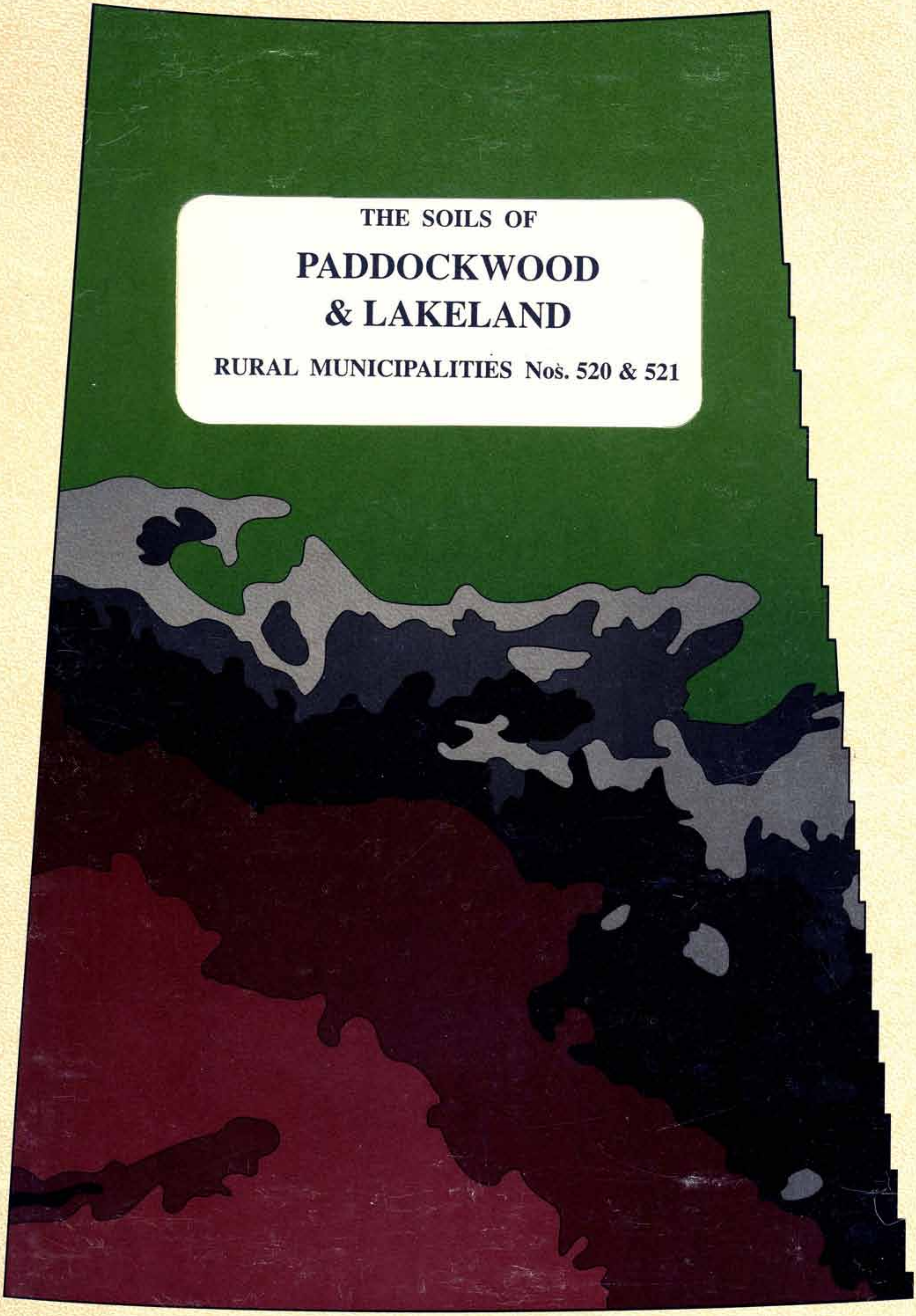
THE SOILS OF

PADDOCKWOOD & LAKELAND

RURAL MUNICIPALITIES Nos. 520 & 521



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SASKATCHEWAN

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by

Staff, Saskatchewan Land Resource Centre
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STAFF, SASKATCHEWAN SOIL SURVEY

Map and Report Compilation: A.J. Anderson
Program Directors: D.W. Anderson, Director, H.P.W. Rostad, Associate Director, Saskatchewan Land Resource Centre, Saskatoon
Soil Correlation: H.B. Stonehouse
Soil Mapping: A.J. Anderson, H.P.W. Rostad and H.B. Stonehouse
Research and Field Staff: M.D. Bock, S.P. Bowkett, D.D. Cerkowniak, H.C. de Gooijer, W.D. Eilers, C.R. Hilliard, L.M. Kozak, P.M. Krug, G.A. Padbury, C.T. Stushnoff, R.D. Stushnoff, A.B. Woloschuk, and F. Youatt
Secretarial: S.S.M. Wood
Geographical Information System: S.R.E. Johnson
Laboratory: B.G. Goetz, J.D. Key and C.L. Lang

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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 made up of a soil association code, a map unit number, and in some cases a substrate modifier code, along with a surface texture code in the numerator and a code composed of numbers and letters indicating the slope class and surface form of the landscape in the denominator. 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.

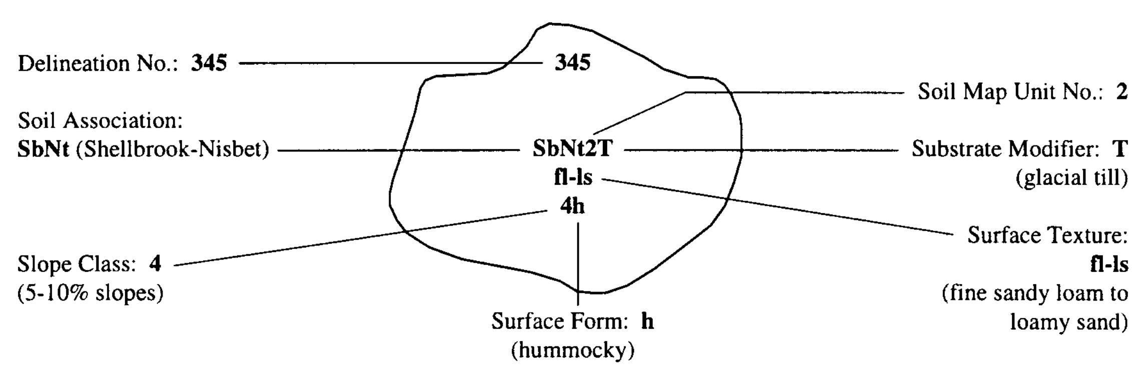
Delineation Number and Soil Interpretations

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 345 (used in the example below), turn to Section 6 and look up the number 345 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 horizon.

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.

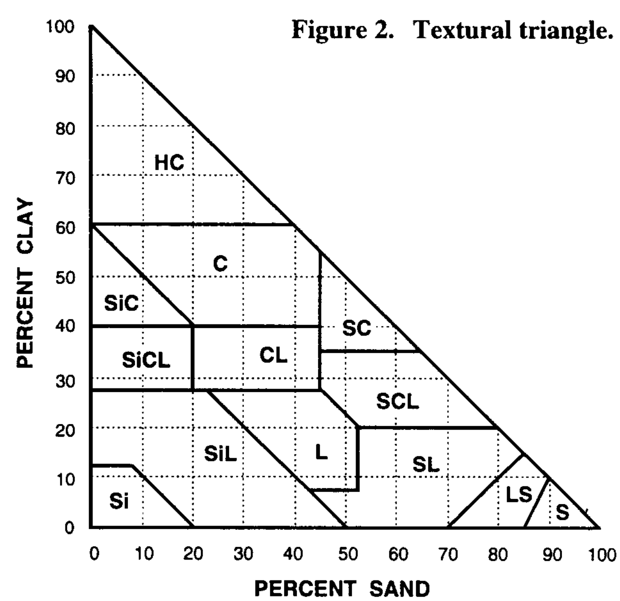
SANDS - The sand group includes soils in which the sand particles make up at least 70% of the material by weight. Two main classes are recognized: sand and loamy sand. Sands are further broken down into different sand sizes such as fine sand or coarse sand. A description of these is found under "Sand"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

Weakly Developed Alluvium - The weakly developed Alluvium soil occurs on mid- and upper slopes, however, it can extend onto lower slopes in some landscapes. If present, the A horizon is very thin, overlying a light-colored, calcareous C horizon. These soils generally occur on river floodplains where soil formation is restricted by periodic deposition of stream sediments.

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 poorly drained 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 Poorly Drained 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 Poorly Drained Arbow - Peaty poorly drained Arbow 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 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 very gentle to gentle slopes and hummocky landscapes with gentle to moderate 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

Gray Wooded Bodmin - The gray wooded Bodmin 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 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.

Dark Gray Wooded Bodmin - The dark gray wooded Bodmin soil usually occurs on mid- and upper slope positions. It is a well- to rapidly drained soil with a grayish-colored A horizon, 8 to 13 cm thick, underlain by a dense dark brown to reddish-brown B horizon with a weak structure that breaks to rough, irregular, cloddy aggregates when dry. The B horizon, in turn, is underlain by a grayish-brown to yellowish-brown, weakly calcareous C horizon. Most of these soils, and in particular, those that occur under native vegetation, have a light-gray horizon with platy structure separating the surface horizon from the B horizon. Part of this horizon may remain intact below the plow layer following cultivation.

Poorly Drained Soils - Poorly drained 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 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 Bodmin Soils

Bodmin soils are poor agricultural soils of capability class 4. The main agricultural limitations of these soils are a very low to low water-holding capacity, due to their coarse textures, and low inherent fertility. 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. It is recommended that soil conservation practices such as leaving stubble standing or maintaining a significant trash cover, maintaining a constant plant cover through forages, shelterbelts, or strip cropping be utilized to provide dependable protection from wind erosion. Bodmin soils are considered marginal, and in some cases are unsuitable, for the production of common field crops. Often, Bodmin soils are considered to be best suited for the production of forage crops.

BAGWA LAKE (BL) SOILS

Bagwa Lake soils are Organic soils that have formed in the moderately decomposed residues of sedges and grasses. Organic deposits derived mainly from sedges, such as the Bagwa Lake soils, are known as fens. These soils occupy large, bowl-shaped depressions that are typically very wet. Bagwa Lake soils have a level to very gently sloping surface, although there is often a strong, hummocky microrelief.

Kinds of Bagwa Lake Soils

Mesic Bagwa Lake - The mesic Bagwa Lake soil is formed in organic materials that are in an intermediate stage of decomposition (mesic). Plant structures in this material are generally still recognizable but are becoming indistinct, however, there may be some layers present in which plant structures are unrecognizable and others, near the surface, where plant structures are easily recognizable. These soils are, for the most part, shallow (ranging in thickness from 40 to 160 cm) but in central portions of the area, thickness may exceed 160 cm.

Agricultural Properties of Bagwa Lake Soils

Bagwa Lake soils are not classified for agricultural capability unless they are being used for agricultural purposes. Bagwa Lake soils that are not classified are rated O for agricultural capability, indicating only that they are Organic soils. These soils are often very wet and generally do not have any potential to grow forages or common field crops as drainage is not feasible. In addition to their wetness and poor drainage, cold air commonly drains into depressional areas where Bagwa Lake soils occur which results in a climatic heat deficiency limitation. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

BITTERN LAKE (Bt) SOILS

Bittern Lake soils are Gray soils that have formed in loam to clay loam glacial till overlain by 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

Gray Wooded Bittern Lake - The gray wooded Bittern Lake 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.

Brunisolic Gray Wooded Bittern Lake - The brunisolic gray wooded Bittern Lake 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. The 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 Wooded Bittern Lake - The dark gray wooded Bittern Lake 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.

Poorly Drained Soils - Poorly drained 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 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.

Peaty Poorly Drained Soils - Peaty poorly drained 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 agricultural limitations of these soils are the hard structure of the B horizon that restricts water infiltration and root penetration, and the low organic matter content and low inherent fertility of the sandy surface horizon. 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 high in available potassium. They are moderately acid to neutral in reaction, however, the acidity does not usually affect the yields of cereal crops. There may be small, local areas with moderate acidity 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, cultivation across dissected slopes and grassing of major water runs, be utilized to control 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.

CARROT RIVER (Cr) SOILS

Carrot River soils are Gleyed Dark Gray 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 Orthic Carrot River - The gleyed orthic Carrot River 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.

Carbonated Carrot River - The carbonated Carrot River 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 highly calcareous A horizon, 15 to 30 cm thick, underlain by a highly calcareous B or 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.

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, sulfur, 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.

GLENBUSH (Gb) SOILS

Glenbush soils are Dark Gray 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 hummocky landscapes having gentle to moderate slopes. Undulating landscapes with very gentle to gentle slopes and hummocky landscapes with strong or steep slopes are also common in some areas.

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 Glenbush - The orthic Glenbush soil may occur on all slope positions where slopes are gentle, and on mid- and lower slopes in landscapes where slopes are moderate to strong. 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.

Gleyed Orthic Glenbush - The gleyed orthic Glenbush soil usually occurs on mid- and lower slope positions. It is an imperfectly drained soil with a dark grayish-colored A horizon overlying B and C horizons, which often have dull colors and reddish spots and stains, indicative of formation under conditions of imperfect soil drainage.

Weakly Developed Glenbush - The weakly developed Glenbush 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 15 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.

Carbonated Glenbush - The carbonated Glenbush soil occurs on lower slopes, frequently surrounding sloughs or poorly drained depressions. It is characterized by a highly calcareous A horizon underlain by a highly calcareous B or C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage. Streaks of carbonate may occur throughout most or all of the profile.

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 removal.

GRONLID (Go) SOILS

Gronlid soils are Gleyed Dark Gray 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 and moderate to strong 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 Orthic Gronlid - The gleyed orthic Gronlid 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.

Carbonated Gronlid - The carbonated Gronlid soil occurs on lower slopes, however, it can extend onto upper slopes in some landscapes. It is characterized by a highly calcareous A horizon, 15 to 25 cm thick, underlain by a highly calcareous B or 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. Due to their location in the lower portion of the landscape, some of these soils are often saline.

Poorly Drained Soils - Poorly drained 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 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 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 have a moderate to 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, 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.

HAMLIN (Hm) SOILS

Hamlin soils are Black soils that have formed in loamy lacustrine materials. Surface textures range from sandy loam to loam.

Hamlin soils are usually stone free, however, 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. Hamlin soils usually occur on undulating landscapes with very gentle to gentle slopes, however, they can occur on hummocky landscapes with moderate to strong slopes, particularly where they occur in complex with soils formed in glacial till.

Hamlin soils commonly occur in complex with soils of other associations. In most of these complexes, the Hamlin soils occur on mid- and upper slopes, however, they will occur on lower slopes in complex with soils formed in glacial till or sandy fluvial materials.

Kinds of Hamlin Soils

Orthic Hamlin - The orthic Hamlin soil occurs on mid- and lower slopes, however, it can extend onto upper slopes in landscapes where slopes are gentle. It is a well-drained soil characterized by a black A horizon, 12 to 18 cm thick, underlain by a brownish B horizon and grayish-brown, moderately calcareous C horizon.

Calcareous Hamlin - The calcareous Hamlin 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 Hamlin soils on lower slopes. It is a well-drained soil characterized by a black, usually calcareous A horizon, underlain by a thin, brownish-colored, calcareous B horizon and grayish-brown, moderately calcareous C horizon.

Poorly Drained Soils - Poorly drained 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 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 Hamlin Soils

The best Hamlin soils are those with a loam or very fine sandy loam surface texture. These are good agricultural soils of capability class 2; a moderate moisture deficit, imparted by the subhumid regional climate and a moderate water-holding capacity, is their main limitation. Hamlin soils with fine sandy loam to sandy loam surface textures are fair agricultural soils of capability class 3 due primarily to their lower water-holding capacity. Although many of the Hamlin 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 Hamlin soils have a moderate amount of organic matter in the A horizon, resulting in soils of reasonably good tilth. They are low in available phosphorus and high in available potassium. Hamlin soils have a weak to moderate cloddy surface 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. Hamlin soils occurring on landscapes with moderate to strong slopes, however, are more susceptible to water erosion. The eroded Hamlin soils on knolls are locally dry because of the rapid runoff associated with these slopes. They have low nutrient reserves and are susceptible to wind and water erosion. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping, 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, however, periodic clearing may be required where the lacustrine materials are shallow (less than 1 m thick) and underlain by glacial till or gravel.

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 shallow, eroded and weakly developed 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 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 a mixture of fluvial gravels and glacial till or eroded till. These soils commonly occur on undulating landscapes with very gentle to gentle slopes and on hummocky landscapes with slopes ranging from gentle to strong.

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 Kamsack - The orthic Kamsack 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.

Calcareous Kamsack - The calcareous Kamsack soil occurs mainly on upper slopes and knolls but can also occur on well-drained mid- and lower slope positions. It has a thin, usually calcareous A horizon, underlain by a calcareous B horizon and a light-gray, moderately to strongly calcareous C horizon.

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.

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.

La CORNE (Lc) SOILS

La Corne soils are Gray 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 moderate 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

Gray Wooded La Corne - The gray wooded La Corne 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 Wooded La Corne - The gleyed gray wooded La Corne soil commonly occurs on mid- and lower slopes 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.

Dark Gray Wooded La Corne - The dark gray wooded La Corne 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 Wooded La Corne - The gleyed dark gray wooded La Corne 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.

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 forest and sphagnum moss peat and are sometimes underlain by sedge peat. 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. 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.

Kinds of Lavallee Lake Soils

Fibric Lavallee Lake - The fibric Lavallee Lake soil has been formed in organic materials that are in the initial stages of decomposition (fibric). Plant structures in this material are well preserved and can be identified readily as to their botanical origin, however, there may be some layers present in which plant structures are becoming indistinct and others, some distance from the surface, where plant structures are unrecognizable.

Mesic Lavallee Lake - The mesic Lavallee Lake soil is a soil formed in organic materials that are in an intermediate stage of decomposition (mesic). Plant structures in this material are generally still recognizable but are becoming indistinct, however, there may be some layers present in which plant structures are unrecognizable and others, near the surface, where plant structures are easily recognizable. The depth of the deposit ranges from 40 cm to greater than 160 cm, becoming thickest near the center of the deposit.

Humic Lavallee Lake - The humic Lavallee Lake soil is a soil formed in organic materials that are in an advanced stage of decomposition (humic). Plant structures in this material are highly decomposed and are not recognizable as to their botanical origin.

Agricultural Properties of Lavallee Lake Soils

Lavallee Lake soils are not classified for agricultural capability unless they are being used for agricultural purposes. Lavallee Lake soils that are not classified are rated O for agricultural capability, indicating only that they are Organic soils. These soils are often very wet and generally do not have any potential to grow forages or common field crops as drainage is not feasible. In addition to their wetness and poor drainage, cold air commonly drains into depressional areas where Lavallee Lake soils occur which results in a climatic heat deficiency limitation. Some areas of Lavallee Lake soils are currently treed. Ratings for each delineation are listed under the heading "Agricultural Capability" in the Interpretive Data Tables section of this report.

MEADOW (Mw) SOILS

Meadow soils are Poorly Drained 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

Poorly Drained Meadow - The poorly drained Meadow 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. The weakly developed poorly drained soil has a thinner A horizon directly overlying the C horizon. In some areas, the poorly drained soils are almost entirely carbonated. In these areas, they have a highly calcareous A horizon underlain by a highly calcareous B or C horizon. In other areas, the 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 poorly drained soils are also saline. In these areas, soluble salts are usually present within 50 cm of the surface. Saline poorly drained soils often occur intermixed with carbonated poorly drained 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 poorly drained 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.

NORTHERN LIGHT (Nr) SOILS

Northern Light soils are Gray soils that have formed in shallow (less than 1 m thick), silty lacustrine materials underlain by 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 light grayish-colored surface horizons. Surface textures are predominantly loam and silt loam but can range to silty clay loam.

Northern Light soils are typically 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. Northern Light soils are usually associated with undulating to undulating dissected landscapes with very gentle to gentle slopes, but also occur on hummocky landscapes with gentle to strong slopes, particularly where they occur in complex with soils formed in glacial till.

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

Kinds of Northern Light Soils

Dark Gray Wooded Northern Light - The dark gray wooded Northern Light 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, 12 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 is underlain , in turn, by a grayish-colored, moderately calcareous C horizon.

Agricultural Properties of Northern Light Soils

Northern Light soils are good agricultural soils of capability class 2. They have a slight moisture deficit, due to the subhumid regional climate and a moderate water-holding capacity. The main agricultural limitations of these soils are a low organic matter content and a dense B horizon. The low organic matter content results in a structure that makes seedbed preparation difficult and also makes these soils susceptible to crusting, especially for small-seeded crops, resulting in poor seedling emergence. The dense B horizon tends to restrict water infiltration and root penetration. 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.

Northern Light soils are low in available phosphorus and high in available potassium. 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 yields of most crops although, there may be local areas with moderate acidity that may inhibit the growth of some sensitive crops such as alfalfa.

These soils have a low susceptibility to water erosion and a moderate susceptibility to wind erosion. Water erosion may become a serious problem 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 or steep slopes. 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 water runways be utilized to provide protection from erosion wherever practical. Inclusion of forages in a crop rotation and addition of manure will greatly benefit the surface structure of these soils.

Stones are generally not a problem on Northern Light soils, however, due to the presence of glacial till near the surface, occasional clearing may be required.

NISBET (Nt) SOILS

Nisbet soils are Dark Gray 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 hummocky landscapes having gentle and moderate slopes. Undulating landscapes with very gentle to gentle 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 Nisbet - The orthic Nisbet 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.

Peaty Poorly Drained Soils - Peaty poorly drained 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 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. 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 Nisbet soils results in a soil of low inherent fertility. 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, strip cropping, frequent inclusion of forages in crop rotations, and shelterbelts be utilized wherever possible to provide dependable protection from wind 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.

OXBOW (Ox) SOILS

Oxbow soils are Black soils that have formed in loamy glacial till. Surface textures are predominantly loam but can range from sandy loam to clay loam.

Oxbow soils are usually slightly to moderately stony, but some areas are very stony. Oxbow soils can occur on a variety of landscapes, but most commonly occur on undulating landscapes with very gentle to moderate slopes and on hummocky landscapes with slopes ranging from gentle to moderate in some areas to steep in others.

Oxbow soils frequently occur in complex with soils of other associations. In most of these complexes, the Oxbow soils occur on the mid- and upper slopes, however, in complex with Dark Brown or Dark Gray soils, they may occur on lower slopes.

Kinds of Oxbow Soils

Orthic Oxbow - The orthic Oxbow soil occurs on mid-slopes in most Oxbow landscapes, however, it may extend onto upper and lower slope positions in landscapes with gentle slopes. It is a well-drained soil characterized by a black A horizon, 11 to 18 cm thick, underlain by a brownish B horizon and a grayish-colored, moderately calcareous C horizon.

Calcareous Oxbow - The calcareous Oxbow soil 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 the surrounding orthic Oxbow soils. It is characterized by a thin, usually calcareous A horizon, 10 to 16 cm thick, which is usually underlain by a thin, calcareous B horizon, overlying a grayish-colored, moderately calcareous C horizon.

Poorly Drained Soils - Poorly drained 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 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 Oxbow Soils

The best Oxbow soils are those with a clay loam surface texture. They are very good agricultural soils of capability class 1. The more common Oxbow soils, those with a loam surface texture, 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. Oxbow soils with a sandy loam surface texture are fair agricultural soils of capability class 3. Oxbow soils are often downrated further based on other soil and landscape limitations (i.e. salinity, wetness, topography, stones, 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.

Most Oxbow soils have a moderate amount of organic matter in the A horizon resulting in reasonably fertile soils of good tilth. These soils are usually low in available phosphorus but high in available potassium. Crops grown on most Oxbow soils respond favorably to additions of nitrogen and phosphorus fertilizers.

Oxbow soils occur on a variety of landscapes. Where they occur on landscapes with very gentle to moderate slopes, they have a low susceptibility to wind and water erosion. However, it is not unusual for these soils to occur on landscapes with strong to steep slopes (sometimes dissected), in which case they will have a high to very high susceptibility to water erosion. The eroded Oxbow soils on steep knolls and ridges have low nutrient reserves and are locally dry because of the rapid runoff associated with these slopes. It is recommended that soil conservation practices, such as maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping, shelterbelts, grassing water runways, cultivation across dissected slopes and establishment of forages, be utilized to control soil erosion wherever practical.

Oxbow soils range from slightly to very stony, hence, the number of clearing operations required each year will vary considerably.

PINE (Pn) SOILS

Pine soils are weakly developed Gray 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

Weakly Developed Pine - The weakly developed Pine 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 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. In many areas, the only significant difference between the B and underlying C horizon is that the C horizon is weakly calcareous. Some weakly developed Pine soils do not have a B horizon. In areas where these soils are cultivated, the resulting surface is 10 to 18 cm thick and light gray in color.

Eluviated Pine - The eluviated Pine 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.

Peaty Poorly Drained Soils - Peaty poorly drained 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 Pine Soils

The best Pine soils, those with a loamy sand surface texture, are very poor agricultural soils of capability class 5; these soils are considered suitable for the production of forages, at best. The sand-textured Pine soils are considered to be nonarable and of capability class 6; these soils are considered suitable for native grazing, at best. A strong moisture deficit, due to 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, but rather for native grazing, or are 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 reestablished. 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 adversely affected.

PORCUPINE PLAIN (Pp) SOILS

Porcupine Plain soils are Gray 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, but also occur on hummocky landscapes with gentle to strong 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

Dark Gray Wooded Porcupine Plain - The dark gray wooded Porcupine Plain 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.

Agricultural Properties of Porcupine Plain Soils

Porcupine Plain soils are good agricultural soils of capability class 2. They have a slight moisture deficit, due to the regional subhumid climate and a moderate water-holding capacity. The main agricultural limitations of these soils are a low organic matter content and a dense B horizon. The low organic matter content results in a structure that makes seedbed preparation difficult and also makes these soils susceptible to crusting, especially for small-seeded crops, resulting in poor seedling emergence. The dense B horizon tends to restrict water infiltration and root penetration. 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.

These soils have a low susceptibility to water erosion and a moderate susceptibility to wind erosion. Water erosion may become a serious problem 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 or steep slopes. 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 water runways be utilized to control erosion wherever practical. Inclusion of forages in a crop rotation and addition of manure will greatly benefit the surface structure of these soils.

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.

PADDOCKWOOD (Pw) SOILS

Paddockwood soils are Gleyed Dark Gray soils that have formed in highly 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 slopes as well as on the lower slopes of hummocky landscapes with gentle to moderate 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

Calcareous Paddockwood - The calcareous Paddockwood soil occurs on locally dry upper slopes and knolls where good drainage occurs. This results in a soil that lacks the yellowish and grayish mottles characteristic of the surrounding carbonated Paddockwood soils on mid- to lower slopes. It is characterized by an A horizon, 10 to 16 cm thick, that may be underlain by a thin, calcareous B horizon and a grayish-colored, highly calcareous C horizon.

Carbonated Paddockwood - The carbonated Paddockwood soil occurs on lower slopes, however, it may extend to upper slopes in landscapes where slopes are very gentle. It is characterized by a highly calcareous A horizon, 14 to 20 cm thick, underlain by a highly calcareous B or C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage.

Poorly Drained Soils - Poorly drained 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. Many 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, these soils are typically carbonated, and some may be saline.

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.

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

PELLY (Py) SOILS

Pelly soils are Thick Dark Gray soils that have formed in highly 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 slopes as well as on the lower slopes of hummocky landscapes with gentle to moderate slopes.

Pelly 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 most often occur randomly as an overlay on the Pelly soils.

Kinds of Pelly Soils

Orthic Pelly - The orthic Pelly soil usually occurs on upper slopes. It is a well-drained soil with a dark-gray A horizon, 20 to 24 cm thick, underlain by a brownish-colored B horizon and a gray-colored, highly calcareous C horizon. Often, a thin, pale-brown horizon with platy structure is present between the A and B horizons. The B horizon often has a noticeably higher clay content than the C horizon due to downward movement of clay from surface horizons.

Calcareous Pelly - The calcareous Pelly soil occurs on locally dry upper slopes and knolls where good drainage occurs. This results in a soil that lacks the yellowish and grayish mottles characteristic of the surrounding carbonated Pelly soils on mid- to lower slopes. It is characterized by an A horizon, 10 to 16 cm thick, that may be underlain by a thin, calcareous B horizon and a grayish-colored, highly calcareous C horizon.

Carbonated Pelly - The carbonated Pelly soil occurs on lower slopes, however, it may extend to upper slopes in landscapes where slopes are very gentle. It is characterized by a highly calcareous A horizon, 20 to 26 cm thick, underlain by a strongly calcareous B or C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage.

Poorly Drained Soils - Poorly drained 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. Many 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, these soils are typically carbonated, and some may be saline.

Agricultural Properties of Pelly Soils

Pelly 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.

Pelly 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 range from weakly developed to poorly drained and 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 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 soils formed in loamy lacustrine materials, they tend to occur on upper slope positions.

Kinds of Shellbrook Soils

Orthic Shellbrook - The orthic Shellbrook 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.

Calcareous Shellbrook - The calcareous Shellbrook 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.

Weakly Developed Shellbrook - The weakly developed Shellbrook 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 15 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.

Poorly Drained Soils - Poorly drained 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 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 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. Shellbrook soils that occur on landscapes with moderate to strong slopes have a moderate 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, 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.

SEDGE PEAT (SP) SOILS

Sedge Peat 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. 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 micro-relief.

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

Kinds of Sedge Peat Soils

Fibric Sedge Peat - The fibric Sedge Peat soil is characterized by an accumulation of relatively undecomposed plant residues that are derived mainly from the accumulation of sedges, meadow grasses and shrubs. Decomposition of this material has been limited and residues are readily identifiable as to their origin.

Mesic Sedge Peat - The mesic Sedge Peat soil is characterized by an accumulation of moderately decomposed plant residues that are derived mainly from the accumulation of sedges, meadow grasses and shrubs. Decomposition of this material has occurred to a moderate extent, such that plant residues are difficult to identify as to their origin.

Agricultural Properties of Sedge Peat Soils

Sedge Peat 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.

Sedge Peat 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.

SYLVANIA (Sy) SOILS

Sylvania soils are Gray 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 hummocky landscapes with gentle to moderate slopes, but can also occur on undulating landscapes with very gentle to gentle 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

Gray Wooded Sylvania - The gray wooded Sylvania 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.

Dark Gray Wooded Sylvania - The dark gray wooded Sylvania 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, and is underlain, in turn, by a dark grayish-brown, weakly calcareous C horizon.

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, it is recommended that soil conservation practices such as maintenance of crop residues through reduced tillage or leaving stubble standing, strip cropping, shelterbelts, and frequent inclusion of forages in a crop rotation be utilized that will maintain or increase the organic matter content as well as fertility levels and provide dependable protection from wind erosion. Sylvania soils, particularly the lighter textured soils, are best utilized for the production of forage crops over the long term. The use of fertilizers will greatly enhance the productive capability of these soils.

TIGER HILLS (Tg) SOILS

Tiger Hills soils are Dark Gray 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, but can also occur on more strongly sloping hummocky landscapes, particularly where they occur in complex with soils formed in glacial till.

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 Tiger Hills - The orthic Tiger Hills 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 Tiger Hills - The calcareous Tiger Hills 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 dark brownish-colored, calcareous B horizon and a yellowish-brown, moderately calcareous C horizon.

Weakly Developed Tiger Hills - The weakly developed Tiger Hills 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.

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, strip cropping, or the establishment of forages in seriously affected areas.

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.

WEIRDALE (We) SOILS

Weirdale soils are Gleyed Dark Gray soils that have formed in highly 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

Carbonated Weirdale - The carbonated Weirdale soil occurs on lower slopes, however, it may extend to upper slopes in landscapes where slopes are very gentle. It is characterized by a highly calcareous A horizon, 14 to 20 cm thick, underlain by a highly calcareous B or C horizon. The B and C horizons often have drab colors and reddish spots and stains, indicative of imperfect soil drainage.

Saline Weirdale - The saline Weirdale soil occurs on lower slopes, often surrounding sloughs or poorly drained depressional areas, and along drainage channels or gullies. It is characterized by the presence of soluble salts, usually within 50 cm of the surface. The salts occur as a white surface crust or as small, white specks within the soil, although salts may not always be visible. Dull colors and reddish and yellowish spots and streaks, indicative of imperfect soil drainage, are often present in the subsoil. The saline Weirdale soil often occurs intermixed with carbonated Weirdale soils on lower slopes surrounding depressional areas.

Peaty Poorly Drained Soils - Peaty poorly drained 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 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.

WHITEWOOD (Wh) SOILS

Whitewood soils are Dark Gray 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 Whitewood - The orthic Whitewood 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.

Calcareous Whitewood - The calcareous Whitewood soil 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 the surrounding Whitewood soils. It has a thin, usually calcareous A horizon, underlain by a thin, calcareous B horizon, and a grayish-colored, moderately calcareous C horizon. This soil is often affected by erosion but the extent of erosion is less than on the eroded Whitewood soil.

Weakly Developed Whitewood - The weakly developed Whitewood 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.

Poorly Drained Soils - Poorly drained 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 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.

Whitewood soils have a moderate amount of organic matter in the A horizon. 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 in productivity to similar kinds of soils developed in the Black soil zone, whereas the more strongly leached Whitewood soils are lower in productivity due to lower organic matter content (hence lower natural fertility) and poorer structure. Some of the more strongly leached soils may be susceptible to crusting after rains and the dense B horizon may restrict rooting.

These soils have a low susceptibility to wind and water erosion. Those soils that occur on strong and steep slopes, or dissected slopes, will have a high to very 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 utilized wherever practical to provide dependable protection from erosion. Inclusion of forages in a crop rotation and addition of manure to those areas that are strongly leached will greatly benefit the surface soil structure.

Stones can be expected on Whitewood soils with the density of stones being quite variable; regular clearing is often required.

WAITVILLE (Wv) SOILS

Waitville soils are Gray 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

Gray Wooded Waitville - The gray wooded Waitville 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.

Gleyed Gray Wooded Waitville - The gleyed gray wooded Waitville 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 is underlain, in turn, 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 Wooded Waitville - The dark gray wooded Waitville 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.

Poorly Drained Soils - Poorly drained 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 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 often restricts water infiltration and root penetration. These limitations are most strongly expressed in the gray wooded soils. Waitville 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.

These soils have a low susceptibility to water erosion and a low to moderate susceptibility to wind erosion. Those soils that occur on strong and steep slopes, or dissected slopes, will have a high to very 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 utilized wherever practical to provide dependable protection from erosion. Inclusion of forages in a crop rotation and addition of manure to those areas that are strongly leached will greatly benefit the surface soil structure.

Stones can be expected on Waitville soils with the density of stones being quite variable; regular clearing is often required.

WETLAND (Wz) SOILS

Wetland soils are Poorly Drained soils formed in a mixture of materials associated with depressional areas. 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. The Wetland soils are made up of a variety of soils which are referred to collectively as poorly drained 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

Poorly Drained Wetland - Poorly drained Wetland 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 poorly drained 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. Some of these poorly drained soils are also saline and carbonated. Most of the poorly drained 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

Class 3 soil

6/10 or 60% of the delineation

Limitation due to insufficient moisture-holding capacity (M)

Class 5 soil

4/10 or 40% of the delineation

Limitation due to adverse topography (T) and erosion damage (E)

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.

C	Depicts a moisture deficiency due to insufficient precipitation.

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
X1	$X^5A^3B^2$	C1	$C^5B^4D^1$
A0	A^5B^5	C2	C^7B^3
A1	$A^7B^2C^1$	C3	$C^7B^2D^1$
A2	$A^5B^2C^3$	C4	C^9D^1
A3	$A^3B^4C^3$	C5	$C^5B^2D^3$
A4	$A^3B^3C^3D^1$	C6	C^7D^3
B0	$B^7A^2C^1$	C7	C^6D^4
B1	$B^4C^4A^2$	D1	D^5C^5
B2	B^7C^3	D2	D^7C^3
B3	B^5C^5	D3	D^9C^1
B4	$B^6C^3D^1$	D4	$D^5C^3B^2$
B5	B^7A^3		

EXAMPLE

Symbol $\longrightarrow$ **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 µs/cm³.

H - **Saline to Highly Saline.** Water conductivity is greater than 15,000 µs/cm³. 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, subbase 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	Symbol	Description
SG0	No sandy or gravelly materials recognized	G3	Gravelly materials occupy 40-70% of landscape
S1	Sandy materials occupy 1-15% of landscape	SG3	Sandy and gravelly materials occupy 40-70% of landscape
G1	Gravelly materials occupy 1-15% of landscape	S4	Sandy materials occupy greater than 70% of landscape
SG1	Sandy and gravelly materials occupy 1-15% of landscape	G4	Gravelly materials occupy greater than 70% of landscape
S2	Sandy materials occupy 15-40% of landscape	SG4	Sandy and gravelly materials occupy greater than 70% of landscape
G2	Gravelly materials occupy 15-40% of landscape	U	Unclassified
SG2	Sandy and gravelly materials occupy 15-40% of landscape		
S3	Sandy materials occupy 40-70% of landscape		

Characteristics of Sand and Gravel Pits

The following table lists the legal location, and provides information on various characteristics, of sand and gravel pits in this municipality. The data was compiled by the Saskatchewan Research Council based on detailed field investigations by the Saskatchewan Department of Highways and Transportation.

Table 20. Gravel pit characteristics. (Continued next page)

Legal Location					Tested Thickness	Texture (%)			
1/4	Sec	Twp	Rg	Mer	(m)	Gravel*	Sand	Fines	Comments
NW	8	52	25	2	1.9	10.3	86.0	3.6	Clean gravelly sand, no material greater than 80 mm, watertable encountered in most testpits, till and silt at bottom of deposit.
NW	5	53	25	2	1.0	29.6	68.4	1.9	Clean gravelly sand, no material greater than 80 mm, watertable encountered in some testpits, clay at bottom of deposit.
SE	29	53	25	2	1.5	25.8	71.9	2.2	Clean gravelly sand, no material greater than 80 mm, watertable encountered in some testpits, till at bottom of deposit.
	31	57	26	2	2.6	16.8	80.9	2.2	Clean gravelly sand, no material greater than 80 mm, watertable encountered in most testpits, very thin overburden, silt and till at bottom of deposit.

* "Gravel" refers to material greater than 5 mm in diameter (Industrial Classification).
"Sand" refers to material greater than 0.071 mm and less than 5 mm in diameter.
"Fines" refers to material less than 0.071 mm in diameter.

Table 20. Gravel pit characteristics, continued.

Legal Location					Tested Thickness (m)	Texture (%)			Comments
1/4	Sec	Twp	Rg	Mer		Gravel*	Sand	Fines	
NW	12	52	27	2	2.4	25.6	73.3	1.0	Clean gravelly sand, no material greater than 80 mm, watertable encountered in some testpits, till at bottom of deposit.
SW	13	52	27	2	2.1	30.5	64.1	5.3	Clean gravelly sand, no material greater than 80 mm, watertable encountered in many testpits, till and silt at bottom of deposit.
	14	52	27	2	2.7	38.1	60.1	1.7	Clean gravelly sand, no material greater than 80 mm, watertable encountered in some testpits, till and clay at bottom of deposit.
NE	2	53	27	2	1.9	28.3	65.9	5.7	Clean gravelly sand, 10% material greater than 80 mm, watertable encountered in many testpits, clay and till at bottom of deposit.
NW	31	54	27	2	2.2	28.0	69.0	2.8	Clean gravelly sand, no material greater than 80 mm, watertable encountered in some testpits, silt, clay and till at bottom of deposit.

* "Gravel" refers to material greater than 5 mm in diameter (Industrial Classification).
"Sand" refers to material greater than 0.071 mm and less than 5 mm in diameter.
"Fines" refers to material less than 0.071 mm in diameter.

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 21) by the depth of moist soil.

Table 21. 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 21. The probability of receiving various amounts of precipitation over the growing season is given in Table 22.

Table 22. Probability (%) of receiving <u>at least</u> the indicated amounts of growing-season precipitation (May 15 to August 13).

Precipitation (mm)[a]									
80	100	115	140	155	180	205	220	245	260
Probability (%)									
>95	90	85	75	65	50	35	25	15	10

[a] Precipitation data from Prince Albert weather station.

Example: If the probability of receiving 180 mm of precipitation were 50%, then <u>at least</u> 180 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 23).
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 79%.

Table 23. 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 Paddockwood, Number 520

	Hectares	Acres
TOTAL AREA	94915	234536
SOIL CAPABILITY FOR AGRICULTURE		
Class 1	0	0
Class 2	29390	72622
Class 3	38955	96257
Class 4	9189	22707
Class 5	5062	12508
Class 6	8320	20558
Class 7	913	2256
Class O	3079	7607
IRRIGATION SUITABILITY		
Excellent	64	158
Good	32991	81520
Fair	47539	117468
Poor	14271	35263
SALINITY		
Very Strong	0	0
Strong	0	0
Moderate	79	194
Weak	80	198
None	94757	234144
SAND AND GRAVEL		
Sandy	4683	11572
Sandy and Gravelly	1016	2510
Gravelly	1529	3778
STONES		
Non- to Slightly Stony	55798	137877
Moderately Stony	39012	96399
Very Stony	0	0
Excessively Stony	62	154

	Hectares	Acres
SURFACE pH (Soil Acidity)		
X (< 5.5)	0	0
A (5.5 - 6.0)	28	68
B (6.1 - 6.7)	106	261
C (6.8 - 7.5)	37924	93710
D (> 7.5)	56167	138788
SURFACE TEXTURE		
Sands	1605	3966
Sandy Loams	32024	79132
Loams	55461	137044
Clay Loams	1375	3398
Clays	0	0
Organics	3714	9177
WIND EROSION POTENTIAL		
Very Low	67121	165855
Low	22185	54818
Moderate	0	0
High	611	1511
Very High	0	0
Extremely High	0	0
WATER EROSION POTENTIAL		
Very Low	8992	22218
Low	68608	169530
Moderate	11697	28903
High	421	1040
Very High	200	494
WETLANDS AND POORLY DRAINED SOILS		
Open water and lakes	1029	2542
Wet, poorly drained soils	9293	22962

ACREAGE FACTS

Rural Municipality of Lakeland, Number 521

	Hectares	Acres
TOTAL AREA	5228	12919
SOIL CAPABILITY FOR AGRICULTURE		
Class 1	0	0
Class 2	37	92
Class 3	3038	7507
Class 4	163	404
Class 5	200	494
Class 6	265	656
Class 7	87	215
Class O	86	212
IRRIGATION SUITABILITY		
Excellent	0	0
Good	0	0
Fair	3532	8728
Poor	344	851
SALINITY		
Very Strong	0	0
Strong	0	0
Moderate	0	0
Weak	0	0
None	5228	12919
SAND AND GRAVEL		
Sandy	4	10
Sandy and Gravelly	0	0
Gravelly	34	83
STONES		
Non- to Slightly Stony	2	4
Moderately Stony	3879	9585
Very Stony	0	0
Excessively Stony	0	0

	Hectares	Acres
SURFACE pH (Soil Acidity)		
X (< 5.5)	0	0
A (5.5 - 6.0)	0	0
B (6.1 - 6.7)	0	0
C (6.8 - 7.5)	2298	5679
D (> 7.5)	1577	3896
SURFACE TEXTURE		
Sands	7	17
Sandy Loams	3628	8966
Loams	240	593
Clay Loams	0	0
Clays	0	0
Organics	0	0
WIND EROSION POTENTIAL		
Very Low	367	906
Low	3501	8652
Moderate	0	0
High	7	17
Very High	0	0
Extremely High	0	0
WATER EROSION POTENTIAL		
Very Low	7	17
Low	3682	9097
Moderate	187	462
High	0	0
Very High	0	0
WETLANDS AND POORLY DRAINED SOILS		
Open water and lakes	1349	3334
Wet, poorly drained soils	488	1205

6. INTERPRETIVE DATA TABLES

R.M. of Paddockwood, No. 520

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	BLLL2	1	H	o	0	4Cwi	S0	O(10)	C7	6F6-N	U	U	U	U	1685.1
2	WvPw3	3-4	h	l-sl	0	2Cdt2	S2	3(9)D5(1)W	D2	1S1-N,1P4-N	1	2	W0	SG0	2028.4
3	Wz3	1	l	U	U	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	131.4
4	Wv10	3	hr	sl	0	2Cdmv	S2	3(8)D5(2)W	C7	3P4-N	2	2	W0	SG0	918.7
5	LLAw1	1	H	o-l	0	4Cwi	S0	O(7)6(3)W	C7	6B6-N	U	U	U	U	298.9
6	WvPw2	3-5	hr	l	0	2Ddt2	S2	3(8)MD6(2)W	D2	3S2-N	1	3	W0	SG0	464.0
7	Rw	3-4	id	cl-l	0	4Dct2	S2	4(6)W5(4)W	D2	6W6-N	1	3D	W2G	SG0	463.2
8	WhWv1	3	ud	l	0	2Cdp	S4	5(7)P3(3)D	C7	N	1	2D	W0	SG0	154.4
9	WvPw2	3-4	h	l	0	2Cdt2v	S1	3(5)D2(3)M5(2)W	D2	2W2-N	1	2	W0	SG0	922.0
10	LLAw1	1	H	o-l	0	4Cwi	S0	O(7)6(3)W	C7	6B6-N	U	U	U	U	233.7
11	BLAw1	1	H	o-l	0	4Cwi	S0	O(7)6(3)W	C7	5F6-N,4W6-N	U	U	U	U	36.6
12	WvBt1	4-3	h	sl-fl	0	2Cmt2v	S2	3(10)D	C7	2W2-N	2	2	W0	SG0	743.7
13	WvPw2	3	u	l	0	2Cdv	S2	3(5)D2(3)M5(2)W	D2	3W1-N	1	2	W0	SG0	3388.7
14	Wv1	3	h	l	0	2Bdt2v	S2	3(10)D	C7	1W1-N	1	2	W0	SG0	197.4
15	BLAw1	1	H	o-l	0	4Cwi	S0	O(6)6(4)W	C7	5F5-N,4E2-N	U	U	U	U	114.0
16	BtWv2	3	h	fl-sl	0	3Cgv	S2	4(5)FD3(3)D6(2)W	C7	3W1-N	2	2	W0	SG0	641.0
17	WvPw1	3-4	h	l-sl	0	2Cdt2	S2	3(6)D2(3)M5(1)W	D2	2W1-N,2C1-N	1	2	W0	SG0	815.7
18	WhGb1	3-4	ud	l-sl	0	1Dv	S2	2(7)M4(2)M5(1)W	D2	2W2-N	1	2D	W2G	G2	207.0
19	WhPw1	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D2	3S1-N,1C1-N	1	2	W1KG	SG0	737.5
20	PwWv1	3	u	l-sl	0	2Bdt1v	S1	2(6)M3(4)D	D2	N	1	2	W0	SG0	1677.2
21	BLAw1	1	H	o-l	0	4Cwi	S0	O(6)6(4)W	C7	5F5-N,4E2-N	U	U	U	U	1089.7
22	WvPw1	3-4	h	l	0	2Cdt2	S2	3(6)D2(3)M6(1)W	D2	2W1-N,1S4-N	1	2	W1K	SG0	1446.1
23	WvLc3	3	u	l-sl	0	2Bdt1v	S1	3(6)D2(4)M	D2	N	1	2	W1K	SG0	285.6
24	Wv1	3-4	h	l	0	2Cdt2	S2	3(10)D	C7	2C1-N,1W1-N	1	2	W1K	SG0	355.4
25	WhWv4	3	uid	l	0	2Bdt1v	S2	2(7)M3(3)D	D2	N	1	2D	W0	SG0	522.7
26	WhPw2	3	uid	l	0	1Cv	S2	3(8)D4(2)W	D3	2W2-N	1	2D	W1G	SG0	449.5
27	WvPw1	3-4	h	l	0	2Cdt2	S2	3(6)D2(4)M	D2	1W2-N	1	2	W1K	SG0	1936.7
28	WvWh1	3-4	h	l	0	2Cdt2	S2	3(10)D	C7	N	1	2	W0	SG0	324.7
29	Wv1	3	h	sl	0	2Bmdt2	S2	3(10)D	C7	2W1-N	2	2	W0	SG0	380.5
30	WvLL1	3	u	sl	0	2Ddmv	S2	3(5)D6(1)WO(4)	C7	4B6-N,2O5-N	2	2	W0	SG0	866.8
31	BLAw1	1	H	o-l	0	4Cwi	S0	O(7)6(3)W	C7	5B6-N,4E5-N	U	U	U	U	928.5
32	PwWv1	3	ud	l	0	2Bdvt1	S1	2(6)M3(3)D5(1)W	D2	2S1-N,2W1-N	1	2D	W0	SG0	427.7
33	WvWh1	3	u	l	0	2Bdt1v	S1	3(10)DT	C7	1S1-N	1	2	W0	SG0	193.3
34	WvPw1	3-4	h	l	0	2Cdt2	S1	3(7)D2(3)M	D2	N	1	2	W0	SG0	1286.4
35	WvPw1	3-4	ud	l	0	2Bdt1v	S1	3(10)DE	D2	N	1	2D	W1G	SG0	212.5
36	BLAw1	1	H	o-l	0	4Cwi	S0	O(5)6(5)W	C7		U	U	U	U	406.0
37	Rw	3	id	l-cl	0	4Dct2	S2	5(10)W	C7	6S6-N	1	3D	U	SG0	144.5
38	WvPw1	3	h	l-sl	0	2Bdt2v	S2	3(6)D2(4)M	D2	1W1-N	1	2	W1K	SG0	1346.2
39	Wv1	3-4	h	sl-l	0	2Cmt2	S2	3(10)D	C7	2W1-N	1	2	W1K	SG0	1098.8
40	Wz3	1	l	sl-l	0	4Cwi	S2	7(10)W	C7	6P6-N	U	U	U	SG0	126.4
41	Wv1	4	h	sl	0	2Cmt2	S2	3(9)TD6(1)W	C7	2S1-N,1P3-N	2	2	W0	SG0	177.1
42	LLBL2	1	H	o	0	4Cwi	S0	O(9)7(1)W	C7	5F6-N,4B6-N	U	U	U	U	123.2
43	Wv1	4	h	sl	0	2Cmt2	S2	3(9)TD6(1)W	C7	2S1-N,1P3-N	2	2	W0	SG0	2509.2
44	Wv2	3	h	sl-l	0	2Cdmv	S2	3(8)D6(2)W	C7	3P2-N	1	2	W1K	SG0	268.1
45	Wv2	4	h	sl	0	2Cmt2v	S2	3(8)TD5(2)W	C7	4P3-N	2	2	W0	SG0	108.2
46	GP														21.0
47	PwWv1	3-4	h	l	0	2Cdt2	S2	2(7)M3(3)D	D2	N	1	2	W1K	SG0	1047.7
48	Wv4	3-4	h	sl	0	2Cmt2	S2	3(10)D	C7	N	2	2	W0	SG0	265.3
49	LL2	1	H	o	0	4Cwi	S0	O(9)7(1)W	C7	6B6-N,1P2-N	U	U	U	U	275.2
50	WhWv3	4-3	h	l	0	2Cdt2	S2	3(10)TD	C7	1W1-N	1	3	W1K	SG0	956.8
51	PwWh1	3	h	l	0	1Bt2v	S1	2(9)M5(1)W	D2	2W1-N	1	2	W1K	SG0	278.7
52	WvPw2	3-4	h	l-sl	0	2Cdt2v	S1	2(5)M3(3)D5(2)W	D2	3W2-N	1	2	W1K	SG0	791.5
53	BLAw1	1	H	o-l	0	4Cwi	S0	O(5)5(5)W	D2	6W6-N	U	U	U	U	80.9
54	PwWh1	3	h	l	0	1Bt2v	S1	2(9)M6(1)W	D2	1P3-N	1	2	W1K	SG0	185.4
55	Wv1	3-4	h	l	0	2Cdt2	S2	3(10)D	C7	1W1-N	1	2	W0	SG0	1178.4
56	PwWv1	3	h	l	0	2Bdt2v	S1	2(7)M3(3)D	D3	1W1-N	1	2	W0	SG0	305.8
57	LL2	1	H	o	0	4Cwi	S0	O(10)	C7	6W5-N	U	U	U	U	44.7
58	WvPw2	3-4	h	l	0	2Cdt2v	S2	3(5)D2(3)M5(2)W	D2	1W1-N	1	2	W0	SG0	1769.1
59	PwWv1	3	h	l	0	2Bdt2v	S1	2(6)M3(3)D6(1)W	D2	3E2-N	1	2	W0	SG0	1085.8
60	WhWv1	3-4	h	l	0	2Cdt2	S1	3(10)D	C7	1W1-N	1	2	W1K	SG0	204.3
61	WhWv1	3-4	u	l	0	2Bdt1v	S1	3(10)D	C7	1W1-N	1	2	W1K	SG0	102.7
62	WhGb1	3-4	u	l-gs	0	1Dv	S2	2(7)M4(3)M	D2	N	2	2	W0	G2	184.1

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)
63	PwWh1	3	u	l	0	1Bt1	S1	2(10)M	D2	1W2-N	1	2	W1K	SG0	513.8
64	WhPw1	3	u	l	0	1Bt1v	S1	2(9)M6(1)W	D2	2O2-N	1	2	W1K	SG0	1632.6
65	WvWh1	3-4	h	l	0	2Cdt2	S1	3(10)D	C7	2C1-N	1	2	W0	SG0	235.2
66	WvPw1	3-4	h	l	0	2Cdt2	S2	3(7)D2(3)M	D2	1W1-N	1	2	W0	SG0	288.5
67	Wz3	1	l	U	0	4Cwi	S0	7(10)W	C7	6P6-N	U	U	U	SG0	86.6
68	Rw	3-4	id	l-cl	0	4Dct2	S1	4(6)W5(4)W	D2	6W6-N	1	3D	U	SG0	135.8
69	WhPw1	3-4	h	l	0	1Ct2	S1	2(6)M3(3)T5(1)W	D2	2S2-N	1	2	W0	SG0	2350.5
70	Wz2	1	l	U	0	4Cwi	S0	6(7)W7(3)W	U	6E6-N	U	U	U	SG0	48.3
71	Wz3	1	l	U	0	4Cwi	S1	7(10)W	U	6P6-N	U	U	U	SG0	77.4
72	Wz3	1	l	l	0	4Cwi	S1	7(10)W	D2	6P6-N	U	U	U	SG0	90.1
73	WhPy2	3-4	ud	l	0	1Cv	S1	2(5)M3(3)TE5(2)W	D2	3W4-N	1	2D	W2G	SG0	998.4
74	PwWh1	3	u	l	0	1Bt1v	S1	2(6)M3(3)D5(1)W	D2	3W3-N	1	2	W0	SG0	2087.6
75	WvPw1	3-4	h	l	0	2Cdt2	S1	3(5)D2(4)M5(1)W	D2	2S2-N,2C1-N	1	2	W1K	SG0	1303.3
76	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	53.5
77	AwBL1	1	l	l	0	4Dwv	S0	6(7)WO(3)	C7	5F6-N,4W4-N	1	1	U	U	24.2
78	Wv2	3	h	sl	0	2Cdmv	S2	3(8)D5(2)W	C7	2W2-N	2	2	W0	SG0	1137.5
79	WhPy1	3	ud	l	0	1Bt1v	S1	2(9)M5(1)W	D2	3W1-N,1S1-N	1	2D	W1G	SG0	2049.7
80	WhPy1	3-4	h	l	0	1Ct2	S1	2(6)M3(3)T5(1)W	D2	2C1-N,2W1-N	1	2	W1K	SG0	778.1
81	Rw	3	id	l-cl	0	4Dct2	S1	5(8)W6(2)W	D2	5W5-N	1	3D	U	SG0	141.4
82	WhPw1	3	u	l	0	1Bt1	S1	2(10)M	D2	2W1-N	1	2	W0	SG0	604.8
83	WhPy1	3-4	hd	l	0	1Ct2	S1	2(8)M3(2)TE	D2	1W1-N	1	2D	W1GK	SG0	433.3
84	Rw	3	id	l-cl	0	4Dct2	S1	5(8)W6(2)W	D2	5W5-N	1	3D	W2G	SG0	102.4
85	WhPw2	3-4	h	l	0	1Ct2v	S1	2(8)M5(2)W	D2	2W2-N	1	2	W0	SG0	2871.2
86	WvSy1	3-4	h	l	0	2Cdt2	S1	3(9)D5(1)W	C7	2W1-N,1C1-N	1	2	W0	S2	1529.0
87	Wv1	4	h	sl	0	2Cmt2	S2	3(10)TD	C7	1W1-N	2	2	W0	SG0	342.8
88	AwBL1	1	l	l	0	4Dwv	S0	6(7)WO(3)	C7	5P6-N,4W4-N	1	1	U	U	115.1
89	AwBt1	2-3	u	l-fl	0	4Dwv	S2	6(6)W4(4)MF	C7	5W5-N	1	1	W0	SG0	799.1
90	WvBt2	3	h	sl-fl	0	2Cdmv	S2	3(8)TD6(2)W	C7	3E5-N,2S2-N	2	2	W0	SG0	1625.5
91	WvBt2	3	h	l-fl	0	2Cdv	S2	3(8)DT6(2)W	C7	3E5-N,2S2-N	1	2	W0	SG0	150.9
92	BtWv1	4-3	hrd	sl-l	0	3Cgt2	S2	4(6)FD3(4)D	C7	N	2	2D	W0	SG0	705.2
93	PyWh1	3	u	l	0	1Bt1	S1	2(10)M	D2	1W1-N	1	2	W1K	SG0	481.1
94	PwWh1	3-2	ud	l	0	1Bt1v	S1	2(9)M5(1)W	D2	2W1-N,2C1-N	1	2D	W1G	SG0	1605.3
95	Wv1	4-5	hr	l-sl	0	2Cdt2	S2	3(6)DT4(4)T	C7	N	1	3	W2K	SG0	50.7
96	WhPy1	3-2	ud	l	0	1Bt1v	S1	2(9)M5(1)W	C5	2C1-N,1W3-N	1	2D	W1K	SG0	518.5
97	WvBt2	3	h	sl-fl	0	2Cdmv	S2	3(8)DT6(2)W	C7	3E5-N,2S2-N	2	2	W0	SG0	227.8
98	WvBt2	3	h	sl-fl	0	2Cdmv	S2	3(8)DT6(2)W	C7	3E5-N,2S2-N	2	2	W0	SG0	189.5
99	AwLL1	1	l	l	0	4Dwv	S2	6(6)WO(4)	C7	4B5-N	1	1	U	U	40.1
100	PwGb1	3	ud	l-sl	0	1Dv	S1	2(7)M4(2)M5(1)W	D2	2W4-N	1	2D	W1G	G3	565.4
101	Nt1	2	u	sl-ls	0	2Bmv	S1	4(10)M	D2	1C4-N	2	1	W2B	S4	156.7
102	BdWv5	3-4	h	sl	0	3Dmv	S2	4(8)MF6(2)W	C7	3E2-N	2	2	W0	G3	152.5
103	PwPy1	2-3	ud	l-sl	0	1Bvt1	S1	2(6)M3(3)M5(1)W	D3	N	1	1D	W1K	SG0	1421.4
104	AwLL1	1	l	l	0	4Dwv	S2	6(6)WO(4)	C7	4B5-N	1	1	U	U	360.7
105	Wv1	4-5	h	sl	0	2Cmt2	S2	4(10)T	C7	2W2-N	2	2	W0	SG0	909.4
106	WvBt2	3	h	sl-fl	0	2Cdmv	S2	3(8)D6(2)W	C7	3S2-N	2	2	W1B	SG0	241.2
107	WvBt1	3-4	hd	l-ls	0	2Cdt2v	S2	3(6)D4(4)M	C7	1W2-N	2	2D	W2B	SG0	464.9
108	BtWv1	3	u	sl-l	0	3Bgt1v	S2	4(6)FD3(4)D	C7	2W1-N	1	2	W2B	SG0	2428.1
109	Wv1	3	h	sl	0	2Bmdt2	S2	3(10)D	C7	1W1-N	2	2	W0	SG0	78.9
110	WvBt2	3	h	sl-fl	0	2Cdmv	S2	3(8)D6(2)W	C7	3E2-N	2	2	W0	SG0	736.7
111	BL3	1	H	o	0	4Cwi	S0	O(10)	C7	6F6-N	U	U	U	U	28.7
112	BtWv2	2-3	u	fl-sl	0	3Cgv	S2	4(5)FD3(3)D6(2)W	C7	3W1-N	2	1	W0	SG0	323.0
113	WvBt2	3	h	sl	0	2Cdmv	S2	3(8)D6(2)W	C7	3F1-N	2	2	W0	SG0	1193.3
114	BtPw1	3	h	sl-l	0	3Bgt2v	S1	4(6)FD3(4)M	D2	2C1-N,1O2-N	1	2	W1K	SG0	1222.7
115	Rw	3	ud	l	0	4Dct2	S1	5(8)W6(2)W	C7	5W6-N,3E2-N	1	3D	U	SG0	185.9
116	Rw	3	ud	l	0	4Dct2	S1	5(8)W6(2)W	C7	5W6-N,3E2-N	1	3D	U	SG0	241.2
117	Rw	3	ud	l	0	4Dct2	S1	5(8)W6(2)W	C7	5W6-N,3E2-N	1	3D	U	SG0	179.5
118	BtPw1	3	h	sl-l	0	3Bgt2v	S1	4(6)FD3(4)M	D2	2C1-N,1O2-N	1	2	W1K	SG1	988.4
119	BtPw1	3	h	sl-l	0	3Bgt2v	S1	4(6)FD3(4)M	D2	2C1-N,1O2-N	1	2	W1K	SG1	685.7
120	BtPw1	3	h	sl-l	0	3Bgt2v	S1	4(6)FD3(4)M	D2	2C1-N,1O2-N	1	2	W1K	SG1	955.7
121	PwGo1	3	u	l-fl	0	1Bvt1	S0	2(10)M	D3	2C1-N	1	2	W1K	SG0	694.0
122	BtPw2	3	u	sl	0	3Cgv	S1	4(8)FD6(2)W	D2	2S2-N	2	2	W1B	SG0	535.9
123	Pn4	3	u	s-sl	0	4Cmv	S1	6(8)M5(2)M	D2	1O3-N	4	1	W0	S4	573.2
124	BL9	1	H	o	0	4Cwi	S0	O(10)	C7	6O6-N	U	U	U	U	599.2
125	CrPw1	3-2	u	ls-l	0	3Cmv	S0	4(9)M5(1)W	D3	2S1-N	2	1	W1K	S4	275.9
126	Pn1	3	u	ls-s	0	3Bmt1v	S0	5(10)M	C4	N	4	1	W2B	S4	55.6
127	Pn1	3	u	ls-s	0	3Bmt1v	S0	5(10)M	C4	N	4	1	W2B	S4	234.3
128	WvBt1	3-5	hid	sl	0	2Dmt2	S2	4(10)T	C7	1S1-N	2	2D	W2G	SG0	1020.1
129	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	375.0
130	BL9	1	H	o	0	4Cwi	S0	O(10)	C7	6O6-N	U	U	U	U	406.7
131	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	127.0
132	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	85.1

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)
133	PwWv1	3	u	l-sl	0	2Bdt1v	S1	3(10)M	D2	1O3-N	1	2	W0	SG0	723.8
134	BtWv1	3	ud	sl-l	0	3Bgt1v	S2	4(6)FD3(4)D	C7	2S1-N,102-N	1	2D	W1G	SG0	1283.9
135	WvNr4	3	ud	l-sl	0	2Bdt1v	S2	3(10)D	C7	N	1	2D	W2G	SG0	1572.4
136	SyGo4	2-3	ud	ls-fl	0	3Cmv	S0	4(10)M	D2	N	2	1D	W1GK	S3	33.2
137	PwWh1	2-3	u	l	0	1Bt1	S1	2(10)M	D2	N	1	1	W0	SG0	34.7
138	SyGo4	2	ud	ls-fl	0	3Cmv	S0	4(10)M	D2	N	2	1D	W2B	S3	76.8
139	Tg4	2-3	u	l	1WA	1Bvt1	S1	2(10)M	D3	1W1-N	1	1	W1K	SG0	1698.3
140	PwGb1	2-3	ud	l-sl	0	1Dv	S1	3(7)M4(3)M	D2	2W3-N	1	1D	W1K	G3	471.8
141	WvBt1	3-4	h	sl	0	2Cmt2v	S2	3(6)D4(4)M	C7	1S1-N	2	2	W1K	SG0	1031.6
142	Wv1	4-5	hd	l-sl	0	2Cdt2	S2	3(5)TD4(4)TE5(1)W	C7	4W3-N	1	3D	W0	SG0	57.3
143	WvPw1	3-4	h	l-sl	0	2Cdt2	S2	3(7)D2(3)M	D2	1W1-N	1	2	W0	SG0	73.0
144	TgPy1	3	ud	l	0	1Bvt1	S1	2(10)M	D3	1C1-N	1	2D	W1G	SG0	747.8
145	Pp1GT	3	ud	l-ls	0	2Cgdv	S1	2(7)M4(3)M	D2	1E2-N	2	2D	W1BK	G2	560.8
146	Wv7	3	ud	sl-l	0	2Bmdt1	S1	3(10)D	C7	2S2-N	1	2D	W1G	SG0	592.1
147	Wv1	4-3	h	sl-l	0	2Cmt2	S1	3(9)D5(1)W	C7	2S1-N	2	2	W1K	SG0	865.8
148	WvSb1	3	u	fl	0	2Bdt1v	S1	3(10)D	C7	2S1-N	2	2	W1K	SG0	274.5
149	SbLc1	3	u	fl	0	1Bt1v	S0	4(9)M5(1)W	D2	2C1-N	2	2	W1B	SG0	341.9
150	Rw	3-5	id	l-cl	0	4Dct2	S2	6(6)W5(4)W	D2	5W4-N,4S3-N	1	4D	U	S3	152.2
151	NtPn1	3	u	sl-s	0	3Cmv	S0	4(5)M5(5)M	C7	N	2	2	W2B	S4	315.1
152	Nr1	3	u	l	0	2Bdt1v	S1	3(10)D	D2	1W2-N	1	2	W1K	SG0	373.0
153	SbNt1	3	u	fl-sl	0	1Bvt1	S0	3(10)M	C7	1W2-N	2	2	W1BK	S2	677.5
154	Bt7	3-5	h	fl	0	3Dgt2	S1	4(9)DT5(1)W	C7	2S1-N	2	3	W1B	SG0	363.5
155	NtPw1	3	u	sl-l	0	2Cmv	S0	3(6)M4(3)M6(1)W	D2	3S2-N,2C1-N	1	2	W1B	S3	591.8
156	We4	2	u	sil	0	1Cv	S0	2(8)X6(2)W	D3	3S2-N	1	1	W0	SG0	386.8
157	CrPw1	3	u	sl-l	0	2Cmv	S0	3(10)M	D3	2C1-N,1S1-N	1	2	W1K	S4	1805.0
158	WhPy1	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D2	2C1-N	1	2	W1K	SG0	1361.4
159	PwPy1	3	u	l	0	1Bt1	S1	2(10)M	D3	3C1-N	1	2	W1K	SG0	902.1
160	WvWh1	3	u	l	0	2Bdt1v	S1	3(10)D	C7	2C1-N	1	2	W1K	SG0	338.4
161	Wz3	1	l	l	0	4Cwi	S0	7(10)W	D3	6P6-N	U	U	U	SG0	48.8
162	Pw1	3	u	l	0	1Dv	S0	2(7)M6(3)W	D3	4S2-N	1	2	W0	SG0	668.3
163	WvWh1	3	ud	l	0	2Bdt1v	S1	3(10)D	C7	2C1-N	1	2D	W1K	SG0	1979.4
164	GbPw1	2-3	u	sl-l	1WA	3Dmv	S1	4(6)M2(4)M	D3	2C1-N	1	1	W1K	G3	995.1
165	WhPy1	3	u	l	0	1Bt1	S0	2(10)M	D2	2C1-N	1	2	W1K	SG0	294.1
166	Cr1G	2	u	fl-gl	0	3Bmv	S0	4(10)M	D3	2C2-N	2	1	W1B	SG4	880.2
167	Rw	3-4	id	cl-l	0	4Dct2	S2	6(7)W5(3)W	D3	5W6-N,3S2-N	1	3D	U	G3	983.6
168	Rw	3	id	cl	0	4Dct2	S2	5(10)W	D3	5W6-N,1S1-N	1	3D	U	G3	75.9
169	WhWv1	3	ud	l	0	2Bdt1v	S1	3(10)TE	C7	1W2-N	1	2D	W2G	SG0	1630.1
170	GoPw1	2-3	u	fl-l	1WA	1Bvt1	S1	3(10)M	D3	2C1-N	1	1	W1K	SG0	1078.5
171	Pw4	3-2	u	l	0	1Bt1	S0	2(10)M	D3	1C1-N	1	2	W1K	SG0	145.9
172	PyWh1	3	u	l	0	1Bt1	S1	2(10)M	D2	N	1	2	W1K	SG0	758.2
173	WvWh1	3	u	l	0	2Bdvt1	S2	3(9)D5(1)W	C7	2W1-N,1C1-N	1	2	W1K	SG0	1129.0
174	Cr1	3	u	sl	0	2Bmt1	S0	4(10)M	D2	3S1-N	2	2	W0	S4	127.9
175	WvWh1	3	u	l	0	2Bdvt1	S2	3(9)D5(1)W	C7	2W1-N,1C1-N	1	2	W1K	SG0	441.3
176	WvSy1	3	u	l-sl	0	2Bdvt1	S1	3(6)D4(3)M5(1)W	C7	3S1-N	1	2	W1B	S2	6905.0
177	Wz3	1	l	l	0	4Cwi	S1	6(10)W	D2	6P6-N	U	U	U	SG0	156.0
178	PwWh1	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D2	2C2-N	1	2	W1K	SG0	1368.2
179	PwPy1	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D3	2C2-N,1S2-N	1	2	W0	SG1	5100.1
180	Rw	3	id	l-cl	0	4Dct2	S1	5(10)W	D3	5W6-N	1	3D	U	SG0	126.3
181	PwGb1	3	u	l-sl	0	1Dv	S1	3(10)M	D3	1C1-N	1	2	W1B	G3	171.8
182	GoPw1	3-2	u	fl-l	0	1Bvt1	S0	3(9)M5(1)W	D3	2C1-N,2W2-N	1	2	W2B	SG0	1262.6
183	PwWe1	3	u	l	0	1Bvt1	S1	2(10)M	D3	2C1-N	1	2	W1K	SG0	780.1
184	GoWe1	2-3	u	fl-sil	0	1Bt1v	S0	3(6)M2(3)X5(1)W	D3	2W3-N	1	1	W0	SG0	3894.4
185	Sb1	3	u	fl	0	1Bt1	S0	3(10)M	C7	1C1-N	2	2	W1B	SG0	279.6
186	WeGo6	2	u	cl-fl	4MA	4Bsv	S0	2(7)X3(3)M	D3	2W2-N	1	1	W0	SG0	747.5
187	WePw1	2	u	cl-l	2WA	2Bqsv	S1	2(10)M	D3	N	1	1	W0	SG0	520.6
188	GoNt1	2-3	u	fl-ls	0	1Cv	S0	3(7)M4(3)M	D2	1W2-N	2	1	W2B	S2	188.2
189	PwNt4	2-3	u	l-sl	2WA	2Csv	S1	2(6)M3(4)M	D3	1W2-N	1	1	W1B	S3	267.3
190	Pw4	2-3	u	l	0	1Bt1	S1	2(10)M	D3	N	1	1	W1K	SG0	148.0
191	Gb1	3	h	sl	0	4Bmt2	S1	4(10)M	D2	N	2	2	W1B	G4	43.6
192	Nt1	3	hr	sl	0	2Bmt2	S0	3(10)M	C7	N	2	2	W2B	S4	24.0
193	PwGo1	2	u	l-fl	2WA	2Bsv	S1	2(7)M3(3)M	D3	2S2-N	1	2	W0	SG0	1375.1
194	Wz2	1	l	l-fl	2WA	4Cwi	S1	6(8)W7(2)W	D3	6E6-N	U	U	U	SG0	87.0
195	WeSb1	2	u	cl-fl	2WA	2Bqsv	S0	2(7)X3(3)M	D3	N	1	1	W1K	SG0	87.4
196	WhSb1	3-4	h	l-fl	0	1Ct2	S1	2(6)M3(3)M6(1)W	D2	203-N	1	2	W1B	SG0	278.8
197	SyNt1T	3	h	fl-sl	0	2Bmdt2	S0	4(10)M	C7	1S1-N	2	2	W1B	S4	376.9
198	Pw4	2	u	l	2WA	2As	S1	2(10)M	D3	1W3-N	1	1	W0	SG0	101.7
199	SyPn1	3	u	sl-s	0	2Cdmv	S0	4(5)M5(5)M	C7	N	2	2	W0	S4	70.1
200	Rw	3	id	sl-cl	0	4Dct2	S2	5(7)W6(3)W	D3	5S6-N,4E3-N	1	3D	U	SG0	575.7
201	BLMw2	1	H	o-cl	0	4Cwi	S0	O(7)6(3)W	D2	6F6-N	U	U	U	U	1262.7
202	NtGb1	2-3	u	sl-gls	0	2Cmv	S1	4(10)M	D2	N	2	1	W1B	SG4	331.0

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)
203	WhPw4	3	u	l	0	1Bt1v	S1	2(9)M6(1)W	D2	2S2-N	1	2	W1K	SG0	1281.6
204	GoPw1	2	u	fl-l	1WA	1Bv	S1	2(5)M3(5)M	D3	N	1	1	W1K	SG0	83.1
205	PwWh1	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D2	2W2-N	1	2	W1K	SG0	540.3
206	Wz2	1	l	l	0	4Cwi	S0	6(10)W	D2	6E6-N	U	U	U	SG0	35.8
207	Rw	3	id	l-cl	0	4Dct2	S1	5(8)W6(2)W	D3	5W6-N,3S2-N	1	3D	U	SG1	308.9
208	Go9	2	u	fl	1WA	1A	S0	3(10)M	D3	N	2	1	W1B	SG0	158.1
209	Pw4	2	u	l	2WA	2As	S1	2(10)M	D3	1W3-N	1	1	W1K	SG0	275.3
210	SyNt1T	3	h	fl-sl	0	2Bmdt2	S0	4(10)M	C7	1S1-N	2	2	W1B	S4	204.3
211	Pw4	3	u	l	2WA	2Bst1	S1	2(10)M	D3	1C1-N	1	2	W1K	SG0	127.1
212	WhSb1	3	h	l-fl	0	1Bvt2	S1	2(7)M3(3)M	D2	N	1	2	W1B	SG0	110.6
213	Gb1	3	u	gsl	0	4Bmt1	S1	4(10)M	D2	N	2	2	W0	G4	29.7
214	WhWv3	4-3	h	l	0	2Cdt2	S2	3(10)DT	C7	1C1-N	1	3	W1K	SG0.	275.8
215	PwGo1	2-3	u	l-fl	2WA	2Bst1v	S1	2(10)M	D3	1C1-N	1	1	W0	SG0	139.0
216	WhWv3	4-3	hr	l	0	2Cdt2	S2	3(10)DT	C7	1C1-N	1	3	W2K	SG0	225.8
217	WhWv3	3	h	l	0	2Bdt2v	S2	3(9)D5(1)W	C7	2S1-N,1C1-N	1	2	W1K	SG0	169.8
218	NtGb1	2-3	u	fl-gls	0	2Dmv	S1	3(6)M4(4)M	D2	1S2-N	2	1	W1B	SG4	140.0
219	Rebitt Lake									6P6-N					25.3
220	PwWh1	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D2	2W2-N	1	2	W1K	SG0	2763.2
221	PwPy1	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D3	2S2-N	1	2	W1K	SG0	3209.2
222	WhPw4	3-4	hd	l	0	1Ct2	S1	2(6)M3(4)TE	D2	N	1	2D	W2G	SG0	448.3
223	WhWv1	3-4	h	l	0	2Cdt2	S1	3(10)D	C7	1W1-N	1	2	W1K	SG0	102.5
224	Wz2	1	l	l	0	4Cwi	S0	6(10)W	D2	6E6-N	U	U	U	SG0	52.7
225	Wz2	1	l	l	0	4Cwi	S0	6(7)W7(3)W	D2	5E6-N,4P4-N	U	U	U	SG0	382.6
226	Rw	3	ud	l-cl	0	4Dct2	S1	6(7)W5(3)W	D2	5E6-N,4S6-N	1	3D	U	SG0	1539.8
227	PwWh1	3	hd	l	0	1Bt2v	S1	2(9)M6(1)W	D2	1S2-N	1	2D	W1K	SG0	673.8
228	WhGo4	3	h	fl-l	0	1Bvt2	S1	2(7)M3(3)M	D2	1W1-N	1	2	W1K	SG0	191.8
229	Gb1	3	u	gsl-ls	0	4Bmt1	S1	4(10)M	D2	N	2	2	W1K	G4	48.6
230	PwGo1	3	u	l-fl	0	1Bvt1	S1	2(6)M3(3)M5(1)W	D3	2S2-N	1	2	W0	SG0	208.5
231	WhGo4	3	u	l-fl	0	1Bvt1	S1	2(7)M3(3)M	D2	1W1-N	1	2	W1K	SG0	461.5
232	Wz2	1	l	l	0	4Cwi	S1	6(10)W	D2	6E6-N	U	U	U	SG0	25.0
233	WhPw2	3	u	l	0	1Cv	S1	2(8)M3(2)W	D2	1S1-N	1	2	W1K	SG0	214.8
234	PwGo1	3-2	u	l-fl	0	1Bvt1	S1	2(10)M	D3	1C1-N	1	2	W1K	SG0	347.8
235	SyLc1	3-4	u	ls-fl	0	3Cmv	S0	4(7)M3(3)M	C7	N	2	1	W1B	S3	214.2
236	WvBd3	3	h	l-sl	0	2Bdt2v	S1	3(7)D4(3)M	C7	1W2-N	1	2	W1B	G2	36.1
237	PwPy4	2-3	u	l	1WA	1Bt1	S1	2(10)M	D3	1W2-N	1	1	W1K	SG0	242.3
238	Mw6	2	u	cl	0	4Cwi	S0	5(6)W6(4)W	D3	6W6-N	1	1	U	SG0	70.2
239	WhWv3	3	u	l	0	2Bdt1v	S2	3(10)D	C7	1C1-N	1	2	W1K	SG0	212.2
240	PwWh5	3	h	l	0	1Cv	S1	2(8)M6(2)W	D2	2S2-N	1	2	W1K	SG0	871.3
241	WhGo3	3	h	l-fl	0	1Bvt2	S1	2(10)M	D2	N	1	2	W1K	SG0	226.3
242	Nt1	3	h	ls	0	3Bmt2	S0	4(10)M	C7	N	2	1	W1B	S4	41.9
243	PwWh1	3	h	l	0	1Bt2	S1	2(10)M	D2	1W1-N	1	2	W1K	SG0	123.1
244	PwGo1	3	u	l-fl	2WA	2Bst1v	S1	2(10)M	D3	2S1-N	1	2	W1K	SG0	179.3
245	WhPw4	3	h	l	0	1Bt2v	S1	2(9)M6(1)W	D2	2S2-N	1	2	W1K	SG0	394.6
246	Gb1	3	h	sl	0	4Bmt2	S1	4(10)M	D2	N	2	2	W1K	G4	61.7
247	GoPw1	3	u	fl-l	0	1Bvt1	S1	2(9)M5(1)W	D3	2W2-N,1O2-N	1	2	W1BK	SG0	100.6
248	PwWh1	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D2	2S2-N	1	2	W1K	SG0	159.1
249	SbLc3	2-3	u	fl	0	1Bt1	S0	3(10)M	C7	N	2	1	W1B	SG0	61.0
250	PwWe1	2-3	u	l-cl	0	1Bvt1	S1	2(9)M5(1)W	D3	2S3-N,1E1-N	1	1	W0	SG0	161.5
251	Wz3	1	l	l-fl	0	4Cwi	S1	7(10)W	D3	5P6-N,5E6-N	U	U	U	SG0	64.7
252	Pw4	3	h	l	0	1Bt2v	S1	2(9)M5(1)W	D3	2W2-N	1	2	W0	SG1	78.2
253	PwWh1	3	h	l	0	1Bt2v	S1	2(9)M5(1)W	D2	2W1-N	1	2	W1K	SG0	625.3
254	Wz3	1	l	l	0	4Cwi	S1	7(10)W	D2	6P6-N	U	U	U	SG0	45.1
255	GoPw1	3	h	fl-l	0	1Bvt2	S1	2(9)M5(1)W	D3	3W2-N	1	2	W1K	SG0	336.3
256	Pw1	3	u	l	0	1Cv	S1	2(8)M5(2)W	D3	3S2-N	1	2	W1K	SG0	430.6
257	Wz3	1	l	l-fl	0	4Cwi	S1	7(10)W	D3	6P6-N	U	U	U	SG0	31.5
258	Pw1	3	u	l-fl	1MP	2Csv	S1	2(8)M6(2)W	D3	2C1-N,2E2-N	1	2	W0	SG0	92.9
259	WhGo2	3	u	l-fl	0	1Bvt1	S1	2(7)M3(3)M	D2	2W1-N,1C1-N	1	2	W1K	SG0	952.0
260	PwWh1	3	h	l	0	1Bt2v	S1	2(9)M5(1)W	D2	1C1-N,1E3-N	1	2	W0	SG0	1371.6
261	WhPw4	3-4	h	l	0	1Ct2	S1	2(7)M3(3)T	D2	1W1-N	1	2	W0	SG0	221.0
262	BL7	1	H	o-l	0	4Cwi	S1	O(10)	D2	6E6-N	U	U	U	U	35.0
263	BL7	1	H	o-l	0	4Cwi	S1	O(10)	D2	6S6-N	U	U	U	U	147.4
264	WhPw2	3-4	h	l	0	1Ct2v	S1	2(8)M5(2)W	D2	3S2-N	1	2	W1K	SG0	634.6
265	WvWh1	4	h	l-sl	0	2Cdt2	S2	3(10)DT	C7	N	1	3	W0	SG0	29.2
266	Wz3	1	l	l	0	4Cwi	S2	7(10)W	D2	6P6-N	U	U	U	SG0	51.4
267	WhPw2	3-4	h	l	0	1Ct2v	S2	2(8)M5(2)W	D2	1C1-N	1	2	W0	SG0	197.7
268	PwWh2	3	u	l	0	1Cv	S1	2(8)M5(2)W	D2	2S2-N	1	2	W1K	SG0	444.0
269	Rw	3	hd	l-cl	0	4Dct2	S1	4(5)W5(5)W	D3	6W6-N	1	3D	U	SG0	125.9
270	PwWv1	3	h	l	0	2Bdt2v	S1	2(7)M3(3)D	D2	1C1-N	1	2	W1K	SG0	598.8
271	Wz2	1	l	l-sl	0	4Cwi	S0	6(7)W7(3)W	D2	6E6-N	U	U	U	SG0	57.3
272	Pw1	3	u	l	0	1Dv	S2	2(7)M6(3)W	D3	3E2-N,1S1-N	1	2	W0	SG0	1031.0

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)
273	Wv4	3-4	h	l	0	2Cdt2	S2	3(10)D	C7	N	1	2	W1K	SG0	80.9
274	PwWh1	3	h	l	0	1Bt2	S1	2(10)M	D2	1C1-N	1	2	W0	SG0	159.3
275	WhWv3	3-4	h	l-sl	0	2Cdt2	S2	3(8)DT2(2)M	C7	N	1	2	W0	SG0	126.5
276	WhWv3	4	h	l-sl	0	2Cdt2	S2	3(10)DT	C7	1S1-N	1	3	W0	SG0	188.1
277	WhWv3	4	h	l-sl	0	2Cdt2	S2	3(10)DT	C7	1S1-N	1	3	W0	SG0	63.9
278	WhWv3	4	h	l-sl	0	2Cdt2	S2	3(10)DT	C7	1S1-N	1	3	W0	SG0	65.1
279	Rw	3	hd	l-cl	0	4Dct2	S2	6(10)WE	D3	3E1-N	1	3D	W5G	SG0	90.7
280	PwWh2	3	h	l	1WP	1Cv	S2	2(8)M6(2)W	D2	3E2-N,2C1-N	1	2	W0	SG0	4810.1
281	WhWv2	4	h	l-sl	0	2Cdt2v	S2	3(8)DT6(2)W	C7	3S1-N,1S2-N	1	3	W1GK	SG0	37.1
282	Pw1	3	u	l-fl	1MP	2Csv	S1	2(8)M6(2)W	D3	2C1-N,2E2-N	1	2	W0	SG0	574.7
283	PyWh1	3	h	l	0	1Bt2	S1	2(10)M	D2	N	1	2	W0	SG0	121.7
284	WhSb4	3	h	l-fl	0	1Bvt2	S1	2(10)M	C7	1C1-N	1	2	W1K	SG0	324.1
285	WhWv2	4	h	l	0	2Cdt2v	S2	3(8)DT6(2)W	C7	3S1-N,1S2-N	1	3	W1GK	SG0	3046.1
286	Wv4	5-4	h	sl-l	0	2Ddmv	S2	3(7)DT4(3)TW	C7	1S1-N,1C1-N	2	3	W1GK	SG0	175.8
287	WvPw2	3-4	h	l	0	2Cdt2v	S2	3(5)DT2(3)T6(2)W	D2	3S1-N,1E2-N	1	2	W0	SG0	567.2
288	WvWh1	3-4	h	l-sl	0	2Cdt2	S2	3(7)DT2(2)M6(1)W	C7	1S1-N,1E2-N	1	2	W1G	SG0	387.1
289	Wv3	4	hd	fl-l	0	2Cdt2	S2	3(10)DT	C7	1S1-N	2	3D	W2G	SG0	1000.9
290	Wv8	4	h	sl-l	0	2Cmt2	S2	3(9)DT6(1)W	C7	3S1-N,1C1-N	2	2	W1G	SG0	1163.3
291	Wz2	1	l	l	0	4Cwi	S2	6(10)W	D2	5E5-N,5P5-N	U	U	U	SG0	43.4
292	WvLc1	4	h	fl	0	2Cdt2	S2	3(9)DT4(1)W	C7	2C1-N	2	3	W1KG	SG0	162.5
293	Wz3	1	l	U	0	4Cwi	S2	6(10)W	U	6P5-N	U	U	U	SG0	42.4
294	WvPw2	3	h	l	0	2Ddv	S2	3(4)D2(3)MT6(3)W	D2	3S1-N,2E1-N	1	2	W0	SG0	319.5
295	PwWh2	3	h	l	0	1Dv	S1	2(6)MD6(4)W	D2	3E2-N,3P2-N	1	2	W0	SG0	396.5
296	Wv1	4	h	sl	0	2Cmt2	S2	3(9)TD6(1)W	C7	2S1-N,1P3-N	2	2	W0	SG0	2070.1
297	PnWv1	4	h	s-sl	0	4Cmt2v	S2	5(6)M3(4)DT	C4	1E1-N	4	1	W0	S3	363.2
298	Rw	3	hd	l-cl	0	4Dct2	S2	6(10)WE	D2	3E1-N	1	3D	W5G	G3	685.9
299	WhPw1	3	h	l	0	1Bt2	S1	2(10)M	D2	1C1-N	1	2	W0	SG0	144.4
300	WhWv3	3-4	h	sl	0	2Cmt2	S2	2(5)M3(4)DT6(1)W	C7	1S1-N,1E2-N	2	2	W1K	SG1	667.9
301	Wv1	4-5	h	l-sl	0	2Cdt2	S2	3(7)DT4(3)T	C7	N	1	3	W0	SG0	522.2
302	PwWh2	3	h	fl-l	0	1Cv	S2	2(8)M6(2)W	D2	3E1-N	1	2	W0	SG0	1172.8
303	WhPw1	4-3	h	l	0	1Ct2	S2	2(8)M3(2)T	D2	1C1-N,1S1-N	1	3	W1K	SG0	332.3
304	SbNt1	3-4	h	fl	0	1Ct2	S0	3(7)MT4(3)M	C7	N	2	2	W0	S2	183.4
305	PwGb1	2-3	ud	l-sl	0	1Dv	S1	2(7)M3(3)MW	D3	2C2-N	1	1D	W0	G3	627.6
306	Av1	2	u	sl-l	1MP	2Bmsv	S0	3(10)M	D3	N	1	1	W0	S4	281.3
307	Mw5	2	u	sl-l	1WP	4Cwi	S1	6(10)W	D3	6S6-N	1	1	U	SG0	457.3
308	GbNt1	2	u	ls-sl	0	3Bmv	S0	4(10)M	C7	1S1-N	2	1	W2B	SG4	233.3
309	GbNt1	2-3	u	ls-sl	0	3Bmt1v	S0	4(10)M	C7	1S1-N	2	1	W2B	SG4	381.7
310	Nt1	2-3	u	ls	0	3Bmt1	S0	4(10)M	C7	1S1-N	2	1	W1B	S4	171.9
311	Pn1	3	h	ls	0	3Bmt2	S0	5(10)MT	C4	N	4	1	W1B	S4	171.2
312	Nt1	3-4	h	ls	0	3Cmt2	S0	4(10)M	C7	1S1-N	2	1	W1B	S4	671.0
313	Wv1	5	h	sl	0	2Cmt2	S2	4(10)T	C7	N	2	3	W0	SG0	55.6
314	PwGb1	2-3	ud	l-sl	0	1Dv	S1	2(7)M3(3)W	D3	2C2-N	1	1D	W0	G3	33.6
315	Fish Lake									6L6-N					80.3
316	Wz3	1	l	l	0	4Cwi	S1	7(10)W	D2	6P6-N	U	U	U	SG0	58.5
317	WvBt1	3-4	h	sl-l	0	2Cmt2v	S1	3(10)D	C7	2C1-N	1	2	W1K	SG0	553.2
318	Wz3	1	l	U	0	4Cwi	S1	7(10)W	C7	6P5-N	U	U	U	SG0	22.8
319	WvBL1	4-5	h	sl	0	2Ddmv	S2	4(4)T7(3)WO(3)	C7	4P4-N	2	2	W0	SG0	14.3
320	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	38.0
321	WhWv2	3-4	h	l-sl	0	2Cdt2v	S2	3(8)DT6(2)W	C7	2S2-N,2C2-N	1	2	W0	SG0	197.2
322	WvGb1	3	h	sl	0	2Bmdt2	S2	3(9)D6(1)W	C7	2S2-N	2	2	W0	G2	237.0
323	WvWh1	3-4	h	l-cl	0	2Cdt2	S2	3(10)DT	C7	1E1-N	1	2	W0	SG0	385.4
324	PwWh2	3	h	l-cl	0	1Dv	S2	2(7)M6(3)W	D2	3E2-N,1O2-N	1	2	W0	SG0	330.3
325	BLAw1	1	H	o-l	0	4Cwi	S0	O(7)6(3)W	B5	4E5-N	U	U	U	U	225.1
326	Wv2	4	h	l	0	2Cdt2v	S2	3(8)D6(2)W	C7	2E2-N,1P3-N	1	3	W0	SG0	2018.1
327	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P5-N	U	U	U	SG0	31.6
328	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P5-N	U	U	U	SG0	22.4
329	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P5-N	U	U	U	SG0	30.9
330	PwPy1	3-4	h	l	0	1Ct2	S2	2(9)M6(1)W	D3	2P3-N	1	2	W0	SG0	194.4
331	Pw1	3	h	l	0	1Dv	S1	2(7)M6(3)W	D3	3P3-N,1E2-N	1	2	W0	SG0	288.8
332	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	40.3
333	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	47.0
334	Wv1	5	h	fl-l	0	2Cdt2	S2	3(10)DT	C7	N	2	4	W0	SG0	267.1
335	Sb2	3-4	h	fl	0	1Ct2v	S0	3(8)MT6(2)W	C7	3P2-N,1E1-N	2	2	W0	SG0	308.7
336	Wz3	1	l	U	0	4Cwi	S0	7(6)W6(4)W	U	5O5-N,4E5-N	U	U	U	SG0	78.6
337	SbWh5	3-4	h	fl-l	0	1Ct2v	S2	3(8)MT6(2)W	C7	2E1-N,1P2-N	1	2	W1K	SG0	1109.8
338	Sb1	4	h	fl	0	1Ct2	S0	3(9)MT5(1)W	C7	1E1-N,1S1-N	2	3	W1K	SG0	424.3
339	Gb1	3	h	sl	0	4Cmp	S2	4(10)M	C7	N	2	2	W0	G4	253.6
340	Nt1	3	u	sl	0	2Bmt1	S1	3(10)M	C7	N	2	2	W0	S4	66.8
341	Gb1	3	h	sl	0	4Cmp	S2	4(10)M	C7	N	2	2	W0	G4	86.9
342	Rw	3-4	hd	fl	0	4Dct2	S2	6(10)IW	C7	3E2-N	1	3D	W5G	S4	1007.8

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)
343	Gb1	3	h	sl	0	4Cmp	S2	4(10)M	C7	N	2	2	W0	G4	221.7
344	Wh5	4	h	l-fl	0	1Ct2v	S2	3(8)MT6(2)W	C7	2E1-N,1P2-N	1	3	W1K	SG0	579.3
345	SbNt2T	4	h	fl-ls	0	2Cgt2v	S1	3(5)TM4(3)M6(2)W	C7	3E2-N	2	3	W2K	S2	1690.4
346	SbNt2	3-4	h	fl-sl	0	1Ct2	S0	3(6)MT4(4)M	C7	2E1-N,1P2-N	2	2	W1K	S2	666.4
347	Sb1	4	h	fl	0	1Ct2	S0	3(9)MT5(1)W	C7	1E1-N,1S1-N	2	3	W1K	SG0	679.9
348	SbWh5	4	h	fl-l	0	1Ct2v	S2	3(8)MT6(2)W	C7	2E1-N,1P2-N	2	3	W1K	SG0	230.5
349	NtWh1	4-5	h	sl-l	0	2Cmt2v	S2	4(6)MT3(3)M6(1)W	C7	2E1-N,1S1-N	2	3	W1K	S3	817.5
350	Sb2	4	h	fl	0	1Dv	S0	3(7)MT6(3)W	C7	3P2-N,2E2-N	2	3	W1K	SG0	922.4
351	Nt5	4	h	sl	0	2Cmt2v	S0	4(8)MT6(2)W	C7	2E1-N,1P1-N	2	3	W2K	S4	199.3
352	SbWh5	4	h	fl-l	0	1Ct2v	S2	3(8)MT6(2)W	C7	3E2-N	2	3	W1K	SG0	365.4
353	Sb1	3	h	fl	0	1Bt2v	S0	3(9)M6(1)W	C7	1E1-N	2	2	W1K	SG0	92.9
354	Mw6	1	l	cl	0	4Cwi	S1	6(10)W	C7	6O6-N	1	1	U	SG0	128.9
355	HmOx8	4	h	fl-l	0	1Ct2v	S2	3(8)T6(2)W	D2	3E2-N	2	3	W1K	SG0	359.5
356	HmOx8	3-4	h	fl-l	0	1Ct2v	S2	2(6)M3(2)T6(2)W	D2	2E1-N,2P2-N	1	2	W1K	SG0	352.0
357	Mw6	1	l	cl	0	4Cwi	S2	6(10)W	C7	6O6-N	1	1	U	S2	62.1
358	SbNt2	4-5	h	fl-sl	0	1Ct2v	S0	3(5)MT4(3)MT6(2)W	C7	2E1-N,1P2-N	2	3	W1K	S2	361.4
359	NtSb5	3-4	h	fl-sl	0	2Cmt2v	S0	4(6)MT3(2)M6(2)W	C7	2E1-N,2P2-N	2	2	W2K	S3	621.8
360	SySb2	3-4	h	sl-fl	0	2Cmt2v	S0	4(5)M3(3)M6(2)W	C7	2E1-N,2P2-N	2	2	W2K	S3	205.8
361	Mw6	1	l	cl	0	4Cwi	S2	6(10)W	C7	6O6-N	1	1	U	S3	189.0
362	SbWh5	3-4	h	vl-l	0	1Ct2v	S2	3(8)MT6(2)W	C7	2E2-N,2P2-N	1	2	W1K	SG0	955.5
363	Sb2	3-4	h	fl-vl	0	1Ct2v	S0	3(8)MT6(2)W	C7	2E2-N,2P2-N	2	2	W1K	SG0	1395.4
364	NtGb1	4-3	h	sl	0	2Cmt2	S2	3(7)M4(3)M	C7	N	2	3	W0	SG4	73.1
365	SbWh5	4-3	h	fl-l	0	1Ct2v	S2	3(8)MT6(2)W	C7	3E1-N	2	3	W1K	SG0	1091.6
366	WhSb5	4-5	h	l-fl	0	1Ct2v	S2	3(6)MT4(2)T6(2)W	C7	3E1-N	1	3	W1K	SG0	355.6
367	Wh1	5	h	l	0	1Ct2	S2	4(10)T	C7	N	1	4	W0	SG0	208.5
368	WhSb5	4	h	l-fl	0	1Ct2v	S2	3(8)MT6(2)W	C7	3E1-N	1	3	W1K	SG0	1147.7
369	WhSb5	4	h	l-fl	0	1Ct2v	S2	3(8)MT6(2)W	C7	3E1-N	1	3	W1K	SG0	12.6
370	Hw	5-6	ig	l	0	4Dct2	S2	6(10)TE	C7	N	1	5G	W5G	SG0	228.3
371	Hw	5-6	ig	fl-l	0	4Dct2	S2	6(10)TE	C7	N	2	5G	W5G	SG0	225.4
372	Hw	5-6	ig	l-fl	0	4Dct2	S2	6(10)TE	C7	N	1	5G	W5G	SG0	40.2
373	KaPp1	3	h	l-sil	0	2Bdt2v	S0	2(6)M3(4)D	C7	N	1	2	W2G	SG0	379.3
374	NtSy3	3-4	h	sl	0	2Cmt2	S1	4(9)M6(1)W	C7	1E1-N	2	2	W1K	S4	519.3
375	SbNt1	4-3	h	fl-sl	0	1Ct2	S0	3(6)MT4(4)M	C7	N	2	3	W2K	S2	242.8
376	SbLc1	3-4	h	fl	0	1Ct2	S0	3(9)M6(1)W	C7	2E2-N	2	2	W1GK	SG0	628.8
377	Rw	3	hd	l	0	4Dct2	S2	6(10)WT	C7	3E2-N	1	3D	W5G	SG0	77.8
378	Ka3	3-4	h	l-sil	0	1Ct2	S0	2(5)M3(4)T6(1)W	C7	2E1-N	1	2	W1K	SG0	282.4
379	Sb1	3-4	h	l-fl	0	1Ct2	S0	2(7)M3(3)T	C7	1S1-N	1	2	W2KG	SG0	238.4
380	WhWv3	4	h	l-sl	0	2Cdt2	S2	3(9)DT6(1)W	C7	1E1-N	1	3	W0	SG0	1334.3
381	SbWh1	3-4	h	fl-l	0	1Ct2	S2	3(9)MT6(1)W	C7	1E1-N,1P2-N	1	2	W1K	SG0	304.3
382	Wv7	4-5	h	l-sl	0	2Cdt2	S2	3(6)DT4(4)T	C7	N	1	3	W2GK	SG0	302.7
383	SbWh5	3	h	fl-l	0	1Cv	S2	3(8)MT6(2)W	C7	2P2-N,1E1-N	1	2	W1K	SG0	517.3
384	Wz2	1	l	U	0	4Cwi	S0	6(7)W7(3)W	U	5E5-N,4O3-N	U	U	U	SG0	35.5
385	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P5-N	U	U	U	SG0	28.8
386	Wz3	1	l	U	0	4Cwi	S0	6(7)W7(3)W	U	5E6-N,4O3-N	U	U	U	S4	101.4
387	NtSy3	3	h	ls-fl	0	3Cmv	S0	4(10)M	C7	1W2-N	2	1	W0	S4	355.4
388	WvLc1	4	h	sl-fl	0	2Cmt2p	S2	3(9)DT6(1)W	C7	1E1-N,1P2-N	2	2	W0	SG0	1669.0
389	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P5-N	U	U	U	SG0	27.3
390	Wz3	1	l	U	0	4Cwi	S0	7(7)W6(3)W	U	5P6-N,4E4-N	U	U	U	SG0	160.6
391	PwGo1	2	u	l-fl	0	1Bv	S1	2(10)M	D3	N	1	2	W0	SG0	76.1
392	Pn1	4	h	s	0	4Cmt2	S0	6(10)M	C4	N	4	1	W0	S4	64.9
393	PwWh1	3	u	l	0	1Bt1v	S2	2(9)M5(1)W	D2	2W1-N	1	2	W0	SG0	1405.9
394	WhPw4	3	u	l	0	1Bt1v	S1	2(9)M5(1)W	D2	2S4-N	1	2	W1K	SG0	1803.3
395	WhPw1	3	h	l	0	1Bt2	S1	2(10)M	D2	N	1	2	W1K	SG0	159.8
396	Wv1	4	h	sl	0	2Cmt2	S2	3(9)DT6(1)W	C7	1O2-N,1E2-N	2	2	W0	SG0	6998.8
397	Wv1	5-4	h	fl-l	0	2Cdt2	S2	4(10)T	C7	1E1-N	2	4	W0	SG0	412.2
398	SbWh5	3-4	h	fl-l	0	1Ct2v	S2	3(8)MT6(2)W	C7	2E1-N,1P2-N	1	2	W0	SG0	703.1
399	PnLc1	3-4	h	s-sl	0	4Cmt2v	S1	6(7)M4(3)M	C4	2S2-N	4	1	W0	S3	48.3
400	LcSb4	3	u	fl	0	2Bdt1	S1	3(10)M	C7	1W2-N	2	2	W1K	SG0	242.3
401	WhPw1	4-3	h	l	0	1Ct2	S2	2(8)M3(2)T	D2	1C1-N,1S1-N	1	3	W1K	SG0	213.2
402	BLAw1	1	H	o-l	0	4Cwi	S0	O(6)6(4)W	D2	5F5-N,4E2-N	U	U	U	U	1155.5
403	KaPp1	3	h	l-sil	0	2Bdt2v	S0	2(7)M3(3)D	C7	N	1	2	W0	SG0	81.4
404	We1	2	u	sicl	0	2Aq	S0	2(10)X	D3	N	1	1	W0	SG0	69.9
405	WvWh1	4-5	h	l-sl	0	2Cdt2	S2	3(7)DT4(2)T6(1)W	C7	1S2-N	1	3	W1G	SG0	216.2

INTERPRETIVE DATA TABLES

R.M. of Lakeland, No. 521

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	Wv1	4	h	sl	0	2Cmt2	S2	3(9)TD6(1)W	C7	2S1-N,1P3-N	2	2	W0	SG0	2540.4
2	GP														10.0
3	Wv2	4	h	sl	0	2Cmt2v	S2	3(8)TD5(2)W	C7	4P3-N	2	2	W0	SG0	2419.4
4	Wv1	4	h	sl	0	2Cmt2	S2	3(9)TD6(1)W	C7	2S1-N,1P3-N	2	2	W0	SG0	1187.4
5	Rw	3	hd	l-cl	0	4Dct2	S2	6(10)WE	D2	3E1-N	1	3D	W5G	G3	106.5
6	Wv1	3-4	h	sl	0	2Cmt2	S2	3(10)D	C7	N	1	2	U	SG0	313.1
7	PnWv1	4	h	s-sl	0	4Cmt2v	S2	5(6)M3(4)DT	C4	1E1-N	4	1	W0	S3	16.5
8	Wv1	4-5	h	l-sl	0	2Cdt2	S2	3(7)DT4(3)T	C7	N	1	3	W0	SG0	355.4
9	BdWv5	3-4	h	sl	0	3Dmv	S2	4(8)MF6(2)W	C7	3E2-N	2	2	W0	G3	18.7
10	Christopher Lake									6L6-N					1692.7
11	Wv1	4	h	sl	0	2Cmt2	S2	3(9)DT6(1)W	C7	1O2-N,1E2-N	2	2	W0	SG0	624.9
12	WvBL1	4-5	h	sl	0	2Ddmv	S2	4(4)T7(3)WO(3)	C7	4P4-N	2	2	W0	SG0	205.2
13	Wv1	4	h	sl	0	2Cmt2	S2	3(9)TD6(1)W	C7	2S1-N	2	2	U	SG0	1100.6
14	Temple Lake									6O6-N					52.8
15	WvBL1	4-5	h	sl	0	2Ddmv	S2	4(4)T7(3)WO(3)	C7	4P4-N	2	2	U	SG0	500.1
16	Phyllis Lake									6E6-N					32.2
17	Wv1	4	h	sl	0	2Cmt2	S2	3(9)TD6(1)W	C7	2S1-N	2	2	U	SG0	4.3
18	Emma Lake									6L6-N					1552.9
19	PwWv1	3-4	h	l	0	2Cdt2	S2	2(7)M3(3)D	D2	N	1	2	W1K	SG0	131.1
20	Wv4	3-4	h	sl	0	2Cmt2	S2	3(10)D	C7	N	2	2	W0	SG0	51.4
21	Wz3	1	l	U	0	4Cwi	S0	7(10)W	U	6P6-N	U	U	U	SG0	3.8

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 "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 - That portion of the total precipitation on an area that flows away through stream channels and that does not enter 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. The amount of salts, as measured by the electrical conductivity of the saturation extract, is 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 which 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 which 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 which 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:

Saskatchewan Land Resource Centre
Room 5C26 Agriculture Building
University of Saskatchewan Campus
51 Campus Drive
SASKATOON SK S7N 5A8

Telephone:
(306) 975-4060

FAX:
(306) 966-4226

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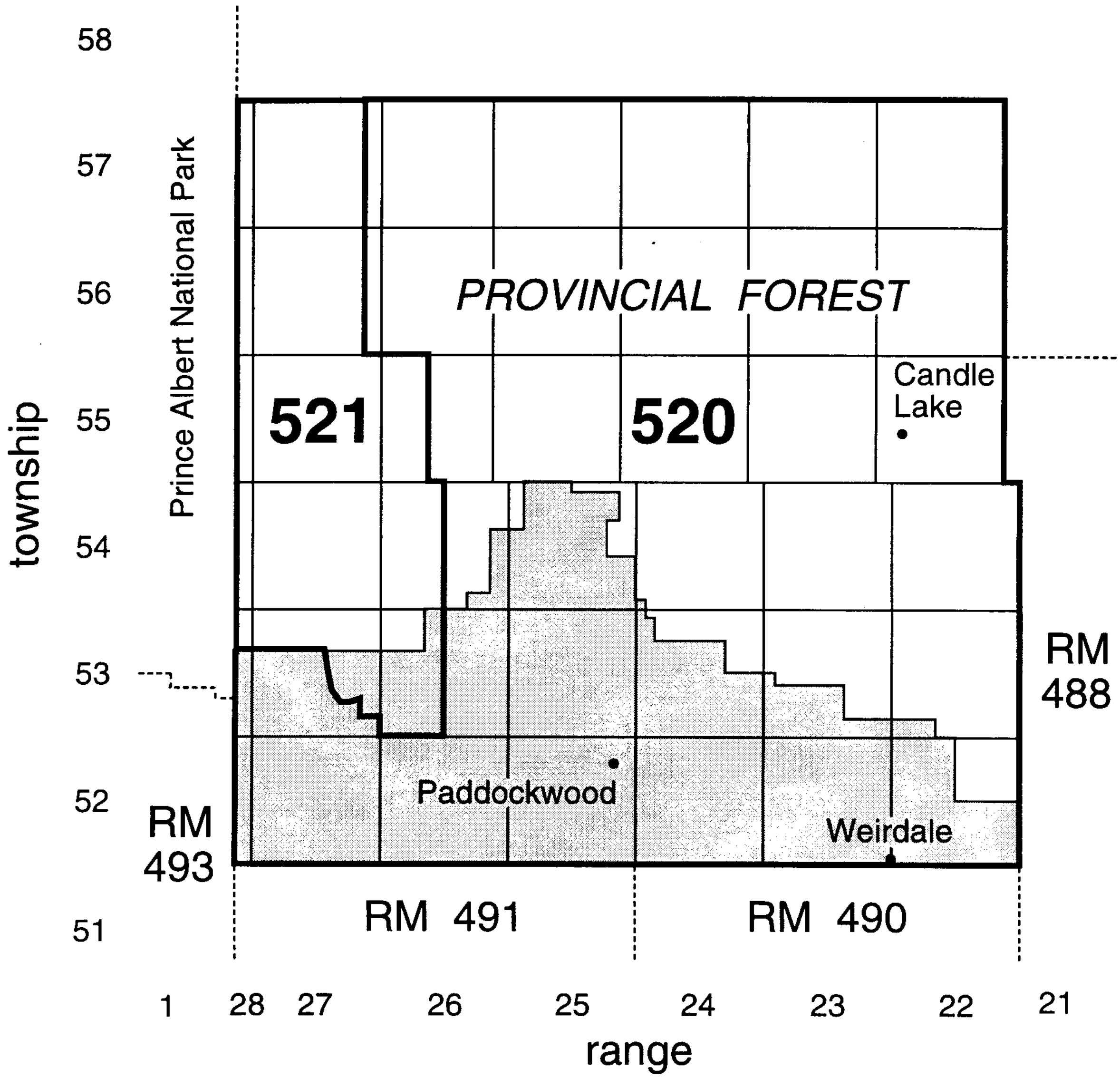
KEY MAP



Area covered by this map and report