class definitions of the system were adapted from the United Nations, Food and Agriculture Organization (FAO) bulletin, *A Framework for Land Evaluation* (26), and the soil reports for the Regions of Haldimand-Norfolk (27) and Niagara (28).

Suitability ratings were determined for crops which are currently being grown, or may become economically important in the future. The ratings are based on information obtained from field observations, agricultural research and extension personnel, and from a review of relevant literature. Important references included: *Climate and Soil Requirements for Economically Important Crops in Canada* (29) and *A Compilation of Soil, Water and Climatic Requirements for Selected Horticultural Crops in Southern Ontario* (30).

Tables 8, 9, and 10 indicate the suitability ratings of a number of special crops for the soil landscape units mapped in the County. Individual crops were sometimes grouped, if their responses to various soil conditions, landscape factors and management practices were similar. The crop groups are listed in Table 7.

Table 7. Special crop groups in Middlesex County

Crop groups	Vegetable crops (see Table 8)	Special field crops (see Table 9)	Fruit crops (see Table 10)
1	Asparagus	Tobacco	Raspberries, strawberries
2	Sweet potatoes	Peanuts	Apples, walnuts
3	Irish potatoes	Rutabagas	Pears, plums, heart nuts, filbert nuts
4	Cucumbers	Soybeans	
5	Tomatoes	White beans	
6	Peppers	Spring canola	
7	Sweet corn	Winter rapeseed	
8	Brussels sprouts, cauliflower, cabbage		

(1) Climatic Considerations

The climate of Middlesex County has been discussed in a previous section of this report. Although fruit and vegetable crops, and some special field crops such as tobacco and peanuts are very sensitive to climatic parameters, the means and ranges for the three climatic regions were not factored into the suitability ratings. For most crops, the micro-climate of the site may be equally or more important than the climatic variability within the County. Additional information on the effect of climate on horticultural crop production in Southern Ontario is contained in Brown and Place (31).

(2) Soil Suitability Classes

The soil suitability classification for special crops in Middlesex County contains five classes. The best soils are designated as Class S1. Soils designated with Classes S2 to S4 have decreasing suitability for special crops. Soils rated Class N are not suitable for the production of special crops.

Class S1 - Soil limitations are not significant to crop growth and yields and range from slight to moderate.

Class S2 - Soil limitations to crop growth and yields range from moderate to severe.

Class S3 - Soil limitations to crop growth and yields are severe.

Class S4 - Soil limitations for crop growth and yields are very severe.

Class N - Soil limitations to crop growth and yields are so severe that soils are considered unsuitable for special crops, even if drainage and irrigation are applied.

Assumptions

Before using the soil suitability tables it is important to have an understanding of the following assumptions, upon which the classification system is based. Although the assumptions have been adapted from those outlined in The Canada Land Inventory Soil Classification for Agriculture (20), they also apply to the suitability ratings.

(a) Good soil management practices that are feasible and practical under a largely mechanized system of agriculture are assumed. These practices include a proper fertility program, management practices that result in good soil structure and crop growth, and management programs that result in minimum damage or risk of damage to the soil.

(b) Distance to markets, accessibility to transport, location, size of farm, field shape and accessibility to machinery, type of ownership, cultural patterns, skill or resources of individual operators or hazards of crop damage by storms are not considered in this classification system.

(c) Soil suitability ratings are subject to change if new technology or management practices are widely adopted. e.g. drainage or irrigation, or as new information about crop yields or the behaviour and responses of the soils becomes available.

(3) How to Determine Special Crop Suitability Ratings from the Soil Map

The soil suitability ratings are presented in alphabetical order by soil association in Tables 8, 9 and 10. The individual soils which belong to the association and their drainage classes are listed following the name of the association. Suitability ratings are listed by landscape unit for each slope class. For landscape units numbered 8, a single rating is given because these landscape units consist predominantly of poorly drained soils.

For landscape units numbered 4, the suitability ratings are presented as a range, because these landscape units are composed of the imperfectly and better-drained soils of an association. The suitability ratings are a combination of the individual ratings for the imperfectly drained soil and the better-drained soil.

For landscape units numbered 6 and 9, which have dominant and significant drainage components, the suitability ratings for each drainage component must be determined separately. In Tables 8, 9 and 10, the ratings for the dominant drainage component are listed first, followed by the ratings for the significant drainage component.

In all cases where a range in the suitability ratings is indicated, one of the ratings appears in bold-face type. This convention identifies the suitability rating of the most commonly occurring drainage class and association member in a landscape unit on a specific slope class. It is based on the typical distribution of soils and drainage classes with topography for all landscape units with the same delineation symbol on the 1:50,000 soil maps. For example, for Table 8, on A, B and b slopes, BO4 landscape units mainly consist of imperfectly drained Berrien soil which are rated Class S3 for asparagus.

Because the extent of imperfectly and better-drained soils varies within individual delineations, it is recommended that the ratings in bold-face type be used only to ascertain a regional overview of the soil suitability for a specific crop or crop group. The rating in bold-face type should not be used in larger scale studies. In those situations, a site investigation is recommended in order to determine the extent of each of the drainage classes. Refer to Appendix 2 for information of conducting site assessments. Once the relative proportion of individual soils has been

determined, the suitability ratings of the individual soils can be assigned using Tables 8, 9 and 10.

The suitability ratings are based on the inherent properties of the soils. An improvement in the ratings is possible for some crops on certain soils as a result of tile drainage and/or irrigation. The equivalent number of classes this improvement represents is indicated by +1, +2 or +3 under the column entitled Slope classes/Management factors. A dash means that no improvement in the rating is expected even if drainage and irrigation are feasible or in place. Where the rating is Class N, these soils are considered to be unsuitable for special crops and therefore cannot be improved with tile drainage or irrigation. Because tile drainage and/or irrigation are common management practices associated with the production of special crops, it may be appropriate to use the improved ratings in most situations.

The following four examples outline the steps for determining the appropriate suitability rating for delineations on the 1:50,000 soil map.

Example 1. $\frac{\text{BO8.T}}{\text{b}}$

1. Using the Key to Symbols of Map Delineations on the border of the soil map, this delineation consists of a landscape unit with a single soil drainage component (BO8), with a soil phase (T). and it occurs on slope class b.
2. Using the soil legend on the border of the soil map, the soil landscape unit belong to the Bookton Association (BO) and the dominant drainage component is poor. There is no significant drainage component.
3. To determine the suitability rating for apples from Table 10, locate the Bookton Association and the BO8.T landscape unit in column 1. The soil associations are listed in alphabetical order in the table and the landscape units appear in numerical order following the association name.
4. Move horizontally to the column entitled Crop groups. The footnotes indicate that apples are included in crop group 2. Using the second column under Crop groups, move down the column until the appropriate slope class is intersected. In this example, the slope class is b. Therefore, the suitability rating is Class S4. The rating can, however, be upgraded by two classes if tile drainage is feasible or in place. Under these conditions, the suitability rating would be Class S2.

Example 2. $\frac{\text{BO6.T}}{\text{d > b}}$

1. Using the Key to Symbols of Map Delineations on the border of the soil map, this delineation consists of a landscape unit with dominant and significant drainage components (BO6), with a soil phase (T). The dominant drainage component occurs on d slopes and the significant component is associated with b slopes.
2. Using the soil legend on the border of the soil map, the soil landscape unit belong to the Bookton Association (BO) and the dominant drainage component is well to imperfect and the significant drainage component is poor.
3. To determine the suitability rating for apples from Table 10, locate the Bookton Association and the BO6.T landscape unit in column 1. The soil associations are listed in alphabetical order in the table and the landscape units appear in numerical order following the association name.
4. Move horizontally to the column entitled Crop groups. The footnotes indicate that apples are included in crop group 2. Using the second column under Crop groups, move down the column until the appropriate slope class is intersected. In this example, the slope class of the well to imperfectly drained component is d. Therefore, the suitability rating of the dominant component ranges from Classes S1 - S2. Because the slope class of the poorly drained component is b, the suitability rating of the significant component is Class S4. The rating can, however, be upgraded by two classes if tile drainage is feasible or in place. Under these condition, the suitability rating of the significant component would be S2. The suitability rating for apples of the BO6.T landscape unit on d and b slopes would therefore be either S1 - S2 > S4 or S1 - S2 > S2, depending on the feasibility of drainage.
5. It is possible to generalize the suitability rating, if the purpose for determining the ratings is to ascertain a regional overview of the soil suitability for apples. Assuming that this is the situation, the rating for the dominant drainage component could be simplified to S2 and the rating for the delineation symbol would therefore be S2 > S4 or S2 > S2. The latter rating can be further simplified to S2, because the dominant and significant components have the same rating.

Example 3. $\frac{\text{BO4.T} > \text{HU4}}{\text{b}}$

1. Using the Key to Symbols of Map Delineations on the border of the soil map, this delineation consists of two landscape units. The dominant landscape unit is the BO4.T unit and it occurs on b slopes. The significant landscape unit is the HU4 unit, which is also associated with b slopes.
2. Using the soil legend on the border of the soil map, the dominant soil landscape unit belongs to the Bookton Association (BO) and it is well to imperfectly drained. The significant soil landscape unit is a member of the Huron Association (HU), and is also well to imperfectly drained.
3. To determine the suitability rating for apples from Table 10, locate the Bookton Association and the BO4.T landscape unit in column 1. The soil associations are listed in alphabetical order in the table and the landscape units appear in numerical order following the association name.
4. Move horizontally to the column entitled Crop groups. The footnotes indicate that apples are included in crop group 2. Using the second column under Crop groups, move down the column until the appropriate slope class is intersected. In this example, the slope class of the well to imperfectly drained component is b. Therefore, the suitability rating of the dominant component ranges from Classes S1 - S2.
5. Repeating steps 3 and 4 for the HU4 landscape unit, the rating for the significant landscape unit is Classes S1 - S2.
6. Combining the ratings for the individual landscape units the suitability rating for the delineation symbol, $\frac{\text{BO4.T} > \text{HU4}}{\text{b}}$, is

   S1 - S2 > S1 - S2. Because the dominant and significant landscape units have the same rating, it can be simplified to Classes S1 - S2.
7. It is possible to generalize the suitability rating, if the purpose for determining the ratings is to ascertain a regional overview of the soil suitability for apples. Assuming that this is the situation, the rating for both the dominant and significant drainage components could be generalized to Class S2 and the rating for the delineation symbol would therefore be S2 > S2. Because the dominant and significant components have the same rating, the rating can be simplified to S2.

Example 4. $\frac{\text{BO4} > \text{BF8}}{\text{d} > \text{b}}$

1. Using the Key to Symbols of Map Delineations on the border of the soil map, this delineation consists of two landscape units. The dominant landscape unit is the BO4 unit and it occurs on d slopes. The significant landscape unit is the BF8 unit, which is associated with b slopes.
2. Using the soil legend on the border of the soil map, the dominant soil landscape unit belongs to the Bookton Association (BO) and it is well to imperfectly drained. The significant soil landscape unit is a member of the Brantford Association (BF), and it is poorly drained.
3. To determine the suitability rating for apples from Table 10, locate the Bookton Association and the BO4 landscape unit in column 1. The soil associations are listed in alphabetical order in the table and the landscape units appear in numerical order following the association name.
4. Move horizontally to the column entitled Crop groups. The footnotes indicate that apples are included in crop group 2. Using the second column under Crop groups, move down the column until the appropriate slope class is intersected. In this example, the slope class of the well to imperfectly drained component is d. Therefore, the suitability rating of the dominant component ranges from Classes S1 -S2.
5. Repeating steps 3 and 4 for the BF8 landscape unit, the rating for the significant landscape unit is Class S4. The rating can, however, be upgraded by two classes if tile drainage is feasible or in place. Under these conditions, the suitability rating for the significant landscape unit would be Class S2.
6. Combining the ratings for the individual landscape units the suitability rating for the delineation symbol, $\frac{\text{BO4} > \text{BF8}}{\text{d} > \text{b}}$, is

   S1 - S2 > S4, or if drainage is feasible or in place, the rating is S1 - S2 > S2.
7. It is possible to generalize the suitability rating, if the purpose for determining the ratings is to ascertain a regional overview of the soil suitability for apples. Assuming that this is the situation, the rating for the dominant drainage component be generalized to Class S1 and the rating for the delineation symbol would therefore be S1 > S4, or S1 > S2, depending on the feasibility of drainage.

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Alluvium											
ALU							Not Rated				
Bennington Association (W-Bennington; I-Tavistock; P-Maplewood)											
BN4	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S4	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	+1 +1	- -	- -
BN4.T	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S4	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	+1 +1	- -	- -
BN6	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S4	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	+1 +1	- -	- -
		P	A,B,b	S4	S4	S4	S4	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BN6.T	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S4	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	+1 +1	- -	- -
		P	A,B,b	S4	S4	S4	S4	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
BN8****	P		A,B,b	S4	S4	S4	S4	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BN8.T	P		A,B,b	S4	S4	S4	S4	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BN9	P		A,B,b	S4	S4	S4	S4	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S2 -S3	S2 - S3	S2 - S3	S1 - S2	S1 -S2	S1 - S2	S1 -S2	S1 -S2
			C,c	S2 -S3	S2 - S3	S2 - S3	S1 - S2	S1 -S2	S2 - S3	S1 -S2	S1 -S2
			D,d	S3 -S4	S2 - S3	S2 - S3	S1 - S2	S1 -S2	S2 - S3	S1 -S2	S1 -S2
			E,e	S4	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	+1 +1	- -	- -
BN9.T	P		A,B,b	S4	S4	S4	S4	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S2 -S3	S2 - S3	S2 - S3	S1 - S2	S1 -S2	S1 - S2	S1 -S2	S1 -S2
			C,c	S2 -S3	S2 - S3	S2 - S3	S1 - S2	S1 -S2	S2 - S3	S1 -S2	S1 -S2
			D,d	S3 -S4	S2 - S3	S2 - S3	S1 - S2	S1 -S2	S2 - S3	S1 -S2	S1 -S2
			E,e	S4	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	+1 +1	- -	- -
Blackwell Association (P-Blackwell)											
BA8	P		A,B,b	N	N	N	S4	S4	N	S4	S3
			C,c	N	N	N	S4	S4	N	S4	S4
			Drainage	-	-	-	+1	+1	-	+1	+1
			Irrigation	-	-	-	-	-	-	-	-

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Bookton Association (W-Bookton; I-Berrien; P-Wauseon)											
BO4	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1
BO4.T	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1
BO6	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1
		P	A,B,b	S4	S4	S4	S4	S4	S3	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BO6.T	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1
		P	A,B,b	S4	S4	S4	S4	S4	S3	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
BO8	P		A,B,b	S4	S4	S4	S4	S4	S3	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BO8.T	P		A,B,b	S4	S4	S4	S4	S4	S3	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BO9	P		A,B,b	S4	S4	S4	S4	S4	S3	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1
BO9.T	P		A,B,b	S4	S4	S4	S4	S4	S3	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1
Brant Association (W-Brant; I-Tuscola; P-Colwood)											
BT4	W-I		A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
BT6	W-I		A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BT8****	P		A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BT9	P		A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
Brantford Association (MW-Brantford; I-Beverly; P-Toledo)											
BF4	MW-I		A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S3	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

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Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
BF6	MW-I		A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S3	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BF8	P		A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BF9	P		A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		MW-I	A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S3	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
Bryanston Association (W-Bryanston; I-Thorndale; P-Nissouri)											
BR4	W-I		A,B,b	S1 - S2	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S4	S4	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
BR6	W-I		A,B,b	S1 - S2	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S4	S4	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BR8	P		A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
BR9	P		A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S1 - S2	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S4	S4	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
Burford Association (R-Burford; I-Brisbane; P-Gilford)											
BU4	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S3 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S4	S4	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1	- -	+1 +1
BU8	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+1	+1	+1	+1	+1	+1	+1
			Irrigation	+1	+1	+1	+1	+1	+1	+1	+1

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Caledon Association (R-W-Caledon; I-Camilla; P-Ayr)											
CA4	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2	S2	S3	S2	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1
CA6	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2	S2	S3	S2	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+3	+3	+2	+2	+3	+3	+2
			Irrigation	-	-	-	-	-	-	-	-
CA8	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+3	+3	+2	+2	+3	+3	+2
			Irrigation	-	-	-	-	-	-	-	-
CA9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+3	+3	+2	+2	+3	+3	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2	S2	S3	S2	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1
Eroded Channel											
ER				Not Rated							

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Fox Association (R-Fox; I-Brady; P-Granby)											
F04	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1
FO6	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+3	+3	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
FO8****	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+3	+3	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
FO9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+3	+3	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		R-I	A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S3	S3	S3	S3	S3	S3	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	+1 +1

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Honeywood Association (W-Honeywood; I-Embro; P-Crombie)											
HY4	W-I		A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
HY6	W-I		A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
HY8	P		A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
HY9	P		A,B,b	S4	S4	S4	S3	S3	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Huron Association (MW-Huron; I-Perth; P-Brookston)											
HU4	MW-I		A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S2	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
HU6	MW-I		A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S2	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
HU8	P		A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
HU9	P		A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		MW-I	A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S2	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Melbourne Association (MW-Melbourne; I-Ekfrid; P-Strathburn)											
ME4	MW-I		A,B,b	N - N	N - N	N - N	S2 - S3	S2 - S3	N - N	S2 - S3	S2 - S3
			C,c	N - N	N - N	N - N	S2 - S3	S2 - S3	N - N	S3 - S4	S2 - S3
			D,d	N - N	N - N	N - N	S3 - S4	S2 - S3	N - N	S3 - S4	S2 - S3
			E,e	N	N	N	N	S3	N	N	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- -	- -	- -	- +1	- -	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
ME6	MW-I		A,B,b	N - N	N - N	N - N	S2 - S3	S2 - S3	N - N	S2 - S3	S2 - S3
			C,c	N - N	N - N	N - N	S2 - S3	S2 - S3	N - N	S3 - S4	S2 - S3
			D,d	N - N	N - N	N - N	S3 - S4	S2 - S3	N - N	S3 - S4	S2 - S3
			E,e	N	N	N	N	S3	N	N	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- -	- -	- -	- +1	- -	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	N	N	S4	S4	N	S4	S4
			C,c	N	N	N	S4	S4	N	S4	S4
			Drainage	-	-	-	+2	+2	-	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
ME8	P		A,B,b	N	N	N	S4	S4	N	S4	S4
			C,c	N	N	N	S4	S4	N	S4	S4
			Drainage	-	-	-	+2	+2	-	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
ME9	P		A,B,b	N	N	N	S4	S4	N	S4	S4
			C,c	N	N	N	S4	S4	N	S4	S4
			Drainage	-	-	-	+2	+2	-	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		MW-I	A,B,b	N - N	N - N	N - N	S2 - S3	S2 - S3	N - N	S2 - S3	S2 - S3
			C,c	N - N	N - N	N - N	S2 - S3	S2 - S3	N - N	S3 - S4	S2 - S3
			D,d	N - N	N - N	N - N	S3 - S4	S2 - S3	N - N	S3 - S4	S2 - S3
			E,e	N	N	N	N	S3	N	N	S3
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- -	- -	- -	- +1	- -	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Muriel Association (MW-Muriel; I-Gobles; P-Kelvin)											
MU4		W-I	A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S2	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
MU6	W-I		A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S2	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
MU8****	P		A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
MU9	P		A,B,b	N	N	S4	S4	S4	S4	S4	S4
			C,c	N	N	S4	S4	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	N - N	S4 - S4	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2
			C,c	N - N	S4 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	N - N	N - N	N - N	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S3	S2	S2	S3	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -	- -
Not Mapped											
NM							Not Rated				

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
Organic Soils											
OD1	VP						Not Rated				
OD2	VP						Not Rated				
OD3	VP						Not Rated				
OS1	VP						Not Rated				
OS2	VP						Not Rated				
OU1	VP						Not Rated				
Plainfield Association (R-Plainfield, I-Walsingham; P-Waterin)											
PL4	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S3 - N	S3 - S4	S3 - S4	S3 - S4	S3 - S4	S3 - S4
			E,e	S3	N	N	N	N	N	N	N
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1
PL6	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S3 - N	S3 - S4	S3 - S4	S3 - S4	S3 - S4	S3 - S4
			E,e	S3	N	N	N	N	N	N	N
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+1	+1	+1	+1	+1	+1	+1
			Irrigation	+1	+1	+1	+1	+1	+1	+1	+1
PL8	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+1	+1	+1	+1	+1	+1	+1
			Irrigation	+1	+1	+1	+1	+1	+1	+1	+1

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
PL9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+1	+1	+1	+1	+1	+1	+1
			Irrigation	+1	+1	+1	+1	+1	+1	+1	+1
	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S3 - N	S3 - S4	S3 - S4	S3 - S4	S3 - S4	S3 - S4
			E,e	S3	N	N	N	N	N	N	N
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1
Teeswater Association (W-Teeswater; I-Fanshawe; P-Ballymote)											
TE4	W-I		A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
TE6	W-I		A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+3	+3	+2	+2	+3
			Irrigation	-	-	-	-	-	-	-	-
TE8	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+3	+3	+2	+2	+3
			Irrigation	-	-	-	-	-	-	-	-

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
TE9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+2	+2	+2	+3	+3	+2	+2	+3
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S3	S3	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	+1 +1	+1 +1	- -	- -	- -	- -	- -
Valley Complex											
VC				Not Rated							
Walsher Association (W-Walsher, I-Vittoria; P-Silver Hill)											
WA4	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	- -
WA4.T	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	- -
WA6	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
WA6.T	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
WA8	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
WA8.T	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
WA9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	- -

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
WA9.T	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+3	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	+1 +1	- -	- -
Wattford Association (W-Wattford; I-Normandale; P-St. Williams)											
WF4	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	+1 +1	+1 +1	- -	+1 +1
WF6	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	+1 +1	+1 +1	- -	+1 +1
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
WF8****	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 8. Agricultural land suitability ratings for vegetable crops in Middlesex County (continued)

Landscape Unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3	4	5	6	7	8
WF9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4	S4
			Drainage	+3	+2	+2	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2	S2	S2	S2	S2	S2
			F,f	N	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	+1 +1	+1 +1	- -	+1 +1

* *Drainage Classes: R-Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Asparagus; 2. Sweet potatoes; 3. Irish potatoes; 4. Cucumbers; 5. Tomatoes; 6. Peppers; 7. Sweet corn; 8. Brussels sprouts, cauliflower, cabbage.*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Alluvium										
ALU							Not Rated			
Bennington Association (W-Bennington; I-Tavistock; P-Maplewood)										
BN4	W-I		A,B,b	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	S2 - S3	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	S3	N	S3	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
BN4.T	W-I		A,B,b	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	S2 - S3	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	S3	N	S3	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
BN6	W-I		A,B,b	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	S2 - S3	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	S3	N	S3	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	S4	S3	S4	S4	S4	S4
			C,c	N	S4	S3	S4	S4	S4	S4
			Drainage	-	+2	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
BN6.T	W-I		A,B,b	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	S2 - S3	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	S3	N	S3	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	S4	S3	S4	S4	S4	S4
			C,c	N	S4	S3	S4	S4	S4	S4
			Drainage	-	+2	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
BN8****	P		A,B,b	N	S4	S3	S4	S4	S4	S4
			C,c	N	S4	S3	S4	S4	S4	S4
			Drainage	-	+2	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
BN8.T	P		A,B,b	N	S4	S3	S4	S4	S4	S4
			C,c	N	S4	S3	S4	S4	S4	S4
			Drainage	-	+2	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
BN9	P		A,B,b	N	S4	S3	S4	S4	S4	S4
			C,c	N	S4	S3	S4	S4	S4	S4
			Drainage	-	+2	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
		W-I	A,B,b	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	S2 - S3	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	S3	N	S3	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
BN9.T	P		A,B,b	N	S4	S3	S4	S4	S4	S4
			C,c	N	S4	S3	S4	S4	S4	S4
			Drainage	-	+2	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
		W-I	A,B,b	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	N - N	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	S2 - S3	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	S3	N	S3	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
Blackwell Association (P-Blackwell)										
BA8	P		A,B,b	N	N	N	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	-	+1	+1	+1	+1
			Irrigation	-	-	-	-	-	-	-

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Bookton Association (W-Bookton; I-Berrien; P-Wauseon)										
BO4	W-I		A,B,b	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S3 - S3	S2 - S3	S3 - S4	S2 - S3	S2 - S3
			E,e	S4	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- -	- -
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
BO4.T	W-I		A,B,b	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S3 - S3	S2 - S3	S3 - S4	S2 - S3	S2 - S3
			E,e	S4	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- -	- -
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
BO6	W-I		A,B,b	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S3 - S3	S2 - S3	S3 - S4	S2 - S3	S2 - S3
			E,e	S4	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- -	- -
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
BO6.T	W-I		A,B,b	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S3 - S3	S2 - S3	S3 - S4	S2 - S3	S2 - S3
			E,e	S4	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- -	- -
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
BO8	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
BO8.T	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
BO9	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S3 - S3	S2 - S3	S3 - S4	S2 - S3	S2 - S3
			E,e	S4	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- -	- -
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
BO9.T	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S3 - S4	S2 - S3	S3 - S3	S2 - S3	S3 - S4	S2 - S3	S2 - S3
			E,e	S4	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- -	- -
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
Brant Association (W-Brant; I-Tuscola; P-Colwood)										
BT4	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
BT6	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
BT8****	P		A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
BT9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
Brantford Association (MW-Brantford; I-Beverly; P-Toledo)										
BF4	MW-I		A,B,b	N - N	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	N - N	S3 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S3 - S4
			E,e	N	N	N	S2	N	S3	N
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
BF6	MW-I		A,B,b	N - N	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	N - N	S3 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S3 - S4
			E,e	N	N	N	S2	N	S3	N
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
BF8	P		A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
BF9	P		A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
		MW-I	A,B,b	N - N	S3 - S4	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	S3 - S4	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			D,d	N - N	S3 - S4	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S3 - S4
			E,e	N	N	N	S2	N	S3	N
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
Bryanston Association (W-Bryanston; I-Thorndale; P-Nissouri)										
BR4	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
BR6	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S 4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
BR8	P		A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
BR9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
Burford Association (R-Burford; I-Brisbane; P-Gilford)										
BU4	R-I		A,B,b	S2 - S3	S4 - N	S3 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S4 - N	S3 - S4	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			D,d	S3 - S4	N - N	S4 - S4	S3 - S3	S3 - N	S2 - S2	S1 - S2
			E,e	S4	N	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- -	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -
BU8	P		A,B,b	S4	N	S4	S4	S4	S3	S3
			C,c	S4	N	S4	N	N	N	N
			Drainage	+1	-	+1	+2	+2	+2	+2
			Irrigation	+1	-	+1	-	-	-	-

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Caledon Association (R-W-Caledon; I-Camilla; P-Ayr)										
CA4	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S3 - S3	S3 - S3	S2 - S2	S1 - S2
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
CA6	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S3 - S3	S3 - S3	S2 - S2	S1 - S2
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
		P	A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
CA8	P		A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
CA9	P		A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S3 - S3	S3 - S3	S2 - S2	S1 - S2
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
Eroded Channel										
ER							Not Rated			

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Fox Association (R-Fox; I-Brady; P-Granby)										
FO4	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S1 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S3 - S3	S3 - S3	S2 - S2	S1 - S2
			E,e	S3	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
FO6	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S1 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S3 - S3	S3 - S3	S2 - S2	S1 - S2
			E,e	S3	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
		P	A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
FO8***	P		A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
FO9	P		A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		R-I	A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S1 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S2 - S3	S2 - S3	S3 - S3	S3 - S3	S2 - S2	S1 - S2
			E,e	S3	S3	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Honeywood Association (W-Honeywood; I-Embro; P-Crombie)										
HY4	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
HY6	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
HY8	P		A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
HY9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S2	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Huron Association (MW-Huron; I-Perth; P-Brookston)										
HU4	MW-I		A,B,b	N - N	N - N	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S2	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
HU6	MW-I		A,B,b	N - N	N - N	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S2	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
HU8	P		A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
HU9	P		A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
		MW-I	A,B,b	N - N	N - N	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S2	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Melbourne Association (MW-Melbourne; I-Ekfrid; P-Strathburn)										
ME4	MW-I		A,B,b	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			C,c	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S3 - S4
			D,d	N - N	N - N	N - N	S2 - S3	S3 - S4	S3 - N	N - N
			E,e	N	N	N	S2	N	S3	N
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
ME6	MW-I		A,B,b	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			C,c	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S3 - S4
			D,d	N - N	N - N	N - N	S2 - S3	S3 - S4	S3 - N	N - N
			E,e	N	N	N	S2	N	S3	N
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	N	N	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	-	+1	+1	+1	+1
			Irrigation	-	-	-	-	-	-	-
ME8	P		A,B,b	N	N	N	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	-	+1	+1	+1	+1
			Irrigation	-	-	-	-	-	-	-
ME9	P		A,B,b	N	N	N	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	-	+1	+1	+1	+1
			Irrigation	-	-	-	-	-	-	-
		MW-I	A,B,b	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S2 - S3	S2 - S3
			C,c	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S3 - S4
			D,d	N - N	N - N	N - N	S2 - S3	S3 - S4	S3 - N	N - N
			E,e	N	N	N	S2	N	S3	N
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Muriel Association (MW-Muriel; I-Gobles; P-Kelvin)										
MU4	MW-I		A,B,b	N - N	N - N	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S2	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
MU6	MW-I		A,B,b	N - N	N - N	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S2	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
		P	A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
MU8****	P		A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
MU9	P		A,B,b	N	N	S4	S4	S4	S4	S4
			C,c	N	N	N	S4	S4	S4	S4
			Drainage	-	-	+1	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
		MW-I	A,B,b	N - N	N - N	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			C,c	N - N	N - N	S3 - S4	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	N - N	N - N	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	N	N	N	S2	N	S3	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- -	- -	- +1	- +1	- +1	- +1	- +1
			Irrigation	- -	- -	- -	- -	- -	- -	- -
Not Mapped										
NM							Not Rated			

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Organic Soils										
OD1	VP						Not Rated			
OD2	VP						Not Rated			
OD3	VP						Not Rated			
OS1	VP						Not Rated			
OS2	VP						Not Rated			
OU1	VP						Not Rated			
Plainfield Association (R-Plainfield; I-Walsingham; P-Waterin)										
PL4	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S3 - S4	S3 - S4	S3 - S3	N - N	S2 - S2	S2 - S3
			E,e	S3	N	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
PL6	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S3 - S4	S3 - S4	S3 - S3	N - N	S2 - S2	S2 - S3
			E,e	S3	N	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+3	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
PL8	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+3	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
PL9	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+1	+3	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		R-I	A,B,b	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			C,c	S2 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S2	S2 - S2	S1 - S2
			D,d	S2 - S3	S3 - S4	S3 - S4	S3 - S3	N - N	S2 - S2	S2 - S3
			E,e	S3	N	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +1
			Irrigation	+1 +1	+1 +1	+1 +1	- -	- -	- -	- -
Teeswater Association (W-Teeswater; I-Fanshawe; P-Ballymote)										
TE4	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S3	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
TE6	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S3	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
TE8	P		A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
TE9	P		A,B,b	S4	S4	S4	S4	S4	S4	S4
			C,c	S4	S4	S4	S4	S4	S4	S4
			Drainage	+1	+2	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3	S2 - S3
			E,e	S4	S3	N	S2	N	S2	S3
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -	- -	- -	- -	- -
Valley Complex										
VC							Not Rated			
Walsher Association (W-Walsher; I-Vittoria; P-Silver Hill)										
WA4	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S3 - S4	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -
WA4.T	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S3 - S4	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -
WA6	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S3 - S4	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
WA6.T	W-I		A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S3 - S4	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -
		P	A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
WA8	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
WA8.T	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
WA9	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S3 - S4	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -
WA9.T	P		A,B,b	S4	S4	S4	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	-	-	-	-	-	-	-
		W-I	A,B,b	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S2 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S3 - S4	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- +1	- +1	- +1	- +1
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 9. Agricultural land suitability ratings for special field crops in Middlesex County (continued)

Landscape Unit	Dominant drainage Component*	Significant drainage component*	Slope classes/ Management factors**	Crop Groups 1	2	3	4	5	6	7
Wattford Association (W-Wattford; I-Normandale; P-St. Williams)										
WF4	W-I		A,B,b	S1 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S3	S2 - S3	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S4	S2 - S3	S2 - S3
			E,e	S2	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +2
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -
WF6	W-I		A,B,b	S1 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S4	S2 - S3	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S4	S2 - S3	S2 - S3
			E,e	S2	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +2
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -
		P	A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
WF8****	P		A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
WF9	P		A,B,b	S4	S4	S3	S4	S4	S4	S3
			C,c	S4	S4	S4	S4	S4	S4	S3
			Drainage	+2	+3	+2	+2	+2	+2	+2
			Irrigation	+1	-	-	-	-	-	-
		W-I	A,B,b	S1 - S3	S2 - S3	S2 - S3	S1 - S2	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S3	S2 - S3	S2 - S3	S2 - S2	S2 - S3	S2 - S3	S1 - S2
			D,d	S2 - S4	S2 - S3	S2 - S3	S2 - S3	S2 - S4	S2 - S3	S2 - S3
			E,e	S2	S2	N	S3	N	S3	S2
			F,f	N	N	N	N	N	N	N
			G,g	N	N	N	N	N	N	N
			Drainage	- +1	- +1	- +1	- -	- -	- -	- +2
			Irrigation	+1 +1	- -	+1 +1	- -	- -	- -	- -

* *Drainage Classes: R - Rapid; MW-Moderately well; W-Well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement in the ratings is possible for some crops on certain soil as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Tobacco; 2. Peanuts; 3. Rutabagas; 4. Soybeans; 5. White Beans; 6. Spring Canola; 7. Winter Rapeseed*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
Alluvium						
ALU					Not Rated	
Bennington Association (W-Bennington; I-Tavistock; P-Maplewood)						
BN4	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
BN4.T	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
BN6	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
BN6.T	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BN8****	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BN8.T	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BN9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
BN9.T	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
Blackwell Association (P-Blackwell)						
BA8	P		A,B,b	N	S4	S4
			C,c	N	S4	S4
			Drainage	-	+1	+1
			Irrigation	-	-	-
Bookton Association (W-Bookton; I-Berrien; P-Wauseon)						
BO4	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
BO4.T	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
BO6	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BO6.T	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BO8	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BO8.T	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
BO9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
BO9.T	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
Brant Association (W-Brant; I-Tuscola; P-Colwood)						
BT4	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
BT6	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BT8****	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BT9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
Brantford Association (MW-Brantford; I-Beverly; P-Toledo)						
BF4	W-I		A,B,b	S2 - S3	S2 - S3	S1 - S2
			C,c	S2 - S3	S2 - S3	S1 - S2
			D,d	S3 - S4	S2 - S3	S1 - S2
			E,e	S3	S2	S2
			F,f	N	S3	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
BF6	W-I		A,B,b	S2 - S3	S2 - S3	S1 - S2
			C,c	S2 - S3	S2 - S3	S1 - S2
			D,d	S3 - S4	S2 - S3	S1 - S2
			E,e	S3	S2	S2
			F,f	N	S3	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+1	+2	+2
			Irrigation	-	-	-
BF8	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+1	+2	+2
			Irrigation	-	-	-
BF9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+1	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S1 - S2
			C,c	S2 - S3	S2 - S3	S1 - S2
			D,d	S3 - S4	S2 - S3	S1 - S2
			E,e	S3	S2	S2
			F,f	N	S3	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
Bryanston Association (W-Bryanston; I-Thorndale; P-Nissouri)						
BR4	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
BR6	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BR8	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
BR9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
Burford Association (R-Burford; I-Brisbane; P-Gilford)						
BU4	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
BU8	P		A,B,b	S4	S3	S4
			C,c	S4	S3	S4
			Drainage	+1	+1	+1
			Irrigation	+1	+1	-
Caledon Association (R-W-Caledon; I-Camilla; P-Ayr)						
CA4	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
CA6	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
CA8	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
CA9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
Eroded Channel						
ER					Not Rated	
Fox Association (R-Fox; I-Brady; P-Granby)						
FO4	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
FO6	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
FO8****	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
FO9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		R-I	A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S3	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
Honeywood Association (W-Honeywood; I-Embro; P-Crombie)						
HY4	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
HY6	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
		P	A,B,b	S3	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
HY8	P		A,B,b	S3	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
HY9	P		A,B,b	S3	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
Huron Association (MW-Huron; I-Perth; P-Brookston)						
HU4	MW-I		A,B,b	S2 - S3	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S3	S2	S1
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
HU6	MW-I		A,B,b	S2 - S3	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S3	S2	S1
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
HU8	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
HU9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		MW-I	A,B,b	S2 - S3	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S3	S2	S1
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
Melbourne Association (MW-Melbourne; I-Ekrid; P-Strathburn)						
ME4	MW-I		A,B,b	S3 - S4	S2 - S3	S2 - S3
			C,c	S3 - S4	S2 - S3	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3
			E,e	N	S3	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
ME6	MW-I		A,B,b	S3 - S4	S2 - S3	S2 - S3
			C,c	S3 - S4	S2 - S3	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3
			E,e	N	S3	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
		P	A,B,b	N	S4	S4
			C,c	N	S4	S4
			Drainage	-	+1	+1
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
ME8	P		A,B,b	N	S4	S4
			C,c	N	S4	S4
			Drainage	-	+1	+1
			Irrigation	-	-	-
ME9	P		A,B,b	N	S4	S4
			C,c	N	S4	S4
			Drainage	-	+1	+1
			Irrigation	-	-	-
		MW-I	A,B,b	S3 - S4	S2 - S3	S2 - S3
			C,c	S3 - S4	S2 - S3	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3
			E,e	N	S3	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
Muriel Association (MW-Muriel; I-Gobles; P-Kelvin)						
MU4		MW-I	A,B,b	S2 - S3	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S3	S2	S1
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
MU6	MW-I		A,B,b	S2 - S3	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S3	S2	S1
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
MU8****	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
MU9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		MW-I	A,B,b	S2 - S3	S1 - S2	S1 - S2
			C,c	S2 - S3	S1 - S2	S1 - S2
			D,d	S2 - S2	S1 - S2	S1 - S2
			E,e	S3	S2	S1
			F,f	N	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	- -	- -	- -
Not Mapped						
NM					Not Rated	
Organic Soils						
OD1	VP				Not Rated	
OD2	VP				Not Rated	
OD3	VP				Not Rated	
OS1	VP				Not Rated	
OS2	VP				Not Rated	
OU1	VP				Not Rated	
Plainfield Association (R-Plainfield; I-Walsingham; P-Waterin)						
PL4	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S3	S3
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
PL6	R-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S3	S3
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
		P	A,B,b	S4	S4	S3
			C,c	S4	S4	S3
			Drainage	+2	+2	+1
			Irrigation	-	-	-
PL8	P		A,B,b	S4	S4	S3
			C,c	S4	S4	S3
			Drainage	+2	+2	+1
			Irrigation	-	-	-
PL9	P		A,B,b	S4	S4	S3
			C,c	S4	S4	S3
			Drainage	+2	+2	+1
			Irrigation	-	-	-
		R-I	A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S3 - S4	S2 - S3	S2 - S3
			E,e	S3	S3	S3
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
Teeswater Association (W-Teeswater; I-Fanshawe; P-Ballymote)						
TE4	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
TE6	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
		P	A,B,b	S3	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
TE8	P		A,B,b	S3	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
TE9	P		A,B,b	S3	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	N	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	- -	- -
Valley Complex						
VC					Not Rated	

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
Walsher Association (W-Walsher; I-Vittoria; P-Silver Hill)						
WA4	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	S2	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
WA4.T	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	S2	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
WA6	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	S2	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
WA6.T	W-I		A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	S2	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
WA8	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
WA8.T	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
WA9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	S2	S2	S2
			G.g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
WA9.T	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S1 - S2	S1 - S2	S1 - S2
			C,c	S1 - S2	S1 - S2	S1 - S2
			D,d	S2 - S3	S1 - S2	S1 - S2
			E,e	S2	S2	S2
			F,f	S2	S2	S2
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	- -
Wattford Association (W-Wattford; I-Normandale; P-St. Williams)						
WF4	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
WF6	W-I		A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1
		P	A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
WF8****	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

Table 10. Agricultural land suitability ratings for fruit crops in Middlesex County (continued)

Landscape unit	Dominant drainage component*	Significant drainage component*	Slope classes/ Management factors**	Crop groups*** 1	2	3
WF9	P		A,B,b	S4	S4	S4
			C,c	S4	S4	S4
			Drainage	+2	+2	+2
			Irrigation	-	-	-
		W-I	A,B,b	S2 - S3	S2 - S3	S2 - S3
			C,c	S2 - S3	S2 - S3	S2 - S3
			D,d	S2 - S3	S2 - S3	S2 - S3
			E,e	S2	S2	S2
			F,f	N	S3	S3
			G,g	N	N	N
			Drainage	- +1	- +1	- +1
			Irrigation	+1 +1	+1 +1	+1 +1

* *Drainage classes: R-Rapid; W-Well; MW-Moderatley well; I-Imperfect; P-Poor; VP-Very poor*

** *An improvement is possible for some crops on certain soils as a result of irrigation and/or drainage. The equivalent number of classes this improvement represents is indicated by +1, +2, etc., where applicable.*

*** *Crop groups: 1. Raspberries, strawberries; 2. Apples, walnuts; 3. Pears, plums, heart nuts, filbert nuts*

**** *Very poorly drained, peaty phase soils are not rated.*

C. Soil Interpretations for Water Erosion

I.J. Shelton, Agriculture Canada, M.S. Kingston, Ontario Ministry of Agriculture and Food and G.J. Wall, Agriculture Canada

Soil erosion by water is a naturally occurring process that can be greatly accelerated by man's activity. Any practice that accelerates surface runoff or reduces the natural protection afforded by vegetative cover will generally lead to increasing erosion levels. Uncontrolled soil erosion can reduce production potential, deplete nutrients, and degrade soil quality. Once removed from the land by water erosion, sediment, fertilizers and pesticides can adversely affect downstream water quality.

The Universal Soil Loss Equation (U.S.L.E.) is a widely accepted method of predicting average annual soil loss through sheet and rill erosion (30). It is usually written as an equation, A = RKLSCP, where:

A is the average annual soil loss (tonnes/hectare/year);
R is the rainfall erosivity factor;
K is the soil erodibility factor;
L is the slope length factor;
S is the slope gradient factor;
C is the crop cover factor; and
P is the management practice factor.

Background information on the application of the U.S.L.E. to Ontario soils is contained in Shelton and Wall (31).

In order to predict the average annual soil loss, A, for the soil associations and landscape units mapped in Middlesex County, values were determined for each of the factors of the U.S.L.E. The values are based on soil property data and information obtained from extension personnel from the County and a review of relevant agricultural research.

The R factor value for the County is 78 (32) which, when adjusted for snowmelt conditions becomes 100. Soil erodibility (K) factor values and ranges for individual soil association members were determined and are included in Table 11. LS factor values, presented in Tables 12 and 13, were based on representative slope lengths and gradient combinations for map delineations and individual slopes. Crop cover factors (C) for selected field and specialty crops and rotations found in the County were calculated and are reported in Tables 14, 15 and 16, respectively. Conservation or management practice (P) factor values were determined and appear in Table 17.

(1) Potential Soil Erosion Classes

A classification system exists which groups soils into five classes according to their erosion potential. It is different than the Canada Land Inventory agricultural capability classification for common field crops, which includes erosion as a subclass limitation. A brief explanation of each of the potential erosion classes follows.

Class 1 - Negligible - Soils in this class have very slight to no erosion potential. Minimal erosion problems should occur if good soil management practices are used. The soils in this class should be able to maintain sustainable productivity under average management practices. The tolerable soil loss limit may be exceeded for soils that are shallow, low in organic matter, of poor structure or previously eroded. Potential soil erosion loss is less than 6 tonnes/hectare/year (<3 tons/acre/year). This amount represents the tolerable soil loss for most Ontario soils.

Class 2 - Low - Without the use of crop rotations and cross slope farming, low to moderate soil losses will occur. Potential soil erosion losses range from 6 - 11 tonnes/hectare/year (3 - 5 tons/acre/year). This amount exceeds the tolerable soil loss limit for all but the deepest Ontario soils.

Class 3 - Moderate - Unless conservation measures such as conservation tillage, contour cropping and grass waterways are used, moderate to high soil losses will occur. Potential soil erosion losses range from 11 - 22 tonnes/hectare/year (5 - 11 tons/acre/year).

Class 4 - High - Unless measures such as conservation tillage, forage-based rotations, terraces, cross-slope or contour strip cropping are employed, high erosion losses will occur. Potential soil erosion losses range from 22 - 33 tonnes/hectare/year (10 - 15 tons/acre/year).

Class 5 - Severe - Unless a soil cover of permanent vegetation is maintained, severe erosion losses will occur. Potential soil erosion losses are greater than 33 tonnes/hectare/year (>15 tons/acre/year).

Based on the average annual soil loss, A, for bare soil conditions, a potential erosion class was assigned to each of the landscape units mapped in Middlesex County. Table 18 lists the potential erosion loss class by landscape unit for all possible slope classes.

Assumptions

Before applying the U.S.L.E. and the potential erosion classes it is important to have an understanding of the following assumptions.

(a) The amount and monthly distribution of rainfall is assumed to be relatively constant throughout the County.

(b) Representative slope lengths for each slope class were used to calculate the LS values appropriate for Middlesex County landscapes.

(c) Average levels of management are assumed. These would include good soil management practices that are feasible and practical under a largely mechanized system of agriculture.

(d) The average annual soil losses calculated for each map unit are based on representative rainfall, soil, slope and possibly crop and management conditions. The results provide an indication of the erosion potential of a delineation, relative to other delineations on the 1:50,000 soil maps. Since variations in conditions do occur within map units, estimations for specific sites require detailed information collected on the site and a separate calculation for each unique combination of conditions. Refer to Appendix 2 for conducting site assessments.

(2) How to Determine Potential Erosion from the Soil Map

In order to determine the average annual soil loss for the symbols in the delineations on the 1:50,000 soil maps, the U.S.L.E. must be applied to each of the individual soil association members which comprise the soil landscape units. The steps outlined in Method 1 indicate how to determine the average annual soil loss using the R, K and LS factors.

Table 19 was compiled in order to simplify the determination of the average annual soil loss, A. It provides the potential average annual soil loss, A, for selected K factor values and the slope classes mapped in the County. For K values that are not shown on the table, average annual soil loss can be interpolated. Note that Table 19 has been compiled specifically for Middlesex County, using R=100 and representative slope lengths for each slope class for the topography of Middlesex County. It is therefore not appropriate to use Table 19 for areas outside the County. The procedure for determining average annual soil loss from Table 19 is presented in Method 2.

Where it is only necessary to determine the potential erosion class, Table 18 can be used. It lists the potential erosion class by landscape unit for all slope classes. Follow the steps outlined in Method 3 to determine the potential erosion class.

In Methods 1, 2 and 3, the average annual soil loss is determined for bare soil conditions. Method 4 outlines the steps to determine the average annual soil loss for a range of cropping and management systems commonly used in Middlesex County.

Method 1 - How to Determine Average Annual Soil Loss for Bare Soil Conditions Using the R, K and LS Factors

Only the rainfall (R), soil erodibility (K), and topography (LS) factors are used to determine the average annual soil loss, (A), for bare soil conditions. A is calculated by multiplying the R factor, 100, by the appropriate K factor value from Table 11 and the LS factor value from Table 12, as follows:

Example 1. $\frac{\text{BO4} > \text{BF8}}{\text{d} > \text{b}}$

1. Using the Key to the Map Delineations on the border of the soil map, this designation consists of two landscape units. The dominant landscape unit is the BO4 unit and it occurs on d slopes. The significant landscape unit is the BF8 unit, which is associated with b slopes.

2. Using the Soil Legend on the border of the soil map, the dominant soil landscape unit belongs to the Bookton Association (BO) and it consists of well-drained Bookton soils and imperfectly drained Berrien soils. The significant soil landscape unit is a member of the Brantford Association (BF), and is comprised of poorly drained Toledo soils.

3. To determine the average annual soil loss, A, select the appropriate R, K, and LS factor values for each of the landscape units. When adjusted for snowmelt conditions, the R factor value for Middlesex County is always 100.

4. The K factor values are listed in Table 11 in alphabetical order by soil association. To determine the K factor values for the BO4 landscape unit move down the column entitled Soil association member, until the Bookton Association is located. The Bookton and Berrien soils are listed below the association name. For both soils, move horizontally across the table until the column entitled Mean K factor values is intersected. The mean K value for Bookton soils is 0.20 and 0.21 for Berrien soils.

5. Repeating step 4 for the BF8 landscape unit, the mean K factor value for Toledo soils is 0.22.

6. The LS factor values are listed in Table 12. To determine the LS value for Bookton and Berrien soils occurring on d slopes, refer to the column entitled Complex slope classes. Move down the column to the d slope class and then horizontally across to the right to the column entitled LS values. The LS value for Bookton and Berrien soils on d slopes is 1.07.

7. Repeating step 6 for the LS value for Toledo soils on b slopes is 0.25.

8. Calculate the average annual soil loss, A, for each of the soil association members by multiplying the values for the R, K and LS factors. To convert the average annual soil loss, A, from tons/acre/year to tonnes/hectare/year, multiply by 2.24.

   The average annual soil loss for Bookton soils on d slopes, assuming bare soil conditions is:

   $$A = RKLS$$
   $$= 100 \times 0.20 \times 1.07 \times 2.24$$
   $$= 47.9 \text{ t/ha/y}$$

   The average annual soil loss for Berrien soils on d slopes, assuming bare soil conditions is:

   $$A = RKLS$$
   $$= 100 \times 0.21 \times 1.07 \times 2.24$$
   $$= 50.3 \text{ t/ha/y}$$

   The average annual soil loss for Toledo soils on b slopes, assuming bare soil conditions is:

   $$A = RKLS$$
   $$= 100 \times 0.22 \times 0.25 \times 2.24$$
   $$= 12.3 \text{ t/ha/y}$$

9. The results indicate that the dominant landscape unit of the delineation, BO4, has a higher potential erosion than the Toledo soils of the BF8 landscape unit.

Method 2 - How to Determine Average Annual Soil Loss for Bare Soil Conditions Using Table 19

Example 1. $\frac{\text{BO4} > \text{BF8}}{\text{d} > \text{b}}$

1. Using the Key to the Map Delineations on the border of the soil map, this designation consists of two landscape units. The dominant landscape unit is the BO4 unit and it occurs on d slopes. The significant landscape unit is the BF8 unit, which is associated with b slopes.

2. Using the Soil Legend on the border of the soil map, the dominant soil landscape unit belongs to the Bookton Association (BO) and it consists of well-drained Bookton soils and imperfectly drained Berrien soils. The significant soil landscape unit is a member of the Brantford Association (BF), and is comprised of poorly drained Toledo soils.

3. To determine the average annual soil loss, A, select the appropriate R, K, and LS factor values for each of the landscape units. When adjusted for snowmelt conditions, the R factor value for Middlesex County is always 100.

4. The K factor values are listed in Table 11 in alphabetical order by soil association. To determine the K factor values for the BO4 landscape unit move down the column entitled Soil association member, until the Bookton Association is located. The Bookton and Berrien soils are listed below the association name. For both soils, move horizontally across the table until the column entitled Mean K factor values is intersected. The mean K value for Bookton soils is 0.20 and 0.21 for Berrien soils.

5. Repeating step 4 for the BF8 landscape unit, the mean K value for Toledo soils is 0.22.

6. Locate the K value for Bookton soils in Table 19 in the column entitled K factor value. Because these soils occur on d slopes, move horizontally across the table until the column entitled d under the heading Slope classes is intersected. The average annual soil loss is 47.9 tonnes/hectare/year.

7. Repeating step 6 for Berrien soils with a mean K value of 0.21, the average annual soil loss on d slopes is 50.3 tonnes/hectare/year.

8. Repeating step 6 for Toledo soils with a mean K value of 0.22, the average annual soil loss on b slopes is 12.3 tonnes/hectare/year.

9. The results indicate that the dominant landscape unit of the delineation, BO4, has a higher potential erosion than the Toledo soils of the BF8 landscape unit.

Method 3 - How to Determine Potential Erosion Classes for Bare Soil Conditions Using Table 18

The potential erosion loss classes are presented in alphabetical order by soil association in Table 18. The individual soils which belong to the association and their drainage classes are listed following the name of the association. The classes are listed by landscape unit for each slope class. For landscape units numbered 8, a single rating is

given because these landscape units consist predominantly of poorly drained soils.

For landscape units numbered 4, the rating is presented as a range, because these landscape units are composed of the imperfectly and better-drained soils of an association. The rating is a combination of the individual ratings for the imperfectly drained soil and the better-drained soil.

For landscape units numbered 6 and 9, which have dominant and significant drainage components, the potential erosion loss class must be determined separately for each drainage component. In Table 18, the ratings for the dominant drainage component are listed first, followed by the ratings for the significant drainage component.

In all cases where a range in the ratings is indicated, one of the ratings will appear in bold-face type. This convention identifies the potential erosion loss class of the most commonly occurring drainage class and association member in a landscape unit on a specific slope class. It is based on the typical distribution of soils and drainage classes with topography for all landscape units with the same delineation symbol on the 1:50,000 soil maps. For example, on A, B and b slopes, BO4.T landscape units mainly consist of imperfectly drained Berrien soils which are rated Class 2.

Because the extent of imperfectly and better-drained soils varies within individual delineations, it is recommended that the ratings in bold-face type be used only to ascertain a regional overview of potential erosion. They should not be used in larger scale studies. In those situations, a site investigation is recommended in order to determine the extent of each of the drainage classes. Refer to Appendix 2 for information on conducting site assessments. Once the relative proportion of individual soils has been determined, the potential erosion loss classes for the individual soils can be assigned using Table 18.

The following example outlines the steps for determining the appropriate potential erosion loss class for delineations on the 1:50,000 soil map.

Example 1. $\underset{c}{\text{BO4.T} > \text{HU8}}$

1. Using the Key to the Map Delineations on the border of the soil map, this designation consists of two landscape units. The dominant landscape unit is the BO4.T unit and it occurs on c slopes. The significant landscape unit is the HU8 unit, which is also associated with c slopes.
2. The landscape units are listed in Table 18 in alphabetical order by soil association. To determine the potential class for the BO4.T landscape unit move down the column entitled Landscape unit until the Bookton Association is located. The BO4.T landscape unit is listed below the association heading. Move horizontally across the table until the column c under the heading Slope classes is intersected. The potential erosion loss ranges from Classes 3-4.
3. To determine the potential class for the HU8 landscape unit move down the column entitled Landscape unit until the Huron Association is located. The HU8 landscape unit is listed below the association heading. Move horizontally across the table until the column c under the heading Slope classes is intersected. The potential erosion class is therefore Class 4.
4. Combining the potential erosion loss ratings for the individual landscape units, the rating for the delineation symbol, $\underset{c}{\text{BO4.T} > \text{BF8}}$, is Class 3-4 > Class 4.
5. It is possible to generalize the potential erosion loss rating, if the purpose for determining the ratings is to ascertain a regional overview of potential erosion loss. Assuming this is the situation, the rating for the dominant drainage component could be simplified to Class 4, and the rating for the delineation symbol would therefore be Class 4 > Class 4, or more simply Class 4.
6. Note that this is not an absolute rating because the potential erosion loss changes under different cropping and management systems.

Method 4 - How to Determine Average Annual Soil Loss for Specific Crop Covers and Management Factors

Cropping and management systems, including conservation practices, can significantly affect the average annual soil loss. In order to determine their effect, the C and P factors must be considered with the R, K and LS factors.

Example 1. map symbol - $\underset{d > b}{\text{BO4} > \text{BF8}}$

crop cover - fall ploughed mixed grain, where the previous year the crop was grain corn

management practices - up and down slope farming, there were no conservation practices

1. The R, K and LS factor values can be determined using the steps outlined previously in Method 1.

2. The C factor values for selected field and speciality crops and crop rotations are listed in Tables 14, 15 and 16, respectively. Table 14 will be used because the present crop is mixed grain, which was preceded by grain corn. Refer to the column entitled Crop, moving down the column to locate mixed grain. Move horizontally to the column entitled Previous crop. Find grain corn and then move to the right to the column entitled Management before crop. In this example the land was ploughed in the fall. Continue to move to the left to the column entitled mean under the heading C factor value. The mean C factor value for fall ploughed, mixed grain preceded by grain corn is 0.38.

3. The conservation or management factor values are given in Table 17. The P value for conventional tillage up and down the slope is 1.00.

4. Calculate the average annual soil loss for each of the soil association members. Using the guidelines for annual soil loss included in the definitions of the potential erosion classes, a class designation can also be assigned.

   The average annual soil loss for Bookton soils on d slopes, under a crop of mixed grain is:

   A = RKLSCP
   = 100 x 0.20 x 1.07 x 0.38 x 1.0 x 2.24
   = 18.2 t/ha/y
   = Class 3 - Moderate

   The average annual soil loss for the Berrien soils on d slopes, under a crop of mixed grain is:

   A = RKLSCP
   = 100 x 0.21 x 1.07 x 0.38 x 1.0 x 2.24
   = 19.1 t/ha/y
   = Class 3 - Moderate

   The average annual soil loss for the Toledo soils on b slopes, under a crop of mixed grain is:

   A = RKLSCP
   = 100 x 0.22 x 0.25 x 0.38 x 1.0 x 2.24
   = 4.7 t/ha/y
   = Class 1 - Negligible

The average annual soil loss for the map delineation symbol $\frac{BO4 > BF8}{d > b}$ ranges from 19.2 tonnes/hectare/year to 18.1 tonnes/hectare/year on the dominant landscape unit, to 4.7 tonnes/hectare/year on the significant landscape unit.

The erosion reducing effects of crops are apparent in this example. Compared to the potential soil loss for bare soil conditions, the average annual soil loss on Bookton soils was reduced by 29.7 tonnes/hectare/year (49.7 t/h/y - 18.2 t/h/y). A decrease of similar magnitude also occurred on Berrien soils (50.3 t/h/y - 19.1 t/h/y = 31.2 t/h/y). The average annual soil loss for Toledo soils declined by 7.6 tonnes/hectare/year.

Although the previous example does not measure the impact of the management factor (P), further reductions in the average annual soil loss would also occur if conservation practices were introduced.

(3) How to Use the Tables to Derive Annual Soil Loss for Site Specific Locations

Site or field specific interpretations are utilized for on-farm management purposes by providing farm managers or advisors with a general indication of the erosion-reducing effectiveness of various crop and management systems. In order to estimate the annual soil loss for a field, follow the procedure outlined below.

1. Using Figures 14, 15, 16 and 17 in Appendix 2 as guides, determine the soil landscape units and soil association members present in the field. For this example, the site assessment has indicated that the field consists of BT8 landscape units. Therefore the soils are the poorly drained member of the Brant Association, known as Colwood soils. They occur on C slopes with gradients of 2.5%, which are 100 metres in length.

2. Determine the cropping history and the management and conservation practices used in the field. It was fall ploughed and planted with silage corn with the rows planted across the slope. The previous crop was grain corn.

3. Using Tables 11, 13, 14 and 17, determine the U.S.L.E. factor values for the field.

   R value for Middlesex County = 100
   K value for Colwood soil = 0.32 (Table 11)
   LS value for slope gradient is 2.5% and slope length is 100 = 0.643 (Table 13)
   C value for fall ploughed silage corn, following grain corn = 0.49 (Table 14)
   P value for rows planted across the slope = 0.75 (Table 17)

4. Calculate the average annual soil loss, A. Using the guidelines for annual soil loss included in the definitions of the potential erosion classes, a class designation can also be assigned.

A = RKLSCP
= 100 x 0.32 x 0.643 x 0.49 x 0.75 x 2.24
= 16.9 tonnes/hectare/year
= Potential Erosion Class 3 - Moderate

(4) How to Determine Alternative Cropping Practices Using the U.S.L.E.

A tolerable average annual soil loss, A, for deep agricultural soils is 6 tonnes/hectare/year (3 tons/acre/year) or less (31). Only soils with a potential erosion rating of Class 1 have tolerable losses. To determine cropping practices which will reduce the average annual soil loss to a more acceptable level, rearrange the U.S.L.E. to solve for the crop cover factor, C. Before the equation is rearranged it is necessary to convert the average annual soil loss, A, from metric units to imperial units by dividing by 2.24.

The potential erosion rating for the field in the previous example was Class 3. To reduce the average annual soil loss to a tolerable amount (Class 1), the maximum C value that is possible without exceeding the upper soil loss limit for Class 1 (3 tons/acre/year) would be:

C = A / R x K x LS x P
= 3 / 100 x 0.32 x 0.643 x 0.75
= 3 / 15.4
= 0.19 or less

To reduce soil losses on this field to a more acceptable level using a change in cropping practices, a crop or crop rotation with a mean C factor value of 0.19 or less must be selected from Tables 14, 15, or 16. In this case, there are several alternatives including: winter wheat (fall chisel plough, C factor value = 0.17, Table 14); no-till corn (C factor value = 0.16, Table 14); forages (established meadow, C factor value = 0.006, Table 14); and rotations including a forage crop (Table 16). Crops or rotations with C factor values slightly higher than 0.19 could be considered, if conservation practices such as contour farming or strip-cropping (Table 17) were incorporated into the cropping and management system.

Table 11. Means and ranges of K factor values for surface soils in Middlesex County

Soil association member	Drainage class	No. of sites	K factor values Mean	Range
Alluvium (ALU)			Not rated	
Bennington Association (BN)				
Bennington	well	7	.36	.28-.43
Tavistock	imperfect	29	.34	.22-.46
Maplewood	poor	5	.32	.27-.36
Bennington Association Till Phase (BN.T)				
Bennington.T	well	3	.31	.25-.39
Tavistock.T	imperfect	27	.33	.22-.58
Maplewood.T	poor	0	.32*	
Blackwell Association (BA)				
Blackwell	poor	2	.15	.14-.16
Bookton Association (BO)				
Bookton	well	8	.20	.03-.33
Berrien	imperfect	32	.21	.02-.42
Wauseon	poor	7	.18	.10-.26

* *Mean K factor values were estimated.*

Table 11. Means and ranges of K factor values for surface soils in Middlesex County (continued)

Soil association member	Drainage class	No. of sites	K factor values Mean	Range
Bookton Association Till Phase (BO.T)				
Bookton.T	well	4	.14	.12-.18
Berrien.T	imperfect	25	.21	.11-.36
Wauseon.T	poor	3	.19	.14-.22
Brant Association (BT)				
Brant	well	15	.38	.27-.52
Tuscola	imperfect	104	.35	.18-.50
Colwood	poor	25	.32	.17-.44
Brantford Association (BF)				
Brantford	moderately well	25	.29	.18-.42
Beverly	imperfect	135	.27	.14-.46
Toledo	poor	55	.22	.15-.35
Bryanston Association (BR)				
Bryanston	well	5	.31	.20-.36
Thorndale	imperfect	48	.32	.23-.43
Nissouri	poor	8	.28	.21-.34
Burford Association (BU)				
Burford	rapid	9	.21	.11-.35
Brisbane	imperfect	0	.17*	
Gilford	poor	0	.17*	
Caledon Association (CA)				
Caledon	rapid to well	15	.16	.01-.40
Camilla	imperfect	10	.17	.03-.29
Ayr	poor	0	.17*	
Eroded Channel (ER)			Not rated	
Fox Association (FO)				
Fox	rapid	9	.11	.01-.33
Brady	imperfect	5	.17	.03-.31
Granby	poor	0	.18*	
Honeywood Association (HY)				
Honeywood	well	6	.38	.35-.43
Embro	imperfect	33	.35	.18-.44
Crombie	poor	2	.30	.29-.32
Huron Association (HU)				
Huron	moderately well	9	.31	.22-.40
Perth	imperfect	99	.26	.17-.48
Brookston	poor	43	.24	.16-.33

* *Mean K factor values were estimated.*

Table 11. Means and ranges of K factor values for surface soils in Middlesex County (continued)

Soil association member	Drainage class	No. of sites	K factor values Mean	Range
Melbourne Association (ME)				
Melbourne	moderately well	6	.22	.14-.25
Ekfrid	imperfect	32	.20	.13-.29
Strathburn	poor	23	.16	.13-.23
Muriel Association (MU)				
Muriel	moderately well	1	.30	
Gobles	imperfect	31	.27	.18-.41
Kelvin	poor	9	.27	.15-.36
Not mapped (NM)			Not rated	
Organic soils (OD, OS, OU)			Not rated	
Plainfield Association (PL)				
Plainfield	rapid	32	.17	.01-.46
Walsingham	imperfect	44	.14	.01-.33
Waterin	poor	7	.18	.09-.24
Teeswater Association (TE)				
Teeswater	well	7	.43	.29-.62
Fanshawe	imperfect	7	.32	.21-.41
Ballymote	poor	1	.21	
Valley Complex (VC)			Not rated	
Walsher Association (WA)				
Walsher	well	2	.14	.13-.15
Vittoria	imperfect	19	.21	.06-.31
Silver Hill	poor	1	.12	
Walsher Association Till Phase (WA.T)				
Walsher.T	well	0	.22*	
Vittoria.T	imperfect	13	.23	.03-.39
Silver Hill.T	poor	1	.24	
Wattford Association (WF)				
Wattford	well	13	.25	.13-.42
Normandale	imperfect	25	.29	.14-.46
St. Williams	poor	4	.26	.12-.46

* *Mean K factor values were estimated.*

Table 12. Generalized LS factor values for Middlesex County

Slope %	Simple slope classes	Slope length (m)	LS value	Complex slope classes	Slope length (m)	LS value
0-0.5	A	300	.15	a	50	.10
0.5-2	B	250	.40	b	50	.25
2-5	C	200	.85	c	50	.49
5-9	D	150	1.85	d	50	1.07
9-15	E	125	3.65	e	25	1.63
15-30	F	100	7.39	f	25	3.69
>30	G	75	12.5	g	25	7.25

Table 13. LS factor values for different combinations of slope length and slope gradient

Slope gradient	Slope Length (m)														
%	10	15	20	25	30	40	50	60	75	100	125	150	200	250	300
0.2	.063	.069	.073	.076	.080	.084	.088	.091	.095	.101	.105	.109	.111	.120	.125
0.5	.076	.083	.088	.092	.095	.101	.105	.109	.114	.121	.126	.131	.139	.145	.151
0.8	.090	.098	.104	.108	.112	.119	.124	.129	.135	.143	.149	.155	.164	.172	.178
2	.144	.162	.177	.189	.200	.218	.233	.246	.263	.287	.307	.324	.353	.377	.399
3	.205	.232	.253	.270	.285	.311	.333	.351	.376	.410	.438	.463	.504	.539	.570
4	.256	.301	.338	.369	.397	.446	.487	.524	.573	.643	.703	.756	.849	.928	.998
5	.306	.375	.433	.485	.531	.613	.685	.751	.839	.97	1.08	1.19	1.37	1.53	1.68
6	.385	.472	.545	.609	.667	.770	.861	.940	1.05	1.22	1.36	1.49	1.72	1.93	2.11
8	.568	.695	.803	.898	.980	1.14	1.27	1.39	1.56	1.80	2.01	2.20	2.54	2.84	3.11
10	.78	.96	1.11	1.24	1.36	1.57	1.75	1.92	2.15	2.48	2.77	3.04	3.51	3.92	4.29
12	1.03	1.27	1.46	1.63	1.79	2.07	2.31	2.53	2.83	3.27	3.65	4.00	4.62	5.17	5.66
14	1.13	1.61	1.86	2.08	2.28	2.63	2.94	3.22	3.60	4.16	4.65	5.09	5.88	6.57	7.20
16	1.63	1.99	2.30	2.57	2.82	3.25	3.63	3.98	4.45	5.14	5.75	6.30	7.27	8.13	8.90
18	1.97	2.41	2.78	3.11	3.41	3.93	4.40	4.82	5.39	6.22	6.95	7.62	8.80	9.83	10.80
20	2.34	2.86	3.30	3.69	4.05	4.67	5.22	5.72	6.40	7.39	8.26	9.05	10.40	11.70	12.80
25	3.40	4.20	4.80	5.30	5.80	6.75	7.50	8.25	9.25	10.75	12.00	13.00	15.00	17.00	18.50
30	4.60	5.60	6.50	7.25	8.00	9.20	10.25	11.20	12.50	14.50	16.00	18.50	19.00	21.00	-
40	8.25	11.00	10.25	11.50	12.50	14.50	16.25	18.00	20.00	-	-	-	-	-	-

Table 14. C factor values for selected field crops in Middlesex County

Crop	Previous crop	Management before crop*	C factor values mean**	range***
Corn (grain)	soybeans	FMP	0.47	
	soybeans	SMP	0.39	
	winter wheat	FMP	0.36	0.33-0.40
	corn, grain	FMP	0.35	0.34-0.37
	corn, grain (2nd year after hay)	FMP	0.34	0.33-0.34
	soybeans, winter wheat	FCH	0.33	0.32-0.33
	corn, grain	SMP	0.30	0.29-0.31
	corn, grain (2nd year after hay)	SMP	0.28	0.27-0.28
	soybeans	SD	0.28	0.27-0.28
	corn, grain	FCH	0.27	0.23-0.31
	soybeans	NT	0.24	0.23-0.25
	hay	FMP	0.20	0.19-0.21
	hay	SMP	0.16	
	corn, grain	NT	0.16	0.12-0.15
Corn (silage)	winter wheat	FMP	0.50	0.46-0.56
	corn, grain	FMP	0.49	0.46-0.52
	corn, grain (2nd year after hay)	FMP	0.47	0.44-0.49
	corn, grain	SMP	0.43	0.41-0.44
	corn, grain (2nd year after hay)	SMP	0.40	0.38-0.41
	soybeans	SD	0.32	0.31-0.33
	hay	FMP	0.28	0.27-0.30
	hay	SMP	0.24	0.22-0.24

* *Management practices: FCH - Fall chisel plough; SCH - Spring chisel plough; CU - Cultivator; SD - Spring disc only before planting; FMP - Fall moldboard plough; SMP - Spring moldboard plough; NT - No till; US - Underseeded*

** *Use the mean C factor value if detailed information on the management history of the field is not available.*

*** *Use the highest value in the range when the soil has been unprotected for long periods of time for reasons such as: early fall ploughing; poor weather conditions which delay spring planting; seedbed preparation is delayed by soil type e.g. fine-textured, poorly drained soils such as Brookston, Toledo, and Strathburn soils. Use the lower value in the range when optimum management has occurred. e.g. favourable weather conditions have facilitated seedbed preparation and planting; the soils are well-drained and/or coarse-textured such as the Bennington, Brant, Honeywood, Fox, Plainfield and Wattford soils.*

Table 14. C factor values for selected field crops in Middlesex County (continued)

Crop	Previous crop	Management before crop*	C factor values mean**	range***
Grain (barley, oats, mixed)	corn (grain)	FMP	0.38	
	corn (grain)	SMP	0.34	
	corn (silage)	FMP	0.33	0.31-0.34
	corn, grain (2nd year after hay)	SMP	0.26	
	corn, grain	SD	0.18	
	corn, grain (2nd year after hay)	SD	0.15	
Hay (grass, legume mix)	establishing year			
	- corn, grain	FMP	0.22	0.21-0.22
	- grain	FCH	0.14	0.13-0.15
	- corn, grain	SMP	0.08	
	- grain	US	0.04	
	established meadow		0.006	
Soybeans	beans	FMP	0.50	
	beans before winter wheat	FMP	0.46	
	winter wheat	FMP	0.43	
	corn	FMP	0.38	0.32-0.42
	corn, grain	SMP	0.37	0.36-0.40
	beans	F & SCH	0.37	0.36-0.40
	beans	NT	0.33	0.32-0.34
	corn, grain	SCH/D	0.32	0.31-0.33
Winter wheat	corn, grain, beans	FMP	0.29	0.29-0.30
	beans	FCH	0.17	0.14-0.21
	beans	CU	0.24	

* *Management practices: FCH - Fall chisel plough; SCH - Spring chisel plough; CU - Cultivator; SD - Spring disc only before planting; FMP - Fall moldboard plough; SMP - Spring moldboard plough; NT - No till; US - Underseeded*

** *Use the mean C factor value if detailed information on the management history of the field is not available.*

*** *Use the highest value in the range when the soil has been unprotected for long periods of time for reasons such as: early fall ploughing; poor weather conditions which delay spring planting; seedbed preparation is delayed by soil type e.g. fine-textured, poorly drained soils such as Brookston, Toledo, and Strathburn soils. Use the lower value in the range when optimum management has occurred. e.g. favourable weather conditions have facilitated seedbed preparation and planting; the soils are well-drained and/or coarse-textured such as the Bennington, Brant, Honeywood, Fox, Plainfield and Wattford soils.*

Table 15. C factor values for selected special crops and alternative land uses in Middlesex County

Crop	Management before crop	Mean C factor value
Asparagus	15-20 years continuous	0.55
Cauliflower	Fall or Spring disc	0.55
Cucumber	Spring tillage or cultivation	0.20
Orchard	cultivated, bare soil	0.40
	100 % ground cover	0.003
Peanuts	Fall tillage or cultivation	0.55
	Spring tillage or cultivation	0.30
Peppers	Fall tillage or cultivation	0.50
	Spring tillage or cultivation	0.45
Potatoes	Fall tillage or cultivation	0.45
	Rotation wheat winter crop (average C)	0.25
Raspberries	10-15 years continuous, bare soil	0.25
	10-15 continuous years, 75 % ground cover	0.10
Rutabagas	Fall tillage or cultivation	0.50
Strawberries	4-5 years continuous, straw cover in winter	0.30
Tobacco/rye or winter wheat rotation	Fall moldboard plough	0.46
	Spring moldboard plough	0.31
Tomatoes	Fall tillage or cultivation	0.50
	Spring tillage or cultivation	0.35
Wooded or idle lands		0.002

Table 16. C factor values for selected crop rotations in Middlesex County

Rotations	Mean C factor value ***
Silage corn (2)*, Soybeans (1; FCH**), Winter wheat (1)	0.40
Silage corn (2), Soybeans (1; cultivate), Winter wheat (1)	0.38
Grain corn (2), Soybeans (1; FCH), Winter wheat (1)	0.33
Grain corn (2), Soybeans (1; cultivate), Winter wheat (1)	0.31
Silage corn (2), Grain (1; FMP), HAY (1)	0.33
Silage corn (2), Grain (1; FCH), HAY (1)	0.31
Silage corn (2), Grain (1; underseeded with hay), HAY (1)	0.28
Grain corn (2), Grain (1; FMP), HAY (1)	0.29
Grain corn (2), Grain (1; FCH), HAY (1)	0.27
Grain corn (2), Grain (1; underseeded with hay), HAY (1)	0.24
Grain corn (2), Grain (1; FMP), HAY (3)	0.19
Grain corn (2), Grain (1; FCH), HAY (3)	0.18
Grain corn (2), Grain (1; underseeded with hay), HAY (3)	0.16
Silage corn (2), HAY (3)	0.20
Grain corn (2), HAY (3)	0.15
Tobacco, 1 yr. RYE (FMP) (SMP)	0.46 0.31
Silage corn (3; FMP), Winter wheat (1)	0.43
Grain corn (3; FMP), Winter wheat (1)	0.33
Grain corn (3; FCH), Winter wheat (1)	0.28
Soybeans (3; FMP), Winter wheat (1)	0.39

* *Numbers in parentheses indicate the number of consecutive years a crop is grown.*

** *Management practices: FMP - Fall moldboard plough; SMP - Spring moldboard plough; FCH - Fall chisel plough*

*** *Mean C factor values were calculated by dividing the sum of the individual C factor values for each crop in the rotation (Tables 14 and 15) by the number of years in the rotation.*

Example: Grain corn (2; FMP), Grain (1; underseeded with hay), Hay (3)

$$\frac{(0.2 + 0.34 + 0.38 + 0.04 + 0.006 + 0.006)}{6 \text{ years}} = 0.16$$

Table 17. Conservation or management practice factor (P) values for Middlesex County

Practice	P factor value
Up and down slope farming (cultivation and planting)	1.00
Cross-slope farming	0.75
Contour farming (2-7 percent slopes)	0.5
Strip-cropping, cross slope	0.37
Strip-cropping, on contour	0.25

Table 18. Potential erosion loss classes for surface soils in Middlesex County

Landscape unit	Dominant drainage component	Significant drainage component	Potential erosion classes by slope class										
			A	a	B	b	C	c	d	D	E,e	F,f	G,g
Alluvium													
ALU			Not rated										
Bennington Association (W-Bennington; I-Tavistock; P-Maplewood)													
BN4	W-I		3-2	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
BN4.T	W-I		2-3	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
BN6	W-I		3-2	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
		P	2	2	4	3	5	5	5	5	5	5	5
BN6.T	W-I		2-3	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
		P	2	2	4	3	5	5	5	5	5	5	5
BN8	P		2	2	4	3	5	5	5	5	5	5	5
BN8.T	P		2	2	4	3	5	5	5	5	5	5	5
BN9	P		2	2	4	3	5	5	5	5	5	5	5
		W-I	3-2	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
BN9.T	P		2	2	4	3	5	5	5	5	5	5	5
		W-I	2-3	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
Blackwell Association (P-Blackwell)													
BA8	P		1	1	3	2	4	3	5	5	5	5	5

Table 18. Potential erosion loss classes for surface soils in Middlesex County (continued)

Landscape unit	Dominant drainage component	Significant drainage component	Potential erosion classes by slope class										
			A	a	B	b	C	c	d	D	E,e	F,f	G,g
Bookton Association (W-Bookton; I-Berrien; P-Wauseon)													
BO4	W-I		2-2	1-1	3-3	3-3	5-5	3-4	5-5	5-5	5	5	5
BO4.T	W-I		1-2	1-1	3-3	2-3	4-5	3-4	5-5	5-5	5	5	5
BO6	W-I		2-2	1-1	3-3	3-3	5-5	3-4	5-5	5-5	5	5	5
		P	2	1	3	2	5	3	5	5	5	5	5
BO6.T	W-I		1-2	1-1	3-3	3-2	4-5	3-4	5-5	5-5	5	5	5
		P	2	1	3	2	5	3	5	5	5	5	5
BO8	P		2	1	3	3	5	3	5	5	5	5	5
BO8.T	P		2	1	3	2	5	3	5	5	5	5	5
BO9	P		2	1	3	2	5	3	5	5	5	5	5
		W-I	2-2	1-1	3-3	3-3	5-5	3-4	5-5	5-5	5	5	5
BO9.T	P		2	1	3	2	5	3	5	5	5	5	5
		W-I	1-2	1-1	3-3	2-3	4-5	3-4	5-5	5-5	5	5	5
Brant Association (W-Brant; I-Tuscola; P-Colwood)													
BT4	W-I		3-3	2-2	5-4	3-3	5-5	5-5	5-5	5-5	5	5	5
BT6	W-I		3-3	2-2	5-4	3-3	5-5	5-5	5-5	5-5	5	5	5
		P	2	2	4	3	5	5	5	5	5	5	5
BT8	P		2	2	4	3	5	5	5	5	5	5	5
BT9	P		2	2	4	3	5	5	5	5	5	5	5
		W-I	3-3	2-2	5-4	3-3	5-5	5-5	5-5	5-5	5	5	5
Brantford Association (MW-Brantford; I-Beverly; P-Toledo)													
BF4	MW-I		2-2	2-2	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5
BF6	MW-I		2-2	2-2	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5
		P	2	1	3	3	5	4	5	5	5	5	5
BF8	P		2	1	3	3	5	4	5	5	5	5	5
BF9	P		2	1	3	3	5	4	5	5	5	5	5
		MW-I	2-2	2-2	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5

Table 18. Potential erosion loss classes for surface soils in Middlesex County (continued)

Landscape unit	Dominant drainage component	Significant drainage component	Potential erosion classes by slope class										
			A	a	B	b	C	c	d	D	E,e	F,f	G,g
Bryanston Association (W-Bryanston; I-Thorndale; P-Nissouri)													
BR4	W-I		2-3	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
BR6	W-I		2-3	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
		P	2	2	4	3	5	4	5	5	5	5	5
BR8	P		2	2	4	3	5	4	5	5	5	5	5
BR9	P		2	2	4	3	5	4	5	5	5	5	5
		W-I	2-3	2-2	4-4	3-3	5-5	5-5	5-5	5-5	5	5	5
Burford Association (R-Burford; I-Brisbane; P-Gilford)													
BU4	R-I		2-2	1-1	3-3	3-2	5-4	4-3	5-5	5-5	5	5	5
BU8	P		1	1	3	2	4	3	5	5	5	5	5
Caledon Association (R-W-Caledon; I-Camilla; P-Ayr)													
CA4	W-I		1-1	1-1	3-3	2-2	4-4	3-3	5-5	5-5	5	5	5
CA6	W-I		1-1	1-1	3-3	2-2	4-4	3-3	5-5	5-5	5	5	5
		P	1	1	3	2	4	3	5	5	5	5	5
CA8	P		1	1	3	2	4	3	5	5	5	5	5
CA9	P		1	1	3	2	4	3	5	5	5	5	5
		W-I	1-1	1-1	3-3	2-2	4-4	3-3	5-5	5-5	5	5	5
Eroded Channel													
ER			Not rated										
Fox Association (R-Fox; I-Brady; P-Poor)													
FO4	R-I		1-1	1-1	2-3	2-2	3-4	3-3	5-5	5-5	5	5	5
FO6	R-I		1-1	1-1	2-3	2-2	3-4	3-3	5-5	5-5	5	5	5
		P	2	1	3	2	5	3	5	5	5	5	5
FO8	P		2	1	3	2	5	3	5	5	5	5	5
FO9	P		2	1	3	2	5	3	5	5	5	5	5
		R-I	1-1	1-1	2-3	2-2	3-4	3-3	5-5	5-5	5	5	5

Table 18. Potential erosion loss classes for surface soils in Middlesex County (continued)

Landscape unit	Dominant drainage component	Significant drainage component	Potential erosion classes by slope class										
			A	a	B	b	C	c	d	D	E,e	F,f	G,g
Honeywood Association (W-Honeywood; I-Embro; P-Crombie)													
HY4	W-I		3-3	2-2	5-4	3-3	5-5	5-5	5-5	5-5	5	5	5
HY6	W-I		3-3	2-2	5-4	3-3	5-5	5-5	5-5	5-5	5	5	5
HY8	P		2	2	4	3	5	4	5	5	5	5	5
HY9	P		2	2	4	3	5	4	5	5	5	5	5
		W-I	3-3	2-2	5-4	3-3	5-5	5-5	5-5	5-5	5	5	5
Huron Association (MW-Huron; I-Perth; P-Brookston)													
HU4	W-I		2-2	2-1	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5
HU6	W-I		2-2	2-1	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5
		P	2	1	3	3	5	4	5	5	5	5	5
HU8	P		2	1	3	3	5	4	5	5	5	5	5
HU9	P		2	1	3	3	5	4	5	5	5	5	5
		W-I	2-2	2-1	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5
Melbourne Association (MW-Melbourne; I-Ekfrid; P-Strathburn)													
ME4	MW-I		2-2	1-1	3-3	3-3	5-5	4-3	5-5	5-5	5	5	5
ME6	MW-I		2-2	1-1	3-3	3-3	5-5	4-3	5-5	5-5	5	5	5
		P	1	1	3	2	4	3	5	5	5	5	5
ME8	P		1	1	3	2	4	3	5	5	5	5	5
ME9	P		1	1	3	2	4	3	5	5	5	5	5
	MW-I		2-2	1-1	3-3	3-3	5-5	4-3	5-5	5-5	5	5	5
Muriel Association (MW-Muriel; I-Gobles; P-Kelvin)													
MU4	W-I		2-2	2-2	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5
MU6	W-I		2-2	2-2	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5
		P	2	2	4	3	5	4	5	5	5	5	5
MU8	P		2	2	4	3	5	4	5	5	5	5	5
MU9	P		2	2	4	3	5	4	5	5	5	5	5
		MW-I	2-2	2-2	4-4	3-3	5-5	4-4	5-5	5-5	5	5	5
Not Mapped													
NM							Not rated						

Table 18. Potential erosion loss classes for surface soils in Middlesex County (continued)

Landscape unit	Dominant drainage component	Significant drainage component	Potential erosion classes by slope class										
			A	a	B	b	C	c	d	D	E,e	F,f	G,g
Organic Soils													
OD1							Not rated						
OD2							Not rated						
OD3							Not rated						
OS1							Not rated						
OS2							Not rated						
OU1							Not rated						
Plainfield Association (R-Plainfield; I-Walsingham; P-Waterin)													
PL4	R-I		1-1	1-1	3-3	2-2	4-4	3-3	5-5	5-5	5	5	5
PL6	R-I		1-1	1-1	3-3	2-2	4-4	3-3	5-5	5-5	5	5	5
	P		2	1	3	2	5	3	5	5	5	5	5
PL8	P		2	1	3	2	5	3	5	5	5	5	5
PL9	P		2	1	3	2	5	3	5	5	5	5	5
		R-I	1-1	1-1	3-3	2-2	4-4	3-3	5-5	5-5	5	5	5
Teeswater Association (W-Teeswater; I-Fanshawe; P-Ballymote)													
TE4	W-I		3-2	2-2	5-4	4-3	5-5	5-5	5-5	5-5	5	5	5
TE6	W-I		3-2	2-2	5-4	4-3	5-5	5-5	5-5	5-5	5	5	5
		P	2	1	4	4	5	3	5	5	5	5	5
TE8	P		2	1	4	4	5	4	5	5	5	5	5
TE9	P		2	1	4	4	5	4	5	5	5	5	5
		W-I	3-2	2-2	5-4	4-3	5-5	5-5	5-5	5-5	5	5	5
Valley Complex													
VC							Not rated						

Table 18. Potential erosion loss classes for surface soils in Middlesex County (continued)

Landscape unit	Dominant drainage component	Significant drainage component	Potential erosion classes by slope class										
			A	a	B	b	C	c	d	D	E,e	F,f	G,g
Walsher Association (W-Walsher; I-Vittoria; P-Silver Hill)													
WA4	W-I		1-2	1-1	3-3	2-3	4-5	4-4	5-5	5-5	5	5	5
WA4.T	W-I		2-2	1-1	3-3	3-3	5-5	4-4	5-5	5-5	5	5	5
WA6	W-I		1-2	1-1	3-3	2-3	4-5	4-4	5-5	5-5	5	5	5
		P	1	1	2	2	4	3	4	5	5	5	5
WA6.T	W-I		2-2	1-1	3-3	3-3	5-5	4-4	5-5	5-5	5	5	5
		P	1	1	2	2	4	3	5	5	5	5	5
WA8	P		1	1	2	2	4	3	4	5	5	5	5
WA8.T	P		2	1	3	3	5	4	5	5	5	5	5
WA9	P		1	1	2	2	4	3	4	5	5	5	5
		W-I	1-2	1-1	3-3	2-3	4-5	4-4	5-5	5-5	5	5	5
WA9.T	P		2	1	3	3	5	4	5	5	5	5	5
		W-I	2-2	1-1	3-3	3-3	5-5	4-4	5-5	5-5	5	5	5
Wattford Association (W-Wattford; I-Normandale; P-St. Williams)													
WF4	W-I		2-2	1-2	3-3	3-3	5-5	4-4	5-5	5-5	5	5	5
WF6	W-I		2-2	1-2	3-3	3-3	5-5	4-4	5-5	5-5	5	5	5
		P	2	1	4	3	5	4	5	5	5	5	5
WF8	P		2	1	4	3	5	4	5	5	5	5	5
WF9	P		2	1	4	3	5	4	5	5	5	5	5
		W-I	2-2	1-2	3-3	3-3	5-5	4-4	5-5	5-5	5	5	5

Table 19. Potential soil erosion losses for given K factor values and slope classes in Middlesex County (t/ha/y).*

K factor value	Slope classes													
	A	a	B	b	C	c	D	d	E	e	F	f	G	g
0.02	0.67	0.45	1.79	1.12	3.81	2.20	8.29	4.79	16.35	7.30	33.11	16.53	56.00	32.48
0.04	1.34	0.90	3.58	2.24	7.62	4.39	16.58	9.59	32.70	14.60	66.21	33.06	112.00	64.96
0.06	2.02	1.34	5.38	3.36	11.42	6.59	24.86	14.38	49.06	21.91	99.32	49.59	168.00	97.44
0.08	2.69	1.79	7.17	4.48	15.23	8.78	33.15	19.17	65.41	29.21	132.43	66.12	224.00	129.92
0.10	3.36	2.24	8.96	5.60	19.04	10.98	41.44	23.97	81.76	36.51	165.54	82.66	280.00	162.40
0.12	4.03	2.69	10.75	6.72	22.85	13.17	49.73	28.76	98.11	43.81	198.64	99.19	336.00	194.88
0.14	4.70	3.14	12.54	7.84	26.66	15.37	58.02	33.56	114.46	51.12	231.75	115.72	392.00	227.36
0.16	5.38	3.58	14.34	8.96	30.46	17.56	66.30	38.35	130.82	58.42	264.86	132.25	448.00	259.84
0.18	6.05	4.03	16.13	10.08	34.27	19.76	74.59	43.14	147.17	65.72	297.96	148.78	504.00	292.32
0.20	6.72	4.48	17.92	11.20	38.08	21.95	82.88	47.94	163.52	73.02	331.07	165.31	560.00	324.80
0.21	7.06	4.70	18.82	11.76	39.98	23.05	87.02	50.33	171.70	76.68	347.63	173.58	588.00	341.04
0.22	7.39	4.93	19.71	12.32	41.89	24.15	91.17	52.73	179.87	80.33	364.18	181.84	616.00	357.28
0.23	7.73	5.15	20.61	12.88	43.79	25.24	95.31	55.13	188.05	83.98	380.73	190.11	644.00	373.52
0.24	8.06	5.38	21.50	13.44	45.70	26.34	99.46	57.52	196.22	87.63	397.29	198.37	672.00	389.76
0.25	8.40	5.60	22.40	14.00	47.60	27.44	103.60	59.92	204.40	91.28	413.84	206.64	700.00	406.00
0.26	8.74	5.82	23.30	14.56	49.50	28.54	107.74	62.32	212.58	94.93	430.39	214.91	728.00	422.24
0.27	9.07	6.05	24.19	15.12	51.41	29.64	111.89	64.71	220.75	98.58	446.95	223.17	756.00	438.48
0.28	9.41	6.27	25.09	15.68	53.31	30.73	116.03	67.11	228.93	102.23	463.50	231.44	784.00	454.72
0.29	9.74	6.50	25.98	16.24	55.22	31.83	120.18	69.51	237.10	105.88	480.05	239.70	812.00	470.96
0.30	10.08	6.72	26.88	16.80	57.12	32.93	124.32	71.90	245.28	109.54	496.61	247.97	840.00	487.20
0.31	10.42	6.94	27.78	17.36	59.02	34.03	128.46	74.30	253.46	113.19	513.16	256.23	868.00	503.44
0.32	10.75	7.17	28.67	17.92	60.93	35.12	132.61	76.70	261.63	116.84	529.72	264.50	896.00	519.68
0.34	11.42	7.62	30.46	19.04	64.74	37.32	140.90	81.49	277.98	124.14	562.82	281.03	952.00	552.16
0.35	11.76	7.84	31.36	19.60	66.64	38.42	145.04	83.89	286.16	127.79	579.38	289.30	980.00	568.40
0.36	12.10	8.06	32.26	20.16	68.54	39.51	149.18	86.28	294.34	131.44	595.93	297.56	1008.00	584.64
0.37	12.43	8.29	33.15	20.72	70.45	40.61	153.33	88.68	302.51	135.09	612.48	305.83	1036.00	600.88
0.38	12.77	8.51	34.05	21.28	72.35	41.71	157.47	91.08	310.69	138.75	629.04	314.09	1064.00	617.12
0.40	13.44	8.96	35.84	22.40	76.16	43.90	165.76	95.87	327.04	146.05	662.14	330.62	1120.00	649.60
0.42	14.11	9.41	37.63	23.52	79.97	46.10	174.05	100.67	343.39	153.35	695.25	347.16	1176.00	682.08
0.43	14.45	9.63	38.53	24.08	81.87	47.20	178.19	103.06	351.57	157.00	711.80	355.42	1204.00	698.32
0.44	14.78	9.86	39.42	24.64	83.78	48.29	182.34	105.46	359.74	160.65	728.36	363.69	1232.00	714.56
0.46	15.46	10.30	41.22	25.76	87.58	50.49	190.62	110.25	376.10	167.96	761.47	380.22	1288.00	747.04
0.48	16.13	10.75	43.01	26.88	91.39	52.68	198.91	115.05	392.45	175.26	794.57	396.75	1344.00	779.52
0.50	16.80	11.20	44.80	28.00	95.20	54.88	207.20	119.84	408.80	182.56	827.68	413.28	1400.00	812.00
0.52	17.47	11.65	46.59	29.12	99.01	57.08	215.49	124.63	425.15	189.86	860.79	429.81	1456.00	844.48
0.54	18.14	12.10	48.38	30.24	102.82	59.27	223.78	129.43	441.50	197.16	893.89	446.34	1512.00	876.96
0.56	18.82	12.54	50.18	31.36	106.62	61.47	232.06	134.22	457.86	204.47	927.00	462.87	1568.00	909.44
0.58	19.49	12.99	51.97	32.48	110.43	63.66	240.35	139.01	474.21	211.77	960.11	479.40	1624.00	941.92
0.59	19.82	13.22	52.86	33.04	112.34	64.76	244.50	141.41	482.38	215.42	976.66	487.67	1652.00	958.16
0.60	20.16	13.44	53.76	33.60	114.24	65.86	248.64	143.81	490.56	219.07	993.22	495.94	1680.00	974.40
0.62	20.83	13.89	55.55	34.72	118.05	68.05	256.93	148.60	506.91	226.37	1026.32	512.47	1736.00	1006.88
0.64	21.50	14.34	57.34	35.84	121.86	70.25	265.22	153.40	523.26	233.68	1059.43	529.00	1792.00	1039.36
0.66	22.18	14.78	59.14	36.96	125.66	72.44	273.50	158.19	539.62	240.98	1092.54	545.53	1848.00	1071.84
0.68	22.85	15.23	60.93	38.08	129.47	74.64	281.79	162.98	555.97	248.28	1125.64	562.06	1904.00	1104.32
0.70	23.52	15.68	62.72	39.20	133.28	76.83	290.08	167.78	572.32	255.58	1158.75	578.59	1960.00	1136.80
0.72	24.19	16.13	64.51	40.32	137.09	79.03	298.37	172.57	588.67	262.89	1191.86	595.12	2016.00	1169.28
0.74	24.86	16.58	66.30	41.44	140.90	81.22	306.66	177.36	605.02	270.19	1224.97	611.65	2072.00	1201.76
0.76	25.54	17.02	68.10	42.56	144.70	83.42	314.94	182.16	621.38	277.49	1258.07	628.19	2128.00	1234.24
0.78	26.21	17.47	69.89	43.68	148.51	85.61	323.23	186.95	637.73	284.79	1291.18	644.72	2184.00	1266.72
0.80	26.88	17.92	71.68	44.80	152.32	87.81	331.52	191.74	654.08	292.10	1324.29	661.25	2240.00	1299.20
0.72	24.19	16.13	64.51	40.32	137.09	79.03	298.37	172.57	588.67	262.89	1191.86	595.12	2016.00	1169.28
0.74	24.86	16.58	66.30	41.44	140.90	81.22	306.66	177.36	605.02	270.19	1224.97	611.65	2072.00	1201.76
0.76	25.54	17.02	68.10	42.56	144.70	83.42	314.94	182.16	621.38	277.49	1258.07	628.19	2128.00	1234.24
0.78	26.21	17.47	69.89	43.68	148.51	85.61	323.23	186.95	637.73	284.79	1291.18	644.72	2184.00	1266.72
0.80	26.88	17.92	71.68	44.80	152.32	87.81	331.52	191.74	654.08	292.10	1324.29	661.25	2240.00	1299.20

* *Potential soil loss was calculated using an R value of 100 and LS values representative of conditions in Middlesex County.*

GLOSSARY*

Alluvial material - material deposited by rivers and streams, usually on riverbeds and floodplains

Coarse fragments - rock or mineral particles greater than 2.0 mm in diameter

Eolian material - material deposited by wind

Delta - an alluvial deposit formed where a stream or river drops its sediment load on entering a body of more quiet water.

Distinct mottles - spots of colour in soil horizons, caused by impeded drainage, whose contrast with the basic horizon colour is low

Eluvial horizon - a soil horizon formed by the process of leaching of carbonates, iron, humus etc., by soil solutions

Fen - a very poorly drained peat landform characterized by a shallow to deep peat layer, and by a dominantly sedge type of vegetation

Fibric material - organic soil material containing large amounts of weakly decomposed fibre, whose botanical origin is readily identifiable

Glaciofluvial material - material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and may occur in the form of outwash plains, deltas, kames, eskers and kame terraces

Gley colours - grey colours and mottles caused by the reduction of iron and other elements under poor drainage conditions

Hue - one of the three variables of soil colour (hue, chroma, value). It is described by soil colour rotations ranging from 10R (reddish) to N (grey)

Humic material - highly decomposed organic soil material containing little fibre

Illuvial horizon - a soil horizon in which material, such as iron or clay has accumulated, that has been leached from overlying soil horizons. In Middlesex County, most illuvial horizons are clay-enriched Bt horizons

Inclusions - minor proportions of soils or nonsoils within a soil delineation, that occur in unmappable amounts (usually less than 10 percent of the total area)

Glaciolacustrine material - material deposited in glacial lake water, and later exposed, either by lowering of the water level, or by uplifting of the land

Map delineation - any map area enclosed by a continuous boundary. A map polygon

Mesic material - organic soil material at a stage of decomposition between that of fibric and humic materials

Moraine - an accumulation of earth, generally with stones, carried and finally deposited by a glacier

Perched water table - the water table in a saturated layer of soil (10 cm or more thick) separated from an underlying saturated layer by an unsaturated zone

Physiography - a description of natural phenomena e.g. The Physiography of Southern Ontario (3) describes the landforms of the surface of southern Ontario

Prominent mottles - spots of colour in soil horizons, caused by impeded drainage, whose contrast with the basic horizon colour is high

Sedge - tufted marsh plants that differ from grasses by having solid stems

Soil association - a natural grouping of mineral soils which occur together in a characteristic pattern over a geographic region. In the mapping system used in Middlesex County soil associations share a consistent material, but have variable properties because of differences in drainage

Soil consistence - the degree of cohesion or adhesion of the soil mass

Soil drainage - the frequency and duration of periods when the soil is free of saturation. Soil drainage classes are described in The CanSIS Manual for Describing Soils in the Field (15)

Soil horizon - a layer of soil approximately parallel to the land surface, that differs from adjacent layers in properties such as texture, colour, structure, etc.

Soil landscape unit - a grouping of individual soil drainage components within a soil association. In Middlesex County, there are four landscape units mapped for most soil associations.

Soil morphology - the constitution of the soil, including the texture, morphology structure, consistence, colour and other physical, chemical and biological properties of the various soil horizons that make up the soil profile

Soil permeability - the ease with which gases and liquids penetrate or pass through soil. Soil permeability descriptions are based mainly on hydraulic conductivity measurements in Middlesex County. Permeability classes are listed in The CanSIS Manual for Describing Soils in the Field (15)

Soil pH - the degree of acidity or alkalinity of a soil. Soil reaction classes are listed in The Canadian System of Soil Classification (19)

Soil profile - a vertical section of the soil through all its horizons, and extending into the parent material

Soil structure - the combination or arrangement of primary soil particles into secondary particles, units or peds

Soil texture - the relative proportions of the various particle size fractions in a soil, as described by the classes of soil texture shown in Figure 13. The sand portion of the triangle may be further subdivided into coarse sand, sand, fine sand and very fine sand, based on the proportions of various sand sizes within the sand fraction. Likewise, loamy sand may be divided into loamy coarse

sand, loamy sand, loamy fine sand and loamy very fine sand. When the percentage gravel, by volume, is between 20 and 50 percent, the textural class name is modified by "gravelly", e.g. "gravelly sandy loam". When the gravel percentage is between 50 and 90 percent, the textural class name is modified by "very gravelly", e.g. "very gravelly sandy loam".

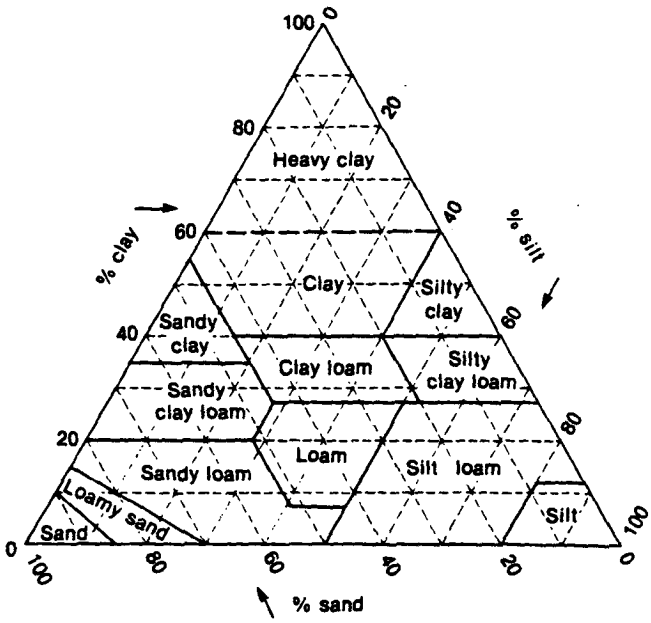

Figure 13. Soil texture classes

Surface runoff - the loss of water from an area by flow over the surface. It depends on many factors, acting independently or in combination, such as the amount and intensity of rainfall (or snowmelt), the soil water state at the beginning of the reference period, vegetation or land use, farming or other factors that affect the surface or its cover, water control practices, soil permeability and others. Surface runoff classes are described in The CanSIS Manual for Describing Soils in the Field (15)

Stereoscope - an optical instrument with two eyeglasses for helping the observer to combine the images of two pictures taken from points of view a little way apart, and thus to get the effect of depth. It is used to obtain a 3-dimensional image of the land surface from airphotos.

Surficial geology - that branch of geology dealing with surface landforms and the unconsolidated materials that comprise them

Till - a sediment of diverse texture and structure, deposited by direct glacier action; it is characteristically compact, poorly sorted and unstratified

Tolerable soil loss - the rate a which soil can be removed before the agricultural productivity of the land is adversely affected

Varve - a distinct band representing the annual deposit of sedimentary materials. It usually consists of two layers, a thick light-coloured layer of silt and fine sand laid down in the spring and summer, and a thin, dark-coloured layer of clay laid down in the fall and winter

Void - space in a soil mass not occupied by solid mineral matter. This space may be occupied by air, water or other gaseous or liquid material.

* Most definitions for this glossary were based on the following sources:

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APPENDIX 1

Generalized Profile Characteristics for the Soils of Middlesex County

SOIL DESCRIPTIONS AND ANALYSES

BENNINGTON ASSOCIATION

ASSOCIATION MEMBERS Bennington, well drained
Tavistock, imperfectly drained
Maplewood, poorly drained

PARENT MATERIALS 40 to 100 cm of loamy textures over clayey glaciolacustrine material, or clayey glacial till (till phase)

BENNINGTON SOIL (BNG)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	8	23	1	24	15	56	20	SIL	4.4	7.2	1.4
Bm	5	47	1	21	11	61	18	SIL	2.3	7.1	1.5
Bt	3	57	0	28	15	46	26	SIL	1.0	7.2	0.6
IICk	6		1	3	0	52	45	SIC	-	7.5	21.5

BENNINGTON SOIL - TILL PHASE (BNG.T)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	3	19	0	29	19	51	20	SIL	5.4	7.3	1.9
Bm	2	53	0	36	31	55	11	SIL	2.1	7.0	0.3
Bt	1	70	1	23	12	60	17	SIL	0.3	6.6	-
IICk	3		4	17	6	48	35	SICL	-	7.4	23.2

TAVISTOCK SOIL (TVK)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	29	23	0	36	18	45	20	L	4.00	7.1	1.8
Bmgj	25	53	0	37	21	44	19	L	1.0	7.1	3.2
IIBtgj	8	85	0	10	3	51	40	SICL	0.7	7.2	0.8
IICkgj	31		0	6	1	55	40	SICL	-	7.6	25.

TAVISTOCK SOIL - TILL PHASE (TVK.T)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	27	23	2	30	13	49	21	L	4.1	7.1	2.2
Bm	22	51	3	32	13	46	22	L	1.6	7.2	2.6
Btgj	10	61	2	33	16	44	23	L	0.9	7.2	2.7
IICkgj	32		3	16	5	48	36	SICL	-	7.5	20.2

MAPLEWOOD SOIL (MPW)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	5	25	0	48	24	31	21	L	4.20	7.10	2.20
Bg	3	58	0	43	18	30	27	L	2.10	7.20	0.40
IICkg	3		1	10	4	54	36	SICL	-	7.60	28.5

BLACKWELL ASSOCIATION

ASSOCIATION MEMBERS Blackwell, poorly drained

PARENT MATERIALS Clayey to fine clayey glaciolacustrine deposits.

BLACKWELL SOIL (BCW)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	3	33	0	7	1	39	53	SIC	10.6	7.3	3.1
Bg	1	66	0	2	0	37	61	HC	4.7	7.3	0.9
Ckg	1		0	6	0	57	37	SICL	-	7.5	39.0

* This soil is classified as a Rego Humic Gleysol in the Provincial Soil Names File. While this classification may occur in Middlesex, it is not the most common.

BOOKTON ASSOCIATION

ASSOCIATION MEMBERS Bookton, well drained
Berrien, imperfectly drained
Wauseon, poorly drained

PARENT MATERIALS 40 to 100 cm of sandy textures overlying clayey glaciolacustrine material, or clayey glacial till (till phase)

BOOKTON SOIL (BOO)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Orthic Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	8	23	4	69	18	22	10	FSL	3.8	6.7	1.4
Bm	6	50	5	74	15	18	8	FSL	0.7	7.1	1.0
IICk	8		1	9	1	51	41	SIC	-	7.6	23.2

* This soil is classified as a Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

BOOKTON SOIL - TILL PHASE (BOO.T)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Orthic Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	4	24	2	67	10	20	13	FSL	3.0	6.5	2.1
Bm	2	69	3	83	10	13	5	LFS	0.3	6.2	0.8
Ck	3	72	3	74	3	16	10	SL	0.1	7.6	29.8
IICk	4		1	22	7	44	35	CL	-	7.5	22.7

* This soil is classified as a Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

BERRIEN SOIL (BRR)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	32	24	1	71	21	19	10	FSL	3.8	6.9	0.9
Bmgj	33	55	2	76	21	15	9	FSL	0.9	7.0	1.3
Ckgj	15	79	6	86	20	9	5	LS	0.1	7.5	18.9
IICkgj	32		1	8	2	52	39	SICL	-	7.6	24.0

* This soil is classified as a Gleyed Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

BERRIEN SOIL - TILL PHASE (BRR.T)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	26	28	1	69	20	19	11	FSL	3.9	7.1	0.9
Bmgj	23	58	2	76	21	16	8	FSL	1.0	7.0	1.4
Ckgj	9	78	2	34	9	33	34	SICL	0.6	7.5	4.9
IICkgj	23		2	18	5	47	35	SICL	-	7.6	23.9

* This soil is classified as a Gleyed Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

WAUSEON SOIL (WUS)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	7	25	0	83	18	21	16	FSL	5.7	7.1	1.8
Bg	4	46	2	70	24	17	14	FSL	1.2	7.3	1.8
Ckg	4	66	5	81	14	15	5	LFS	-	7.6	24.5
IICkg	8		1	11	5	50	39	SICL	-	7.6	25.0

WAUSEON SOIL - TILL PHASE (WUS.T)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	3	26	4	61	17	22	17	FSL	4.7	7.3	6.7
Bg	2	59	1	87	22	9	6	LS	0.8	6.9	0.4
Ckg	5	69	7	80	11	12	8	LS	-	7.5	21.1
IICkg	4		4	15	4	46	39	SICL	-	7.6	27.6

BRANT ASSOCIATION

ASSOCIATION MEMBERS Brant, well drained
Tuscola, imperfectly drained
Colwood, poorly drained

PARENT MATERIALS Glaciolacustrine loam, silt loam and very fine sandy loam

BRANT SOIL (BRT)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Orthic Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	15	28	1	29	15	53	18	SIL	3.8	7.1	1.4
Bm1	5	61	1	35	20	51	14	SIL	0.9	6.7	1.4
Bm2	12	84	0	26	14	59	16	SIL	0.8	6.9	1.7
Ck	12		3	29	15	55	17	SIL	-	7.6	23.2

* This soil is classified as a Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

TUSCOLA SOIL (TUC)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	106	28	1	34	18	48	18	L	4.5	7.2	2.5
Bmgj	61	64	1	38	23	46	16	L	1.5	7.0	0.8
Ckgj	86		1	28	16	57	15	SIL	-	7.6	26.6

* This soils is classified as a Gleyed Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

COLWOOD SOIL (CWO)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	25	25	1	38	20	43	19	L	6.60	7.20	1.50
Bg	26	74	0	28	16	50	22	L	1.30	7.10	2.60
Ckg	32		1	25	14	57	18	SIL	-	7.50	23.2

BRANTFORD ASSOCIATION

ASSOCIATION MEMBERS Brantford, moderately well drained
Beverly, imperfectly drained
Toledo, poorly drained

PARENT MATERIALS Clayey glaciolacustrine deposits

BRANTFORD SOIL (BFO)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	25	22	1	14	5	55	31	SICL	4.7	7.0	1.2
Bm	5	47	2	15	2	45	40	SICL	1.2	7.3	3.2
Bt	16	57	0	5	0	50	44	SIC	1.1	7.1	0.6
Ck	21		0	6	1	54	40	SICL	-	7.5	18.4

BEVERLY SOIL (BVY)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	135	22	1	17	6	50	32	SICL	4.40	7.0	1.3
Btgj	71	49	0	9	2	47	44	SIC	1.2	7.2	2.0
Bmgj	70	56	0	14	5	50	37	SICL	1.1	7.2	2.2
Ckgj	134		0	6	1	54	41	SIC	-	7.6	23.0

TOLEDO SOIL (TLD)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	55	23	0	17	7	46	37	SICL	5.4	7.1	1.4
Bg1	18	63	0	14	6	46	40	SICL	1.9	7.0	1.2
Bg2	18	92	0	12	5	47	41	SIC	1.1	7.1	2.5
Ckg	47		0	9	2	50	41	SIC	-	7.5	19.4

BRYANSTON ASSOCIATION

ASSOCIATION MEMBERS Bryanston, well drained
Thorndale, imperfectly drained
Nissouri, poorly drained

PARENT MATERIALS Loamy glacial till

BRYANSTON SOIL (BRY)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol**

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Texture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	5	21	3	26	10	51	23	SIL	4.0	7.2	8.0
Bm	1	52	1	19	12	58	23	SIL	1.0	7.2	4.0
Ck	5		10	27	9	47	27	L	-	7.6	24.2

** Horizon sequence in the generalized profile is based on a small number of sampled sites and is not consistent with the usual classification of a Bryanston soil

THORNDALE SOIL (THN)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Texture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	49	26	2	24	10	53	22	SIL	4.3	7.3	1.7
Bmgj	18	53	2	23	9	53	24	SIL	1.1	7.3	0.9
Btgj	7	58	3	29	11	42	29	CL	1.0	7.3	0.9
Ckgj	63		8	29	10	49	23	L	-	7.6	23.8

NISSOURI SOIL (NIS)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Texture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	8	28	1	22	8	52	26	SIL	4.8	7.3	1.8
Bg	2	61	3	31	7	43	27	L	1.5	7.0	1.0
Ckg	9		11	31	8	45	23	L	-	7.5	24.4

BURFORD ASSOCIATION

ASSOCIATION MEMBERS Burford, rapidly drained
Brisbane, imperfectly drained
Gilford, poorly drained

PARENT MATERIALS Gravelly and/or cobbly glaciofluvial material

BURFORD SOIL (BUF)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Rapid

USUAL CLASSIFICATION Orthic Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	10	20	14	57	8	30	14	SL	3.2	7.1	7.0
Bm	2	38	17	81	9	13	6	LCS	1.1	7.1	11.6
Ck	10		37	71	6	19	10	GCSL	-	7.5	33.5

* This soil is classified as an Orthic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

CALEDON ASSOCIATION

ASSOCIATION MEMBERS Caledon, rapidly to well drained
Camilla, imperfectly drained
Ayr, poorly drained

PARENT MATERIALS Sandy textures overlying gravelly and cobbly glaciofluvial outwash

CALEDON SOIL (CAD)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Rapid to well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	17	24	6	71	11	20	8	SL	3.0	7.0	2.4
Bm	13	52	5	79	11	14	6	LS	1.0	7.0	0.4
Bt	6	69	8	68	8	14	18	SL	0.7	7.2	3.9
IICk	15		28	81	7	12	7	GLS	-	7.5	24.9

CAMILLA SOIL (CML)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	10	23	4	65	12	23	12	SL	3.3	7.1	2.3
Bmgj	7	52	4	69	10	23	9	SL	0.9	7.0	0.7
Btgj	2	56	11	64	8	20	16	CSL	0.9	7.3	2.1
IICkgj	6		22	82	12	12	6	GLS	-	7.5	18.0

FOX ASSOCIATION

ASSOCIATION MEMBERS Fox, rapidly drained
Brady, imperfectly drained
Granby, poorly drained

PARENT MATERIALS Glaciolacustrine and glaciofluvial sand and loamy sand, occasionally with layers of sandy loam material

FOX SOIL (FOX)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Rapid

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	12	23	3	77	8	16	7	LS	3.1	7.0	2.6
Bm	13	41	4	84	5	11	5	LS	0.8	6.9	0.5
Bt	4	62	8	74	6	14	13	SL	0.5	6.6	1.1
Ck	9		4	89	7	7	4	S	-	7.4	24.4

BRADY SOIL (BAY)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	7	28	3	71	12	20	10	SL	3.4	6.8	1.2
Bmgj	4	48	5	77	13	16	7	LS	0.9	6.9	0.5
Btgj	4	66	3	71	14	20	10	SL	1.4	7.1	2.6
Ckgj	7		7	85	6	11	4	LS	-	7.5	19.2

HONEYWOOD ASSOCIATION

ASSOCIATION MEMBERS Honeywood, well drained
Embro, imperfectly drained
Crombie, poorly drained

PARENT MATERIALS 40 to 100 cm of loamy glaciolacustrine material overlying loamy glacial till

HONEYWOOD SOIL (HYW)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Orthic Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	6	23	1	22	13	61	18	SIL	5.4	7.3	2.2
Bm	8	59	1	20	12	62	18	SIL	2.5	7.3	1.4
IICk	8		10	36	13	48	17	L	-	7.6	23.1

* This soil is classified as a Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

EMBRO SOIL (EBR)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	33	25	1	24	12	56	20	SIL	4.4	7.2	1.3
Bmgj	31	62	1	26	14	55	19	SIL	1.0	7.2	1.1
IICkgj	38		9	35	10	46	19	L	-	7.6	25.2

* This soil is classified as a Gleyed Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

CROMBIE SOIL (CMB)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	2	29	1	18	9	57	26	SIL	5.5	7.1	1.0
Bg	3	60	1	25	12	57	18	SIL	1.4	7.1	1.3
IICkg	4		8	33	11	47	20	SIL	-	7.6	23.6

HURON ASSOCIATION

ASSOCIATION MEMBERS Huron, moderately well drained
Perth, imperfectly drained
Brookston, poorly drained

PARENT MATERIALS Clayey glacial till material

HURON SOIL (HUO)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Moderately well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	9	25	2	22	11	52	25	SIL	4.8	7.2	2.2
Bm	3	35	0	16	8	52	32	SICL	1.5	7.3	1.0
Bt	3	50	2	14	7	47	39	SICL	1.4	7.2	1.3
Ck	9		7	19	6	44	37	SICL	-	7.5	18.9

PERTH SOIL (PTH)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	99	25	2	20	8	49	31	SICL	4.40	7.30	3.30
Bmgj	15	44	2	25	8	41	35	CL	1.4	7.2	1.3
Btgj	28	50	1	18	6	41	42	SIC	1.2	7.2	1.2
Ckgj	107		5	15	4	47	37	SICL	-	7.6	25.8

BROOKSTON SOIL (BKN)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	43	24	1	20	7	46	34	SICL	5.0	7.3	2.3
Bg	12	53	1	20	6	41	40	SICL	2.0	7.2	0.8
Ckg	37		2	14	4	47	39	SICL	-	7.5	17.7

MELBOURNE ASSOCIATION

ASSOCIATION MEMBERS Melbourne, moderately well drained
Ekfrid, imperfectly drained
Strathburn, poorly drained

PARENT MATERIALS Clayey to fine clayey glaciolacustrine material

MELBOURNE SOIL (MEL)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Moderately well

USUAL CLASSIFICATION Orthic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	6	18	1	12	3	49	40	SICL	5.80	7.0	0.9
Bt	8	55	0	3	0	40	57	SIC	1.30	7.2	1.6
Ck	7		0	2	0	47	51	SIC	-	7.5	24.1

EKFRID SOIL (EKF)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	32	21	0	14	3	44	41	SIC	4.90	6.9	0.9
Bmgj	12	46	0	6	0	39	55	C	1.60	7.1	1.6
Btgj	26	51	0	5	0	38	58	C	1.20	7.2	1.90
Ckgj	38		0	3	0	45	52	SIC	-	7.6	25.7

STRATHBURN SOIL (SBN)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Humic Luvic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	23	22	0	7	1	42	51	SIC	7.0	6.8	0.6
Btg	12	61	0	4	0	37	60	HC	2.8	6.9	1.1
Bg	22	74	0	5	0	38	57	C	1.7	7.1	1.1
Ckg	13		0	3	0	47	49	C	-	7.6	20.8

MURIEL ASSOCIATION

ASSOCIATION MEMBERS Muriel, moderately well drained
Gobles, imperfectly drained
Kelvin, poorly drained

PARENT MATERIALS Clayey glacial till

MURIEL SOIL (MUI)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Moderately well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol**

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	1	22	1	19	10	57	23	SIL	3.4	6.9	-
Bm	1	28	2	18	9	60	22	SIL	0.8	5.6	-
Bt1	1	38	1	10	5	52	38	SICL	0.6	5.9	-
Bt2	1	71	1	11	5	51	39	SICL	0.4	6.2	-
Ckgj	1		2	9	0	62	29	SICL	-	7.4	11.1

** Horizon sequence in the generalized profile is based on a small number of sampled sites and therefore may not represent the common horizon sequence of a Brunisolic Gray Brown Luvisol.

GOBLES SOIL (GOB)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	31	25	2	25	8	46	29	CL	3.30	7.1	1.1
Bmgj	5	47	1	33	6	33	34	CL	1.3	7.2	0.5
Btgj	15	60	2	15	5	44	42	SIC	0.9	7.2	2.2
Ckgj	28		2	14	4	48	38	SICL	-	7.6	19.0

KELVIN SOIL (KVN)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	9	21	1	28	11	42	31	CL	4.3	7.0	1.1
Bg	2	55	2	14	4	35	52	C	1.9	7.2	0.6
Ckg	10		6	17	5	48	36	SICL	-	7.6	21.6

PLAINFIELD ASSOCIATION

ASSOCIATION MEMBERS — Plainfield, rapidly drained
Walsingham, imperfectly drained
Waterin, poorly drained

PARENT MATERIALS — Eolian fine sand, and eolian modified, glaciolacustrine fine sand

PLAINFIELD SOIL (PFD)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE — Rapid

USUAL CLASSIFICATION — Orthic Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	32	23	1	83	25	12	6	FS	3.3	6.9	1.5
Bm1	19	42	0	88	24	10	3	FS	1.4	6.8	0.4
Bm2	19	77	0	91	25	7	2	FS	0.6	6.8	0.4
Ck	13		0	88	22	8	4	FS	-	7.5	18.2

* This soil is classified as a Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may occur in Middlesex, it is not the most common.

WALSINGHAM SOIL (WAM)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE — Imperfect

USUAL CLASSIFICATION — Gleyed Melanic Brunisol*

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	45	21	1	84	24	11	5	LFS	3.50	6.6	0.5
Bmgj1	50	55	0	89	26	8	3	FS	1.2	6.4	0.5
Bmgj2	47	81	0	91	26	6	3	FS	0.4	6.3	0.2
Ckgj	28		0	92	30	6	3	FS	-	7.5	15.2

* This soil is classified as a Gleyed Brunisolic Gray Brown Luvisol in the Provincial Soil Names File. While this classification may be found in Middlesex, it is not the most common.

WATERIN SOIL (WRN)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE — Poor

USUAL CLASSIFICATION — Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	8	25	1	80	25	12	8	LFS	4.3	7.0	1.1
Bg1	3	62	0	87	31	8	5	FS	0.8	7.0	0.4
Bg2	3	84	0	92	27	5	4	FS	0.5	7.2	2.0
Ckg	7		0	94	18	4	2	FS	-	7.4	16.4

TEESWATER ASSOCIATION

ASSOCIATION MEMBERS Teeswater, well drained
Fanshawe, imperfectly drained
Ballymote, poorly drained

PARENT MATERIALS Loamy glaciolacustrine material 40 to 100 cm deep overlying gravelly glaciofluvial deposits

TEESWATER SOIL (TEW)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	7	24	1	33	18	52	15	SIL	2.5	7.2	1.3
Bm	4	36	0	38	26	47	15	L	0.7	6.6	0.3
Bt	6	50	7	38	16	38	24	L	0.9	7.3	3.4
Ck	3	61	4	55	19	33	12	SL	-	7.4	9.5
IICk	9		30	71	8	20	9	GSL	-	7.6	35.2

FANSHAWE SOIL (FAN)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol**

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	7	32	2	20	8	58	22	SIL	5.2	7.3	4.6
Bmgj	3	56	1	16	10	63	21	SIL	0.8	7.4	1.8
Ckgj	3	66	17	33	9	45	22	L	-	7.4	14.7
IICkgj	6		32	58	8	30	12	GCSL	-	7.6	35.1

** Horizon sequence in the generalized profile is based on a small number of sampled sites and therefore may not represent the common horizon sequence of Gleyed Brunisolic Gray Brown Luvisol

BALLYMOTE SOIL (BLL)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	1	22	1	43	6	37	20	L	7.4	7.0	1.0
Bg	1	65	3	49	8	36	15	L	1.0	7.4	2.0
IICkg	1		10	78	5	17	5	LS	-	7.6	53.0

WALSHER ASSOCIATION

ASSOCIATION MEMBERS Walsher, well drained
Vittoria, imperfectly drained
Silver Hill, poorly drained

PARENT MATERIALS 40 to 100 cm of sandy textures overlying loamy glaciolacustrine material

WALSHER SOIL (WSH)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol**

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	2	30	5	77	15	14	10	FSL	2.6	6.6	-
Bm	2	55	5	73	29	15	12	FSL	1.5	6.7	0.6
IICk	3		3	39	21	41	19	L	-	7.4	23.3

** Horizon sequence in the generalized profile is based on a small number of sampled sites and therefore may not represent the common horizon sequence of a Brunisolic Gray Brown Luvisol.

VITTORIA SOIL (VIT)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	21	25	2	72	19	19	9	FSL	3.40	7.1	1.8
Aegj	5	45	2	77	20	17	6	LFS	1:1	7.1	0.5
Bmgj	19	52	1	81	20	13	6	LFS	1.0	7.0	0.5
Btgj	4	60	3	74	19	14	13	FSL	0.4	7.1	0.3
IICkgj	22		1	24	17	63	12	SIL	-	7.6	30.7

VITTORIA SOIL - TILL PHASE (VIT.T)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	13	27	2	62	16	28	10	SL	3.2	6.9	0.7
Bmgj	11	66	1	71	19	21	8	SL	0.6	7.0	0.9
Btgj	3	71	2	68	25	18	14	SL	0.5	7.2	1.2
IICkgj	12		9	33	13	49	18	L	-	7.6	27.9

SILVER HILL SOIL (SIH)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol**

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	1	33	1	63	5	23	14	SL	6.70	6.90	-
Ck	1	90	12	77	6	18	5	LS	-	7.30	26.5
IICkg	1		0	28	14	60	12	SIL	-	7.40	26.7

** Horizon sequence in the generalized profile is based on a small number of sampled sites and therefore may not represent the common horizon sequence of a Orthic Humic Gleysol.

SILVER HILL SOIL - TILL PHASE (SIH.T)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol**

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	1	23	6	63	25	22	15	FSL	3.2	7.3	2.0
Ckg	1	42	2	62	21	24	15	FSL	-	7.1	1.0
IICkg	1		10	34	6	42	24	L	-	7.6	39.0

** Horizon sequence in the generalized profile is based on a small number of sampled sites and therefore may not represent the common horizon sequence of a Orthic Humic Gleysol.

WATTFORD ASSOCIATION

ASSOCIATION MEMBERS Wattford, well drained
Normandale, imperfectly drained
St. Williams, poorly drained

PARENT MATERIALS Fine sandy loam, loamy very fine sand, and very fine sand textured material w occasional horizons of fine sand and loamy fine sand

WATTFORD SOIL (WAT)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Well

USUAL CLASSIFICATION Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	13	23	3	68	22	23	9	FSL	3.6	7.1	2.6
Bm	8	60	2	85	28	12	4	LFS	0.7	6.8	0.5
Bt	4	87	0	78	33	17	6	VFSL	0.2	6.8	0.2
Ck	8		3	72	33	22	6	VFSL	-	7.5	18.1

NORMANDALE SOIL (NDE)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Imperfect

USUAL CLASSIFICATION Gleyed Brunisolic Gray Brown Luvisol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	25	22	0	66	28	23	10	FSL	3.90	6.8	0.7
Bmgj	28	61	1	77	31	17	6	LFS	0.9	6.5	0.7
Btgj	11	74	0	70	30	15	15	VFSL	0.4	6.7	1.2
Ckgj	18		1	73	37	21	6	VFSL	-	7.5	18.7

ST. WILLIAMS SOIL (SLI)

GENERALIZED PROFILE CHARACTERISTICS

DRAINAGE Poor

USUAL CLASSIFICATION Orthic Humic Gleysol

MEAN HORIZON VALUES

Horizon	No. of Samples	Depth to Horizon Base (cm)	Gravel %	Sand %	VF Sand %	Silt %	Clay %	Tex-ture	Org. M %	pH in $CaCl_2$	$CaCO_3$ %
Ap	4	29	1	65	29	23	13	VFSL	8.9	7.3	3.3
Bg	4	51	1	78	51	17	5	LVFS	1.0	7.4	11.2
Ckg1	2	71	4	86	44	11	4	LFS	-	7.6	22.1
Ckg2	4		1	82	53	15	3	LVFS	-	7.7	31.1

APPENDIX 2

Identifying Soil Landscape Units in the Field

Introduction

Guidelines for assessing soils in the field were prepared in order to ensure that future data collection on the soils of Middlesex County can be correlated with the published descriptions and interpretations. The guidelines are based on the soil drainage groupings and mapping methodology used in the compilation of the 1:50,000 maps.

Figures 14, 15, 16 and 17 are keys which will assist extension personnel, consultants and others in identifying soil landscape units in the field. Some knowledge of the geology, physiography and soils of Middlesex County is useful in order to use the keys. In addition, it is important to have an understanding of the soil association based mapping system used in the survey. Since background information on these subjects is contained in the Introduction and Soil Description sections of this report, it is recommended that the user thoroughly review the soil report before conducting field investigations.

In order to use the flow charts effectively it is necessary to be familiar with the techniques for assessing soil properties such as drainage and texture. Those who require assistance are referred to the following publications: *CanSIS Manual for Describing Soils in the Field* (15) and the *OIP Field Manual for Describing Soils* (17).

It is possible to identify the soil landscape unit at most sites using Figures 14, 15, 16 and 17. At sites where it is difficult to determine the landscape unit, it may be necessary to consult the soil association descriptions in Volume 1 and the analytical data in Volume 2, before assigning the landscape unit designation.

On site soil assessments should be considered under the following conditions:

1. The areal extent of the site under investigation is approaching or less than 12 hectares, which is the minimum size area that can be delineated on the 1:50,000 scale soil maps.

2. The soil and topographic variability may not be completely described in all delineations, because the delineation symbol on the 1:50,000 maps, can only identify a maximum of two landscape units and slope classes. The landscape units and slope classes not identified by the symbol are referred to as inclusions. Although their areal extent is usually limited, they can occupy up to 20% of a delineation, where the soils and topography are highly variable. The degree of variability can be inferred by determining the number of landscape units and slope classes mapped in the vicinity of the site under investigation. In addition, there is a discussion on the soil variability of each association in the Soil Description section of this report.

3. Although the map delineation symbol indicates the relative proportion of the landscape units and slope classes within a delineation, it does not identify their spatial distribution. It is important to understand that landscape units and slope classes do not necessarily occur in a uniform pattern across the delineation. In cases where the site under investigation covers only a portion of the delineation, the location of the landscape units and slope classes is critical. In some delineations the area under investigation may consist of only one of the landscape units and slope classes noted in the symbol. It is also possible that the site may be comprised of inclusions.

How to Determine Soil Landscape Units in the Field

In order to determine soil landscape units in the field, it is recommended that the following procedure be followed:

1. Locate the site under investigation on the 1:50,000 soil maps. Using the Key to the Symbols of Map Delineations on the border of the map, determine the landscape units and slope classes for the map delineation symbols. It may also be useful to examine the symbols in the surrounding delineations. Refer to the appropriate soil and profile descriptions in Volume 1 and 2 for background information on soil properties. This awareness will facilitate correlation of the data collected on site with the published information.

2. Locate the sites for soil inspections on dominant slopes in the area. As an example, in rolling topography, the sites should be located on the upper part of the slope and in the lower areas between the slopes. The number of sites is influenced by the complexity of the topography and parent materials, and the areal extent of the site under investigation.

3. Determine the slope class at each site.

4. Take a sample of the soil profile at each site using a Dutch auger, soil probe, or shovel. Where it is feasible the soil should be examined to a depth of one metre.

5. Beginning with Figure 14 determine the nature of the soil ie. Is it organic or mineral? Organic soils are easily identified as they usually have a greasy-feeling, and dark, peaty material with visible plant remains. Use Figure 15 to determine the organic soil landscape unit if the organic surface layer is greater than 40 cm. Use Figures 16 or 17 for mineral soil profiles.

6. Assess the homogeneity of the soil profile to determine if one or two contrasting parent materials are present. Materials are considered to be contrasting if there are significant differences in the gravel and stone content of the soil profile and/or differences of more than two textural classes between adjacent soil horizons. These differences often indicate a change in the mode of deposition of the material e.g. glaciolacutrine, glacial till and glaciofluvial. In the soil legend for Middlesex County the upper parent material must have a minimum thickness of 40 cm before both materials are used as criteria for differentiating landscape units. The lower parent material can often be identified by its reaction to a 10% solution of hydrochloric acid. Refer to Figure 17 to determine the appropriate soil landscape unit for those soil profiles with two parent materials.

7. For the mineral soils determine the dominant textural class of the parent material(s). Use the textural groupings indicated on Figures 16 or 17 as the criteria for this assessment. The guidelines for determining soil texture classes are explained in the *OIP Field Manual for Describing Soils* (17).

8. Determine the natural drainage of the soil using the soil colours and the depth to mottling. The guidelines for determining soil drainage classes are presented in the *OIP Field Manual for Describing Soils* (17). Using the drainage groupings shown on Figure 16 or 17, assign a soil landscape designation to the soil profile.

9. Compile the soil landscape designations and their respective slopes for all sites within the area of the site investigation.

10. In delineations where the soil landscape designation verifies the symbol, the interpretive tables can be applied to the delineation symbol on the 1:50,000 soil map. Tables 4 and 5 contain the agricultural capability ratings for common field crops. Refer to Tables 8, 9 and 10 for suitability ratings for selected special crops. Potential erosion loss classes for all landscape units are presented in Table 19. If the soil landscape designations determined by the field investigation are significantly different than those indicated by the delineation symbol, remapping the area at a more detailed scale should be considered before applying the interpretive ratings.

11. The individual soils which comprise the landscape units can be identified based on their drainage class. A list of the soil and drainage components of the landscape units for each association is included in the Soil Description section of this report. It also discusses the characteristics of the soil association members.

The following example outlines the steps for determining soil landscape units in the field.

Topography

slope gradient is 4%
slope length is 75 m

Using the slope classes in the OIP Field Manual for Describing Soils (17), this is a C slope.

Soil Texture Assessment

0 - 55 cm sandy textures
55 - 100 cm silty clay and silty clay loam textures with significant stone content

Beginning with Figure 14, the profile has no organic soil horizons, and therefore is a mineral soil. Because there is a significant difference in the texture of the material in the 0 - 55 cm zone and the underlying material and the lower material contains stones, two parent materials are present. Using Figure 17, the soil landscape unit is either a BO4.T or a BO8.T.

Soil Drainage Assessment

soil colour is 10YR5/3
mottle colour 10YR/5/8
depth to mottles is 60 cm

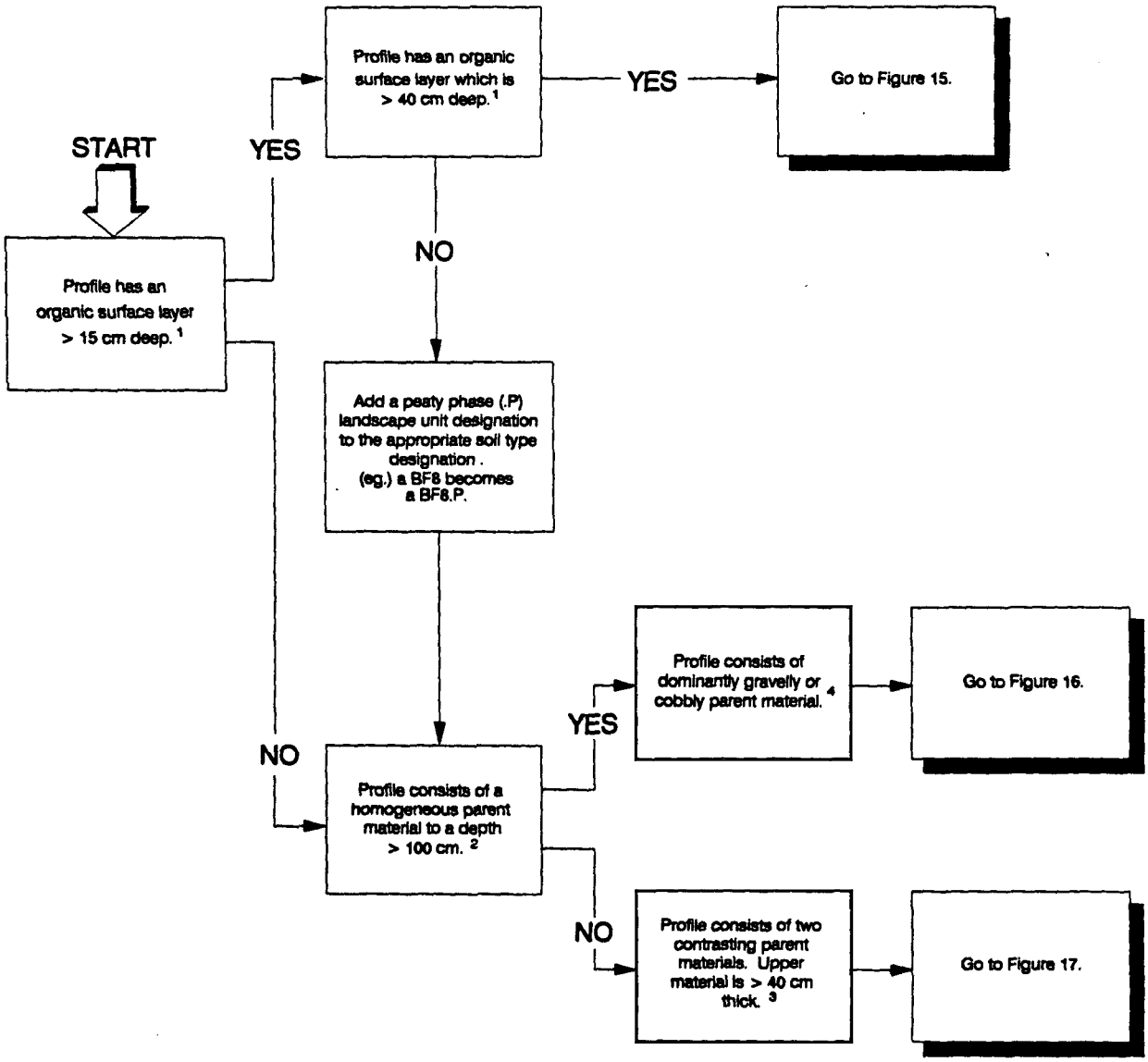
Using the soil drainage chart in the OIP Field Manual for Describing Soils (17), the soil profile is imperfectly drained.

Soil Landscape Designation

The soil landscape designation is a BO4.T.

In this example the soil profile is imperfectly drained. Using the table in the soil description of the Bookton Association, the imperfectly drained member of the association is the Berrien soil. Agricultural capability ratings for the Berrien soil can be determined from Table 4. Refer to Tables 8, 9 and 10 for suitability ratings for selected special crops. The potential erosion class for Berrien soils on C slopes can be calculated using the soil erodibility (K) factor values from Table 11 and the slope length and gradient (LS) factor values from Table 13.

Figure 14 : Introductory Field Key For Identifying Soil Landscape Units.



FOOTNOTES

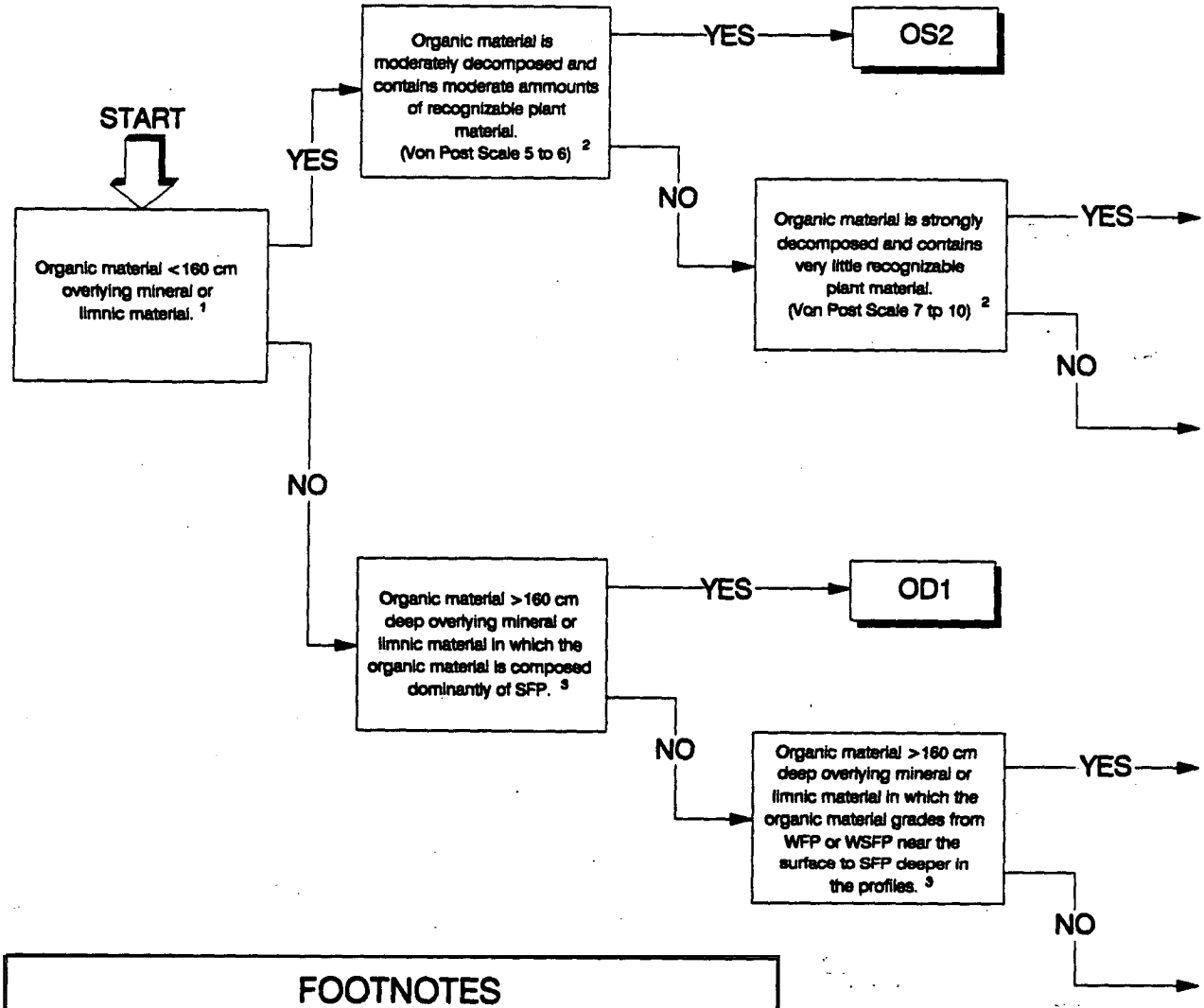
(1) The organic soils of Middlesex County have three main components:
- (a) WFP - Woody Forest Peat - woody materials originating from tree species; usually formed in forested swamps.
- (b) SFP - Sedge Fen Peat - sedge leaves with little or no woody material; usually formed on very poorly drained sites where sedges and reeds are the dominant vegetation types.
- (c) WSFP - Woody Sedge Fen Peat - decomposed sedge leaves and plant material with a lesser component of tree species such as Tamarack and Willow; formed on very poorly drained sites where sedges were the colonizing species.

(2) Homogeneous Parent Material - > 100 cm of material which is similar in texture and mode of deposition.

(3) Contrasting Parent Material - materials are signifigantly different in texture (ie. more than one class difference in texture) and/or stone or gravel content.

(4) > 20% gravel or cobble by volume.

Figure 15 : Field Key For Identifying Organic Soil Landscape Units.



FOOTNOTES

(1) Limnic material in Middlesex County usually consists of a greyish-white paste often with a high content of shells.

(2) Von Post Scale of decomposition can be determined using criteria in the "Manual for Describing Soils in the Field." (17)

(3) The organic soils of Middlesex County have three main components:
- (a) WFP - Woody Forest Peat - woody materials originating from tree species; usually formed in forested swamps.
- (b) SFP - Sedge Fen Peat - sedge leaves with little or no woody material; usually formed on very poorly drained sites where sedges and reeds are the dominant vegetation types.
- (c) WSFP - Woody Sedge Fen Peat - decomposed sedge leaves and plant material with a lesser component of tree species such as Tamarack and Willow; formed on very poorly drained sites where sedges were the colonizing species.

(4) OU1 - The undifferentiated organic landscape unit designation was applied to areas on the map where:
- (a) The areal extent of some types of organic matter was so limited as to not warrant a legend designation or,
- (b) There was insufficient field verification to determine the type and depth of organic materials.

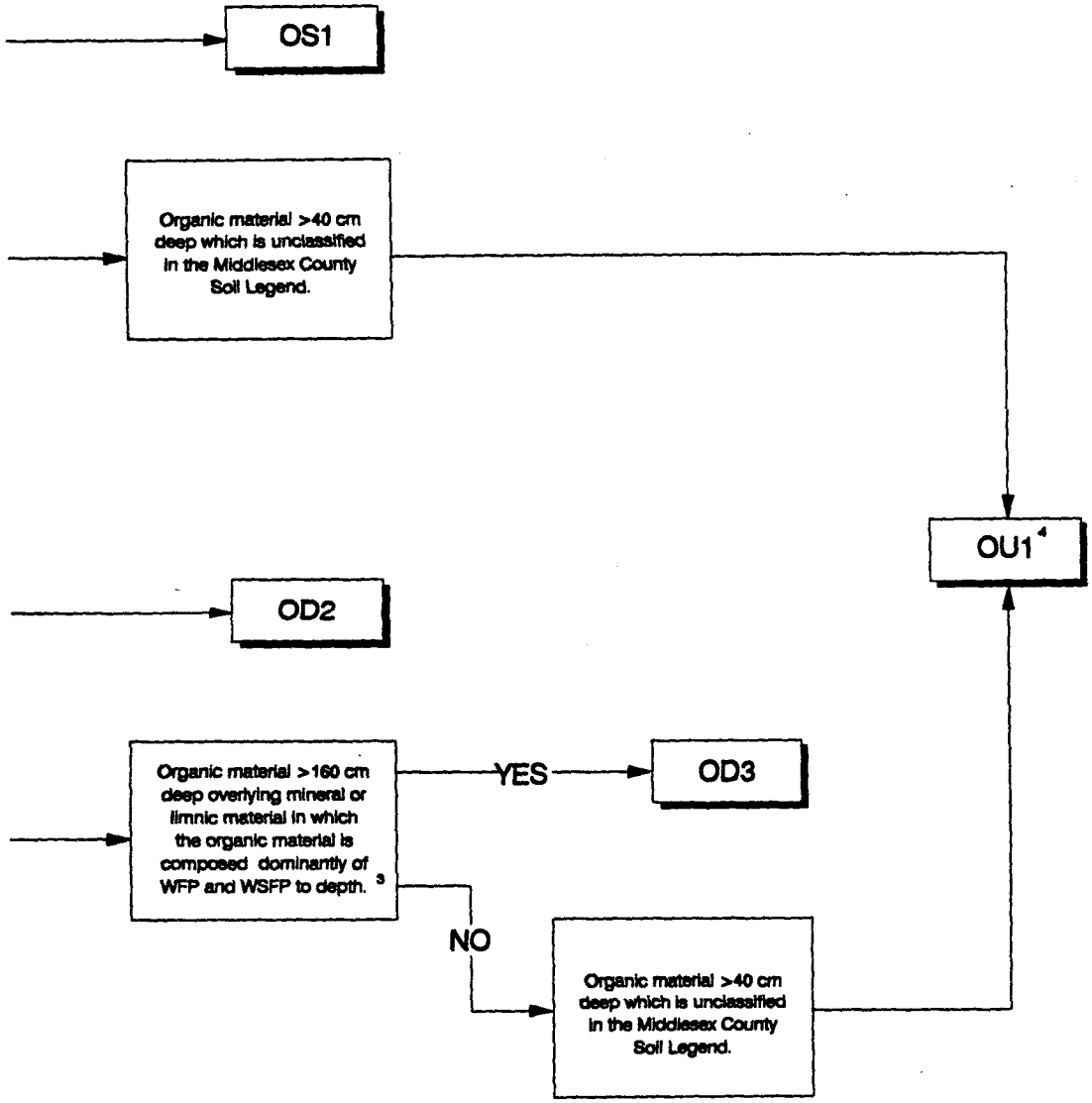
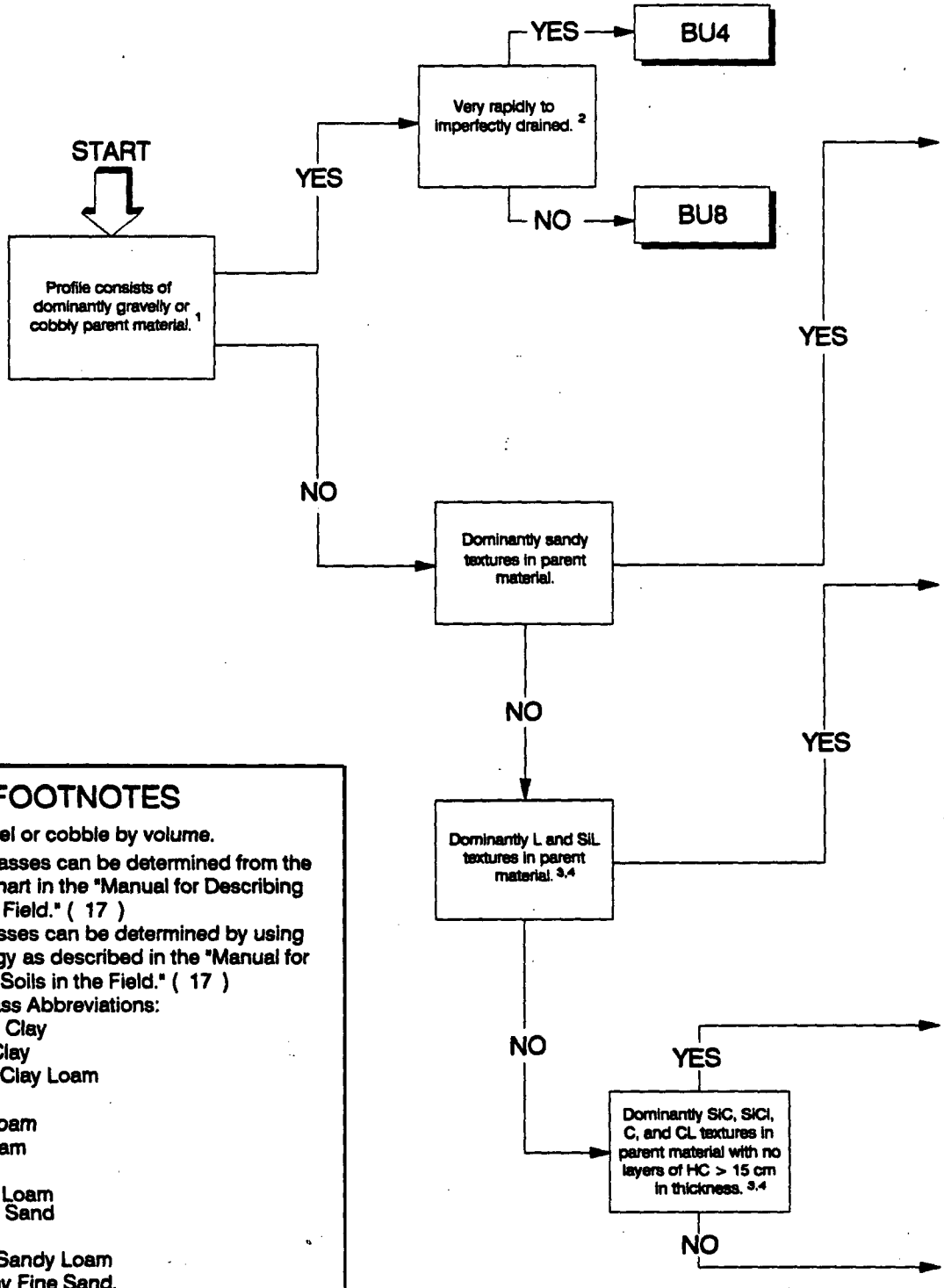

OS1
Organic material >40 cm deep which is unclassified in the Middlesex County Soil Legend.
OU1 4
OD2
Organic material >160 cm deep overlying mineral or limnic material in which the organic material is composed dominantly of WFP and WSFP to depth. 3
YES
OD3
NO
Organic material >40 cm deep which is unclassified in the Middlesex County Soil Legend.

Figure 16 : Field Key For Identifying Soil Landscape Units With A Consistent Parent Material.



FOOTNOTES

(1) > 20% gravel or cobble by volume.

(2) Drainage classes can be determined from the drainage chart in the "Manual for Describing Soils in the Field." (17)

(3) Textural classes can be determined by using methodology as described in the "Manual for Describing Soils in the Field." (17)

(4) Textural Class Abbreviations:
- HC - Heavy Clay
- SiC - Silty Clay
- SiCL - Silty Clay Loam
- C - Clay
- CL - Clay Loam
- SiL - Silt Loam
- L - Loam
- SL - Sandy Loam
- LS - Loamy Sand
- S - Sand
- FSL - Fine Sandy Loam
- LFS - Loamy Fine Sand.
- VFSL - Very Fine Sandy Loam
- LVFS - Loamy Very Fine Sand
- VFS - Very Fine Sand

(5) 5% - 20% gravel content by volume.

(6) The distribution of Huron Lobe Glacial Tills is shown in Figure 4.

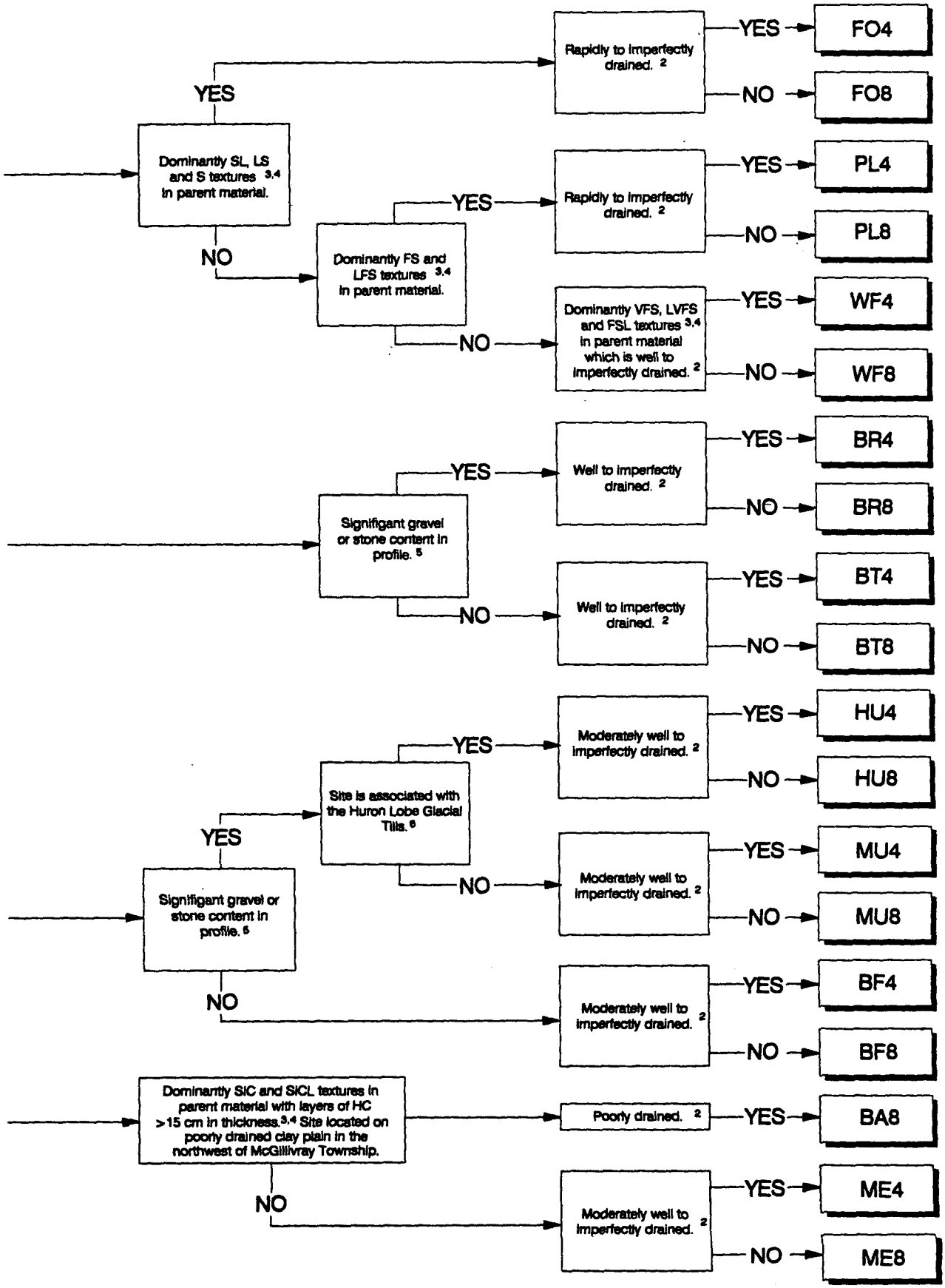
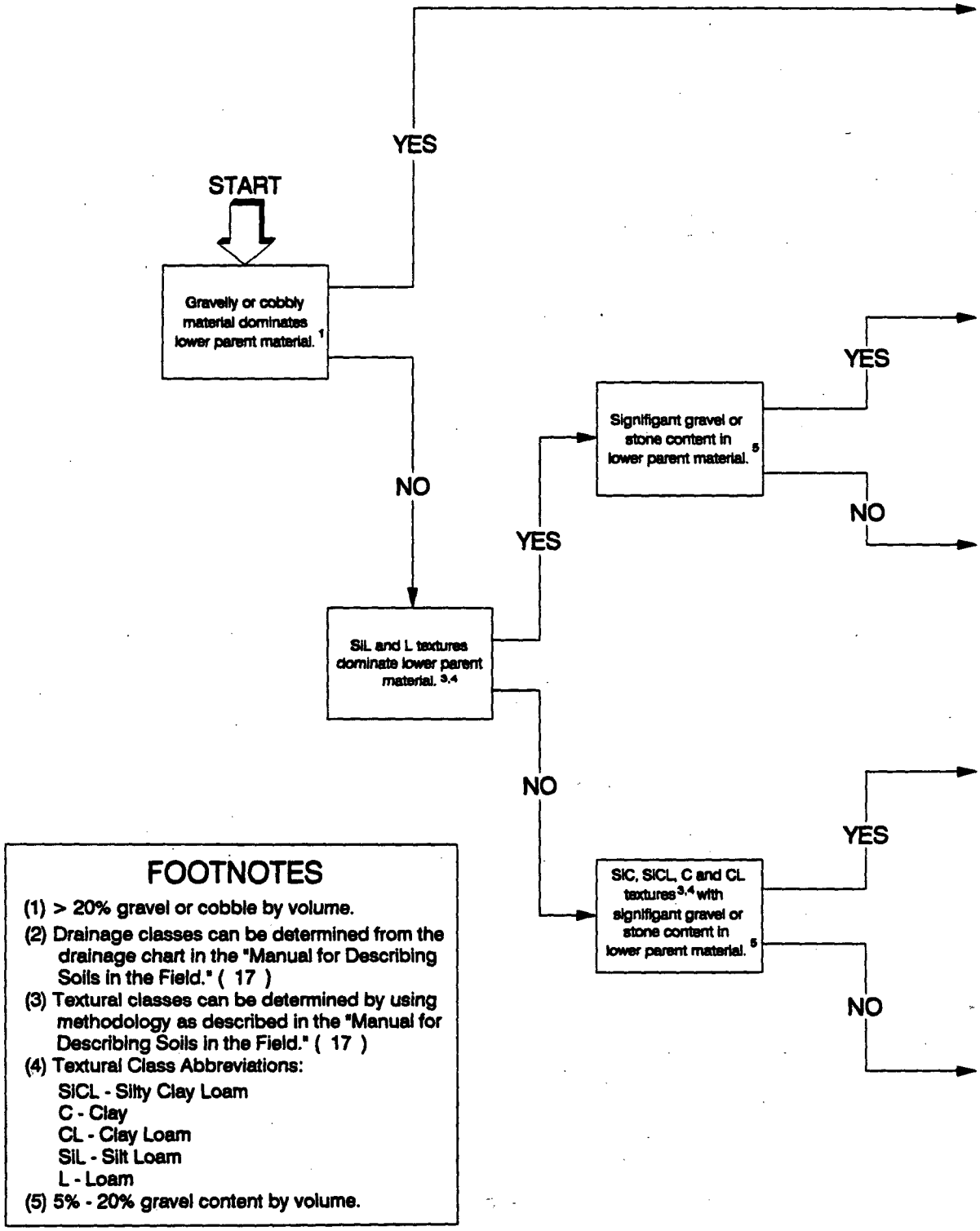
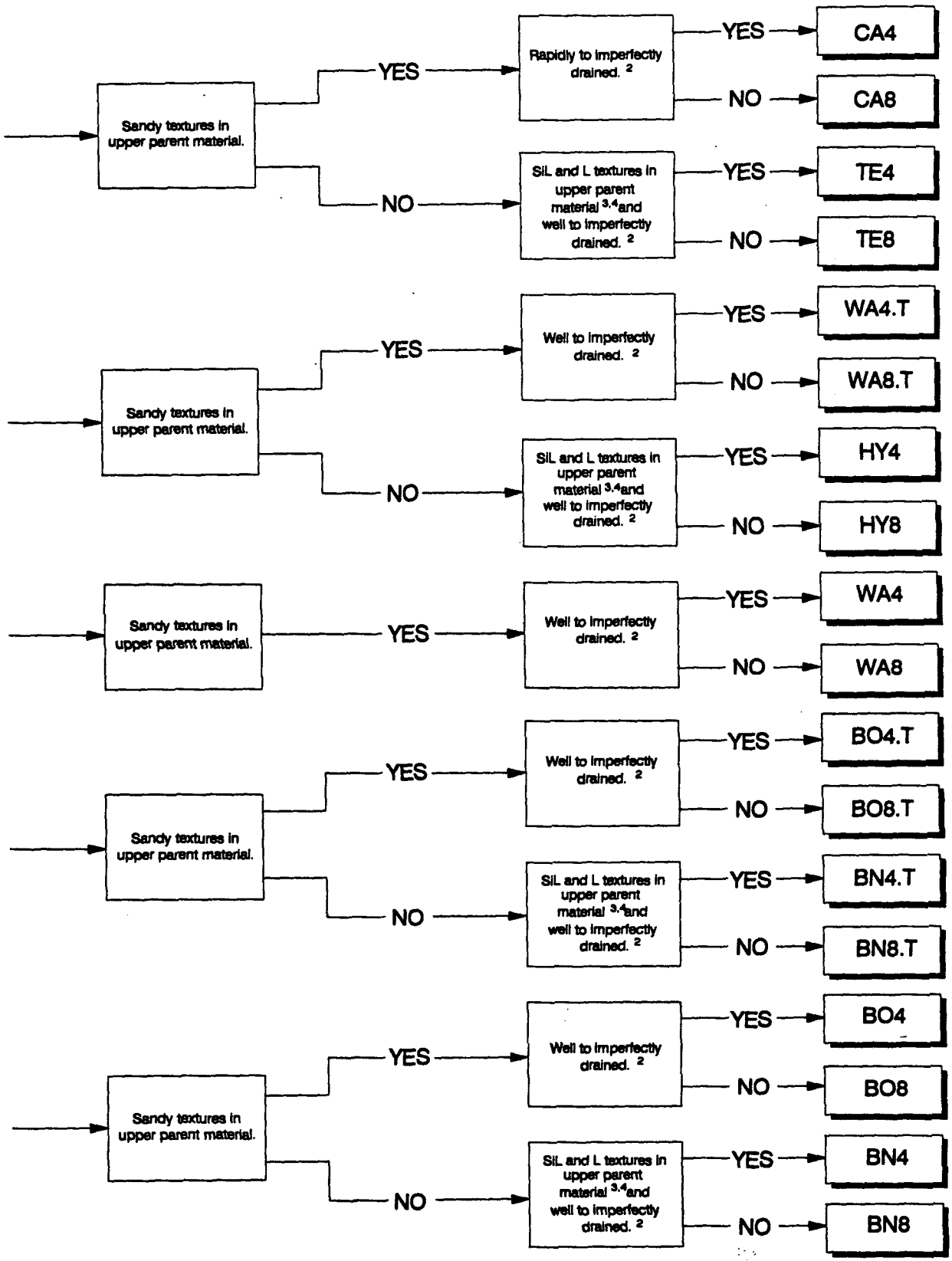

Dominantly SL, LS and S textures [3,4] in parent material.
YES
Rapidly to imperfectly drained. [2]
YES
FO4
NO
FO8
NO
Dominantly FS and LFS textures [3,4] in parent material.
YES
Rapidly to imperfectly drained. [2]
YES
PL4
NO
PL8
NO
Dominantly VFS, LVFS and FSL textures [3,4] in parent material which is well to imperfectly drained. [2]
YES
WF4
NO
WF8
Significant gravel or stone content in profile. [5]
YES
Well to imperfectly drained. [2]
YES
BR4
NO
BR8
NO
Well to imperfectly drained. [2]
YES
BT4
NO
BT8
Site is associated with the Huron Lobe Glacial Tills. [6]
YES
Moderately well to imperfectly drained. [2]
YES
HU4
NO
HU8
NO
Moderately well to imperfectly drained. [2]
YES
MU4
NO
MU8
Significant gravel or stone content in profile. [5]
YES
NO
Moderately well to imperfectly drained. [2]
YES
BF4
NO
BF8
Dominantly SIC and SICL textures in parent material with layers of HC >15 cm in thickness. [3,4] Site located on poorly drained clay plain in the northwest of McGillivray Township.
Poorly drained. [2]
YES
BA8
NO
Moderately well to imperfectly drained. [2]
YES
ME4
NO
ME8

Figure 17 : Field Key For Identifying Soil Landscape Units With More Than One Parent Material.



FOOTNOTES

(1) > 20% gravel or cobble by volume.
(2) Drainage classes can be determined from the drainage chart in the "Manual for Describing Soils in the Field." (17)
(3) Textural classes can be determined by using methodology as described in the "Manual for Describing Soils in the Field." (17)
(4) Textural Class Abbreviations:
SICL - Silty Clay Loam
C - Clay
CL - Clay Loam
SiL - Silt Loam
L - Loam
(5) 5% - 20% gravel content by volume.


Sandy textures in upper parent material.
YES
Rapidly to imperfectly drained. 2
YES
CA4
NO
CA8
NO
SiL and L textures in upper parent material 3,4 and well to imperfectly drained. 2
YES
TE4
NO
TE8
Sandy textures in upper parent material.
YES
Well to imperfectly drained. 2
YES
WA4.T
NO
WA8.T
NO
SiL and L textures in upper parent material 3,4 and well to imperfectly drained. 2
YES
HY4
NO
HY8
Sandy textures in upper parent material.
YES
Well to imperfectly drained. 2
YES
WA4
NO
WA8
Sandy textures in upper parent material.
YES
Well to imperfectly drained. 2
YES
BO4.T
NO
BO8.T
NO
SiL and L textures in upper parent material 3,4 and well to imperfectly drained. 2
YES
BN4.T
NO
BN8.T
Sandy textures in upper parent material.
YES
Well to imperfectly drained. 2
YES
BO4
NO
BO8
NO
SiL and L textures in upper parent material 3,4 and well to imperfectly drained. 2
YES
BN4
NO
BN8