Soil Survey of the

Keeseekoose Indian Reserves Nos. 66 and 66A

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Location

Keeseekoose Indian Reserve No. 66 is located about 8 miles north of the town of Kamsack while Keeseekoose Indian Reserve No. 66A is located about 14 miles north of the town of Kamsack. Reserve No. 66 is approximately 10,200 acres in extent while No. 66A covers apprcximately 85 acres. (Reserve No. 66 includes all or portions of Sections 21, 22, 27, 28 and 32 to 34 in Township 31, Range 32, and Sections 3 to 5, 7 to 10, 15 to 18 and 20 to 22 in Township 32, Range 32. Reserve No. 66A includes a portion of Section 21 in Township 32, Range 32. All locations are west of the 1st Principal Meridian).

MAP LEGEND

The series of symbols which appear within each area, separated on the map by a soil boundary, are interpreted by means of the map legend.

There may be some terms in the legend which are unfamiliar to the reader. The booklet, "A Guide to Understanding Saskatchewan Soils"[1], will familiarize the reader with the terms used. To properly interpret the legend it is essential that the above-mentioned booklet be used as a reference.

Soils

Dominantly Black Chernozemic Soils

Whitesand - Dominant Black Chernozemic soils developed on coarse to moderately coarse textured glacio-fluvial deposits.

Ws1 - Dominant* Orthic Black.

Ws4 - Dominant Orthic Black with significant** Calcareous Black.

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*Series which are Dominant occupy over 40% of the Map Unit.

**Series which are Significant occupy over 15% of the Map Unit but less than 40%.

Blaine Lake - Dominant Black Chernozemic soils developed on medium to moderately fine textured, moderately calcareous, silty, glacio-lacustrine deposits.

B1 - Dominant Orthic Black.

B2 - Dominant Orthic Black with significant Calcareous Black and a significant occurrence of undifferentiated Gleysolic soils.

Cudworth - Dominant Black Chernozemic soils developed on medium to moderately fine textured, moderately to highly calcareous, silty, glacio-lacustrine deposits. Cd/T - shallow deposits (less than 4 feet) overlying glacial till.

Cd4 - Dominant combination of Rego and Calcareous Black with significant salinized and gleyed Rego and Calcareous Black.

Oxbow - Dominant Black Chernozemic soils developed on medium to moderately fine textured calcareous glacial till.

O1 - Dominant Orthic Black.

Dominantly Thick*** Black Chernozemic Soils

Meota (t)**** - Dominant Black Chernozemic soils (thick phase) developed on coarse to medium textured sandy glacio-fluvial and glacio-lacustrine deposits.

Me (t) 1 - Dominant Orthic Black.

***Soils which are designated as being Thick have an Ap or Ah horizon depth of 8 inches or more.

****No Association name set up for this soil.

Hoey - Dominant Black Chernozemic soils (thick phase) developed on medium to moderately fine textured, moderately calcareous, silty, glacio-lacustrine deposits. H/T - shallow deposits (less than 4 feet) overlying glacial till.

H1 - Dominant Orthic Black.

H3 - Dominant Orthic Black with significant Eluviated Black.

Canora - Dominant Black Chernozemic soils (thick phase) developed on medium to moderately fine textured, moderately to highly calcareous, silty, glacio-lacustrine deposits.

Ca1 - Dominant Rego Black.

Ca2 - Dominant combination of Rego and Calcareous Black with a significant occurrence of undifferentiated Gleysolic soils.

Naicam - Dominant Black Chernozemic soils (thick phase) developed on medium to moderately fine textured, calcareous, modified glacial till.

N4 - Dominant Orthic Black with significant Calcareous Black.

Dominantly Dark Gray Chernozemic Soils

Whitewood - Dominant Dark Gray Chernozemic soils developed on medium to moderately fine textured calcareous glacial till.

Wh1 - Dominant Orthic Dark Gray.

Paddockwood - Dominant Dark Gray Chernozemic soils, developed on medium to moderately fine textured, highly calcareous, modified glacial till.

Pw1 - Dominant Rego and Calcareous Dark Gray with a significant occurrence of undifferentiated Gleysolic soils.

Miscellaneous Soils

Alluvium - A group of soils developed on variable textured alluvial deposits.

Av5 - Dominant Orthic and Rego Humic Gleysols.

Dune Sand - Dominant Regosolic soils developed on coarse textured aeolian or wind-worked fluvial-lacustrine deposits.

DS1 - Dominant Orthic Regosol.

Hillwash - Hw - A mapping complex of Regosolic and weakly developed Chernozemic and Podzolic soils developed on variable deposits of valley slopes and eroding escarpments.

Textural Groupings and Classes

Textural Group	Textural Class
Coarse textured	Sands (s), loamy sands (ls)
Moderately coarse textured	Sandy loam (sl), fine sandy loam (fl)
Medium textured	Very fine sandy loam (vl), loam (l), silt loam (sil)
Moderately fine textured	Sandy clay loam (scl), clay loam (cl), silty clay loam (sicl)
Fine textured	Sandy clay (sc), clay (c), silty clay (sic), heavy clay (hc)

Gravelly sandy loam (gsl) and gravelly loam (gl) are recorded where present.

Landforms

Name	Symbol	Description
Glacial Till Landforms		
Moraine	Ma	Gently rolling moraine with a knob and kettle pattern having no external drainage.
	Md	Moderately sloping moraine with external drainage.
Ground Moraine	Ga	Roughly undulating ground moraine with a knob and kettle pattern having no external drainage.
	Gd	Gently sloping ground moraine with external drainage.
Glacio-Lacustrine Landforms		
Glacial Lake Plain	La	Roughly undulating to gently rolling glacial lake plain of knolls and depressions without external drainage.
	Ld	Gently to moderately sloping plain with external drainage.
Glacio-Alluvial Landforms		
Glacial Lake Delta and Post Glacial Alluvium Deposits	Ae	Roughly undulating to gently rolling aeolian plain having no external drainage.
	Ad	Gently sloping alluvial plain with external drainage.
Glacio-Fluvial Landforms		
Outwash Plain	Fa	Roughly undulating kettled or pitted outwash plain without external drainage.
	Fd	Gently to steeply sloping outwash plain with external drainage or glacial drainage channels.

Topography

Description	Symbol	Percentage Slope
Gently sloping or roughly undulating	3	2-5%*
Moderately sloping or gently rolling	4	5-9%
Strongly sloping or moderately rolling	5	9-15%
Steeply sloping or strongly rolling	6	15-30%

*A 5% slope means a rise or fall of 5 feet for every 100 feet of horizontal distance.

Other Map Symbols

Slough or depressional area which is periodically flooded.

Drainage way indicating direction of flow.

Soil boundary.

Tp — Township.

Rg — Range.

Not suitable for grain production.

Marginal for grain production.

Section number.

SOIL CAPABILITY FOR AGRICULTURE

Class	Soil Capability for Agriculture
1	No significant limitations.
2	Moderate limitations.
3	Moderately severe limitations.
4	Severe limitations.
5	Serious limitations - not suitable for annual crops but suitable for improved pasture.
6	Very serious limitations - suited only for permanent pasture.

Kind of Limitations

Soil limitations - caused by unfavorable soil characteristics.

m - insufficient soil moisture holding capacity.

n - excessive soil salinity.

s - unfavorable soil characteristics. This subclass is used in a collective sense in place of subclasses m (insufficient soil moisture holding capacity), d (poor structure), f (low soil fertility) and n (excessive soil salinity) where more than two of them are present or where two of these limitations are present in addition to some other limitation.

Landscape limitations

t - unfavorable topography.

w - excess water - applies to soils where excess water, apart from inundation, is a limitation in their use for agriculture.

e - erosion damage.

i - inundation - applies to soils subjected to flooding due to overflow.

Guiding Criteria for Capability Classes in Saskatchewan

Class	Degree of Limitations	Range of Adaptability	Productivity*	Other Characteristics
1	No significant limitations.	Wide range of field crops.	Moderately high to high, 20-25 bu/acre (30.0 to 35.0 bu/acre)**	Deep, well drained good water holding capacity. Natural high fertility.
2	Moderate limitations due to climate, soil or landscape.	Fairly wide range of field crops.	Moderately high to high, 15.5-20 bu/acre (24.0 to 30.0 bu/acre)**	Good water holding capacity. Natural high fertility or highly responsive to fertilizer.
3	Moderately severe limitations due to climate, soil or landscape.	Moderate range of field crops.	Medium to moderately high, 11.0 -15.5 bu/acre (19-24 bu/acre)**	Limitations adversely affect the timing and ease of tillage, planting, harvesting, and application of conservation practices.
4	Severe limitations due to climate, soil or landscape.	Narrow range of field crops.	Low to medium 9.0-11.0 bu/acre (13-15 bu/acre)**	The high incidence of low yields or disastrous failures suggests that some of these soils be removed from continued cultivation.
5	Serious soil or landscape limitations make them unsuitable for the production of annual crops.	Suited for the production of adapted grasses and legumes.		Soils within this class are responsive to improvement practices through the use of farm machinery. Improvement of 25% of an area can double the carrying capacity.
6	Very serious soil or landscape limitations restrict their use to native grazing.	Suited only to native pasture.		Soils in this class are not responsive to improvement practice.
7	Prevent agricultural use.	Unsuited for agricultural use.		Bodies of water, townsites, parks, airports, railroads.

*Estimated productivity of arable Classes 1-4 is expressed in terms of long-time (1932-1961) average wheat yields in bu/acre.

**Estimated potential productivity.

THE SOILS OF THE KEESEEKOOSE INDIAN RESERVES NOS. 66 AND 66A

Interpretation of the Soil Symbol Sequence

One report only is being presented for both Reserve No. 66 and Reserve No. 66A, inasmuch as Reserve No. 66A is too small to warrant a separate report. The ability to interpret the symbols on the map of one reserve will enable the reader to do the same for the other reserve.

The sequence of the soil symbols given for each area separated on the map is always arranged in the following order: Soil Association and Map Unit:Texture: Landform:Percentage Slope. An illustration of this is the symbol sequence B2:cl-1:La3 which occurs on Reserve No. 66 in Section 16, Township 32, Range 32.

The letter B represents the abbreviation for the Blaine Lake Association described in the legend as, "Dominant Black Chernozemic soils developed on medium to moderately fine textured, moderately calcareous, silty, glacio-lacustrine deposits". Medium to moderately fine textural groups are dominantly loam and clay loam textural classes. The number 2 indicates the Map Unit of the Blaine Lake Association, namely B2, which is described as "Dominant Orthic Black with significant Calcareous Black and a significant occurrence of undifferentiated Gleysolic soils". The letters cl-l represent the textural class range of the surface soil, namely clay loam to loam. The letters La described under the heading "Landforms", signifies "A roughly undulating to gently rolling glacial lake plain of knolls and depressions without external drainage". The topography in the area is indicated by the symbol 3 defined in the legend as slopes ranging from 2-5%.

It will be noted that the soil symbol sequence in many areas contains two or more Associations and their Map Units, as in Section 34, Township 31, Range 32, on Reserve No. 66, where the symbols H3:1-cl-Cal:1-cl represent Hoey and Canora Associations and their Map Units. Where two or more Associations and their Map Units occur in the one sequence, the first mentioned Association is

dominant. The reason that some areas are indicated as a complex, such as the one above, is that at the present scale of mapping and the expected land use it was not considered practical to separate these soils.

Interpretation of the Soil Capability[2] Symbol Sequence

Each area separated on the map (by a soil boundary), contains not only the soil symbol sequence already described but also a capability sequence. In the area containing the symbols B2:c1-1:La3, the symbols $1^{8}\ 5^{2}_{w}$ occur and are interpreted as follows. The lower numbers are the capability classes. The small letter indicates the "limitation" or adverse soil or landscape feature which relegates the soil area to its particular capability class. The upper numbers indicate the percentage of the soil area designated to a specific capability class. By referring to the heading in the legend designated as "Soil Capability for Agriculture", it can be seen that $1^{8}\ 5^{2}_{w}$ describes an area of 80% Class 1 soil which has no significant limitations, and 20% Class 5 soil which has serious limitations due to excess water (w). It can, therefore, be concluded that, except for the wet depressional areas, this area of gently undulating Blaine Lake clay loam to loam is an excellent soil for grain production.

EVALUATION OF THE AGRICULTURAL POTENTIAL OF THE KEESEEKOOSE INDIAN RESERVES

An evaluation of the agricultural potential may be made of any portion of the map area by interpreting the map symbols by means of the legend.

The entire soil area of Reserve No. 66A is rated as dominantly Class 1 soil. These soils except for the low lying wet areas are excellent soils for annual crop production.

The areas with the best potential on Reserve No. 66 are the areas of Hoey (H), Canora (Ca), Naicam (N) and Blaine Lake (B) which are rated as Class 1 soils. These areas make up more than half of the soils on the reserve and cover

an area of about 6,000 acres. These soils have no significant limitations for agriculture, except for the low lying wet areas, and are well suited to the production of annual crops. Areas which have a slightly lower potential than the areas mentioned above, but which are still well suited to grain production are the area of Oxbow (O) and the areas of Naicam (N) and Hoey (H) on Class 4 topography. These are all rated as Class 2 soils which have only moderate limitations and offer an additional area of approximately 1,260 acres of good agricultural soils.

Other areas which can be utilized for grain production but which are somewhat poorer than the Class 1 and 2 soils are the areas of Meota (Me), Paddockwood Whitewood (Pw-Wh), Cudworth (Cd) and the areas of Blaine Lake (B) on Class 4 topography. These areas, covering about 1,000 acres, are all rated as Class 3 soils which have moderately severe limitations but which still have a potential for grain production.

The areas of Whitesand (Ws) on Class 3 topography are rated as Class 4 soils which are marginal for crop production and as such should not be considered for grain production as they would be better used as areas for forage production. All the remaining soils on the reserve are rated mainly as Class 6 (shown as dark shading). As such they should be used only for permanent pasture.

Acknowledgments

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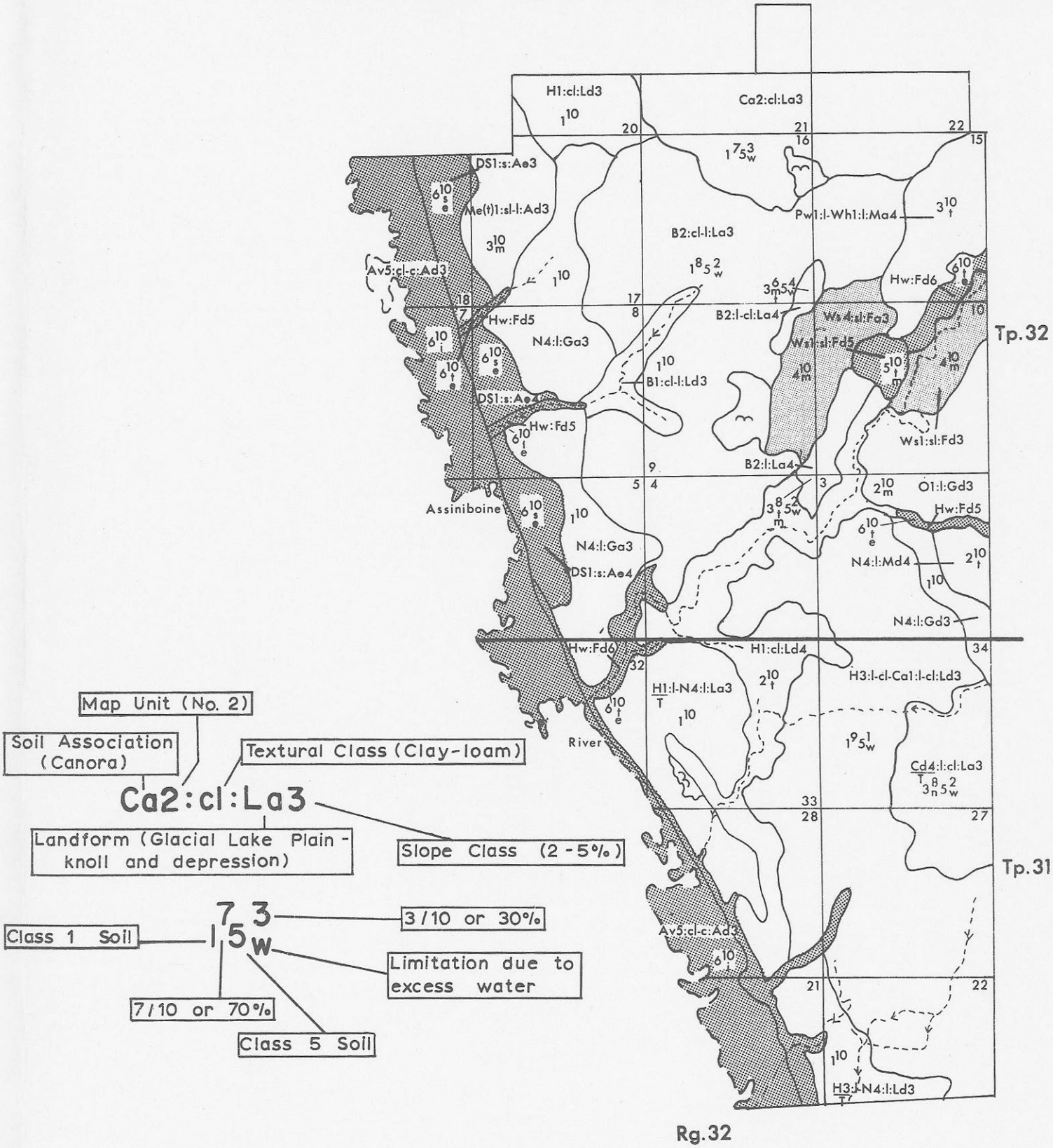
References

1. A Guide to Understanding Saskatchewan Soils. H.C. Moss. 1965. Saskatchewan Institute of Pedology Publication M1. Extension Publication 175. Distributed by Extension Division, University of Saskatchewan, Saskatoon.

2. A Guide to Soil Capability and Land Inventory Maps in Saskatchewan. Saskatchewan Institute of Pedology Publication M8. Department of Soil Science, University of Saskatchewan, Saskatoon. 1968.

KEESEEKOOSE INDIAN RESERVES NOS. 66 and 66A



Map Unit (No. 2)

Soil Association (Canora)

Textural Class (Clay-loam)

Ca2:cl:La3

Landform (Glacial Lake Plain - knoll and depression)

Slope Class (2 - 5%)

Class 1 Soil — 7 3 / 1 5 W

3/10 or 30%

Limitation due to excess water

7/10 or 70%

Class 5 Soil

Scale – 1.25 inches to 1 mile or 1:50,000

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