RURAL MUNICIPALITY OF NORTH BATTLEFORD

NUMBER 437

APRIL 1, 1986

PRELIMINARY SOIL MAP AND REPORT

SASKATCHEWAN SOIL SURVEY

SASKATCHEWAN INSTITUTE OF PEDOLOGY

UNIVERSITY OF SASKATCHEWAN

Saskatchewan Agriculture

Agriculture Development Fund

Agriculture Canada

Research Branch

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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.

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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 North Battleford Rural Municipality, No. 437

Legal Location 1/4 SEC TWP RG MER	Tested Thickness (m)	Texture (%) Gravel[a]	Sand	Fines	Comments
NE- 10- 45- 17 W3	1.7	48.0	43.2	8.7	Deposit of sandy gravel
NW- 13- 44- 17 W3	2.3	29.1	67.5	3.2	Gravelly sand underlain by till
NW- 31- 44- 16 W3	2.7	21.0	75.5	3.3	Clean sand, test pits did not reach bottom of deposit
SW- 23- 43- 16 W3	2.3	0.8	94.5	4.5	Deposit of clean sand, no gravel
NW- 21- 45- 14 W3	2.7	38.0	59.7	2.1	Clean gravelly sand, test pits did not reach bottom of deposit
SE- 29- 45- 14 W3	2.9	34.2	62.8	2.8	Clean gravelly 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 NORTH BATTLEFORD
NUMBER 437

	HECTARES	ACRES
TOTAL AREA	89491	221134
SOIL CAPABILITY FOR AGRICULTURE		
Class 1	0	0
Class 2	48034	118694
Class 3	14353	35468
Class 4	13714	33889
Class 5	6173	15253
Class 6	3424	8463
Class 7	527	1304
IRRIGATION SUITABILITY		
Excellent	79	195
Good	33437	82625
Fair	37123	91732
Poor	15588	38519
SALINITY		
Very Strong	131	324
Strong	261	646
Moderate	1004	2482
Weak	609	1504
None	87484	216176
SAND AND GRAVEL		
Sandy	7755	19164
Sandy and Gravelly	985	2436
Gravelly	592	1463
STONES		
Non Stony to Slightly Stony	47508	117394
Moderately Stony	37547	92779
Very Stony	1173	2899
Excessively Stony	0	0
SURFACE pH		
X < 5.5	0	0
A 5.5 - 6.0	2440	6030
B 6.1 - 6.7	55231	136479
C 6.8 - 7.5	27754	68583
D > 7.5	801	1981
SURFACE TEXTURE		
Sands	1235	3053
Sandy Loams	21884	54076
Loams	62031	153281
Clay Loams	914	2259
Clays	162	402

6. ACREAGE FACTS

RURAL MUNICIPALITY OF NORTH BATTLEFORD
NUMBER 437

	HECTARES	ACRES
WIND EROSION POTENTIAL		
Very Low	50979	125972
Low	21875	54055
Moderate	10131	25035
High	2403	5939
Very High	35	88
Extremely High	0	0
WATER EROSION POTENTIAL		
Very Low	7742	19131
Low	63586	157124
Moderate	5732	14164
High	4514	11155
Very High	3851	9516
WETLANDS & POORLY DRAINED SOILS		
Open water and lakes	3843	9498
Wet, poorly drained soils	9013	22272

7. SOIL MAP UNIT DESCRIPTIONS

MAPUNIT SOIL LANDSCAPE RELATIONSHIPS

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

Av 5 Mainly poorly drained soils.

Av41 Mainly weakly developed soils, with poorly drained soils in depressions.

Blaine Lake: Black soils formed in silty lacustrine materials; loam to silty clay loam surface textures.

Bb 3 Mainly orthic Blaine Lake soils, with eluviated Blaine Lake soils on lower slopes.

Bb 6 Mainly orthic Blaine Lake soils, with leached poorly drained soils in depressions.

Bb 9 Mainly orthic Blaine Lake soils, with saline soils on lower slopes, and poorly drained soils in depressions.

Blaine Lake-Hamlin: Black soils formed in a mixture of silty lacustrine (Blaine Lake) and loamy lacustrine (Hamlin) materials; loam (Bb) to fine sandy loam (Hm) surface textures.

BbHm 3 Mainly orthic Blaine Lake soils, with orthic Hamlin soils, and eluviated Blaine Lake soils on lower slopes.

Blaine Lake-Kamsack: A mixture of Black (Blaine Lake) soils and Dark Gray (Kamsack) soils formed in silty lacustrine materials; loam to silty clay loam surface textures.

BbKa 1 Mainly orthic Blaine Lake soils, with orthic Kamsack soils on lower slopes.

BbKa 6 Mainly orthic Blaine Lake soils, with Orthic Kamsack soils on lower slopes, and leached, poorly drained soils in depressions.

Blaine Lake-Mayfair: Black soils formed in a mixture of silty lacustrine materials (Blaine Lake) and slightly stony, loamy glacial till (Mayfair); loam surface textures.

BbMf 3 Mainly orthic Blaine Lake soils, with orthic Mayfair soils on upper slopes, and eluviated Blaine Lake soils on lower slopes.

BbMf 6 Mainly orthic Blaine Lake soils, with orthic Mayfair soils on upper slopes, and leached poorly drained soils in depressions.

Blaine Lake-Speers: A mixture of Black soils (Blaine Lake) and Solonetzic soils (Speers) formed in silty lacustrine materials; loam to silty clay loam surface textures.

BbSs 9 Mainly orthic Blaine Lake soils, with Speers solonetzic soils, and saline soils on lower slopes.

Cutknife: Black soils formed in shallow, silty lacustrine materials underlain by glacial till; loam surface textures.

Cf 3 Mainly orthic Cutknife soils, with eluviated Cutknife soils on lower slopes.

Cf 9 Mainly orthic Cutknife soils, with saline Cutknife soils on lower slopes.

Cutknife-Hamlin: Black soils formed in a mixture of shallow, silty lacustrine material underlain by glacial till (Cutknife) and loamy lacustrine material (Hamlin); loam (Cf) to fine sandy loam (Hm) surface textures.

CfHm 3 Mainly orthic Cutknife soils, with orthic Hamlin soils, and eluviated Cutknife soils on lower slopes.

Cutknife-Mayfair: Black soils formed in a mixture of shallow, silty lacustrine (Cutknife) materials and slightly stony, loamy glacial till (Mayfair); loam surface textures.

CfMf 3 Mainly orthic Cutknife soils, with eluviated Cutknife soils on lower slopes, and orthic Mayfair soils on upper slopes.

CfMf 6 Mainly orthic Cutknife soils, with Orthic Mayfair soils on upper slopes, and leached, poorly drained soils in depressions.

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.

Edam: Weakly developed soils formed in wind-worked sandy fluvial materials; sand to loamy sand surface textures.

Em 3 Mainly eroded Edam soils, with weakly developed Edam soils.

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.

Fk 3 Mainly strongly saline, poorly drained soils.

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

Gr 4 Mainly moderately saline, poorly drained soils.

Hamlin: Black soils formed in loamy lacustrine materials (Hamlin); fine sandy loam to very fine sandy loam surface textures.

Hm 1 Mainly orthic Hamlin soils.

Hm 1T Mainly orthic Hamlin soils. Most of these soils are shallow to glacial till.

Hm 4 Mainly orthic Hamlin soils, with calcareous and eroded Hamlin soils on upper slopes and knolls.

Hm 6 Mainly orthic Hamlin soils, with leached, poorly drained soils in depresions.

Hm 9 Mainly orthic Hamlin soils, with saline Hamlin soils on lower slopes, and poorly drained soils in depressions.

Hamlin-Blaine Lake: Black soils formed in a mixture of loamy lacustrine (Hamlin) and silty lacustrine (Blaine Lake) materials; fine sandy loam (Hm) to silt loam (Bb) surface textures.

HmBb 3 Mainly orthic Hamlin soils, with orthic Blaine Lake and eluviated Blaine Lake soils on mid and lower slopes.

Hamlin-Cutknife: Black soils formed in a mixture of loamy lacustrine materials(Hamlin) and shallow silty lacustrine materials underlain by glacial till(Cutknife); fine sandy loam (Hm) to loam (Cf) surface textures.

HmCf 3 Mainly orthic Hamlin soils, with orthic Cutknife soils on mid slopes, and eluviated Cutknife soils on lower slopes.

Hamlin-Meota: Black soils formed in a mixture of loamy lacustrine (Hamlin) and sandy fluvial (Meota)materials; very fine sandy loam (Hm) to loamy sand (Me) surface textures.

HmMe 1 Mainly orthic Hamlin soils, with orthic Meota soils.

HmMe 1T Mainly orthic Hamlin soils, with orthic Meota soils. Most of these soils are shallow to glacial till.

HmMe 4 Mainly orthic Hamlin soils, with calcareous Hamlin soils on upper slopes and knolls, and orthic Meota soils.

Hamlin-Mayfair: Black soils formed in a mixture of loamy lacustrine materials(Hamlin) and slightly stony, loamy glacial till (Mayfair); fine sandy loam (Hm) to loam (Mf) surface textures.

HmMf 1 Mainly orthic Hamlin soils, with orthic Mayfair soils on upper slopes and knolls.

HmMf 6 Mainly orthic Hamlin soils, with orthic Mayfair soils on upper slopes, and leached poorly drained soils in depressions.

HmMf10 Mainly orthic Hamlin soils, with calcareous Mayfair soils on upper slopes and knolls, and orthic Meota soils.

Hamlin-Oxbow: Black soils formed in a mixture of loamy lacustrine materials (Hamlin) and slightly stony, loamy glacial till (Oxbow); fine sandy loam (Hm) to loam (Ox) surface textures.

HmOx 1 Mainly orthic Hamlin soils, with orthic Oxbow soils on upper slopes and knolls.

Hamlin-Shellbrook: A mixture of Black soils (Hamlin) and Dark Gray soils (Shellbrook) formed in loamy lacustrine materials; fine sandy loam to very fine sandy loam surface textures.

HmSb 1 Mainly orthic Hamlin soils, with orthic Shellbrook soils on lower slopes.

HmSb 6 Mainly orthic Hamlin soils, with orthic Shellbrook soils on lower slopes, and leached poorly drained soils in depressions.

Hamlin-Whitesand: Black soils formed in a mixture of loamy lacustrine (Hamlin) and gravelly fluvial (Whitesand) materials; fine sandy loam (Hm) to gravelly sandy loam (Ws) surface textures.

HmWs 1 Mainly orthic Hamlin soils, with orthic Whitesand soils.

Hillwash: Weakly developed soils formed in various deposits associated with steep eroding valley sides; variable surface textures.

Hw Mainly shallow, eroded, and weakly developed soils on steep gullied valley side slopes.

Kamsack-Mayfair: A mixture of Dark Gray soils formed in silty lacustrine materials (Kamsack) and Black soils formed in slightly stony, loamy glacial till (Mayfair); silt loam (Ka) to clay loam (Mf) surface textures.

KaMf 6 Mainly orthic Kamsack soils, with orthic Mayfair soils on upper slopes, and leached, poorly drained soils in depressions.

Keatly: Black soils formed in clayey lacustrine materials; clay to silty clay surface textures.

Kt 5 Mainly orthic Keatly soils, with poorly drained soils in depressions.

Meota: Black soils formed in sandy fluvial materials; sandy loam to loamy sand surface textures.

Me 1 Mainly orthic Meota soils.

Me 2 Mainly orthic Meota soils, with eroded orthic Meota soils

Meota-Edam: A mixture of Black soils formed in sandy fluvial (Meota) and weakly developed soils formed in wind-worked, sandy fluvial (Edam)materials; sandy loam (Me) to sand (Em) surface textures.

MeEm 1 Mainly orthic Meota soils, with weakly developed Edam soils on upper slopes.

Meota-Hamlin: Black soils formed in a mixture of sandy fluvial (Meota) and loamy lacustrine (Hamlin) materials; loamy sand (Me) to fine sandy loam (Hm) surface textures.

MeHm 1 Mainly orthic Meota soils, with orthic Hamlin soils on lower slopes.

Meota-Mayfair: Black soils formed in a mixture of sandy fluvial materials (Meota) and slightly stony, loamy glacial till (Mayfair); loamy sand (Me) to clay loam (Mf) surface textures.

MeMf 1 Mainly orthic Meota soils, with orthic Mayfair soils on upper slopes.

MeMf 2 Mainly orthic Meota soils, with orthic Mayfair soils on upper slopes, calcareous Mayfair soils on and knolls, and poorly drained soils in depressions.

MeMf 4 Mainly orthic Meota soils, with orthic Mayfair soils on upper slopes, and calcareous Mayfair soils on knolls.

MeMf 6 Mainly orthic Meota soils, with orthic Mayfair soils on upper slopes, and leached poorly drained soils in depressions.

Meota-Shellbrook: A mixture of Black soils formed in sandy fluvial (Meota) and Dark Gray soils formed in loamy lacustrine (Shellbrook) materials; loamy sand (Me) to fine sandy loam (Sb) surface textures.

MeSb 1 Mainly orthic Meota soils, with orthic Shellbrook soils on lower slopes.

Meota-Whitesand: Black soils formed in a mixture of sandy fluvial (Meota) and gravelly fluvial (Whitesand) materials; sandy loam (Me) to gravelly loamy sand (Ws) surface textures.

MeWs 1 Mainly orthic Meota soils, with orthic Whitesand soils.

MeWs 7 Mainly othic Meota soils, with orthic Whitesand soils, and eroded soils on upper slopes and knolls.

Mayfair: Black soils formed in slightly stony, loamy glacial till; loam surface textures.

Mf 1 Mainly orthic Mayfair soils.

Mf 2 Mainly orthic Mayfair soils, with calcareous Mayfair soils on upper slopes and knolls, and poorly drained soils in depressions.

Mf 4 Mainly orthic Mayfair soils, with calcareous Mayfair soils on upper slopes and knolls.

Mf 6 Mainly orthic Mayfair, with leached poorly drained soils in depressions.

Mayfair-Cutknife:Black soils formed in a mixture of slightly stony, loamy glacial till (Mayfair) and shallow, silty lacustrine materials (Cutknife); clay loam (Mf) to silt loam (Cf) surface textures.

MfCf 3 Mainly orthic Mayfair soils, with orthic and eluviated Cutknife soils on lower slopes.

MfCf 4 Mainly orthic Mayfair soils, with orthic Cutknife soils on lower slopes, and calcareous Mayfair soils on upper slopes and knolls.

Mayfair-Hamlin: Black soils formed in a mixture of slightly stony, loamy glacial till (Mayfair) and loamy lacustrine materials (Hamlin); loam (Mf) to fine sandy loam (Hm) surface textures.

MfHm 1 Mainly orthic Mayfair soils, with orthic Hamlin soils on lower slopes.

MfHm 6 Mainly orthic Mayfair soils, with orthic Hamlin soils on lower slopes, and leached poorly drained soils in depressions.

Mayfair-Kamsack: A mixture of Black soils formed in slightly stony,loamy glacial till (Mayfair) and Dark Gray soils formed in silty lacustrine materials (Kamsack); clay loam (Mf) to silt loam (Ka) surface textures.

MfKa 6 Mainly orthic Mayfair soils, with orthic Kamsack soils on lower slopes, and leached, poorly drained soils in depressions.

Mayfair-Lorenzo: A mixture of Black soils (Mayfair) and Dark Gray soils (Lorenzo) formed in slightly stony, loamy glacial till; loam to clay loam surface textures.

MfLz 4 Mainly orthic Mayfair soils, with calcareous Mayfair soils on knolls, and orthic Lorenzo soils on lower slopes.

Mayfair-Meota: Black soils formed in a mixture of slightly stony, loamy glacial till (Mayfair) and sandy fluvial materials (Meota); clay loam (Mf) to loamy sand (Me) surface textures.

MfMe 1 Mainly orthic Mayfair soils, with orthic Meota soils on lower slopes.

MfMe 4 Mainly orthic Mayfair soils, with calcareous Mayfair soils on upper slopes and knolls, and orthic Meota soils on lower slopes.

MfMe 6 Mainly orthic Mayfair soils, with orthic Meota soils, and leached, poorly drained soils in depressions.

Mayfair-Shellbrook: A mixture of Black soils formed in slightly stony, loamy glacial till (Mayfair), and Dark Gray soils formed in loamy lacustrine materials (Shellbrook); clay loam (Mf) to fine sandy loam (Sb) surface textures.

MfSb 1 Mainly orthic Mayfair soils, with orthic Shellbrook soils on lower slopes.

Mayfair-Whitesand: Black soils formed in a mixture of slightly stony, loamy glacial till (Mayfair) and gravelly fluvial materials (Whitesand); loam (Mf) to gravelly loamy sand (Ws) surface texture

MfWs 1 Mainly orthic Mayfair soils, with orthic Whitesand soils intermixed.

MfWs 4 Mainly orthic Mayfair soils, with orthic Whitesand soils intermixed, and calcareous Mayfair soils on upper slopes and knolls.

Oxbow: Black soils formed in slightly stony, loamy glacial till; loam surface textures.

Ox 3 Mainly orthic Oxbow soils, with eluviated Oxbow soils on lower slopes.

Ox 6 Mainly orthic Oxbow soils, with leached, poorly drained soils in depressions.

Runway: Weakly developed and poorly drained soils formed in various deposits associated with shallow drainage channels and gullies; variable surface textures.

Rw Mainly a mixture of poorly drained soils on channel bottoms and eroded or weakly developed soils on channel side slopes.

Whitesand: Black soils formed in gravelly fluvial materials; gravelly sandy loam surface textures.

Ws 1 Mainly orthic Whitesand soils.

Whitesand-Hamlin: Black soils formed in a mixture of gravelly fluvial (Whitesand) and loamy lacustrine (Hamlin) materials; gravelly sandy loam (Ws)to fine sandy loam(Hm) surface textures.

WsHm 1 Mainly orthic Whitesand soils, with orthic Hamlin soils on lower slopes.

Whitesand-Meota: Black soils formed in a mixture of gravelly fluvial (Whitesand) and sandy fluvial (Meota) materials; gravelly sandy loam (Ws) to loamy sand (Me) surface textures.

WsMe 2 Mainly orthic Whitesand soils, with orthic Meota soils, eroded soils on knolls, and poorly drained soils in depressions.

Wetlands: Poorly drained soils and shallow open water associated with wet, depressional areas; variable surface textures.

X Wet Meadows. Mainly poorly drained soils, with shallow open water in central areas.

Y Marshes. A mixture of poorly drained soils and shallow open water.

Z Open water wetlands. Mainly shallow open water, with poorly drained soils in marginal areas.

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	AREA IN ACRES
1	MFCF4	3	UD	3SA	L	4Bsvt1	3(6)P4(4)NP	S2	A1	SG0	B4	1	2D	399
2	RW	3	U	5SA	SL	4Dct2	6(10)NW	S0	B3	SG0	B3	2	3	27
3	HM9	3	U	4SA	VL	4Dsv	3(7)M5(3)NW	S0	B3	SG0	B1	2	2	298
4	ME1	4	U	2MA	SL	3Bst1	3(10)ME	S0	B1	S4	B1	3	2	553
5	Z	1	L	2MA	SL	4Cwi	7(10)W	S0	DZ	SG0	B1	U	U	29
6	HMME1	4-5	ID	1SP	FL-SL	2Cmst2	3(6)TE4(4)TE	S0	A2	S2	B1	3	2D	80
7	AV41	3	U	1WA	SL	3Cwi	3(10)M	S0	B3	SG0	B1	2	2	157
8	HW	5-6	IG	1SP	L-SL	4Dct2	6(10)TE	S2	A1	SG0	D1	2	5G	645
9	ME1	3	U	2MA	SL-LS	3Bsvt1	3(6)M4(4)ME	S0	B1	S4	B2	3	2	1400
10	ME1	3	U	1WA	FL	2Bmt1	3(10)M	S0	B1	S4	B1	3	2	372
11	RW	4-5	ID	0	L	4Dct2	5(6)TE6(4)W	S1	A3	SG0	B2	1	4D	138
12	HW	6	IG	0	SL-LS	4Dct2	6(10)TE	S1	A1	SG0	D1	4	5G	260
13	MEEM1	4	U	0	SL-LS	3Bmvt1	4(8)ME5(2)ME	S0	B1	S4	B2	3	2	144
14	EM3	4	H	0	S	4Cmt2	6(10)ME	S0	B1	S4	B2	5	1	89
15	MEEM1	4-5	ID	0	SL-LS	3Cmt2	4(6)ME5(4)ME	S0	A1	S4	B2	3	2D	89
16	HMWS1	4-5	ID	1WA	SL	2Cmvt2	4(10)TE	S2	A1	G2	B1	3	2D	130
17	HM1	3	UR	1MA	L-VL	2Bst1	2(10)M	S1	B1	SG0	B1	2	2	963
18	Z	1	L	2MA	L	4Cwi	7(10)W	S0	DZ	SG0	B1	U	U	35
19	BB6	3	U	2MA	L	3Dsv	2(7)M4(3)W	S0	B3	SG0	B1	1	2	83
20	Z	1	L	2MPA	L	4Cwi	7(10)W	S1	DZ	SG0	B2	U	U	51
21	HMSB6	3	U	2MA	L	3Dsv	2(7)M4(3)W	S0	B3	SG0	B1	1	2	249
22	Y	1	L	2WA	VL-L	4Cwi	7(7)W5(3)W	S1	DY	SG0	B1	U	U	92
23	MESB1	3	U	1WA	FL-L	2Bmt1	3(7)M2(3)M	S0	B1	S3	B1	2	2	767
24	HM6	3	U	2MA	L	3Dsv	2(6)M4(4)W	S0	B3	SG0	B1	1	2	175
25	HM9	3	U	3MA	L	4Csv	2(8)M4(2)NW	S0	B3	SG0	B1	1	2	229
26	HMSB6	3	U	1MP	VL	2Dsv	2(7)M4(3)W	S1	B3	SG0	B2	2	2	734
27	HMSB1	3-2	U	2WA	VL-L	2Bst1v	2(9)M4(1)W	S1	B2	SG0	B1	2	2	7716
28	HMMF1	3-4	UR	1WA	L	1Bvt1	2(9)M4(1)W	S1	B2	SG0	B1	1	2	591
29	BB3	3	U	0	L	1Bt1	2(10)M	S0	B1	SG0	B1	1	2	368
30	HMWS1	3-5	ID	1WA	SL	2Dmt2	4(10)TE	S2	A1	G2	B1	3	2D	212
31	HM1	3	UR	1WA	VL-L	1Bt1	2(10)M	S2	B1	SG0	B2	2	2	365
32	MFHM1	3-5	UR	1WA	L	1Ct1	2(6)M4(3)TP5(1)W	S2	B1	SG0	B2	1	2	1164
33	HM9	3	U	3MA	L	4Csv	2(8)M4(2)NW	S1	B3	SG0	B1	1	2	166
34	Z	1	L	3MA	L	4Cwi	7(10)W	S1	DZ	SG0	B1	U	U	31
35	HMSB1	3-2	UR	1MA	L	2Bst1	2(10)M	S1	B1	SG0	B1	1	2	785
36	BBKA1	3	UR	2MPA	L-CL	3Bsvt1	2(10)M	S1	B2	SG0	B1	1	2	2349
37	Z	1	L	1MP	L	4Cwi	7(10)W	S1	DZ	SG0	B2	U	U	38
38	BBKA6	3	U	1MP	L	2Csv	2(8)M4(2)W	S1	B3	SG0	B2	1	2	3570
39	BB9	3	U	4SA	L	4Dsv	2(5)M6(5)WN	S0	B3	SG0	B2	1	2	120
40	BB3	3-2	U	0	L-CL	1Bvt1	2(10)M	S0	B1	SG0	B2	1	2	901
41	ME1	5	R	0	SL	2Cmt2	4(10)TE	S0	A3	S4	B2	4	4	52
42	HMSB6	3-4	UR	1WP	VL-FL	1Cv	2(6)M3(2)MT4(2)W	S1	B3	SG0	B1	2	2	1363
43	BB9	3	U	4MA	L-SIL	4Dsv	2(6)M5(4)NW	S0	B3	SG0	B2	1	2	431
44	BB6	3-4	U	1MP	L-SIL	2Csv	2(8)M4(2)W	S0	B3	SG0	B2	1	2	1677
45	Y	1	L	1MA	L	4Cwi	6(10)W	S1	DY	SG0	B2	U	U	26
46	BBMF6	3	U	2MA	L	3Csv	2(8)M5(2)W	S1	B1	SG0	B2	1	2	596
47	KAMF6	3-4	UR	2MA	L	3Csv	2(6)M3(2)TE4(2)W	S2	B3	SG0	B2	1	2	12584
48	BBKA6	2	U	1MP	L	2Csv	2(8)M4(2)W	S1	B3	SG0	B2	1	1	307
49	BBMF3	3	U	1WA	L	1Bvt1	2(10)M	S1	B1	SG0	B1	1	2	401
50	Z	1	L	1SA	L	4Cwi	7(10)W	S1	DZ	SG0	B2	U	U	27
51	BB3	3-4	ID	1SA	L	2Cst2	2(5)M3(5)TE	S1	A2	SG0	B2	1	2D	186
52	BB6	3	U	2MPA	L	3Dsv	2(7)M5(3)WN	S1	B3	SG0	B2	1	2	1468
53	BB3	3-4	U	1MA	L-SIL	2Bst1	2(7)M3(3)T	S2	B2	SG0	B2	1	2	1131
54	KT5	3-2	U	1MA	CL	3Cqv	2(8)C5(2)W	S2	B3	SG0	B3	1	2	1077
55	CFMF3	3-4	UR	1WP	L-SL	1Bvt1	2(8)M3(2)MT	S1	B1	SG0	B2	2	2	1253

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	AREA IN ACRES
56	Y	1	L	1WA	L	4Cwi	6(10)W	S2	DY	SG0	B2	U	U	137
57	CF3	3	UR	1MP	L	2Bsvt1	2(10)M	S1	B3	SG0	B2	1	2	1235
58	Z	1	L	1WP	L	4Cwi	7(10)W	S1	DZ	SG0	B2	U	U	42
59	CFMF3	3-2	U	1WP	L	1Bvt1	2(10)M	S1	B1	SG0	B2	1	2	1119
60	HMMF6	3-4	UR	3MA	L-FL	4Csv	2(4)M3(4)MT5(2)W	S1	B3	SG0	B2	2	2	960
61	HW	5-6	IG	1WD	FL-L	4Dct2	6(10)TE	S2	A1	SG0	B2	2	5G	2309
62	WSHM1	3-4	U	0	L-SL	3Dmv	3(8)P4(2)P	S2	B1	G3	B2	2	2	102
63	HMMF1	3-4	UR	1MA	FL-L	2Bsvt1	2(6)M3(4)P	S2	B1	SG0	B2	2	2	506
64	WSHM1	3-4	U	1WA	SL	3Dmv	5(6)M3(4)M	S2	B1	G3	B2	3	2	233
65	HM1	3	U	1WA	FL	1Bt1	3(10)M	S0	B1	SG0	B1	2	2	262
66	WSHM1	3	U	1WA	SL	3Dmv	3(5)M6(5)M	S2	B1	G3	B1	3	2	207
67	AV5	2	U	0	CL-SIL	2Dqv	6(10)W	S0	B3	SG0	B2	1	1	862
68	HMCF3	3	UR	1MP	L-SL	2Bsvt1	2(6)M3(4)M	S0	B1	SG0	B2	2	2	2357
69	CFMF3	3	UR	1MP	L-SL	2Bsvt1	2(7)M3(3)MP	S2	B1	SG0	B2	2	2	4486
70	MFWS1	3-4	UR	1WP	L-LS	1Dv	3(4)MT4(3)PM5(3)TP	S2	B1	G2	B2	2	2	1049
71	Z	1	L	1MP	L	4Cwi	7(10)W	S1	DZ	SG0	B2	U	U	32
72	BBMF3	3-4	UR	0	L	1Bvt1	2(8)M3(2)T	S1	B2	SG0	B2	1	2	1179
73	CFMF3	3-4	UR	2MA	L-SIL	3Bsvt1	2(8)M3(2)T	S2	B2	SG0	B2	1	2	1668
74	MF1	3-4	UR	1WP	L	1Bt1	2(4)M3(3)T4(3)P	S2	B1	SG0	B1	1	2	2075
75	Z	1	L	2WA	L	4Cwi	7(10)W	S0	DZ	SG0	B1	U	U	39
76	Y	1	L	2WA	L	4Cwi	6(10)W	S0	DY	SG0	B1	U	U	22
77	BB3	3	U	2WA	L	2Bst1	2(10)M	S0	B1	SG0	B1	1	2	832
78	CFMF3	3-4	UD	2MA	L	3Bsvt1	2(7)M3(3)E	S1	A1	SG0	B2	1	2D	500
79	HMBB3	3	ID	2SS	FL-L	3Bst2	2(7)M3(3)NE	S0	A1	SG0	B1	2	2D	546
80	HMBB3	3	U	3WA	FL-L	2Bst1	3(6)M2(4)M	S0	B1	SG0	B1	2	2	553
81	HMME1	3	ID	2WA	L-SL	2Bmst2	2(6)M3(4)ME	S1	A1	S2	B1	2	2D	266
82	CT3	2-3	U	4VA	SL	4Dwsv	5(7)NW4(3)N	S1	C4	S4	D1	2	1	78
83	ME1	3	U	2MS	SL-LS	3Bsvt1	3(5)ME4(5)ME	S0	B1	S4	B1	3	2	1274
84	ME1	4	U	1WP	SL	2Bmt1	3(5)ME4(5)ME	S0	B1	S4	B1	3	2	219
85	HMME1	3	U	2WA	L-SL	2Bmvt1	2(5)M3(5)ME	S0	B1	S2	B1	2	2	703
86	FK1	2	U	5VA	L	4Dwsv	4(5)N5(5)NW	S0	C3	SG0	D1	1	1	93
87	LAKE													7145
88	FK1	2	U	5VA	L	4Dwsv	4(5)N5(5)NW	S0	C3	SG0	D1	1	1	370
89	HMME1	3	U	2WA	L-SL	2Bmvt1	2(5)M3(5)ME	S0	B1	S2	B1	2	2	227
90	HW	5-6	IG	1WD	L-SL	4Dct2	6(10)TE	S2	A1	SG0	C1	2	5G	679
91	CFHM3	3-2	UD	1WA	L-FL	1Bvt1	2(6)M3(4)M	S1	A1	SG0	B2	2	2D	185
92	CFHM3	3-2	UD	1WA	L-FL	1Bvt1	2(6)M3(4)M	S1	A1	SG0	B2	2	2D	371
93	HMCF3	2-3	UD	2WA	FL-L	2Bst1	3(6)M2(4)M	S1	A1	SG0	B2	2	1D	250
94	CF3	2-3	U	1WP	L	1Bvt1	2(10)M	S1	B1	SG0	B2	1	1	97
95	BBSS9	2-3	U	3MA	L	4Bsvt1	2(6)M3(4)DN	S0	B1	SG0	B1	1	1	62
96	HMME1	3	UD	2SAD	FL-SL	3Bsvt1	3(10)M	S1	A1	S2	B1	3	2D	292
97	BB3	3	UD	2SAD	L	3Bst1	2(9)M3(1)N	S1	A1	SG0	B2	1	2D	445
98	HMMF1	4	ID	2MA	FL-L	3Cst2	3(6)M4(4)ME	S1	A1	SG0	B1	2	2D	133
99	HMMF1	4	ID	2MA	FL-L	3Cst2	3(6)M4(4)ME	S1	A1	SG0	B1	2	2D	59
100	HMMF1	4	ID	2MA	FL-L	3Cst2	3(6)M4(4)ME	S1	A1	SG0	B1	2	2D	354
101	CT3	2-3	U	4MA	SL	4Dwsv	4(5)N5(5)NW	S0	C4	S4	D1	2	1	195
102	CT3	2-3	U	4VA	SL	4Dwsv	5(7)NW4(3)N	S1	C4	S4	D1	2	1	326
103	HMMF1	3	UD	3MS	FL-L	4Bsvt1	2(5)M3(3)M4(2)N	S1	A1	SG0	B1	2	2D	1043
104	HM9	3	U	3SA	L-FL	4Csv	2(8)M5(2)NW	S1	B3	SG0	B2	2	2	571
105	HMME1	3	UD	2SAD	FL-SL	3Bsvt1	3(10)M	S1	A1	S2	B1	3	2D	216
106	CF9	3	UD	3SAD	L	4Bsvt1	2(7)M4(2)N5(1)TE	S1	A1	SG0	B2	1	2D	982
107	CFMF3	3	U	2SS	L	3Bsvt1	2(9)M5(1)N	S2	B2	SG0	B2	1	2	2347
108	BB3	2-3	UD	1MA	L	2Bst1	2(10)M	S1	A2	SG0	B2	1	1D	2872
109	CFMF3	3	UR	1WP	L	1Bvt1	2(10)M	S1	B1	SG0	B3	1	2	368
110	CFMF3	3	UR	1WP	L	1Bvt1	2(10)M	S1	A1	SG0	B2	1	2D	614

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	AREA IN ACRES
111	HMBB3	4	ID	2SS	FL-L	3Cst2	3(8)ME4(2)E	S1	A1	SG0	B1	2	3D	269
112	HMBB3	4	ID	2SS	FL-L	3Cst2	3(8)ME4(2)E	S1	A1	SG0	B1	2	3D	166
113	HMBB3	4	ID	2SS	FL-L	3Cst2	3(8)ME4(2)E	S1	A1	SG0	B1	2	3D	594
114	RW	4	ID	3MD	FL-L	4Dct2	5(10)TE	S1	A1	SG0	B1	2	4D	35
115	BB3	3	U	1WA	L	1Bt1	2(10)M	S0	B1	SG0	B2	1	2	773
116	HMMF1	3	UR	2WA	L-FL	2Bsvt1	2(10)M	S1	B1	SG0	B2	2	2	862
117	CT3	2-3	U	3VA	SL	4Dwsv	4(7)N5(3)NW	S1	C4	S4	B4	2	1	121
118	CFMF3	3	U	1WP	L	1Bvt1	2(10)M	S1	B1	SG0	B2	1	2	1280
119	Y	1	L	1WP	L	4Cwi	6(10)W	S1	DY	SG0	B2	U	U	76
120	CFMF3	4	ID	1WP	L	1Ct2	3(10)TE	S1	A1	SG0	B2	1	4D	330
121	CFMF3	3	UR	1WP	L	1Bvt1	2(10)M	S1	A1	SG0	B2	1	2D	3588
122	MFCF4	4-3	UR	1WP	L	1Bvt1	2(6)M3(4)TE	S1	B2	SG0	B4	1	3	1860
123	CF3	2-3	U	1WA	L	1Bvt1	2(10)M	S1	B1	SG0	B2	1	1	188
124	KAMF6	3-4	UR	1WP	L	1Cv	2(6)M3(2)TE4(2)W	S1	B3	SG0	B4	1	2	1695
125	CF3	3	UR	1WA	L	1Bvt1	2(10)M	S1	B1	SG0	B2	1	2	485
126	CFMF3	3	UR	1WA	L	1Bvt1	2(10)M	S1	B1	SG0	B2	1	2	1820
127	KAMF6	2-3	U	1WP	L	1Cv	2(8)M4(2)W	S2	B3	SG0	B2	1	1	1311
128	Y	1	L	1WP	L	4Cwi	6(10)W	S1	DY	SG0	B2	U	U	58
129	CFMF6	3-4	UR	1WA	L	1Cv	2(6)M3(2)T5(2)W	S1	B3	SG0	B2	1	2	270
130	CF3	3	U	3MPA	L	4Csv	3(8)M5(2)NW	S1	B1	SG0	B1	1	2	461
131	CF3	3	UD	1WP	L	1Bvt1	2(10)M	S1	A1	SG0	B2	1	2D	865
132	BBKA6	2-3	UD	1WP	L-CL	1Bvt1	2(9)M4(1)W	S0	A3	SG0	B2	1	1D	4503
133	Z	1	L	1MA	CL	4Cwi	7(10)W	S2	DZ	SG0	B3	U	U	165
134	GR4	2	U	4MA	C	4Dwsv	5(10)W	S0	C4	SG0	D1	2	1	402
135	KAMF6	3	UR	1WP	L	1Cv	2(8)M4(2)W	S1	B3	SG0	B2	1	2	2666
136	MFKA6	3-5	UR	1WPA	L	1Ct1v	2(5)M4(3)T5(2)W	S1	B3	SG0	B2	1	3	2044
137	CFMF6	3	U	1WP	L	1Cv	2(8)M5(2)W	S1	B3	SG0	B2	1	2	1111
138	MF1	3	U	0	L	1Bt1	2(8)M3(2)P	S2	B1	SG0	B2	1	2	413
139	MF6	4	H	1WA	L	1Dv	4(6)TP5(4)WP	S2	B3	SG0	B2	2	2	235
140	MF6	3	U	2WP	L	2Dsv	4(4)P2(3)M5(3)WP	S2	B3	SG0	B2	1	2	4363
141	MFKA6	3-4	UR	1WP	L	1Cv	2(6)M3(2)P5(2)W	S2	B3	SG0	B2	1	2	2326
142	MFME1	3	U	2MP	FL-L	3Csv	2(6)M3(4)M	S2	B1	S2	B2	2	2	320
143	ME1	3	U	0	SL	2Bmt1	3(6)M4(4)ME	S0	B1	S4	B2	3	2	693
144	MEMF6	3-4	U	2MPA	FL-L	3Csv	3(5)ME2(3)M5(2)W	S1	B3	S3	B2	2	2	853
145	KAMF6	3-4	UR	2MA	L	3Csv	2(6)M3(2)T4(2)W	S1	B3	SG0	B2	1	2	115
146	BBKA6	3	U	1WA	L	1Cv	2(8)M5(2)W	S1	B3	SG0	B1	1	2	725
147	KAMF6	3-4	U	3MA	L	4Csv	2(8)M5(2)W	S1	B3	SG0	B2	1	2	1216
148	BB3	3	U	1WA	L	1Bt1	2(10)M	S0	B1	SG0	B2	1	2	427
149	KAMF6	3-5	UR	1MP	L	2Dsv	2(6)M4(4)TW	S2	B3	SG0	B2	1	2	419
150	BB3	3-4	UD	1MA	L	2Bst1	2(10)M	S1	A2	SG0	B2	1	2D	5496
151	BBKA6	3	U	1WA	L	1Dv	2(7)M5(3)W	S0	B3	SG0	B2	1	2	105
152	BBHM3	4-5	ID	1WA	L	1Ct2	2(7)M3(3)TE	S2	A1	SG0	B2	1	3D	1329
153	BB3	3	U	2MA	L	3Bst1	2(10)M	S0	B1	SG0	B1	1	2	72
154	HMME1	3	U	1MA	FL-VL	2Bmst1	3(7)M2(2)M5(1)W	S1	B2	S2	B1	3	2	254
155	MEHM1	4	UD	1MA	FL	2Bmst1	3(6)MT4(4)ME	S0	A1	S3	B2	3	2D	769
156	HMMF6	4	H	1MA	VL-L	2Cst2v	3(8)MT4(2)W	S1	B1	SG0	B2	2	2	679
157	Z	1	L	2SA	L	4Cwi	7(10)W	S1	DZ	SG0	B2	U	U	52
158	HMME1T	4-3	H	1WA	VL-FL	2Csvt2	3(6)M4(4)ME	S0	B1	S2	B2	3	3	498
159	HMSB6	3-4	U	1WA	VL	1Cv	2(8)M4(2)W	S0	B3	SG0	B2	2	2	147
160	ME1	4	U	1WA	SL-LS	2Bmvt1	3(5)M4(5)M	S0	B1	S4	B2	3	2	42
161	LAKE													85
162	HMMF1	4	ID	2MA	VL-L	3Cst2	3(5)T4(5)TE	S1	A1	SG0	B2	2	4D	342
163	HMME1	4-5	HD	2MA	VL-FL	3Cst2	4(6)TE3(4)MT	S2	A2	S2	B2	3	3D	436
164	HMMF6	4-5	HD	2MA	VL-L	3Cst2v	3(4)TE4(4)TE5(2)W	S2	A3	SG0	B2	2	3D	1662
165	BBKA6	3-4	U	2SA	L	3Csv	2(8)M4(2)W	S1	B3	SG0	B2	1	2	280

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	AREA IN ACRES
166	Y	1	L	2SA	L	4Cwi	6(10)W	S1	DY	SG0	B2	U	U	32
167	Y	1	L	2MA	VL-L	4Cwi	6(10)W	S2	DY	SG0	B2	U	U	98
168	BBMF3	4-5	ID	1WA	L	1Ct2	3(7)TE4(3)TE	S1	A1	SG0	B2	1	3D	892
169	HMMF6	3-4	UD	2MA	VL-L	3Csv	2(8)M4(2)W	S1	A3	SG0	B2	2	2D	1255
170	HMMF1	3-4	U	2WP	SL-L	2Bmst1	3(5)M2(4)M5(1)W	S2	B2	SG0	B2	2	2	309
171	Y	1	L	2WP	SL-L	4Cwi	6(10)W	S2	DY	SG0	B2	U	U	90
172	MEMF6	4-5	H	2MP	FL-L	3Csvt2	3(5)MT4(3)TE5(2)W	S1	B3	S3	B2	3	2	1463
173	MEMF4	5-6	HD	0	SL-L	2Dmt2	4(7)TE5(3)TE	S2	A2	S3	B2	3	4D	263
174	MFHM1	4-5	H	1WA	VL-L	1Ct2	3(6)TE4(4)TE	S1	B1	SG0	B2	2	3	312
175	HMMF1	4-5	HD	1WA	VL-L	1Ct2	4(7)TE5(3)TE	S1	A2	SG0	B2	2	3D	770
176	HMMF6	3-4	U	2MA	L	3Csv	2(8)M4(2)W	S1	B3	SG0	B2	1	2	772
177	HW	5-6	IG	0	VL-L	4Dct2	6(10)TE	S1	A1	SG0	B2	2	5G	47
178	MF4	5-6	HD	1WA	L	1Dt2	4(7)TP5(3)TE	S3	A2	SG0	B2	2	4D	1184
179	MFWS4	6-7	HD	1WA	L-SL	1Dvt2	5(5)TE6(5)TE	S3	A2	G2	B2	3	5D	1151
180	MEMF4	5	HD	0	SL-L	2Cmvt2	4(10)TE	S2	A2	S3	B2	3	4D	346
181	MFME1	6-5	HD	1WP	L-SL	1Dt2	6(7)TE5(3)TE	S2	A2	S2	B2	3	5D	2722
182	HM1	3-4	U	0	FL	1Bt1	3(10)M	S0	B1	SG0	B2	2	2	82
183	MFME4	5	H	0	L-SL	1Cvt2	4(10)TE	S2	B1	S2	B2	3	4	204
184	MFLZ4	6-7	HD	0	L-SL	1Dt2	5(8)TE6(2)TE	S2	A2	SG0	B2	2	5D	986
185	HW	5	IG	0	SL-GSL	4Dct2	4(10)TE	S1	A1	SG0	D1	3	5G	170
186	MEWS1	4	HD	0	SL-LS	2Cmt2	3(6)ME4(4)ME	S2	A2	SG4	B2	4	2D	49
187	MEWS7	5-6	HD	1MP	SL-GSL	2Dmst2	4(6)TE5(4)TE	S1	A2	SG4	B3	4	4D	66
188	Z	1	L	1MP	SL-GSL	4Cwi	7(10)W	S1	DZ	SG0	B3	U	U	70
189	MEWS7	5-6	HD	1MP	SL-GSL	2Dmst2	4(6)TE5(4)TE	S1	A2	SG4	B3	4	4D	942
190	MF4	6	HD	0	L	1Dt2	5(10)TE	S2	A2	SG0	B2	2	5D	54
191	MEWS7	3-4	H	0	SL-LS	2Cmt2	3(7)ME4(3)ME	S2	B1	SG4	B2	3	2	195
192	HMWS1	3	U	0	FL-LS	2Cmv	3(7)M4(3)MP	S2	B1	G2	B2	3	2	259
193	MFLZ4	6-7	HD	0	L-SL	1Dt2	5(8)TE6(2)TE	S2	A2	SG0	B2	2	5D	176
194	HM4	4-5	HD	0	VL	1Ct2	3(6)TE4(4)TE	S1	A2	SG0	B2	3	3D	486
195	Z	1	L	0	SL	4Cwi	7(10)W	S2	DZ	SG0	B2	U	U	38
196	WSME2	5-6	HD	0	SL	3Dmt2	4(7)TE5(3)TE	S2	A2	SG4	B2	4	4D	1355
197	HM1T	3	U	0	FL	1Bvt1	3(10)M	S1	B1	SG0	B2	2	2	129
198	HMMF10	5	HD	0	L	1Ct2	4(10)TE	S2	A2	SG0	B2	2	4D	552
199	HMME4	5	HD	0	FL-SL	2Cmt2	4(10)TE	S1	A2	S2	B2	4	3D	354
200	HM4	5	H	0	L-FL	1Ct2	2(8)M3(2)M	S0	B1	SG0	B2	2	4	76
201	MEWS7	5	HD	1WA	SL	2Cmt2	4(10)TE	S2	A2	SG4	B2	4	4D	439
202	MEMF4	5-6	HD	0	SL-L	2Dmt2	4(7)TE5(3)TE	S2	A2	S3	B2	3	4D	646
203	MEMF2	4	H	0	SL-L	2Cmvt2	3(7)ME2(3)M	S2	B2	S3	B2	3	2	591
204	HW	6	ID	0	SL	4Dct2	5(10)TE	S3	A1	SG0	B4	3	5D	192
205	MEMF4	5-6	HD	0	SL-L	2Dmt2	4(7)TE5(3)TE	S2	A2	S3	B2	3	4D	595
206	Z	1	L	0	L-CL	4Cwi	7(10)W	S2	DZ	SG0	B2	U	U	156
207	ME2	4	HD	1MA	SL	2Cmst2	4(6)ME3(4)M	S2	A2	S4	B2	3	2D	1589
208	Z	1	L	1MA	L-CL	4Cwi	7(10)W	S2	DZ	SG0	B2	U	U	63
209	LAKE													830
210	WS1	5	HD	0	SL-GSL	4Cmt2	4(10)TE	S2	A2	G4	B2	4	4D	547
211	Z	1	L	2MA	L	4Cwi	7(10)W	S1	DZ	SG0	B2	U	U	47
212	ME2	5	HD	2MA	SL	3Cst2	4(10)TE	S1	A2	S4	B2	4	4D	48
213	MEMF1	4-5	HD	0	LS-L	3Cmvt2	3(6)M4(4)TE	S1	A2	S3	B2	3	2D	1328
214	ME1	3	UD	0	SL	2Bmt1	3(10)M	S0	A3	S4	B2	3	2D	259
215	Z	1	L	1MA	L	4Cwi	7(10)W	S2	DZ	SG0	B2	U	U	95
216	ME2	4	H	0	SL	2Cmt2	4(6)ME3(4)M	S1	B1	S4	B2	3	2	670
217	Z	1	L	1MA	L	4Cwi	7(10)W	S2	DZ	SG0	B2	U	U	144
218	Z	1	L	1WP	L	4Cwi	7(10)W	S0	DZ	SG0	B2	U	U	53
219	ME1	3-4	H	0	LS	3Cmt2	4(10)M	S0	B2	S4	B2	3	2	634
220	ME1	3	U	1WP	SL	2Cmv	3(8)M7(2)W	S0	B3	S4	B2	3	2	173

8. SOIL INTERPRETATIONS

DELIN-EATION	MAPUNIT	SLOPE CLASS	SURFACE FORM	SALINITY SYMBOL	SURFACE TEXTURE	IRRIGATION	AGRICULTURAL CAPABILITY	STONE CLASS	WETLANDS DRAINAGE	SAND+ GRAVEL	SURFACE pH	EROSION WIND	EROSION WATER	AREA IN ACRES
221	BB3	3	U	0	L	1Bt1	2(10)M	S0	B1	SG0	B2	1	2	102
222	MEMF4	5-6	HD	0	SL-L	2Dmt2	4(7)TE5(3)TE	S2	A2	S3	B2	3	4D	523
223	MFSB1	5	HD	0	L-FL	1Ct2	4(10)TE	S2	A2	SG0	B2	2	4D	919
224	Y	1	L	1WA	L-FL	4Cwi	6(10)W	S0	DY	SG0	B2	U	U	52
225	MFME6	3-4	U	1WA	L-FL	1Cv	2(6)M3(2)ME5(2)W	S0	B3	S2	B2	2	2	2181
226	MEMF1	3	ID	1MP	SL-L	2Cmsv	3(6)M2(4)M	S2	A1	S3	B2	2	2D	478
227	MEMF1	4-5	HD	0	SL-L	2Cmvt2	3(6)M4(4)TE	S1	A2	S3	B2	3	2D	1866
228	ME2	4-5	HD	0	LS-SL	3Cmt2	3(7)ME4(3)TE	S1	A2	S4	B2	4	2D	1003
229	ME2	3	UD	0	SL	2Bmt1	3(10)ME	S0	A2	S4	B2	3	2D	463
230	MEMF4	5	H	0	SL-L	2Cmvt2	4(10)TE	S1	B1	S3	B2	3	4	135
231	ME2	5-6	HD	0	SL	2Dmt2	4(6)TE5(4)TE	S1	A2	S4	B3	4	4D	825
232	Y	1	L	1WP	SL	4Cwi	6(10)W	S1	DY	SG0	B3	U	U	22
233	HW	6	IG	0	L	4Dct2	5(10)TE	S2	A1	SG0	D1	2	5G	125
234	MF4	5	HD	0	L	1Ct2	4(10)TE	S2	A2	SG0	B2	2	4D	392
235	MF2	4	H	0	L	1Ct2v	3(8)T5(2)W	S2	B3	SG0	B2	2	3	160
236	MF4	5	HD	0	L	1Ct2	4(10)TE	S2	A2	SG0	B2	2	4D	173
237	MF1	3	UD	1MA	L	2Bst1p	2(10)ME	S2	A1	SG0	B2	1	2D	777
238	HM1	3	U	1MA	FL-L	2Bst1	3(6)M2(4)M	S0	B1	SG0	B2	2	2	231
239	FK2	2	U	4MA	L-CL	4Dwsv	5(10)NW	S0	C3	SG0	B4	1	1	141
240	MEMF6	3	U	0	SL-L	2Cmv	3(8)M5(2)W	S2	B3	S3	B2	2	2	310
241	MEMF1	3-4	UD	2SA	SL-L	3Csv	3(6)ME2(4)M	S2	A1	S3	B2	2	2D	1990
242	CFMF3	3	U	2MP	L	3Bsvt1	2(9)M5(1)NW	S1	B2	SG0	B2	1	2	305
243	BBSS9	2-3	U	3MP	L	4Bsvt1	2(8)M3(2)ND	S0	B2	SG0	B2	1	1	422
244	X	1	L	3MP	L	4Cwi	5(10)W	S0	DX	SG0	B2	U	U	72
245	MF6	3	UD	0	L	1Cv	2(5)M4(3)P5(2)W	S2	A3	SG0	B2	1	2D	1094
246	BB3	3	U	1MA	L	2Bst1	2(10)M	S0	B2	SG0	B2	1	2	448
247	BB3	2	U	0	L	1A	2(10)M	S0	B1	SG0	B2	1	1	196
248	MF4	4	HD	0	L	1Ct2	3(10)TE	S2	A2	SG0	B2	2	3D	425
249	CFMF3	3	U	0	L	1Bvt1	2(9)M3(1)P	S2	B1	SG0	B2	1	2	106
250	MF1	3	U	0	L	1Bt1	2(10)M	S2	B2	SG0	B2	1	2	363
251	BB6	2	U	3MA	L	4Dsv	2(5)M5(3)W3(2)N	S0	B3	SG0	B2	1	1	108
252	MFCF3	3-2	U	0	L	1Bvt1	2(10)M	S1	B1	SG0	B2	1	2	570
253	MFHM6	3	U	0	L-FL	1Cv	2(5)M3(3)P4(2)W	S2	B3	SG0	B2	2	2	311
254	MF6	3-4	UR	1WP	L	1Cv	2(5)M4(3)TP5(2)W	S2	B3	SG0	B2	1	2	7485
255	OX6	3	U	0	FL	1Bt1p	3(8)M4(2)P	S2	B2	SG0	B2	2	2	276
256	MFCF4	2-3	UR	2WP	L	2Bsvt1	2(10)M	S2	B1	SG0	B2	1	1	623
257	CF3	2	U	0	L-CL	1Bv	2(10)M	S1	B1	SG0	B2	1	1	101
258	FK3	2	U	5MA	L	4Dwsv	5(10)NW	S0	C4	SG0	B3	1	1	66
259	CFMF6	2	U	2MA	CL-L	3Csv	2(7)M5(2)W3(1)N	S1	B3	SG0	B2	1	1	156
260	MFCF4	4-3	UR	2WP	L	2Bsvt1	2(8)M3(2)TE	S2	B1	SG0	B2	1	3	1883
261	MFCF3	3	UR	2MP	L	3Bsvt1	2(8)M3(2)NP	S2	B1	SG0	B3	1	2	1259
262	CF3	2	U	1WA	L	1Bv	2(10)M	S2	B1	SG0	B2	1	1	250
263	OX3	3	UR	1WP	L	1Bt1p	2(8)M3(2)P	S2	B1	SG0	B2	1	2	350
264	HMMF6	3	U	1WA	L	1Cv	2(8)M4(2)WP	S2	B3	SG0	B2	1	2	928
265	HMOX1	2-3	UR	1WP	L	1Bvt1	2(10)M	S2	B1	SG0	B2	1	1	559
266	MF6	3-4	UR	1WP	L	1Cv	2(8)M4(2)WP	S2	B3	SG0	B2	1	2	311
267	CFMF3	2-3	U	1WA	L	1Bvt1	2(10)M	S2	B1	SG0	B2	1	1	1335
268	CF3	2	U	1WP	L	1Bv	2(10)M	S1	B1	SG0	B2	1	1	1611
269	CF3	3-2	UR	2WPA	L	2Bsvt1	2(10)M	S2	B1	SG0	B2	1	2	344
270	MFCF3	3-4	UR	2WP	L	2Bsvt1	2(8)C3(2)TP	S2	A1	SG0	B2	1	2D	921
271	HMMF1	3	UR	1WP	L	1Bvt1	2(9)M3(1)TE	S2	B1	SG0	B2	1	2	1373
272	CFMF3	3-4	UR	1WP	L	1Bvt1	2(8)M3(2)TE	S2	B1	SG0	B2	1	2	1961
273	CFMF3	2-3	UR	2WP	L	2Bsvt1	2(9)M3(1)N	S2	B1	SG0	B4	1	1	519
274	BB3	2-3	U	1WP	L	1Bt1	2(10)M	S1	B1	SG0	B2	1	1	499
275	CFMF3	2-3	UR	2WP	L	2Bsvt1	2(9)M4(1)W	S1	B2	SG0	B2	1	1	420

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	AREA IN ACRES
276	HM1T	2	U	1WP	L-FL	1Bvt1	2(7)M3(3)M	S1	B1	SG0	B2	2	2	323
277	CFMF3	3-2	UR	1WP	L	1Bvt1p	2(8)M3(2)P	S2	B1	SG0	B2	1	2	653
278	CFMF3	3	U	2WP	L	2Bsvt1	2(9)M4(1)WP	S2	B2	SG0	B2	1	2	382
279	MF2	3-4	UR	1WP	L	1Cv	2(7)M5(2)W4(1)P	S2	B3	SG0	B4	1	2	187
280	CFMF3	3-4	UR	1WP	L	1Bvt1	2(8)M3(2)TE	S2	B1	SG0	B2	1	2	1439
281	MEMF1	3-4	UR	2WA	SL-L	2Cmsv	3(6)ME2(4)M	S2	B1	S3	B4	2	2	291
282	HMMF1	3-4	UR	1WP	L	1Bvt1	3(6)ME2(4)M	S2	A1	SG0	B2	1	2D	895
283	HMMF1	2-3	U	1WP	L	1Bvt1	2(10)M	S2	B1	SG0	B2	1	2	674
284	MFCF3	3	U	1WP	L	1Bvt1	2(10)M	S2	B1	SG0	B2	1	2	695
285	MF4	3	UD	2MA	L	3Bst1p	4(6)P5(4)P	S3	A2	SG0	B4	1	2D	373
286	RW	3-5	UD	1WD	L	4Dct2	4(10)TE	S1	A1	SG0	B4	1	4D	33

9. Further Information

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

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