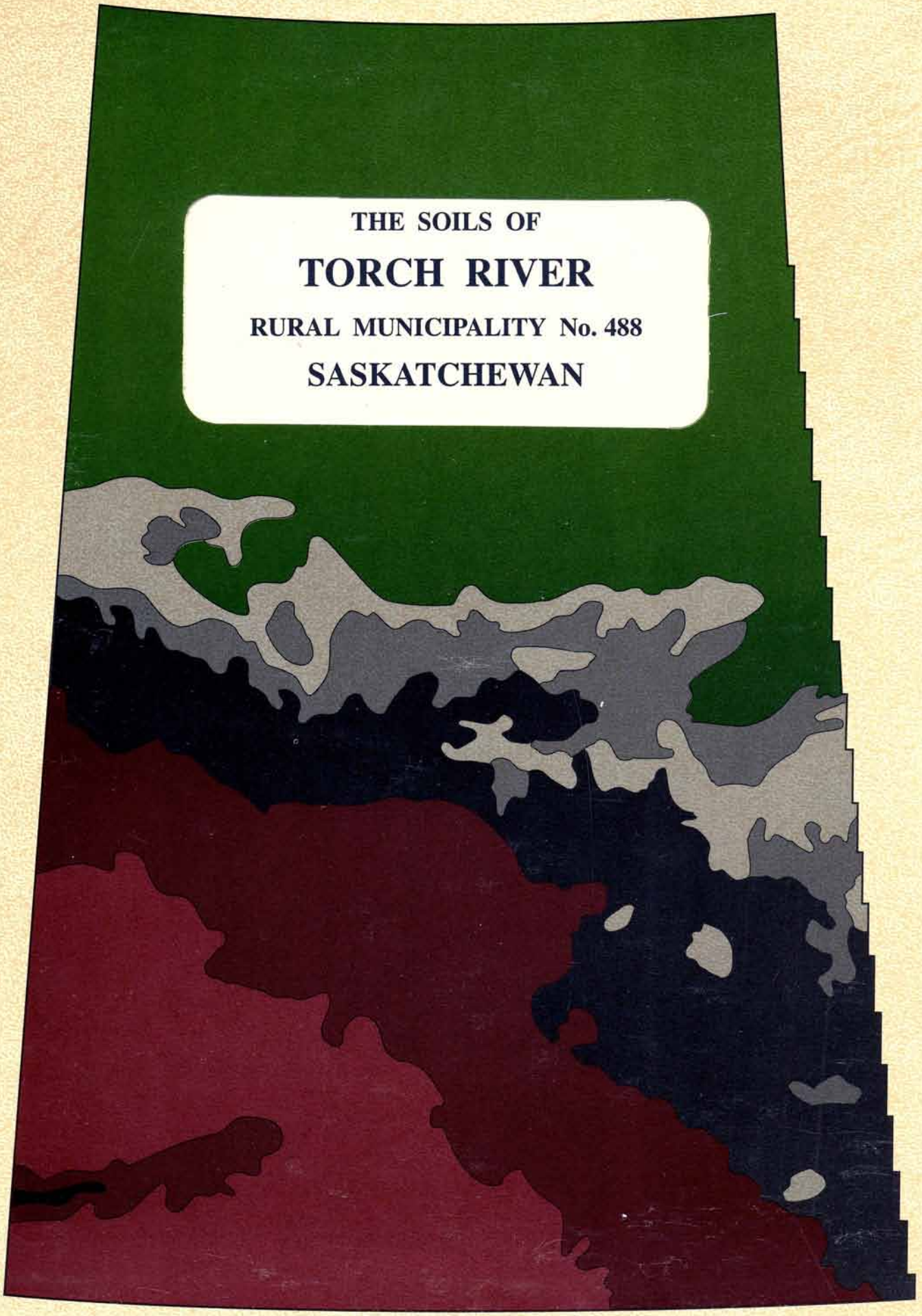
THE SOILS OF
TORCH RIVER
RURAL MUNICIPALITY No. 488
SASKATCHEWAN



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SASKATCHEWAN

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MAP (in pocket)

1. INTRODUCTION

This publication continues the series of soil survey reports for Saskatchewan initiated on an R.M. basis in 1984. This series of publications is a continuation of the basic soil survey program in the Province, initiated in 1958; however, the publication format has been substantially changed to include more interpretive information on an R.M. basis.

The main purpose of a soil survey is to inventory the soil resources of an area, providing a description of the soils and showing their extent and distribution. It has become increasingly apparent, however, that many users require additional interpretive information for the resolution of production, conservation and other problems related to a particular set of soil conditions. To that end, this report also presents a number of interpretations based on the soil inventory information.

In order to gain the most information about any particular area within the municipality, both the soil map and report must be used together.

1.1 USING THE SOIL MAP AND REPORT

Each delineation on the soil map contains a map symbol and a unique number which are described and illustrated below.

The Soil Map Symbol

The map symbol is composed of up to three rows of information. The first row typically consists of a soil association code, a map unit number and, in some cases, a substrate modifier code. The second row of information consists of a surface texture code. However, if the map symbol is composed of only two rows, this texture information is not included in the symbol. The last row is a code composed of numbers and letters that indicate the slope class and surface form of the landscape. A brief explanation of each of these map symbol components is provided in the legend on the side of the map. The legend describes the general type of soil development, the geologic material in which each soil has developed, and in complex areas, where each geologic material occurs in the landscape, as well as the kinds of soils comprising each map unit.

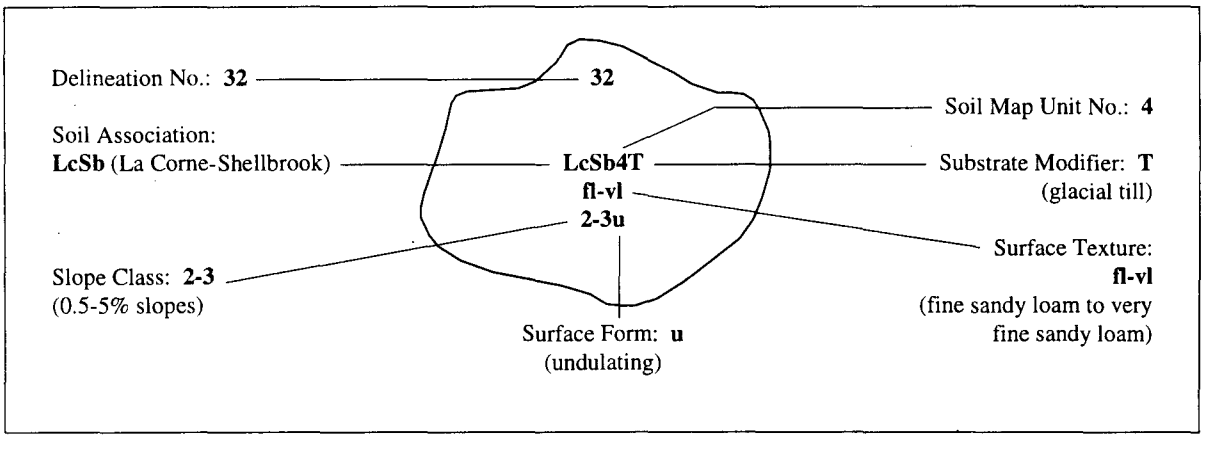
Delineation Number and Soil Interpretations

Each map delineation contains a unique number which is used to reference additional soils and interpretive information in Section 6 of the report. This section provides a tabular listing of interpretive symbols for each delineation. An explanation of these symbols is provided under the appropriate subsection in Section 4 entitled "Soil Interpretations."

Example

To determine the agricultural capability classification for area 32 (used in the example below), turn to Section 6 and look up the number 32 listed in the left-hand column under the heading, "Area No.". Next, read across to the symbols listed in the column headed, "Agricultural Capability". These symbols are explained in Subsection 4.4, entitled, "Soil Capability for Agriculture".

Figure 1. Sequence of Symbols.



2. INTRODUCTION TO SOILS

The nature and agriculturally important properties of the soils of the area are described in succeeding sections of this report. The present section, largely adapted from H.C. Moss, in **A Guide to Understanding Saskatchewan Soils**, deals mainly with features common to most prairie soils.

2.1 THE SOIL PROFILE

A soil is a natural body that occupies a relatively thin section (usually less than a meter) of the earth's surface and consists of several layers or horizons which differ in appearance and composition from the underlying material. Its formation from the original geological deposit involves various physical, chemical and biological processes which result in the formation of individual layers or horizons, extending from the surface downwards, that have specific characteristics. The whole succession of layers down to and including the original geological deposit is called the **soil profile**. Each individual layer is called a **soil horizon**. A particular soil is recognized and separated from other soils by identifying the various layers or horizons which make up its profile. The recognition of soil profiles forms the basis of soil classification and mapping.

The soils of Saskatchewan are classified according to a national system of soil classification and the names given to the soils are derived, in part, from this system. For example, an orthic profile is a soil whose characteristics are defined as an Orthic Chernozemic soil of the National system.

In profiles of mineral soils, three main horizons are recognized. From the surface downward, these are designated by the letters A, B, and C. The A horizon forms all or part of the surface soil. It may be dark colored representing an accumulation of humus, or it may be a light-colored horizon from which clay, humus and other materials have been removed. The B horizon occurs immediately below the A horizon. It may have an accumulation of clay and may have been altered to give a change in color or structure. The C horizon occupies the lower portion of the soil profile and usually represents the parent material. It is relatively unaffected by soil forming processes operative in the A and B horizons.

2.2 THE SOIL MAP

Ideally, the area represented by each soil profile should be shown on the map. This, however, is only possible where large, uniform areas of a single soil occur, or in detailed soil surveys where small areas can be separated on the map. Since, on the semi-detailed maps, it is rarely possible to delineate areas of a single soil, it is almost always necessary to combine small areas of several soils into a larger area. These larger areas are represented on the map by a map unit that identifies the kinds and distribution of the component soil profiles.

The **soil association** is used to show the relationship between map units that have formed on a similar geological deposit within a particular soil zone. The Oxbow Association, for instance, is the name given to a group of soil profiles formed on loamy glacial till occurring in the black soil zone. The various **map units** of the Oxbow Association reflect variations in the kind and distribution of Oxbow soils from one area to the next.

Where two geological deposits occur within a delineated area on the map, two associations are used. As an example, Meota-Oxbow is the name given to a group of soils of the Meota and Oxbow soil associations. Different map units of this complex are used to reflect variations in the kind and distribution of Meota and Oxbow soils from one area to the next. As an exception, areas in which several geological deposits occur in a somewhat chaotic and unpredictable pattern throughout the landscape are often given a single association name. For example, Keppel is the name given to soils formed in a highly complex mixture of loamy glacial till, silty water-modified glacial till and silty glaciolacustrine materials.

It is possible also to find soils reflecting the characteristics of two soil zones within a local area. Under these circumstances, two associations are used to reflect these different soil properties. For example, Black and Dark Gray soils that occur together are mapped in the Oxbow-Whitewood complex, the Oxbow referring to the Black soils and Whitewood to the Dark Gray soils.

The soil map, then, attempts to portray the kinds and distribution of various soil profiles throughout the municipality. The symbols on the map identify the soil map unit, the soil texture, the slope class and surface form. The map legend provides a brief description of these features. More complete descriptions of individual soil associations and their component soil types are provided in the Description of Soils section of the report. The types of geological deposits which comprise the parent materials of the various soil associations, the surface forms or shape of the land, and the soil's surface texture are described below.

2.3 SURFACE DEPOSITS

Alluvial Deposits - Alluvial deposits are materials laid down by streams and rivers, in valley bottoms and collection basins, since glaciation. These deposits are stratified and often contain beds or layers that are oblique to the main planes of stratification, indicative of their river or stream origin.

Eolian Deposits - Eolian deposits are sandy or silty deposits that have been moved and redeposited by the wind, often in the form of sand dunes or silty loessial veneers or blankets. Eolian deposits are well-sorted, poorly compacted and may contain beds or layers.

Fluvial Deposits - Fluvial deposits are materials laid down in rivers and streams carrying glacial meltwater. They are usually sandy or gravelly and, like the alluvial deposits described above, may contain beds or layers that are inclined or oblique to the main planes of stratification. These deposits are usually thick but may be thin, like a veneer, and underlain by glacial till. Materials laid down in direct contact with the glacier are termed ***glaciofluvial***.

Lacustrine Deposits - Lacustrine deposits are materials laid down in a glacial lake. These deposits are often stratified and characterized by dark- and light-colored beds or layers reflecting summer and winter depositional cycles in a glacial lake. Lacustrine deposits usually have a high content of very fine sand-, silt- or clay-sized particles. Those dominated by sand-sized particles are termed ***loamy lacustrine*** while those dominated by silt- and clay-sized particles are termed ***silty*** and ***clayey lacustrine***, respectively. They are usually thick but may be thin, like a veneer, and underlain by glacial till or gravel. Materials laid down in close contact with the glacier are termed ***glaciolacustrine*** deposits.

Morainal Deposits - Morainal deposits, often referred to as glacial till, are materials laid down by the glacial ice. These deposits are generally comprised of stones and gravels embedded in a matrix of sand-, silt- and clay-sized materials. When this matrix contains nearly equal amounts of sand, silt and clay they are called ***loamy morainal*** deposits. When there is a preponderance of sand or silt, they are referred to as ***sandy morainal*** or ***silty morainal*** deposits, respectively. Usually, there are fewer stones and gravels present in silty morainal deposits than in sandy or loamy types. Morainal deposits characterized by an abundance of surface stones are called ***bouldery morainal*** deposits.

Organic Deposits - Organic deposits are materials laid down by the accumulation of plant remains. They are generally 40 cm thick or greater and are comprised of either the remains of mosses or sedges and grasses and often have inclusions of woody materials. When the organic materials are largely undecomposed, so that there is a large amount of well-preserved fiber that is readily identifiable as to botanical origin, they are called ***fibric organic*** deposits. When the organic materials are in an intermediate stage of decomposition, so that there is an intermediate amount of fiber that is identifiable as to botanical origin, they are called ***mesic organic*** deposits. Highly decomposed materials, which have a small amount of fiber that can be identified as to botanical origin, are called ***humic organic*** deposits.

Undifferentiated Deposits - Areas where the origin of the materials for the purpose of mapping has not been specified are termed undifferentiated deposits. These deposits, usually consisting of several materials (morainal, fluvial, lacustrine, or others) occur in areas of steeply sloping land such as coulees and valley sides.

2.4 SURFACE FORMS

Aprons and Fans - A fan is a gently sloping fan-shaped area, usually occurring at the base of a valley wall, resulting from the accumulation of sediments brought down by a stream descending through a steep ravine. A series of adjacent, coalescing fans is called an apron.

Hummocky - Landscapes with a complex pattern of generally short, steep slopes extending from prominent knolls to somewhat rounded depressions or kettles are termed hummocky. They are called ***hummocky dissected*** where shallow gullies join one low area or kettle to the next and ***hummocky gullied*** where numerous, parallel or subparallel, narrow ravines interrupt the hummocky features of the landscape. Occasionally, areas have a complex of ridged and hummocky features. They are called ***hummocky-ridged***.

Inclined - Landscapes in which the general slope is in one direction only are called inclined. Where shallow gullies occur along the slope, the areas are called ***inclined dissected***; where a series of parallel or subparallel, deep gullies or ravines occur, they are called ***inclined gullied***.

Level - Landscapes that are flat or have very gently sloping surfaces are said to be level. Along flood plains of rivers and streams where the level surface is broken by abandoned river channels they are called ***level channelled***.

Ridged - Landscapes that have a linear pattern, usually of short and straight parallel ridges but sometimes a single, sinuous ridge or a series of intersecting ridges are termed ridged.

Rolling - Landscapes that are characterized by a sequence of long (often 1.6 km or greater), moderate to strong slopes extending from rounded, sometimes confined depressions to broad, rounded knolls, that impart a wave-like pattern to the land surface are called rolling. They are called ***dissected rolling*** where shallow gullies join one low area or kettle to the next.

Terraced - Areas, usually along a valley, that have a steep, short scarp slope and a horizontal or gently inclined surface above it are called terraced.

Undulating - Landscapes that are characterized by a sequence of gentle slopes extending from smooth rises to gentle hollows, that impart a wavelike pattern to the land surface are called undulating. Where shallow gullies extend from one low area to the next in these landscapes they are called ***undulating dissected*** and where the undulating surface is broken by abandoned river channels they are called ***undulating channelled***.

2.5 SURFACE TEXTURE

Mineral soil is a mixture of various-sized mineral particles, decaying organic matter, air and water. The mineral particles, exclusive of stones and gravel, may be grouped into three particle-size fractions: sands (soil particles between 0.05 and 2 mm in diameter), silts (soil particles between 0.002 and 0.05 mm in diameter), and clays (soil particles less than 0.002 mm in diameter). The relative proportions of these particle-size fractions in a soil determine its **texture**. The textural triangle (Figure 2) is used to illustrate the proportion of sand, silt and clay in the main textural classes. The vertical axis is percent clay, the horizontal axis is percent sand, while the remainder of each class is percent silt. Thus, when sand is dominant, it yields a sandy- or coarse-textured soil, whereas a fine-textured soil is made up largely of silt and clay. The terms "light" and "heavy" are often used to refer to sandy- and clayey-textured soils respectively, and are actually a measure of the power required to till the soil. These terms have nothing to do with the actual weight of soil, as a given volume of dry sand actually weighs slightly more than that of clay.

Table 1. Soil texture classes.

Symbol	Soil Texture Class
Coarse-Textured	
gs	Gravelly sand
s	Sand
fs	Fine sand
gls	Gravelly loamy sand
ls	Loamy sand
lfs	Loamy fine sand
Moderately Coarse-Textured	
gsl	Gravelly sandy loam
gl	Gravelly loam
sl	Sandy loam
fl	Fine sandy loam
vl	Very fine sandy loam
Medium-Textured	
scl	Sandy clay loam
fcl	Fine sandy clay loam
vcl	Very fine sandy clay loam
l	Loam
Moderately Fine-Textured	
sil	Silt loam
cl	Clay loam
sicl	Silty clay loam
Fine-Textured	
c	Clay
sic	Silty clay
hc	Heavy clay
Miscellaneous	
o	Organic
U	Unclassified

Textural class names such as sandy loam, clay loam, heavy clay, etc., are given to soils based upon the relative proportions of sand, silt and clay. Three broad, fundamental textural groups are recognized: sands, loams and clays.

SANDS - The sand group includes soils in which the sand particles make up at least 70% of the material by weight. Two main classes are recognized: sand and loamy sand. Sands are further broken down into different sand sizes such as fine sand or coarse sand. A description of these is found under "Sand" in the glossary.

LOAMS - The loam group is intermediate in texture between the coarse-textured sands and the fine-textured clays, and these soils usually contain a significant proportion of each particle-size fraction. Class names include: sandy loam, silt loam, silty clay loam, sandy clay loam, clay loam and loam.

CLAYS - The clay group includes soils that contain at least 35% clay-size particles, and in most cases, more than 40%. Class names are : sandy clay, silty clay, clay and heavy clay. Soils of this group are often referred to as "gumbo".

Table 1 lists the surface textures and symbols that may be used in this report, grouped into particle-size categories. The miscellaneous catergory contains two non-texture entries. The "o" or organic soil texture class is used for organic soils. By definition, these soils do not contain any mineral component and, therefore, do not have a surface texture as defined and described above. The symbol "o" merely identifies the surface as being organic. The "U" or unclassified class is used for areas in which surface texture has not been determined. These include areas that have been greatly altered (such as gravel pits or mines), most wetlands and lakes, areas that have not been examined (such as towns and cities), and areas of extremely variable texture (such as some Hillwash or Runway delineations).

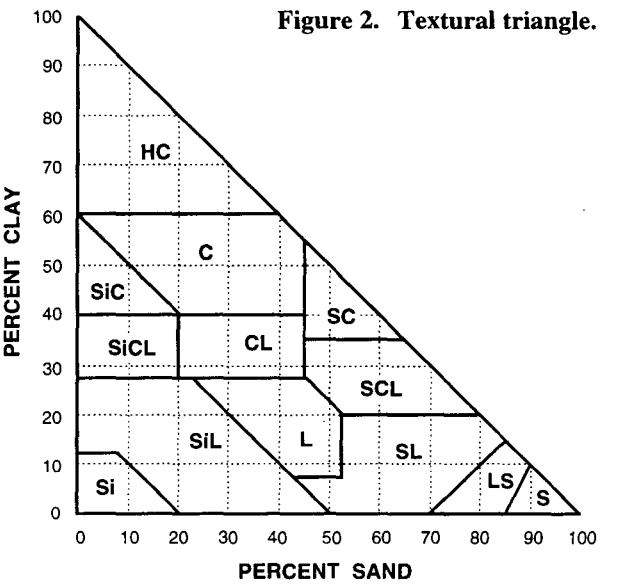


Figure 2. Textural triangle.

3. DESCRIPTION OF SOILS

ALLUVIUM (Av) SOILS

Alluvium soils are a mixture of soils formed in variable-textured alluvial materials, associated with stream flood plains and drainage channels. These soils have formed in materials derived from a variety of sources and thus vary markedly in color, texture, and composition. Surface textures range from sand to clay.

Alluvium soils are usually stone free, but may be underlain by stony deposits. Eroded stream beds within Alluvium areas, for example, may be very stony. Alluvium soils usually occur on level or undulating landscapes with very gentle to gentle slopes.

Alluvium soils occur in complex with soils of other associations and, in most of these complexes, the Alluvium soils occur on the lower slopes in the landscape.

Kinds of Alluvium Soils

Chernozemic - The Alluvium Chernozemic soil represents a variety of soils that occur on well drained landscapes. They have a dark-colored A horizon that may be underlain, in turn, by a brown, sometimes calcareous B horizon and a light-colored, calcareous C horizon.

Orthic Chernozemic - The Alluvium Orthic Chernozemic soil can occur on all slope positions in some landscapes, especially in areas of coarse-textured materials and good drainage. It is a well-drained soil characterized by a dark-colored A horizon, 10 to 20 cm thick, underlain by a brown B horizon and a light-colored, calcareous C horizon.

Gleyed Chernozemic - The Alluvium Gleyed Chernozemic soil usually occurs on mid- and lower slopes. It is a moderately well- to imperfectly drained soil characterized by a dark-colored A horizon, underlain by B and C horizons that often have dull colors and reddish spots and stains, indicative of restricted soil drainage.

Calcareous Chernozemic - The Alluvium Calcareous Chernozemic soil can occur on all slope positions in some landscapes, particularly in areas of finer-textured materials. It is a well-drained soil characterized by a dark-colored, usually calcareous A horizon, 10 to 20 cm thick, underlain by a thin, brownish-colored, calcareous B horizon and a light-colored, calcareous C horizon.

Gleyed Calcareous Chernozemic - The Alluvium Gleyed Calcareous Chernozemic soil occurs on lower slopes, surrounding poorly drained depressions and abandoned stream meanders; however, it can occur on all slope positions in some landscapes. This soil is affected to varying degrees by imperfect soil drainage and, often, by the presence of soluble salts within the rooting zone. It is characterized by a strongly calcareous A horizon underlain by a strongly calcareous B horizon, overlying a strongly calcareous C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage.

Gray Luvisolic - The Alluvium Gray Luvisolic soil is term used to describe the combination of Alluvium Orthic Gray Luvisol and Dark Gray Luvisol soils occurring together in a landscape.

Orthic Gray Luvisol - The Alluvium Orthic Gray Luvisol soil can occur on all slope positions in some landscapes, especially on coarser-textured materials with good drainage. It is a well-to rapidly drained soil characterized by a light-gray A horizon, 8 to 15 cm thick, underlain by a thin, very light-gray, leached horizon with platy structure. This horizon is underlain by a dense, brownish-colored B horizon and a grayish-colored, calcareous C horizon.

Dark Gray Luvisol - The Alluvium Dark Gray Luvisol soil can occur on all slope positions in some landscapes, especially on coarse-textured materials with good drainage. It is a well- to rapidly drained soil characterized by a dark-gray A horizon, 8 to 15 cm thick, underlain by a dense, brownish B horizon and a grayish C horizon. Most of these soils, and in particular those that still occur under forest vegetation, have a light-gray leached horizon, with platy structure, separating the darker-colored surface from the B horizon. In cultivated areas, the leached horizon has been partially or totally incorporated into the plow layer.

Cumulic Regosol - The Alluvium Cumulic Regosol soil can occur on all slope positions. It is a well-drained soil that may have a very thin, dark-colored A horizon that overlies alternating layers of grayish-colored C horizon and dark-colored, buried organic-rich materials. These soils occur on river floodplains where soil formation is restricted by periodic deposition of stream sediments.

Cumulic Humic Regosol - The Alluvium Cumulic Humic Regosol soil can occur on all slope positions. It is a well-drained soil that has a dark-colored A horizon that is at least 10 cm thick, overlying alternating layers of grayish-colored C horizon and dark-colored, buried organic-rich materials. These soils occur on river floodplains where soil formation is restricted by periodic deposition of stream sediments.

Gleysolic Soils - The Alluvium Gleysolic soils represents a variety of wet soils. They occur in undrained depressional areas that are subject to flooding and in undrained areas associated with abandoned stream meanders. They often have thick, dark-colored A horizons and drab subsurface colors that are dotted with reddish spots and streaks. Some of these soils have a very light-gray leached horizon below the dark A horizon. Alluvium peaty Gleysolic soils have a layer of peaty material, 15 to 40 cm thick, overlying mineral materials. They are generally wet for all or a significant portion of the growing season and are often flooded. Most Alluvium Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. In some areas, these soils may be saline and/or carbonated.

Agricultural Properties of Alluvium Soils

The agricultural capability of Alluvium soils ranges from class 2, good agricultural soils, to class 7, soils with no capability for arable agriculture or permanent pasture. This wide range in agricultural capability is mainly the result of varying degrees of salinity and excess wetness. Where salinity and wetness are not a problem and where the soil texture provides an adequate water-holding capacity, they are often good agricultural soils. Alluvium soils may be downrated based on other soil and landscape limitations (i.e. stones, topography, flooding, erosion, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Alluvium soils generally have a moderate amount of organic matter in the A horizon, resulting in reasonable fertility and good tilth. Because of the association of these soils with lower portions of the landscape and their occurrence in narrow bands in valley bottoms, wind erosion is not usually a serious problem. They are, however, susceptible to water erosion and to flooding because of their association with low landscape positions and drainage channels which receive runoff water in the spring or during periods of intense rainfall. They usually occur on favorable topography but areas are often small and irregular and cut by erosion channels, making cultivation difficult or impractical.

Stones are not generally a problem, however, annual clearing may be required along eroded stream beds. Areas dominated by saline or Gleysolic Alluvium soils generally have little potential for crop land and are suitable mainly for forage production or pasture. If drainage can be improved and if salinity and accessibility do not pose serious limitations, some of these areas can be brought into agricultural production.

ARBOW (Aw) SOILS

Arbow soils are Gleysolic soils that have formed in variable-textured alluvial deposits associated with low-lying depressional basins, supporting a tree cover whose species vary according to the local drainage conditions. Most of these soils are overlain by up to 60 cm of peat. The texture of the mineral layer immediately below the organic layer is variable.

Arbow soils are usually stone free, although stones may occur where the alluvial materials are shallow (less than 1 m thick) and underlain by glacial till, or where glacial till is the main deposit in which these soils are formed. These soils generally occur in flat to depressional areas and often occur at the margins of Organic soils or as small islands of mineral soils within areas of Organic soils.

Kinds of Arbow Soils

Peaty Gleysolic Soils - Arbow peaty Gleysolic soils occur mainly in low-lying depressional areas. They are characterized by a shallow layer of peaty material, from 15 to 60 cm thick, that overlies a dark-colored A horizon. The underlying horizons have drab colors that often include reddish spots and stains, indicative of formation under poorly drained conditions. When the organic material is primarily humic or mesic peat, the organic layer may be up to 40 cm thick; if primarily fibric peat, the organic layer may be up to 60 cm thick. Unless artificially drained, most of these soils are frequently wet for all or a significant portion of the growing season and are often flooded.

Agricultural Properties of Arbow Soils

Arbow soils are nonarable agricultural soils of capability classes 5 and 6, with wetness being the main limitation. These soils are wet for all or a significant portion of the growing season, thus limiting their agricultural use to permanent pasture. Their occurrence in low-lying and depressional areas makes drainage difficult and the possibility of flooding or unseasonal frost damage is always present. If cleared and adequately drained, these soils do have a limited potential for the production of forage crops. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

BODMIN (Bd) SOILS

Bodmin soils are Gray Luvisolic soils that have formed in gravelly fluvial materials, in areas where wooded vegetation has had a strong influence on soil formation. Soils that have formed under these conditions are usually strongly leached, resulting in low organic matter levels and, hence, a grayish-colored surface when cultivated. Surface textures range from loamy sand to loam or gravelly loamy sand to gravelly loam, depending on the nature of the parent material.

Bodmin soils are usually slightly to moderately stony, however, where the gravelly deposit is thin and underlain or mixed with glacial till, surface stones are often more numerous. These soils occur on a variety of landscapes. Undulating landscapes with gentle to moderate slopes and hummocky landscapes with moderate to steep slopes are two of the more common landforms.

Bodmin soils frequently occur in complex with soils of other associations. In most of these complexes, the Bodmin soils occur in an unpredictable manner, occupying almost any slope position.

Kinds of Bodmin Soils

Orthic Gray Luvisol - The Bodmin Orthic Gray Luvisol soil usually occurs on upper slopes and knolls. It is a well- to rapidly drained soil that, when cultivated, has a very light grayish-colored A horizon, underlain by a dense, brownish-colored B horizon with prismatic structure that breaks to angular blocky or coarse angular aggregates when dry. The B horizon, in turn, is underlain by a grayish-brown, weakly

calcareous C horizon. In the native state, these soils usually occur under aspen and pine forest, where the uppermost horizons consist of a layer of leaf litter and a very thin, dark-colored A horizon overlying a very light grayish-colored, leached horizon with platy structure. Upon cultivation, these horizons become mixed, resulting in the very light grayish-colored surface.

Agricultural Properties of Bodmin Soils

Bodmin soils are poor agricultural soils of capability class 4. Their coarse textures, resulting in a very low to low water-holding capacity and, consequently, poor drought resistance, as well as their low inherent fertility, are their main limitations. These soils may be downrated further based on other soil and landscape limitations (i.e. salinity, topography, stones, etc.) that are peculiar to individual delineations. For example, some Bodmin soils have been rated as class 5 (unsuitable for sustained production of annual field crops) because of their coarse surface textures and excessive amounts of stone. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

These soils are low in organic matter. They usually require applications of nitrogen and phosphorus fertilizers and may also need additions of potassium and sulphur, depending on the crops grown. Stones are usually present, however, amounts vary considerably. Some areas are almost stone free, while others require periodic removal if the soils are to be cultivated. Due to their coarse textures and low organic matter contents, wind erosion may present a further problem, especially on the steeper slopes and knolls. Conservation practices that maintain a continual crop or trash cover should be used to protect these soils. Although forage crops have been grown successfully on some of the Bodmin soils, they are generally considered to be marginal to unsuitable for annual crop production.

BAGWA LAKE (BL) SOILS

Bagwa Lake soils are Organic soils that have formed in accumulations of vegetative materials, primarily sedges, meadow grasses and shrubs. These partly decomposed plant residues have accumulated in wet lowland areas, which are known as fens. The native vegetation in these areas consist mainly of sedges, cattails, rushes, reeds and grasses, along with scattered willows and other shrubs. Trees such as tamarack and black spruce may also be present. The peat is derived from the accumulation of this vegetative material and is often saturated at or near the surface. In these areas, it is not unusual for the center of the deposit to have a small water body. The deposits are usually less than 2 m thick, but greater than 0.6 m thick, with the thickest part occurring towards the center of the deposit. The surface is generally level with strong, hummocky microrelief.

Bagwa Lake soils may occur in complex with soils of other associations. In these complexes, the Bagwa Lake soils typically occur on lower landscape positions.

Kinds of Bagwa Lake Soils

Terric Fibrisol - The Bagwa Lake Terric Fibrisol soil is formed in organic materials that are weakly decomposed (fibric), and the thickness of the organic material exceeds 60 cm in thickness but is less than 160 cm.

Typic Mesisol - The Bagwa Lake Typic Mesisol soil is formed in organic materials that are in an intermediate stage of decomposition (mesic), and the thickness of the organic material generally exceeds 160 cm.

Fibric Mesisol - The Bagwa Lake Fibric Mesisol soil is formed in organic materials that are in an intermediate stage of decomposition (mesic). There is a subdominant layer of weakly decomposed material (fibric) greater than 25 cm thick below a depth of 40 cm from the surface. The thickness of the organic material is greater than 160 cm.

Cumulo Mesisol - The Bagwa Lake Cumulo Mesisol soil is formed in organic materials that are in an intermediate stage of decomposition (mesic). They occur adjacent to streams or other sources of alluvial sediments. This accounts for their characteristic multiple layers of mineral material interbedded with the organic material.

Terric Mesisol - The Bagwa Lake Terric Mesisol soil is formed in organic materials that are in an intermediate stage of decomposition (mesic), and the thickness of the organic material exceeds 40 cm but is less than 160 cm.

Organic Soils - The Bagwa Lake Organic soils refers to a mixture of different types of Bagwa Lake soils. These soils are in various stages of decomposition, ranging from fibric, or weakly decomposed, to humic or highly decomposed. The thickness of the organic material may also be quite variable. The minimum thickness of an organic soils in an intermediate (mesic) or highly (humic) decomposed state is 40 cm, and 60 cm for those in a weakly decomposed (fibric) state. The maximum thickness of the organic material is also variable, and may exceed 160 cm in some areas.

Agricultural Properties of Bagwa Lake Soils

Bagwa Lake soils are not classified for agricultural capability unless they are being used for agricultural purposes. The rating for each delineation is listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report. Areas that are not classified are given the symbol O.

Bagwa Lake soils, in their natural state, are very wet and are suitable only for native grazing. Areas with open water are not suitable for agricultural use. If these lands are to be developed for agricultural use, they will require drainage and, usually, some clearing before breaking. Disposal of drainage water may not be feasible in some locations. Due to their low-lying position, these areas are susceptible to cold air drainage and, thus, to late spring and early fall frosts. The organic mat is also an excellent insulator and, thus, these soils are slow to warm up in the spring. This may shorten the growing season to the extent that crops may not have sufficient time to mature. Also, once the vegetative mat is disturbed by cultivation and the surface dries, these soils

become very susceptible to wind erosion. If drainage is provided, the growing of perennial forage crops may be more feasible than annual cropping. Considering the cost of drainage and clearing of these areas, the possible requirement for specialized agricultural equipment, and the potential need for soil amendments such as fertilizer and lime, it may not be economically feasible to grow annual crops on these soils.

BITTERN LAKE (Bt) SOILS

Bittern Lake soils are Gray Luvisolic soils that have formed in loam to clay loam glacial till overlain by shallow, sandy glaciofluvial materials, in areas where wooded vegetation has had a strong influence on soil formation. Soils that have formed under these conditions are usually strongly leached, resulting in low organic matter levels and, hence, a grayish-colored surface when cultivated. The surface texture of these soils is commonly sandy loam.

Bittern Lake soils are usually slightly to moderately stony, however, sometimes stones will tend to be concentrated at the contact between the glacial till and the sandy overlay. These soils occur on hummocky landscapes with slopes ranging from gentle to strong, and on undulating landscapes with gentle to moderate slopes.

Bittern Lake soils commonly occur in complex with soils of other associations. The Bittern Lake soils tend to occur in an unpredictable manner occupying any slope position.

Kinds of Bittern Lake Soils

Orthic Gray Luvisol - The Bittern Lake Orthic Gray Luvisol soil usually occupies upper slope positions, however, it may extend to all slope positions in some landscapes. It is a well-drained soil which, under forested conditions, is characterized by the presence of a very thin, dark-colored surface horizon below the forest litter, underlain by a gray to grayish-brown, strongly leached horizon with platy structure. Usually, the horizon with platy structure includes the entire thickness of the sandy overlay. Upon cultivation, part or all of this leached horizon is incorporated into the plow layer, producing a light-gray surface. Below these horizons is a relatively thick, dark-brown to dark grayish-brown B horizon that usually has a strong (hard), angular blocky to prismatic structure due to an accumulation of clay leached from upper horizons. The B horizon, in turn, is underlain by a grayish-colored, moderately calcareous C horizon.

Gleyed Gray Luvisol - The Bittern Lake Gleyed Gray Luvisol soil usually occurs on lower slope positions in the landscape. It is an imperfectly drained soil characterized by a light-gray, leached A horizon with platy structure underlain by a transitional AB horizon and dark-brown B horizon that often has a strong (hard), angular blocky to prismatic structure due to an enrichment of clay from the leached horizon above. The B horizon, in turn, is underlain by a grayish-colored, weakly to moderately calcareous C horizon. The B and C horizons often have dull colors and reddish spots and stains, indicative of imperfect soil drainage.

Brunisolic Gray Luvisol - The Bittern Lake Brunisolic Gray Luvisol soil usually occupies upper slope positions, however, it may extend to all slope positions in some landscapes. It is a well-drained soil which, under forested conditions, is characterized by the presence of a very thin, dark-colored surface horizon below the forest litter, underlain by a gray to grayish-brown, strongly leached horizon with platy structure. A distinguishing characteristic of these soils is the presence of a brown horizon within this leached horizon. Usually, the horizon with platy structure includes the entire thickness of the sandy overlay. Upon cultivation, part or all of the leached horizon is incorporated into the plow layer, producing a light-gray surface. Below these horizons is a relatively thick, dark-brown to dark grayish-brown B horizon that usually has a strong (hard), angular blocky to prismatic structure due to an accumulation of clay leached from upper horizons. The B horizon, in turn, is underlain by a grayish-colored, moderately calcareous C horizon.

Dark Gray Luvisol - The Bittern Lake Dark Gray Luvisol soil usually occurs on mid- to lower slopes. It is a well- to moderately well-drained soil which, under forested conditions, is characterized by the presence of a thin, dark-colored surface horizon below the forest litter, underlain by a gray to grayish-brown, leached horizon with platy structure. Usually, the horizon with platy structure includes the entire depth of the sandy overlay. Upon cultivation, part or all of this leached horizon is incorporated into the plow layer, producing a dark-gray surface. Below these horizons is a relatively thick, dark brown to dark grayish-brown B horizon that usually has a strong (hard), angular blocky to prismatic structure due to an enrichment of clay leached from upper horizons. The B horizon is underlain, in turn, by a grayish-colored, moderately calcareous C horizon.

Peaty Gleysolic Soils - Peaty Gleysolic soils occur mainly in sloughs and low-lying depressional areas. They are characterized by a shallow layer of peaty material, from 15 to 40 cm thick, that overlies a dark-colored A horizon. The underlying horizons have drab colors that often include reddish spots and stains, indicative of formation under poorly drained conditions. When the organic material is primarily fibric peat, the organic layer may be up to 60 cm thick. Unless artificially drained, most of these soils are frequently wet for all or a significant portion of the growing season and are often flooded.

Agricultural Properties of Bittern Lake Soils

Most Bittern Lake soils are poor agricultural soils of capability class 4. The main limitations of these soils are the hard structure of the B horizon that restricts water infiltration and root penetration, the sandy nature of the surface horizon, and the low organic matter content of the surface horizon that makes seedbed preparation difficult and also makes the soil susceptible to crusting after heavy rains; this crusting results in poor seedling emergence for small-seeded crops. These

soils may be further downrated based on other soil and landscape limitations (salinity, wetness, topography, stones, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Bittern Lake soils have low inherent fertility. They have a low amount of organic matter in the A horizon, are low in available phosphorus and low in available potassium. They are moderately acid in reaction, however, the acidity does not usually affect the yields of cereal crops. There may be small, local areas where the growth of some sensitive crops, like legumes, may be inhibited; detailed sampling and analysis for pH will determine whether it is practical to lime such areas to achieve maximum yields.

Bittern Lake soils that occur on landscapes with gentle slopes have a low susceptibility to wind and water erosion. Those soils that occur on landscapes with moderate to strong slopes have a moderate to high susceptibility to water erosion. In these areas it is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping, cultivation across dissected slopes and grassing of major water runs, be utilized to control wind and water erosion. The addition of organic matter, through the regular use of legumes in crop rotations or by spreading manure, will greatly benefit the surface structure of these soils.

A few stones can be expected on these soils and occasional clearing is required.

BREDENBURY (Bu) SOILS

Bredenbury soils are Thick Black Chernozemic soils that have formed in loamy lacustrine materials in moist areas of the Black soil zone, where soils with thicker-than-normal surface horizons have formed. These soils are distinguished from Hamlin soils (thin Black Chernozemic soils formed in loamy lacustrine materials) by having a surface horizon that is greater than 20 cm thick. Surface textures range from sandy loam to loam.

Bredenbury soils are usually stone free. However, some stones may occur where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel, or where the lacustrine materials occur in complex with glacial till or gravel. Bredenbury soils usually occur on undulating landscapes with very gentle to gentle slopes.

The Bredenbury soils frequently occur in complex with soils of other associations. In most of these complexes, the Bredenbury soils occur on the mid- and lower slopes.

Kinds of Bredenbury Soils

Orthic Black - The Bredenbury Orthic Black soil occurs on mid- and lower slopes, however, it can extend onto upper slopes in some landscapes. It is a well-drained soil characterized by a black A horizon, 21 to 33 cm thick, underlain by a brownish B horizon and a grayish-brown, moderately calcareous C horizon.

Calcareous Black - The Bredenbury Calcareous Black soil occurs on mid- and upper slopes, however, it can extend onto lower slopes in some landscapes. It is a well-drained soil characterized by a black, often calcareous A horizon, 20 to 34 cm thick, which is usually underlain by a thin, brownish-colored, calcareous B horizon, overlying a grayish-brown, moderately calcareous C horizon.

Agricultural Properties of Bredenbury Soils

The best Bredenbury soils are those with a loam to very fine sandy loam surface texture. These soils have an agricultural capability rating of class 2 (good); a moderate moisture deficit, imparted by a moderate water-holding capacity and the subhumid regional climate, is their main limitation. Bredenbury soils with sandy loam to fine sandy loam surface textures have been rated as capability class 3 (fair) due primarily to their lower water-holding capacity. Although many of the Bredenbury soils have few agricultural limitations, some have been downrated based on other soil and landscape limitations (i.e. salinity, topography, wetness, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Most Bredenbury soils have a moderately high organic matter content in the A horizon, resulting in soils of reasonably good tilth. They are reasonably fertile soils, although additions of phosphorus and nitrogen are usually required to obtain optimum yields. Bredenbury soils have a weak to moderate cloddy structure that breaks to fine granular and single grain, making them moderately susceptible to wind erosion. Relatively high infiltration rates, coupled with very gentle to moderate slopes, result in a relatively low susceptibility to water erosion. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, inclusions of forages in crop rotations and shelterbelts, be utilized wherever possible to control soil erosion and maintain or enhance soil organic matter content and aggregate stability. Stones are not generally a problem, however, periodic clearing may be required where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel.

CARROT RIVER (Cr) SOILS

Carrot River soils are Gleyed Dark Gray Chernozemic soils that have formed in sandy fluvial materials, in areas of mixed grassland and forest, where wooded vegetation and restricted soil drainage have had an influence on soil formation. Soils formed under wooded vegetation are usually slightly leached. They have lower organic matter levels than soils occurring in the Black soil zone, resulting in a dark-gray surface horizon. Although cultivation may have improved surface and internal drainage, soil characteristics indicative of restricted soil drainage are still present. Surface textures are predominantly loamy sand and sandy loam, but can range from sand to fine sandy loam.

Carrot River soils are usually stone free. Some stones may occur where the fluvial materials are shallow (less than 1 m thick) and underlain by glacial till or gravel. These soils usually occur on undulating or hummocky landscapes with very gentle to gentle slopes.

Carrot River soils frequently occur in complex with soils of other associations. In most of these complexes, the Carrot River soils occur on mid- and lower slopes.

Kinds of Carrot River Soils

Gleyed Dark Gray - The Carrot River Gleyed Dark Gray soil usually occurs on upper slopes, however, it can extend onto midslopes in some landscapes. It is a moderately well- to imperfectly drained soil characterized by a dark-gray A horizon, 10 to 19 cm thick, underlain by a brownish B horizon and a grayish to yellowish-brown, moderately calcareous C horizon. There may be a thin, grayish layer with slightly platy structure between the A and B horizons which, upon cultivation, is often incorporated into the plow layer. The B and C horizons often have drab colors and reddish spots and stains, indicative of restricted soil drainage. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Gleyed Rego Dark Gray - The Carrot River Gleyed Rego Dark Gray soil occurs on mid- and lower slopes in most Carrot River landscapes, and is affected to varying degrees by imperfect soil drainage. It is characterized by a strongly calcareous A horizon, 15 to 30 cm thick, underlain by a grayish, strongly calcareous C horizon. The C horizon often has drab colors and reddish spots and stains, indicative of imperfect soil drainage. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Gleyed Calcareous Dark Gray - The Carrot River Gleyed Calcareous Dark Gray soil occurs on mid- and lower slopes in most Carrot River landscapes, and is affected to varying degrees by imperfect soil drainage. It is characterized by a strongly calcareous A horizon, 15 to 30 cm thick, underlain by a brownish, strongly calcareous B horizon, which is underlain by a grayish, strongly calcareous C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a layer of peaty material that is 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Due to their location in the landscape, some Gleysolic soils have become saline and/or carbonated. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought.

Agricultural Properties of Carrot River Soils

The best Carrot River soils are those with a fine sandy loam to sandy loam surface texture. These are fair agricultural soils of capability class 3; a moderate moisture deficit, imparted by a low water-holding capacity and the subhumid regional climate, is their main limitation. Carrot River soils with loamy sand and sand surface textures have been rated as capability class 4. These are poor agricultural soils due primarily to their very low water-holding capacity. Carrot River soils may be further downrated based on other soil and landscape limitations (i.e. excessive wetness, erosion, topography, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

As a result of their low to moderate organic matter content and sandy nature, most Carrot River soils have a low natural fertility and are not easily kept in good tilth. They are generally low in potassium, sulphur, nitrogen, and phosphorus. Carrot River soils have a high susceptibility to wind erosion and a low susceptibility to water erosion. Their sandy texture, weak structure and low organic matter content make it difficult to maintain a cloddy surface that is resistant to wind erosion. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, and frequent use of legumes and grasses in rotations, be utilized wherever possible to control erosion and maintain or enhance the organic matter content, fertility and aggregate stability of these soils.

Stones are not generally a problem on Carrot River soils, however, periodic clearing may be required where the fluvial materials are shallow (less than 1 m thick) and underlain by glacial till or gravel. Carrot River soils have formed under conditions of restricted drainage and, in most cases, it was necessary to provide artificial drainage before they could be cultivated. In most instances, drainage must be continued on a permanent basis to ensure sustained cultivation.

ELDERSLEY (Ed) SOILS

Eldersley soils are Gray Luvisolic soils that have formed in clayey lacustrine materials, in areas where wooded vegetation has had a strong influence on soil formation. Soils formed under these conditions are highly leached, resulting in low organic matter levels and, hence, dark-gray to gray-colored surfaces. Surface textures range from clay loam to clay and may be silty.

These soils are usually nonstony, but may be slightly stony where the lacustrine materials are shallow and underlain by glacial till. They usually occur on undulating landscapes with very gentle slopes.

Eldersley soils frequently occur in complex with soils of other associations. In most of these areas, the Eldersley soils occur on the mid- and upper slope positions. However, where they occur in complex with soils formed in clayey lacustrine materials, they usually occur on lower slopes or in depressions.

Kinds of Eldersley Soils

Dark Gray Luvisol - The Eldersley Dark Gray Luvisol soil occurs on lower to upper slopes. It is a moderately well-drained soil that has a dark grayish-colored A horizon, 13 to 19 cm thick, overlying a gray-colored, leached horizon with platy structure. The B horizon, which has been enriched by clay leached from the A horizon, is brownish in color and is more dense and compact than the surface layers. The underlying C horizon has a grayish-brown color, and is weakly to moderately calcareous.

Agricultural Properties of Eldersley Soils

Eldersley soils are good agricultural soils of capability class 2. They have a high water-holding capacity and a slight moisture deficit due to the regional subhumid climate. Some Eldersley soils may be downrated based on various soil and landscape limitations (i.e. salinity, topography, wetness, etc.) that are peculiar to individual delineations. For example, Eldersley soils may be rated lower due to steep slopes, or the presence of wet depressional areas. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Eldersley soils are limited by a dense, compact B horizon that restricts root penetration and by an A horizon that may be susceptible to crusting after heavy rainfall, thus interfering with seedling emergence. Eldersley soils have low to moderate amounts of organic matter in the A horizon. These soils are low in available phosphorus and high in available potassium, and most crops usually respond to applications of fertilizer nitrogen and phosphorus. Some crops, such as oil seeds, may benefit from sulphur applications.

A significant water erosion potential exists in many areas, particularly those that are on moderate to steeply sloping landscapes. Special conservation techniques, such as stubble conservation and grassing of runways, may be required to minimize soil erosion losses.

GARRICK (Ga) SOILS

Garrick soils are Gray Luvisolic soils that have formed in a mixture of loamy, water-modified glacial till and shallow (less than 1 m thick), silty lacustrine materials underlain by glacial till. These soils occur in areas where wooded vegetation has had a strong influence on soil formation. Soils formed under these conditions are highly leached, resulting in lower organic matter levels and, hence, dark-gray to light grayish-colored surface horizons. Surface textures range from loam to clay loam.

Garrick soils are usually stone free to slightly stony, however, they can be moderately stony in areas where the lacustrine materials are very shallow or where they occur in complex with glacial till soils. They usually occur on undulating landscapes, which may be dissected, and have slopes ranging from very gentle to moderate.

Garrick soils may occur in complex with soils of other associations. In most of these complexes, the Garrick soils occur on the mid- to upper slope positions. Where they occur with glacial till soils, Garrick soils occur on lower slopes.

Kinds of Garrick Soils

Orthic Gray Luvisol - The Garrick Orthic Gray Luvisol soil usually occurs on upper slope positions, but may extend to all slope positions in some landscapes. It is a well-drained soil which, under forested conditions, is characterized by the presence of a thin, dark-colored surface horizon below the forest litter, underlain by a gray to grayish-brown, strongly leached, platy A horizon of variable thickness. When cultivated, part or all of this leached A horizon is incorporated into the plow layer, producing a light-gray surface. Below these horizons is a relatively thick, dark-brown to dark grayish-brown, lime-free B horizon that has angular blocky to prismatic structure due to enrichment of clay leached from upper horizons. The B horizon is underlain by a grayish-colored, strongly calcareous C horizon.

Gleyed Gray Luvisol - The Garrick Gleyed Gray Luvisol soil usually occurs on mid- to lower slope positions. It is an imperfectly drained soil characterized by a light-gray, strongly leached A horizon with well developed platy structure. This horizon is underlain by a very dark grayish brown B horizon that has a distinct, angular blocky structure when dry. The B horizon is underlain by a grayish-colored, strongly calcareous C horizon. The B and C horizons often have dull colors and reddish spots and stains, indicative of imperfect soil drainage.

Dark Gray Luvisol - The Garrick Dark Gray Luvisol soil occurs on mid- to lower slope positions. It is a well- to moderately well-drained soil which, under forested conditions, is characterized by the presence of a dark-colored surface horizon below the forest litter and a gray to grayish-brown, strongly leached, platy horizon of variable thickness. Upon cultivation, part or all of this leached horizon is incorporated into the surface layer, producing a dark-gray surface. Below these horizons is a relatively thick, dark-brown to dark grayish-brown, lime-free B horizon that usually has angular blocky to prismatic structure due to an enrichment of clay from the leached horizon. The B horizon is underlain by a grayish-colored, strongly calcareous C horizon.

Gleyed Dark Gray Luvisol - The Garrick Gleyed Dark Gray Luvisol soil occurs on lower slope positions. It is an imperfectly drained soil characterized by a dark-gray A horizon underlain by a light-gray, leached horizon with platy structure. The leached horizon is underlain by a relatively thick, dark-brown to dark grayish-brown B horizon that usually has angular blocky to prismatic structure due to an

accumulation of clay leached from upper horizons. The B horizon is underlain by a grayish, strongly calcareous C horizon. The B and C horizons often have dull colors and reddish spots and stains, indicative of imperfect soil drainage.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a surface layer of peaty material, 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Garrick Soils

Garrick soils are good (Dark Gray Luvisol) to fair (Orthic Gray Luvisol) agricultural soils of capability classes 2 and 3, respectively. They have a slight moisture deficit due to the regional subhumid climate and a moderate water-holding capacity. The main limitations of these soils are related to soil structure. The low organic matter content of some of these soils results in a structure that makes seedbed preparation difficult and also causes the soil to be susceptible to crusting after heavy rains. This results in poor seedling emergence especially for small-seeded crops. They have a dense B horizon that hinders root development and uptake of moisture and nutrients, and impedes normal water infiltration. These limitations are most strongly expressed in the Orthic Gray Luvisol soils. Furthermore, due to the occurrence of Garrick soils in the northern agricultural region of Saskatchewan, the cooler growing season, as well as the possible occurrence of late spring or early frosts in some years, may severely delay or damage crops that require a long season to reach maturity. These soils may be further downrated based on other soil and landscape limitations (i.e. topography, stones, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agriculture Capability" in the Interpretive Data Tables section of this report.

Garrick soils have a low to moderate amount of organic matter in the A horizon. This low organic matter content increases the susceptibility to surface crusting, which in turn impedes or prevents the emergence of crop seedlings. Garrick soils are low in available phosphorus and high in available potassium. Crops usually respond well to applications of nitrogen and phosphorus fertilizers. It is often necessary to add sulphur fertilizer to these soils, particularly when oil seed crops are being grown. These soils range from neutral to slightly acid in reaction. This level of acidity does not seriously affect the yields of cereal crops, although there may be local areas with moderate acidity that may inhibit the growth of sensitive crops such as alfalfa.

These soils generally have a low susceptibility to wind and water erosion, however, if they occur on moderate to strong slopes, they may have a high susceptibility to water erosion. It is recommended that soil conservation practices such as maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping, shelterbelts, cultivation across dissected slopes, and grassing of major water runways be used wherever practical to provide protection from erosion. Inclusion of forage crops in rotations and the addition of manure to those areas that are strongly leached will generally improve surface soil structure.

Stones are generally not a problem, however, periodic clearing may be needed in areas of resorted glacial till, or where lacustrine materials are shallow.

GLENBUSH (Gb) SOILS

Glenbush soils are Dark Gray Chernozemic soils that have formed in gravelly fluvial materials, in areas of mixed grassland and forest, where wooded vegetation has had some influence on soil formation. Surface textures usually range from loamy sand to sandy loam or loam. Gravelly phases of these textures also occur in some areas.

These soils are usually slightly to moderately stony, however, stoniness can be more severe, especially in areas where the gravelly parent materials are shallow (less than 1 m thick) and overlie glacial till. Glenbush soils are often associated with undulating landscapes with gentle slopes.

Glenbush soils frequently occur in complex with soils of other associations. In many areas of these complexes, the Glenbush soils occur randomly throughout the landscape, whereas in other areas, they occur in a more regular pattern, often occupying the upper slopes and knolls.

Kinds of Glenbush Soils

Orthic Dark Gray - The Glenbush Orthic Dark Gray soil occurs on all slope positions, provided there is adequate drainage and no erosion. It is a well- to rapidly drained soil with a dark gray-colored A horizon, 10 to 17 cm thick, underlain by a brownish-colored B horizon of variable thickness which overlies a grayish-colored, weakly calcareous C horizon.

Agricultural Properties of Glenbush Soils

The Glenbush soils are fair agricultural soils of capability class 3. Their loam to sandy loam textures, coupled with a gravelly subsoil, result in a low water-holding capacity. The coarser-textured Glenbush soils, those with gravelly sandy loam or loamy sand surface textures, are considered to be poor agricultural soils of capability class 4. These soils may be downrated further based on other soil and landscape

limitations (i.e. salinity, topography, stones, etc.) that are peculiar to an individual delineation. For example, Glenbush soils occurring in eroded channels may be so stony that extensive clearing may be required before they can be cultivated. These soils are usually rated as capability class 5. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Glenbush soils generally have a moderate amount of organic matter in the A horizon but, nevertheless, tend to be relatively infertile. In addition to applications of nitrogen and phosphorus, additions of potassium and sulphur may benefit some crops. These soils have a moderate to high susceptibility to wind erosion due to their sandy nature. Soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping and shelterbelts, should be used to provide dependable protection from wind erosion. Frequent inclusion of forages in crop rotations will help to maintain or enhance the organic matter content as well as provide protection from erosion.

Glenbush soils vary from slightly to moderately stony, often requiring periodic stone removal.

GRONLID (Go) SOILS

Gronlid soils are Gleyed Dark Gray Chernozemic soils that have formed in loamy lacustrine materials, in areas of mixed grassland and forest, where wooded vegetation and restricted soil drainage have had an influence on soil formation. Soils formed under wooded vegetation are usually slightly leached. They have lower organic matter levels than soils occurring in the Black soil zone, resulting in a dark-gray surface horizon. Although cultivation may have improved surface and internal drainage, soil characteristics indicative of restricted soil drainage are still present. Surface textures range from loam to sandy loam.

Gronlid soils are usually stone free. However, some stones may occur where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel. These soils usually occur on undulating landscapes with very gentle to gentle slopes, however, they can occur on hummocky landscapes with gentle to moderate slopes.

Gronlid soils frequently occur in complex with soils of other associations. In most of these complexes, the Gronlid soils occur on mid- and lower slopes.

Kinds of Gronlid Soils

Gleyed Dark Gray - The Gronlid Gleyed Dark Gray soil occurs on mid- and upper slopes, however, it can extend onto lower slopes in some landscapes. It is a moderately well- to imperfectly drained soil characterized by a dark-gray A horizon, 16 to 26 cm thick, underlain by a brownish or reddish-brown B horizon and a grayish to yellowish-brown, moderately calcareous C horizon. There may be a thin, grayish layer with platy structure between the A and B horizons which, upon cultivation, is often incorporated into the plow layer. The B and C horizons often have drab colors and reddish spots and stains, indicative of restricted soil drainage. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Gleyed Rego Dark Gray - The Gronlid Gleyed Rego Dark Gray soil occurs on lower slopes, however, it can extend onto upper slopes in some landscapes. It has a dark-gray, strongly calcareous A horizon, 15 to 25 cm thick, underlain by a gray, strongly calcareous C horizon. The C horizon often has drab colors and reddish spots and stains, indicative of imperfect soil drainage. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Gleyed Calcareous Dark Gray - The Gronlid Gleyed Calcareous Dark Gray soil occurs on lower slopes, however, it can extend onto upper slopes in some landscapes. It has a dark-gray, strongly calcareous A horizon, 15 to 25 cm thick, underlain by a gray-brown, strongly calcareous B horizon, which is underlain by a gray, strongly calcareous C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a layer of peaty material that is 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Due to their location in the landscape, some Gleysolic soils have become saline and/or carbonated. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought.

Agricultural Properties of Gronlid Soils

The best Gronlid soils are those with a loam to very fine sandy loam surface texture. These are good agricultural soils of capability class 2; a moderate moisture deficit, imparted by a moderate water-holding capacity and the subhumid regional climate, is their main limitation. Gronlid soils with fine sandy loam to sandy loam surface textures have been rated as capability class 3 (fair) due primarily to their lower water-holding capacity. Gronlid soils may be further downrated based on other soil and landscape limitations (i.e. excess moisture, erosion, topography, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Because of their moderate organic matter content and sandy nature, most Gronlid soils have moderate natural

fertility and tilth. Gronlid soils have a weak to moderate cloddy structure that breaks to fine granular and single grain, making them moderately susceptible to wind erosion. Relatively high infiltration rates, coupled with very gentle to gentle slopes, often result in a low susceptibility to water erosion. Gronlid soils occurring on landscapes with moderate to strong slopes, however, are more susceptible to water erosion. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, inclusions of forages in crop rotations and shelterbelts, be utilized wherever possible to control soil erosion and maintain or enhance soil organic matter content and aggregate stability.

Stones are not generally a problem on Gronlid soils, however, periodic clearing may be required where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel. Gronlid soils have formed under conditions of restricted drainage; in most cases, it is necessary to provide permanent artificial drainage to ensure sustained cultivation.

HILLWASH (Hw) SOILS

Hillwash soils are formed in various deposits associated with the steep and eroding sides of escarpments and valleys of rivers, creeks and tributaries. They are a group of Regosolic, Chernozemic, and Gray Luvisolic soils. Surface textures and amounts of stone are extremely variable because of the variable nature of the parent material and the association of these soils with steeply sloping, eroded landscapes.

Agricultural Properties of Hillwash Soils

Hillwash soils are primarily nonarable due to the nature of the landscape on which they occur. Steepness of slope and susceptibility to erosion are the main limitations. They do, however, have some value as pasture land, depending upon steepness of slopes, density of tree cover and availability of water. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

KAMSACK (Ka) SOILS

Kamsack soils are Dark Gray Chernozemic soils that have formed in silty lacustrine materials, where wooded vegetation has had an influence on soil formation. Surface textures are usually silt loam, but loam and clay loam textures can occur.

Kamsack soils are usually stone free, however, a few stones can occur in areas where these soils are shallow (less than 1 m thick) and underlain by fluvial gravels, glacial till or eroded till. These soils commonly occur on undulating landscapes with very gentle to gentle slopes.

Kamsack soils frequently occur in complex with soils of other associations. In most of these complexes, the Kamsack soils tend to occur on mid- and lower slope positions.

Kinds of Kamsack Soils

Orthic Dark Gray - The Kamsack Orthic Dark Gray soil usually occurs on mid-to upper slopes. It is a well-drained soil with a dark grayish-brown A horizon, 11 to 20 cm thick, that overlies a brownish-colored B horizon and a grayish-colored, moderately to strongly calcareous C horizon.

Gleyed Dark Gray - The Kamsack Gleyed Dark Gray soil occurs on mid- to lower slopes. It is a moderately well- to imperfectly drained soil, with a dark grayish-brown A horizon, 11 to 20 cm thick, underlain by B and C horizons that have faint reddish spots and streaks, indicative of soil formation under conditions of imperfect soil drainage.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks, indicative of formation under poorly drained conditions. Most of these soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Kamsack Soils

Kamsack soils are generally very good to good agricultural soils of capability classes 1 and 2. A slight moisture deficit, imparted by the subhumid regional climate and a moderate water-holding capacity, is their main limitation. Kamsack soils are often downrated based on other soil and landscape limitations (i.e. salinity, wetness, topography, etc.) that are peculiar to individual delineations. Steepness of slope, for example, may reduce the agricultural capability of these soils to classes 3 or 4 in some areas. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Kamsack soils have a moderate amount of organic matter in the A horizon. Stones are generally not present in these soils, but where the lacustrine materials are shallow and underlain by gravel or eroded till, a few stones may occur and occasional clearing may be required. Wet conditions may be encountered on the imperfectly drained Kamsack soils in the spring, delaying cultivation and seeding operations.

These soils have a low susceptibility to wind erosion. Relatively low infiltration rates, when coupled with long slopes, however, can result in a high susceptibility to water erosion. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, grassing runways, cultivation across slopes and establishment of forages, be utilized to control soil erosion.

KEWANOKE (Kk) SOILS

Kewanoke soils are Brunisolic soils that have formed in weakly to noncalcareous, gravelly fluvial materials. They have formed in areas where trees have had an influence on soil formation. Soils formed under these conditions are often leached, low in organic matter and have gray surface colors when cultivated. Surface textures range from sand to gravelly sandy loam.

Kewanoke soils are usually nonstony and are associated with undulating, hummocky or terraced landscapes with gentle to strong slopes.

The Kewanoke soils occur in complex with many other soil associations. In most of these complexes, the Kewanoke soils occur in an unpredictable manner, occupying almost any slope position.

Kinds of Kewanoke Soils

Orthic Eutric Brunisol - The Kewanoke Orthic Eutric Brunisol soil can occur on all landscape positions. It is a rapidly drained soil which, under forested conditions, is characterized by the presence of a layer of forest litter that may overlie a very thin, dark-colored A horizon and a very thin, grayish-colored leached layer. These horizons, if present, overlie a brownish B horizon that, in turn, overlies a light yellowish-brown C horizon.

Gleyed Eutric Brunisol - The Kewanoke Gleyed Eutric Brunisol soil occurs on lower slopes. It is an imperfectly drained soil which, under forested conditions, is characterized by the presence of a layer of forest litter that may overlie a very thin, dark-colored A horizon and a very thin, grayish-colored leached layer. These horizons, if present, overlie a B and C horizon, which have dull colors and reddish spots or stains, indicative of formation under the influence of restricted soil drainage.

Eluviated Eutric Brunisol - The Kewanoke Eluviated Eutric Brunisol soil can occur on all landscape positions. It is a rapidly drained soil that, under forested conditions, is characterized by the presence of a layer of forest litter that overlies a grayish-colored, leached A horizon which, in turn, overlies a brownish B horizon and a yellowish-brown C horizon.

Gleyed Eluviated Eutric Brunisol - The Kewanoke Gleyed Eluviated Eutric Brunisol soil occurs on mid- to lower slopes. It is a moderately well- to imperfectly drained soil. Under forested conditions, it has a layer of forest litter that overlies a thin, grayish-colored, leached A horizon which, in turn, overlies a brownish B horizon and a light yellowish-brown C horizon. The B and C horizons often have dull colors and reddish spots or stains, indicative of formation under the influence of restricted soil drainage.

Agricultural Properties of Kewanoke Soils

Kewanoke soils are poor agricultural soils of capability class 5. A strong moisture deficit, the result of a very low water-holding capacity, as well as low natural fertility, are the main limitations to the production of crops. These soils may be further downrated based on other soil and landscape limitations (i.e. topography, stones, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agriculture Capability" in the Interpretive Data Tables section of this report.

Kewanoke soils are infertile due to their low organic matter content and coarse textures. Because of this and their very low water-holding capacity, they are not usually used for the production of annual field crops, and are commonly used for native grazing, or cleared of their tree cover and seeded to pasture. Water erosion is not usually a problem on these soils. Stones in some areas may pose a problem, in which case clearing may be required.

Kewanoke soils normally should not be cleared of their native vegetation. If they are cleared, agricultural production will be low, even when supplemental fertilizer is used on a continual basis and adequate amounts of precipitation are obtained. In addition, Kewanoke soils are moderately acidic in reaction and, as a result, sensitive crops such as alfalfa, may be affected.

KELSEY (Ky) SOILS

Kelsey soils are Dark Gray Chernozemic soils that have formed in loamy, water-modified glacial till and shallow (less than 1 m thick), silty lacustrine materials underlain by glacial till. They occur in areas of mixed grassland and forest. Soils formed under these conditions are usually slightly leached, resulting in lower organic matter levels than similar soils in the Black soil zone and, therefore, generally have a dark gray-colored surface horizon. However, many Kelsey soils have a black-colored surface horizon. These soils were included with the Dark Gray soils due to their occurrence in the southern transitional Boreal (northern) forest ecoregion. The black surface colors may be partially explained by the position of these soils in the landscape and the incorporation of forest litter and peat into the surface mineral soil horizon upon cultivation. Surface textures range from clay loam to loam.

Kelsey soils are usually nonstony, however, they may be slightly stony where glacial till occurs near the surface. They occur on undulating landscapes that may be dissected and have slopes ranging from very gentle to gentle.

These soils often occur in complex with soils of other associations, in which case, they will generally occur on lower slope positions.

Kinds of Kelsey Soils

Orthic Dark Gray - The Kelsey Orthic Dark Gray soil is a moderately well-drained soil that occurs on lower slopes. It is characterized by the presence of a dark-gray to black A horizon underlain by a grayish-brown B horizon that usually has moderate, angular blocky structure when dry. The B horizon is underlain by a grayish-colored, moderately to strongly calcareous C horizon.

Gleyed Dark Gray - The Kelsey Gleyed Dark Gray soil is an imperfectly drained soil that may occur on all slope positions. It is characterized by the presence of a dark-gray to black A horizon underlain by a grayish-brown B horizon that usually has moderate, angular blocky structure when dry. The B horizon is underlain by a grayish-colored, moderately to strongly calcareous C horizon. The B and C horizons often have dull colors and reddish spots and stains, indicative of imperfect soil drainage.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a surface layer of peaty material, 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils may have become saline and/or carbonated.

Agricultural Properties of Kelsey Soils

Kelsey soils are very good to good agricultural soils of capability classes 1 to 2 respectively. The main limitations include a slight moisture deficit due to a moderate water holding capacity and the subhumid regional climate, together with minor soil structural problems. Some of these soils have a surface horizon that presents minor difficulties for seedbed preparation and also makes them moderately susceptible to crusting, which in turn inhibits seedling emergence, especially for small-seeded crops. The subsurface B horizon is moderately dense, which slows moisture infiltration and inhibits root penetration somewhat. Furthermore, due to the occurrence of Kelsey soils in the northern agricultural region of Saskatchewan, the cooler growing season, as well as the possible occurrence of late spring or early frosts in some years, may severely delay or damage crops that require a long season to reach maturity. These soils may be further downrated based on other soil and landscape limitations (i.e. topography, stones, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agriculture Capability" in the Interpretive Data Tables section of this report.

Kelsey soils have a moderate amount of organic matter in the surface horizon. They are low in available phosphorus and high in available potassium. Crops grown on these soils usually respond well to applications of nitrogen and phosphorus fertilizers.

These soils generally have a low susceptibility to wind and water erosion. Water erosion may however become more serious during periods of intense rainfall due to the relatively low infiltration rate of these soils. It is recommended that soil conservation practices such as maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping, shelterbelts, cultivation across dissected slopes and major runways be used wherever practical to provide dependable protection from erosion.

Stones are seldom a problem on Kelsey soil, however, due to the presence of glacial till near the surface, a few stones may be present and occasional clearing may be required. Wet conditions may be encountered on Kelsey soils, especially on the imperfectly drained soils in the spring, delaying cultivation and seeding operations.

La CORNE (Lc) SOILS

La Corne soils are Gray Luvisolic soils that have formed in loamy lacustrine materials in areas where wooded vegetation has had a strong influence on soil formation. Soils that have formed under these conditions are usually strongly leached, resulting in low organic matter levels and, hence, have a dark-gray to light grayish-colored surface upon cultivation. Surface textures are predominantly fine sandy loam to very fine sandy loam.

La Corne soils are usually stone free, however, some stones may occur where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel. La Corne soils usually occur on undulating landscapes with very gentle to gentle slopes, but can also occur on hummocky landscapes with gentle to steep slopes, particularly where they occur in complex with soils formed in glacial till.

La Corne soils frequently occur in complex with soils of other associations. In complexes with soils formed in finer-textured lacustrine materials, the La Corne soils tend to occur on mid- and upper slope positions, whereas in complex with soils formed in coarser-textured sandy fluvial materials or glacial till, they usually occur on the mid-and lower slope positions of the landscape.

Kinds of La Corne Soils

Orthic Gray Luvisol - The La Corne Orthic Gray Luvisol soil usually occurs on mid- and upper slopes and knolls but in some landscapes, it may be restricted to lower slopes and depressions. It is a well-drained soil which, under forested conditions, is characterized by the presence of a very thin, dark-colored surface horizon below the forest litter, underlain by a strongly leached, gray to grayish-brown, platy horizon of variable thickness. Upon cultivation, part or all of this leached horizon is incorporated into the plow layer, producing a light-gray surface. In some areas, a portion of the strongly leached, grayish-colored horizon will remain below the cultivated surface layer. Below these horizons is a relatively thick, dark-brown to dark grayish-brown, B horizon that usually has a strong (hard), angular blocky to prismatic structure, and is underlain, in turn, by a dark grayish-brown, moderately calcareous C horizon.

Gleyed Gray Luvisol - The La Corne Gleyed Gray Luvisol soil commonly occurs on mid- and lower slope positions in most La Corne landscapes. It is a moderately well- to imperfectly drained soil with a light-gray A horizon, 8 to 15 cm thick, underlain by a very light-gray horizon with platy structure. This horizon, in turn, is underlain by a relatively thick, brownish or reddish-brown B horizon that has a distinct, angular blocky structure when dry. The B horizon, in turn, is underlain by a grayish-colored, moderately calcareous C horizon. The B and C horizons often have reddish spots and stains and dull colors, indicative of formation in areas of restricted drainage.

Brunisolic Gray Luvisol - The La Corne Brunisolic Gray Luvisol soil usually occurs on mid- to upper slopes. It is a moderately well- to well-drained soil that has a gray to grayish-brown, strongly leached A horizon with platy structure occurring below a thin forest litter layer. The distinguishing characteristic of these soils is the presence of a brownish-colored horizon within this leached layer. Below these horizons is a relatively thick, dark-brown to brown B horizon that usually has strong (hard), angular blocky to prismatic structure, due to an accumulation of clay leached from upper horizons. The B horizon is underlain by a grayish-colored, moderately calcareous C horizon.

Dark Gray Luvisol - The La Corne Dark Gray Luvisol soil can occur on all slope positions in most La Corne landscapes. It is a well-drained soil which, under forested conditions, is characterized by the presence of a dark-colored A horizon below the forest litter, underlain by a strongly leached, gray to grayish-brown horizon with platy structure. These horizons, in turn, are underlain by a brownish or reddish-brown B horizon having a strong, angular blocky structure, overlying a grayish-colored, moderately calcareous C horizon. Upon cultivation, the forest litter, A horizon and part of the underlying leached horizon are incorporated together, producing a dark gray-colored surface horizon.

Gleyed Dark Gray Luvisol - The La Corne Gleyed Dark Gray Luvisol soil generally occurs on lower slope positions in the landscape. It is a moderately well-to imperfectly drained soil characterized by a dark-gray A horizon, 10 to 20 cm thick, underlain by a relatively thick, brownish or reddish-brown B horizon that has a strong, angular blocky structure. The B and C horizons often have reddish spots and stains and dull colors, indicative of formation in areas with restricted soil drainage.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and in low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a surface layer of peaty material, 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of La Corne Soils

La Corne soils are fair agricultural soils of capability class 3 due mainly to their moderate water-holding capacity. Although the majority of the La Corne soils are considered to be class 3 soils, some of them may have been downrated further based on various soil and landscape limitations (i.e. topography, wetness etc.) that are peculiar to individual delineations. La Corne soils occurring on strongly sloping hummocky landscapes, for example, are placed in capability class 4 due to topographic limitations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

The sandy nature and low organic matter content of the La Corne soils result in soils of only moderate fertility and tilth. The low organic matter content in some of these soils results in a structure that makes seedbed preparation difficult and also makes the soils susceptible to crusting after heavy rains, resulting in poor seedling emergence, especially for small-seeded crops. To ensure productivity, management practices should be followed that will increase the organic matter content, maintain or increase fertility levels and prevent water and wind erosion. Such practices should include using forages in crop rotations, addition of manure, tillage methods that will conserve crop residues, strip cropping and shelterbelts.

LAVALLEE LAKE (LL) SOILS

Lavallee Lake soils are Organic soils that have formed in accumulations of vegetative materials composed primarily of forest vegetation overlain by a shallow layer of moss vegetation. They commonly occur in bowl-shaped depressions in rather isolated, small areas of the northern fringes of the agricultural region of Saskatchewan and are often very wet. The deposits are usually less than 2 m thick, but greater than 0.6 m thick, with the thickest portion occurring towards the center of the area. Lavallee Lake soils typically have a level to very gently sloping surface with moderate to strong, hummocky microrelief.

Typical fens (grasses and sedges) tend to occur toward the wet center of the bowls. Near the outer edges, the peat is better drained and a bog vegetation community develops, which forms the substrate for the Lavallee Lake soils. Bogs (Lavallee Lake) are typically well treed with white spruce, black spruce and tamarack. Surface vegetation consists of various shrubs, forbs, grasses, sedges and mosses, including sphagnum.

The Lavallee Lake soils may occur in complex with other organic and mineral soil associations. In complexes with Bagwa Lake soils, Lavallee Lake soils occur on the higher landscape positions. In complexes with mineral soils,

Lavallee Lake soils typically occur on the lower landscape positions.

Kinds of Lavallee Lake Soils

Typic Fibrisol - The Lavallee Lake Typic Fibrisol soil is formed in organic materials that are weakly decomposed (fibric), and the thickness of the organic material generally exceeds 160 cm.

Mesic Fibrisol - The Lavallee Lake Mesic Fibrisol soil is formed in organic materials that are weakly decomposed (fibric). There is a subdominant layer at an intermediate stage of decomposition (mesic) greater than 25 cm thick below a depth of 60 cm. The thickness of the organic material is greater than 160 cm.

Terric Fibrisol - The Lavallee Lake Terric Fibrisol soil is formed in organic materials that are weakly decomposed (fibric), and the thickness of the organic material exceeds 60 cm in thickness but is less than 160 cm.

Typic Mesisol - The Lavallee Lake Typic Mesisol soil is formed in organic materials that are in an intermediate stage of decomposition (mesic), and the thickness of the organic material generally exceeds 160 cm.

Terric Mesisol - The Lavallee Lake Terric Mesisol soil is formed in organic materials that are in an intermediate stage of decomposition (mesic), and the thickness of the organic material exceeds 40 cm but is less than 160 cm.

Terric Fibric Mesisol - The Lavallee Lake Terric Fibric Mesisol soil is formed in organic materials that are in an intermediate stage of decomposition (mesic). There is a layer of weakly decomposed (fibric) material greater than 25 cm thick below the depth of 40 cm. The thickness of the organic material is less than 160 cm.

Agricultural Properties of Lavallee Lake Soils

Lavallee Lake soils are not classified for agricultural capability unless they are being used for agricultural purposes. The rating for each delineation is listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report. Areas that are not classified are given the symbol O.

Lavallee Lake soils are usually very wet and in their natural state, are suitable only for native grazing, or forestry purposes if treed. If these areas are to be developed for agricultural use, they will require drainage and, usually, clearing before breaking. At best, most of these efforts only result in poor agricultural soils. Due to their location in depressional areas, these soils are susceptible to cold air drainage and, consequently, to late spring and early fall frosts. The organic mat is an excellent insulator and, thus, these soils are also slow to warm up in the spring. This may delay crop development and shorten the growing season to the extent that crops may not have sufficient time to mature. Also, once the vegetative mat is disturbed by cultivation and the surface dries, these soils become very susceptible to wind erosion. If drainage is provided, the growing of perennial forage crops may be more feasible than annual cropping. However, considering the cost of drainage and clearing of these lands, the possible requirement of specialized agricultural equipment, and the potential need for soil amendments such as fertilizer and lime, it may not be economically feasible to grow annual crops on these soils.

MEADOW (Mw) SOILS

Meadow soils are Gleysolic soils that have formed in variable-textured alluvial sediments typically associated with low-lying depressional basins. Surface textures are variable but usually range from loam to clay.

Meadow soils are usually stone free, although some stones may occur where the alluvial materials are shallow (less than 1 m thick) and underlain by glacial till. Meadow soils usually occur on nearly level to very gently sloping landscapes.

Meadow soils may occur in complex with soils of other associations. If they are in complex with organic soils, they usually occur on upper slope positions or along the margins of the organic deposit. Occasionally, Meadow soils may occur in complex with well-drained soils. In these cases, the Meadow soils occur in lower landscape positions.

Kinds of Meadow Soils

Humic Gleysolic - Meadow Humic Gleysolic soils occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas which collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks, indicative of formation under poorly drained conditions. Meadow peaty Humic Gleysolic soils are covered by a shallow layer of peaty material, from 15 to 40 cm thick. Most of these soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Gleysolic Soils - The Meadow Gleysolic soils occur in depressional areas that are subject to flooding. They are wet for all or a significant portion of the growing season. They may have a relatively thick, dark-colored A horizon and drab-colored B and C horizons that are dotted with reddish spots and streaks, indicative of formation under poorly drained conditions. In some areas, the Meadow Gleysolic soils are almost entirely carbonated. In these areas, they have a highly calcareous A horizon underlain by a highly calcareous B or C horizon. Meadow peaty Gleysolic soils are covered by a shallow layer of peaty material, from 15 to 40 cm thick. Where the organic material is primarily fibric peat, the organic layer may be up to 60 cm thick. In some cases, the Meadow Gleysolic soils are also saline. In these areas, soluble salts are usually present within 50 cm of the surface. Meadow saline Gleysolic soils often occur intermixed with Meadow carbonated Gleysolic soils.

Agricultural Properties of Meadow Soils

Meadow soils are fair to nonarable agricultural soils of capability classes 3 to 6. The wide range in agricultural capability is mainly a result of varying degrees of wetness and salinity. Many of these soils are wet for all or a significant portion of the growing season, thus limiting their use for arable agriculture. Improved drainage, however, has permitted cultivation in some areas and may result in fair agricultural soils. While textures vary, they usually range from loam to clay; consequently, water-holding capacity is often adequate. The organic matter content of the surface horizon is usually high, resulting in reasonable fertility and good tilth. Stones are rarely a problem in Meadow soils. Because of the association of these soils with lower portions of the landscape, wind erosion is not a serious problem. On the other hand, they do receive runoff water in the spring or during periods of intense rainfall and, consequently, are susceptible to water erosion and to flooding. Areas with peaty surfaces and saline Gleysolic soils have little potential for arable agriculture and are best suited for forage production or pasture. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

NIPAWIN (Np) SOILS

Nipawin soils are Dark Gray Chernozemic soils formed in variable, silt-stratified, sandy alluvial materials and occur in areas of mixed grassland and forest. Soils formed under these conditions are usually slightly leached, resulting in lower organic matter levels than soils in the Black soil zone and, therefore, generally have a dark gray-colored surface horizon. Many Nipawin soils however have a black-colored surface horizon. These soils were included with Dark Gray soils due to their occurrence in the southern transitional Boreal (northern) forest ecoregion. The black surface colors may be partially explained by the position of these soils in the landscape and the incorporation of forest litter and peat into the surface mineral soil horizon upon cultivation. Nipawin soils have a loamy or silty surface veneer underlain by a series of thin, sandy and silty layers. Below a depth of about 60 cm, there is often a thick layer of sand. Surface textures range from very fine sandy loam to silty clay loam.

These soils are associated with the Saskatchewan River channel near the community of Nipawin. Materials that compose the Nipawin soils were deposited by the Saskatchewan River shortly after deglaciation and prior to the establishment of the river in its current channel. Areas of Nipawin soils, and the sandier Whitefox soils, often have meander scars, terraces and escarpments indicating former alluvial activity.

Nipawin soils are nonstony. They usually occur on undulating landscapes with very gentle to level slopes. Gentle to moderate slopes may occur in areas that demark the margins of meander scars, drainage channels or runways. Strong to steep slopes occur on terrace escarpments.

Nipawin soils frequently occur in complex with Whitefox soils. In these complexes, the Nipawin soils may occur in any slope position.

Kinds of Nipawin Soils

Orthic Dark Gray - The Nipawin Orthic Dark Gray soil is a well-drained soil that usually occurs on mid- to upper slope positions, although in some landscapes it may also occur on lower slopes. It is characterized by the presence of a dark gray-colored A horizon, 10 to 20 cm thick, underlain by a brownish B horizon and a grayish, calcareous C horizon.

Gleyed Dark Gray - The Nipawin Gleyed Dark Gray soil occurs on lower slopes, but may extend to upper slopes in very gently sloping landscapes. It is an imperfectly drained soil with a dark-gray to black A horizon that is underlain by a noncalcareous B horizon, and a calcareous C horizon. The B and C horizons often have dull or drab colors and reddish spots and stains, indicative of restricted soil drainage.

Gleyed Calcareous Dark Gray - The Nipawin Gleyed Calcareous Dark Gray soil may occur throughout the landscape. It is an imperfectly drained soil that has a dark-gray to black A horizon that overlies a dull-colored, calcareous B horizon and lighter-colored, calcareous C horizon. The B and C horizons often have dull or drab colors and reddish spots or stains, indicative of restricted soil drainage.

Agricultural Properties of Nipawin Soils

Nipawin soils are good agricultural soils of capability class 2. The main limitations of these soils are a slight moisture deficit due to a moderate water-holding capacity and the subhumid regional climate. Although many Nipawin soils have a moderately fine-textured surface veneer, this is often underlain by sand at relatively shallow depths. The depth at which the sand is encountered may limit the rooting zone and the area that roots can explore for water in drier years. These soils may be further downrated based on other soil and landscape limitations (i.e. topography, wetness, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agriculture Capability" in the Interpretive Data Tables section of this report.

Nipawin soils have a moderate amount of organic matter in the surface horizon. They are low in available phosphorus and high in available potassium. Crops grown on these soils usually respond well to applications of nitrogen and phosphorus fertilizers. Wet conditions may be encountered on Nipawin soils, especially on the imperfectly drained soils in the spring, delaying cultivation and seeding operations.

These soils generally have a low susceptibility to wind and water erosion. Water erosion, however, may become more serious during periods of intense rainfall due to the relatively low infiltration rate of these soils. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping, shelterbelts, and cultivation

across dissected slopes and major runways, be used wherever practical to provide dependable protection from erosion.

NISBET (Nt) SOILS

Nisbet soils are Dark Gray Chernozemic soils that have formed in sandy fluvial materials, in areas where wooded vegetation has had an influence on soil formation. Surface textures range from loamy sand to sandy loam.

Nisbet soils are usually stone free, however, some stones may occur where the sandy deposits are shallow (less than 1 m thick) and underlain by glacial till or gravel. These soils are typically associated with undulating landscapes with very gentle to gentle slopes. Hummocky landscapes having gentle and moderate slopes occur less frequently.

The Nisbet soils often occur in complex with soils of other associations. In most of these complexes, the Nisbet soils occur on mid- and upper slope positions. However, in complexes with soils developed in glacial till, the Nisbet soils usually occur on the mid- and lower slope positions.

Kinds of Nisbet Soils

Orthic Dark Gray - The Nisbet Orthic Dark Gray soil can occupy all slope positions in some landscapes. It is a well-drained soil that is characterized by a dark-gray A horizon, 11 to 22 cm thick, underlain by a brown-colored, lime-free B horizon and a light-brown, weakly calcareous C horizon.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and in low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a surface layer of peaty material, 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Nisbet Soils

Nisbet soils with fine sandy loam and sandy loam surface textures are fair agricultural soils of capability class 3 due primarily to their sandy nature. The occurrence of these soils in an area of more favorable precipitation compensates slightly for the low water-holding capacity. The coarser-textured Nisbet soils, those with loamy sand and sand surface textures, are considered to be poor agricultural soils of capability class 4. Nisbet soils may be further downrated based on soil and landscape limitations (i.e. salinity, wetness, topography, erosion, etc.) that are peculiar to individual delineations. Limitations for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

The Nisbet soils have a low organic matter content which, combined with the sandy nature of this soil, results in one of the poorest agricultural soils in the Dark Gray soil zone. Fertilizer applications, particularly nitrogen and phosphorus, can increase their productivity somewhat. In addition, applications of potassium and sulphur may be required for certain crops. The potential for erosion is high on these soils because of their sandy texture, weak structure and low organic matter content, making it difficult to keep a cloddy surface that is resistant to wind erosion. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, frequent inclusion of forages in crop rotations, and shelterbelts, be utilized wherever possible to control soil erosion and maintain or enhance soil organic matter content and aggregate stability. Stones are generally not a problem. Areas of poorly drained soils, especially those with peaty surfaces, often have little potential for arable agriculture and are best suited for forage production or pasture.

PERLEY (Pe) SOILS

Perley soils are Thick Black Chernozemic soils that have formed in sandy fluvial materials. They are distinguished from Meota soils by having a surface horizon that is greater than 20 cm thick. Surface textures range from very fine sandy loam to loamy sand.

Perley soils are usually stone free, however, some stones may occur where the sandy deposits are shallow (less than 1 m thick) and underlain by glacial till or gravel. They occur on undulating landscapes with very gentle to gentle slopes.

Perley soils frequently occur in complex with soils of other associations. In most of these complexes, the Perley soils occur on the mid- and lower slope positions.

Kinds of Perley Soils

Orthic Black - The Perley Orthic Black soil usually occupies mid- and lower slope positions in most Perley landscapes. It is a well- to rapidly drained soil with a black A horizon, 20 to 36 cm thick, underlain by a brownish B horizon and a light-brown, weakly to moderately calcareous C horizon.

Calcareous Black - The Perley Calcareous Black soil occurs on mid- and upper slopes and knolls in most Perley landscapes, however, it can extend onto lower slopes in some landscapes. It is a well- to moderately well-drained soil with a black, usually calcareous A horizon, 20 to 37 cm thick, underlain by a brownish-colored, calcareous B horizon and a light-brown, weakly to moderately calcareous C horizon.

Agricultural Properties of Perley Soils

The best Perley soils, particularly the typical or Perley Orthic Black soils with a very fine sandy loam surface texture, are rated as capability class 2; a moderate moisture deficit, imparted by the subhumid regional climate and a moderate water-holding capacity, is their main limitation. Most Perley soils, however, have fine sandy loam to sandy loam surface textures, and are, at best, only fair agricultural soils of capability class 3. Their low water-holding capacity is their main limitation. Perley soils with coarser textures (loamy sands) are even more droughty and are considered to be poor agricultural soils of capability class 4. Perley soils may be further downrated based on other soil and landscape limitations (i.e. salinity, topography, wetness, etc.) that are peculiar to an individual delineation. For example, Perley soils are downrated to class 4 or 5 if the potential for crop production is severely affected by salinity. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

A moderate to high organic matter content makes most Perley soils reasonably fertile, although additions of phosphorus and nitrogen are usually required to obtain optimum yields. Due to their sandy nature and weak structure, these soils are often subject to wind erosion, particularly when the surface is not protected by a trash cover. Tillage practices that maintain a trash cover and management practices that maintain or increase the organic matter content will help reduce this hazard. Water erosion is generally not a problem because of high infiltration rates. Likewise, stones are seldom a problem on these soils.

PINE (Pn) SOILS

Pine soils are a mixture of Brunisolic and Regosolic soils that have formed in sandy fluvial materials, some of which have been reworked by the wind. They have formed in areas where trees have had an influence on soil formation. Soils formed under these conditions are often leached, low in organic matter and have gray surface colors when cultivated. Surface textures range from sand to loamy sand.

Pine soils are usually nonstony and are frequently associated with hummocky landscapes with gentle to strong slopes. In some areas, undulating landscapes with very gentle to gentle slopes are common.

The Pine soils occur in complex with many other soil associations. Typically, they occur in complex with soils formed in other sandy fluvial materials, in which case the Pine soils usually occur on the mid- to upper slope positions.

Kinds of Pine Soils

Orthic Eutric Brunisol - The Pine Orthic Eutric Brunisol soil occurs mainly on upper slopes and knolls, but may extend onto midslopes in some landscapes. It is a very rapidly drained soil which, under forested conditions, is characterized by the presence of a layer of forest litter that may overlie a very thin, dark-colored A horizon. These horizons overlie a brownish B horizon that, in turn, overlies a light yellowish-brown C horizon. In many areas, the only significant difference between the B and underlying C horizon is that the C horizon is weakly calcareous. In areas where these soils are cultivated, the resulting surface is 10 to 18 cm thick and light gray in color.

Gleyed Eutric Brunisol - The Pine Gleyed Eutric Brunisol soil occurs mainly on lower slopes, but may extend onto midslopes in low-lying, gentle landscapes. It is a moderately well- to imperfectly drained soil which, under forested conditions, is characterized by the presence of a layer of forest litter that may overlie a very thin, dark-colored A horizon and a very thin, grayish-colored, leached layer. These horizons, if present, overlie a brownish B horizon and a yellowish brown C horizon, which have dull colors and reddish spots or stains, indicative of formation under the influence of restricted soil drainage. Upon cultivation, the upper horizons are mixed, resulting in a light gray-colored surface.

Eluviated Eutric Brunisol - The Pine Eluviated Eutric Brunisol soil can occur on all landscape positions. It is a rapidly drained soil that, under forested conditions, is characterized by the presence of a layer of forest litter that overlies a thin, grayish-colored, leached A horizon which, in turn, overlies a brownish B horizon and a light yellowish-brown C horizon. The B horizon may be up to 2 m or more in thickness. Upon cultivation, the upper horizons are mixed, resulting in a light grayish-colored surface.

Gleyed Eluviated Eutric Brunisol - The Pine Gleyed Eluviated Eutric Brunisol soil occurs on mid- to lower slopes. It is a moderately well- to imperfectly drained soil. Under forested conditions, it has a layer of forest litter that overlies a thin, grayish-colored, leached A horizon which, in turn, overlies a brownish B horizon and a yellowish-brown C horizon. The B and C horizons often have dull colors and reddish spots or stains, indicative of formation under the influence of restricted soil drainage.

Orthic Regosol - The Pine Orthic Regosol soil occurs on upper slopes and knolls. It is a very rapidly drained soil, which under forested conditions, is characterized by the presence of a layer of forest litter that may overlie a very thin, dark-colored A horizon that directly overlies the yellowish-brown C horizon.

Gleyed Regosol - The Pine Gleyed Regosol soil occurs mainly on lower slopes, but may extend onto midslopes in low-lying, gentle landscapes. It is an imperfectly drained soil which, under forested conditions, is characterized by the presence of a layer of forest litter that may overlie a very thin, dark-colored A horizon. These horizons directly overlie the yellowish-brown C horizon, which has dull colors and reddish spots and stains, indicative of formation under the influence of restricted soil drainage.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and in low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for

much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a surface layer of peaty material, 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Pine Soils

The best Pine soils, those with a loamy sand surface texture, are very poor agricultural soils of capability class 5. The sand-textured Pine soils are considered to be nonarable and of capability class 6. A strong moisture deficit, imparted by the subhumid regional climate and a very low water-holding capacity, as well as low natural fertility, are the main limitations to the production of common field crops. These soils may be further downrated based on other soil and landscape limitations (i.e. erosion, topography, deficiencies in fertility, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Pine soils are infertile due to their low organic matter content and coarse textures. Because of this and their very low water-holding capacity, they are not usually used for the production of annual field crops, and are commonly used for native grazing, or cleared of their tree cover and seeded to pasture. If these soils are cleared, they are highly susceptible to wind erosion until a permanent vegetative cover, of either forages or trees, is re-established. Water erosion is not usually a problem on these soils. Stones do not pose a problem unless glacial till is near the surface, in which case periodic clearing may be required.

Pine soils normally should not be cleared of their native vegetation. If they are cleared, agricultural production will be low, even when supplemental fertilizer is used on a continual basis and adequate amounts of precipitation are obtained. In addition, Pine soils are often acidic in reaction and, as a result, sensitive crops, such as alfalfa, may be affected.

PORCUPINE PLAIN (Pp) SOILS

Porcupine Plain soils are Gray Luvisolic soils that have formed in silty lacustrine materials, in areas where wooded vegetation has had a strong influence on soil formation. Soils that have formed under these conditions are usually strongly leached, resulting in low organic matter levels and, hence, a dark-gray to light gray-colored surface horizon upon cultivation. Surface textures are predominantly loam and silt loam but can range to silty clay loam.

Porcupine Plain soils are typically stone free. However, where these soils are shallow (less than 1 m thick) and underlain by gravel, a few pebbles may occur at depth or throughout the profile. In areas where these soils are underlain by eroded till, large boulders may be present causing a serious hindrance to cultivation. Porcupine Plain soils are usually associated with undulating or undulating dissected landscapes with very gentle to gentle slopes.

Porcupine Plain soils frequently occur in complex with soils of other associations. In complexes with soils of sandy fluvial or loamy lacustrine origin, they often occur on the mid- to lower slopes. In complexes with soils of finer textured lacustrine origin, they usually occur on the upper slopes.

Kinds of Porcupine Plain Soils

Orthic Gray Luvisol - The Porcupine Plain Orthic Gray Luvisol soil usually occupies upper slope positions, however, it may extend to all slope positions in some landscapes. It is a well-drained soil which, under forested conditions, is characterized by the presence of a thin, dark-colored surface horizon below the forest litter, underlain by a gray to grayish-brown, strongly leached, platy horizon of variable thickness. Upon cultivation, part or all of this leached horizon is incorporated into the plow layer, producing a light-gray surface. Below these horizons is a relatively thick, dark-brown to dark grayish-brown, lime-free B horizon that usually has a strong (hard), angular blocky to prismatic structure due to an enrichment of clay from the leached horizon. The B horizon, in turn, is underlain by a grayish-colored, moderately calcareous C horizon.

Gleyed Gray Luvisol - The Porcupine Plain Gleyed Gray Luvisol soil commonly occurs on mid- to lower slope positions. It is a moderately well- to imperfectly drained soil characterized by a light-gray A horizon, 8 to 15 cm thick, underlain by a light-gray, leached horizon with platy structure. This horizon, in turn, is underlain by a brownish B horizon that has a distinct, angular blocky structure when dry. The B horizon is underlain by a grayish-colored, moderately calcareous C horizon. The B and C horizons often have dull colors and reddish spots and stains, indicative of imperfect soil drainage.

Dark Gray Luvisol - The Porcupine Plain Dark Gray Luvisol soil occurs on mid- to lower slope positions. It is a well- to moderately well-drained soil which, under forested conditions, is characterized by the presence of a thin, dark-colored surface horizon below the forest litter, underlain by a strongly leached, gray to grayish-brown platy horizon of variable thickness. Upon cultivation, part or all of this leached horizon is incorporated into the plow layer, producing a dark-gray surface horizon, 13 to 19 cm thick. Below these horizons is a relatively thick, dark-brown to dark grayish-brown, lime- free B horizon that usually has a strong (hard), angular blocky to prismatic structure due to an enrichment of clay from the leached horizon. The B horizon, in

turn, is underlain by a grayish-colored, moderately calcareous C horizon.

Gleyed Dark Gray Luvisol - The Porcupine Plain Gleyed Dark Gray Luvisol soil occurs on mid- to lower slope positions. It is a moderately well- to imperfectly drained soil characterized by a dark-gray A horizon, 13 to 20 cm thick, underlain by a light-gray, leached horizon with platy structure. This horizon is underlain by a brownish B horizon that has a distinct, angular blocky structure when dry. The B horizon, in turn, is underlain by a moderately calcareous, grayish C horizon. The B and C horizons often have dull colors and reddish spots and stains, indicative of imperfect soil drainage.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a layer of peaty material that is 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Due to their location in the landscape, some Gleysolic soils have become saline and/or carbonated. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought.

Agricultural Properties of Porcupine Plain Soils

Porcupine Plain soils are good (Dark Gray Luvisol) to fair (Orthic Gray Luvisol) agricultural soils of capability classes 2 and 3, respectively. They have a slight moisture deficit, due to the regional subhumid climate and a moderate water-holding capacity. The main limitations in these soils are structural. The low organic matter content in some of these soils results in a structure that makes seedbed preparation difficult and also makes the soil susceptible to crusting after heavy rains, resulting in poor seedling emergence, especially for small-seeded crops. They have a dense B horizon that may restrict water infiltration and root penetration. These limitations are most strongly expressed in the Orthic Gray Luvisol soils. These soils may be further downrated based on other soil and landscape limitations (i.e. salinity, topography, wetness, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Porcupine Plain soils are low in available phosphorus and high in available potassium and crops usually respond well to applications of nitrogen and phosphorus fertilizers. Sulphur fertilizer may be beneficial to some crops, particularly oil seeds. These soils are moderately acid to neutral in reaction. The acidity does not affect the productivity of these soils, although there may be local areas with moderate acidity that may inhibit the growth of some sensitive crops such as alfalfa.

Stones are generally not a problem in Porcupine Plain soils, however, where the lacustrine materials are shallow and underlain by eroded till, stones often cause a serious hindrance to cultivation and usually require clearing on an annual basis. Water erosion is not a serious problem, but can become serious during periods of intense rainfall due to the relatively low infiltration rate of these soils. The potential for water erosion is greatest in areas with long slopes so management practices, such as cultivation across slopes and grassing of runways, should be followed as much as possible. Wind erosion can be a problem unless conservation practices are followed. Such practices include maintenance of crop residues through reduced tillage or leaving stubble standing and continuous cropping. Management practices, such as the use of legumes in crop rotations, would help to increase the soil organic matter content and, thus, improve the surface structure of these soils.

PADDOCKWOOD (Pw) SOILS

Paddockwood soils are Gleyed Dark Gray Chernozemic soils that have formed in strongly calcareous, loamy, water-modified glacial till, in areas of mixed grassland and forest, where wooded vegetation has had some influence on soil formation. The surface texture of these soils is most commonly loam, with sandy loam and clay loam textures occurring less frequently.

These soils commonly have a few small, scattered stones at the surface, but in some areas are virtually stone free. They commonly occur on undulating landscapes with very gentle to gentle slopes.

Paddockwood soils frequently occur in complex with soils of other associations. They typically occur on lower slopes when in complex with soils formed in glacial till, however, when in complex with soils formed in sandy or gravelly fluvial materials, the sandy and gravelly materials will most often occur randomly as an overlay on the Paddockwood soils.

Kinds of Paddockwood Soils

Gleyed Rego Dark Gray - The Paddockwood Gleyed Rego Dark Gray soil occurs on lower slopes, however, it may extend to upper slopes in landscapes where slopes are very gentle. It has a dark-gray, strongly calcareous A horizon, 14 to 20 cm thick, underlain by a gray, strongly calcareous C horizon. The C horizon often has drab colors and reddish spots and stains, indicative of imperfect soil drainage. Streaks of carbonate frequently occur throughout the soil.

Gleyed Calcareous Dark Gray - The Paddockwood Gleyed Calcareous Dark Gray soil occurs on lower slopes, however, it may extend to upper slopes in landscapes where slopes are very gentle. It has a dark-gray, strongly calcareous A horizon, 14 to 20 cm thick, underlain by a gray-brown, strongly calcareous B horizon, which is underlain by a gray,

strongly calcareous C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage. Streaks of carbonate frequently occur throughout the upper horizons.

Agricultural Properties of Paddockwood Soils

Paddockwood soils are good agricultural soils of capability class 2. The main limitation of these soils is a slight moisture deficit imparted by a moderate water-holding capacity. These soils may be further downrated based on other soil and landscape limitations (salinity, wetness, topography, stones) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Paddockwood soils have a moderate amount of organic matter in the A horizon. They are low in available phosphorus and high in available potassium.

These soils have a very low susceptibility to wind and water erosion. It is important, however, that crop residues be carefully conserved through reduced tillage or leaving stubble standing to guard against wind erosion through prolonged periods of drought.

Only a few stones can be expected on these soils and occasional clearing may be required.

RUNWAY (Rw) SOILS

Runway soils are formed in various deposits associated with the sides and bottoms of shallow drainage channels. This group of soils includes Regosolic, Gray Luvisolic, Chernozemic and Gleysolic soils that are primarily associated with dissected landscapes. As a result, surface texture, degree of stoniness, slope class and salinity are extremely variable.

Agricultural Properties of Runway Soils

Runway soils are usually rated as class 4, 5 or 6 for agricultural capability. Most of these soils, however, are nonarable in that the bottom lands are poorly drained and the side slopes are often too steep to permit cultivation. A few areas, where slopes permit crossing with field implements, have some potential for cultivation. As well, many areas have little potential for grazing land because they occur as narrow strips cutting through cultivated areas. Where they are large enough to be fenced, they do have some value as pasture land depending upon steepness of slope, density of tree cover and availability of water. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

SHELLBROOK (Sb) SOILS

Shellbrook soils are Dark Gray Chernozemic soils that have formed in loamy lacustrine materials, in areas of mixed grassland and forest, where wooded vegetation has had some influence on soil formation. Soils that have formed under these conditions are usually slightly leached. They have lower organic matter levels than similar soils occurring in the Black soil zone, as evidenced by a dark-gray surface horizon. Surface textures range from sandy loam to loam.

Shellbrook soils are usually stone free. Some stones may occur where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel, or where the lacustrine materials occur in complex with glacial till or gravel. Shellbrook soils usually occur on undulating landscapes with very gentle to gentle slopes, however, they can also occur on hummocky landscapes with gentle to moderate slopes.

Shellbrook soils occur in complex with soils of many other associations. In most of these complexes, the Shellbrook soils occur on mid- and lower slopes, however, in complex with certain soils, such as Black Chernozemic soils formed in loamy lacustrine materials, they tend to occur on upper slope positions.

Kinds of Shellbrook Soils

Orthic Dark Gray - The Shellbrook Orthic Dark Gray soil occurs on mid- and lower slopes, however, it can extend onto upper slopes in some landscapes. It is a well-drained soil characterized by a dark-gray A horizon, 11 to 22 cm thick, underlain by a reddish-brown B horizon and a grayish, moderately calcareous C horizon. There may be a thin, grayish layer with platy structure between the A and B horizons which, if cultivated, is often incorporated into the plow layer.

Gleyed Dark Gray - The Shellbrook Gleyed Dark Gray soil occurs on mid- and upper slopes, however, it can extend onto lower slopes in some landscapes. It is a moderately well-to imperfectly drained soil characterized by a dark-gray A horizon, 16 to 26 cm thick, underlain by a brownish or reddish-brown B horizon and a grayish to yellowish-brown, moderately calcareous C horizon. There may be a thin, grayish layer with platy structure between the A and B horizons which, upon cultivation, is often incorporated into the plow layer. The B and C horizons often have drab colors and reddish spots and stains, indicative of restricted soil drainage. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Calcareous Dark Gray - The Shellbrook Calcareous Dark Gray soil usually occurs on locally dry upper slopes and knolls where runoff reduces the amount of water entering the soil. This results in a thinner soil with less organic matter than Shellbrook soils on lower slopes. It is a well-drained soil characterized by a dark-gray, usually calcareous A horizon, 10 to 20 cm thick, underlain by a thin, calcareous, grayish-brown B horizon and a grayish, moderately calcareous C horizon. It has usually been affected by erosion and its surface color is lighter than the Shellbrook soils on lower slopes.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and in low-lying

depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a surface layer of peaty material, 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Shellbrook Soils

The best Shellbrook soils are those with loam to very fine sandy loam surface textures. These are good agricultural soils of capability class 2; a slight moisture deficit, imparted by the subhumid regional climate and a moderate water-holding capacity, is their main limitation. Shellbrook soils with fine sandy loam to sandy loam surface textures are fair agricultural soils of capability class 3 due primarily to their low water-holding capacity. Shellbrook soils may be further downrated based on other soil and landscape limitations (i.e. salinity, topography, erosion, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Shellbrook soils have a moderate amount of organic matter in the A horizon. They are low in available phosphorus and high in available potassium. Shellbrook soils have a weak to moderate cloddy structure that breaks to fine granular and single grain, making them moderately susceptible to wind erosion. Relatively high infiltration rates, coupled with very gentle to gentle slopes, often result in a low susceptibility to water erosion. Shellbrook soils occurring on landscapes with moderate slopes, however, are more susceptible to water erosion. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, inclusions of forages in crop rotations, strip cropping and shelterbelts, be utilized wherever possible to control soil erosion and maintain or enhance soil organic matter content and aggregate stability.

Stones are not generally a problem on Shellbrook soils, however, periodic clearing may be required where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel.

SMEATON (Sm) SOILS

Smeaton soils are a complex of Gray Luvisolic, Brunisolic and Regosolic soils formed in a mixture of loamy glacial till, eroded glacial till, and sandy and gravelly fluvial materials. Smeaton soils are formed in areas where wooded vegetation has had a strong influence on soil formation. Soils formed under these conditions are highly leached, resulting in lower organic matter levels and, hence, dark-gray to light grayish-colored surface horizons. Surface textures range from loamy sand to sandy loam.

Smeaton soils are often excessively stony, although some areas that are only moderately stony do occur. They usually occur on undulating or hummocky landscapes with very gentle to moderate slopes.

Smeaton soils may occur in association with other soils. In most of these complexes they occur on the mid- to upper slope positions.

Kinds of Smeaton Soils

Orthic Gray Luvisol - The Smeaton Orthic Gray Luvisol soil occurs on mid- to upper slopes. It is a well-drained soil which, under forested conditions, is characterized by a light-gray, strongly leached A horizon below the forest litter. The leached A horizon ranges from 5 to 15 cm in thickness and exhibits a well-developed platy structure. Below this horizon is a brownish B horizon that has a prismatic to subangular blocky structure due to the accumulation of clay leached from upper horizons. The B horizon, in turn, is underlain by a grayish-brown, calcareous C horizon. Where these soils are cultivated, part or all of the leached A horizon and all of the forest litter are incorporated into the plow layer, producing a soil with a light-gray surface color.

Gleyed Gray Luvisol - The Smeaton Gleyed Gray Luvisol soil occurs on lower slope positions. It is an imperfectly drained soil characterized by a light gray-colored A horizon that is strongly leached, with well-developed platy structure. This horizon is underlain by a brownish B horizon that has a prismatic to subangular blocky structure due to the accumulation of clay leached from upper horizons. The B horizon, in turn, is underlain by a grayish-brown, calcareous C horizon. The B and C horizons often have dull colors and reddish spots and stains, indicative of imperfect soil drainage.

Eluviated Eutric Brunisol - The Smeaton Eluviated Eutric Brunisol soil occurs on upper slopes. It is a rapidly drained soil that, under forested conditions, is characterized by the presence of a layer of forest litter that overlies a grayish-colored, leached A horizon which, in turn, overlies a brownish B horizon and a yellowish-brown C horizon.

Orthic Regosol - The Smeaton Orthic Regosol soil occurs on upper slopes and knolls. It is a rapidly drained soil that, under forested conditions, is characterized by the presence of a layer of forest litter that may overlie a very thin, dark-colored A horizon that directly overlies the yellowish-brown C horizon.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a

surface layer of peaty material, 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of it may have been incorporated into the upper mineral soil horizon upon cultivation. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought.

Agricultural Properties of Smeaton Soils

The best Smeaton soils are poor agricultural soils of capability class 4. These soils have a sandy loam texture and do not have excessive amounts of surface stone. Typically, however, Smeaton soils are excessively stony, and that condition in addition to very coarse soil textures, results in a soil that is very poor (class 5) for agriculture or is nonarable (class 6). The main limitations of these soils are a strong moisture deficit, due to a low water-holding capacity, a low natural fertility and excessive stoniness. These soils may be further downrated based on other soil and landscape limitations (i.e. topography, wetness, stones, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agriculture Capability" in the Interpretive Data Tables section of this report.

Smeaton soils are relatively infertile due to their low organic matter content and sandy and gravelly textures. In addition, they are usually very stony. Because of this and their low water-holding capacity, they are not usually used for the production of annual field crops, but rather for native grazing. If cleared of their tree cover, some areas of Smeaton soils are suitable for improved pasture.

Smeaton soils have a low susceptibility to water erosion. If cultivated, some of the sandy-textured Smeaton soils may have a moderate to high susceptibility to wind erosion. Most Smeaton soils are not suitable for the production of annual crops. They should not normally be cleared of their native vegetation. If they are cropped, agricultural production will be low, even when supplemental fertilizer is used on a continual basis and adequate amounts of precipitation are obtained. Furthermore, stones will always remain a serious problem on many of these soils.

SYLVANIA (Sy) SOILS

Sylvania soils are Gray Luvisolic soils that have formed in sandy fluvial materials, in areas where wooded vegetation has had a strong influence on soil formation. Soils that have formed under these conditions are usually strongly leached, resulting in low organic matter levels and, hence, a grayish-colored surface upon cultivation. Surface textures are predominantly loamy sand to very fine sandy loam.

Sylvania soils are usually stone free, however, some stones may occur where the fluvial materials are shallow (less than 1 m thick) and underlain by glacial till or gravel. Sylvania soils usually occur on undulating landscapes with very gentle to gentle slopes but can also occur on hummocky landscapes with gentle to strong slopes.

Sylvania soils frequently occur in complex with soils of other associations. In complexes with soils formed in finer-textured lacustrine materials, the Sylvania soils tend to occur on mid- and upper slope positions, whereas, in complexes with soils formed in coarser-textured fluvial materials or glacial till, they usually occur on the mid-and lower slope positions of the landscape.

Kinds of Sylvania Soils

Orthic Gray Luvisol - The Sylvania Orthic Gray Luvisol soil usually occurs on mid- and upper slopes and knolls but, in some landscapes, it may be restricted to lower slopes and depressions. It is a well- to rapidly drained soil which, under forested conditions, is characterized by the presence of a thin, dark-colored surface horizon below the forest litter, underlain by a strongly leached, gray to grayish-brown, platy horizon of variable thickness. Upon cultivation, part or all of this leached horizon is incorporated into the plow layer, producing a light-gray surface horizon, 11 to 16 cm thick. In some areas, a portion of the strongly leached, grayish-colored horizon remains below the cultivated surface layer. Below these horizons is a relatively thick, dark-brown to dark grayish-brown B horizon that usually has a strong (hard), angular blocky to prismatic structure, and is underlain, in turn, by a dark grayish-brown, weakly calcareous C horizon with a weak, blocky to massive structure.

Gleyed Gray Luvisol - The Sylvania Gleyed Gray Luvisol soil commonly occurs on mid- and lower slope positions in most Sylvania landscapes. It is a moderately well- to imperfectly drained soil with a light-gray A horizon, 8 to 15 cm thick, underlain by a very light-gray horizon with platy structure. This horizon is underlain, in turn, by a relatively thick, brownish or reddish-brown B horizon that has a distinct, angular blocky structure when dry. The B horizon is underlain, in turn, by a grayish-colored, weakly calcareous C horizon. The B and C horizons often have reddish spots and stains and dull colors, indicative of formation in areas with restricted drainage.

Dark Gray Luvisol - The Sylvania Dark Gray Luvisol soil can occupy all slope positions in most Sylvania landscapes. It is a well-drained soil which, under forested conditions, is characterized by the presence of a dark-colored A horizon below the forest litter, underlain by a strongly leached, gray to grayish-brown horizon with platy structure. Upon cultivation, the forest litter, A horizon and part of the underlying leached horizon are incorporated together, producing a dark gray-colored surface horizon, 10 to 18 cm thick. These horizons are underlain, in turn, by a brownish or reddish-brown B horizon having a strong, angular blocky structure.

Gleyed Dark Gray Luvisol - The Sylvania Gleyed Dark Gray Luvisol soil generally occurs on lower slope positions in the landscape. It is a moderately well- to imperfectly drained soil characterized by a dark-gray A horizon, 10 to 20 cm thick, underlain by a relatively thick,

brownish or reddish-brown B horizon that has a strong, angular blocky structure. The B and C horizons often have reddish spots and stains and dull colors, indicative of formation in areas with restricted soil drainage.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and in low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a surface layer of peaty material, 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Sylvania Soils

The best Sylvania soils are those with very fine sandy loam textures. They are considered to be fair agricultural soils of capability class 3. Areas with fine sandy loam to sandy loam surface textures are, at best, only poor agricultural soils of capability class 4. A low water-holding capacity is the main agricultural limitation of these soils. Areas with very light surface textures (loamy sand) are rated class 5 (nonarable and suitable only for perennial forages or improved pasture) due to their very low water-holding capacity and low natural fertility. Sylvania soils may be further downrated based on other soil and landscape limitations (i.e. topography, wetness, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

The sandy nature and low organic matter content of the Sylvania soils result in soils of low fertility and poor tilth. They are coarse textured and lack drought resistance, while their loose surface structure makes them susceptible to wind erosion when cultivated. They are not usually susceptible to water erosion due to their high infiltration rate. To ensure productivity, management practices should be followed that will increase the organic matter content, maintain or increase fertility levels and prevent wind erosion. Sylvania soils may be better utilized for the production of forage crops than cereal crops. This would add organic matter to the soil and, along with proper tillage methods, protect against erosion. As well, the use of fertilizers would help ensure their continual use as arable agricultural land.

TIGER HILLS (Tg) SOILS

Tiger Hills soils are Dark Gray Chernozemic soils that have formed in shallow (less than 1 m thick), silty lacustrine materials underlain by glacial till, in areas of mixed grassland and forest, where wooded vegetation has had some influence on soil formation. Surface textures are predominantly loam and silt loam, but can range to silty clay loam and clay loam.

Tiger Hills soils are typically slightly stony to stone free, but may be moderately stony in areas where the lacustrine materials are very shallow or where they occur in complex with glacial till or gravel. They are usually associated with undulating or undulating dissected landscapes with very gentle to gentle slopes.

Tiger Hills soils frequently occur in complex with soils of other associations. In most of these complexes, the Tiger Hills soils occur on the mid- and lower slope positions.

Kinds of Tiger Hills Soils

Orthic Dark Gray - The Tiger Hills Orthic Dark Gray soil may occupy all slope positions. It is a well-drained soil characterized by a dark-gray A horizon, 12 to 22 cm thick, underlain by a dark brownish-colored B horizon and a yellowish-brown, moderately calcareous C horizon.

Calcareous Dark Gray - The Tiger Hills Calcareous Dark Gray soil occurs mainly on upper slopes and knolls. It is a well-drained soil characterized by a dark-gray, often calcareous A horizon, 10 to 20 cm thick, which is underlain by a dark brownish-colored, calcareous B horizon and a yellowish-brown, moderately calcareous C horizon.

Rego Dark Gray - The Tiger Hills Rego Dark Gray soil occurs mainly on upper slopes and knolls. It is a well-drained soil characterized by a dark-gray, usually calcareous A horizon, 10 to 20 cm thick, underlain by a yellowish-brown, moderately calcareous C horizon. These soils often appear as lighter-colored areas, especially on knolls, due to some degree of erosion.

Agricultural Properties of Tiger Hills Soils

Tiger Hills soils are generally good agricultural soils rated as agricultural capability class 2. A slight moisture deficit, imparted by a moderate water-holding capacity and the subhumid regional climate, is their main limitation. These soils may be further downrated based on other soil and landscape limitations (i.e. salinity, topography, stones, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Tiger Hills soils have a moderate amount of organic matter in the A horizon. They are low in available phosphorus and high in available potassium. Crops grown on these soils usually respond well to applications of nitrogen and phosphorus fertilizers.

Stones are seldom a problem on Tiger Hills soils, however, due to the presence of glacial till near the surface, a few stones may be present and occasional clearing may be required. Similarly, water erosion is not a serious problem, but can become serious during periods of intense rainfall due to the relatively low infiltration rate of these soils. The

potential for water erosion is greatest in areas with long slopes and management practices, such as cultivation across slopes and grassing of runways, should be followed as much as possible. Wind erosion may be a problem, unless conservation practices are followed. Such practices include maintenance of crop residues through reduced tillage or leaving stubble standing, continuous cropping, or the establishment of forages in seriously affected areas.

TISDALE (Ti) SOILS

Tisdale soils are Dark Gray Chernozemic soils that have formed in clayey lacustrine materials, in areas of mixed grassland and forest, where wooded vegetation has had some influence on soil formation. Soils that have formed under these conditions are usually slightly leached. They have lower organic matter levels than similar soils occurring in the Black soil zone, resulting in a dark-gray surface horizon. Surface textures range from clay loam to clay and are often silty.

Tisdale soils are usually stone free, however, a few stones occur in some areas where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel, or where the lacustrine materials occur in complex with glacial till or gravel. They usually occur on undulating and undulating dissected landscapes, with slopes ranging from nearly level to gentle.

Tisdale soils frequently occur in complex with soils of other associations. In most of these complexes, the Tisdale soils occupy the upper slopes, but in some, they occupy the mid-and lower slopes.

Kinds of Tisdale Soils

Orthic Dark Gray - The Tisdale Orthic Dark Gray soil commonly occurs on mid- and upper slopes, but in many areas, it extends over the knolls and through the depressions. It is a well-drained soil with a dark-gray surface horizon, 13 to 21 cm thick, that, in some lower slope positions, is separated from the underlying B horizon by a thin, very light-gray, leached horizon. This is indicative of the greater leaching which may occur under more moist conditions. These upper horizons are underlain, in turn, by a light brownish-gray, lime-free B horizon and a moderately calcareous C horizon.

Gleyed Dark Gray - The Tisdale Gleyed Dark Gray soil commonly occurs on lower slope positions, although in some landscapes it may extend to upper slopes and through depressions. It resembles the Tisdale Orthic Dark Gray soil, but may have a slightly thicker surface horizon, and reddish spots and stains, and dull colors in the B and C horizons. These features are indicative of soil formation under moderately well- to imperfectly drained conditions.

Agricultural Properties of Tisdale Soils

Tisdale soils are generally very good agricultural soils of capability class 1. However, some areas have been reduced to class 2 because of adverse subsoil structure. As well, some of these soils may be downrated further based on other soil and landscape limitations (i.e. salinity, topography, excessive wetness, etc.) that are peculiar to individual delineations. For example, the majority of the Gleysolic soils are cultivated regularly, but are poorer agricultural soils because of excessive moisture conditions at certain times of the year. In some areas, excessive moisture prevents cultivation of these soils. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Most Tisdale soils are highly fertile and suitable for a wide range of crops including wheat, coarse grains, oil seeds and forages. Their heavy textures result in a high water-holding capacity; consequently, they have good drought resistance. These soils are naturally fertile, although they will respond to additions of nitrogen and phosphate fertilizers. They have a moderate organic matter content and are reasonably easy to keep in good tilth. Stones are usually absent, however, a few may occur where the Tisdale soils are thin and underlain by glacial till. Wind erosion is rare, but considerable water erosion can occur on topography with long slopes. Management practices that reduce or prevent this should be employed. On level landscapes, temporary flooding may occur in lower slope positions in the spring or after periods of intense rainfall, but is not usually a serious problem.

WEIRDALE (We) SOILS

Weirdale soils are Gleyed Dark Gray Chernozemic soils that have formed in strongly calcareous, silty lacustrine materials, in areas of mixed grassland and forest, where wooded vegetation has had an influence on soil formation. Soils formed under these conditions usually have lower organic matter levels than similar soils occurring in the Black soil zone, and thus have a dark gray-colored surface horizon. The surface texture of these soils is either silt loam or silty clay loam.

Weirdale soils are usually stone free, however, a few stones may be present where the silty materials are shallow (less than 1 m thick) and underlain by glacial till. These soils commonly occur on undulating landscapes with very gentle to gentle slopes.

Weirdale soils frequently occur in complex with soils of other associations. In most of these complexes, the Weirdale soils tend to occur on mid- and lower slopes.

Kinds of Weirdale Soils

Orthic Dark Gray - The Weirdale Orthic Dark Gray soil occurs on upper slopes. It is a well-drained soil with a dark grayish-brown A horizon, 10 to 20 cm thick, that overlies a brownish-colored B horizon and a grayish-colored, strongly calcareous C horizon.

Gleyed Dark Gray - The Weirdale Gleyed Dark Gray soil usually occurs on lower slopes. It is an imperfectly drained soil with a dark grayish-brown A horizon, 10 to 20

cm thick, underlain, in turn, by a noncalcareous B horizon and a strongly calcareous C horizon. The B and C horizons have dull colors and reddish spots and stains, indicative of imperfect soil drainage. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Calcareous Dark Gray - The Weirdale Calcareous Dark Gray soil occurs on upper slopes. It is a well-drained soil that has a thin, usually calcareous, dark grayish-brown A horizon, underlain, in turn, by a calcareous, brownish B horizon and a light gray, strongly calcareous C horizon.

Rego Dark Gray - The Weirdale Rego Dark Gray soil occurs on upper slopes and knolls and is usually affected by erosion to some degree. It is a well-drained soil characterized by a thin, usually calcareous A horizon underlain by a grayish-colored, moderately to strongly calcareous C horizon.

Gleyed Rego Dark Gray - The Weirdale Gleyed Rego Dark Gray soil occurs on lower slopes, however, it may extend to upper slopes in landscapes where slopes are very gentle. It has a dark grayish-brown, strongly calcareous A horizon, 14 to 20 cm thick, underlain by a gray, strongly calcareous C horizon, which has drab colors and reddish spots and stains, indicative of imperfect soil drainage. Streaks of carbonate frequently occur throughout the soil profile. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Gleyed Calcareous Dark Gray - The Weirdale Gleyed Calcareous Dark Gray soil occurs on lower slopes, however, it may extend to upper slopes in landscapes where slopes are very gentle. It has a dark grayish-brown, strongly calcareous A horizon, 14 to 20 cm thick, underlain by a gray-brown, strongly calcareous B horizon, which is underlain by a gray, strongly calcareous C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage. Streaks of carbonate frequently occur throughout the upper horizons. A peaty layer, less than 40 cm thick, may occur on the surface in some areas.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Peaty Gleysolic soils have a layer of peaty material that is 15 to 40 cm thick. In areas where the deposit of peat was relatively thin, much or all of the peat may have been incorporated into the upper mineral soil horizon upon cultivation. Due to their location in the landscape, some Gleysolic soils have become saline and/or carbonated. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought.

Agricultural Properties of Weirdale Soils

Weirdale soils are very good agricultural soils of capability class 1. However, some of these soils may be downrated based on other soil and landscape limitations (salinity, wetness, topography, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Weirdale soils are, in general, very productive agricultural soils. They have a moderate amount of organic matter in the A horizon, are low in available phosphorus and high in available potassium. Where these soils occur on landscapes with gentle slopes, and are free from salinity, there are no significant limitations to the production of common field crops. Low areas that are poorly drained often have a layer of peat 15 to 30 cm thick that may initially present problems, however, these peaty areas tend to disappear upon cultivation, which mixes the peat into the underlying mineral material, and they soon become quite productive.

These soils have a very low susceptibility to wind and water erosion. It is recommended, however, that soil conservation practices that maintain crop residues be utilized to provide protection to the soil surface from erosion. Those soils that occur on dissected landscapes should be cultivated across slope and major water runs should be grassed to reduce water erosion potential.

WHITEFOX (WF) SOILS

Whitefox soils are Dark Gray Chernozemic soils formed in stratified, sandy alluvial materials and occur in areas of mixed grassland and forest. Soils formed under these conditions are usually slightly leached, resulting in lower organic matter levels than soils in the Black soil zone and, therefore, generally have a dark gray-colored surface horizon. Whitefox soils have a sandy surface veneer underlain by a series of thin, very fine or fine sandy and sometimes silty layers. Below a depth of about 60 cm, a thicker layer of sand often occurs. Surface textures range from loamy sand to fine sandy loam.

These soils are associated with the Saskatchewan River channel near the community of Nipawin. Materials that compose the Whitefox soils are thought to have been deposited by the Saskatchewan River shortly after deglaciation and prior to the establishment of the river in its current channel. Areas of Whitefox soils, and the loamy Nipawin soils, often have meander scars, terraces and escarpments indicating former alluvial activity.

Whitefox soils are nonstony. They usually occur on undulating landscapes with nearly level to gentle slopes. Moderate slopes may occur in areas that demark the margins of meander scars, drainage channels or runways. Strong to steep slopes occur on escarpment faces.

Whitefox soils occur in complex with soils of other associations. In most of these complexes, the Whitefox soils occur on mid- and lower slopes, however when in complex with Nipawin soils, the Whitefox soils tend to occur on upper slopes.

Kinds of Whitefox Soils

Orthic Dark Gray - The Whitefox Orthic Dark Gray soil occurs on mid- to upper slopes, however, it can extend into the lower slopes in some landscapes. It is a well-drained soil characterized by a dark-gray A horizon, 10 to 20 cm thick, underlain by a brown to dark-brown B horizon and a grayish, moderately calcareous C horizon.

Gleyed Dark Gray - The Whitefox Gleyed Dark Gray soil occurs on mid- to lower slopes, however, it can extend onto upper slopes in some landscapes. It is an imperfectly drained soil characterized by a dark-gray A horizon, 15 to 20 cm thick, underlain by a brownish B horizon and a grayish, moderately calcareous C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of restricted soil drainage.

Gleyed Calcareous Dark Gray - The Whitefox Gleyed Calcareous Dark Gray soil occurs on lower slopes. It is an imperfectly drained soil characterized by a dark-gray to black, calcareous A horizon, underlain by a brownish, calcareous B and grayish, calcareous C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of restricted soil drainage.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks. Most Gleysolic soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Whitefox Soils

The best Whitefox soils are those with a very fine sandy loam texture. These are good agricultural soils of capability class 2; a moderate moisture deficit, imparted by a moderate water-holding capacity and the subhumid regional climate, is their main limitation. The more common fine sandy loam- and sandy loam-textured Whitefox soils are rated as fair agricultural soils (class 3) due to their lower water-holding capacity. These soils may be further downrated based on other soil and landscape limitations (i.e. topography, wetness, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agriculture Capability" in the Interpretive Data Tables section of this report.

Whitefox soils have moderate to low natural fertility and tilth due to their moderate organic matter content and sandy nature. They are generally low in nitrogen, phosphorus and potassium. Their sandy nature results in a soil that breaks into a fine granular or a single grain structure resulting in a soil with a moderate susceptibility to wind erosion. Relatively high infiltration rates, coupled with nearly level to gentle slopes, usually results in a low susceptibility to water erosion. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, inclusion of forages in crop rotations, and shelterbelts, be used wherever possible to control soil erosion and maintain or enhance soil organic matter content and aggregate stability. Stones are seldom a problem on these soils.

WHITEWOOD (Wh) SOILS

Whitewood soils are Dark Gray Chernozemic soils that have formed in loamy glacial till, in areas of mixed grassland and forest, where wooded vegetation has had an influence on soil formation. Soils formed under these conditions are usually slightly leached, resulting in lower organic matter levels than similar soils occurring in the Black soil zone and, therefore, a dark gray-colored surface horizon. Surface textures are predominantly loam but may range from sandy loam to clay loam.

These soils are moderately to very stony. They usually occur on hummocky landscapes having gentle to moderate slopes, although steeper slopes are common in some areas.

Where Whitewood soils occur in complex with Black soils such as Oxbow, their occurrence in the landscape is a function of drainage and precipitation. In southern parts of the Black soil zone, Whitewood soils tend to occur on the lower slopes, whereas, in the northern more humid parts of the zone, the Whitewood soils occur on the well-drained upper slopes. Whitewood soils also tend to occupy upper slope positions when they occur in complex with soils of the Gray soil zone. When Whitewood soils occur in complex with soils formed in lacustrine or fluvial materials, they usually occupy mid- to upper slope positions.

Kinds of Whitewood Soils

Orthic Dark Gray - The Whitewood Orthic Dark Gray soil occupies lower slopes in most Whitewood landscapes, but may extend to the midslope in some areas, and upper slopes and knolls in other areas. It is a well-drained soil with a dark-gray A horizon, 10 to 18 cm thick, underlain by a brownish or reddish-brown B horizon that usually has a moderate, angular blocky structure when dry, and is, in turn, underlain by a grayish-colored, moderately calcareous C horizon. There may be a thin, grayish layer with platy structure between the A and B horizons which, if cultivated, is often incorporated into the plow layer. This mixing imparts a dark-gray color to the soil surface.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks, indicative of formation under poorly drained conditions. Most of these soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Whitewood Soils

Whitewood soils are good agricultural soils of capability class 2. The main agricultural limitation of these soils is a slight moisture deficit, imparted by the subhumid regional climate and a moderate water-holding capacity. These soils may be further downrated based on other soil and landscape limitations (i.e. salinity, topography, stones, etc.) that are peculiar to an individual delineation. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

The degree of leaching that has occurred in these soils is important when evaluating their productivity. Those that are only slightly leached are nearly equal to similar soils developed in the Black soil zone, whereas the more strongly leached Whitewood soils are lower in organic matter and natural fertility and have poorer structure. Some of the more strongly leached soils may be susceptible to crusting after rains and the dense B horizon may restrict rooting.

Stones, in many cases, pose a hindrance to cultivation and regular clearing is often required. Wind erosion has not been a serious problem but can be expected to worsen when all the land is cleared and cultivated. Water erosion is generally not a serious problem, except on moderately or strongly sloping landscapes. Management practices that include forages in the crop rotations should be used to enhance soil organic matter content and improve soil structure.

WAITVILLE (Wv) SOILS

Waitville soils are Gray Luvisolic soils that have formed in loamy glacial till, in areas where wooded vegetation has had a strong influence on soil formation. Soils formed under these conditions are highly leached, resulting in lower organic matter levels and, hence, dark-gray to gray surface colors. Surface textures range from loam to sandy loam.

Waitville soils are typically slightly to moderately stony but range to exceedingly stony in some areas. They usually occur on hummocky landscapes with slopes ranging from gentle to steep.

In most complexes in the Gray soil zone, the Waitville soils tend to occur on the mid- and upper slope positions, however, when these soils occur in complexes in the Black soil zone, the Waitville soils usually occur on the more moist and strongly leached lower slopes.

Kinds of Waitville Soils

Orthic Gray Luvisol - The Waitville Orthic Gray Luvisol soil usually occupies upper slope positions, however, it may extend to all slope positions in some landscapes. It is a well-drained soil which, under forested conditions, is characterized by the presence of a very thin, dark-colored surface horizon below the forest litter, underlain by a gray to grayish-brown, strongly leached horizon with platy structure. Upon cultivation, part or all of this leached horizon is incorporated into the plow layer, producing a light-gray surface. Below these horizons is a relatively thick, dark-brown to dark grayish-brown B horizon that usually has a strong (hard), angular blocky to prismatic structure due to an accumulation of clay leached from upper horizons. The B horizon, in turn, is underlain by a grayish-colored, moderately calcareous C horizon.

Dark Gray Luvisol - The Waitville Dark Gray Luvisol soil occurs on mid- to lower slope positions. It is a well- to moderately well-drained soil which, under forested conditions, is characterized by the presence of a thin, dark-colored surface horizon below the forest litter, underlain by a gray to grayish-brown, leached horizon with platy structure. Upon cultivation, part or all of this leached horizon is incorporated into the plow layer, producing a dark-gray surface. Below these horizons is a relatively thick, dark-brown to dark grayish-brown B horizon that usually has a strong (hard), angular blocky to prismatic structure due to an enrichment of clay leached from upper horizons. The B horizon is underlain, in turn, by a grayish-colored, moderately calcareous C horizon.

Gleysolic Soils - Gleysolic soils represent a variety of wet soils. They occur mainly in sloughs and, occasionally, on the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. They often have thick, dark-colored A horizons and drab subsurface colors that include reddish spots and streaks, indicative of formation under poorly drained conditions. Most of these soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought. Due to their location in the landscape, some of these soils have become saline and/or carbonated.

Agricultural Properties of Waitville Soils

Waitville soils are fair agricultural soils of capability class 3. They have a slight moisture deficit due to the regional subhumid climate and a moderate water-holding capacity. The main limitations of these soils are related to soil structure. The low organic matter content of some of these soils results in a structure that makes seedbed preparation difficult

and also makes the soil susceptible to crusting after heavy rains, resulting in poor seedling emergence especially for small-seeded crops. They have a dense B horizon that may restrict water infiltration and root penetration. These limitations are most strongly expressed in the Orthic Gray Luvisol soils. These soils may be further downrated based on other soil and landscape limitations (i.e. salinity, topography, stones, etc.) that are peculiar to individual delineations. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

Waitville soils are low in available phosphorus and high in available potassium. They are moderately acid to neutral in reaction, however, the acidity does not usually affect the yield of cereal crops. However, there may be local areas with moderate acidity where the growth of some sensitive crops, such as alfalfa, may be inhibited.

Stones can pose a serious hindrance to cultivation and annual clearing is often required. Water erosion is not a serious problem, but can be during periods of intense rainfall due to the relatively low infiltration rate of these soils. Management practices, such as cultivation across slopes and grassing of runways in affected areas, should be followed as much as possible. Wind erosion can be a problem unless conservation practices are followed. Such practices include maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping or the establishment of forages in seriously-affected areas. The use of legumes in crop rotations will help to increase the soil organic matter content and, thus, improve the surface structure of these soils.

WETLAND (Wz) SOILS

Wetland soils include Gleysolic soils formed in a mixture of materials associated with depressional areas and small areas of open water. Most occur as sloughs, too small to show separately on the soil map, and are included in the map units of the surrounding upland soils. Only the larger areas have been delineated on the map. Wetland soils are made up of a variety of soils which are referred to collectively as Gleysolic soils. All are wet for at least a portion of the growing season and many remain flooded for much or all of the growing season.

Kinds of Wetland Soils

Gleysolic Soils - Wetland Gleysolic soils occur in sloughs and, occasionally, in the bottom of small drainage channels and low-lying depressional areas. They occur in areas that collect runoff from heavy rains and snowmelt, and usually remain wet for much of the growing season. The A horizon may be thin or thick (greater than 10 cm), and darkly colored; or it may be leached and gray or grayish-brown in color. Peaty Gleysolic soils have a layer of peaty material, from 15 to 40 cm thick, overlying mineral materials. Wetland soils have drab subsurface colors that are often dotted with reddish spots and streaks, indicative of formation under poorly drained conditions. Some of these poorly drained soils are also saline and carbonated. Most of the Wetland soils are not cultivated unless drained, although some may become dry enough to cultivate during periods of prolonged drought.

Agricultural Properties of Wetland Soils

All areas of Wetland soils have little or no potential for arable agriculture. Most have an agricultural capability rating of class 5 or lower. Some areas are suitable for tame or native forage production or as native grazing land. Those areas indicated on the soil map with the symbol Wz1 have the highest potential. These are areas that usually become dry at some point in the growing season and have potential for forage production. Some of the shallower ones may be arable during extended dry periods and will have some potential for the production of tame hay, or early maturing, moisture-tolerant crops. Those areas indicated on the soil map with the symbol Wz2 usually have at least central portions remaining flooded for all of the growing season. In these areas, only the outer margins have any potential for the production of native hay. Those areas indicated on the soil map with the symbol Wz3 usually remain flooded for all of the growing season and have little or no potential for agricultural use, even as grazing land.

4. SOIL INTERPRETATIONS

4.1 SALINITY

Saline soils occur sporadically throughout the agricultural area of Saskatchewan. These soils contain sufficient water soluble salts to inhibit the uptake of moisture by plants, resulting in moisture stress and reduced plant growth. The presence of saline soils can often be recognized by bare spots in the crop or by uneven stands of grain or forage. Very strongly saline soils usually develop a white surface crust during dry weather. Where less salt is present, the soil is grayish in color when dry and the subsoil often has streaks or specks of salt at a depth of 5 to 25 cm or deeper. In weakly saline or moderately saline soils that are very wet, it may not be possible to see the salt.

Development of Saline Soils

Saline soils result almost invariably from the movement of salts carried by groundwater and subsequent concentration in the soil upon evaporation of this water at or near the soil surface.

Soluble salts are present in the parent materials of all soils as the result of on-going natural, chemical and physical weathering processes. When the amount of water evaporating from the soil is greater than the amount infiltrating, salts may accumulate in the soil and may result in saline soils. Areas are subject to soil salinization where water tables are high and the amount of infiltration of precipitation is limited. In most cases, this is a natural process which has been going on since the time of deglaciation. Agriculture has, however, aggravated the problem in some areas by the use of cropping systems that are not as water efficient as the natural prairie.

Management of Saline Soils

Management of saline soils requires the effective management of soil water in both the saline and nonsaline parts of the landscape. In terms of water management for soil salinity control this means making the most efficient use of soil moisture possible. Extending the cropping rotation or continuously cropping in nonsaline areas will cycle more precipitation through crops rather than allowing it to reach the water table where it may contribute to salinity in some other location. Leaving stubble standing promotes a more even distribution of snow cover reducing the amount that blows off the land into large snow drifts or depressions where, upon melting, it has a greater chance of infiltrating to the watertable. Saline soils should be seeded to long-term forage or continuously cropped with crops having the appropriate degree of salt tolerance. The objective in the saline areas is to reduce the amount of evaporation from the soil surface, lower the watertable level and move salts downward with infiltrating precipitation.

Table 2. The relative tolerance of common field crops to soil salinity. (Differences of one or two places in the ranking may not be significant.)

	Degree of Salinity Tolerated		
	Nonsaline	**Moderately Saline**	**Strongly to Very Strongly Saline**
	Annual Field Crops		
Increasing Tolerance ↓	Soybeans Field Beans Faba Beans Peas Corn Sunflowers	Canola Mustard Wheat Flax Fall Rye[a] Oats Barley[a] Sugar Beets	Barley may produce some crop but this land best suited to tolerant forages.
	Forage Crops		
Increasing Tolerance ↓	Red Clover Alsike Timothy	Reed Canary Meadow Fescue Intermediate Wheat Crested Wheat Brome Alfalfa Sweetclover[a]	Altai Wild Rye Russian Wild Rye Slender Wheatgrass[a] Tall Wheatgrass[b]

[a] These crops not tolerant of flooding, which is common in some saline areas.

[b] Under dry conditions slender wheatgrass is more tolerant than tall wheatgrass.

For more information on saline soils and their management, see the publication **The Nature and Management of Salt Affected Land in Saskatchewan** by Saskatchewan Agriculture, Soils and Crops Branch.

Explanation of the Salinity Symbol

The soil salinity symbol is made up of three components indicating the extent of saline soils, the degree of the salts in the saline soils, and the position in the landscape occupied by the saline soils within the delineation and is based on field observation alone.

Example: 1WPA	1 -	Extent Class
	W -	Degree Class
	PA -	Landscape Position

Soil Salinity Extent Class Limits

Table 3. Soil salinity extent class limits.

Extent Class	% Of Area Affected
0	0
1	0 - 3
2	3 - 10
3	10 - 20
4	20 - 40
5	40 - 70
6	> 70

Soil Salinity Degree

Table 4. Description of soil salinity degree classes.

Salinity Degree	Electrical Conductivity of 0-60 cm depth (mS/cm)	Effect on Crop Growth and Estimate of Potential Yield Loss
Nonsaline	0 - 2	There are no visible effects of salts on the growth of crops. No yield loss.
(W) Weak	2 - 4	Yields of very sensitive crops may be restricted. Cereals are generally unaffected.
(M) Moderate	4 - 8	Yields of many crops are restricted. Wheat yields may be reduced by 30%.
(S) Strong	8 - 16	Only tolerant crops yield satisfactorily. Wheat yields may be reduced by 60%.
(V) Very Strong	16+	Only a few very tolerant crops yield satisfactorily. Wheat yields may be reduced by 80-100%.

Note: Electrical conductivity values based on a saturated paste extract.
Yield loss estimates are based on recent research and only apply to the saline soils, not to the entire delineated area.

Landscape Position

The landscape position describes where in the landscape saline soils occur. In some areas, saline soils occur in more than one landscape position. These situations are indicated by the use of two letters.

Table 5. Description of landscape position symbol.

Symbol	Description
P	Saline soils occur on the edges of depressions, sloughs or runways. All soils in the bottoms of the depressions are leached and nonsaline.
A	Saline soils occur throughout the bottoms of depressions and sloughs.
D	Saline soils extend throughout the bottoms of dissections and small runways.
S	Saline soils occur on the sides of hills and slopes well above any slough or depression.
I	Saline soil parent materials within 60 cm of the soil surface generally occur on knolls and upper slopes.

4.2 IRRIGATION SUITABILITY

The irrigation suitability rating is based on soil and landscape characteristics. The suitability rating uses limiting factors to predict the potential landscape-water-crop interaction. It also considers the potential long-term consequences of irrigation such that the soil will remain permanently productive while being irrigated. It does not consider water availability and quality, climate, or economics. Within any one map delineation there may be smaller soil areas that have a higher or lower irrigation suitability than that indicated by the map symbol. **Any decision regarding irrigation should be made only after a field-specific examination is made.**

Symbol Interpretation

The combination of soil and landscape categories (Table 6), based upon the most limiting features present (Tables 7 and 8), determine the irrigation class and suitability rating (Table 9).

A maximum of three limitations are shown in the symbol. An ideal soil area to be used for irrigation will have the following characteristics:

- medium texture
- uniform texture vertically and horizontally
- uniformly well drained
- nonsaline
- permeable
- nearly level
- nonstony

Table 6. Soil and landscape categories.

Soil Category	Landscape Category	Description
1	A	nonlimiting
2	B	slightly limiting
3	C	moderately limiting
4	D	severely limiting

Irrigation Symbol

example: $2Cmvt_1$

2C - Irrigation class

m - Soil limitations

v, t_1 - Landscape limitations

The example above indicates that the area in question has slight limitations (2) due to soil factors (m) and moderate limitations (C) due to landscape factors (v, t_1). This area, therefore, has a fair suitability rating (Table 9).

Symbol Evaluation

Excellent to good areas (Table 9) can usually be considered irrigable. Fair areas are marginally suitable for irrigation providing adequate management exists such that the soil and adjacent areas are not affected adversely by water application. Poor soils can usually be considered nonirrigable. The rating is given for the area based on soil characteristics in the upper 1.2 m and the main landscape features in the area. Depending on the type and severity of the limitation, it may be advisable to investigate an area further. Portions of the total area may also be significantly better or poorer than the general rating would indicate. For example, within a poor area with steep slopes, there may be areas of gentler topography that may be suitable for small scale irrigation if the detailed examination indicates that this smaller area is otherwise suitable.

Decision to Irrigate

The cost of irrigation development can be expected to increase with less suitable soils. The suitability rating does not take into account important factors such as climate, agronomy, availability of water, or economics in determining the feasibility of an irrigation project. If a field is indicated to be suitable for irrigation based on the information presented in this report, then an onsite inspection should be made. Other factors not used in this rating should also be considered during a site specific examination. These include geological uniformity to 3 m, local relief, depth to bedrock, drainability, sodicity, organic matter content and surface crusting potential. These factors may affect the suitability to some degree in terms of the type of irrigation system that can be used, the type and amount of surface preparation needed, the response of the soil and crop to applied water, and the type of management needed. A decision can then be made whether to irrigate if economic conditions are suitable and an adequate source of water is available.

Irrigation can lead to improved stability and flexibility in farm production through improved reliability of water application. Although maximum yields may be attainable only through irrigation, assuming adequate management, other climatic considerations may affect the feasibility. Climatic factors may limit the range of crops that can be grown due to heat or growing season limitations. In higher rainfall areas of the province, irrigation water may only be, in many years, a minor supplemental source of water that may not be needed every year. In these cases, the increased returns through higher yields, in some years, may not justify the expense of development. In dry regions where the risk of crop failure due to drought is relatively high and the range of crops that can be grown is lower, irrigation water may be a potentially important source of moisture needed for crop growth.

Table 7. Landscape limitations.

Symbol	Description
a	**Impact on Target Areas** - refers to the hazard resulting from the impact of applied irrigation water to the irrigated area. Impacts may include such effects as higher water tables, wetter soils, and increases in soil salinity.
c	**Impact on Nontarget Areas** - refers to the hazard resulting from the impact of applied irrigation water on an adjacent nonirrigated area. The hazards may include such effects as higher water tables, wetter soils, development or build-up of saline areas, or flooding and sedimentation caused by runoff.
i	**Inundation** - refers to the frequency of flooding. The inundation hazard is used mainly on areas adjacent to rivers.
p	**Stones** - refers to the amount of stone present on the surface and in the soil. Stones may reduce the available water-holding capacity of the soil, increase development costs and restrict the types of crops that may be grown.
t	**Slope** - refers to the presence of simple slopes (t_1) in undulating landscapes, or complex slopes (t_2) in hummocky or inclined landscapes. Complex slopes are often more limiting than simple slopes. Topography may affect the type of irrigation system, design and management required.
v	**Horizontal Variability** - refers to the horizontal variations caused by texture, soil structure, and landscape pattern that may result in the surface ponding of irrigated soils.

Table 8. Soil limitations.

Symbol	Description
d	**Structure** - soil structural properties that restrict root and water penetration. Commonly used with soils that have a dense B horizon and an A horizon that is subject to crusting.
g	**Geological Uniformity** - the uniformity of the soil texture with depth. The greater the textural difference between the surface and subsoil, the greater the potential for the development of perched water tables and lateral water movement.
k	**Hydraulic Conductivity** - the rate at which water moves through a saturated soil. Used mainly on soil areas that swell upon wetting, restricting water movement through the soil.
m	**Available Water-Holding Capacity** - the amount of water held by a soil that can be absorbed by plants. Coarse-textured soils with a low water-holding capacity are considered to be relatively inefficient for irrigation, as compared to medium-textured soils. Soils with this limitation also have relatively high hydraulic conductivities and intake rates.
q	**Intake Rate** - the rate of movement of water into the soil. It is closely associated with hydraulic conductivity which controls the rate at which water moves through the soil, and thus affects the rate at which water is able to enter the soil. Usually used on fine-textured soils that have relatively low intake rates requiring relatively light water application rates.
r	**Depth to Bedrock** - the presence of near-surface bedrock. Perched water tables may form, resulting in poor drainage and lateral movement of water and salts.
s	**Salinity** - the presence of soluble salts that may affect the growth of crops. The potential exists for lower yields, or for lateral salt movement into adjacent areas.
w	**Drainage** - the rate of removal of water from a soil in relation to supply. Indicates areas of mainly poorly drained soils.

Table 9. Irrigation suitability classes.

Class	Rating	Degree of Limitation	Description
1A	Excellent	No soil or landscape limitations	These soils are medium textured, well drained and hold adequate available moisture. Topography is level to nearly level. Gravity irrigation methods may be feasible.
2A 2B 1B	Good	Slight soil and/or landscape limitations	The range of crops that can be grown may be limited. As well, higher development inputs and management skills are required. Sprinkler irrigation is usually the only feasible method of water application.
3A 3B 3C 1C 2C	Fair	Moderate soil and/or landscape limitations	Limitations reduce the range of crops that may be grown and increase development and improvement costs. Management may include special conservation techniques to minimize soil erosion, limit salt movement, limit water table build-up or flooding of depressional areas. Sprinkler irrigation is usually the only feasible method of water application.
4A 4B 4C 4D 1D 2D 3D	Poor	Severe soil and/or landscape limitations	Limitations generally result in a soil that is unsuitable for sustained irrigation. Some lands may have limited potential when special crops, irrigation systems, and soil and water conservation techniques are used.

4.3 STONES

The stones rating is an estimation of the average severity of stoniness in a delineation. The estimation is based on the amount of stone clearing activity required and is related to the number and size of stones on the soil surface, number and size of stone piles, and the soil parent material observed. The amount of stone clearing activity required is categorized into one of six stone severity classes listed in the table below.

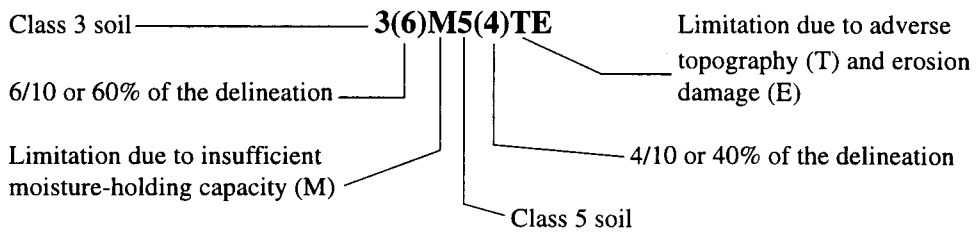
Table 10. Stone classes.

Symbol	Description
S0	**Nonstony.**
S1	**Slightly stony** - stones seldom hinder cultivation. Light clearing is occasionally required.
S2	**Moderately stony** - stones are a moderate hindrance to cultivation. Annual clearing is usually required.
S3	**Very stony** - stones cause a serious hindrance to cultivation. Sufficient stones to require clearing on an annual basis.
S4	**Excessively stony** - stones prohibit cultivation or make clearing a major task. Cultivation is usually severely hindered, even after regular, heavy clearing.
U	**Unclassified.**

4.4 SOIL CAPABILITY FOR AGRICULTURE

The soil capability classification for agricultural use is an interpretive classification of soils based on limitations affecting their use for production of annual crops. These limitations are categorized according to **degree** or severity and **kind** of limitation. Degree of limitation is represented by the capability class (numbers in the example below) and kind of limitation is represented by the capability subclass (letters in the example below). (The bracketed numbers in the example below indicate the percentage of each capability class present.) Capability classes and subclasses are briefly outlined below. A complete explantation of the system of soil capability classification for agriculture is contained in the publication, **A Guide to Soil Capability and Land Inventory Maps in Saskatchewan**.

SYMBOL SEQUENCE



3(6)M5(4)TE means that 60% of the area was placed in Class 3 due to a limitation in moisture-holding capacity and 40% of the area was placed in Class 5 because of limitations due to topography and erosion damage.

Capability Class (Degree of Limitation)

The mineral soils of Saskatchewan are grouped into seven capability classes. Soils rated Classes 1 to 3 are considered suitable for sustained production of common cultivated field crops, those rated Class 4 are considered marginal for sustained production of common cultivated field crops, those rated Class 5 are considered capable only of permanent pasture and hay production, those rated Class 6 are considered suitable only for use as native pasture, and those rated Class 7 are considered unsuitable for either the production of field crops or for use as native pasture.

Table 11. Description of capability classes.

CLASS 1	Soils in this class have **no significant limitations** in use for crops.
CLASS 2	Soils in this class have **moderate limitations** that restrict the range of crops or require moderate conservation practices.
CLASS 3	Soils in this class have **moderately severe limitations** that restrict the range of crops or require special conservation practices.
CLASS 4	Soils in this class have **severe limitations** that restrict the range of crops or require special conservation practices, or both.
CLASS 5	Soils in this class have **very severe limitations** that restrict their use to the production of native or tame species of perennial forage crops. Improvement practices are feasible.
CLASS 6	Soils in this class are **capable of producing native forage crops only.** Improvement practices are not feasible.
CLASS 7	Soils in this class have **no capability for arable agriculture or permanent pasture.**
CLASS O	Unimproved or virgin **organic soils** are not included in classes 1 to 7, and are designated by the letter 'O'.

Capability Subclass (Kind of Limitation)

The capability subclass represents a grouping of soils that have the same kind of limitations for crop production. If more than one limiting condition is recognized in a particular area, the subclasses are listed in order of their importance.

Table 12. Description of capability subclasses.

Climatic Limitations - Limitations due to climatic deficiencies.

Cm Depicts a moisture deficiency due to insufficient precipitation.

Cs Depicts a heat deficiency expressed in terms of length of growing season and frost-free period.

Soil Limitations - Limitations due to soil deficiencies are caused by adverse physical, chemical and morphological properties of the soil.

D Depicts adverse soil structure in the upper layers (A and B horizons) that affects the condition of the seedbed, prevents or restricts root growth and penetration, or adversely affects moisture permeability and percolation.

F Depicts adverse fertility characteristics of soils having naturally low inherent fertility due to lack of available nutrients, high acidity or alkalinity, high calcium carbonate content or inadequate cation exchange capacity.

M Depicts an insufficient soil water-holding capacity, due to the combined effects of the textural characteristics of the top 1 m and by the organic matter content of the surface horizon.

N Depicts excessive soil salinity and applies to soils with either high alkalinity or a sufficient content of soluble salts to adversely affect crop growth or the range of crops which can be grown.

S Depicts a variety of adverse soil characteristics. It is used in a collective sense in place of subclasses M, D, F and N, where more than two of them are present, or where two of these occur in addition to some other limitation.

Landscape Limitations - Limitations due to adverse characteristics of the soil landscape.

T Depicts a limitation in agricultural use of the soil as the result of unfavorable topography. It includes hazards to cultivation and cropping imposed by increasing degree of slope as well as by the irregularity of field pattern and lack of soil uniformity.

W Depicts a limitation due to excess water caused by either poor soil drainage, a high groundwater table or to seepage and local runoff. It does not include limitations that are the result of flooding.

P Depicts a limitation caused by excess stones and it applies to soils that are sufficiently stony that the difficulty of tillage, seeding and harvesting are significantly increased.

E Depicts a limitation caused by actual damage from wind and/or water erosion.

I Depicts a limitation due to inundation and applies to soils subjected to flooding by lakes or streams, but does not include local ponding in undrained depressions.

R Depicts a limitation due to shallowness to bedrock and applies to soils where the rooting zone is restricted.

X Soils having a moderate limitation due to the accumulative effect of two or more adverse characteristics of the soil and the landscape which singly are not serious enough to affect the class rating.

4.5 SURFACE pH

The pH scale, which ranges from 0 to 14 is used to indicate the relative acidity or alkalinity of a solution. A soil with a pH value of 7.0 is neutral, while one with a value less than 7.0 is acidic, and one with a value greater than 7.0 is alkaline.

The pH values indicated in the table in Section 6.0 are for the surface layer of soil which ranges in thickness from 10 to 20 cm. The soil pH was determined using a mixture of one part soil with one part distilled water. A soil with a pH between 6.5 and 7.5 provides the best environment for crop growth. Yields of sweet clover and alfalfa are reduced below a pH of 6.0. A pH of 5.5 or less may reduce the yields of wheat, barley and canola.

Table 13. Surface pH classes.

pH Class	pH Range	Description
X	less than 5.5	Moderately acid
A	5.5 to 6.0	Slightly acid
B	6.1 to 6.7	Slightly acid to neutral
C	6.8 to 7.5	Neutral to slightly alkaline
D	greater than 7.5	Alkaline

Table 14. Definition of surface pH symbol.

Symbol	Percent Surface pH Class	Symbol	Percent Surface pH Class
X0	X^{10}	**B5**	B^7A^3
X1	$X^5A^3B^2$	**B6**	B^7X^3
X2	X^7B^3	**C1**	$C^5B^4D^1$
X3	$X^6C^2D^2$	**C2**	C^7B^3
A0	A^5B^5	**C3**	$C^7B^2D^1$
A1	$A^7B^2C^1$	**C4**	C^9D^1
A2	$A^5B^2C^3$	**C5**	$C^5B^2D^3$
A3	$A^3B^4C^3$	**C6**	C^7D^3
A4	$A^3B^3C^3D^1$	**C7**	C^6D^4
A5	$A^4B^4X^2$	**D0**	$D^4C^3X^3$
A6	$A^4B^4C^1X^1$	**D1**	D^5C^5
B0	$B^7A^2C^1$	**D2**	D^7C^3
B1	$B^4C^4A^2$	**D3**	D^9C^1
B2	B^7C^3	**D4**	$D^5C^3B^2$
B3	B^5C^5	**U**	Unclassified
B4	$B^6C^3D^1$		

EXAMPLE

Symbol ⟶ **B1** = $B^4C^4A^2$

B^4 - 40% of surface area has a pH in the "B" range (6.1 - 6.7)

C^4 - 40% of surface area has a pH in the "C" range (6.8 - 7.5)

A^2 - 20% of surface area has a pH in the "A" range (5.5 - 6.0)

4.6 WETLANDS CLASSIFICATION

Wetlands are intermittent, semipermanent, or permanent waterbodies and include areas that have been drained as well as areas in which organic soils occur. Undisturbed wetlands are used extensively by wildlife for shelter, breeding habitat, and as feeding areas. Agricultural use of wetlands is often limited. However, some wetlands may provide native forage or hay for livestock, and trees may be used from some organic wetlands. If drained, these wetlands may support annual crop or hay production.

The size and type of wetland is often reflective of the permanence of a wetland. Generally the larger a wetland and the more open water there is, the more permanent it is. Nevertheless, wetlands will be influenced by recent climatic conditions. Due to the drought of the 1980's, for example, many wet meadows and shallow marshes have become dry enough to cultivate. In wetter years, it may be that many of these areas will become flooded and they may not be feasible to farm without installing drainage.

Wetlands occur in almost all areas, but are often not large enough to be mapped as individual areas. The wetlands classification attempts to indicate the types of wetlands that occur in each soil area mapped, as well as their approximate size and extent. It may, however, also be used to describe an individual wetland that is large enough to be delineated on the map. The wetland types can be identified using characteristic vegetation types, and the size and extent of wetlands distributed in the landscape is estimated using air photo interpretation.

Wetland Symbol

The wetlands symbol is composed of: an extent class, followed by a wetland type, a size class, and a water quality rating.

Wetland Type
|
Extent Class — **4S2-N** — Water Quality
|
Size Class

For example: an area with the wetland symbol **4S2-N** would be interpreted as follows: 20 to 40% of the area has shallow marshes that are 1 to 5 acres in size, with fresh to moderately saline water. There may be two wetland symbols listed in the Soil Interpretation section. The first symbol refers to the most common wetland type in the polygon, and the second symbol refers to the next most common. Intermediate types of wetlands can also be expected in most areas. Ten types of wetlands are identified. A description of the wetland types and classes follow.

Wetland Types

W- Wet Meadow. Contains vegetation composed mainly of fine-textured grasses and sedges of low stature intermixed with various forbs. Occasionally willows will dominate the wet meadow. Normally wet meadows are flooded for only three or four weeks in the springtime.

S - Shallow Marsh. Contains vegetation composed of various intermediate-height grasses, sedges, and forbs. Flooding normally lasts until July or early August.

E - Emergent Deep Marsh. Contains vegetation composed of coarse grass-like plants such as bulrushes and cattails. Water normally persists into late summer and fall and occasionally throughout the winter.

O - Open Water Marsh. Contains an open water zone that occupies less than 75% of the wetland's diameter. Plants that occur in the open water area are either submerged rooted or floating. Water is normally persistent throughout the year, except in times of extreme drought.

P - Shallow Open Water Wetland. The shallow open water wetland has an open water zone that occupies greater than 75% of the wetland's diameter.

A - Open Alkali Wetland. Contains a high concentration of salts in the mineral material throughout the extent of the wetland. The length of time the wetland is flooded varies from a few weeks to months. When the wetland is dry, a salt crust usually forms on the soil surface.

C - Cultivated Wetland. Any wetland that has been altered by cultivation.

B - Bog. Wetlands having an accumulation of mosses and forest peat materials.

F - Fen. Wetlands associated with nutrient-rich groundwater, and having an accumulation of sedge residues.

L - Lake. Named lakes, and other large waterbodies that are predominantly open water and greater than 2 m in depth.

N - No Wetlands. Wetlands occupy less than 1% of the mapped area.

Wetland Extent and Size Classes

The proportion of the polygon that has wetlands is estimated and given an extent class. The main size classes of wetlands in the polygon is also determined.

Table 15. Wetland extent and size class limits.

Extent		Size	
Class	% Area	Class	Area (acres)
1	1 - 5	1	< 1
2	5 - 10	2	1 - 5
3	10 - 20	3	5 - 10
4	20 - 40	4	10 - 20
5	40 - 70	5	20 - 40
6	> 70	6	> 40

Water Quality

Quality of the water is estimated based upon the wetland vegetation.

N - Fresh to Moderately Saline. Water conductivity is less than 15,000 $\mu s/cm^3$.

H - Saline to Highly Saline. Water conductivity is greater than 15,000 $\mu s/cm^3$. Plants that are known to occur where it is saline are red samphire, alkali grass, and prairie bulrush.

4.7 WIND EROSION

Wind Erosion Potential

The calculation of wind erosion potential is based on the following formula:

$$E(p) = C \times T \times I \times K$$

E(p) Potential annual soil loss.

C **Climatic factor** (based on average wind velocity and temperature). Values are compiled from weather stations and are presented on a rural municipality basis.

T **Landscape factor** (based on slope class and surface form). Topography, including the differences in relief between one location and another, the direction, steepness and frequency of slopes, and the comparative roughness of the land's surface, has a pronounced effect on the potential erodibility of soils.

I **Soil erodibility factor** (based on texture). The relative proportions of sand, silt and clay present influence a soil's ability to absorb and retain moisture and, consequently, to form aggregates resistant to wind erosion. Coarse-textured soils have a "single grain" structure lacking sufficient amounts of silt and clay to bind individual sand particles together. Consequently, these soils are readily broken down and eroded by wind. Fine and medium-textured soils have a higher water-holding capacity and stronger surface attraction. This results in a good soil structure with a high degree of resistance to wind erosion.

K **Soil ridge roughness factor** (based on texture).

The E(p) values from the formula are used to predict a soil's susceptibility to wind erosion if the soil surface is bare (i.e. it is in summerfallow with no growth and no organic residue on the surface). Management practices and the actual amount of past wind erosion that has occurred are not considered.

Table 16. Wind erosion susceptibility classes.

Class	Susceptibility	Description
1	Very Low	Good soil management and average growing conditions will produce a crop with sufficient residue to protect these soils against wind erosion.
2	Low	Good soil management and average growing conditions may produce a crop with sufficient residue to protect these soils against wind erosion.
3	Moderate	Average growing conditions may not supply adequate residue to protect these soils against wind erosion. Enhanced soil management practices are necessary to control wind erosion.
4	High	Average growing conditions will not provide sufficient residue to protect these soils against wind erosion. Coarse-textured soils may be seeded to pasture or to forage crops to prevent severe degradation of the soil.
5	Very High	These soils should not be used for annual cropping, but rather for pasture and forage crops which will protect the surface from severe degradation.
6	Extremely High	These soils must be left in permanent pasture and are not capable of sustaining arable agriculture.
U	Unclassified	Unclassified areas (e.g. Wetlands).

4.8 WATER EROSION

Water Erosion Potential

The potential water erosion classes are obtained by using the Universal Soil Loss Equation. This equation is an erosion model developed in the United States to predict long term average soil losses from runoff. The equation is:

$$A = R \times K \times L \times S \times C \times P$$

A **Computed loss per unit area** (tons per acre per year).

R **Rainfall erosivity factor** (the amount and intensity of rainfall an area receives).

K **Soil erodibility factor** (calculated using several physical soil properties; texture, organic matter, infiltration rate and structure).

L **Slope length factor.**

S **Slope steepness factor.**

C **Cover and management factor.**

P **Support practice factor.**

Assessment of potential water erosion for a particular area is independent of current management practices and therefore the C and P factors in the equation are held constant.

When using this information, it should be remembered that the class assigned to an area is an estimation of potential erosion for the entire area and that individual soils may occur within the area that vary significantly from the assigned class.

Table 17. Water erosion susceptibility classes.

Class	Susceptibility	Description
1	Very Low	Conventional soil management will produce sufficient residue to protect the soil from water erosion.
2	Low	Conventional soil management and average growing conditions should produce sufficient residue to protect the soil from water erosion.
3	Moderate	Conventional farming practices will result in a steady loss of soil due to water erosion. Conservation practices should be instituted to prevent degradation of these soils.
4	High	Rapid loss of soil will occur unless conservation practices are instituted. All gullies in these areas should be grassed.
5	Very High	These soils should not be broken due to their water erosion hazard. If broken, perennial crops or permanent forage should replace annual crops.
U	Unclassified	Unclassified areas (e.g. Wetlands).
D or G Modifiers		If an area was observed to be gullied (G) or dissected (D) (dissections being shallow gullies that can be crossed with farm implements), these symbols were added to the erosion class symbol to indicate that higher rates of erosion may occur on the steeper slopes along the edges of the dissection or gully if they are left unprotected.

4.9 PAST WIND AND WATER EROSION

An erosion rating has been assigned to each soil area. This rating reflects the surveyor's best estimate of the extent and degree of erosion that has occurred in an area since cultivation. Areas that have never been cultivated usually have enough vegetative cover to protect the soil surface from erosion and, therefore, remain relatively unaffected. Some uncultivated areas, however, do have clear evidence of recent erosion.

The rating system contains six classes with the degree of past wind and water erosion ranging from unaffected (W0) to very severe (W5). These classes, with the exception of W0 (unaffected), are assigned modifiers (G, K, B) which identify the type of erosion that has occurred. Wetlands, nonsoil areas and some uncultivated areas were not classified and are designated with the symbol 'U'.

Table 18. Past wind and water erosion classes.

Class	Description
U	**Unclassified**
W0	**Unaffected**. No evidence of past wind or water erosion.
W1	**Weak**. Soils are slightly eroded.
W1K	The knolls have slightly thinner A horizons and are lighter in color than midslopes. There is no noticeable thickening of the surface horizon on mid- to lower slopes.
W1B	Wind has removed part of the soil surface resulting in thinner A horizons. There is very little mixing of the A and B horizons and little sign of soil accumulation on mid- and lower slopes.
W1G	A few very shallow dissections are present indicating very slight evidence of water erosion.
W2	**Moderate**. Soils are moderately eroded.
W2K	Eroded knolls make up 5-15% of the area. The knolls are much lighter in color than midslopes. There is a noticeable thickening of the surface horizon on lower slopes due to accumulation of upper slope material.
W2B	Wind has removed part of the A horizon resulting in moderately thin A horizons. There is slight mixing of A and B horizons during tillage and some evidence of soil accumulation near fencelines and windbreaks.
W2G	Shallow dissections are present. The dissections may easily be crossed by farm implements and have little effect on cultivation. There is evidence of rill erosion (small channels a few centimeters deep, occurring after substantial rains or snowmelt).
W3	**Strong**. Soils are strongly eroded.
W3K	Eroded knolls make up 15-40% of the area. The knolls are much lighter in color than midslopes. A large portion of the A horizon has been removed and redistributed to lower slopes. On knolls, subsoil has been incorporated into the cultivated horizon.
W3B	Wind has removed a significant amount of the A horizon. Regular tillage results in a thorough mixing of the B horizon with the remaining A horizon. Accumulation of wind-blown material occurs along fencelines and windbreaks.
W3G	Distinct dissections are present. The dissections may be crossed by farm implements with some difficulty, and have a moderate effect on cultivation. These dissections should be seeded to grass to prevent further damage from erosion.
W4	**Severe**. Soils are severely eroded.
W4K	Eroded knolls make up 40-70% of the area. The eroded knolls are white in color, with light colors extending well onto the midslope position. Erosion has destroyed the soil profile on upper slopes.
W4B	Wind has removed most of the A horizon and frequently part of the B horizon. Occasional blowout areas are present, creating a very unstable surface.
W4G	Occasional shallow gullies are present. The gullies cannot be crossed by farm implements, and therefore, should not be cultivated for annual cropping. Reclamation for improved pasture is difficult unless erosion can be controlled.
W5	**Very Severe**. Soils are very severely eroded.
W5K	Eroded knolls make up greater than 70% of the area. The knolls and midslopes are white in color. Erosion has destroyed the soil profile on upper and midslope positions.
W5B	Wind has removed most of the soil profile. Blowout holes are numerous and easily carved into the subsoil or parent material. Areas between blowouts are deeply buried by eroded soil material. At best, this land should be utilized for native or improved pasture.
W5G	Deep gullies occur frequently. Soil profiles have been destroyed except in small areas between gullies. These areas should be permanently grassed. Reclamation of eroded areas is a difficult process.

4.10 SAND AND GRAVEL

The sand and gravel symbol shows the location of near surface sources of sandy and gravelly materials. The materials can range from mixtures of sand and silt to coarse gravelly sand. These materials may be used for concrete, sub-base for roads, traffic gravel or pervious borrow for fill purposes. This symbol does not suggest whether any of these areas contain sands and gravels of sufficient volume or quality to enable commercial development.

The term sand refers to materials with greater than 50% sand and with less than 15% clay. Gravel refers to materials having a significant component of particles greater than 2 mm in diameter.

Table 19. Description of sand and gravel symbol.

Symbol	Description
SG0	No sandy or gravelly materials recognized
S1	Sandy materials occupy 1-15% of landscape
G1	Gravelly materials occupy 1-15% of landscape
SG1	Sandy and gravelly materials occupy 1-15% of landscape
S2	Sandy materials occupy 15-40% of landscape
G2	Gravelly materials occupy 15-40% of landscape
SG2	Sandy and gravelly materials occupy 15-40% of landscape
S3	Sandy materials occupy 40-70% of landscape
G3	Gravelly materials occupy 40-70% of landscape
SG3	Sandy and gravelly materials occupy 40-70% of landscape
S4	Sandy materials occupy greater than 70% of landscape
G4	Gravelly materials occupy greater than 70% of landscape
SG4	Sandy and gravelly materials occupy greater than 70% of landscape
U	Unclassified

4.11 SOIL MOISTURE AND YIELD

An estimate of the amount of available soil moisture may be of value in decision-making regarding the seeding of stubble land and the level of fertilizer inputs required. In most cases, such decisions rely, in part, on an estimate of expected yield. Since yield is largely a function of soil moisture conditions, an estimate of the amount of soil moisture available to the crop over the growing season can be used to assess the probability of obtaining a given yield.

Calculation of Available Soil Moisture

To calculate the amount of available water in the soil, multiply the soil's available water-holding capacity (see Table 20) by the depth of moist soil.

Table 20. Available soil water-holding capacity in relation to soil texture.

Texture Class	Available water-holding capacity per unit depth of moist soil
Loamy sand	0.05
Sandy loam	0.08
Fine sandy loam	0.09
Very fine sandy loam	0.10
Sandy clay loam	0.12
Loam	0.14
Silt loam	0.16
Clay loam	0.17
Silty clay loam	0.20
Clay	0.21
Silty clay	0.22
Heavy clay	0.23

Example: If a loam-textured soil were moist to a depth of 500 mm, it would contain about 70 mm (500 x 0.14) of available water.

Estimation of Potential Yield

The amount of soil moisture available to the crop equals the amount stored in the soil prior to seeding, plus that received as precipitation during the growing season. Available soil moisture prior to seeding can be estimated using Table 20. The probability of receiving various amounts of precipitation over the growing season is given in Table 21.

Table 21. Probability (%) of receiving at least the indicated amounts of growing-season precipitation (May 15 to August 13).

Precipitation (mm)[a]									
75	100	120	145	165	190	220	240	265	280
Probability (%)									
>95	90	85	75	65	50	35	25	15	10

[a] Precipitation data from Choiceland weather station.

Example: If the probability of receiving 190 mm of precipitation were 50%, then at least 190 mm of precipitation could be expected in 5 out of 10 years.

To asses the probability of obtaining a given yield:

1. Estimate the available soil moisture prior to seeding.
2. Determine the total moisture requirements (Table 22).
3. Assess the probability of receiving enough precipitation during the growing season to make up the difference.

Example: If a loam-textured soil were moist to a depth of 500 mm, what would be the probability of obtaining a wheat yield of at least 1500 kg/ha?

1. Stored soil moisture = (500 x 0.14) = 70 mm.
2. Total moisture requirements = 200 mm.
3. Moisture required = (200 - 70) = 130 mm.
4. Probability of receiving at least 130 mm is about 81%.

Table 22. Estimated yields[b] (kg/ha) in relation to available moisture requirements.

Crop	Moisture requirements (mm) 125	150	175	200	225	250	275	300	325	350	To convert kg/ha to bu/ac multiply by:
Wheat	600	900	1200	1500	1800	2100	2400	2700	3000	3300	.015
Oats	640	950	1270	1590	1910	2230	2540	2860	3180	3500	.026
Barley	740	1110	1480	1850	2210	2580	2950	3320	3690	4060	.019
Flax	360	500	660	830	990	1160	1320	1490	1650	1820	.016
Canola	360	540	720	900	1080	1270	1440	1620	1800	1980	.018

[b] Yields are based on good management and reasonably normal seasonal climatic conditions, particularly with respect to the timeliness of rainfall events. Actual yields may exceed estimates under abnormally favorable conditions, or be below estimates due to weeds, disease, low fertility, or adverse climatic extremes.

5. ACREAGE FACTS

Rural Municipality of Torch River, Number 488

	Hectares	Acres
TOTAL AREA	203718	503387
SOIL CAPABILITY FOR AGRICULTURE		
Class 1	15653	38678
Class 2	35686	88181
Class 3	73855	182495
Class 4	20746	51263
Class 5	41766	103204
Class 6	9825	24277
Class 7	212	524
Class O	5601	13840
IRRIGATION SUITABILITY		
Excellent	1391	3438
Good	62649	154806
Fair	83671	206751
Poor	55633	137468
SALINITY		
Very Strong	0	0
Strong	0	0
Moderate	27	67
Weak	30	75
None	203660	503245
SAND AND GRAVEL		
Sandy	54994	135891
Sandy and Gravelly	656	1622
Gravelly	536	1324
STONES		
Non- to Slightly Stony	181912	449505
Moderately Stony	20726	51214
Very Stony	361	891
Excessively Stony	191	473

	Hectares	Acres
SURFACE pH (Soil Acidity)		
X (< 5.5)	2841	7020
A (5.5 - 6.0)	34716	85783
B (6.1 - 6.7)	89077	220109
C (6.8 - 7.5)	48066	118772
D (> 7.5)	28490	70399
SURFACE TEXTURE		
Sands	34805	86003
Sandy Loams	82471	203786
Loams	60935	150570
Clay Loams	18639	46056
Clays	470	1162
Organics	5870	14506
WIND EROSION POTENTIAL		
Very Low	117221	289654
Low	52742	130325
Moderate	40	100
High	27294	67443
Very High	0	0
Extremely High	0	0
WATER EROSION POTENTIAL		
Very Low	116633	288201
Low	65744	162454
Moderate	6637	16399
High	4213	10411
Very High	4070	10056
WETLANDS AND POORLY DRAINED SOILS		
Open water and lakes	362	895
Wet, poorly drained soils	19197	47436

6. INTERPRETIVE DATA TABLES

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
1	BLMw4	1	H	o	0	4Cwi	S0	O(8)6(2)W	D3	6F6-N,3B3-N	U	U	U	U	1479.5
2	CrLL1	2	u	sl-o	0	3Dwv	S0	3(6)MO(4)	D3	3F3-N	2	1	W0	S3	361.5
3	NtPn3	3	u	ls	0	3Dmv	S0	4(6)M5(4)MW	B0	3S1-N	2	1	W2B	S4	180.3
4	BuPe7	3	u	sl-ls	0	2Bmt1v	S0	3(6)M4(4)M	C7	1S1-N	2	2	W0	S2	681.4
5	SbNt3	3-4	u	sl	0	2Bmt1	S0	3(10)M	C5	1S1-N	1	2	W0	S2	112.5
6	Sb2	2-3	u	vl	1WP	1Cv	S0	2(8)M5(2)W	C7	3S3-N	2	1	W1B	SG0	100.1
7	Sb1T	3	u	vl	0	2Bgt1	S0	2(10)M	C7	1S2-N	2	2	W0	SG0	461.0
8	Rw	3	ud	sl	0	4Dct2	S0	3(5)MT5(5)W	D1	4C2-N,2S1-N	2	3D	W0	SG0	135.1
9	SbLc6	3	u	fl-vl	0	1Cv	S0	3(8)M5(2)W	C5	3S2-N	2	2	W1B	SG0	2378.8
10	GoCr1	2-3	u	sl	0	2Cmv	S0	3(8)M5(2)W	D1	3S2-N	1	1	W0	S2	1097.3
11	SbWe4	2-3	u	vl-sil	1WPA	1Bt1	S0	2(10)M	C7	1S1-N	1	2	W0	SG0	765.2
12	Rw	3	uid	l-sl	1MA	4Dct2	S0	4(10)W	D1	6S6-N	1	3D	W1G	SG0	366.6
13	NtPn3	3	u	ls-s	0	3Dmv	S0	4(6)M5(4)MW	A0	3S1-N	2	1	W2B	S4	511.4
14	NtPn3	3	u	ls-s	0	3Dmv	S0	4(6)M5(4)MW	A0	3S1-N	2	1	W2B	S4	612.8
15	RwAv1	2	uc	sl	1MA	4Dct2	S0	5(10)W	D1	6S4-N	1	3	U	S4	211.5
16	Rw	3-4	uid	l-sl	1MA	4Dct2	S0	3(5)MT4(5)WT	D1	5S2-N	1	3D	W1G	SG0	1588.3
17	SbLc6	3	u	vl	0	1Cv	S0	2(6)M3(2)M5(2)W	C1	3S2-N	1	2	W0	SG0	294.2
18	SbLc6	3	u	vl	0	1Cv	S0	2(6)M3(2)M5(2)W	C1	3S2-N	1	2	W0	SG0	685.7
19	SbLc6	3	u	vl	0	1Cv	S0	2(6)M3(2)M5(2)W	C1	3S2-N	1	2	W0	SG0	60.1
20	SbLc6	3	u	vl	0	1Cv	S0	2(6)M3(2)M5(2)W	C1	3S2-N	1	2	W0	SG0	2312.6
21	SyNt1	3-2	u	sl	0	2Bmdt1	S0	4(7)M3(3)M	A0	1C1-N,1S1-N	2	2	W1B	S4	3502.6
22	WeGo2	2	u	cl-fl	1WA	2Cqv	S0	2(5)X3(3)M5(2)W	D1	3S1-N	1	1	W1G	SG0	279.2
23	Sb7	2-3	u	vl	0	1Cv	S0	2(8)M5(2)W	C5	3S2-N	1	2	W0	SG0	803.6
24	NtSy6	3	u	sl	0	2Bmt1	S0	3(8)M4(2)M	A0	1S1-N	2	2	W1B	S4	621.2
25	NtSy6	3	u	sl	0	2Bmt1	S0	3(8)M4(2)M	A0	1S1-N	2	2	W1B	S4	601.9
26	NtSy6	3	u	sl	0	2Bmt1	S0	3(8)M4(2)M	A0	1S1-N	2	2	W1B	S4	556.2
27	WeGo2	2	u	cl-fl	1WA	2Cqv	S0	2(5)X3(3)M5(2)W	D1	3S2-M	1	1	W1G	SG0	295.2
28	WeGo1	2-3	u	l-fl	1WA	1Bt1	S0	2(10)X	D1	1C1-N	1	1	W0	SG0	612.7
29	PnNt4	3	ur	ls-s	0	3Bmt1v	S0	4(5)M5(5)MF	A0	N	4	1	W2B	S4	122.9
30	PnNt4	3	ur	ls-s	0	3Bmt1v	S0	4(5)M5(5)MF	A0	N	4	1	W2B	S4	337.3
31	PnNt4	3	ur	ls-s	0	3Bmt1v	S0	4(5)M5(5)MF	A0	N	4	1	W2B	S4	18.6
32	LcSb4T	2-3	u	fl-vl	0	2Bdgt1	S0	3(6)M2(4)M	C5	1S1-N	1	1	W0	SG0	195.6
33	LcSb4T	2-3	u	fl-vl	0	2Bdgt1	S0	3(6)M2(4)M	C5	1S1-N	2	1	W0	SG0	146.2
34	LcSb4T	2-3	u	fl-vl	0	2Bdgt1	S0	3(6)M2(4)M	C5	1S1-N	2	1	W0	SG0	134.2
35	LcSb4T	2-3	u	fl-vl	0	2Bdgt1	S0	3(6)M2(4)M	C5	1S1-N	1	1	W0	SG0	29.2
36	SbLc4	2-3	u	fl-vl	0	1Bt1	S0	3(10)M	C1	2S3-N	1	1	W1B	SG0	63.4
37	SbLc4	2-3	u	fl-vl	0	1Bt1	S0	3(10)M	C1	2S3-N	1	1	W1B	SG0	1870.9
38	Tg4	2-3	u	l	1WA	1Bvt1	S1	2(10)M	D3	1W1-N	1	1	W1K	SG0	266.4
39	SyGo4	2	ud	ls-fl	0	3Cmv	S0	4(10)M	D2	N	2	1D	W2B	S3	9.5
40	PwWh1	2-3	u	l	0	1Bt1	S1	2(10)M	D2	N	1	1	W0	SG0	1321.5
41	NtSy6	3	u	sl	0	2Bmt1	S0	3(8)M4(2)M	A0	1S1-N	2	2	W1B	S4	151.6
42	NtSy6	3	u	sl	0	2Bmt1	S0	3(8)M4(2)M	A0	1S1-N	2	2	W1B	S4	119.3
43	GoWe1	2-3	u	l-vl	1WA	1Bt1	S1	2(10)M	D3	1C1-N	1	1	W1K	SG0	1181.1
44	NtSy6	3	u	sl	0	2Bmt1	S0	3(8)M4(2)M	A0	1S1-N	2	2	W1B	S4	406.3
45	SyGo4	3	u	sl-l	0	2Bmdt1	S0	2(4)M3(4)M4(2)M	C5	1S1-N	1	2	W1K	S3	475.0
46	WvWh9	2-3	u	l	0	2Bdt1v	S1	3(7)D2(3)M	C1	1S1-N	1	1	W1K	SG0	281.0
47	Wz1	1	l	U	0	4Cwi	U	5(10)W	U	6S6-N	U	U	U	S4	75.3
48	Go1	3-2	u	l-vl	0	1Bt1	S0	2(10)M	C5	2C1-N	1	2	W1K	SG0	134.8
49	PnCr4	3-2	u	s-sl	0	4Cmv	S0	5(4)MF6(2)W3(4)M	A2	3S2-N	4	1	W2B	S4	2691.2
50	PnCr4	3-2	u	s-sl	0	4Cmv	S0	5(4)MF6(2)W3(4)M	A2	3S2-N	4	1	W2B	S4	174.5
51	BtWv1	3	ud	sl-l	0	3Bgt1v	S2	4(6)FD3(4)D	C7	2S1-N,1O2-N	1	2D	W1G	SG0	868.2
52	WvBt1	3-4	h	sl	0	2Cmt2v	S2	3(6)D4(4)M	C7	1S1-N	1	2	W1K	SG0	331.5
53	WvBt1	3-5	hid	sl	0	2Dmt2	S2	4(10)T	C7	1S1-N	1	2D	W2G	SG0	77.4
54	Sm2	3	h	sl	0	4Dmv	S3	5(10)MP	A0	3S2-N	1	2	U	SG1	12.9
55	PnKk1	5	h	ls-sl	0	3Cmt2p	S2	5(10)MF	A0	1S1-N	4	2	W1KB	SG4	542.7
56	WvBt1	3	uid	sl-ls	0	2Cdmv	S2	3(6)D4(4)MD	C1	1S1-N	2	2D	W1K	SG0	17.5
57	WvBt1	3	uid	sl-ls	0	2Cdmv	S2	3(6)D4(4)MD	C1	1S1-N	2	2D	W1K	SG0	264.5
58	PnKk1	5	h	ls-sl	0	3Cmt2p	S2	5(10)MF	A0	1S1-N	4	2	W1KB	SG4	39.1
59	BtWv1	4-3	uid	sl	0	3Bgt1p	S2	4(10)MD	C1	N	2	2D	W1KG	SG0	107.2
60	BtWv1	4-3	uid	sl	0	3Bgt1p	S2	4(10)MD	C1	N	2	2D	W1KG	SG0	505.9
61	WvBt1	3	u	sl-ls	0	2Cdmv	S2	3(6)D4(4)MD	C1	N	2	2	W0	SG0	354.2
62	LLSm5	1-2	Hu	ls-gsl	0	4Cwi	S2	O(6)4(2)MD6(2)W	X1	5B6-N	U	U	U	SG1	56.1
63	BL22	2	R	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	8.3
64	AwSm2	2-3	u	l-sl	0	3Dwv	S3	5(6)W4(2)MO(2)	X1	5B3-N	1	1	U	SG1	100.4
65	BtWv1	3-2	u	ls-sl	0	3Bmgt1	S2	4(6)MD3(4)D	C1	1S1-N	2	1	W1K	SG0	814.4

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
66	AwSm2	2-3	u	l-sl	0	3Dwv	S3	5(6)W4(2)MO(2)	B0	6B3-N	1	1	U	SG1	343.8
67	AwBL1	2	u	sl	0	4Dwv	S0	6(6)WO(4)	D1	6F6-N	1	1	U	U	16.0
68	SmLL1	3	ur	ls-gsl	0	3Dmv	S2	5(6)MF4(2)MO(2)	A0	3B2-N	2	1	U	SG0	1871.1
69	Sm2	4-3	h	ls-gsl	0	4Dmv	S4	5(10)MP	A0	N	2	2	U	SG1	177.3
70	Sm2	4-3	h	ls-gsl	0	4Dmv	S4	5(10)MP	A0	N	2	2	U	SG1	190.8
71	Sm2	4-3	h	ls-gsl	0	4Dmv	S4	5(10)MP	A0	N	2	2	U	SG1	95.1
72	AwSm1	2-3	u	ls-gsl	0	3Dwmv	S3	5(5)MF6(5)W	B0	6B6-N	2	1	U	SG1	434.1
73	WvBt1	3	u	sl-ls	0	2Cdmv	S2	3(7)D4(3)MD	C1	1S1-N	2	2	W1K	SG0	1477.1
74	PnWv3	3	u	s-sl	0	4Cmv	S2	5(6)MF3(4)MD	C1	1S1-N	4	1	W1B	S3	1739.5
75	LLBt4	1-2	Hu	o-sl	0	4Cwi	S1	O(7)4(3)MD	A0	5B3-N	U	U	W1K	SG0	179.0
76	Bt6	3-2	u	sl	0	3Bgt1	S1	4(10)MF	C1	1S1-N	1	2	W1B	SG0	501.0
77	PnCr1	3	u	s-sl	0	4Cmv	S0	5(7)MF3(3)M	A2	1S1-N	4	1	W2B	S4	175.5
78	PnCr1	3	u	s-sl	0	4Cmv	S0	5(7)MF3(3)M	A2	1S1-N	4	1	W2B	S4	21.1
79	PnCr1	3	u	s-sl	0	4Cmv	S0	5(7)MF3(3)M	A2	1S1-N	4	1	W2B	S4	1333.5
80	Ga6	2	u	l-sl	0	2Bdv	S1	3(8)MD2(2)D	C5	N	1	1	W1K	SG0	288.8
81	Ga6	2	u	l-sl	0	2Bdv	S1	3(8)MD2(2)D	C5	2S2-N	1	1	W1K	SG0	558.9
82	GoCr3	2	u	fl-sl	0	1Bv	S1	3(10)M	D1	1S1-N,1C1-N	1	1	W1B	S2	3639.3
83	GaKy4	2-3	u	l	0	2Bdt1v	S1	3(6)D2(4)D	B0	1C1-N,1S1-N	1	1	W1K	SG0	635.2
84	Cr5	2-3	u	sl	0	2Dmv	S0	3(7)M5(3)W	C5	4S3-N	2	1	W1K	S4	400.4
85	SyGo4	2-3	u	sl	0	2Bmdt1	S0	4(7)M3(3)M	C5	1S1-N,1C1-N	2	1	W1K	S3	1965.3
86	SyGo4	2-3	u	sl	0	2Bmdt1	S0	4(7)M3(3)M	C5	1S1-N,1C1-N	2	1	W1K	S3	28.7
87	SyGo4	2-3	u	sl	0	2Bmdt1	S0	4(7)M3(3)M	C5	1S1-N,1C1-N	2	1	W1K	S3	61.0
88	KyGa1	2	u	l	0	2Bdv	S1	2(10)D	B0	1C1-N	1	1	W0	SG0	248.2
89	SyNt1T	2-3	u	sl	0	2Bmdt1	S0	4(7)M3(3)M	A0	1C1-N,1S1-N	2	1	W1B	S4	608.0
90	Ga6	2	u	cl	0	2Bdqv	S1	2(5)D3(5)D	C5	1C1-N,1S1-N	1	1	W0	SG0	58.8
91	Ga6	2	u	cl	0	2Bdqv	S1	2(5)D3(5)D	C5	1C1-N,1S1-N	1	1	W0	SG0	1098.9
92	SyNt1	3-2	u	sl	0	2Bmdt1	S0	4(7)M3(3)M	A0	1C1-N,1S1-N	2	2	W1B	S4	158.8
93	WeGo2	2	u	cl-fl	1WA	2Cqv	S0	2(5)X3(3)M5(2)W	D1	3S1-N	1	1	W1G	SG0	402.7
94	WeGo2	2	u	cl-fl	1WA	2Cqv	S0	2(5)X3(3)M5(2)W	D1	3S1-N	1	1	W1G	SG0	337.3
95	SbGo4	2	u	vl	1WA	1A	S0	2(10)M	C5	1C1-N	1	2	W0	SG0	446.4
96	SyNt1	3-2	u	sl	0	2Bmdt1	S0	4(7)M3(3)M	A0	1C1-N,1S1-N	2	2	W1B	S4	91.0
97	WeGo2	2	u	cl-fl	1WA	2Cqv	S0	2(6)X3(2)M5(2)W	D1	3C1-N	1	1	W1K	SG0	156.6
98	SbLc6	3	u	vl	0	1Cv	S0	2(6)M3(2)M5(2)W	C1	3S2-N	1	2	W0	SG0	158.7
99	SbGo4	3-2	u	fl-l	2MA	3Bst1	S0	3(10)M	C5	N	1	2	W0	SG0	148.0
100	NtSb1	3-4	u	sl-fl	0	2Bmt1v	S0	3(10)M	B0	1C1-N	2	2	W1KB	S3	1315.6
101	Go1C	2-3	u	vl	0	3Bgt1	S0	2(10)M	B0	2S2-N	1	1	W0	SG0	97.7
102	Go1C	2-3	u	vl	0	3Bgt1	S0	2(10)M	B0	2S2-N	1	1	W0	SG0	2911.7
103	Go1C	2-3	u	vl	0	3Bgt1	S0	2(10)M	B0	2S2-N	1	1	W0	SG0	233.1
104	SyNt1	3-2	u	sl	0	2Bmdt1	S0	4(7)M3(3)M	A0	1C1-N,1S1-N	2	2	W1B	S4	289.2
105	Nt1	3	u	sl-ls	0	2Bmt1v	S0	3(10)M	B0	1S1-N	2	2	W1B	S4	47.5
106	Nt1	3	u	sl-ls	0	2Bmt1v	S0	3(10)M	B0	1S1-N	2	2	W1B	S4	298.2
107	Nt1	3	u	sl-ls	0	2Bmt1v	S0	3(10)M	B0	1S1-N	2	2	W1B	S4	324.2
108	NtSb1	3	u	sl-fl	0	2Bmt1v	S2	3(10)M	B0	1S1-N	2	2	W1B	S3	24.5
109	NtSb1	3	u	sl-fl	0	2Bmt1v	S2	3(10)M	B0	1S1-N	2	2	W1B	S3	39.0
110	NtSb1	3	u	sl-fl	0	2Bmt1v	S2	3(10)M	B0	1S1-N	2	2	W1B	S3	457.4
111	GoSb10	2-3	u	vl	1WA	1Cv	S0	2(8)M5(2)W	C5	3S2-N	1	1	W0	SG0	1849.6
112	GaKy5	3-2	u	l	0	2Cdv	S1	3(5)D2(3)D5(2)W	C1	3S1-N	1	2	W1K	SG0	2109.8
113	SbGo2	3-2	u	fl-l	0	1Cv	S0	2(8)M5(2)W	C5	3S1-N	1	2	W1G	SG0	1340.3
114	NtLc1	3-4	ud	sl-vl	0	2Bmt1v	S0	3(10)M	C1	1S1-N	2	2D	W1B	S3	180.0
115	NtLc1	3-4	ud	sl-vl	0	2Bmt1v	S0	3(10)M	C1	1S1-N	2	2D	W1B	S3	1007.0
116	Rw	3-4	uid	sl	1MP	4Dct2	S1	6(6)W3(4)MT	D1	4S2-N,4W2-N	1	3D	W1KG	SG0	1339.1
117	GaWv3	3-2	u	l	0	2Bdt1v	S2	3(10)D	B0	1S1-N	1	2	W1K	SG0	625.8
118	GoSb3	2-3	u	vl	0	1Bt1	S0	2(10)M	D1	2S1-N	1	1	W0	SG0	599.6
119	LcSb4T	3-2	u	vl	0	2Bdgt1	S0	2(10)M	C1	N	1	2	W1K	SG0	486.1
120	GoSb3	2-3	u	vl	0	1Bt1	S0	2(10)M	D1	2S1-N	1	1	W0	SG0	169.5
121	Wz3	1	l	U	0	4Cwi	U	7(10)W	U	6P6-N	U	U	U	SG0	34.1
122	Sb1	3-2	u	vl	0	1Bt1	S0	2(10)M	C5	N	1	2	W1K	SG0	220.8
123	Lc6	3-2	ud	fl	0	2Bdt1	S0	3(10)M	C1	1C1-N	1	2D	W1G	SG0	2097.4
124	LcSy6	4-3	ud	vl-sl	0	2Bdt1v	S0	3(8)MT4(2)M	B0	1C1-N	2	3D	W1B	S2	2040.0
125	Pp3	3	ud	l-cl	0	2Bdt1v	S0	3(6)D2(4)D	C5	1S1-N	1	2D	W1G	SG0	389.6
126	WePp1	2	u	l	0	2Bdv	S0	2(10)X	D1	N	1	2	W1K	SG0	226.2
127	SyCr2	3-2	ud	sl	0	2Cdmv	S0	3(4)M4(4)M5(2)W	B0	3C1-N	2	2D	W1K	S4	392.3
128	LcGo5	3	u	vl	0	2Cdv	S0	2(6)M3(2)M5(2)W	B0	3C1-N	1	2	W1K	SG0	427.9
129	WeGo1	2	u	cl-fl	0	2Bqv	S0	2(8)X3(2)M	C1	N	1	1	W0	SG0	324.4
130	Sm1	3	u	sl	0	4Dmv	S2	4(10)MF	B0	N	1	2	W1B	SG1	151.8
131	SyCr2	2	u	sl	0	2Cdmv	S0	3(4)M4(4)M5(2)W	B0	3C1-N	2	1	W1B	S4	571.6
132	GoLc2	3	u	sl	0	2Cmv	S0	3(8)M5(2)W	B0	3S1-N	1	2	W1K	SG0	405.7
133	PnSy3	3	u	ls-sl	0	3Bmt1v	S0	5(6)MF4(4)M	A0	N	4	1	W1B	S4	672.9
134	PnSy3	3	u	ls-sl	0	3Bmt1v	S0	5(6)MF4(4)M	A0	N	4	1	W1B	S4	97.6
135	LcSy6	2-3	u	vl-sl	0	2Bdt1v	S0	3(8)M4(2)M	B0	2S3-N	1	2	W0	S2	2303.4

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
136	GoSb3	2-3	u	vl	0	1Bt1	S0	2(10)M	D1	2S1-N	1	1	W0	SG0	162.5
137	SbLc4	3	u	vl	0	1Bt1	S0	2(7)M3(3)M	C1	N	1	2	W1K	SG0	222.4
138	SbLc4	3	u	vl	0	1Bt1	S0	2(7)M3(3)M	C1	N	1	2	W1K	SG0	73.4
139	SbLc4	3	u	vl	0	1Bt1	S0	2(7)M3(3)M	C1	N	1	2	W1K	SG0	251.3
140	Pn2	3	u	s	0	4Bmt1	S0	5(10)MF	A0	N	4	1	W1B	S4	254.4
141	PnCr1	2-3	u	s-sl	0	4Cmv	S0	5(6)MF3(4)M	A2	1S1-N	4	1	W2B	S4	2566.8
142	NtCr2TC	2-3	u	sl	0	3Cgv	S1	3(8)M5(2)W	C1	3C1-N	2	1	W1B	S4	560.8
143	SbLc4C	2-3	u	vl	0	3Bgt1	S0	2(6)M3(4)M	C1	1S1-N	1	2	W1B	SG0	378.6
144	CrPn2C	2-3	u	sl-s	0	4Dgv	S1	3(5)M5(5)MW	C1	3S2-N	2	1	W1B	S4	284.3
145	CrPn2C	2-3	u	sl-s	0	4Dgv	S1	3(5)M5(5)MW	C1	3S2-N	2	1	W1B	S4	2576.3
146	WvBt1	2-3	u	l-sl	0	2Cdv	S2	3(8)D4(2)MD	C1	N	1	1	W1K	SG0	680.8
147	CrPn2C	2-3	u	sl-s	0	4Dgv	S1	3(5)M5(5)MW	C1	3S1-N	2	1	W1B	S4	370.4
148	CrPn2C	2-3	u	sl-s	0	4Dgv	S1	3(5)M5(5)MW	C1	3S2-N	2	1	W1B	S4	927.3
149	PpEd1	2	u	l-cl	0	2Bdv	S0	3(10)D	C5	N	1	1	W1K	SG0	145.4
150	BtPn3	3-2	u	sl-s	0	3Cgv	S2	4(6)MD5(4)MF	A0	1S1-N	2	2	W1B	S2	1887.1
151	CrPn2TC	2-3	u	sl-ls	0	3Dgv	S0	3(6)M5(4)MW	C1	2C2-N,2B2-N	2	1	W1B	S4	1422.4
152	Lc1C	2	u	l	0	3Ag	S0	3(10)MD	B0	1C1-N	1	1	W1K	SG0	534.1
153	Go2CL	2	u	vl	0	3Cgv	S0	2(8)M5(2)W	D3	3S1-N,2C1-N	1	1	W1K	SG0	1052.4
154	We4	2-3	u	vl-cl	1WA	1Dv	S1	2(7)X5(3)W	D3	4S4-N	1	1	W0	SG0	1274.3
155	BL15	2	H	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	677.4
156	PnLL3	3	u	s-o	0	4Dmv	S0	5(6)MF6(2)WO(2)	A0	3S2-N,3B3-N	4	1	U	S3	2620.6
157	BtPn4	3	u	sl-s	0	3Cgv	S2	4(5)MD5(3)MF6(2)W	B0	3S1-N	2	2	W1K	S2	4531.0
158	PnBt7	3	u	s-sl	0	4Cmv	S1	5(5)MF4(2)MDO(3)	A0	4B3-N	4	1	U	S3	3646.6
159	PnLL6	3	h	s-o	0	4Dmv	S0	5(6)MF6(2)WO(2)	A0	4B3-N	4	1	W1B	S3	761.9
160	Jacquine Lake									6L6-N					222.7
161	PnBt1	3	u	s-sl	0	4Cmvp	S2	5(6)MF4(4)MD	A0	1S1-N	4	1	W1K	S3	1352.9
162	Lc9CL	2-3	u	vl	0	2Bdgt1	S0	3(10)M	B0	1C1-N,1S1-N	1	2	W1K	SG0	759.7
163	LLBL2	2	H	o	0	4Cwi	S0	O(10)	X3	6F6-N,3B3-N	U	U	U	U	2380.8
164	Lc9	2-1	u	vl	0	2Ad	S0	3(10)M	B0	1C1-N	1	2	W1K	SG0	1146.0
165	Lc9	2-1	u	vl	0	2Ad	S0	3(10)M	B0	1C1-N	1	2	W1K	SG0	798.0
166	Lc9	2-1	u	vl	0	2Ad	S0	3(10)M	B0	1C1-N	1	2	W1K	SG0	294.4
167	GoLc2	2	u	fl	0	1Cv	S0	3(8)M5(2)W	B0	3S3-N	1	1	W1K	SG0	471.8
168	LLBL2	2	H	o	0	4Cwi	S0	O(10)	X3	6F6-N,3B3-N	U	U	U	U	370.8
169	CrPn2	2-3	u	sl-ls	0	3Dmv	S0	3(5)M4(2)M5(3)MW	B0	2C1-N,1S1-N	2	1	W1B	S4	1958.1
170	LL5	1	H	o	0	4Cwi	S0	6(10)W	X1	6B6-N	U	U	W0	U	293.0
171	Aw1	1	l	sl-l	0	4Dwv	S0	5(10)W	D0	5B4-N,4C4-N	1	1	W0	U	383.1
172	Sm1	3	u	sl-ls	0	4Dmv	S2	4(8)MF5(2)MF	B0	N	2	2	W1B	SG1	265.1
173	Mw6	1	l	sl	0	4Cwi	S0	5(9)W7(1)W	D3	6F6-N,2O2-N	1	1	W0	S4	282.2
174	PnCr4TC	2-3	u	sl-ls	0	3Dgv	S0	5(7)MW3(3)M	A2	2C2-N	4	1	W2B	S4	3034.5
175	Cr1C	2	u	sl	0	4Ag	S0	3(10)M	B0	1C1-N	2	1	W1B	S4	731.9
176	Pw4	3-2	u	l-sl	0	1Bvt1p	S2	3(9)MP5(1)W	C5	2C1-N,1S1-N	1	2	W1K	SG0	610.0
177	Ky1	2	u	cl	0	2Bqv	S1	1(10)	B0	1S1-N,1C1-N	1	2	W0	SG0	662.8
178	SyCr1C	2	u	sl	0	4Ag	S0	4(6)M3(4)M	A0	1S1-N,1C1-N	2	2	W2B	S4	912.2
179	AwBL1	1	l	sl-o	0	4Dwv	S0	5(6)W6(4)W	D1	5B6-N,4F4-N	1	1	W0	U	1099.6
180	We4	2	u	sicl	0	2Cqv	S0	2(8)X5(2)W	D3	3S2-N	1	2	W0	SG0	65.7
181	Aw1	1	l	l	0	4Dwv	S0	6(10)W	D0	6B6-N	1	1	W0	U	93.5
182	SmPp1	3	u	s-sil	0	4Dmv	S0	4(4)MF3(3)D5(3)MW	A0	3S2-N,3C2-N	4	1	W1K	SG0	767.7
183	Go1S	2	u	l	0	1A	S0	2(9)M5(1)M	B0	1C1-N	1	1	W1K	S3	261.3
184	PnPp2	3-4	hd	s-cl	0	4Dmv	S0	6(5)MF5(2)W3(3)D	A0	3F2-N	4	1D	W0	S3	34.9
185	PnPp2	3-4	hd	s-cl	0	4Dmv	S0	6(5)MF5(2)W3(3)D	A0	3F2-N	4	1D	W0	S3	6.5
186	LL15	1	H	o	0	4Cwi	S0	O(10)	X1	6F6-N,2B3-N	U	U	W0	U	307.6
187	Rw	3-5	hc	s-cl	0	4Dct2	S0	5(8)TW7(2)W	D1	3S3-N,2O2-N	4	4	W0	S2	408.1
188	PpSy3	2	u	l-sl	0	2Bdv	S0	3(7)D4(3)M	B0	1S2-N,1C1-N	1	1	W2B	S2	1110.3
189	CrPn4C	2-3	u	sl-ls	0	4Bgt1v	S0	3(5)M4(2)M5(3)MF	B0	1C1-N	2	1	W2B	S4	1817.7
190	Ga6	2	u	l	0	2Bdv	S0	2(5)D3(5)D	C5	1C1-N	1	1	W1K	SG0	554.5
191	CrPn4C	2-3	u	sl-ls	0	4Bgt1v	S0	3(5)M4(2)M5(3)MF	B0	1C1-N	2	1	W2B	S4	1103.0
192	Pp7	2	u	cl-l	0	2Cdqv	S0	3(8)D5(2)W	C5	3C2-N,2S2-N	1	1	W1K	SG0	3278.1
193	Mw6	2	u	l	0	4Cwi	S2	5(10)W	D3	6S6-N	1	1	U	SG0	122.6
194	Aw1	1	l	sl-l	0	4Dwv	S0	5(10)W	D0	6B6-N,3C3-N	1	1	W0	U	246.7
195	Cr1TC	2-3	u	sl	0	3Bgvt1	S1	3(9)M5(1)W	B0	2S2-N,1C1-N	2	1	W1B	S4	2762.6
196	Wz2	1	l	U	0	4Cwi	U	6(10)W	U	6E6-N	U	U	U	S4	172.7
197	We1	1	l	sicl	0	2Aq	S0	1(10)	D3	1S1-N	1	1	W0	SG0	214.5
198	Go1CL	2-1	u	l	0	3Bgv	S0	2(9)M5(1)W	B0	2C2-N,1S1-N	1	2	W1K	SG0	1514.5
199	CrPn4	2-3	u	sl-ls	0	3Bmvt1	S0	3(6)M4(1)W5(3)MF	B0	2C1-N	2	1	W2B	S4	158.7
200	CrPn4	2-3	u	sl-ls	0	3Bmvt1	S0	3(6)M4(1)W5(3)MF	B0	2C1-N	2	1	W2B	S4	913.8
201	GoWe3	2-3	u	fl-l	0	1Bt1	S0	3(4)M1(3)2(3)M	C1	1C2-N	1	1	W1K	SG0	1119.3
202	Rw	2-3	ud	sl-cl	0	4Dct2	S2	6(8)W2(2)T	D1	5S2-N,2C2-N	1	3D	W1K	S4	581.9
203	Mw6	1-2	u	l	0	4Cwi	S0	4(10)W	D3	6C6-N	1	1	W0	SG0	99.8
204	CrSy3C	2-3	u	sl-ls	0	4Dgv	S0	3(4)M4(3)M5(3)MW	B0	2C2-N	2	1	W2B	S4	917.9
205	WePp3C	2-1	u	cl-l	0	2Bdqv	S0	1(6)2(4)D	B0	1C1-N	1	1	W0	SG0	1727.0

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
206	Sm1	2-3	u	sl	0	4Dmv	S2	4(10)MF	B0	N	1	1	W1K	SG1	271.9
207	Ky1	2-1	u	cl	0	2Bqv	S0	1(9)5(1)W	B0	2C1-N,1S2-N	1	2	W0	SG0	390.6
208	Mw6	1	l	sicl	0	4Cwi	S0	4(6)W5(4)W	D3	6C6-N	1	1	W0	SG0	118.3
209	Ga3	2	u	l	0	2Bdv	S1	3(10)D	B0	1S2-N	1	2	W1K	SG0	866.8
210	CrPn4	2	u	sl-s	0	3Cmv	S0	3(4)M4(2)M5(4)MF	B0	1S2-N,1C2-N	2	1	W2B	S4	5893.3
211	Ga5	2	u	cl	0	2Cdqv	S0	2(6)D3(2)D5(2)W	B0	3S1-N,2C1-N	1	2	W0	SG0	253.4
212	Ga1	3-2	u	cl	0	2Bqdt1	S1	3(10)D	B0	1C1-N	1	2	W1K	SG0	951.4
213	Ga5	2-3	u	l-cl	0	2Cdv	S1	2(6)D3(2)D5(2)W	B0	3C1-N,2S1-N	1	1	W1K	SG0	786.1
214	LcSy8C	2-3	u	l-ls	0	3Dgv	S0	3(4)M4(3)M5(3)MW	B0	2C1-N	1	1	W1B	S2	971.9
215	Go1C	2	u	fl-vl	0	3Bgv	S0	3(6)M2(3)M5(1)W	B0	2C1-N,1S2-N	1	1	W1K	SG0	988.3
216	Go1C	2	u	fl-vl	0	3Bgv	S0	3(6)M2(3)M5(1)W	B0	2C1-N,1S2-N	1	1	W1K	SG0	210.1
217	GoPn1	2-3	u	l-s	0	1Dv	S0	3(5)M2(2)M6(3)MW	B0	2C2-N,1S2-N	2	1	W2B	S2	2103.6
218	Go1C	2	u	fl-l	0	3Ag	S0	3(5)M2(3)M1(2)	B0	1C1-N	1	1	W1K	SG0	465.8
219	KyGa1	2-1	u	cl-l	0	2Bdqv	S1	1(6)2(4)D	B0	1C1-N	1	1	W0	SG0	529.7
220	Lc1T	3	u	fl	0	2Bdgt1	S1	3(10)M	B0	N	1	2	W1K	SG0	287.1
221	Lc9C	2	ud	fl-vl	0	3Ag	S0	3(10)M	B0	1C1-N	1	2D	W1G	SG0	1326.6
222	Pn9	2-3	u	ls	0	3Cmv	S0	5(8)MF6(2)W	A0	3S2-N	4	1	W2B	S4	681.5
223	NtCr1CL	2-3	u	ls-sl	0	3Bmgv	S0	4(5)M3(4)M5(1)W	B0	1S1-N,1C1-N	2	1	W2B	S4	419.1
224	Cr1	2-3	u	sl	0	2Bmt1	S0	3(10)M	B0	1S1-N	2	1	W1B	S4	274.3
225	Ga1	3-2	u	l	0	2Bdt1v	S1	3(10)D	B0	1C1-N	1	2	W1K	SG0	374.5
226	Sm1	2-3	u	sl	0	4Dmv	S2	4(10)MF	B0	N	1	1	W1B	SG1	345.9
227	Cr1	3	u	sl	0	2Bmt1	S0	3(10)M	B0	1C1-N	2	2	W1B	S4	358.5
228	Rw	2-3	ud	l-sl	0	4Dct2	S2	5(8)W3(2)T	D1	4S3-N,4E2-N	1	3D	U	SG0	365.1
229	Sm1	2-3	u	sl	0	4Dmv	S2	4(10)MF	B0	N	1	1	W1B	SG1	143.7
230	CrSy2TC	2-3	u	sl-ls	0	3Dgv	S1	3(5)M4(2)M5(3)MW	B0	3C1-N	2	1	W1B	S4	987.0
231	GoCr3CL	2-3	u	l-ls	0	3Dgv	S0	2(4)M3(3)M4(3)MW	D1	2S2-N,2C2-N	1	1	W1B	S2	387.0
232	Ga6	3-2	ur	l-cl	0	2Bdt1v	S1	3(6)D2(4)D	C5	N	1	2	W1K	SG0	609.9
233	WeGo1	2	u	cl-l	0	2Bqv	S0	2(9)X5(1)W	C1	2C2-N	1	1	W0	SG0	535.0
234	WeGo1	2	u	cl-l	0	2Bqv	S0	2(9)X5(1)W	C1	2C2-N	1	1	W0	SG0	1265.5
235	SyPn6C	2-3	u	sl-ls	0	3Bmgt1	S0	4(6)MF5(4)MF	A0	1C2-N	2	1	W2B	S4	2265.9
236	CrPn3	3-2	u	sl-s	0	3Cmv	S0	3(6)M4(2)W5(2)MF	A0	3C2-N	2	2	W2B	S4	1207.0
237	Aw1	2	u	l-sl	0	4Dwv	S0	6(7)W5(3)W	D0	6B6-N,2C2-N	1	1	W0	U	101.6
238	Aw1	2	u	l-sl	0	4Dwv	S0	6(7)W5(3)W	D0	6B6-N,2C2-N	1	1	W0	U	99.3
239	Lc1	3	ud	sl	0	2Bmdt1	S0	3(10)M	B0	1C1-N	1	2D	W1G	SG0	134.8
240	Lc1	3	ud	sl	0	2Bmdt1	S0	3(10)M	B0	1C1-N	1	2D	W1G	SG0	427.9
241	Rw	3	ud	sl	0	4Dct2	S0	6(8)W2(2)T	D1	2E2-N	1	3D	W1K	SG0	73.1
242	SyNt7	3-2	u	fl-ls	0	2Ddmv	S0	4(7)M5(3)MW	A0	2C2-N	2	2	W2B	S4	33.0
243	SyNt7	3-2	u	fl-ls	0	2Ddmv	S0	4(7)M5(3)MW	A0	2C2-N	2	2	W2B	S4	1225.3
244	LcPn1	3	ud	sl-s	0	2Cdmv	S0	3(7)M5(3)MF	B0	1C1-N	2	2D	W1B	S2	541.1
245	BL23	1	H	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	W0	U	97.0
246	LcPn2	3	u	sl-s	0	2Cdmv	S0	3(5)M5(3)MF6(2)W	B0	3S2-N,2C1-N	2	2	W1B	S2	320.6
247	Rw	3-5	hc	l-si	0	4Dct2	S0	6(8)W3(2)M	D1	4E3-N,2C2-N	1	4	W1K	S4	2691.8
248	Cr1	2	u	sl	0	2Am	S0	3(10)M	B0	1C1-N	2	1	W1B	S4	541.2
249	WeSy1	2-3	u	cl-sl	0	2Cqv	S0	2(7)X4(3)M	B0	1C1-N	1	1	W1B	S2	636.4
250	SyLc1	2-3	u	ls-fl	0	3Cmv	S0	4(5)M3(3)M5(2)MF	B0	1C1-N	2	1	W1B	S3	585.0
251	We1	3	u	l	0	1Bt1	S0	2(10)X	D3	1C1-N	1	2	W1K	SG0	157.0
252	Go5T	2	u	sl	0	2Cgmv	S1	3(8)M4(2)W	B0	3C2-N	1	1	W0	SG0	126.0
253	Sm1	2-3	ur	sl	0	4Dmv	S1	4(10)MF	B0	N	1	1	W1K	SG1	388.6
254	SbLc3	2-3	ud	l-fl	0	1Bt1	S0	2(5)M3(5)M	B0	1C1-N	1	1D	W1K	SG0	1682.5
255	KyGa1	2-1	u	cl	0	2Bdqv	S1	1(7)2(3)D	B0	N	1	1	W0	SG0	411.0
256	KaPp7C	2-1	u	cl-l	0	2Bgqv	S0	1(8)2(2)D	B0	1C1-N	1	2	W0	SG0	3977.3
257	LcSy6C	2-3	u	l-ls	0	3Cgv	S0	3(5)M4(3)MF5(2)WM	B0	2C2-N	1	1	W2B	S2	890.5
258	LcSy6C	2-3	u	l-ls	0	3Cgv	S0	3(5)M4(3)MF5(2)WM	B0	2C2-N	1	1	W2B	S2	174.5
259	Sy1C	3	u	ls	0	4Bgt1	S0	4(10)MF	A0	N	2	1	W1B	S4	447.5
260	Av5	2	uc	vl	0	4Dwv	S0	5(7)W4(3)W	D3	5S3-N,3C3-N	1	2	W1K	S2	294.0
261	LcSy5	3	u	fl-ls	0	2Cdv	S0	3(5)M4(3)M5(2)MF	B0	1S1-N	2	2	W2B	S2	1020.4
262	LLBL47	1	H	o	0	4Cwi	S0	O(10)	X3	5B3-N,4F3-N	U	U	U	U	44.4
263	PnLc3	3	u	s-sl	0	4Cmv	S0	5(6)MF3(4)M	A0	1S1-N,1C1-N	4	1	W1K	S3	368.0
264	Mw6	2	u	l	0	4Cwi	S0	6(6)W4(4)W	D3	5C4-N,5S4-N	1	1	W0	SG0	149.3
265	We1	2	ud	l	0	1A	S0	2(10)X	D3	1C1-N	1	1D	W1G	SG0	568.5
266	We1	2	u	l	0	1A	S0	2(10)X	D3	1C1-N	1	1	W0	SG0	427.8
267	Rw	3-4	uid	l-sl	0	4Dct2	S0	3(8)MT5(2)W	D1	4S1-N	1	3D	W1KG	SG0	101.0
268	We1	2	ud	l	0	1A	S0	2(10)X	D3	1C1-N	1	1D	W1G	SG0	830.7
269	BL22	1	R	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	28.0
270	Lc1	3	u	fl	0	2Bdt1	S0	3(10)M	B0	N	1	2	U	SG0	37.1
271	BL22	1	R	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	7.8
272	BL22	1	R	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	69.4
273	GoSb1	2-3	u	l-sl	0	1Bvt1	S0	2(5)M3(4)M5(1)W	B0	2S2-N	1	1	W1K	SG0	2752.4
274	Mw6	1	l	l	0	4Cwi	S0	6(8)W4(2)W	D3	6S6-N,2P3-N	1	1	W0	SG0	252.3
275	We1	2	u	l	0	1Bv	S0	2(9)X5(1)W	D3	2C1-N,1S2-N	1	1	W0	SG0	564.4

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
276	BL22	1	R	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	176.9
277	Gertrude Lake									6L6-N					72.3
278	WeGo2	3-2	u	l-fl	0	1Cv	S0	2(5)X3(3)M5(2)W	D1	4S3-N	1	2	W0	SG0	567.6
279	LcSb4	2-3	u	fl	0	2Bdt1	S0	3(10)M	C1	1C1-N	1	1	W0	SG0	1141.2
280	NtGb1	3	ud	sl	0	2Bmt1	S0	3(10)M	B0	N	2	2D	W1B	SG4	89.3
281	NtGb1	3	ud	sl	0	2Bmt1	S0	3(10)M	B0	N	2	2D	W1B	SG4	147.6
282	NtGb1	3	ud	sl	0	2Bmt1	S0	3(10)M	B0	N	2	2D	W1B	SG4	274.9
283	LcSb4	2-3	ud	fl	0	2Bdt1	S0	3(10)M	C1	1C1-N	1	1D	W0	SG0	690.8
284	LcSb4	2-3	ud	fl	0	2Bdt1	S0	3(10)M	C1	1C1-N	1	1D	W0	SG0	242.6
285	KyGa1	2-1	u	cl-l	0	2Bdqv	S1	1(6)2(4)D	B0	1C1-N	1	1	W0	SG0	1122.2
286	Ka6C	2-1	u	cl	0	2Agq	S0	1(10)	B0	1C1-N	1	1	W0	SG0	429.7
287	Ka6C	2-1	u	cl	0	2Agq	S0	1(10)	B0	1C1-N	1	1	W0	SG0	6119.2
288	Rw	3-4	uid	l-sl	0	4Dct2	S0	3(8)MT5(2)W	D1	4S1-N	1	3D	W1KG	SG0	248.9
289	Ti7	2	u	c-sicl	0	3Bqv	S0	1(10)	C1	1C1-N	1	1	W0	SG0	603.6
290	KyGa1	2	u	cl-l	0	2Bdqv	S1	1(6)2(4)D	B0	1C1-N	1	1	W0	SG0	1652.5
291	Ga4	3	u	l	0	2Bdt1v	S1	3(8)D2(2)D	B0	1S1-N	1	2	W1K	SG0	493.3
292	KaPp7	2	u	l-cl	0	2Bdv	S0	1(6)2(4)D	B0	1C1-N	1	1	W0	SG0	3340.2
293	Go1T	2-1	u	l-fl	0	2Ag	S2	2(6)M3(4)M	B0	1C1-N	1	1	W0	SG0	1924.0
294	KyGa1	2-1	u	cl-l	0	2Bdqv	S1	1(6)2(4)D	B0	1C1-N	1	1	W0	SG0	4299.1
295	KaPp7C	2-1	u	cl-l	0	2Bgqv	S0	1(8)2(2)D	B0	1C1-N	1	2	W0	SG0	73.2
296	CrPn4	3-2	u	sl-s	0	3Cmv	S0	3(4)M4(2)M5(4)MF	B0	1S1-N	2	2	W2B	S4	867.7
297	Ga5	2	u	l	0	2Cdv	S1	2(4)D3(4)D5(2)W	B0	2C6-N,2C2-N	1	1	W0	SG0	2044.7
298	Go1T	2-1	u	l-fl	0	2Ag	S2	2(6)M3(4)M	B0	1C1-N	1	1	W0	SG0	1249.0
299	CrSy1	2-3	u	sl	0	2Bmt1	S1	3(6)M4(4)M	B0	2C1-N	2	1	W0	S4	751.5
300	Wz1	1	l	U	0	4Cwi	U	5(10)W	U	6S6-N	U	U	U	SG0	86.6
301	PpKa5	2	u	sil-cl	0	2Cdv	S0	2(5)D1(3)5(2)W	B0	3S2-N	1	2	W1K	SG0	2541.9
302	LcGo2	2-3	u	fl-vl	0	2Cdv	S0	3(5)M2(3)M5(2)W	B0	2C2-N,2S2-N	1	1	W1B	SG0	2346.4
303	Rw	4-3	hd	l	0	4Dct2	S0	5(6)W4(4)TE	D1	5S3-N	1	3D	W1G	SG0	627.1
304	We2	1-2	u	sil	0	1Dv	S0	3(10)W	D1	5C4-N	1	1	W0	SG0	734.0
305	Aw1	2	u	sil	0	4Dwv	S0	5(10)W	D0	6W6-N	1	1	U	U	271.3
306	PpKa5C	2-1	u	l-cl	0	2Cdv	S0	2(5)D1(3)5(2)W	C5	2C2-N,2S2-N	1	1	W1B	SG0	10911.2
307	SyCr1	2	ud	sl	0	2Adm	S0	4(7)M3(3)M	A0	2S2-N	2	1D	W1K	S4	78.2
308	SyCr1	2	ud	sl	0	2Adm	S0	4(7)M3(3)M	A0	2S2-N	2	1D	W1K	S4	412.8
309	WeGo2	2	ud	cl-sl	0	2Cqv	S0	2(5)X3(3)M5(2)W	D1	2O2-N,2C2-N	1	1D	W0	SG0	2213.9
310	WeGo2	2	ud	cl-sl	0	2Cqv	S0	2(5)X3(3)M5(2)W	D1	2O2-N,2C2-N	1	1D	W0	SG0	377.2
311	AwBL2	2	u	sl-l	0	4Dwv	S0	5(6)WO(4)	D1	6F6-N	1	1	U	U	847.9
312	Kelsey Lake									6L6-N					317.4
313	PnBt3	4-5	h	s-ls	0	4Cmt2v	S1	5(10)MF	A0	2F3-N	4	1	U	S3	2705.5
314	PpCr2	2-3	u	sil-sl	0	2Cdv	S0	3(8)MD5(2)W	B0	2S1-N,2B3-N	1	2	W0	S2	2452.9
315	PpCr2	2-3	u	sil-sl	0	2Cdv	S0	3(8)MD5(2)W	B0	2S1-N,2B3-N	1	2	W0	S2	338.2
316	Smallwood Lake									6L6-N					155.3
317	BLLL4	1	H	o	0	4Cwi	S0	O(10)	D0	6F6-N,4B4-N	U	U	U	U	89.1
318	BLLL4	1	H	o	0	4Cwi	S0	O(10)	D0	6F6-N,4B4-N	U	U	U	U	1134.2
319	Aw1	2	u	sl	0	4Dwv	S0	5(10)W	D0	6B6-N	1	1	U	U	213.5
320	CrPn4	3	u	sl-s	0	3Cmv	S0	3(5)M5(5)MF	B0	2S2-N	2	2	W1B	S4	3686.5
321	PnBt3	4-5	h	s-ls	0	4Cmt2v	S1	5(10)MF	A0	2F3-N	4	1	U	S3	591.3
322	PnLc1CL	3	u	s-sl	0	4Cmv	S0	5(6)MF3(4)M	A0	N	4	1	W1B	S3	1072.7
323	Rw	3	hd	l-sl	0	4Dct2	S0	6(10)W	D1	6F6-N	1	3D	U	S2	419.6
324	PpSy3	3	ud	sil-sl	0	2Bdvt1	S1	3(6)M4(3)M5(1)W	B0	2B3-N	1	2D	W0	S2	546.0
325	PpSy3	3	ud	sil-sl	0	2Bdvt1	S1	3(6)M4(3)M5(1)W	B0	2B3-N	1	2D	W0	S2	2491.8
326	PnPp5	3	ud	ls-l	0	3Cgmv	S2	5(6)MF6(2)W3(2)D	A0	2C1-N,2S2-N	4	1D	W1G	S3	1886.0
327	BtPn27	4-3	ur	sl-ls	0	3Bgt1v	S0	4(6)MF5(4)MF	A0	2S1-N	2	2	W0	S2	1489.8
328	Aw1	2	u	l-sl	0	4Dwv	S1	5(10)W	D0	6F6-N	1	1	U	U	288.8
329	PnPp5	3	ud	ls-l	0	3Cgmv	S2	5(6)MF6(2)W3(2)D	A0	2C1-N,2S2-N	4	1D	W1G	S3	71.5
330	PnPp5	3	ud	ls-l	0	3Cgmv	S2	5(6)MF6(2)W3(2)D	A0	2C1-N,2S2-N	4	1D	W1G	S3	721.1
331	Rw	4-3	hd	ls-l	0	4Dct2	S2	5(10)MW	D1	4S3-N	2	3D	U	S3	101.5
332	Aw1	2	u	l-ls	0	4Dwv	S0	5(10)W	D0	6F6-N	1	1	U	U	1369.1
333	PpSy3	2-3	u	sil-sl	0	2Bdt1v	S0	3(7)D4(3)M	B0	2S3-N	1	2	W1B	S2	521.7
334	PnPp2	3	u	ls-sil	0	3Cgmv	S0	5(5)MF6(2)W3(3)D	A0	3B3-N	4	1	U	S3	1062.1
335	LL16	1	H	o	0	4Cwi	S0	O(10)	X1	6B6-N	U	U	U	U	51.0
336	PpPn2	3	u	sil-s	0	2Ddv	S0	3(7)D5(3)MF	B0	2S3-N	2	2	W1B	S2	3053.4
337	CrGo3	2	u	sl-fl	0	2Bmv	S0	3(10)M	D2	N	2	1	W1B	S3	1206.0
338	Mw6	1	l	sl-cl	0	4Cwi	S0	3(9)W5(1)W	D3	6C6-N	1	1	W0	S4	515.5
339	PnPp2	3	u	ls-sil	0	3Cgmv	S0	5(5)MF6(2)W3(3)D	A0	3B3-N	4	1	U	S3	502.8
340	PnLc7	3	ud	ls-vl	0	3Cmv	S0	5(6)MF3(4)M	A0	2O3-N	4	1D	U	S3	2491.5
341	PnLc7	3	ud	ls-vl	0	3Cmv	S0	5(6)MF3(4)M	A0	2O3-N	4	1D	U	S3	4.7
342	LcPn3	2-3	ud	vl-ls	0	2Cdv	S0	3(6)M5(4)MF	B0	1C1-N	2	2D	W0	S2	664.9
343	CrPn4	2-3	u	sl-s	0	3Cmv	S0	3(5)M4(2)M5(3)MF	B0	1C1-N	2	1	W2B	S4	3578.9
344	Cr2	2-3	u	ls-sl	0	3Bmt1v	S0	4(6)M3(4)M	C5	1C2-N	2	1	W2B	S4	860.5
345	Np3	2	u	l-cl	0	3Bgv	S0	1(10)	D1	1C2-N	1	1	W0	S4	1532.6

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
346	LcWf1	2-3	ud	fl	0	3Bgt1	S0	3(10)M	C5	1C2-N	1	2D	W1K	S1	1941.9
347	Wf3	2-1	u	l	0	3Ag	S0	2(10)M	B0	2C2-N	1	2	W0	S1	1320.4
348	PpSy3	2-3	u	sil-sl	0	2Bdt1v	S0	3(7)D4(3)M	B0	2S3-N	1	2	W1B	S2	619.4
349	PpSy3	2-3	u	sil-sl	0	2Bdt1v	S0	3(7)D4(3)M	B0	2S3-N	1	2	W1B	S2	512.6
350	Ga5	3-4	ud	sil	0	2Cdv	S1	2(8)D5(2)W	B0	3C1-N,1S1-N	1	2D	W2K	SG0	387.8
351	BtPn27	4-3	h	sl-ls	0	3Cgt2	S1	4(6)MF5(4)MF	A0	1S1-N	2	2	W0	S2	1261.5
352	PpLc3	2-3	ud	sil-vl	0	2Bdt1	S0	2(7)D3(3)M	C1	1C1-N,1S1-N	1	2D	W1G	SG0	756.3
353	BtPn3	5-6	hig	sl-s	0	3Dgt2	S1	5(7)MF4(3)MF	A0	N	2	3G	U	S2	390.7
354	LcSy4C	4-3	ud	sl	0	3Bgt1	S0	3(8)M4(2)M	B0	2C2-N	2	3D	W1B	S2	2158.4
355	Pp2	3-2	ud	sil	0	2Bdt1v	S0	3(7)D2(3)D	C5	1S1-N	1	2D	W1K	SG0	939.7
356	LcSy4C	4-3	ud	sl	0	3Bgt1	S0	3(8)M4(2)M	B0	2C2-N	2	3D	W1B	S2	191.2
357	PnCr4	3-4	u	s-sl	0	4Cmv	S0	5(5)MF6(2)W3(3)M	A2	3F3-N	4	1	W1B	S4	30.8
358	PnCr4	3-4	u	s-sl	0	4Cmv	S0	5(5)MF6(2)W3(3)M	A2	3F3-N	4	1	W1B	S4	327.5
359	PnCr4	3-4	u	s-sl	0	4Cmv	S0	5(5)MF6(2)W3(3)M	A2	3F3-N	4	1	W1B	S4	719.6
360	WeGo1	2-3	u	l	0	1Bt1	S0	2(10)X	C1	2C1-N	1	1	W1G	SG0	498.5
361	GoLc1	2-3	u	fl	0	1Bt1	S0	3(10)M	B0	2S2-N	1	1	W1K	SG0	3876.7
362	GaKy2	2	u	l-cl	0	2Cdv	S1	2(8)D5(2)W	C1	2S3-N,2C1-N	1	1	W0	SG0	4403.5
363	Rw	3-4	hd	l-cl	0	4Dct2	S2	3(6)T5(4)W	D1	4S3-N	1	3D	U	SG0	309.8
364	Ga5	2	ud	sil	0	2Cdv	S1	2(4)D3(4)D5(2)W	B0	2S2-N,2C2-N	1	2D	W1G	SG0	405.9
365	Ga3	2-3	ud	sil	0	2Bdt1v	S0	3(10)D	B0	N	1	2D	W1G	SG0	501.9
366	WvWh5	2-3	u	l	0	2Cdv	S1	3(5)D2(3)M5(2)W	C1	2S2-N,2C1-N	1	1	W1K	SG0	1758.7
367	GaWv2	3-2	u	l-cl	0	2Cdv	S1	3(8)D5(2)W	C1	3C2-N,2S2-N	1	2	W1K	SG0	7124.1
368	GaKy3	2-3	u	l-cl	0	2Bdt1v	S1	3(6)MD2(4)D	B0	2S2-N,1C1-N	1	1	W1K	SG0	1127.6
369	GoWe3	2-3	u	fl-l	0	1Bt1	S0	3(6)M2(4)M	C1	1C1-N	1	1	W0	SG0	472.9
370	GoWe3	2-3	u	fl-l	0	1Bt1	S0	3(6)M2(4)M	C1	1C1-N	1	1	W0	SG0	150.8
371	HwAv1	4-7	hg	cl-ls	0	4Dct2	S2	6(7)TW3(3)MD	D1	3S3-N,2O2-N	2	5G	W1K	SG0	2058.4
372	We7	2-3	ud	cl	0	2Bqt1	S0	1(10)	C5	1C1-N	1	1D	W0	SG0	980.7
373	We7	2-3	ud	cl	0	2Bqt1	S0	1(10)	C5	1C1-N	1	1D	W0	SG0	1963.9
374	Rw	3-4	hd	cl	0	4Dct2	S0	3(5)T5(5)W	D1	5S2-N	1	3D	W1G	SG0	129.2
375	BL22	1	O	o	0	4Cwi	S0	O(10)	D1	6F6-N,2P2-N	U	U	U	U	74.0
376	Lc1	3-2	u	fl	0	2Bdvt1	S0	3(9)M4(1)W	C1	2C1-N	1	2	W1K	SG0	433.0
377	BL21	1	H	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	78.9
378	BL21	1	H	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	55.2
379	Lc3	3-2	u	fl	0	2Bdt1	S0	3(10)M	C1	2C1-N	1	2	W1K	SG0	315.7
380	Go5	3	u	fl	0	1Dv	S0	3(7)M5(3)W	C1	4S2-N	1	2	W0	SG0	50.3
381	Go5	3	u	fl	0	1Dv	S0	3(7)M5(3)W	C1	4S2-N	1	2	W0	SG0	892.3
382	GaKy1	2-1	u	l-cl	0	2Bdv	S1	2(6)D1(4)	C5	1C1-N	1	1	W0	SG0	1607.1
383	Go3	3-2	ud	vl	0	1Bt1	S0	2(10)M	D3	1C1-N	1	2D	W1G	SG0	841.2
384	LcSb4	3-2	u	fl	0	2Bdt1	S0	3(10)M	C1	1C1-N	1	2	W0	SG0	454.6
385	LcSb4	3-2	u	fl	0	2Bdt1	S0	3(10)M	C1	1C1-N	1	2	W0	SG0	879.9
386	Go3	4	hd	vl	0	1Ct2	S0	3(10)T	D3	1C1-N	2	3D	W1K	SG0	155.6
387	Rw	4-3	hd	l	0	4Dct2	S0	5(6)W4(4)TE	D1	5S3-N	1	3D	W1G	SG0	347.6
388	Industrial Site														156.4
389	Av44	2-3	t	sl-cl	0	2Cmvp	S2	3(7)M2(3)X	D1	1B1-N	1	1	W1K	G4	268.1
390	NtCr1CL	2	u	sl	0	3Ag	S0	3(10)M	B0	1C1-N	2	2	W1B	S4	367.7
391	Kk1	2-3	t	gs-sl	0	4Cmvp	S2	5(9)MF6(1)W	A0	2B2-N,2W3-N	2	1	U	G4	401.8
392	Av43G	2	t	ls	0	3Cmp	S2	5(10)MF	A0	N	2	1	U	G4	134.5
393	LcPn2	3	u	sl-s	0	2Cdmv	S0	3(6)M5(2)M6(2)W	B0	3S2-N	2	2	U	S2	9.1
394	LL5	1	H	o	0	4Cwi	S0	O(10)	X1	6B6-N	U	U	U	U	670.3
395	Wf1	3	u	fl	0	3Bgt1	S0	3(10)M	B0	N	1	2	W1K	S1	256.6
396	PnNt1	3-2	t	ls	0	3Bmt2	S0	5(6)MF4(4)M	A0	N	4	1	W1B	S4	286.7
397	We5	2	u	cl	0	2Cqv	S0	1(8)3(2)W	D1	3C1-N	1	1	W1K	SG0	2291.9
398	LcPp7	3-5	ud	vl-cl	0	2Ddv	S0	3(5)MD2(2)D4(3)TW	B0	2C2-N	1	3D	W3G	SG0	1448.0
399	Rw	4-6	hg	sl-l	0	4Dct2	S2	4(3)T3(2)T5(5)TW	D1	2S2-N,2C1-N	1	5G	W3G	SG0	174.4
400	Np1	2-3	u	sil-vl	0	3Bgvt1	S0	2(9)X3(1)W	B0	2C1-N	1	2	W1K	S4	596.5
401	Lc2	2-3	ud	fl-vl	0	2Bdvt1	S0	3(9)M5(1)W	B0	2C1-N	1	1D	W2G	SG0	776.5
402	Lc2	3-4	ud	fl	0	2Bdt1	S0	3(10)M	B0	1C2-N	1	2D	W3G	SG0	628.9
403	Hw	6-7	hig	ls-l	0	4Dct2	S2	6(10)T	D1	N	2	5G	W3G	SG0	1100.3
404	Lc4	4-6	hg	fl-vl	0	2Ddt2	S0	3(4)M4(3)T5(3)T	B0	1S2-N,1C1-N	2	4G	W3G	SG0	1370.1
405	Lc4	4-6	hg	fl-vl	0	2Ddt2	S0	3(4)M4(3)T5(3)T	B0	1S2-N,1C1-N	2	4G	W3G	SG0	66.4
406	SyLc1CL	3-4	ud	ls-fl	0	3Cgmv	S0	4(5)M3(3)M5(2)MF	B0	1B2-N	2	1D	W2K	S3	978.2
407	SyLc1CL	3-4	ud	ls-fl	0	3Cgmv	S0	4(5)M3(3)M5(2)MF	B0	1B2-N	2	1D	W2K	S3	227.7
408	LL9	1	H	o	0	4Cwi	S0	O(10)	X1	6B6-N,2F3-N	U	U	U	U	483.3
409	LcPp1	5-6	hd	fl-l	0	2Ddt2	S0	4(6)T5(4)T	B0	N	2	4D	W2G	SG0	117.2
410	LcPp1	3-4	ud	fl-l	0	2Bdt1	S0	3(10)MD	B0	1F1-N	1	2D	W1G	SG0	210.5
411	LL4	1	H	o	0	4Cwi	S0	O(10)	X3	6B6-N	U	U	U	U	94.2
412	Lc1	4-3	hd	fl	0	2Cdt2	S0	3(10)M	B0	N	2	3D	W1G	SG0	85.2
413	Lc1	3-5	ud	fl	0	2Cdt1	S0	3(8)M4(2)T	B0	1S2-N	1	3D	W2G	SG0	308.2
414	Pn1	3	u	ls	0	3Bmt1	S0	5(10)MF	A0	N	4	1	W2B	S4	328.6
415	LcSy5	3-4	hd	fl-ls	0	2Cdt2v	S0	3(6)M4(3)M5(1)W	B0	2S2-N	2	2D	W2K	S2	173.8

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
416	LL5	1	H	o	0	4Cwi	S0	O(10)	X1	6B6-N	U	U	U	U	174.9
417	LcSy5	4-5	hd	fl-sl	0	2Cdt2	S0	3(5)M4(5)MT	B0	1S1-N	2	2D	W2G	S2	294.1
418	LcSy5	4-5	hd	fl-sl	0	2Cdt2	S0	3(5)M4(5)MT	B0	1S1-N	2	2D	W2G	S2	249.0
419	RwLL1	3-6	hg	l-o	0	4Dct2	S2	5(7)T6(3)W	D1	4E3-N	1	4G	W2G	SG0	565.5
420	Lc1	3-4	ud	fl	0	2Bdt1	S0	3(10)M	B0	1C1-N	1	2D	W1G	SG0	161.0
421	Lc1	3-4	ud	fl	0	2Bdt1	S0	3(10)M	B0	1C1-N	1	2D	W1G	SG0	80.1
422	Lc1	3-4	ud	fl	0	2Bdt1	S0	3(10)M	B0	1C1-N	1	2D	W1G	SG0	80.2
423	GoLc1	2-3	ud	l-fl	0	1Bt1	S0	2(5)M3(5)M	B0	1S2-N	1	1D	W1K	SG0	663.4
424	NtPn1	3	h	sl-ls	0	3Dmv	S0	3(4)M4(3)M5(3)MW	A0	2S2-N,2C1-N	2	2	W2B	S4	593.0
425	NtPn1	3	h	sl-ls	0	3Dmv	S0	3(4)M4(3)M5(3)MW	A0	2S2-N,2C1-N	2	2	W2B	S4	458.1
426	WeGa3	2	ud	sil-cl	0	2Bdv	S0	1(6)2(4)D	C1	1S2-N	1	1D	W2G	SG0	962.0
427	WeGa3	2	ud	sil-cl	0	2Bdv	S0	1(6)2(4)D	C1	1S2-N	1	1D	W2G	SG0	651.7
428	WeGa3	2	ud	sil-cl	0	2Bdv	S0	1(6)2(4)D	C1	1S2-N	1	1D	W2G	SG0	925.1
429	Mw6	1-2	u	cl-c	2MA	4Cwi	S0	2(7)X3(3)W	D3	6C6-N	1	1	W0	S1	780.6
430	WfNp3	1-2	u	fl-cl	0	3Bgv	S0	2(5)X3(5)M	B0	N	1	1	W0	S1	2478.0
431	Np1	1-2	l	sil-cl	0	3Bgv	S0	2(10)X	B0	N	1	1	W0	S4	892.8
432	Rw	3-6	hc	sl-l	0	4Dct2	S2	5(9)TW7(1)W	D1	4S3-N,2O1-N	1	4	W1K	S1	3520.3
433	Wf1	2	u	fl	0	3Ag	S0	3(10)M	B0	N	1	1	W0	S1	424.6
434	WfNp3	1-2	u	l-cl	1WA	3Bgv	S0	2(7)X1(3)	B0	1C1-N	1	1	W0	S1	2012.9
435	Mw6	1	l	l-sl	1MA	4Cwi	S2	5(6)W4(4)W	D3	4C3-N,4S3-N	1	1	W0	S1	455.9
436	LcPp1	3	u	fl-sil	0	2Bdt1	S0	3(10)MD	B0	N	1	2	W1K	SG0	209.3
437	Ky1	2-3	ud	l-sil	0	1Bvt1	S0	2(10)D	B0	N	1	1D	W1K	SG0	737.0
438	Rw	4-3	hd	l	0	4Dct2	S0	5(6)W4(4)TE	D1	5S3-N	1	3D	W1G	SG0	523.2
439	Rw	4-3	hd	l	0	4Dct2	S0	5(6)W4(4)TE	D1	5S3-N	1	3D	W1G	SG0	170.8
440	LcSy5	4-5	hd	fl-sl	0	2Cdt2	S0	3(5)M4(5)MT	B0	1S1-N	2	2D	W2G	S2	776.8
441	LcSy5	3-4	hd	fl-ls	0	2Cdt2v	S0	3(6)M4(3)M5(1)W	B0	2S2-N	2	2D	W2K	S2	357.7
442	LcSy5	3-4	hd	fl-ls	0	2Cdt2v	S0	3(6)M4(3)M5(1)W	B0	2S2-N	2	2D	W2K	S2	1071.3
443	SbGo1	3-4	hd	vl-fl	0	1Ct2	S0	2(6)M3(4)MT	B0	1S2-N,1C2-N	1	2D	W3G	SG0	374.4
444	SbGo1	3-4	hd	vl-fl	0	1Ct2	S0	2(6)M3(4)MT	B0	1S2-N,1C2-N	1	2D	W3G	SG0	489.4
445	Go3	3	ud	vl	0	1Bt1	S0	2(10)M	D1	1C1-N	1	2D	W1G	SG0	610.9
446	Go3	4	hd	vl	0	1Ct2	S0	3(10)T	D3	1C1-N	2	3D	W1K	SG0	54.1
447	We6	2-3	ud	l-cl	0	1Bvt1	S0	1(8)3(1)T5(1)W	C5	2S2-N,1C1-N	1	1D	W2G	SG0	266.1
448	We6	2-3	ud	l-cl	0	1Bvt1	S0	1(8)3(1)T5(1)W	C5	2S2-N,1C1-N	1	1D	W2G	SG0	481.6
449	We6	2-3	ud	l-cl	0	1Bvt1	S0	1(8)3(1)T5(1)W	C5	2S2-N,1C1-N	1	1D	W2G	SG0	735.0
450	We6	2-3	ud	l-cl	0	1Bvt1	S0	1(8)3(1)T5(1)W	C5	2S2-N,1C1-N	1	1D	W2G	SG0	1675.6
451	Ga3	3-2	u	sil	0	2Bdt1v	S0	3(10)D	B0	1C1-N	1	2	W1K	SG0	680.7
452	GaKy3	3-2	ud	l-cl	0	2Bdt1v	S1	3(8)D2(2)D	B0	N	1	2D	W2G	SG0	2143.9
453	GaWv3	3-2	ud	sil-l	0	2Bdt1v	S1	3(10)D	B0	1C1-N	1	2D	W2G	SG0	3230.8
454	We3	1-2	u	cl	0	2Aq	S0	1(10)	D3	N	1	1	W0	SG0	636.2
455	NtCr1	2	u	sl-ls	0	2Bmv	S0	3(6)M4(4)M	B0	N	2	2	W2B	S4	536.1
456	PnCr1	3-4	hr	s-ls	0	4Cmt2	S0	5(8)MF4(2)M	A2	N	4	1	W2B	S4	500.1
457	We6	1-2	u	l-cl	0	1Bv	S0	1(10)	C5	1C1-N	1	1	W0	SG0	1157.1
458	Nt1	2	u	ls	0	3Am	S0	4(10)M	B0	N	2	1	W1B	S4	301.1
459	Wf1	1-2	u	fl-vl	0	3Ag	S0	3(6)M2(4)M	B0	N	1	1	W1B	S1	501.7
460	Pn1	2	u	s	0	4Am	S0	5(10)MF	A0	N	4	1	W2B	S4	907.1
461	WfNt1	1-2	u	fl-sl	0	3Bgv	S0	3(10)M	B0	N	1	1	W1B	S2	1051.1
462	Pn2	2-3	u	s	0	4Bmt1	S0	5(10)MF	A0	N	4	1	W2B	S4	7860.4
463	CrPn4	2-1	u	ls	0	3Am	S0	4(8)M5(2)MF	B0	N	2	1	W1B	S4	1217.9
464	Cr1	1-2	u	sl	0	2Am	S0	3(10)M	B0	N	2	1	W1B	S4	930.8
465	SyPn6	2-3	u	ls	0	3Bmt1	S0	5(10)MF	A0	1S1-N	2	1	W1B	S4	862.0
466	WvGa1	3	ud	l	0	2Bdt1v	S1	3(8)D2(2)D	B0	1C1-N	1	2D	W1G	SG0	1077.8
467	Ga4	2-3	ud	l	0	2Bdt1v	S1	3(8)D2(2)D	B0	1C1-N	1	2D	W1G	SG0	2827.4
468	GaKy4	2-3	ud	sil-cl	0	2Bdt1v	S0	2(6)D3(4)D	B0	1C1-N	1	2D	W2G	SG0	4411.4
469	WvGa1	3-2	u	l	0	2Bdt1v	S1	3(8)D2(2)D	B0	N	1	2	W1G	SG0	355.4
470	Ga4	3-2	ud	sil	0	2Bdvt1	S1	3(7)D4(1)W2(2)D	B0	2C1-N	1	2D	W1G	SG0	622.5
471	Ga4	3-2	ud	sil	0	2Bdvt1	S1	3(7)D4(1)W2(2)D	B0	2C1-N	1	2D	W1G	SG0	96.5
472	Ga4	3-2	ud	sil	0	2Bdvt1	S1	3(7)D4(1)W2(2)D	B0	2C1-N	1	2D	W1G	SG0	95.3
473	Ga4	3	ud	sil	0	2Bdt1v	S1	3(8)D2(2)D	B0	N	1	2D	W1G	SG0	168.9
474	Ga4	3-2	ud	sil	0	2Bdt1v	S1	3(8)D2(2)D	B0	2C1-N	1	2D	W1G	SG0	3127.3
475	Ga1	3-5	uid	sil	0	2Cdt1	S1	3(8)D4(2)T	B0	N	1	4D	W2G	SG0	351.7
476	PnSy4	4-5	hd	s-ls	0	4Cmt2p	S2	6(8)MF5(2)MF	A0	N	4	1D	U	S4	392.4
477	Sy1	4	id	fl	0	2Cmt2	S0	4(10)M	A0	N	2	4D	W1G	S4	128.0
478	Sy1	2-3	u	fl	0	2Bmdt1	S0	4(10)M	A0	N	2	1	W1B	S4	145.1
479	Lc1T	3-4	ud	fl	0	2Bdgt1	S1	3(10)M	B0	N	1	2D	W1G	SG0	109.9
480	Lc1T	3-4	ud	fl	0	2Bdgt1	S1	3(10)M	B0	N	1	2D	W1G	SG0	1296.4
481	Bd1	4-6	hr	ls	0	4Dmt2	S1	5(10)MF	B0	N	2	2	W1K	G4	172.6
482	WeGo1	2	ud	cl-vl	0	2Bqv	S0	2(10)X	C1	1S1-N	1	1D	W1G	SG0	144.4
483	WeGo1	2	ud	cl-vl	0	2Bqv	S0	2(10)X	C1	1S1-N	1	1D	W1G	SG0	738.8
484	LL4	1	H	o	0	4Cwi	S0	4(5)W5(5)W	X3	6B6-N	U	U	W0	U	922.5
485	Rw	3-4	hd	cl-vl	0	4Dct2	S2	6(7)W3(3)T	D1	3S2-N	1	3D	U	SG0	189.4

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
486	We6	2-3	u	cl	0	2Bqvt1	S0	2(9)Cs5(1)W	C5	2C1-N,1S1-N	1	1	W1K	SG0	892.5
487	Ga5	3-4	ud	sil	0	2Cdv	S0	2(8)D5(2)W	B0	3C1-N,1S1-N	1	2D	W2K	SG0	2448.6
488	Lc1T	3	ud	vl	0	2Bdgt1	S1	3(10)M	B0	N	1	2D	W1K	SG0	619.2
489	Pp7C	3-2	ud	sil	0	2Cdv	S0	3(8)D5(2)W	C5	3C1-N	1	2D	W1K	SG0	864.9
490	HwPn1	5-6	hc	s	0	4Dct2	S2	6(8)TW3(2)S	C1	4S2-N,2O2-N	4	5	W1K	S2	4909.1
491	Pp2	3-4	ud	l	0	2Bdvt1	S0	3(7)D2(2)D5(1)W	C5	2C2-N	1	2D	W1K	SG0	999.9
492	LcSb1	3	u	vl-fl	0	2Bdt1	S0	3(8)M2(2)M	C1	1S1-N	1	2	W1K	SG0	249.3
493	LcSb1	3	u	vl-fl	0	2Bdt1	S0	3(8)M2(2)M	C1	1S1-N	1	2	W1K	SG0	60.7
494	Mw6	1	l	sl-sil	0	4Cwi	S0	3(10)W	D3	6C6-N	1	1	W0	SG0	305.2
495	Pn2	2-3	u	s	0	4Bmt1	S0	5(10)MF	A0	N	4	1	W2B	S4	279.8
496	KkPn5	3	u	s	0	4Bmt1	S0	5(10)MF	A0	N	4	1	W1B	SG4	561.6
497	Pn2	2-3	u	s	0	4Bmt1	S0	5(10)MF	A0	N	4	1	W2B	S4	3898.9
498	GaPn2	3-2	u	sl-s	0	2Cdmv	S2	5(4)MF6(2)W3(4)D	C1	3B3-N	2	2	W1K	S2	2100.4
499	Ga2	3	u	l-sil	0	2Cdv	S1	3(8)D5(2)W	C5	3S2-N,2S1-N	1	2	W1K	SG0	1114.0
500	Ga2	3	u	vl	0	2Cdv	S2	3(8)D5(2)W	C5	3C1-N	1	2	W1K	SG0	425.0
501	Ga4	3	id	l-sil	0	2Bdt2v	S2	3(8)D2(2)D	C5	1S1-N	1	2D	W1G	SG0	321.3
502	GaBd1	3-4	ud	l-sl	0	2Cdv	S1	3(6)D4(4)MF	C5	1S1-N	1	2D	W1K	G2	541.6
503	Ga2	4-5	h	l-cl	0	2Cdt2v	S1	3(5)D4(3)T5(2)W	C5	3S2-N,3C1-N	1	3	W2K	SG0	1202.2
504	Ga2	3-4	u	l	0	2Cdv	S1	3(8)D4(2)W	C5	3C2-N	1	2	W1K	SG0	1296.9
505	Pp2	2-3	u	cl	0	2Bqdt1	S0	3(7)D2(3)D	C5	1S2-N	1	1	W1K	SG0	563.7
506	Pp2	3	ud	sil	0	2Bdt1v	S0	3(8)D2(2)D	C5	1S1-N	1	2D	W1G	SG0	155.1
507	Pp2	3	ud	sil	0	2Bdt1v	S0	3(8)D2(2)D	C5	1S1-N	1	2D	W1G	SG0	441.6
508	Rw	4-5	hd	ls-cl	0	4Dct2	S2	4(5)T6(5)W	D1	3E3-N,3S3-N	2	4D	W2K	SG0	643.5
509	Lc1	3	u	fl-l	0	2Bdt1	S0	3(10)M	B0	N	1	2	W1K	SG0	408.6
510	Sy1	3-5	ud	fl-ls	0	2Cmt1v	S0	4(7)M5(3)MF	A0	1S2-N	2	3D	W1B	S4	448.3
511	Rw	3-5	hd	l-cl	0	4Dct2	S0	4(8)T6(2)W	D1	3S2-N	1	4D	W2G	SG0	104.4
512	Pp7	2-3	u	sil-cl	0	2Cdv	S0	3(7)D2(1)D5(2)W	C5	3C2-N,2S2-N	1	2	W1K	SG0	6574.1
513	Wz3	1	l	U	0	4Cwi	U	7(10)W	U	6O5-N	U	U	U	SG0	11.1
514	GaBt2	3-2	u	l-ls	0	2Cdv	S0	3(6)D4(2)MF5(2)W	C1	3S2-N,2C2-N	1	2	W1K	SG0	6.8
515	BL3	1	H	o	0	4Cwi	S0	5(9)W7(1)W	D1	6F6-N	U	U	W0	U	167.6
516	GaBt2	3-2	u	l-ls	0	2Cdv	S0	3(6)D4(2)MF5(2)W	C1	3S2-N,2C2-N	1	2	W1K	SG0	2322.9
517	GaBt2	3-4	u	vl	0	2Cdv	S2	3(6)D4(2)MF5(2)W	C1	3S2-N,3C2-N	1	2	W1K	SG0	3036.9
518	BL7	1	H	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	241.7
519	CrPn4	2-1	u	sl-ls	0	3Bmv	S0	3(5)M4(3)M5(2)MF	B0	1C1-N	2	1	W2B	S4	1229.4
520	Cr2	2-1	u	sl-ls	0	2Bmv	S0	3(5)M4(4)M5(1)W	C5	2C2-N	2	1	W1B	S4	279.0
521	Cr2	2-1	u	sl-ls	0	2Bmv	S0	3(5)M4(4)M5(1)W	C5	2C2-N	2	1	W1B	S4	3487.6
522	BL7	1	H	o	0	4Cwi	S0	O(10)	D1	6F6-N	U	U	U	U	16.4
523	LLAw1	1-2	Hu	o-sl	0	4Cwi	S0	O(7)6(3)W	X1	6B6-N,3F3-N	U	U	U	U	3173.9
524	Pn1	3	r	s	0	4Bmt2	S2	6(10)MF	A0	N	4	1	U	S4	133.4
525	LLAw1	1-2	Hu	o-sl	0	4Cwi	S0	O(7)6(3)W	X1	6B6-N,3F3-N	U	U	U	U	309.1
526	CrPn4	2	u	sl-ls	0	3Bmv	S0	3(5)M5(4)MF6(1)W	B0	2C2-N	2	1	W2B	S4	2209.0
527	SyPn6	2	u	ls	0	3Am	S0	5(10)MF	A0	1C1-N	2	1	W1B	S4	1595.4
528	PnNt1	2-3	u	s-ls	0	4Bmt1v	S0	5(6)MF4(4)M	A0	1C1-N	4	1	W2B	S4	208.8
529	Pn5	3-4	hr	s	0	4Cmt2	S0	6(10)MF	A0	N	4	1	W2B	S4	324.7
530	Cr4	2	u	vl	0	2Am	S0	2(10)M	D2	1C1-N	2	2	W1K	S4	578.5
531	NtCr1	2-3	u	ls	0	3Bmt1	S0	4(10)M	B0	N	2	1	W1B	S4	469.9
532	WfCr3	2-3	u	sl-ls	0	3Bgt1v	S0	3(6)M4(3)M5(1)M	B0	N	2	1	W2B	S2	1065.9
533	Wf2	2-3	u	sl	0	3Cgv	S0	3(8)M4(2)W	B0	3C3-N	1	2	W1K	S1	2084.5
534	Rw	3-5	ud	sl-cl	0	4Dct2	S0	3(6)MT4(2)T5(2)W	D1	2C1-N,2S1-N	1	4D	W1K	S1	195.9
535	Cr1	3-2	u	ls-sl	0	3Bmt1v	S0	4(6)M3(4)M	B0	1C1-N	2	1	W2B	S4	263.3
536	Cr1	3-2	u	ls-sl	0	3Bmt1v	S0	4(6)M3(4)M	B0	1C1-N	2	1	W2B	S4	445.6
537	Wf3	2-3	u	fl-sl	0	3Bgt1v	S0	3(10)M	B0	1C2-N	1	1	W1K	S1	906.8
538	NtPn1	4	hr	ls-s	0	3Cmt2	S0	4(8)M5(2)MF	A0	N	3	2	W2B	S4	99.6
539	PnNt1	4-3	h	s-ls	0	4Cmt2	S0	5(7)MF4(3)M	A0	N	4	1	W1B	S4	327.8
540	Nt1	2	u	sl-ls	0	2Bmv	S0	3(6)M4(4)M	B0	N	2	2	W1B	S4	209.7
541	Wf3	2	u	vl	0	3Bgv	S0	2(9)M5(1)W	C5	2B2-N	1	2	W1K	S1	129.8
542	Wf3	1-2	u	fl-vl	0	3Ag	S0	3(6)M2(4)M	B0	N	1	1	W0	S1	9862.7
543	Np1	1-2	u	l	0	3Ag	S0	2(10)X	B0	N	1	1	W0	S4	2658.3
544	Av20	2	t	c-cl	0	3Bqv	S0	1(10)	C1	N	1	1	W1K	S4	558.1
545	HwAv1	4-6	ihg	l-s	0	4Dct2	S2	6(10)TW	D1	3F2-N	1	5G	U	S4	694.4
546	Np1	3-2	ud	cl-l	0	3Bgt1v	S0	2(10)X	B0	N	1	2D	W1G	S4	213.8
547	Av42	2-3	t	sl-cl	0	2Cmv	S2	3(10)S	D2	N	1	1	W1K	G3	252.3
548	KkBL1	3-4	h	gs-o	0	4Dmv	S0	6(10)MW	A0	3F4-N	2	1	U	G3	426.7
549	Pn3	2-3	u	ls-s	0	3Bmt1v	S0	5(7)MF6(3)MF	A0	N	4	1	W2B	S4	1376.7
550	Sy8	2-3	u	ls	0	3Cmv	S0	4(8)MF5(2)W	A0	3B3-N	2	1	W1B	S4	612.9
551	Aw1	2	u	sl	0	4Dwv	S0	5(7)W4(3)W	D0	6B6-N,3C6-N	1	1	W0	U	1470.2
552	BLLL20	1	H	o	0	4Cwi	S0	5(10)W	D0	5F4-N,4B4-N	U	U	W0	U	649.3
553	Cr1	2-1	u	ls	0	3Am	S0	4(10)M	C1	N	2	1	W1B	S4	464.3
554	Pn13	2-3	u	ls-s	0	3Bmt1v	S0	5(7)MF6(3)MF	A0	N	4	1	W2B	S4	591.2
555	Av42	2-3	t	sl-cl	0	2Cmv	S2	3(10)S	D2	N	1	1	W1K	S4	283.5

Area No.	Map Unit	Slope Class	Land Form	Surface Texture	Salinity	Irrigation	Stone Class	Agricultural Capability	pH	Wetlands Classification	Wind Eros.	Water Eros.	Past Eros.	Sand/ Gravel	Acreage (ac)
556	HwAv1	4-6	hig	s-cl	0	4Dct2	S2	6(10)TW	D1	3F3-N	4	5G	U	S4	890.8
557	LcWf1	2-3	ud	fl	0	3Bgt1	S0	3(10)M	C5	1C2-N	1	2D	W1K	S1	194.3
558	SyCr1	2-3	u	ls	0	3Bmt1	S0	5(6)MF4(4)M	A0	1C1-N	2	1	W2B	S4	595.5
559	Pn13	3-5	h	s	0	4Dmt2	S0	6(10)MF	A0	N	4	1	W1B	S4	264.8
560	Pn13	3-5	h	s	0	4Dmt2	S0	6(10)MF	A0	N	4	1	W1B	S4	548.8
561	Hw	5	hig	s-l	0	4Dct2	S2	6(10)T	D1	N	4	5G	U	S4	214.9
562	Cr4	2-3	t	ls	0	3Bmt2	S0	4(10)M	D2	N	2	1	W1B	S4	614.2
563	PnSy7	2-3	u	s-ls	0	4Cmv	S0	5(8)MF6(2)W	A0	3B2-N,2F2-N	4	1	W1B	S4	1102.7
564	Cr3	1	l	sl-ls	0	2Bmv	S0	3(6)M4(4)M	D3	6C6-N	2	1	W1B	S4	129.4
565	We1	1	l	cl	0	2Aq	S0	1(10)	D3	N	1	1	W0	SG0	215.2
566	Go3	1-2	u	vl	0	1A	S0	2(10)M	D3	1C2-N	1	1	W1K	SG0	902.8
567	CrGo3	2	u	ls-vl	0	3Cmv	S0	3(5)M2(3)M4(2)M	D2	1C2-N	2	1	W2B	S3	1679.4
568	Cr4	1-2	u	vl-ls	0	2Cmv	S0	3(5)M2(3)M4(2)M	D2	1C2-N	2	1	W2B	S4	2592.1
569	SyPn5	2-3	u	ls-s	0	3Cmv	S0	5(8)MF6(2)W	A0	3F2-N	2	1	W2B	S4	153.3
570	PnSy7	2-3	u	s-ls	0	4Cmv	S0	5(8)MF6(2)W	A0	3B2-N,2F2-N	4	1	W1B	S4	437.5
571	Pn2	5	h	s	0	4Cmt2	S0	6(10)MF	A0	1F1-N	4	1	U	S4	110.9
572	Cr6	2	u	ls	0	3Dmv	S0	4(7)M6(3)W	C5	4F3-N	2	1	W1B	S4	670.9
573	Rw	3-5	hi	s-l	0	4Dct2	S2	6(10)TW	D1	5S5-N	4	4	U	S4	248.1
574	PnCr5	2	u	s-ls	0	4Bmv	S0	5(7)MF4(3)M	A2	3F2-N,2C2-N	4	1	W3B	S4	1793.6
575	PnCr1	2-3	u	s-sl	0	4Cmv	S0	3(4)M4(1)W5(5)MF	A2	2C1-N	4	1	W2B	S4	1364.0
576	HwPn1	5-6	hc	s	0	4Dct2	S2	6(8)TW3(2)S	C1	4S3-N,2O2-N	4	5	W1K	S2	13.4
577	Rw	4-3	hd	ls-sl	0	4Dct2	S0	5(10)TW	D1	4S2-N	2	3D	U	S4	88.5
578	Pn9	2-3	u	ls	0	3Cmv	S0	5(8)MF6(2)W	A0	3F2-N	4	1	W2B	S4	865.7
579	We5	1-2	u	sil-cl	0	1Cv	S0	1(8)5(2)W	C5	3S2-N,2C2-N	1	1	W0	SG0	658.9
580	SmLL1	2-3	ud	ls-o	0	3Dmv	S4	5(6)MFO(4)	B0	3B3-N	2	1D	U	SG0	9.8
581	Pn9	2-3	u	ls	0	3Dmv	S0	5(7)MF6(3)W	A0	4F2-N	4	1	U	S4	42.1

7. GLOSSARY

Acid soil - A soil having a pH of less than 7.0.

Aggregate - A group of soil particles sticking together in such a way that they behave mechanically as a unit.

Alkali soil - (i) A soil having a high degree of alkalinity (pH of 8.5 or higher), or having a high exchangeable sodium content (15% or more of the exchange capacity), or both. (ii) A soil that contains enough alkali (sodium) to interfere with the growth of most crops.
Note: The term "alkali soil" is often incorrectly used to describe a "saline soil".

Alkaline soil - A soil having a pH greater than 7.0.

Alluvial deposit - Refer to section "2.3 Surface Deposits" on page 2-1 of this report.

Apron - Refer to section "2.4 Surface Forms" on page 2-2 of this report.

Aspect - The particular direction in which a slope faces.

Available water - The portion of water in a soil that can be readily absorbed by plant roots. See also "field capacity".

Bedrock - The preglacial sediments, exclusive of stratified deposits in preglacial valleys, that underlie the surficial glacial sediments. These bedrock materials may or may not be consolidated into solid rock and may be exposed at the surface.

Blanket - A mantle of unconsolidated materials thick enough to mask minor irregularities in the underlying unit but still conforming to the general underlying topography.

Blowout - A small area from which soil material has been removed by wind.

Channel - The bed where a natural stream of water runs or has run.

Clay - (i) A soil particle that is less than 0.002 mm in diameter. (ii) A soil textural class. See also "texture, soil".

Clod - A compact, coherent mass of soil varying in size, usually produced by plowing or digging.

Cobble - Rounded or partially rounded rock or mineral fragment between 8 and 25 cm in diameter.

Cobbly - Containing appreciable quantities of cobbles. The term is used to describe both soil and land.

Colluvium - A heterogenous mixture of material that has moved down a slope and settled at its base, as a result of gravitational action.

Degradation - (i) The decline in a soil's fertility status as a result of loss of organic matter, erosion by wind or water, compaction, salinization, or acidification. (ii) The changing of a soil to a more highly leached and more highly weathered condition, usually accompanied by morphological changes such as the development of an eluviated (leached), light-colored Ae horizon.

Dissected - Where the original surface has been cut by running water, leaving a network of channels, shallow gullies, or valleys.

Dunes - Wind-built ridges and hills of sand formed in the same manner as snowdrifts. They are started where some obstruction, such as a bush, boulder, or fence, causes an eddy or otherwise thwarts the sand-laden wind. Once begun, the dunes themselves offer resistance and they grow to form various shapes.

Eluviation - The transportation of soil material in suspension or solution within the soil by the downward or lateral movement of water.

Eolian deposit - Refer to section "2.3 Surface Deposits" on page 2-1 of this report.

Erosion - The wearing away of the land surface by running water, wind, ice or gravity.

Erosivity - The tendency for a soil to erode or permit erosion.

Esker - A winding ridge of irregularly stratified sand, gravel, and cobbles deposited under the ice by a rapidly flowing glacial stream.

Fan - Refer to section "2.4 Surface Forms" on page 2-2 of this report.

Fibric layer - A layer of organic material containing large amounts of weakly decomposed fiber whose botanical origin is readily identifiable.

Field capacity - The percentage of water remaining in the soil two or three days after the soil has been saturated and free drainage has practically ceased.

Fluvial deposit - Refer to section "2.3 Surface Deposits" on page 2-1 of this report.

Genesis - The mode of origin of the soil, especially the processes or soil-forming factors responsible for the development of the solum, the true soil, from unconsolidated parent material.

Glacial till - See "till".

Glaciofluvial - Refer to section "2.3 Surface Deposits" on page 2-1 of this report.

Glaciolacustrine - Refer to section "2.3 Surface Deposits" on page 2-1 of this report.

Gleyed soil - Soil affected by gleysation.

Gleysation - A soil forming process, operating under poor drainage conditions, which results in the reduction of iron and other elements, and in gray colors and mottles.

Gravel - Rock fragments between 2 mm and 7.5 cm in diameter.

Grumic - A fine-textured (clay or heavy clay) soil which cracks extensively when dry and forms angular blocky structures with grooved surfaces in subsoils due to the effect of swelling and shrinking during periods of wetting and drying. Surface horizons are massive, often with granular secondary structure under cultivation.

Gully - A channel caused by erosion from concentrated but intermittent flow of water during and immediately after heavy rains or snowmelt. It is deep enough to interfere with and not be removed by tillage operations.

Heavy soil - A soil having a high content of fine particles, particularly clay, or a soil having a high drawbar pull and therefore requiring more power to cultivate.

Horizon - Refer to section "2.1 The Soil Profile" on page 2-1 of this report.

Humic layer - A layer of organic material containing large amounts of highly decomposed organic material; only small amounts of fiber are present that can be identified as to their botanical origin. Fibers can be easily destroyed by rubbing.

Hummocky - Refer to section "2.4 Surface Forms" on page 2-2 of this report.

Humus - (i) The fraction of the soil organic matter that remains after most of the added plant and animal residues have decomposed. It is usually dark-colored. (ii) Humus is also used in a broader sense to designate the humus forms referred to as forest humus. (iii) All the dead organic material on and in the soil that undergoes continuous breakdown, change, and synthesis.

Hydraulic conductivity - The rate at which saturated soils transmit water.

Inclined - Refer to section "2.4 Surface Forms" on page 2-2 of this report.

Infiltration - The downward movement of water into the soil.

Kettle - Depression left after the melting of a detached mass of glacial ice that was buried in glacial debris.

Knob - A pronounced, rounded hill commonly found in knob and kettle topography in morainic areas.

Knoll - A small, subdued, rounded hill commonly found in knoll and depression topography in areas of till plains.

Lacustrine deposit - Refer to section "2.3 Surface Deposits" on page 2-1 of this report.

Landform - The various shapes of the land surface resulting from a variety of actions such as deposition (eskers, moraines) and erosion (gullies, valleys).

Leaching - The downward removal from the soil of materials in solution.

Level - Refer to section "2.4 Surface Forms" on page 2-2 of this report.

Light soil - A soil having a high content of coarser particles, particularly sand, or a soil having a low drawbar pull and therefore easy to cultivate.

Loess - Material transported and deposited by wind and consisting of predominantly silt-sized particles.

Mesic layer - A layer of organic material in an intermediate stage of decomposition; intermediate amounts of fiber are present that can be identified as to their botanical origin.

Microrelief - Small scale, local differences in topography, including mounds, swales, or pits that are usually < 1 m in diameter and with elevation differences of up to 2 m.

Mineral soil - A soil consisting predominantly of mineral matter. It contains less than 17% organic carbon except for an organic surface layer that may be up to 40 cm thick if formed of mixed peat or 60 cm if formed of fibric peat.

Moraine - Distinct accumulations of glacial material, mainly till, deposited directly by glaciers.

Mottles - Spots or blotches of different color or shades of color interspersed with the dominant color.

Neutral soil - A soil having a pH of 7.0.

Organic matter, soil - The organic fraction of the soil; includes plant and animal residues at various stages of decomposition, cells and tissues of soil organisms, and substances synthesized by the soil population.

Parent material - The unconsolidated and more or less chemically unweathered mineral or organic matter from which the solum of a soil has developed.

Pedology - Those aspects of soil science involving the constitution, distribution, genesis, classification and mapping of soils.

Permeability, soil - The ease with which gases and liquids penetrate or pass through a bulk mass of soil or a layer of soil.

pH, soil - The negative logarithm of the hydrogen ion activity of a soil. The degree of acidity (or alkalinity) of a soil as determined by an electrode or indicator at a specified soil-water ratio, and expressed in terms of the pH scale.

Ridged - Refer to section "2.4 Surface Forms" on page 2-2 of this report.

Rolling - Refer to section "2.4 Surface Forms" on page 2-2 of this report.

Runoff - The portion of the total precipitation falling upon an area that flows away through stream channels or over the surface instead of entering the soil.

Runway - The channel of a stream.

Saline soil - A soil that contains enough soluble salts to interfere with the growth of most crops. As measured by the electrical conductivity of the saturation extract, the amount of salt present is great enough to produce a reading greater than 4 mS/cm. Very sensitive crops may be affected at electrical conductivities of 2 mS/cm.

Sand - (i) A soil particle between 0.05 and 2.0 mm in diameter. (ii) A soil textural class. See also "texture, soil".

very coarse sand - A soil particle between 1.0 and 2.0 mm in diameter.

coarse sand - (i) A soil particle between 0.5 and 1.0 mm in diameter. (ii) A soil textural class. See also "texture, soils".

medium sand - A soil particle between 0.25 and 0.5 mm in diameter.

fine sand - (i) A soil particle between 0.10 and 0.25 mm in diameter. (ii) A soil textural class. See also "texture, soil".

very fine sand - A soil particle between 0.05 and 0.10 mm in diameter.

Silt - (i) A soil particle between 0.002 and 0.05 mm in diameter. (ii) A soil textural class. See also "texture, soil".

Soil - (i) The unconsolidated mineral material on the immediate surface of the earth that serves as a natural medium

for the growth of land plants. (ii) The unconsolidated mineral matter on the surface of the earth that has been subjected to and influenced by genetic and environmental factors of: parent material, climate (including moisture and temperature effects), macro- and microorganisms and topography, all acting over a period of time and producing a product (soil) that differs from the material from which it is derived in many physical, chemical, biological and morphological properties and characteristics.

Solum - The upper horizons of a soil in which the parent material has been modified and in which most plant roots are contained. It usually consists of the A and B horizons.

Stratification - The arrangement of sediments in layers or strata marked by a change in color, texture, dimension of particles, and composition. Stratification usually means layers of sediments that separate readily along bedding planes because of different sizes and kinds of material or some interruption in deposition that permitted changes to take place before more material was deposited.

Structure, soil - The combination or arrangement of primary soil particles into aggregates of secondary soil particles, which are separated from each other by surfaces of weakness. These secondary particles may be, but usually are not, arranged in the profile in such a manner as to give a distinct characteristic pattern. The secondary particles are characterized and classified on the basis of size, shape, and degree of distinctness. The general shape types are structureless, plate-like, block-like and prism-like. The terms are:

structureless - Having no observable aggregation or no definite orderly arrangement around natural lines of weakness.

single grain - Loose, incoherent mass of individual particles as in sands.

massive - A coherent mass showing no evidence of any distinct arrangement of soil particles.

block-like - Soil particles are arranged around a point and bounded by flat or rounded sides.

blocky (angular blocky) - Having block-like structures with flat, rectangular faces and sharp, angular corners.

subangular blocky - Having block-like structures with rounded or flattened faces and rounded corners.

granular - Having block-like aggregates that appear as spheroids having curved surfaces which have slight or no accommodation to the faces of the surrounding aggregates.

plate-like - Soil particles are arranged around a horizontal plane and generally bounded by relatively flat, horizontal surfaces.

platy - Having thin, plate-like aggregates with faces mostly horizontal.

prism-like - Soil particles are arranged around a vertical axis and bounded by relatively flat, vertical surfaces.

prismatic - Having prism-like structures with vertical faces well-defined, and edges near the top sharp and somewhat angular.

columnar - Having column-like structures with vertical edges near the top of columns not sharp (columns may be flat-topped, round-topped or irregular).

Substrate modifier - A material of different origin that underlies material in which a soil is formed, at a depth of 1 m or less.

Superglacial - A glaciolacustrine or glaciofluvial deposit laid down in small ponds or lakes on the melting ice surface, which subsequently becomes mixed with or underlain by glacial till upon melting. It is not as uniform as typical lacustrine or fluvial deposits.

Terrace - A nearly level, usually narrow, plain bordering a river, lake, or sea. Rivers are sometimes bordered by a number of terraces at different levels.

Texture, soil - The relative proportions of the various soil particles (sand, silt or clay) in a soil as described by the classes of soil texture. Refer to section "2.5 Surface Texture" on page 2-3 of this report. The limits of the various classes and subclasses are:

sand - Soil material that contains 85% or more sand.

coarse sand - Soil material that contains 25% or more very coarse and coarse sand, and less than 50% of any other one grade of sand.

fine sand - Soil material that contains 50% or more fine sand or less than 25% very coarse, coarse, and medium sand and less than 50% very fine sand.

gravelly sand - Soil material that meets the requirements of a sand but also contains 20 to 50% by volume of coarse fragments from 2 mm to 75 mm in diameter.

loamy sand - Soil material that usually contains 70 to 85% sand but may contain as much as 90% sand depending upon the amount of clay present.

gravelly loamy sand - Soil material that meets the requirements of a loamy sand but also contains 20 to 50% by volume of coarse fragments from 2 mm to 75 mm in diameter.

sandy loam - Soil material that usually contains 52 to 70% sand but may contain as much as 85% or as little as 43% sand depending upon the amount of clay present.

fine sandy loam - Soil material that contains 30% or more fine sand and less than 30% very fine sand or between 15 and 30% very coarse, coarse, and medium sand.

gravelly sandy loam - Soil material that meets the requirements of a sandy loam but also contains 20 to 50% by volume of coarse fragments from 2 mm to 75 mm in diameter.

very fine sandy loam - Soil material that contains 30% or more very fine sand or more than 40% fine and very fine sand, at least half of which is very fine sand, and less than 15% very coarse, coarse, and medium sand.

loam - Soil material that contains 7 to 27% clay, 28 to 50% silt, and less than 52% sand.

gravelly loam - Soil material that meets the requirements of a loam but also contains 20 to 50% by volume of coarse fragments from 2 mm to 75 mm in diameter.

silt loam - Soil material that contains 50% or more silt and 12 to 27% clay, or 50 to 80% silt and less than 12% clay.

silt - Soil material that contains 80% or more silt and less than 12% clay.

sandy clay loam - Soil material that contains 20 to 35% clay, less than 28% silt, and 45% or more sand.

clay loam - Soil material that contains 27 to 40% clay and 20 to 45% sand.

silty clay loam - Soil material that contains 27 to 40% clay and less than 20% sand.

silty clay - Soil material that contains 40% or more silt and more than 40% clay.

clay - Soil material that contains 40% or more clay, less than 45% sand, and less than 40% silt.

heavy clay - Soil material that contains more than 60% clay.

Till - Unstratified glacial drift, deposited directly by the ice, consisting of a mixture of clay, sand, silt, gravel, and boulders.

eroded till - Glacial till that has been subjected to water erosion subsequent to deposition, often leaving a dense stone lag or stony, gravelly lense on the surface.

water-modified till - Glacial till that has had significant amounts of water-sorted materials incorporated, usually during deposition, that results in less stony than normal glacial till with more sandy, silty or clayey textures than unstratified glacial till.

Tilth - The physical condition of soil as related to its ease of tillage, fitness as a seedbed, and impedance to seedling emergence and root penetration.

Topography - The physical features of a district or region, taken collectively; especially, the relief and contours of the land.

Undulating - Refer to section "2.4 Surface Forms" on page 2-2 of this report.

Veneer - Unconsolidated materials too thin to mask the minor irregularities of the underlying unit surface. A veneer will range from 10 cm to 1 m in thickness and will possess no form typical of the material's genesis. An example of this is shallow lacustrine deposits overlying glacial till.

Water, soil - Water occupying the pore spaces in the soil.

Water table - The upper surface of groundwater or that level in the ground where the water is at atmospheric pressure.

Wilting point - The moisture content of a soil at which plants wilt and fail to recover their turgidity when placed in a dark, humid atmosphere.

Zone, soil - An area in which the dominant soils reflect the zonal influence of climate and vegetation, and form a natural land pattern with other soils that exhibit the zonal influence only weakly or not at all. In Saskatchewan soils, there is a gradual increase in the organic matter content of the surface horizons as one moves from the southwest to the northeast, as reflected by their surface color. This forms the basis of soil zonal separations in the province, namely Brown, Dark Brown, Black, Dark Gray, and Gray.

8. FURTHER INFORMATION

For more information about the data contained in this report or for more information about the Saskatchewan soil survey, contact:

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University of Saskatchewan Campus
51 Campus Drive
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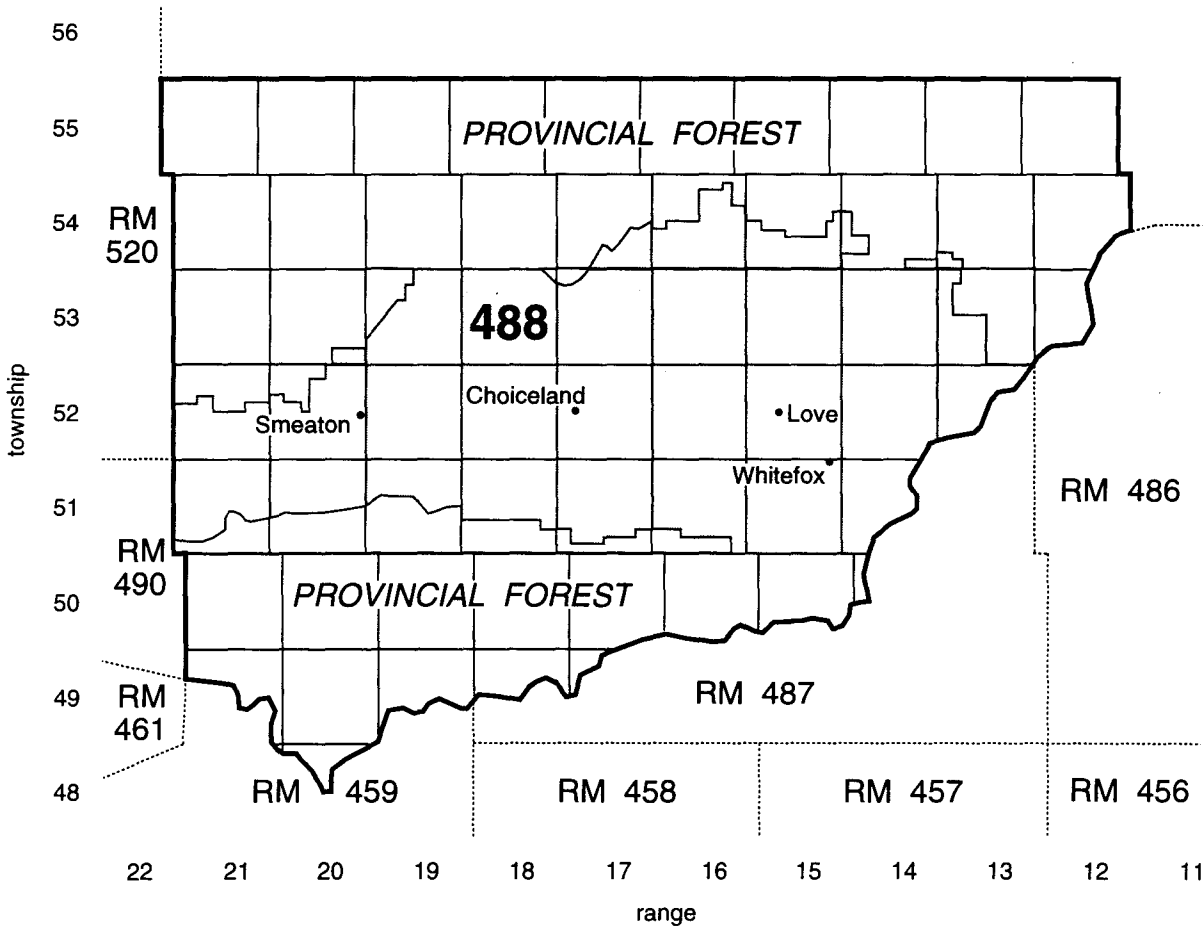
If more copies of this report are required, please indicate the name of the Rural Municipality and the number of copies required.

KEY MAP



Area covered by this map and report

9. MAP LEGEND

MAP UNIT	SOIL DESCRIPTION
Alluvium	**A complex of soils formed in variable-textured alluvial materials.**
Av5	Mainly Alluvium Gleysolic soils.
Av20	Mainly Alluvium Orthic Chernozemic soils.
Av42	Mainly a mixture of Alluvium Cumulic Regosol and Cumulic Humic Regosol soils.
Av43	Mainly a mixture of Alluvium Orthic Gray Luvisol and Dark Gray Luvisol soils.
Av44	Mainly a mixture of Alluvium Chernozemic soils on mid- and lower slopes and Alluvium Gray Luvisolic soils on some mid- and upper slopes.
Arbow	**Gleysolic soils formed in variable-textured alluvial materials supporting a tree cover.**
Aw1	Mainly Arbow peaty Gleysolic soils.
Arbow-Bagwa Lake	**A mixture of Gleysolic soils formed in variable-textured alluvial materials supporting a tree cover (Arbow) and Organic soils formed in sedge (fen) peat (Bagwa Lake).**
AwBL1	Mainly Arbow peaty Gleysolic soils, with a mixture of Bagwa Lake Typic Mesisol and Terric Mesisol soils intermixed.
AwBL2	Mainly Arbow peaty Gleysolic soils, with Bagwa Lake Terric Mesisol soils in depressions.
Arbow-Smeaton	**A mixture of Gleysolic soils formed in variable-textured alluvial materials supporting a tree cover (Arbow) and Gray Luvisolic, Brunisolic and Regosolic soils formed in a complex mixture of loamy glacial till, eroded glacial till, and sandy and gravelly fluvial materials (Smeaton).**
AwSm1	Mainly Arbow peaty Gleysolic soils, with Smeaton Orthic Gray Luvisol soils on midslopes, and a mixture of Smeaton Gleyed Gray Luvisol soils on lower slopes and Smeaton Orthic Regosol soils on upper slopes.
AwSm2	Mainly Arbow peaty Gleysolic soils, with Smeaton Orthic Gray Luvisol soils on upper slopes, Smeaton Gleyed Gray Luvisol soils on mid- to lower slopes, and Lavallee Lake Terric Fibric Mesisol soils in some depressions.
Bodmin	**Gray Luvisolic soils formed in gravelly fluvial materials.**
Bd1	Mainly Bodmin Orthic Gray Luvisol soils.
Bagwa Lake	**Organic soils formed in sedge (fen) peat.**
BL3	Mainly Bagwa Lake Terric Mesisol soils, with Bagwa Lake Typic Mesisol soils intermixed.
BL7	Mainly Bagwa Lake Terric Mesisol soils.
BL15	Mainly Bagwa Lake Organic soils.
BL21	Mainly a mixture of Bagwa Lake Terric Mesisol soils along the margins and Bagwa Lake Typic Mesisol soils towards the center of the area.
BL22	Mainly a mixture of Bagwa Lake Typic Mesisol and Fibric Mesisol soils.
BL23	Mainly a mixture of Bagwa Lake Typic Mesisol and Cumulo Mesisol soils.
Bagwa Lake-Lavallee Lake	**Organic soils formed in a mixture of sedge (fen) peat (Bagwa Lake) and forest peat overlain by shallow moss peat (Lavallee Lake).**
BLLL4	Mainly Bagwa Lake Typic Mesisol soils toward the center of depressional areas, with Lavallee Lake Terric Mesisol soils along the margins.
BLLL20	Mainly Bagwa Lake Terric Mesisol soils toward the center of depressional areas, with Lavallee Lake Terric Fibrisol soils along the margins.

MAP UNIT	SOIL DESCRIPTION
Bagwa Lake-Meadow	**A mixture of Organic soils formed in sedge (fen) peat (Bagwa Lake) and Gleysolic soils formed in variable-textured alluvial materials (Meadow).**
BLMw4	Mainly a mixture of Bagwa Lake Typic Mesisol and Terric Mesisol soils in depressional areas, with Meadow Gleysolic soils along the margins of Bagwa Lake soils.
Bittern Lake	**Gray Luvisolic soils formed in loamy glacial till overlain by shallow, sandy glaciofluvial materials.**
Bt6	Mainly a mixture of Bittern Lake Brunisolic Gray Luvisol soils on upper slopes and Bittern Lake Dark Gray Luvisol soils on mid- to lower slopes.
Bittern Lake-Pine	**A mixture of Gray Luvisolic soils formed in loamy glacial till overlain by shallow, sandy glaciofluvial materials (Bittern Lake) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
BtPn3	Mainly a mixture of Bittern Lake Brunisolic Gray Luvisol and Orthic Gray Luvisol soils, with a mixture of Pine Orthic Regosol and Pine Eluviated Eutric Brunisol soils intermixed.
BtPn4	Mainly Bittern Lake Brunisolic Gray Luvisol soils, with Bittern Lake Orthic Gray Luvisol soils on some mid- and upper slopes, a mixture of Pine Eluviated Eutric Brunisol and Orthic Regosol soils intermixed, and peaty Gleysolic soils in depressions.
BtPn27	Mainly Bittern Lake Orthic Gray Luvisol soils, with a mixture of Pine Orthic Regosol and Eluviated Eutric Brunisol soils intermixed.
Bittern Lake-Waitville	**Gray Luvisolic soils formed in a mixture of loamy glacial till overlain by shallow, sandy glaciofluvial materials (Bittern Lake) and loamy glacial till (Waitville).**
BtWv1	Mainly Bittern Lake Orthic Gray Luvisol soils, with Waitville Orthic Gray Luvisol soils intermixed.
Bredenbury-Perley	**Thick Black Chernozemic soils formed in a mixture of loamy lacustrine (Bredenbury) and sandy fluvial (Perley) materials.**
BuPe7	Mainly a mixture of Bredenbury Orthic Black and Calcareous Black soils, with a mixture of Perley Orthic Black and Calcareous Black soils intermixed.
Carrot River	**Gleyed Dark Gray Chernozemic soils formed in sandy fluvial materials.**
Cr1	Mainly Carrot River Gleyed Dark Gray soils.
Cr2	Mainly Carrot River Gleyed Dark Gray soils, with a mixture of Carrot River Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils on lower slopes.
Cr3	Mainly a mixture of Carrot River Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils.
Cr4	Mainly a mixture of Carrot River Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils, with Carrot River Gleyed Dark Gray soils on some upper slopes.
Cr5	Mainly Carrot River Gleyed Dark Gray soils, with peaty Gleysolic soils in depressions.
Cr6	Mainly Carrot River Gleyed Dark Gray soils, with Carrot River Gleyed Calcareous Dark Gray soils on mid- to lower slopes, and peaty Gleysolic soils in depressions.
Carrot River-Gronlid	**Gleyed Dark Gray Chernozemic soils formed in a mixture of sandy fluvial (Carrot River) and loamy lacustrine (Gronlid) materials.**
CrGo3	Mainly Carrot River Gleyed Rego Dark Gray soils, with a mixture of Gronlid Gleyed Dark Gray and Gleyed Rego Dark Gray soils on lower slopes.
Carrot River-Lavallee Lake	**A mixture of Gleyed Dark Gray Chernozemic soils formed in sandy fluvial materials (Carrot River) and Organic soils formed in forest peat overlain by shallow moss peat (Lavallee Lake).**
CrLL1	Mainly a mixture of Carrot River Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils, with Lavallee Lake Terric Fibrisol and Bagwa Lake Terric Fibrisol soils in depressions.

MAP UNIT	SOIL DESCRIPTION
Carrot River-Pine	**A mixture of Gleyed Dark Gray Chernozemic soils formed in sandy fluvial materials (Carrot River) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
CrPn2	Mainly Carrot River Gleyed Dark Gray soils, with Carrot River Gleyed Calcareous Dark Gray soils on lower slopes, a mixture of Pine Orthic Regosol and Pine Orthic Eutric Brunisol soils on some upper slopes and knolls, and Gleysolic soils in depressions.
CrPn3	Mainly a mixture of Carrot River Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils, with Pine Eluviated Eutric Brunisol soils on upper slopes, and peaty Gleysolic soils in depressions.
CrPn4	Mainly Carrot River Gleyed Dark Gray soils, with a mixture of Pine Gleyed Eluviated Eutric Brunisol and Pine Gleyed Regosol soils on midslopes, and a mixture of Pine Orthic Regosol and Pine Eluviated Eutric Brunisol soils on upper slopes.
Carrot River-Sylvania	**A mixture of Gleyed Dark Gray Chernozemic (Carrot River) and Gray Luvisolic (Sylvania) soils formed in sandy fluvial materials.**
CrSy1	Mainly Carrot River Gleyed Calcareous Dark Gray soils, with Sylvania Gleyed Dark Gray Luvisol soils on upper slopes and knolls, and Gleysolic soils in depressions.
CrSy2	Mainly Carrot River Gleyed Dark Gray soils, with Sylvania Dark Gray Luvisol soils on upper slopes and knolls, and Gleysolic soils in depressions.
CrSy3	Mainly Carrot River Gleyed Dark Gray soils, with Sylvania Dark Gray Luvisol soils on midslopes, and Sylvania Orthic Gray Luvisol soils on upper slopes.
Garrick	**Gray Luvisolic soils formed in a mixture of loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till.**
Ga1	Mainly Garrick Orthic Gray Luvisol soils.
Ga2	Mainly Garrick Orthic Gray Luvisol soils, with Gleysolic soils in depressions.
Ga3	Mainly Garrick Gleyed Gray Luvisol soils, with Garrick Orthic Gray Luvisol soils on upper slopes.
Ga4	Mainly Garrick Orthic Gray Luvisol soils on upper slopes, with Garrick Gleyed Gray Luvisol soils on midslopes, and Garrick Gleyed Dark Gray Luvisol soils on lower slopes.
Ga5	Mainly Garrick Gleyed Dark Gray Luvisol soils, with Garrick Gleyed Gray Luvisol soils on lower slopes, and Gleysolic soils in depressions.
Ga6	Mainly a mixture of Garrick Orthic Gray Luvisol soils on mid- to upper slopes and Garrick Dark Gray Luvisol soils on lower slopes.
Garrick-Bodmin	**Gray Luvisolic soils formed in a mixture of loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till (Garrick) and gravelly fluvial materials (Bodmin).**
GaBd1	Mainly Garrick Orthic Gray Luvisol soils, with Bodmin Orthic Gray Luvisol soils on upper slopes.
Garrick-Bittern Lake	**Gray Luvisolic soils formed in a mixture of loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till (Garrick) and loamy glacial till overlain by shallow, sandy glaciofluvial materials (Bittern Lake).**
GaBt2	Mainly Garrick Orthic Gray Luvisol soils, with a mixture of Bittern Lake Brunisolic Gray Luvisol and Orthic Gray Luvisol soils on lower slopes, and peaty Gleysolic soils in depressions.
Garrick-Kelsey	**A mixture of Gray Luvisolic (Garrick) and Dark Gray Chernozemic (Kelsey) soils formed in a mixture of loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till.**
GaKy1	Mainly Garrick Gleyed Dark Gray Luvisol soils, with Kelsey Gleyed Dark Gray soils on lower slopes.
GaKy2	Mainly Garrick Gleyed Dark Gray Luvisol soils, with Kelsey Gleyed Dark Gray soils on lower slopes, and Gleysolic soils in depressions.
GaKy3	Mainly Garrick Gleyed Gray Luvisol soils, with Kelsey Gleyed Dark Gray soils on lower slopes, and Garrick Orthic Gray Luvisol soils on upper slopes.
GaKy4	Mainly Garrick Orthic Gray Luvisol soils, with Kelsey Gleyed Dark Gray soils on lower slopes, and Garrick Gleyed Dark Gray Luvisol soils on midslopes.
GaKy5	Mainly a mixture of Garrick Orthic Gray Luvisol soils on upper slopes and Garrick Dark Gray Luvisol soils on midslopes, with Kelsey Orthic Dark Gray soils on lower slopes, and Gleysolic soils in depressions.
Garrick-Pine	**A mixture of Gray Luvisolic soils formed in loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till (Garrick) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
GaPn2	Mainly Garrick Orthic Gray Luvisol soils, with a mixture of Pine Orthic Regosol and Eluviated Eutric Brunisol soils on knolls and some lower slopes, and Gleysolic soils in depressions.
Garrick-Waitville	**Gray Luvisolic soils formed in a mixture of loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till (Garrick) and loamy glacial till (Waitville).**
GaWv2	Mainly a mixture of Garrick Orthic Gray Luvisol soils on midslopes and Garrick Gleyed Dark Gray Luvisol soils on lower slopes, with Waitville Orthic Gray Luvisol soils on upper slopes, and Gleysolic soils in depressions.
GaWv3	Mainly a mixture of Garrick Gleyed Gray Luvisol and Gleyed Dark Gray Luvisol soils on mid- to lower slopes, with Waitville Orthic Gray Luvisol soils on upper slopes, and Garrick Orthic Gray Luvisol soils on some midslopes.
Gronlid	**Gleyed Dark Gray Chernozemic soils formed in loamy lacustrine materials.**
Go1	Mainly Gronlid Gleyed Dark Gray soils.
Go2	Mainly Gronlid Gleyed Calcareous Dark Gray soils, with Gleysolic soils in depressions.
Go3	Mainly a mixture of Gronlid Gleyed Rego Dark Gray and Gleyed Calcareous Dark Gray soils.
Go5	Mainly Gronlid Gleyed Dark Gray soils, with Gleysolic soils in depressions.
Gronlid-Carrot River	**Gleyed Dark Gray Chernozemic soils formed in a mixture of loamy lacustrine (Gronlid) and sandy fluvial (Carrot River) materials.**
GoCr1	Mainly a mixture of Gronlid Gleyed Rego Dark Gray and Gleyed Calcareous Dark Gray soils, with a mixture of Carrot River Gleyed Rego Dark Gray, Gleyed Calcareous Dark Gray and peaty Gleyed Dark Gray soils on lower slopes, and Carrot River peaty Gleyed Calcareous Dark Gray soils on some lower slopes.
GoCr3	Mainly a mixture of Gronlid Gleyed Rego Dark Gray and Gleyed Calcareous Dark Gray soils, with a mixture of Carrot River Gleyed Dark Gray and Gleyed Calcareous Dark Gray soils on upper slopes, and Gronlid Gleyed Dark Gray soils on lower slopes.
Gronlid-La Corne	**A mixture of Gleyed Dark Gray Chernozemic (Gronlid) and Gray Luvisolic (La Corne) soils formed in loamy lacustrine materials.**
GoLc1	Mainly Gronlid Gleyed Dark Gray soils, with La Corne Dark Gray Luvisol soils on upper slopes.
GoLc2	Mainly Gronlid Gleyed Dark Gray soils, with La Corne Dark Gray Luvisol soils on upper slopes and knolls, and Gleysolic soils in depressions.
Gronlid-Pine	**A mixture of Gleyed Dark Gray Chernozemic soils formed in loamy lacustrine materials (Gronlid) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
GoPn1	Mainly Gronlid Gleyed Dark Gray soils, with Pine Gleyed Eutric Brunisol soils on midslopes, and Pine Eluviated Eutric Brunisol soils on upper slopes.
Gronlid-Shellbrook	**A mixture of Gleyed Dark Gray (Gronlid) and Dark Gray (Shellbrook) Chernozemic soils formed in loamy lacustrine materials.**
GoSb1	Mainly Gronlid Gleyed Dark Gray soils, with Shellbrook Orthic Dark Gray soils on upper slopes, and Gronlid Gleyed Calcareous Dark Gray soils on lower slopes.
GoSb3	Mainly a mixture of Gronlid Gleyed Rego Dark Gray and Gleyed Calcareous Dark Gray soils, with a mixture of Shellbrook Orthic Dark Gray and Gleyed Dark Gray soils on upper slopes, and Carrot River Gleyed Calcareous Dark Gray soils on some lower slopes.
GoSb10	Mainly Gronlid Gleyed Calcareous Dark Gray soils, with Gronlid Gleyed Dark Gray soils on midslopes, Shellbrook Orthic Dark Gray soils on upper slopes and knolls, and Gleysolic soils in depressions.

MAP UNIT	SOIL DESCRIPTION
Gronlid-Weirdale	**Gleyed Dark Gray Chernozemic soils formed in a mixture of loamy (Gronlid) and strongly calcareous, silty (Weirdale) lacustrine materials.**
GoWe1	Mainly a mixture of Gronlid Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils, with a mixture of Weirdale Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils on lower slopes.
GoWe3	Mainly Gronlid Gleyed Dark Gray soils, with Weirdale Gleyed Dark Gray soils on lower slopes.
Hillwash	**A complex of soils formed in various deposits associated with steep and eroding valley sides.**
Hw	Mainly a mixture of Hillwash Regosolic, Hillwash Gray Luvisolic and Hillwash Chernozemic soils on steep, gullied valley side slopes.
Hillwash-Alluvium	**A complex of soils formed in various deposits associated with steep and eroding valley sides (Hillwash) and variable-textured alluvial materials (Alluvium).**
HwAv1	Mainly a mixture of Hillwash Regosolic, Hillwash Gray Luvisolic and Hillwash Chernozemic soils on steep, gullied valley side slopes, with Alluvium Gleysolic soils on stream floodplains.
Hillwash-Pine	**A complex of soils formed in various deposits associated with steep and eroding valley sides (Hillwash) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine)**
HwPn1	Mainly a mixture of Hillwash Regosolic, Hillwash Gray Luvisolic and Hillwash Chernozemic soils, with a mixture of Pine Orthic Regosol and Pine Eluviated Eutric Brunisol soils intermixed.
Industrial Site IS	**A mixture of nonsoils and soils used as an industrial site or for other nonagricultural use.**
Kamsack	**Dark Gray Chernozemic soils formed in silty lacustrine materials.**
Ka6	Mainly a mixture of Kamsack Orthic Dark Gray soils on mid- to upper slopes and knolls and Kamsack Gleyed Dark Gray soils on mid- to lower slopes and in depressions.
Kamsack-Porcupine Plain	**A mixture of Dark Gray Chernozemic (Kamsack) and Gray Luvisolic (Porcupine Plain) soils formed in silty lacustrine materials.**
KaPp7	Mainly a mixture of Kamsack Gleyed Dark Gray and Orthic Dark Gray soils, with Porcupine Plain Gleyed Dark Gray Luvisol soils on upper slopes.
Kewanoke	**Brunisolic soils formed in weakly to noncalcareous, gravelly fluvial materials.**
Kk1	Mainly a mixture of Kewanoke Orthic Eutric Brunisol and Eluviated Eutric Brunisol soils, with Kewanoke Gleyed Eluviated Eutric Brunisol soils on lower slopes.
Kewanoke-Bagwa Lake	**A mixture of Brunisolic soils formed in weakly to noncalcareous, gravelly fluvial materials (Kewanoke) and Organic soils formed in sedge (fen) peat (Bagwa Lake).**
KkBL1	Mainly a mixture of Kewanoke Eluviated Eutric Brunisol and Gleyed Eutric Brunisol soils, with Bagwa Lake Typic Mesisol soils on lower slopes, and a mixture of Lavallee Lake Typic Mesisol and Typic Fibrisol soils on some lower slopes.
Kewanoke-Pine	**A mixture of Brunisolic soils formed in weakly to noncalcareous, gravelly fluvial materials (Kewanoke) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
KkPn5	Mainly Kewanoke Eluviated Eutric Brunisol soils, with Pine Eluviated Eutric Brunisol soils on lower slopes, and Kewanoke Orthic Eutric Brunisol soils on upper slopes.
Kelsey	**Dark Gray Chernozemic soils formed in a mixture of loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till.**
Ky1	Mainly Kelsey Gleyed Dark Gray soils.
Kelsey-Garrick	**A mixture Dark Gray Chernozemic (Kelsey) and Gray Luvisolic (Garrick) soils formed in loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till.**
KyGa1	Mainly Kelsey Gleyed Dark Gray soils, with Garrick Gleyed Dark Gray Luvisol soils on upper slopes.
La Corne	**Gray Luvisolic soils formed in loamy lacustrine materials.**
Lc1	Mainly La Corne Orthic Gray Luvisol soils.
Lc2	Mainly La Corne Dark Gray Luvisol soils.
Lc3	Mainly La Corne Orthic Gray Luvisol soils, with peaty Gleysolic soils in depressions.
Lc4	Mainly a mixture of La Corne Orthic Gray Luvisol and Dark Gray Luvisol soils.
Lc6	Mainly La Corne Orthic Gray Luvisol soils, with La Corne Brunisolic Gray Luvisol soils on lower slopes and La Corne Gleyed Gray Luvisol soils in depressions.
Lc9	Mainly a mixture of La Corne Gleyed Gray Luvisol and Gleyed Dark Gray Luvisol soils, with La Corne Dark Gray Luvisol soils on upper slopes.
La Corne-Gronlid	**A mixture of Gray Luvisolic (La Corne) and Gleyed Dark Gray Chernozemic (Gronlid) soils formed in loamy lacustrine materials.**
LcGo2	Mainly La Corne Dark Gray Luvisol soils, with La Corne Gleyed Dark Gray Luvisol soils on mid- to lower slopes, a mixture of Gronlid Gleyed Dark Gray and Gleyed Calcareous Dark Gray soils on some lower slopes, and Gleysolic soils in depressions.
LcGo5	Mainly La Corne Dark Gray Luvisol soils, with a mixture of Gronlid Gleyed Dark Gray and Gleyed Calcareous Dark Gray soils on mid- to lower slopes, and Gleysolic soils in depressions.
La Corne-Pine	**A mixture of Gray Luvisolic soils formed in loamy lacustrine materials (La Corne) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
LcPn1	Mainly La Corne Orthic Gray Luvisol soils, with Pine Eluviated Eutric Brunisol soils on upper slopes.
LcPn2	Mainly La Corne Orthic Gray Luvisol soils, with Pine Eluviated Eutric Brunisol soils on upper slopes, and peaty Gleysolic soils in depressions.
LcPn3	Mainly La Corne Orthic Gray Luvisol soils, with a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils on upper slopes, and a mixture of La Corne Brunisolic Gray Luvisol soils on some mid- to upper slopes and La Corne Gleyed Gray Luvisol soils on lower slopes.
La Corne-Porcupine Plain	**Gray Luvisolic soils formed in a mixture of loamy (La Corne) and silty (Porcupine Plain) lacustrine materials.**
LcPp1	Mainly La Corne Orthic Gray Luvisol soils, with Porcupine Plain Orthic Gray Luvisol soils on lower slopes.
LcPp7	Mainly a mixture of La Corne Orthic Gray Luvisol soils on mid- to upper slopes and La Corne Dark Gray Luvisol soils on lower slopes, with a mixture of Porcupine Plain Orthic Gray Luvisol soils on some upper slopes and Porcupine Plain Dark Gray Luvisol soils on some lower slopes, and a mixture of Shellbrook Orthic Dark Gray soils and Kamsack Orthic Dark Gray soils on some lower slopes.
La Corne-Shellbrook	**A mixture of Gray Luvisolic (La Corne) and Dark Gray Chernozemic (Shellbrook) soils formed in loamy lacustrine materials.**
LcSb1	Mainly La Corne Orthic Gray Luvisol soils, with Shellbrook Orthic Dark Gray soils on lower slopes and through depressions.
LcSb4	Mainly a mixture of La Corne Dark Gray Luvisol soils on midslopes and La Corne Orthic Gray Luvisol soils on upper slopes and knolls, with Shellbrook Orthic Dark Gray soils on lower slopes and through depressions.
La Corne-Sylvania	**Gray Luvisolic soils formed in a mixture of loamy lacustrine (La Corne) and sandy fluvial (Sylvania) materials.**
LcSy4	Mainly a mixture of La Corne Dark Gray Luvisol soils on mid- and lower slopes and La Corne Orthic Gray Luvisol soils on upper slopes and knolls, with a mixture of Sylvania Orthic Gray Luvisol soils on some upper slopes and knolls and Sylvania Dark Gray Luvisol soils on some midslopes.
LcSy5	Mainly La Corne Orthic Gray Luvisol soils, with Sylvania Orthic Gray Luvisol soils on upper slopes, and La Corne Dark Gray Luvisol soils on some lower slopes.
LcSy6	Mainly La Corne Dark Gray Luvisol soils, with a mixture of Sylvania Dark Gray Luvisol soils on some mid- to lower slopes and Sylvania Orthic Gray Luvisol soils on upper slopes, and Shellbrook Orthic Dark Gray soils on some lower slopes.
LcSy8	Mainly La Corne Gleyed Dark Gray Luvisol soils, with Sylvania Gleyed Dark Gray Luvisol soils on upper slopes.

MAP UNIT	SOIL DESCRIPTION
La Corne-Whitefox	**A mixture of Gray Luvisolic soils formed in loamy lacustrine materials (La Corne) and Dark Gray Chernozemic soils formed in stratified, sandy alluvial materials (Whitefox).**
LcWf1	Mainly La Corne Dark Gray Luvisol soils, with Whitefox Orthic Dark Gray soils on lower slopes.
Lavallee Lake	**Organic soils formed in forest peat overlain by shallow moss peat.**
LL4	Mainly Lavallee Lake Terric Mesisol soils.
LL5	Mainly a mixture of Lavallee Lake Terric Mesisol and Typic Mesisol soils.
LL9	Mainly Lavallee Lake Terric Fibrisol soils, with Lavallee Lake Typic Fibrisol soils toward the center of the depression.
LL15	Mainly a mixture of Lavallee Lake Terric Mesisol and Terric Fibric Mesisol soils.
LL16	Mainly a mixture of Lavallee Lake Terric Fibric Mesisol and Mesic Fibrisol soils.
Lavallee Lake-Arbow	**A mixture of Organic soils formed in forest peat overlain by shallow moss peat (Lavallee Lake) and Gleysolic soils formed in variable-textured alluvial materials supporting a tree cover (Arbow).**
LLAw1	Mainly a mixture of Lavallee Lake Terric Fibric Mesisol and Mesic Fibrisol soils, with Arbow peaty Gleysolic soils intermixed.
Lavallee Lake-Bagwa Lake	**A mixture of Organic soils formed in forest peat overlain by shallow moss peat (Lavallee Lake) and sedge (fen) peat (Bagwa Lake).**
LLBL2	Mainly a mixture of Lavallee Lake Terric Fibric Mesisol and Mesic Fibrisol soils, with a mixture of Bagwa Lake Typic Mesisol and Terric Mesisol soils intermixed.
LLBL47	Mainly a mixture of Lavallee Lake Terric Fibric Mesisol and Mesic Fibrisol soils along the margins of the depression, with a mixture of Bagwa Lake Typic Mesisol and Cumulo Mesisol soils toward the center of the depression.
Lavallee Lake-Bittern Lake	**A mixture of Organic soils formed in forest peat overlain by shallow moss peat (Lavallee Lake) and Gray Luvisolic soils formed in loamy glacial till overlain by shallow, sandy glaciofluvial materials (Bittern Lake).**
LLBt4	Mainly a mixture of Lavallee Lake Terric Fibric Mesisol and Mesic Fibrisol soils toward the center of the depression, with Bittern Lake Gleyed Gray Luvisol soils on local upland areas, and peaty Gleysolic soils along the margins of the depression.
Lavallee Lake-Smeaton	**A mixture of Organic soils formed in forest peat overlain by shallow moss peat (Lavallee Lake) and Gray Luvisolic, Brunisolic and Regosolic soils formed in a complex mixture of loamy glacial till, eroded glacial till and sandy and gravelly fluvial materials (Smeaton).**
LLSm5	Mainly a mixture of Lavallee Lake Terric Fibric Mesisol and Mesic Fibrisol soils toward the center of the depression, with a mixture of Smeaton Orthic Gray Luvisol and Gleyed Gray Luvisol soils on local upland areas, and peaty Gleysolic soils along the margins of the depression.
Meadow	**Gleysolic soils formed in variable-textured alluvial materials.**
Mw6	Mainly a mixture of Meadow Humic Gleysolic soils on mid- and upper slopes and Meadow peaty Humic Gleysolic soils on lower slopes.
Nipawin	**Dark Gray Chernozemic soils formed in variable, silt-stratified, sandy alluvial materials.**
Np1	Mainly Nipawin Orthic Dark Gray soils.
Np3	Mainly Nipawin Gleyed Calcareous Dark Gray soils, with Nipawin Gleyed Dark Gray soils on upper slopes.
Nisbet	**Dark Gray Chernozemic soils formed in sandy fluvial materials.**
Nt1	Mainly Nisbet Orthic Dark Gray soils.
Nisbet-Carrot River	**A mixture of Dark Gray (Nisbet) and Gleyed Dark Gray (Carrot River) Chernozemic soils formed in sandy fluvial materials.**
NtCr1	Mainly Nisbet Orthic Dark Gray soils, with Carrot River Gleyed Dark Gray soils on mid- to lower slopes and through depressions.
NtCr2	Mainly Nisbet Orthic Dark Gray soils, with a mixture of Carrot River Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils on mid- to lower slopes, and Gleysolic soils in depressions.

MAP UNIT	SOIL DESCRIPTION
Nisbet-Glenbush	**Dark Gray Chernozemic soils formed in a mixture of sandy (Nisbet) and gravelly (Glenbush) fluvial materials.**
NtGb1	Mainly Nisbet Orthic Dark Gray soils, with Glenbush Orthic Dark Gray soils on some upper slopes and knolls.
Nisbet-La Corne	**A mixture of Dark Gray Chernozemic soils formed in sandy fluvial materials (Nisbet) and Gray Luvisolic soils formed in loamy lacustrine materials (La Corne).**
NtLc1	Mainly Nisbet Orthic Dark Gray soils, with La Corne Dark Gray Luvisol soils on lower slopes.
Nisbet-Pine	**A mixture of Dark Gray Chernozemic soils formed in sandy fluvial materials (Nisbet) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
NtPn1	Mainly Nisbet Orthic Dark Gray soils, with Pine Orthic Eutric Brunisol soils on upper slopes and knolls.
NtPn3	Mainly Nisbet Orthic Dark Gray soils, with a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils on upper slopes and knolls, and peaty Gleysolic soils in depressions.
Nisbet-Shellbrook	**Dark Gray Chernozemic soils formed in a mixture of sandy fluvial (Nisbet) and loamy lacustrine (Shellbrook) materials.**
NtSb1	Mainly Nisbet Orthic Dark Gray soils, with Shellbrook Orthic Dark Gray soils on lower slopes and through depressions.
Nisbet-Sylvania	**A mixture of Dark Gray Chernozemic (Nisbet) and Gray Luvisolic (Sylvania) soils formed in sandy fluvial materials.**
NtSy6	Mainly Nisbet Orthic Dark Gray soils, with Sylvania Dark Gray Luvisol soils on some mid- and upper slopes.
Pine	**Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked.**
Pn1	Mainly Pine Eluviated Eutric Brunisol soils.
Pn2	Mainly a mixture of Pine Orthic Regosol soils on mid- to upper slopes and knolls and Pine Eluviated Eutric Brunisol soils on lower slopes and in depressions.
Pn3	Mainly a mixture of Pine Orthic Eutric Brunisol and Pine Orthic Regosol soils.
Pn5	Mainly a mixture of Pine Orthic Regosol, Pine Orthic Eutric Brunisol and Eluviated Eutric Brunisol soils.
Pn9	Mainly a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils, with a mixture of Pine Gleyed Eluviated Eutric Brunisol and Pine Gleyed Regosol soils on lower slopes, and peaty Gleysolic soils in depressions.
Pn13	Mainly Pine Orthic Eutric Brunisol soils, with Pine Eluviated Eutric Brunisol soils on midslopes, and Pine Gleyed Eluviated Eutric Brunisol soils on lower slopes.
Pine-Bittern Lake	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Gray Luvisolic soils formed in loamy glacial till overlain by shallow, sandy glaciofluvial materials (Bittern Lake).**
PnBt1	Mainly Pine Eluviated Eutric Brunisol soils, with a mixture of Bittern Lake Brunisolic Gray Luvisol and Orthic Gray Luvisol soils on upper slopes and knolls.
PnBt3	Mainly Pine Eluviated Eutric Brunisol soils, with a mixture of Bittern Lake Brunisolic Gray Luvisol and Orthic Gray Luvisol soils intermixed.
PnBt7	Mainly Pine Eluviated Eutric Brunisol soils, with a mixture of Bittern Lake Brunisolic Gray Luvisol and Orthic Gray Luvisol soils intermixed, Lavallee Lake Terric Mesisol soils in depressions, and peaty Gleysolic soils on some lower slopes and in some depressions.
Pine-Carrot River	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Gleyed Dark Gray Chernozemic soils formed in sandy fluvial materials (Carrot River).**
PnCr1	Mainly a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils, with a mixture of Carrot River Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils on lower slopes and in depressions.

MAP UNIT	SOIL DESCRIPTION
PnCr4	Mainly a mixture of Pine Orthic Regosol soils on knolls, Pine Eluviated Eutric Brunisol soils on mid- to upper slopes and Pine Gleyed Eluviated Eutric Brunisol soils on mid- to lower slopes, with a mixture of Carrot River Gleyed Dark Gray and Gleyed Calcareous Dark Gray soils on some lower slopes, and Gleysolic soils in depressions.
PnCr5	Mainly a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils, with a mixture of Carrot River Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils on lower slopes, a mixture of Pine Gleyed Eluviated Eutric Brunisol and Gleyed Regosol soils on some mid- to lower slopes, and peaty Gleysolic soils in depressions.
Pine-Kewanoke	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Brunisolic soils formed in weakly to noncalcareous, gravelly fluvial materials (Kewanoke).**
PnKk1	Mainly Pine Eluviated Eutric Brunisol soils, with Kewanoke Eluviated Eutric Brunisol soils intermixed.
Pine-La Corne	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Gray Luvisolic soils formed in loamy lacustrine materials (La Corne).**
PnLc1	Mainly a mixture of Pine Eluviated Eutric Brunisol and Orthic Eutric Brunisol soils, with La Corne Orthic Gray Luvisol soils intermixed.
PnLc3	Mainly Pine Eluviated Eutric Brunisol soils, with La Corne Orthic Gray Luvisol soils on lower slopes.
PnLc7	Mainly a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils, with La Corne Orthic Gray Luvisol and Brunisolic Gray Luvisol soils on upper slopes, and a mixture of Pine Gleyed Eluviated Eutric Brunisol and Pine Gleyed Regosol soils on lower slopes.
Pine-Lavallee Lake	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Organic soils formed in forest peat overlain by shallow moss peat (Lavallee Lake).**
PnLL3	Mainly Pine Eluviated Eutric Brunisol soils, with Pine Gleyed Eluviated Eutric Brunisol soils on mid- to lower slopes, Lavallee Lake Terric Fibric Mesisol soils on lower slopes, and peaty Gleysolic soils in depressions.
PnLL6	Mainly Pine Orthic Regosol soils, with Pine Eluviated Eutric Brunisol soils on midslopes, Lavallee Lake Terric Mesisol soils on lower slopes, and peaty Gleysolic soils in depressions.
Pine-Nisbet	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Dark Gray Chernozemic soils formed in sandy fluvial materials (Nisbet).**
PnNt1	Mainly a mixture of Pine Orthic Eutric Brunisol and Pine Orthic Regosol soils on upper slopes and knolls, with Nisbet Orthic Dark Gray soils on lower slopes and through depressions.
PnNt4	Mainly a mixture of Pine Orthic Regosol and Pine Eluviated Eutric Brunisol soils, with Nisbet Orthic Dark Gray soils intermixed.
Pine-Porcupine Plain	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Gray Luvisolic soils formed in silty lacustrine materials (Porcupine Plain).**
PnPp2	Mainly a mixture of Pine Orthic Regosol and Pine Eluviated Eutric Brunisol soils, with a mixture of Porcupine Plain Orthic Gray Luvisol and Gleyed Gray Luvisol soils on mid- and lower slopes, a mixture of Pine Gleyed Eluviated Eutric Brunisol and Pine Gleyed Regosol soils on some lower slopes, and peaty Gleysolic soils in depressions.
PnPp5	Mainly a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils, with a mixture of Porcupine Plain Orthic Gray Luvisol and Gleyed Gray Luvisol soils on mid- and lower slopes, Smeaton Orthic Gray Luvisol soils intermixed, and peaty Gleysolic soils in depressions.
Pine-Sylvania	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Gray Luvisolic soils formed in sandy fluvial materials (Sylvania).**
PnSy3	Mainly a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils, with Sylvania Orthic Gray Luvisol soils on lower slopes.
PnSy4	Mainly a mixture of Pine Orthic Eutric Brunisol and Pine Orthic Regosol soils, with Sylvania Orthic Gray Luvisol soils on lower slopes.
PnSy7	Mainly a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils, with Sylvania Orthic Gray Luvisol soils intermixed, a mixture of Pine Gleyed Eluviated Eutric Brunisol and Pine Gleyed Regosol soils on some lower slopes, and peaty Gleysolic soils in depressions.
Pine-Waitville	**A mixture of Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine) and Gray Luvisolic soils formed in loamy glacial till (Waitville).**
PnWv3	Mainly a mixture of Pine Orthic Regosol and Pine Eluviated Eutric Brunisol soils, with a mixture of Waitville Orthic Gray Luvisol soils on upper slopes and Waitville Dark Gray Luvisol soils on some midslopes.
Porcupine Plain	**Gray Luvisolic soils formed in silty lacustrine materials.**
Pp2	Mainly Porcupine Plain Orthic Gray Luvisol soils, with Porcupine Plain Dark Gray Luvisol soils on lower slopes and in depressions.
Pp3	Mainly a mixture of Porcupine Plain Orthic Gray Luvisol soils on upper slopes and knolls and Porcupine Plain Dark Gray Luvisol soils on lower slopes and in depressions.
Pp7	Mainly a mixture of Porcupine Plain Orthic Gray Luvisol soils on mid- to upper slopes and knolls and Porcupine Plain Gleyed Gray Luvisol soils on lower slopes, with peaty Gleysolic soils in depressions.
Porcupine Plain-Carrot River	**A mixture of Gray Luvisolic soils formed in silty lacustrine materials (Porcupine Plain) and Gleyed Dark Gray Chernozemic soils formed in sandy fluvial materials (Carrot River).**
PpCr2	Mainly Porcupine Plain Gleyed Gray Luvisol soils, with Carrot River Gleyed Dark Gray soils intermixed, and peaty Gleysolic soils in depressions.
Porcupine Plain-Eldersley	**Gray Luvisolic soils formed in a mixture of silty (Porcupine Plain) and clayey (Eldersley) lacustrine materials.**
PpEd1	Mainly Porcupine Plain Dark Gray Luvisol soils, with Eldersley Dark Gray Luvisol soils on lower slopes.
Porcupine Plain-Kamsack	**A mixture of Gray Luvisolic (Porcupine Plain) and Dark Gray Chernozemic (Kamsack) soils formed in silty lacustrine materials.**
PpKa5	Mainly Porcupine Plain Gleyed Dark Gray Luvisol soils on upper slopes, with Kamsack Gleyed Dark Gray soils on midslopes, and Gleysolic soils in depressions.
Porcupine Plain-La Corne	**Gray Luvisolic soils formed in a mixture of silty (Porcupine Plain) and loamy (La Corne) lacustrine materials.**
PpLc3	Mainly Porcupine Plain Gleyed Dark Gray Luvisol soils, with La Corne Dark Gray Luvisol soils on upper slopes and knolls.
Porcupine Plain-Pine	**A mixture of Gray Luvisolic soils formed in silty lacustrine materials (Porcupine Plain) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
PpPn2	Mainly a mixture of Porcupine Plain Orthic Gray Luvisol and Gleyed Gray Luvisol soils, with a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils on upper slopes and knolls.
Porcupine Plain-Sylvania	**Gray Luvisolic soils formed in a mixture of silty lacustrine (Porcupine Plain) and sandy fluvial (Sylvania) materials.**
PpSy3	Mainly Porcupine Plain Gleyed Gray Luvisol soils, with a mixture of Sylvania Gleyed Gray Luvisol soils on upper slopes and Sylvania Gleyed Dark Gray Luvisol soils on midslopes, and Porcupine Plain Orthic Gray Luvisol soils on some mid- to upper slopes.
Paddockwood	**Gleyed Dark Gray Chernozemic soils formed in strongly calcareous, loamy, water-modified glacial till.**
Pw4	Mainly a mixture of Paddockwood Gleyed Rego Dark Gray and Gleyed Calcareous Dark Gray soils.
Paddockwood-Whitewood	**A mixture of Gleyed Dark Gray Chernozemic soils formed in strongly calcareous, loamy, water-modified glacial till (Paddockwood) and Dark Gray Chernozemic soils formed in loamy glacial till (Whitewood).**
PwWh1	Mainly a mixture of Paddockwood Gleyed Calcareous Dark Gray and Gleyed Rego Dark Gray soils, with Whitewood Orthic Dark Gray soils on upper slopes and knolls.

MAP UNIT	SOIL DESCRIPTION
Runway	**A complex of soils formed in various deposits associated with shallow drainage channels and gullies.**
Rw	Mainly a mixture of Runway Gleysolic soils on channel bottoms and Runway Regosolic, Runway Gray Luvisolic and Runway Chernozemic soils on channel side slopes.
Runway-Alluvium	**A complex of soils formed in various deposits associated with shallow drainage channels and gullies (Runway) and variable-textured alluvial materials (Alluvium).**
RwAv1	Mainly Runway Regosolic, Runway Gray Luvisolic and Runway Chernozemic soils on channel side slopes, with Alluvium Gleysolic soils on stream floodplains, and a mixture of Alluvium Orthic, Calcareous, Gleyed and Gleyed Calcareous Chernozemic soils on terraces.
Runway-Lavallee Lake	**A complex of soils formed in various deposits associated with shallow drainage channels and gullies (Runway) and Organic soils formed in forest peat overlain by shallow moss peat (Lavallee Lake).**
RwLL1	Mainly a mixture of Runway Chernozemic, Runway Regosolic and Runway Gleysolic soils on channel side slopes, with Lavallee Lake Terric Fibrisol soils in the channel bottom.
Shellbrook	**Dark Gray Chernozemic soils formed in loamy lacustrine materials.**
Sb1	Mainly Shellbrook Orthic Dark Gray soils.
Sb2	Mainly Shellbrook Orthic Dark Gray soils, with Gleysolic soils in depressions.
Sb7	Mainly Shellbrook Orthic Dark Gray soils, with Shellbrook Calcareous Dark Gray soils on upper slopes and knolls, and peaty Gleysolic soils in depressions.
Shellbrook-Gronlid	**A mixture of Dark Gray (Shellbrook) and Gleyed Dark Gray (Gronlid) Chernozemic soils formed in loamy lacustrine materials.**
SbGo1	Mainly Shellbrook Orthic Dark Gray soils, with Gronlid Gleyed Dark Gray soils on lower slopes and through depressions.
SbGo2	Mainly Shellbrook Orthic Dark Gray soils, with Gronlid Gleyed Calcareous Dark Gray soils on lower slopes, and Gleysolic soils in depressions.
SbGo4	Mainly Shellbrook Orthic Dark Gray soils, with Gronlid Gleyed Calcareous Dark Gray soils on lower slopes and through depressions.
Shellbrook-La Corne	**A mixture of Dark Gray Chernozemic (Shellbrook) and Gray Luvisolic (La Corne) soils formed in loamy lacustrine materials.**
SbLc3	Mainly Shellbrook Orthic Dark Gray soils, with a mixture of La Corne Dark Gray Luvisol soils on midslopes and La Corne Gleyed Dark Gray Luvisol soils on lower slopes.
SbLc4	Mainly Shellbrook Orthic Dark Gray soils, with a mixture of La Corne Orthic Gray Luvisol and Dark Gray Luvisol soils on upper slopes.
SbLc6	Mainly Shellbrook Orthic Dark Gray soils, with a mixture of La Corne Orthic Gray Luvisol soils on upper slopes and La Corne Dark Gray Luvisol soils on some midslopes, with peaty Gleysolic soils in depressions.
Shellbrook-Nisbet	**Dark Gray Chernozemic soils formed in a mixture of loamy lacustrine (Shellbrook) and sandy fluvial (Nisbet) materials.**
SbNt3	Mainly Shellbrook Orthic Dark Gray soils, with Nisbet Orthic Dark Gray soils and Shellbrook Calcareous Dark Gray soils on upper slopes.
Shellbrook-Weirdale	**A mixture of Dark Gray Chernozemic formed in loamy lacustrine materials (Shellbrook) and Gleyed Dark Gray Chernozemic soils formed in strongly calcareous, silty lacustrine materials (Weirdale).**
SbWe4	Mainly Shellbrook Orthic Dark Gray soils, with Weirdale Gleyed Calcareous Dark Gray soils on lower slopes, and Shellbrook Calcareous Dark Gray soils on midslopes.
Smeaton	**Gray Luvisolic, Brunisolic and Regosolic soils formed in a complex mixture of loamy glacial till, eroded glacial till, and sandy and gravelly fluvial materials.**
Sm1	Mainly Smeaton Orthic Gray Luvisol soils, with Smeaton Gleyed Gray Luvisol soils on lower slopes, and a mixture of Smeaton Orthic Regosol and Smeaton Eluviated Eutric Brunisol soils on mid- and upper slopes.
Sm2	Mainly Smeaton Orthic Gray Luvisol soils, with Smeaton Gleyed Gray Luvisol soils on lower slopes, a mixture of Smeaton Orthic Regosol and Smeaton Eluviated Eutric Brunisol soils on mid- and upper slopes, and Gleysolic soils in depressions.
Smeaton-Lavallee Lake	**A mixture of Gray Luvisolic, Brunisolic and Regosolic soils formed in a complex mixture of loamy glacial till, eroded glacial till and sandy and gravelly fluvial materials (Smeaton) and Organic soils formed in forest peat overlain by shallow moss peat (Lavallee Lake).**
SmLL1	Mainly Smeaton Orthic Gray Luvisol soils, with Smeaton Gleyed Gray Luvisol soils on lower slopes, a mixture of Lavallee Lake Terric Fibric Mesisol and Mesic Fibrisol soils in depressions, and Gleysolic soils in some depressions and margins of Lavallee Lake soils.
Smeaton-Porcupine Plain	**A mixture of Gray Luvisolic, Brunisolic and Regosolic soils formed in a complex mixture of loamy glacial till, eroded glacial till and sandy and gravelly fluvial materials (Smeaton) and Gray Luvisolic soils formed in silty lacustrine materials (Porcupine Plain).**
SmPp1	Mainly Smeaton Orthic Gray Luvisol soils, with a mixture of Porcupine Plain Orthic Gray Luvisol soils on some midslopes and Porcupine Plain Gleyed Gray Luvisol soils on lower slopes, a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils intermixed, and Gleysolic soils in depressions.
Sylvania	**Gray Luvisolic soils formed in sandy fluvial materials.**
Sy1	Mainly Sylvania Orthic Gray Luvisol soils.
Sy8	Mainly a mixture of Sylvania Gleyed Dark Gray Luvisol and Gleyed Gray Luvisol soils, with Gleysolic soils in depressions.
Sylvania-Carrot River	**A mixture of Gray Luvisolic (Sylvania) and Gleyed Dark Gray Chernozemic (Carrot River) soils formed in sandy fluvial materials.**
SyCr1	Mainly Sylvania Gleyed Gray Luvisol soils, with Carrot River Gleyed Dark Gray soils on lower slopes.
SyCr2	Mainly Sylvania Dark Gray Luvisol soils, with Carrot River Gleyed Dark Gray soils on lower slopes, and peaty Gleysolic soils in depressions.
Sylvania-Gronlid	**A mixture of Gray Luvisolic soils formed in sandy fluvial materials (Sylvania) and Gleyed Dark Gray Chernozemic soils formed in loamy lacustrine materials (Gronlid).**
SyGo4	Mainly Sylvania Dark Gray Luvisol soils, with Gronlid Gleyed Calcareous Dark Gray soils on lower slopes and through depressions.
Sylvania-La Corne	**Gray Luvisolic soils formed in a mixture of sandy fluvial (Sylvania) and loamy lacustrine (La Corne) materials.**
SyLc1	Mainly a mixture of Sylvania Dark Gray Luvisol soils on midslopes and Sylvania Orthic Gray Luvisol soils on upper slopes and knolls, with La Corne Dark Gray Luvisol soils on lower slopes and through depressions.
Sylvania-Nisbet	**A mixture of Gray Luvisolic (Sylvania) and Dark Gray Chernozemic (Nisbet) soils formed in sandy fluvial materials.**
SyNt1	Mainly a mixture of Sylvania Dark Gray Luvisol soils on midslopes and Sylvania Orthic Gray Luvisol soils on upper slopes and knolls, with Nisbet Orthic Dark Gray soils on lower slopes and through depressions.
SyNt7	Mainly a mixture of Sylvania Dark Gray Luvisol and Orthic Gray Luvisol soils, with Nisbet Orthic Dark Gray soils on upper slopes, and Pine Eluviated Eutric Brunisol soils on midslopes.
Sylvania-Pine	**A mixture of Gray Luvisolic soils formed in sandy fluvial materials (Sylvania) and Brunisolic and Regosolic soils formed in sandy fluvial materials, some of which have been wind worked (Pine).**
SyPn5	Mainly Sylvania Orthic Gray Luvisol soils, with a mixture of Pine Eluviated Eutric Brunisol and Pine Orthic Regosol soils on upper slopes and knolls, and peaty Gleysolic soils in depressions.
SyPn6	Mainly a mixture of Sylvania Gleyed Gray Luvisol and Gleyed Dark Gray Luvisol soils on lower slopes, with Pine Eluviated Eutric Brunisol soils on upper slopes, and Pine Orthic Eutric Brunisol soils on midslopes.
Tiger Hills	**Dark Gray Chernozemic soils formed in shallow, silty lacustrine materials underlain by glacial till.**
Tg4	Mainly Tiger Hills Orthic Dark Gray soils, with a mixture of Tiger Hills Calcareous Dark Gray and Rego Dark Gray soils on upper slopes.

MAP UNIT	SOIL DESCRIPTION
Tisdale	**Dark Gray Chernozemic soils formed in clayey lacustrine materials.**
Ti7	Mainly a mixture of Tisdale Orthic Dark Gray soils on upper slopes and Tisdale Gleyed Dark Gray soils on lower slopes and in depressions.
Weirdale	**Gleyed Dark Gray Chernozemic soils formed in strongly calcareous, silty lacustrine materials.**
We1	Mainly a mixture of Weirdale Gleyed Rego Dark Gray and Gleyed Calcareous Dark Gray soils.
We2	Mainly a mixture of Weirdale Rego Dark Gray and Calcareous Dark Gray soils, with Weirdale Orthic Dark Gray soils on upper slopes, and a mixture of Weirdale peaty Gleyed Dark Gray, peaty Gleyed Rego Dark Gray and peaty Gleyed Calcareous Dark Gray soils on lower slopes and in depressions.
We3	Mainly a mixture of Weirdale Rego Dark Gray and Calcareous Dark Gray soils, with Weirdale Orthic Dark Gray soils on knolls.
We4	Mainly Weirdale Gleyed Calcareous Dark Gray soils, with peaty Gleysolic soils in depressions.
We5	Mainly Weirdale Gleyed Dark Gray soils, with Gleysolic soils in depressions.
We6	Mainly Weirdale Gleyed Dark Gray soils.
We7	Mainly Weirdale Gleyed Dark Gray soils, with a mixture of Weirdale Gleyed Calcareous Dark Gray soils on midslopes and Weirdale Gleyed Rego Dark Gray soils on lower slopes.
Weirdale-Garrick	**A mixture of Gleyed Dark Gray Chernozemic soils formed in strongly calcareous, silty lacustrine materials (Weirdale) and Gray Luvisolic soils formed in loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till (Garrick).**
WeGa3	Mainly Weirdale Gleyed Dark Gray soils, with Garrick Dark Gray Luvisol soils on upper slopes, and a mixture of Garrick Gleyed Dark Gray Luvisol and Gleyed Gray Luvisol soils on midslopes.
Weirdale-Gronlid	**Gleyed Dark Gray Chernozemic soils formed in a mixture of strongly calcareous, silty (Weirdale) and loamy (Gronlid) lacustrine materials.**
WeGo1	Mainly Weirdale Gleyed Dark Gray soils, with Gronlid Gleyed Dark Gray soils on upper slopes.
WeGo2	Mainly a mixture of Weirdale Gleyed Dark Gray and Gleyed Rego Dark Gray soils, with Gronlid Gleyed Dark Gray soils on upper slopes, and Gleysolic soils in depressions.
Weirdale-Porcupine Plain	**A mixture of Gleyed Dark Gray Chernozemic soils formed in strongly calcareous, silty lacustrine materials (Weirdale) and Gray Luvisolic soils formed in silty lacustrine materials (Porcupine Plain).**
WePp1	Mainly Weirdale Gleyed Dark Gray soils, with Porcupine Plain Dark Gray Luvisol soils on upper slopes.
WePp3	Mainly Weirdale Gleyed Dark Gray soils, with Porcupine Plain Gleyed Dark Gray Luvisol soils on upper slopes.
Weirdale-Sylvania	**A mixture of Gleyed Dark Gray Chernozemic soils formed in strongly calcareous, silty lacustrine materials (Weirdale) and Gray Luvisolic soils formed in sandy fluvial materials (Sylvania).**
WeSy1	Mainly Weirdale Gleyed Dark Gray soils, with Sylvania Gleyed Dark Gray Luvisol soils on upper slopes.

MAP UNIT	SOIL DESCRIPTION
Whitefox	**Dark Gray Chernozemic soils formed in stratified, sandy alluvial materials.**
Wf1	Mainly Whitefox Orthic Dark Gray soils.
Wf2	Mainly Whitefox Gleyed Dark Gray soils, with Gleysolic soils in depressions.
Wf3	Mainly Whitefox Gleyed Dark Gray soils, with Whitefox Orthic Dark Gray soils on upper slopes.
Whitefox-Carrot River	**A mixture of Dark Gray Chernozemic soils formed in stratified, sandy alluvial materials (Whitefox) and Gleyed Dark Gray Chernozemic soils formed in sandy fluvial materials (Carrot River).**
WfCr3	Mainly Whitefox Gleyed Dark Gray soils, with Carrot River Gleyed Dark Gray soils on some midslopes, and a mixture of Pine Orthic Eutric Brunisol and Nisbet Orthic Dark Gray soils on upper slopes.
Whitefox-Nipawin	**Dark Gray Chernozemic soils formed in a mixture of stratified, sandy alluvial materials (Whitefox) and variable, silt-stratified, sandy alluvial materials (Nipawin).**
WfNp3	Mainly Whitefox Gleyed Dark Gray soils, with a mixture of Nipawin Gleyed Dark Gray and Gleyed Calcareous Dark Gray soils intermixed, and Whitefox Gleyed Calcareous Dark Gray soils on lower slopes.
Whitefox-Nisbet	**Dark Gray Chernozemic soils formed in mixture of stratified, sandy alluvial (Whitefox) and sandy fluvial (Nisbet) materials**
WfNt1	Mainly Whitefox Orthic Dark Gray soils, with Nisbet Orthic Dark Gray soils on upper slopes.
Waitville-Bittern Lake	**Gray Luvisolic soils formed in a mixture of loamy glacial till (Waitville) and loamy glacial till overlain by shallow, sandy glaciofluvial materials (Bittern Lake).**
WvBt1	Mainly Waitville Orthic Gray Luvisol soils, with Bittern Lake Orthic Gray Luvisol soils intermixed.
Waitville-Garrick	**Gray Luvisolic soils formed in a mixture of loamy glacial till (Waitville) and loamy, water-modified glacial till and shallow, silty lacustrine materials underlain by glacial till (Garrick).**
WvGa1	Mainly Waitville Orthic Gray Luvisol soils, with Garrick Gleyed Dark Gray Luvisol soils on lower slopes.
Waitville-Whitewood	**A mixture of Gray Luvisolic (Waitville) and Dark Gray Chernozemic (Whitewood) soils formed in loamy glacial till.**
WvWh5	Mainly a mixture of Waitville Dark Gray Luvisol and Orthic Gray Luvisol soils, with Whitewood Orthic Dark Gray soils on upper slopes, and Gleysolic soils in depressions.
WvWh9	Mainly Waitville Dark Gray Luvisol soils, with Whitewood Orthic Dark Gray soils on lower slopes.
Wetland	**Gleysolic soils and shallow open water associated with wet, depressional areas.**
Wz1	Wet meadows. Mainly Wetland Gleysolic soils, with shallow open water in central areas.
Wz2	Marshes. A mixture of Wetland Gleysolic soils and shallow open water.
Wz3	Open water wetlands. Mainly shallow open water, with Wetland Gleysolic soils in marginal areas.