RURAL MUNICIPALITY OF PROGRESS

NUMBER 351

MAY 1989

PRELIMINARY

SOIL MAP AND REPORT

SASKATCHEWAN SOIL SURVEY

SASKATCHEWAN INSTITUTE OF PEDOLOGY

UNIVERSITY OF SASKATCHEWAN

Saskatchewan Agriculture And Food

Agriculture Development Fund

Canada-Saskatchewan Agreement On Soil Conservation

Agriculture Canada

Research Branch

RURAL MUNICIPALITY OF PROGRESS

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1. INTRODUCTION

This report and map have been prepared as an interim document, to enable the Saskatchewan Institute of Pedology to make available pertinent soil data and interpretive soil information for this municipality. A final report and maps, which will include this and other data, are being produced and published. The final report and accompanying maps will not, however, be available for three to five years.

The information presented within this report is designed for the interpretation of various soil and landscape properties that may benefit planning and land management within the municipality. Due to the preliminary nature of this report, the final soil map and interpretive data may be slightly altered before the final publication is printed.

2. TABLE OF CONTENTS

3. HOW TO USE THIS MAP AND REPORT

The Soil Map

The soil map, contained in the back cover of this report, shows all soil areas delineated during the mapping of the municipality. The soils, and some of their properties, are represented on the map by a series of symbols that identify the kinds and distribution of the component soils within each delineation. This symbol is illustrated below.

120

STWR3
3-4U:1WA

120	Delineation Number (120)
STWR3	STWR3- Soil map unit (Scott-Weyburn 3)
3-4	3-4- Slope class (2-10% slopes)
U	U- Surface form (undulating)
1WA	1WA- Soil salinity (0-3% of area is weakly saline in low-lying areas of the landscape)

i.e. Surface form and salinity symbols may not be present on the map but are always included in the Soil Interpretation section.

The mapunit (e.g.STWR3) indicates the types of soils present within the delineation. A description of these soils is presented in Section 7 entitled,"Soil Map Unit Descriptions". An explanation of the symbols for surface form and slope class is presented in Section 4 entitled, "Explanation of The Map Symbol".

Other Interpretations

The final report will include a series of interpretive maps that will provide information on such aspects of soils as **surface texture, irrigation potential, agricultural capability, stoniness, wetlands and drainage and sand and gravel occurrences.** This information is also provided in this report, but in a tabular rather than map form. This information can be obtained by determining the delineation number from the soil map and referring to Section 8 for a listing of the symbols. Then, by referring to the appropriate subsection, an explanation of the symbols can be obtained.

4. EXPLANATION OF THE MAP SYMBOL

4.1 Slope Classes

CLASS	DESCRIPTION
1	Nearly level - slopes of 0.5% or less.
2	Very gently sloping - slopes up to 2% but dominantly 0.5 to 2%.
3	Gently sloping - slopes up to 5% but dominantly 2 to 5%.
4	Moderately sloping - slopes up to 10% but dominantly 5 to 10%.
5	Strongly sloping - slopes up to 15% but dominantly 10 to 15%.
6	Steeply sloping - slopes up to 30% but dominantly 15 to 30%.
7	Very steeply sloping - slopes dominantly greater than 30%.

Note: A one-percent slope is a change in elevation of one metre in a horizontal distance of 100 metres.

4.2 Surface Forms

Map Symbol	Name
H	Hummocky
I	Inclined
L	Level
M	Rolling
R	Ridged
T	Terraced
U	Undulating
F	Fan

Erosional Modifiers

Map Symbol	Name
C	Channelled
D	Dissected
G	Gullied

Surface Forms, Cont.

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. 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.** Along flood plains of rivers and streams where the inclined surface is broken by abandoned river channels they are called **inclined channelled.**

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 regular sequence of moderate slopes extending from rounded, sometimes confined, concave depressions to broad, rounded convexities producing a wavelike pattern of moderate relief are termed **rolling.**

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.** Where a series of parallel or subparallel,deep gullies or ravines occur,they are called **undulating gullied.**

Fan

A landform with a fan shape and gently inclined surface, formed by the deposition of materials from a stream descending through a steep ravine, where the stream enters a floodplain or an area of much lower gradient.

4.3 Salinity Symbol

S A L I N I T Y

A saline soil is a soil with sufficient amounts of water soluble salts to inhibit the uptake of moisture by plants. This inhibition of water uptake results in moisture stress and reduced plant growth. The most common soluble salts in Saskatchewan soils are magnesium and sodium sulfates. Calcium sulfates also occur but are not as easily dissolved and are less harmful. Calcium, magnesium and sodium chlorides may also be present. The presence of saline soils can often be recognized by bare spots in the crop or as 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 (2 to 10 in.) or deeper. In some cases, it may not be possible to see the salt and a soil analysis must be carried out.

Management of Saline Soils

Saline soils should be managed in such a way as to either prevent further spread or intensification of the problem and, where possible, to reclaim land which has already become salinized. Since most of the salinity is the result of groundwater movement, the key to control lies in the effective management of groundwater flow and water table levels.

One method of achieving this objective is to use precipitation where it falls preventing it from entering the groundwater system. Extending the cropping rotation in saline areas will cycle more precipitation through crops rather than allowing it to reach the water table. This practice is most effective in areas of recharge where water that reaches the water table is very often responsible for soil salinization on lower slopes. Saline soils should be cropped continuously or seeded to long term forage crops. High moisture use crops will intercept incoming groundwater and may lower the water table.

Crop production on saline soils may also be improved by using farmyard manure or green manure, growing salt-tolerant crops and improving surface or subsoil drainage. Fertilizer may help if soils are weakly or moderately saline. The choice of crops which can be grown on saline soils should be based on a soil test. It must be recognized, however, that even though a crop is considered to be tolerant to a specific degree of salinity,some yield reduction can be expected.

On some soils, the use of subsurface drainage installations may be effective in lowering the water table and reducing soil salinity. These drainage installations are most effective in relatively permeable materials affected by shallow water tables. Subsurface drainage may be costly and potential sites need to be studied and water tables monitored for a period of time to determine the feasibility of this drainage method to produce the desired results.

Drainage of water ponded in sloughs may be beneficial in controlling soil salinity. In some areas, the source of water entering the shallow groundwater flow systems is the water ponded in these sloughs.

Drainage of any type, however, requires an approved permit. In Saskatchewan, anyone installing drainage works may be held responsible for any subsequent damage caused by the drained water.

Salinity, Cont.

Further information on soil salinity and drainage can be found in the publications *Understanding Salt-Affected Soils* and *Subsurface Drainage for Salinity Control* , available from Saskatchewan Agriculture.

SALINITY MAP EDIT

e.g. 1WA

1	-Soil salinity extent class
W	-Soil salinity degree class
A	-Landscape position

Extent and Degree of Saline Soils

The salinity symbol indicates the extent and degree of the salt affected soils and is based on field observation alone. The extent of soil salinity was estimated as a percentage of the area of the map delineation in which soil salinity occurred. Estimates of the degree of soil salinity were based on the observed effect of the salinity on crop growth.

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%

Salinity, Cont.

Soil Salinity Degree Classes

Salinity Degree	Electrical Conductivity of 0-60 depth (mS/cm)	Effect on Crop Growth
Nonsaline	0-2	There are no visible effects of salts on the growth of crops.
Weak (W)	2-4	Yields of very sensitive crops may be restricted.
Moderate (M)	4-8	Yields of many crops are restricted.
Strong (S)	8-16	Only tolerant crops yield satisfactorily.
Very Strong (V)	16+	Only a few very tolerant crops yield satisfactorily.

Landscape Position

P Saline soils occur on the edges of depressions, sloughs or runways. All soils in the bottoms of the depressions are leached and nonsaline. These areas generally occur on relatively level or very gentle regional slopes.

A Saline soils occur throughout the bottoms of depressions and sloughs. Salinity may extend out from the slough or depression but is generally the strongest in the most low-lying areas of the landscape. These areas generally occur in low-lying areas of the region.

D Saline soils extend throughout the bottoms of dissections and small runways in the landscape. It is very similar to class A, however, it is restricted to soil areas which have dissections and/or runways.

S Saline soils occur on the sides of hills and slopes well above any slough or depression. The occurrence of salinity is controlled by stratigraphic differences in the materials.

I Saline soil materials generally occur on knolls and upper slopes. In these areas, salts occur below the A horizon due to insufficient in filtration of precipitation to leach the salts out of the root zone. In some areas, erosion has removed sufficient topsoil to expose saline soil or to cause saline soils to be nearer the surface. Salts in these areas are usually of weak degree and are at or slightly higher than the degree of natural salts occurring in the parent material.

5. SOIL INTERPRETATION SYMBOLS

5.1 Surface Texture

Soil Texture

A 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 (the largest or coarsest), silts, and clays (the smallest or finest). The relative proportions of these particle-size fractions in a soil determine its texture. Thus, sand, when dominant, 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', often used to refer to sand- and clayey- textured soils, respectively, are actually a measure of the power required to till the soil and were originally related to the number of horses required to pull the plough __light or sandy land was described as one-horse land, and heavy land as four-horse land. 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.

Textural class names such as sandy loam, clay loam, heavy clay and the like are given to soils based upon the relative proportions of sand, silt and clay. Three broad, yet 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.

CLAYS - The clay group contains at least 35% clay, and in most cases more than 40%. Class names are sandy clay, silty clay, clay and heavy clay. Soils of this group are often called 'gumbo'.

LOAMS- The loam group is intermediate in texture between the coarse-textured sands and the fine-textured clays, and usually contains 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.

Surface Texture cont,

MAP SYMBOL	SOIL TEXTURE CLASS
	Coarse-Textured
GS	Gravelly sand
S	Sand
GLS	Gravelly loamy sand
LS	Loamy sand
FS	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
L	Loam
FCL	Fine sandy clay loam
SCL	Sandy clay loam
VCL	Very fine sandy clay loam
	Moderately Fine-Textured
CL	Clay loam
SIL	Silt loam
SICL	Silty clay loam
	Fine-Textured
C	Clay
HC	Heavy clay
SIC	Silty clay

5.2 Irrigation Suitability

Introduction

The irrigation suitability rating is based on measured or interpreted soil and landscape characteristics described in the various maps and sections of this report. 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 which have higher or lower irrigation suitability than that indicated by the map unit.

SYMBOL DESCRIPTION

e.g. $2Cmvt_1$

2C - Irrigation class

m - Soil limitations

v, t_1 - Landscape limitations

The combination of soil and landscape categories, based upon the most limiting features present, determines the irrigation class and suitability rating.

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

Irrigation Suitability, Cont.

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 slight soil and/or landscape limitations may limit the range of crops that can be grown, require higher development inputs and require greater management skills. Sprinkler irrigation is usually the only feasible method of water application.
3A 3B 3C 1C 2C	Fair	Moderate soil and/or landscape limitations	The moderate soil and/or landscape limitations reduce the range of crops that may be grown and increase developement 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	The severe soil and/or landscape limitations generally result in a soil that is unsuitable for sustained irrigation use. Some lands may have limited potential when special crops, irrigation systems, and soil and water conservation techniques are used.

Irrigation Suitability, Cont.

Landscape Limitations

Symbol	Description
t	**Slope** - the presence of simple slopes (t^1) in undulating landscapes, or complex slopes (t^2) on hummocky or inclined landscapes. Complex slopes (t^2) are often more limiting than simple slopes. Topography may affect the type of irrigation system design and management required.
p	**Stones** - the amount of ground covered by stones. Stones may reduce the available water-holding capacity of the soil, increase development costs and restrict the type of crops that may be grown.
i	**Inundation** - the frequency of flooding. The inundation hazard is used mainly in areas adjacent to rivers.
c	**Impact on Nontarget areas** - the hazard resulting from the impact of applied irrigation water on an adjacent non-irrigated area. The hazards may include such affects as higher water tables, wetter soils, development or build-up of saline areas, or flooding and sedimentation caused by runoff.
v	**Horizontal Variability** - the horizontal variations caused by texture, soil structure, and landscape pattern that may result in the surface ponding of irrigated soils.

Irrigation Suitability, Cont.

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.
k	**Hydraulic Conductivity** - the rate at which water moves through a saturated soil. Used mainly on soil areas that have a B horizon that swells upon wetting and restricts 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 soil. Soils with this limitation also have relatively high hydraulic conductivities and intake rates.
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 watertables and lateral water movement.
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.
q	**Intake Rate** - the rate of movement of water into and through the soil. Usually used on fine-textured soils that have relatively low intake rates requiring relatively light water application rates.
w	**Drainage** - the rate of removal of water from a soil in relation to supply. Indicates areas of mainly poorly drained soils.
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.

5.3 Agricultural Capability

Capability Class
(Degree of Limitation)

The mineral soils of Saskatchewan are grouped into seven capability classes. Soils rated Class 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.

Example 3(6)M5(4)TE

In the symbol notation, the first number indicates the capability class, the bracketed number indicates the percent of the area, and the letters indicate the limitation.

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 in Class 5 because of limitations due to topography and erosion damage.

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.

Agricultural Capability, Cont.

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 limitation is recognized in a particular area, the subclasses are listed in order of importance.

Climatic Limitations

Limitations due to climate are caused by deficiencies in the amount and distribution of precipitation, length of growing season, frost-free period and amount of heat units available for plant growth.

Subclass C: Depicts a moisture deficiency due to insufficient precipitation.

Soil Limitations

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

Subclass 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.

Subclass M: Depicts an insufficient water-holding capacity, due to the combined effects of the textural characteristics of the top 1 m (3 to 4 ft.) and by the organic matter content of the surface horizon.

Subclass 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.

Subclass 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 limition.

Landscape Limitation

Limitations due to adverse characteristics of the soil landscape.

Subclass 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.

Subclass 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.

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

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

Subclass 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.

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

5.4 Stones

Symbol	Description
S0	Nonstony.
S1	Slightly stony - stones seldom hinder cultivation . Light clearing is occasionally required.
S1B1	Slightly stony, slightly bouldery - stones and boulders seldom hinder cultivation. Light clearing is occasionally required.
S1B2	Slightly stony and moderately bouldery - stones and boulders cause moderate interference with cultivation. Annual clearing is usually required.
S2	Moderately stony - stones are a moderate hindrance to cultivation. Annual clearing is usually required.
S2B1	Moderately stony, slightly bouldery - stones cause moderate interference with cultivation. Annual clearing of stones is usually required. Boulders seldom hinder cultivation - light clearing is occasionally required.
S2B2	Moderately stony, moderately bouldery - stones and boulders cause moderate interference with 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.
S3B2	Very stony, moderately bouldery - stones and boulders cause a serious hindrance to cultivation. Sufficient boulders and stones to require clearing on an annual basis.
B3	Very bouldery - boulders cause a serious hindrance to cultivation. Sufficient boulders 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.
S4B1	Excessively stony, slightly bouldery - stones and boulders prohibit cultivation or make clearing a major task. Cultivation is usually hindered, even after regular, heavy clearing.

Stones, Cont.

Symbol	Description
S4B2	Excessively stony, moderately bouldery - stones and boulders prohibit cultivation and make clearing a major task. Boulders make clearing more difficult. Cultivation is severely hindered, even after regular, heavy clearing.
U	Unclassified.

5.5 Wetlands and Drainage

Wetlands, commonly referred to as sloughs, ponds or marshes, develop in depressional areas that receive surface runoff from the surrounding landscape, but lack external surface drainage. They are frequently flooded in the spring and may contain water throughout the year. Although most are considered agricultural wastelands, they are often critical wildlife habitats.

Four types of wetlands, based on the duration of flooding and the proportion of the area permanently occupied by open water and the occurance of organic materials are recognized: organic wetlands, wet meadows, marshes and open water wetlands.

Surface drainage, or runoff, refers to the loss of water from an area by flow over the land surface. The water either ends up in local undrained depressions or, following a network of local channels, creeks and streams, is carried out of the area. Surface drainage is controlled principally by two factors: (1) the texture and structural characteristics of the land, and (2) the direction, steepness and frequency of slopes, often referred to as topography.

Map Symbol	Extent of Wetlands
	Regional Runoff
A1	0 - 5%
A2	5 - 15%
A3	15 - 40%
	Local Runoff and Accumulation
B1	0 - 5%
B2	5 - 15%
B3	15 - 40%
	Major Accumulation
C1	0 - 5%
C2	5 - 15%
C3	15 - 40%
C4	40 - 70%
	Wetlands
DW	Organic Wetlands
DX	Wet Meadows
DY	Marshes
DZ	Open Water Wetlands

Surface Drainage Classes

A. Areas of Regional Surface Water Runoff - These are landscapes where most, if not all, of the water that is shed locally is carried out of the area to major creeks, rivers, or lakes. They are usually characterized by the presence of gullies.

B. Areas of Local Runoff and Accumulation of Surface Water - These are landscapes where water that is shed from upper slopes collects in local depressions that are too small to be shown on the map. They are usually recognized by chaotic, hummocky landscapes with numerous, enclosed depressions or sloughs.

C. Areas of Major Accumulation of Surface Water - These are typically low-lying flat or depressional landscapes that receive surface runoff from surrounding areas resulting in temporary periods of wetness due to occasional flooding.

D. Wetland Areas - These are areas that receive sufficient water from runoff and other sources to be considered a wetland. They are primarily nonagricultural lands made up of wet, poorly drained soils.

Wetlands

DW. Organic Wetlands. These areas are dominated by shallow organic soils. Wet poorly drained soils occur near the margins and all soils remain saturated for most of the year.

DX. Wet Meadows. These areas consist mainly of wet, poorly drained soils. Flooding occurs mainly in the spring but can last until midsummer. These are often hayland areas but may be partially cultivated during periods of drought.

DY. Marshes. These areas consist of wet, poorly drained soils near the edges with shallow open water in the centre. Flooding usually persists until late summer and occasionally throughout the year. Haying may take place around the slough margins but these areas are rarely cultivated.

DZ. Open Water Wetlands. These areas are dominated by shallow open water with wet, poorly drained soils around the outer fringes. They are permanently flooded.

5.6 Sand and Gravel

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

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

Map Symbols	Description
SG0	- No sandy or gravelly materials recognized.
S1	- Very limited areas of sandy materials (1-15% of landscape).
G1	- Very limited areas of gravelly materials (1-15% of landscape).
SG1	- Very limited areas of sandy and gravelly materials (1-15% of landscape).
S2	- Limited areas of sandy materials (15-40% of landscape).
G2	- Limited areas of gravelly materials (15-40% of landscape).
SG2	- Limited areas of sandy and gravelly materials (15-40% of landscape).
S3	- Extensive areas of sandy materials (40-70% of landscape).
G3	- Extensive areas of gravelly materials (40-70% of landscape).
SG3	- Extensive areas of sandy and gravelly materials (40-70% of landscape).
S4	- Very extensive areas of sandy materials (greater than 70% of landscape).
G4	- Very extensive areas of gravelly materials (greater than 70% of landscape).
SG4	- Very extensive areas of sandy and gravelly materials (greater than 70% of landscape).
U	- Unclassified.

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.

Characteristics of Sand and Gravel Pits in the
Progress Rural Municipality, No. **351**

Legal location 1/4	sec	twp	rg	mer	Tested thickness (m)	Texture (%) gravel[a]	sand	fine	Comments
NW-	1-	34-	23	W3	1.2	2.6	68.5	28.7	Very dirty sand deposit

[a] "gravel" refers to material greater than 5 mm diameter (Industrial Classification)

5.7 Surface pH

The pH scale, ranging from 0 to 14 is used to indicate the relative acidity or alkalinity of a solution. pH is determined by measuring the concentration of hydrogen ions in the soil solution. Thus , a soil with a pH value of 7.0 is said to be neutral, while a value less than 7.0, acid, and a value greater than 7.0, alkaline.

The pH values indicated in the table in Section 8 are for the surface layer of soil and are equivalent to pH measured in 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 6.0. A pH of 5.5 or less may reduce the yields of wheat, barley and canola.

pH Class	pH Range
X	less than 5.5
A	5.5 to 6.0
B	6.1 to 6.7
C	6.8 to 7.5
D	greater than 7.5

Surface pH Classes

Symbol	Percent Surface pH Class
X1	$X^5A^3B^2$
A1	$A^7B^2C^1$
A2	$A^5B^2C^3$
A3	$A^3B^4C^3$
A4	$A^3B^3C^3D^1$
B1	$B^4C^4A^2$
B2	B^7C^3
B3	B^5C^5
B4	$B^6C^3D^1$
C1	$C^5B^4D^1$
C2	C^7B^3
C3	$C^7B^2D^1$
C4	C^9D^1
C5	$C^5B^2D^3$
C7	C^6D^4
D1	C^5D^5

FOR EXAMPLE:

Symbol ---------> B1 $B^4C^4A^2$

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

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

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

5.8 Wind Erosion

Wind Erosion Potential

In Saskatchewan, there was relatively little wind erosion while our soils were under natural vegetation, but, since the early 1900's, erosion has had profound effects resulting in excessive losses of topsoil from agricultural land. In the past, there was little concern about soil losses due to wind erosion because of our inability to monitor the importance and extent of these losses. Presently, we are able to study and understand the physical, chemical and biological properties which control wind erosion and thereby we can classify and predict a soils wind erosion potential.

The wind erosion potential of the soils in this municipality is based on the dominant surface texture, topography, ridge roughness and climatic conditions within an area. These features are used to predict a soil's susceptibility to wind erosion. The actual amount of past wind erosion that has occurred is not considered. As well, the influence of management practices is not part of the initial evaluation even though this parameter has a pronounced effect on the potential erodibility of soils.

Surface 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-textured soils have a high water-holding capacity and strong surface attraction. This results in a good soil structure with a high degree of resistance to wind erosion. Medium-textured soils contain sufficient amounts of silt and clay to bind sand grains forming a good soil structure resistant to granulation and, consequently, wind erosion.

Topography

The influence of topography, which includes such features as the differences in relief or height between one place and another, the direction, steepness and frequency of slopes, and the comparative roughness of the land's surface all have a pronounced effect on the potential erodibility of soils. In general, the greater the slope of the land (section 4.1), the greater the potential for wind erosion to occur.

Climate

The climatic information used to calculate potential wind erosion is based on the average wind velocity and the precipitation-evaporation index for a particular location. This information was compiled from official weather records of specific Saskatchewan locations.

Soil-Ridge Roughness

The soil-ridge roughness factor refers to the roughness of the soil surface in the form of ridges which result mainly from the operation of tillage and planting equipment. The fields are classified as smooth, semi-ridged, or ridged.

Wind Erosion, Cont.

Class		Wind Erosion Susceptibility Classes
1	Very Low	Soils in this class have a very low susceptibility to wind erosion. Good soil management and average growing conditions will produce a crop with sufficient trash cover to protect these soils against wind erosion.
2	Low	Soils in this class have a low susceptibility to wind erosion. Good soil management and average growing conditions may produce a crop with sufficient trash cover to protect these soils against wind erosion.
3	Moderate	Soils in this class have a moderate susceptibilty to wind erosion. Average growing conditions may not supply adequate trash cover to protect these soils against wind erosion. Enhanced soil management practices are necessary to control wind erosion.
4	High	Soils in this class have a high susceptibility to wind erosion. Average growing conditions will not provide sufficient trash cover to protect these soils against wind erosion. Coarse-textured soils may be seeded to pasture or forage crops to prevent severe degradation of the soil.
5	Very High	Soils in this class have a very high susceptibility to wind erosion. These soils shoud not be used for annual cropping, but rather for pasture and forage crops which will protect the surface from severe degradation.
6	Extremely High	Soils in this class have an extremely high susceptibility to wind erosion. These soils must be left in permanent pasture and are not capable of maintaining arable agriculture.
U	Unclassified	Unclassified areas (Wetlands).

5.9 Water Erosion

Potential Water Erosion Of Soils

The potential water erosion classes are obtained from calculations using the Universal Soil Loss Equation. This equation takes into account soil texture, soil organic matter content, slope length and gradient, soil infiltration rates, soil surface structure and the rainfall erosivity.

The distribution of soil particle sizes (soil texture) influences the soil's potential for erosion. The silt-size particles are most easily transported by water followed by clay and sand-sized particles. Thus, soils high in silt are more easily eroded.

Soil organic matter acts like a "glue", binding soil particles together so that a greater force is required to break away individual particles that can be transported by water. Soils of high organic matter contents will, therefore, be less erodible than those with lower contents.

Slope length and gradient are very important to a soil's potential to erode. These factors control the amount and speed of water movement over the soil surface. Long, steep slopes are much more erodible than short, gentle slopes.

The rate of infiltration of water affects the amount of water that will run over the surface of the soil. Runoff occurs once the rate of water accumulation exceeds the rate of infiltration. Fine-textured soils such as clays have much lower rates of infiltration than coarser-textured soils.

The rate of infiltration is also influenced by the origin of the materials. Soils of similar textures but different origins may have different rates of infiltration.

Soil surface structure influences the speed of water movement and, therefore, the erosive force the water exerts on the soil. A rough soil surface causes much slower water movement and therefore there is less erosive force.

The rainfall erosivity refers to the intensity and amount of rainfall an area receives. An area that receives gentle, short showers will experience less erosion than one subjected to prolonged downpours with all other conditions being equal.

For the classes assigned to the map units, the soils were assumed to be under conventional summerfallow in order to determine a class that would represent the maximum potential for erosion. If dissections or gullies were observed in the field, this was noted by a "D" or a "G" next to the class number since there may be higher potential erosion rates associated with these features.

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 actual rates for individual soils within that area may vary significantly from the assigned class.

Water Erosion, Cont.

Class		Water Erosion Susceptibility Classes
1	Very Low	Little or no susceptibility to water erosion.
2	Low	Slight susceptibility to water erosion.
3	Moderate	Moderate susceptibility to water erosion. Conventional farming practices will result in a steady loss of soil due to water erosion. Conservation practices should be instituted to prevent degradation of the soils.
4	High	High susceptibility to water erosion. Rapid loss of soil will occur unless conservation practices are instituted. All gullies in these areas should be grassed.
5	Very High	Very high susceptibility to water erosion. 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 (wetlands)
	Modifiers	If an area was observed to be gullied (G) or dissected (dissections being shallow gullies that can be crossed with farm implements) (D) ,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.

6. ACREAGE FACTS

RURAL MUNICIPALITY OF PROGRESS
NUMBER 351

	HECTARES	ACRES
* TOTAL AREA	77591	191730
SOIL CAPABILITY FOR AGRICULTURE		
Class 1	0	0
Class 2	3595	8885
Class 3	40825	100881
Class 4	15483	38260
Class 5	15426	38120
Class 6	1741	4304
Class 7	518	1280
IRRIGATION SUITABILITY		
Excellent	0	0
Good	12233	30230
Fair	42140	104130
Poor	23217	57370
SALINITY		
Very Strong	605	1496
Strong	2928	7236
Moderate	1583	3913
Weak	236	584
None	72236	178499
SAND AND GRAVEL		
Sandy	8509	21028
Sandy and Gravelly	267	660
Gravelly	0	0
STONES		
Non Stony to Slightly Stony	74143	183210
Moderately Stony	3447	8520
Very Stony	0	0
Excessively Stony	0	0
SURFACE pH		
X < 5.0	0	0
A 5.1 - 5.5	11692	28893
B 5.6 - 6.5	36839	91031
C 6.6 - 7.5	23870	58984
D > 7.5	5188	12822
SURFACE TEXTURE		
Sands	3342	8260
Sandy Loams	9299	22980
Loams	29870	73810
Clay Loams	26276	64930
Clays	8802	21750

* Acreages were estimated using preliminary maps.

6. ACREAGE FACTS

RURAL MUNICIPALITY OF PROGRESS
NUMBER 351

	HECTARES	ACRES
WIND EROSION POTENTIAL		
Very Low	0	0
Low	62524	154500
Moderate	3885	9600
High	10356	25590
Very High	291	720
Extremely High	0	0
WATER EROSION POTENTIAL		
Very Low	9987	24680
Low	61472	151900
Moderate	4431	10950
High	615	1520
Very High	550	1360
WETLANDS AND POORLY DRAINED SOILS		
Open water and lakes	199	493
Wet, poorly drained soils	4271	10555

7. SOIL MAP UNIT DESCRIPTIONS

MAPUNIT SOIL LANDSCAPE RELATIONSHIPS

Ardill-Kettlehut: A mixture of Brown soils (Ardill) and Solonetzic soils (Kettlehut) formed in clay loam glacial till; clay loam surface textures.

AdKh 1 Mainly orthic Ardill soils, with Kettlehut solonetzic soils on mid and lower slopes, and solonetzic Ardill soils on mid slopes.

Ardill-Kelstern: A mixture of Brown soils formed in clay loam glacial till (Ardill) and Solonetzic soils formed in silty lacustrine materials (Kelstern); clay loam (Ad) to silt loam (Kn) surface textures.

AdKn 1 Mainly orthic Ardill soils, with Kelstern solonetzic soils on mid and lower slopes.

Alluvium: Alluvial soils formed in variable materials; variable surface textures.

Av26 Mainly a mixture of orthic Alluvium soils,solonetzic Alluvium soils, and saline Alluvium soils.

Av 7 Mainly saline, weakly developed Alluvium soils and gleyed solonetzic Alluvium soils.

Av 8 Mainly saline, weakly developed Alluvium soils and saline, poorly drained soils.

Bradwell-Weyburn: Dark Brown soils formed in a mixture of loamy lacustrine materials (Bradwell) and slightly stony, loamy glacial till (Weyburn); fine sandy loam (Br) to loam (Wr) surface textures.

BrWr 1 Mainly orthic Bradwell soils, with orthic Weyburn soils on upper slopes and knolls.

Birsay-Haverhill: Brown soils formed in a mixture of loamy lacustrine materials (Birsay) and slightly stony, loamy glacial till (Haverhill); fine sandy loam (By) to loam (Hr) surface textures.

ByHr 1 Mainly orthic Birsay soils, with orthic Haverhill soils on upper slopes and knolls.

Birsay-Hatton: Brown soils formed in a mixture of loamy lacustrine (Birsay) and sandy fluvial (Hatton) materials; very fine sandy loam (By) to sandy loam (Ht) surface textures.

ByHt 1 Mainly orthic Birsay soils, with orthic Hatton soils on upper slopes.

Cathkin: A complex of saline and poorly drained soils formed in sandy alluvial materials occurring in depressional areas; sandy loam surface textures.

Ct 3 Mainly strongly saline , poorly drained soils.

Ct 4 Mainly moderately saline, poorly drained soils.

Elstow: Dark Brown soils formed in silty lacustrine materials; loam to silt loam surface textures.

Ew 3 Mainly orthic Elstow soils, with eluviated Elstow soils on lower slopes.

Elstow-Bradwell: Dark Brown soils formed in a mixture of silty lacustrine (Elstow) and loamy lacustrine (Bradwell) materials; fine sandy loam (Br) to silt loam (Ew) surface textures.

EwBr 4 Mainly orthic Elstow soils, with orthic Bradwell soils,and calcareous Elstow soils on upper slopes and knolls.

Elstow-Hanley: A mixture of Dark Brown soils (Elstow) and Solonetzic soils (Hanley) formed in silty lacustrine materials; loam to silt loam surface textures.

EwHy 1 Mainly orthic Elstow soils, with Hanley solonetzic soils on lower slopes.

EwHy 2 Mainly orthic Elstow soils, with Hanley solonetzic soils on lower slopes, and poorly drained soils in depressions.

EwHy 3 Mainly orthic Elstow soils, with solod Hanley soils on lower slopes, and eluviated Elstow soils on lower slopes.

EwHy 9 Mainly orthic Elstow soils, with Hanley solonetzic soils on lower slopes, and saline soils on lower slopes.

Elstow-Sutherland: Dark Brown soils formed in a mixture of silty lacustrine (Elstow) and clayey lacustrine (Sutherland) materials ; silt loam (Ew) to clay (Su) surface textures.

EwSu 4 Mainly orthic Elstow soils,with orthic Sutherland soils on lower slopes, and calcareous Elstow soils on upper slopes.

Flat Lake: A complex of soils formed in loamy alluvial materials occurring in depressional areas; loam surface textures.

Fk 1 Mainly strongly saline soils with strongly saline poorly drained soils.

Fk 2 Mainly moderately saline soils, with moderately saline poorly drained soils.

Fox Valley-Kelstern: A mixture of Brown soils (Fox Valley) and Solonetzic soils (Kelstern) formed in silty lacustrine materials; loam to silt loam surface textures.

FxKn 1T Mainly orthic Fox Valley soils, with Kelstern solonetzic soils on lower slopes and solonetzic Fox Valley soils on lower slopes. Most of these soils are shallow to glacial till.

Grill Lake: A complex of soils formed in clayey alluvial materials occurring in depressional areas; clay surface textures.

Gr 1 Mainly strongly saline soils, with strongly saline poorly drained soils.

Gr 2 Mainly moderately saline soils, with moderately saline poorly drained soils.

Gr 3 Mainly strongly saline, poorly drained soils.

Gr 4 Mainly moderately saline, poorly drained soils.

Gr 5 Mainly gleyed soils, with saline soils, and poorly drained soils.

Gilroy-Kettlehut: Solonetzic soils formed in a mixture of loamy lacustrine (Gilroy) materials and clay loam glacial till (Kettlehut); fine sandy loam (Gy) to clay loam (Kh) surface textures.

GyKh 1 Mainly solodized solonetz Gilroy soils, with Kettlehut solonetzic soils, and solonetzic Birsay soils.

Haverhill: Brown soils formed in slightly stony, loamy glacial till; loam surface textures.

Hr 1 Mainly orthic Haverhill soils.

Haverhill-Birsay: Brown soils formed in a mixture of slightly stony, loamy glacial till (Haverhill) and loamy lacustrine materials (Birsay); loam (Hr) to sandy loam (By) surface textures.

HrBy 1 Mainly orthic Haverhill soils, with orthic Birsay soils on lower slopes.

HrBy 2 Mainly orthic Haverhill soils, with calcareous Haverhill soil on knolls, orthic Birsay soils on lower slopes, and poorly drained soils in depressions.

Haverhill-Hatton: Brown soils formed in a mixture of slightly stony, loamy glacial till (Haverhill) and sandy fluvial materials (Hatton); loam (Hr) to loamy sand (Ht) surface textures.

HrHt 1 Mainly orthic Haverhill soils, with orthic Hatton soilson mid and lower slopes.

Hatton: Brown soils formed in sandy fluvial materials; sandy loam to loamy sand surface textures.

Ht 1 Mainly orthic Hatton soils.

Ht 2 Mainly orthic Hatton soils, with eroded Hatton soils on upper slopes.

Ht 3 Mainly orthic Hatton soils, with saline soils on lower slopes.

Hatton-Birsay: Brown soils formed in a mixture of sandy fluvial (Hatton) and loamy lacustrine (Birsay) materials; loamy sand (Ht) to loam (By) surface textures.

HtBy 1 Mainly orthic Hatton soils, with orthic Birsay soils intermixed.

Hatton-Gilroy: A mixture of Brown soils formed in sandy fluvial (Hatton) and Solonetzic soils formed in loamy lacustrine (Gilroy) materials; loamy sand (Ht) to fine sandy loam (Gy) surface textures.

HtGy 1 Mainly orthic Hatton soils, with solodized solonetz Gilroy soils on lower slopes.

HtGy 9 Mainly orthic Hatton soils, with solodized solonetz Gilroy soils on lower slopes, and saline soils on lower slopes.

Hatton-Haverhill: Brown soils formed in a mixture of sandy fluvial materials (Hatton) and slightly stony, loamy glacial till (Haverhill); loamy sand (Ht) to loam (Hr) surface textures.

HtHr 1 Mainly orthic Hatton soils, with orthic Haverhill soils on upper slopes.

HtHr 2 Mainly orthic Hatton soils, with orthic Haverhill soils, calcareous Haverhill soils on upper slopes and knolls, and poorly drained soils in depressions.

Hillwash-Alluvium: A complex of soils associated with steep eroded slopes (Hillwash) and level alluvial valley bottoms (Alluvium); variable surface textures.

HwAv Mainly shallow, eroded, weakly developed soils, with poorly drained soils on valley bottoms.

Hanley: Solonetzic soils formed in silty lacustrine materials; loam to silt loam surface textures.

Hy 5 Mainly Hanley solonetzic soils and saline soils on lower slopes.

Kindersley-Kettlehut: Solonetzic soils formed in clayey lacustrine (Kindersley) materials and clay loam glacial till (Kettlehut); clay (Kd) to clay loam (Kh) surface textures.

KdKh 1 Mainly Kindersley solonetzic soils, with Kettlehut solonetzic soils on mid- and upper slopes, and solonetzic Willows soils.

Kindersley-Willows: A mixture of Solonetzic soils (Kindersley) and Brown soils (Willows) formed in clayey lacustrine materials; clay surface textures.

KdWw 1 Mainly Kindersley solonetzic soils, with orthic Willows soils on mid- and upper slopes, and solonetzic Willows soils.

KdWw 2 Mainly Kindersley solonetzic soils, with orthic Willows soils on mid- and upper slopes, solonetzic Willows soils, and poorly drained soils in depressions.

Kettlehut-Kelstern: Solonetzic soils formed in a mixture of clay loam glacial till (Kettlehut) and silty lacustrine materials (Kelstern); clay loam (Kh) to silt loam (Kn) surface textures.

KhKn 1 Mainly Kettlehut solonetzic soils, with Kelstern solonetzic soils on lower slopes, and solonetzic Ardill soils.

Kelstern: Solonetzic soils formed in silty lacustrine materials; loam to silt loam surface textures.

Kn 2 Mainly solonetz Kelstern soils, with saline soils on lower slopes and in depressions.

Kelstern-Ardill: A mixture of Solonetzic soils formed in silty lacustrine materials (Kelstern) and Brown soils formed in clay loam glacial till (Ardill); silt loam (Kn) to clay loam (Ad) surface textures.

KnAd 1 Mainly Kelstern solonetzic soils, with orthic Ardill soils on upper slopes.

KnAd 9 Mainly Kelstern solonetzic soils, with orthic Ardill soils on upper slopes, and saline soils on lower slopes.

Kelstern-Birsay: A mixture of Solonetzic soils formed in silty lacustrine (Kelstern) and Brown soils formed in loamy lacustrine (Birsay) materials; silt loam (Kn) to fine sandy loam (By) surface textures.

KnBy 1 Mainly Kelstern solonetzic soils on lower slopes, with orthic Birsay soils on mid slopes, and solonetzic Birsay soils on lower slopes.

Kelstern-Fox Valley: A mixture of Solonetzic soils (Kelstern) and Brown soils (Fox Valley) formed in silty lacustrine materials; loam to clay loam surface textures.

KnFx 1 Mainly Kelstern solonetzic soils on lower slopes, with orthic Fox Valley soils on mid slopes, and solonetzic Fox Valley soils on lower slopes.

KnFx 1T Mainly Kelstern solonetzic soils on lower slopes, with orthic Fox Valley soils on mid slopes, and solonetzic Fox Valley soils on lower slopes. Most of these soils are shallow to glacial till.

KnFx 9 Mainly Kelstern solonetzic soils on lower slopes, with orthic Fox Valley soils on mid slopes, solonetzic Fox Valley soils on lower slopes, and saline soils on lower slopes.

Kelstern-Kettlehut: Solonetzic soils formed in a mixture of silty lacustrine materials (Kelstern) and clay loam glacial till (Kettlehut); silt loam (Kn) to clay loam (Kh) surface textures.

KnKh 1 Mainly Kelstern solonetzic soils, with Kettlehut solonetzic soils on mid slopes, and solonetzic Fox Valley soils.

KnKh 2 Mainly Kelstern solonetzic soils, with Kettlehut solonetzic soils on mid slopes, solonetzic Fox Valley soils, and poorly drained soils in depressions.

Kelstern-Valor: A mixture of Solonetzic soils formed in silty lacustrine (Kelstern) and Brown soils formed in shallow, silty lacustrine (Valor) materials; loam to silt loam surface textures.

KnVa 1 Mainly Kelstern solonetzic soils, with orthic Valor soils on upper slopes, and solonetzic Valor soils on mid slopes.

Regina: Grumic Dark Brown soils formed in clayey lacustrine materials; heavy clay to clay surface textures.

Ra 1 Mainly grumic Regina soils.

Ra 2 Mainly grumic Regina soils, with poorly drained soils in depressions.

Ra 3 Mainly poorly drained soils.

Regina-Sutherland: A mixture of grumic Dark Brown soils formed in clayey lacustrine (Regina) and Dark Brown soils formed in clayey lacustrine (Sutherland) materials; heavey clay (Ra) to clay loam (Su) surface textures.

RaSu 1 Mainly grumic Regina soils, with orthic and calcareous Sutherland soils.

Regina-Weyburn: A mixture of grumic Dark Brown soils formed in clayey lacustrine materials (Regina) and Dark Brown soils formed in moderately stony, loamy glacial till (Weyburn); heavy clay (Ra) to loam (Wr) surface textures.

RaWr 1 Mainly grumic Regina soils, with orthic Weyburn soils on upper slopes.

Sceptre: Grumic soils formed in clayey lacustrine materials; heavy clay to clay surface textures.

Sc 1 Mainly grumic Sceptre soils.

Scott-Hanley:A mixture of Dark Brown soils (Scott) and Solonetzic soils (Hanley) formed in shallow, silty lacustrine material, and Dark Brown soils formed in slightly stony, loamy glacial till (Weyburn);loam surface textures.

StHy 3 Mainly orthic Scott soils, with eluviated Scott and solod Hanley soils on lower slopes, and orthic Weyburn soils on upper slopes.

StHy 9 Mainly orthic Scott soils, with Hanley solonetzic soils on lower slopes, orthic Weyburn soils on upper slopes, and saline soils on lower slopes.

Scott-Weyburn; Dark Brown soils formed in a mixture of shallow, silty lacustrine material (Scott) and slightly stony, loamy glacial till (Weyburn); silt loam (St) to loam (Wr) surface textures.

StWr 2 Mainly orthic Scott soils, with calcareous Weyburn soils on knolls, Orthic Weyburn soils on upper slopes, and poorly drained soils in depressions.

StWr 3 Mainly orthic Scott soils, with eluviated Scott soils on lower slopes, and orthic Weyburn soils on upper slopes.

StWr 4 Mainly orthic Scott soils, with orthic Weyburn soils on upper slopes, and calcareous Weyburn soils on upper slopes and knolls.

Sutherland; Dark Brown soils formed in clayey lacustrine materials; clay to clay loam surface textures.

Su 5 Mainly poorly drained soils.

Sutherland-Regina: A mixture of Dark Brown soils (Sutherland) and grumic soils (Regina) formed in clayey lacustrine materials; clay (Su) to heavy clay (Ra) surface textures.

SuRa 1 Mainly orthic Sutherland soils, with grumic Regina soils.

Sutherland-Scott: Dark Brown soils formed in a mixture of clayey lacustrine materials (Sutherland) and shallow, silty lacustrine materials underlain by glacial till (Scott); clay (Su) to silt loam (St) surface textures.

SuSt 8 Mainly orthic Sutherland soils, with orthic Scott soils, and solodic Tuxford and eluviated Scott soils on lower slopes.

Sutherland-Tuxford: A mixture of Dark Brown soils (Sutherland) and Solonetzic soils (Tuxford) formed in clayey lacustrine materials; clay to clay loam surface textures.

SuTu 1 Mainly orthic Sutherland soils, with Tuxford solonetzic soils on lower slopes.

SuTu 9 Mainly orthic Sutherland soils, with Tuxford solonetzic soils, and saline soils on lower slopes.

Sutherland-Weyburn: Dark Brown soils formed in a mixture of clayey lacustrine materials (Sutherland) and slightly stony, loamy glacial till (Weyburn); clay (Su) to loam (Wr) surface textures.

SuWr 4 Mainly orthic Sutherland soils, with orthic Weyburn soils on upper slopes, and calcareous Weyburn soils on knolls.

Valor-Ardill: Brown soils formed in a mixture of shallow, silty lacustrine materials (Valor) and clay loam glacial till (Ardill); silt loam (Va) to clay loam (Ad) surface textures.

VaAd 1 Mainly orthic Valor soils, with orthic Ardill soils on upper slopes and knolls.

VaAd 2 Mainly orthic Valor soils, with orthic Ardill soils on upper slopes, calcareous Ardill soils on knoll, and poorly drained soils in depressions.

VaAd 3 Mainly orthic Valor soils, with orthic Ardill soils on upper slopes and knolls, and eluviated Valor soils on lower slopes.

Valor-Haverhill: Brown soils formed in a mixture of shallow, silty lacustrine materials (Valor) and slightly stony, loamy glacial till (Haverhill); silt loam (Va) to loam (Hr) surface textures.

VaHr 4 Mainly orthic Valor soils, with orthic Haverhill soils on upper slopes, and calcareous Haverhill soils on knolls.

Valor-Kettlehut: A mixture of Brown soils formed in shallow, silty lacustrine materials (Valor) and Solonetzic soils formed in clay loam glacial till (Kettlehut); silt loam (Va) to clay loam (Kh) surface textures.

VaKh 1 Mainly orthic Valor soils, with Kettlehut solonetzic soils on lower slopes.

Valor-Kelstern: A mixture of Brown soils (Valor) and Solonetzic soils (Kelstern) formed in shallow, silty lacustrine materials underlain by glacial till; silt loam surface textures.

VaKn 1 Mainly orthic Valor soils, with Kelstern solonetzic soils on lower slopes.

Weyburn: Dark Brown soils formed in slightly stony, loamy glacial till; loam surface textures.

Wr12 Mainly orthic Weyburn soils, with calcareous Weyburn soils on upper slopes and knolls.

Weyburn-Brooking: A mixture Dark Brown soils formed in slightly stony, loamy glacial till (Weyburn) and Solonetzic soils formed in clay loam glacial till (Brooking); loam (Wr) to clay loam (Bk) surface textures.

WrBk 3 Mainly orthic Weyburn and calcareous Weyburn soils on mid- and upper slopes, and solonetz Brooking and solonetzic Weyburn soils on lower slopes.

Weyburn-Hanley: A mixture of Dark Brown soils formed in slightly stony, loamy glacial till (Weyburn) and Solonetzic soils formed in silty lacustrine materials (Hanley); loam (Wr) to silt loam (Ew) surface textures.

WrHy 3 Mainly orthic Weyburn soils, with Hanley solonetzic soils on mid- slopes, and orthic Scott soils on lower slopes.

WrHy 9 Mainly orthic Weyburn soils, with Hanley solonetzic soils on mid- slopes, and saline soils on lower slopes.

Weyburn-Scott: Dark Brown soils formed in a mixture of slightly stony, loamy glacial till(Weyburn) and shallow, silty lacustrine materials (Scott); loam (Wr) to silt loam (St) surface textures.

WrSt 2 Mainly orthic Weyburn soils, with calcareous Weyburn soils on upper slopes and knolls, orthic Scott soils on lower slopes, and poorly drained soils in depressions.

WrSt 3 Mainly orthic Weyburn soils, with orthic and eluviated Scott soils on lower slopes.

Willows: Brown soils formed in clayey lacustrine materials; loam to clay loam surface textures.

Ww 2 Mainly orthic Willows soils, with calcareous Willows soils.

Ww 6 Mainly calcareous Willows soils, with saline Willows soils on lower slopes.

Willows-Kindersley: A mixture of Brown soils (Willows) and Solonetzic soils (Kindersley) formed in clayey lacustrine materials; clay surface textures.

WwKd 1 Mainly orthic Willows soils, with solonetzic Willows soils, and Kindersley solonetzic soils on lower slopes.

8. SOIL INTERPRETATIONS

DELIN-EATION	MAPUNIT	SLOPE CLASS	SURFACE FORM	SALINITY SYMBOL	SURFACE TEXTURE	IRRIG ATION	AGRICULTURAL CAPABILITY	STONE CLASS	WETLANDS DRAINAGE	SAND+ GRAVEL	SURFACE pH	EROSION WIND	EROSION WATER	PAST EROSION
1	SUTU1	3	U	1MA	CL	3Bdt1	2(7)M3(3)D	S0	B1	SG0	A3	2	3	W0
2	STHY9	3-4	UD	3SA	L	4Bst1	3(4)M4(3)D5(3)N	S1	A1	SG0	A3	2	3D	W1K
3	SUTU1	3	U	1MA	CL	3Bdt1	2(7)M3(3)D	S0	B1	SG0	A3	2	3	W0
4	STHY3	3	U	2SA	L	3Bdst1	3(10)M	S1	B1	SG0	A3	2	2	W1K
5	STHY9	3	U	3SA	L	4Bst1	3(6)M4(4)DN	S0	B1	SG0	A2	2	2	W1K
6	STHY9	3-4	U	3SA	L	4Bst1v	3(5)M4(4)ND5(1)W	S0	B1	SG0	A2	2	2	W1K
7	STWR3	3	UD	1MA	CL	2Bqvt1	3(10)M	S2	A1	SG0	A1	2	2D	W1K
8	RA1	3-4	U	1MI	HC	4Bqt1	2(10)C	S1	B1	SG0	D1	2	1	W1K
9	RAWR1	4-5	ID	1MI	HC-CL	4Cqvt2	3(6)T4(4)TE	S1	A1	SG0	D1	3	3D	W3K
10	RA2	2-3	UD	1MI	C-HC	3Dqv	2(7)C3(3)W	S0	A3	SG0	D1	2	2D	W1K
11	RA3	1	U	2SA	HC	4Dqv	5(10)W	S0	C3	SG0	D1	2	1	W1G
12	RA1	4	ID	1MI	HC	4Cqt2	3(6)TE2(4)C	S0	A1	SG0	D1	3	2D	W1K
13	RA1	4-3	UD	1MI	C	3Bqt1	2(7)C3(3)TE	S0	A1	SG0	C1	3	3D	W2G
14	GR5	2	U	4MA	C	4Dwsv	4(4)WN6(4)W3(2)W	S0	C3	SG0	D1	2	1	W1G
15	GR5	2	U	4MA	C	4Dwsv	4(4)WN6(4)W3(2)W	S0	C3	SG0	D1	2	1	W1G
16	RA1	3	U	1MI	HC	4Bqt1	2(10)C	S0	B1	SG0	C5	2	1	W1K
17	EW3	3-4	HD	2MPA	SIL	3Cst2v	3(8)M5(2)W	S0	A3	SG0	B4	2	2D	W2G
18	STWR3	3	U	1MA	SICL-CL	2Bqst1	3(10)M	S1	B1	SG0	B4	2	2	W1K
19	STHY3	3-4	U	1MA	SICL-CL	3Bdvt1	3(7)M4(3)MD	S1	B1	SG0	B2	2	2	W1K
20	STHY3	2-3	U	1MA	SIL	3Bdvt1	3(10)M	S0	B1	SG0	B2	2	1	W1G
21	WRST3	3-4	U	1MA	L-SIL	2Bsvt1	3(10)M	S1	B1	SG0	B2	2	2	W1K
22	WRHY9	3	UD	2SA	L-SIL	3Bdst1	3(8)M4(2)ND	S1	A1	SG0	B2	2	2D	W1K
23	WRHY3	3-4	U	1MA	CL-L	3Bdvt1	3(8)M4(2)MD	S1	B1	SG1	B2	2	2	W1K
24	WRST2	3-4	U	2WA	L	2Csv	3(8)M4(2)W	S1	B3	SG0	B2	2	2	W1K
25	STWR3	3-4	UD	2WA	CL-L	2Bqvt1	3(10)M	S1	A1	SG0	A4	2	2D	W1K
26	EWHY9	3	U	3SA	CL-L	4Bsvt1	3(7)M4(3)ND	S1	B1	SG0	B4	2	2	W0
27	RA3	2	U	1MP	HC	4Dqv	3(6)W4(4)W	S0	C1	SG0	D1	2	1	W0
28	EWHY3	3-2	U	2MPA	SIL-CL	3Bdsv	3(10)MD	S0	B1	SG0	B2	2	2	W1K
29	SU5	2	U	3WA	C-CL	3Dqv	4(10)W	S0	C1	SG0	C5	2	1	W0
30	STHY3	3	U	2SA	L	3Bdst1	3(10)M	S1	B1	SG0	A3	2	2	W1K
31	STWR4	3	U	1MA	L-SIL	2Bsvt1	3(10)M	S1	B1	SG0	B4	2	2	W1K
32	SUTU9	2	U	3MS	C	4Bsv	4(8)N5(2)ND	S0	B1	SG0	A4	2	1	W0
33	STHY9	3	U	3SA	L-CL	4Bsvt1	4(5)ND3(3)M5(2)N	S1	B1	SG0	C3	2	2	W1K
34	X	3	U	1MA	CL-C	4Cwi	4(10)W	S0	DX	SG0	B2	U	U	W0
35	X	2	U	2MP	CL	4Cwi	4(5)W5(5)W	S1	DX	SG1	B2	U	U	W0
36	GR2	2	U	6MA	C	4Dwsv	4(5)NW5(5)NW	S0	C3	SG0	D1	2	1	W0
37	GR2	2	U	6MA	C	4Dwsv	4(5)NW5(5)NW	S0	C3	SG0	D1	2	1	W0
38	STWR3	3-4	U	1MA	SIL-L	2Bsvt1	3(10)M	S2	B1	SG0	B2	2	2	W1K
39	WRHY3	3	UD	1MA	CL-SIL	3Bdvt1	3(6)M4(4)MD	S1	A1	SG0	B2	2	2D	W1K
40	EWHY2	3	U	3MA	SIL	4Csv	3(5)M4(3)D5(2)W	S0	B3	SG0	B2	2	2	W1K
41	STHY9	3	UD	2MA	SIL	3Bdst1	3(6)M4(4)ND	S1	A1	SG0	B4	2	2D	W1G
42	HWAV	5	HI	3MA	CL	4Dct2	5(5)TE6(5)NW	S1	A3	SG0	C3	2	5G	W2KG
43	GR3	2	U	5VA	SIC-C	4Dwsv	7(10)WN	S1	C4	SG0	D1	2	1	W1G
44	STHY3	3-4	U	1MA	SICL-CL	3Bdvt1	3(7)M4(3)MD	S1	B1	SG0	B2	2	2	W1K
45	SUTU1	3	U	1MA	SIC	3Bdqt1	2(7)M3(3)MD	S1	B1	SG0	A4	2	2	W1K
46	GR2	2	U	4SA	C	4Dwsv	5(7)NW4(3)NW	S0	C3	SG0	D1	2	1	W1G
47	WRHY3	3	U	3MA	CL-SIL	4Bsvt1	3(6)M4(4)MD	S1	B1	SG0	B2	2	2	W1K
48	WRHY3	3-4	U	2MA	CL-SIL	3Bdst1	3(7)M4(3)ND	S1	B1	SG0	B2	2	2	W1K
49	EWHY9	3	U	3SPA	SICL	4Bsvt1	3(6)M4(4)ND	S0	B1	SG0	B4	2	2	W1K
50	RASU1	3-4	U	1MI	HC-C	4Bqvt1	2(8)C3(2)T	S0	B1	SG0	C5	2	1	W1K
51	GR1	3	UD	4VA	CL-C	4Dwsv	6(7)WN4(3)WN	S1	C3	SG0	D1	2	2D	W2G
52	SUST8	3-4	U	1MA	SIC-SICL	3Bqvt1	2(4)M3(3)M4(3)MD	S1	B1	SG0	C3	2	2	W1K
53	EWHY1	3	U	1MA	SICL	3Bdvt1	3(7)M4(3)MD	S1	B1	SG0	B2	2	2	W1K
54	EWHY9	3	U	3SPA	SICL	4Bsvt1	3(6)M4(4)ND	S0	B1	SG0	B4	2	2	W1K
55	GR3	2	U	5VA	CL-C	4Dwsv	7(10)NW	S0	C4	SG0	D1	2	1	W1G

8. SOIL INTERPRETATIONS

DELIN-EATION	MAPUNIT	SLOPE CLASS	SURFACE FORM	SALINITY SYMBOL	SURFACE TEXTURE	IRRIG ATION	AGRICULTURAL CAPABILITY	STONE CLASS	WETLANDS DRAINAGE	SAND+ GRAVEL	SURFACE pH	EROSION WIND	EROSION WATER	PAST EROSION
56	EWHY9	3	UD	2SAD	SICL	3Bdst1	3(8)M4(2)ND	S0	A1	SG0	B4	2	2D	W1KG
57	RASU1	3-4	ID	1MI	SIC	3Cqt2	2(7)C3(3)TE	S0	A1	SG0	C3	2	2D	W2G
58	EWHY3	3	U	3MP	SIL	4Bsvt1	3(8)M4(2)ND	S0	B1	SG0	B2	2	2	W1K
59	EW3	3-4	HD	2MPA	SIL	3Cst2v	3(8)M5(2)W	S0	A3	SG0	B4	2	2D	W2G
60	X	1	L	2MPA	SIL	4Cwi	5(10)W	S0	DX	SG0	B4	U	U	W1G
61	EWBR4	4-5	H	2MPA	L-FL	3Cst2	3(8)M4(2)MT	S0	B1	SG0	B4	2	3	W3K
62	EWHY9	3-4	U	3SPA	VL-L	4Bsvt1	3(7)M4(3)ND	S0	B2	SG0	B4	2	2	W2K
63	GR3	2	U	5VA	C-CL	4Dwsv	6(10)NW	S1	C4	SG0	D1	2	1	W1G
64	EWHY9	3-4	U	3SPA	VL-L	4Bsvt1	3(7)M4(3)ND	S0	B2	SG0	B4	2	2	W2K
65	Y	1	L	2MA	VL-L	4Cwi	6(10)WD	S0	DY	SG0	B4	U	U	
66	EWHY9	4-3	U	3SPA	L-VL	4Bsvt1	3(7)M4(3)ND	S0	B2	SG1	B4	2	3	W2K
67	STHY3	3	U	1MA	SICL	3Bdvt1	3(7)M4(3)MD	S1	B1	SG0	B2	2	2	W1K
68	WRST3	4-3	U	2MA	CL-VL	3Bsvt1	3(9)M5(1)W	S1	B2	SG0	B4	2	2	W1K
69	HTGY9	3-2	U	3SA	SL	4Bsvt1	5(6)ME4(4)ND	S1	B1	S3	A2	4	2	W3B
70	GR2	2	UD	4SA	C	4Dwsv	5(7)NW4(3)NW	S0	C3	SG0	D1	2	1D	W1G
71	WRHY3	3-4	U	2MA	CL-SIL	3Bdst1	3(7)M4(3)MD	S1	B1	SG0	B2	2	2	W1K
72	RW	3	UI	2MA	L-CL	4Dct2	5(8)WT4(2)W	S2	A3	SG0	D1	2	3	W1G
73	HY5	3	U	4SA	SICL-SIL	4Bksv	3(5)M4(5)ND	S1	B1	SG0	B4	2	2	W1K
74	FK2	2	U	4SA	CL	4Dwsv	5(10)NW	S0	C3	SG0	D1	2	1	W1G
75	KNAD9	3	U	5MA	CL	4Bksv	3(4)M4(3)ND5(3)N	S1	B1	SG0	A4	2	2	W1K
76	Y	2	U	5SA	CL	4Cwi	5(10)NW	S1	DY	SG0	D1	U	U	W0
77	Y	2	U	5SA	CL	4Cwi	5(10)NW	S1	DY	SG0	D1	U	U	W0
78	Y	2	U	5SA	CL	4Cwi	5(10)NW	S1	DY	SG0	D1	U	U	W0
79	KN2	2-3	U	5SA	CL	4Bksv	5(10)ND	S0	B1	SG0	A4	2	1	W1G
80	FK1	2	U	5SA	CL	4Dwsv	5(5)NW6(5)NW	S1	C3	SG0	D1	2	1	W1G
81	KN2	2-3	U	5SA	CL	4Bksv	5(10)ND	S0	B1	SG0	A4	2	1	W1G
82	FK1	2	U	5SA	CL	4Dwsv	5(5)NW6(5)NW	S1	C3	SG0	D1	2	1	W1G
83	WRHY3	3-4	U	2WA	L-SIL	3Bdvt1	3(6)M4(4)MD	S1	B1	SG0	B2	2	2	W1K
84	Y	2	U	4MA	C	4Cwi	5(6)W4(4)NW	S0	DY	SG0	B2	U	U	W0
85	X	2	U	1WA	CL	4Cwi	4(10)W	S0	DX	SG0	B2	U	U	W0
86	SUTU9	2	U	3MS	C	4Bsv	4(8)N5(2)ND	S0	B1	SG0	A4	2	1	W0
87	WRHY3	3-4	H	2MA	CL-SIL	3Cdst2	3(8)M4(2)D	S1	B1	SG0	B5	2	2	W1K
88	STHY3	3	U	2WA	CL	3Bdvt1	3(8)M4(2)D	S1	B1	SG0	B2	2	2	W0
89	STWR3	4-3	H	1WA	CL	2Cqt2	3(10)M	S1	B1	SG0	B4	2	2	W1K
90	WR12	5	HI	1WD	L	1Ct2	4(7)T5(3)TE	S2	A1	SG0	C5	2	3D	W2G
91	GR4	2	U	3MPA	C	4Dwsv	4(8)W5(2)NW	S0	C4	SG0	B5	2	1	W0
92	X	2	U	1MA	C	4Cwi	4(10)W	S0	DX	SG0	A4	U	U	W0
93	SURA1	3	UD	1WA	C-HC	3Bqvt1	2(10)M	S0	A1	SG0	C5	2	2D	W0
94	BRWR1	5-4	HD	2MA	SL-CL	3Csvt2	4(7)MT5(3)TE	S2	A1	SG0	B5	3	3D	W1K
95	EWSU4	5-4	HD	0	SIL-C	1Cvt2	4(7)T3(3)M	S1	A1	SG0	B4	2	4D	W2G
96	EWHY1	3-4	U	2MA	CL	3Bdst1	3(8)M4(2)D	S1	B1	SG0	B2	2	2	W1K
97	RA2	2	U	2WA	HC	4Dqv	3(7)W4(3)W	S0	B3	SG0	D1	2	1	W0
98	SUWR4	4-5	HI	1WA	C-CL	3Cqt2	3(6)MT2(4)M	S1	A1	SG0	B5	2	2D	W1K
99	BRWR1	3	U	0	FL-L	1Bvt1	3(10)M	S1	B1	SG0	B2	2	2	W1K
100	X	2	U	2MA	C	4Cwi	4(10)W	S0	DX	SG0	B2	U	U	W0
101	Y	2	U	2MPA	C	4Cwi	4(5)W5(5)W	S0	DY	SG0	B2	U	U	W0
102	WR12	4-3	HD	1WA	L-CL	1Ct2	3(8)MT4(2)TE	S1	A1	SG0	C7	2	2D	W2KG
103	STWR2	3	U	1MPA	L-CL	2Csv	3(8)M5(2)W	S1	B3	SG0	B4	2	2	W1K
104	STHY3	3-4	U	1MA	SIL-SICL	3Bdvt1	3(7)M4(3)MD	S1	B1	SG0	B2	2	2	W1K
105	RA2	2	U	3MA	HC	4Dqsv	2(6)M4(4)NW	S0	B3	SG0	B4	2	1	W0
106	STWR2	3	U	1WA	SIL-L	1Cv	3(8)M5(2)W	S1	B3	SG0	B4	2	2	W1K
107	STHY3	3-2	U	1WA	SIL	3Bdvt1	3(6)M4(4)MD	S1	B1	SG0	B5	2	2	W1K
108	Y	2	U	1WA	SIL	4Cwi	6(10)W	S1	DY	SG0	B5	U	U	W0
109	HT1	3	U	1MA	SL-LS	2Bmst1	5(10)ME	S0	B1	S4	A4	4	2	W3B
110	HTGY9	3	U	4SA	SL	4Bsvt1	5(10)MN	S0	B1	S3	B5	4	2	W1B

8. SOIL INTERPRETATIONS

DELINEATION	MAPUNIT	SLOPE CLASS	SURFACE FORM	SALINITY SYMBOL	SURFACE TEXTURE	IRRIGATION	AGRICULTURAL CAPABILITY	STONE CLASS	WETLANDS DRAINAGE	SAND+ GRAVEL	SURFACE pH	EROSION WIND	EROSION WATER	PAST EROSION
111	CT4	3	U	4SA	SL	4Dwsv	5(8)NW6(2)NW	S1	C4	S4	D1	3	2	W0
112	WRBK3	4-3	U	2MA	CL	3Bdst1	3(5)M4(4)MD5(1)W	S1	B2	SG0	B4	2	2	W1K
113	WRBK3	4-3	U	2MA	CL	3Bdst1	3(5)M4(4)MD5(1)W	S1	B2	SG0	B4	2	2	W1K
114	EWHY2	4-5	H	2MA	SIL-VL	3Cdst2	3(5)M4(3)ND5(2)W	S0	B3	SG0	B4	2	2	W1K
115	WRST3	4-3	U	2MA	CL-VL	3Bsvt1	3(9)M5(1)W	S1	B2	SG1	B4	2	2	W1K
116	HWAV	5	ID	4VA	L	4Dct2	5(7)NT6(3)NW	S2	A1	SG1	D1	2	5D	W3G
117	KNFX1	3-4	U	3MA	L	4Bkst1	4(10)MD	S1	B1	SG0	B4	2	2	W1G
118	CT3	2	U	5VA	S-SL	4Dwms	6(10)NW	S0	C4	S4	D1	4	1	W0
119	RW	3-4	ID	5SA	L	4Dct2	5(10)NW	S1	A2	SG0	C3	2	3D	W0
120	KNFX1	3-4	U	3MA	L	4Bkst1	4(10)MD	S1	B1	SG0	B4	2	2	W1G
121	HTGY1	3	U	2MA	SL-FL	3Bdst1	4(6)MD5(4)ME	S1	B1	S3	A2	3	2	W3B
122	KNBY1	2-3	U	2MA	L-FL	4Bkvt1	4(10)MD	S1	B1	SG0	A2	2	2	W1B
123	KNFX9	2-3	U	4SA	L	4Bkst1	4(7)MD5(3)N	S1	B1	SG0	A2	2	2	W1K
124	KNKH1	4	UI	1WP	L-CL	4Bkvt1	3(7)MD4(3)D	S1	A1	SG0	B2	2	4D	W2G
125	VAAD3	3-4	U	2MA	SIL-CL	3Bsvt1	3(9)M5(1)W	S1	B2	SG0	B2	2	2	W1K
126	X	2	U	4MPA	CL	4Cwi	4(10)NW	S1	DX	SG0	A4	U	U	W0
127	KNKH1	3	UD	3MA	CL	4Bksv	3(6)M4(4)D	S1	A1	SG0	A4	2	2D	W1G
128	HRBY2	3-5	H	1WA	L-VL	1Dt2	4(8)M5(2)W	S1	B3	SG0	B2	2	2	W2B
129	HRBY1	3-4	H	0	L-SL	1Ct2	4(10)M	S1	B1	SG0	B2	2	2	W1B
130	BYHR1	3-4	H	0	SL	2Cmt2	4(10)M	S1	B1	SG0	B2	3	2	W2B
131	BYHR1	3-4	U	0	FL	1Bvt1	4(10)M	S1	B1	SG0	B2	3	2	W2B
132	VAAD2	3-4	UD	3MA	SIL-CL	4Csv	3(8)M5(2)W	S1	A3	SG0	B2	2	2D	W1KG
133	Z	1	L	1MP	SIL-CL	4Cwi	7(10)W	S1	DZ	SG0	B2	U	U	W0
134	CT3	2	U	5VA	S-SL	4Dwms	6(10)NW	S0	C4	S4	D1	4	1	W0
135	HTHR2	3-4	H	1WA	LS-SL	3Cmvt2	5(6)M4(4)M	S1	B1	S3	B2	4	1	W2B
136	HRHT1	3-4	H	1MA	L-SL	2Csvt2	4(6)M5(4)M	S1	B1	S2	B2	2	2	W3B
137	HT1	3	U	1WA	SL	2Bmt1	5(10)ME	S0	B1	S4	A2	4	2	W3B
138	HT3	3	U	5MA	LS-SL	4Bsvt1	5(10)MN	S0	B1	S4	C3	4	1	W3B
139	BYHT1	3	U	1MA	VL-SL	2Bsvt1	4(6)M5(4)M	S1	B1	S2	B2	3	2	W2B
140	HTHR1	4-3	H	0	SL	2Cmvt2	5(7)M4(3)M	S1	B1	S3	B2	4	2	W3B
141	HT3	3	U	3MA	LS-SL	4Bsvt1	5(10)M	S1	B1	S4	B2	4	1	W3B
142	HTGY9	3	U	3VA	LS-SL	4Csv	5(8)ME6(2)NW	S0	B3	S3	B2	4	1	W3B
143	CT3	2	U	5VA	SL	4Dwsv	6(10)NW	S0	C4	S4	D1	3	1	W0
144	AV8	3	UD	6SA	C	4Dsv	5(6)NW4(4)ND	S0	C4	SG0	C5	2	2D	W0
145	KDKH1	4-5	ID	1WD	C-CL	4Ckt2	4(8)TD5(2)TE	S1	A1	SG0	B2	2	3D	W3G
146	ADKH1	4-6	UI	0	L-CL	3Cdt1	5(6)T4(4)MT	S2	A1	SG0	B4	2	4D	W3G
147	VAHR4	4-3	UI	1WA	L	1Bvt1	3(5)M4(4)MT5(1)NW	S1	B2	SG0	B4	2	3	W1KG
148	VAHR4	3-4	U	1WA	L	1Bvt1	3(7)M4(3)TM	S1	B1	SG0	B4	2	2	W1K
149	AV26	2	U	3SPA	C	4Dksv	5(10)NW	S0	C4	SG0	C3	2	1	W0
150	STWR3	3-4	UI	1WA	L	1Bvt1	3(10)M	S1	B1	SG0	B4	2	2	W1K
151	AV26	2	U	3SPA	C	4Dksv	5(10)NW	S0	C4	SG0	C3	2	1	W0
152	WW6	2	U	3MA	SIC	4Dsv	2(4)M3(3)NW5(3)NW	S0	B3	SG0	B4	2	1	W1G
153	GR3	2	U	5MA	C	4Dwsv	6(6)NW5(4)NW	S0	C4	SG0	C3	2	1	W1G
154	VAHR4	4-5	UI	1WA	L	1Ct1	4(6)MT3(4)M	S1	A1	SG0	B4	2	3D	W1K
155	VAKN1	3	U	1MA	SIL	3Bdvt1	3(6)M4(4)MD	S1	B1	SG0	A4	2	2	W1K
156	KDWW1	3	U	1MA	SIC	4Bkvt1	3(5)M4(5)MD	S1	B1	SG0	B4	2	2	W1K
157	KNAD1	3	U	1MA	SIL-CL	4Bkvt1	3(6)M4(4)MD	S1	B1	SG0	A2	2	2	W1K
158	KDWW2	2	U	2MA	SIC	4Ckv	3(4)M4(4)MD5(2)W	S1	B3	SG0	B4	2	1	W1G
159	KNVA1	3-2	U	1MA	SIL	4Bkvt1	3(5)M4(5)MD	S1	B1	SG0	A2	2	2	W1K
160	KNVA1	3-2	U	1MA	SIL	4Bkvt1	3(5)M4(5)MD	S1	B1	SG0	A2	2	2	W1K
161	ADKN1	3	U	1MA	CL-SIL	3Bdvt1	3(10)M	S1	B2	SG0	A4	2	2	W1K
162	KNKH1	3	U	1MAD	L-CL	4Bkvt1	3(10)MD	S1	B2	SG0	A2	2	2	W1K
163	SC1	3	UD	1WD	HC	4Bqt1	2(10)C	S0	A1	SG0	B4	3	2D	W1G
164	VAAD1	3-4	U	1WA	SIL-L	1Bvt1	3(7)M4(3)M	S1	B1	SG0	B2	2	2	W1K
165	ADKH1	3	U	1MA	CL	3Bdvt1	3(7)M4(3)MD	S1	B1	SG0	B5	2	2	W1K

8. SOIL INTERPRETATIONS

DELIN-EATION	MAPUNIT	SLOPE CLASS	SURFACE FORM	SALINITY SYMBOL	SURFACE TEXTURE	IRRIG ATION	AGRICULTURAL CAPABILITY	STONE CLASS	WETLANDS DRAINAGE	SAND+ GRAVEL	SURFACE pH	EROSION WIND	EROSION WATER	PAST EROSION
166	WWKD1	3-4	UD	1MD	SIC	3Bdqt1	3(7)M4(3)MD	S0	A1	SG0	B4	2	2D	W1G
167	WW2	4-3	UI	1WA	SIC	3Bqt1	3(6)M4(4)M	S0	B1	SG0	B4	2	2	W2KG
168	WWKD1	3-4	UD	1MA	SIC	3Bdqt1	2(7)M3(3)MD	S0	A1	SG0	B4	2	2D	W0
169	SC1	4	ID	1WD	HC	4Cqt2	3(6)TE2(4)C	S0	A1	SG0	B4	3	2D	W2G
170	STHY3	3	U	1MA	SIL	3Bdvt1	3(10)MD	S2	B2	SG0	B2	2	2	W1K
171	AV7	3	UD	6SA	C	4Bsvt1	4(6)DN5(4)N	S0	C3	SG0	C5	2	2D	W0
172	WWKD1	3	U	1MA	C	3Bdqt1	3(8)M4(2)D	S0	B1	SG0	B4	2	2	W1K
173	GYKH1	3	U	1WA	FL-L	4Bkvt1	4(10)MD	S0	B1	SG0	A2	3	2	W2B
174	HR1	3-5	UI	3SA	L-FL	4Cst1v	4(8)MT5(2)W	S1	A3	SG0	B4	2	2D	W3G
175	FK2	4-2	UD	4MAD	CL	4Dwsv	4(7)N5(3)W	S0	C3	SG0	C3	2	2D	W1G
176	HT2	3-4	UD	2SA	LS	3Bmst1	5(10)ME	S1	A1	S4	A2	5	1D	W3BG
177	HTGY1	3	U	1MA	LS-SL	3Bdmt1	5(10)ME	S0	B1	S3	B2	4	2	W3B
178	Z	1	L	4MPA	SL	4Cwi	5(6)NW4(4)NW	S0	DZ	SG0	D1	U	U	W0
179	HTBY1	3-4	UI	1MA	LS-SL	3Bmvt1	5(6)M4(4)M	S1	A1	S3	B2	4	1D	W2B
180	Z	1	L	0	L	4Cwi	6(10)W	S0	DZ	SG0	B2	U	U	W0
181	KNFX1	3-4	U	2MA	SIL-FL	4Bkvt1	4(7)D3(3)M	S2	B1	SG0	A2	2	2	W2B
182	KNFX1T	3	UD	2MA	SICL	4Bkvt1	4(6)D3(4)M	S1	A1	SG0	A4	2	2D	W1BG
183	VAKH1	4-3	UI	1MA	SIL-L	3Bdvt1	3(6)M4(4)MD	S1	A1	SG0	B2	2	3D	W2GK
184	KHKN1	3-4	UD	2MA	L-SIL	4Bkvt1	3(6)MD4(4)D	S2	A1	SG0	A2	2	2D	W1KG
185	FXKN1T	4	M	2MA	SIL-L	3Cdst2	3(5)M4(5)TD	S1	B1	SG0	A4	2	3	W2K
186	FK2	2	U	5MA	CL-C	4Dwsv	4(5)NW5(5)W	S0	C3	SG0	D1	2	1	W0
187	KHKN1	3	U	2MA	L-CL	4Bkvt1	3(6)MD4(4)D	S1	B1	SG0	A2	2	2	W1K
188	ADKH1	3	U	1WP	L-CL	3Bdvt1	3(6)M4(4)D	S1	B3	SG0	B2	2	2	W2GK
189	KNKH2	3-2	U	2MA	SIL	4Bkvt1	4(10)MD	S1	B3	SG0	A2	2	2	W1K
190	Z	2	U	4MPA	SIL	4Cwi	7(10)W	S0	DZ	SG0	D1	U	U	W0
191	HTHR1	3-4	U	2MA	SL-L	3Csv	4(5)M5(5)ME	S1	B1	S3	A4	3	2	W1BK
192	Y	1	L	5SA	L	4Cwi	3(8)M4(2)N	S1	DY	SG0	A3	U	U	
193	WRST3	3-4	UD	1MAD	L-CL	2Bsvt1	3(10)M	S1	A1	SG0	C3	2	2D	W1K
194	HW	6	IG	0	L	4Dct2	6(10)T	S2	A1	SG0	C5	2	5G	W2G
195	KNFX1	3-4	U	1WP	CL-L	4Bkvt1	4(6)D3(4)MD	S1	B1	SG0	A2	2	2	W1GB

9. Further Information

For more information about the data contained in this report or for more information about the Saskatchewan Soil Survey, please contact:

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