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Rural Municipality of Park (north)

Information Bulletin 97-29

Soils and Terrain

An introduction to the land resource

Land Resource Unit
Brandon Research Centre

Canada

Rural Municipality of Park (north)

Information Bulletin 97-29

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PREFACE

This is one of a new series of information bulletins for individual rural municipalities of Manitoba. They serve to introduce the newly developed digital soil databases and illustrate several typical derived and interpretive map products for agricultural land use planning applications. The bulletins will also be available in diskette format for each rural municipality.

Information contained in this bulletin may be quoted and utilized with appropriate reference to the originating agencies. The authors and originating agencies assume no responsibility for the misuse, alteration, re-packaging, or re-interpretation of the information.

This information bulletin serves as an introduction to the land resource information available for the municipality. More detailed information, including copies of the primary soil and terrain maps at larger scales, may be obtained by contacting

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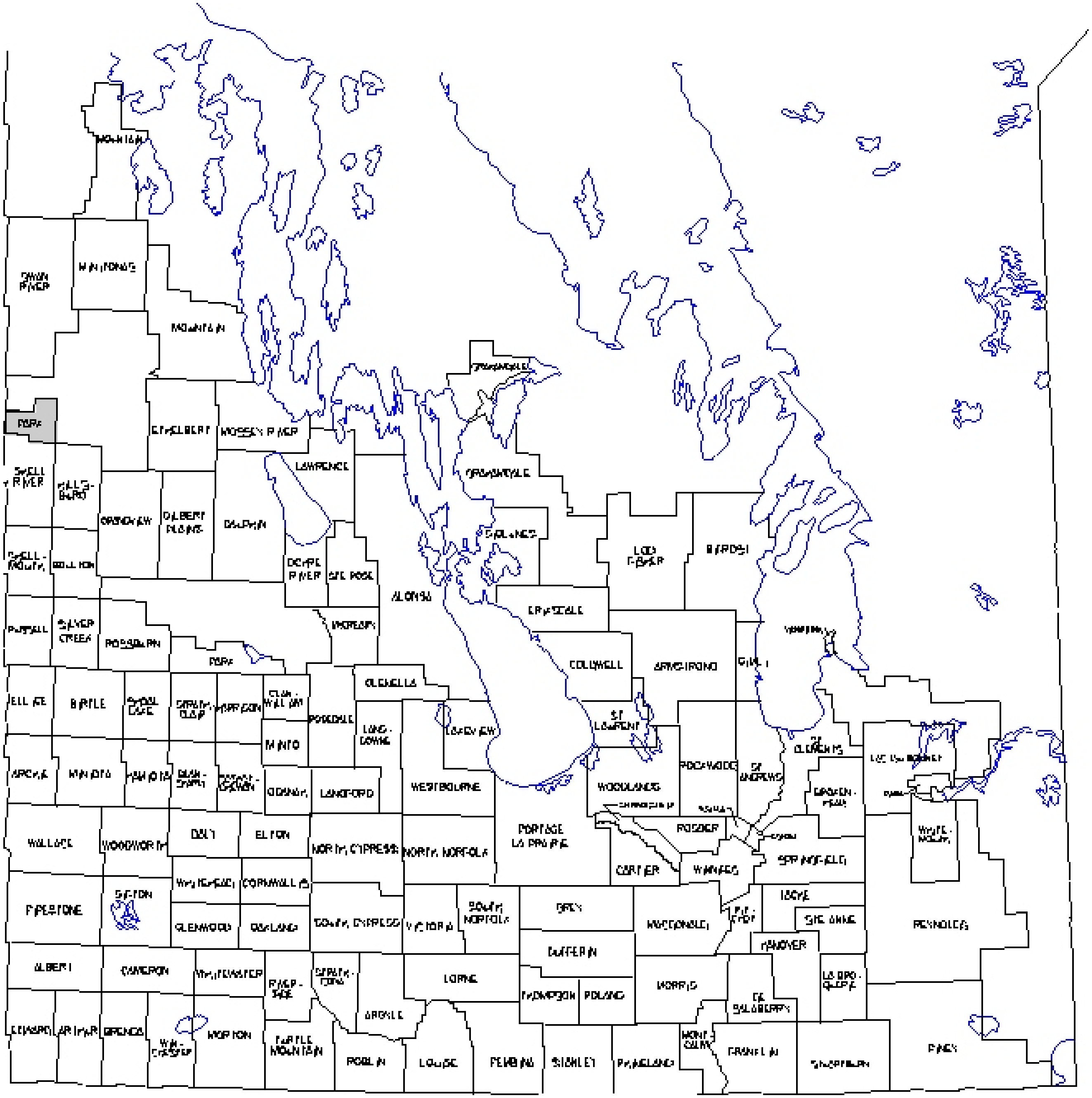


Figure 1. Rural municipalities of southern Manitoba.

INTRODUCTION

The location of the Rural Municipality of Park (north) is shown in Figure 1. A brief overview of the database information assembled, and general environmental conditions for the municipality are presented. A set of maps derived from the data for typical agricultural land use and planning applications are also included.

The soil map and database were compiled and registered using the computerized Geographic Information System (PAMAP GIS) facilities of the Manitoba Land Resource Unit. These databases were used with the GIS to create the generalized, derived and interpretive maps and statistics contained in this report. The final maps were compiled and printed using Coreldraw.

This bulletin is available in printed or digital format. The digital bulletin is a Windows based executable file which offers additional display options, including the capability to print any portion of the bulletin.

LAND RESOURCE DATA

The soil and terrain information presented in this bulletin was compiled as part of a larger project to provide a uniform level of land resource information for agricultural and regional planning purposes throughout Agro-Manitoba. This information was compiled and analysed in two distinct layers as shown in Figure 2.

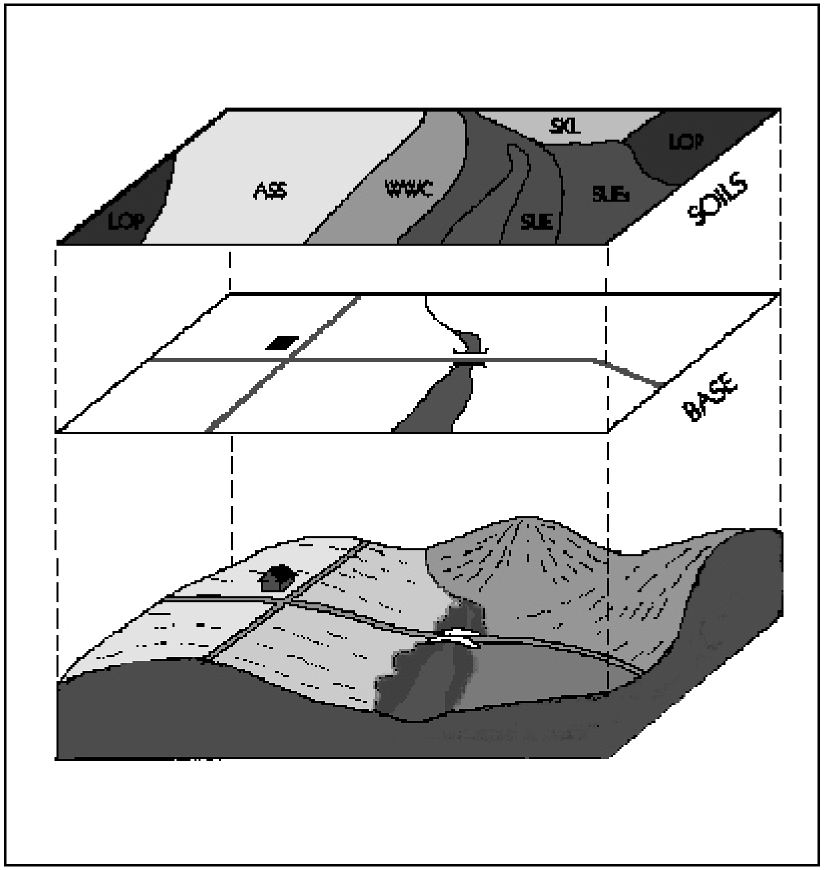


Figure 2. Soil and Base Map data.

Base Layer

Digital base map information includes the municipality and township boundaries, along with major streams, roads and highways. Major rivers and lakes from the base layer were also used as common boundaries for the soil map layer. Water bodies larger than 25 ha in size were digitized as separate polygons.

Soil Layer

The most detailed soil information currently available was selected as the data source for the digital soil layer for each rural municipality.

Comprehensive detailed soil maps (1:20 000 to 1:50 000 scale) have been published for many rural municipalities. Where they were available, the individual soil map sheets were digitized and compiled as a single georeferenced layer to match the digital RM base. Map polygons have one or more soil series components, as well as slope and stoniness classes. Soil database information was produced for each polygon, to meet national standards (MacDonald and Valentine, 1992). Slope length classes were also added, based on photo-interpretation.

Older, reconnaissance scale soil maps (1:126 720 scale) represented the only available soil data source for many rural municipalities. These maps were compiled on a **soil association** basis, in which soil landscape patterns were identified with unique surficial geological deposits and textures. Each soil association consists of a range of different soils ("associates") each of which occurs in a repetitive position in the landscape. Modern soil series that best represent the soil association were identified for each soil polygon. The soil and modifier codes provide a link to additional databases of soil properties. In this way, both detailed and reconnaissance soil map polygons were related to soil drainage, surface texture, and other soil properties to produce various interpretive maps. Slope length classes were also added, based on photo-interpretation.

SOIL AND TERRAIN OVERVIEW

The Rural Municipality (RM) of Park (north) covers an area of 3 townships (approximately 30 919 hectares) of land in western Manitoba (page 3). The Villages of San Clara and Boggy Creek are small population centers but within the RM agricultural services are generally provided from larger towns in the surrounding region.

The climate in the municipality can be related to the weather data from several stations within the area. The mean annual temperature at Roblin 24 km to the south is 0.2˚C and the mean annual precipitation is 476 mm (Environment Canada, 1982). The average frost-free period based on data from nearby stations varies from 96 to 108 days and degree-days above 5˚C range from 1450 to 1500 (Ash, 1991). The calculated seasonal moisture deficit for the period between May and September for the area is 200 to 250 mm. The estimated effective growing degree days (EDD) above 5˚C accumulated from date of seeding to the date of the first fall frost is 1200 to 1300 (Agronomic Interpretations Working Group, 1995). These parameters provide an indication of length of growing season and the moisture and heat energy available for crop growth.

Physiographically, the RM of Park is located in the Saskatchewan Plain (Canada-Manitoba Soil Survey, 1980). The majority of the RM is in the Duck Mountain Upland with a small portion in the Newdale Plain to the south. Elevation varies from 660 m above sea level (ASL) in the north to 555 m ASL in the south at the point where the Shell River flows from the municipality. The land surface is dominantly hummock with local relief between 3 and 8 m and slopes of 5 to 9 percent (page 9). The RM is dissected by a prominent glacial meltwater channel containing the Shell River. Slopes commonly exceed 30 percent along the walls of this valley and in the eroded channels and gullies draining into the valley. Local areas in the south average less than 3 m relief, with slopes ranging from 2 to 5 percent. Nearly level to gently undulating areas with local relief under 3 m and slopes less than 2 percent occur at scattered locations throughout the RM and on the bottom land within the Shell River Valley.

Soil materials in this RM consist dominantly of loamy textured glacial till and silty and sandy glacio-lacustrine deposits. Deposits of outwash sand and gravel are common near the Shell River Valley and its tributary channels. The side walls of the Shell River Valley and the deep ravines tributary to the valley are characterized by stream eroded glacial till, colluvium and slump debris (page 11).

Soils in the municipality have been mapped at a reconnaissance map scale of 1:126 720 and published in the soil survey report for the Grandview Map Sheet Area (Ehrlich et al., 1959). Soils in the municipality are dominantly Gray Luvisols (Waitville and Rackham Associations). A small area of Dark Gray Chernozems (Erickson and Kenville Associations) occur in the western part of the RM. Dark Gray and Black soils of the Leary Asssociation are associated with gravel and sand outwash deposits. Local areas of poorly drained soils (Gleysols) and organic soils are common in depressional areas of the landscape. Regosolic soils occur on stratified stream deposits (alluvium) in the Shell Valley and on steeply sloping areas of eroded slopes (page 11). A more detailed and complete description of the type, distribution and textural variability of soils in the municipality is provided in the published soil survey report.

The majority of soils are well drained with minor areas of imperfect drainage on lower slopes and in the Shell Valley. Surface runoff collects in poorly drained depressional areas, many of which contain shallow ponds and small lakes. Extensive sand and gravel deposits are dominantly rapidly drained. Surface drainage flows through gullies and intermittent streams to eventually enter the deeply cut valley of the Shell River (page 13).

Major management considerations are related to topography and coarse texture (page 15). Excessively wet soils are minor in extent and there are no significant bedrock outcrops. Variably stony conditions are common on the till soils throughout the area. Soils on the benchlands within the Shell River Valley are modified by stream erosion and as a result, are coarse textured and in many places very stony.

Approximately 10 percent of the land in the RM is rated as **Class 2** and nearly 58 percent is rated as **Class 3** for agriculture capability (page 17). Seventy percent of the land area is rated **Good** to **Fair** for irrigation suitability (page 19). Topography and droughtiness are the main limitations for agriculture capability. Well drained sandy and gravelly soils are rated as **Class 5** for agriculture and **Poor** for irrigation. Steeply sloping land and poorly drained soils are rated in **Class 6** for agriculture and **Poor** for irrigation.

A major issue currently receiving considerable attention is the sustainability of agricultural practices and their potential impact on the soil and groundwater environment. To assist in highlighting this concern to land planners and agricultural producers, an assessment of potential environmental impact (EI) under irrigation has been included in this bulletin (page 21). As shown, the majority of the RM is at at a **Low** to **Moderate** risk of degradation. However, areas of deep, sandy and gravelly soils and steeply sloping soils are rated as having a **High** potential for impact on the environment under irrigation. These conditions increase the risk for deep leaching of potential contaminants on the soil surface and the potential for rapid runoff from the soil surface into adjacent wetlands or water bodies. This EI map is intended to be used in association with the irrigation suitability map.

Another issue of concern to producers, soil conservationists and land use specialists is soil erosion caused by agricultural cropping and tillage practices. To highlight areas with potential for water erosion, a risk map has been included to show where special practices should be adopted to mitigate this risk (page 23). About 63 percent of the land in the RM is at a **Severe** risk of degradation. An additional 11percent of the RM is considered to have a **Moderate** to **High** risk of erosion whereas the risk is **Negligible** on about 17 percent of the land area. Maintenance of grasslands on many of the sandy and gravelly soils helps to minimize the risk of erosion. Adequate protection of the steeper sloping lands most at risk may require a shift in land use away from annual cultivation to production of perennial forages and pasture or permanant tree cover.

An assessment of the status of land use in the RM of Park in 1994 was obtained through analysis of satellite imagery. It showed that nearly 21 percent of the land in the RM is in annual cropland, 30 percent is in grassland and 40 percent of the area, mainly steeper sloping land, is in trees. Production of perennial forages occurs on 3 percent of the area and most of the grasslands are used for hay and pasture. Natural wetlands and water bodies constitute approximately 3 percent of the RM. Various non-agricultural uses such as recreation and infrastructure for urban areas and transportation occupy 2.5 percent of the RM (page 25).

While the majority of the soils in the RM of Park (north) have moderately severe to very severe limitations for arable agriculture, careful choice of crops and maintenance of adequate surface cover is essential for the management of sensitive lands with coarse texture or steeper slopes. This includes leaving adequate crop residues on the surface to provide sufficient trash cover during the early spring period. Implementation of minimum tillage practices and crop rotations including forage on a site by site basis will help to reduce the risk of soil degradation, maintain productivity and insure that agriculture land-use is sustainable over the longterm.

DERIVED AND INTERPRETIVE MAPS

A large variety of computer derived and interpretive maps can be generated from the digital soil and landscape databases. These maps are based on selected combinations of database values and assumptions.

Derived maps show information that is given in one or more columns in the computer map legend (such as soil drainage or slope class).

Interpretive maps portray more complex land evaluations based on a combination of soil and landscape information. Interpretations are based on soil and landscape conditions in each polygon. Interpretative maps typically show land capabilities, suitabilities, or risks related to sustainability.

Several examples of derived and interpretive maps are included in this information bulletin:

Derived Maps
Slope Classes
Generalized Soil
Drainage
Management Consideration

Interpretative Maps
Agricultural Capabilities
Irrigation Suitability
Potential Environmental Impact
Water Erosion Risk
Land Use.

The maps have all been reduced in size and generalized (simplified) in order to portray conditions for an entire rural municipality on one page. These generalized maps provide a useful overview of conditions within a municipality, but are not intended to apply to site specific land parcels. On-site evaluations are recommended for localized site specific land use suitability requirements.

Digital databases derived from recent detailed soil inventories contain additional detailed information about significant inclusions of differing soil and slope conditions in each map polygon. This information can be portrayed at larger map scale than shown in this bulletin.

Information concerning particular interpretive maps, and the primary soil and terrain map data, can be obtained by contacting the Manitoba Soil Resource Section of Manitoba Agriculture, the local PFRA office, or the Manitoba Land Resource Unit.

Slope Map.

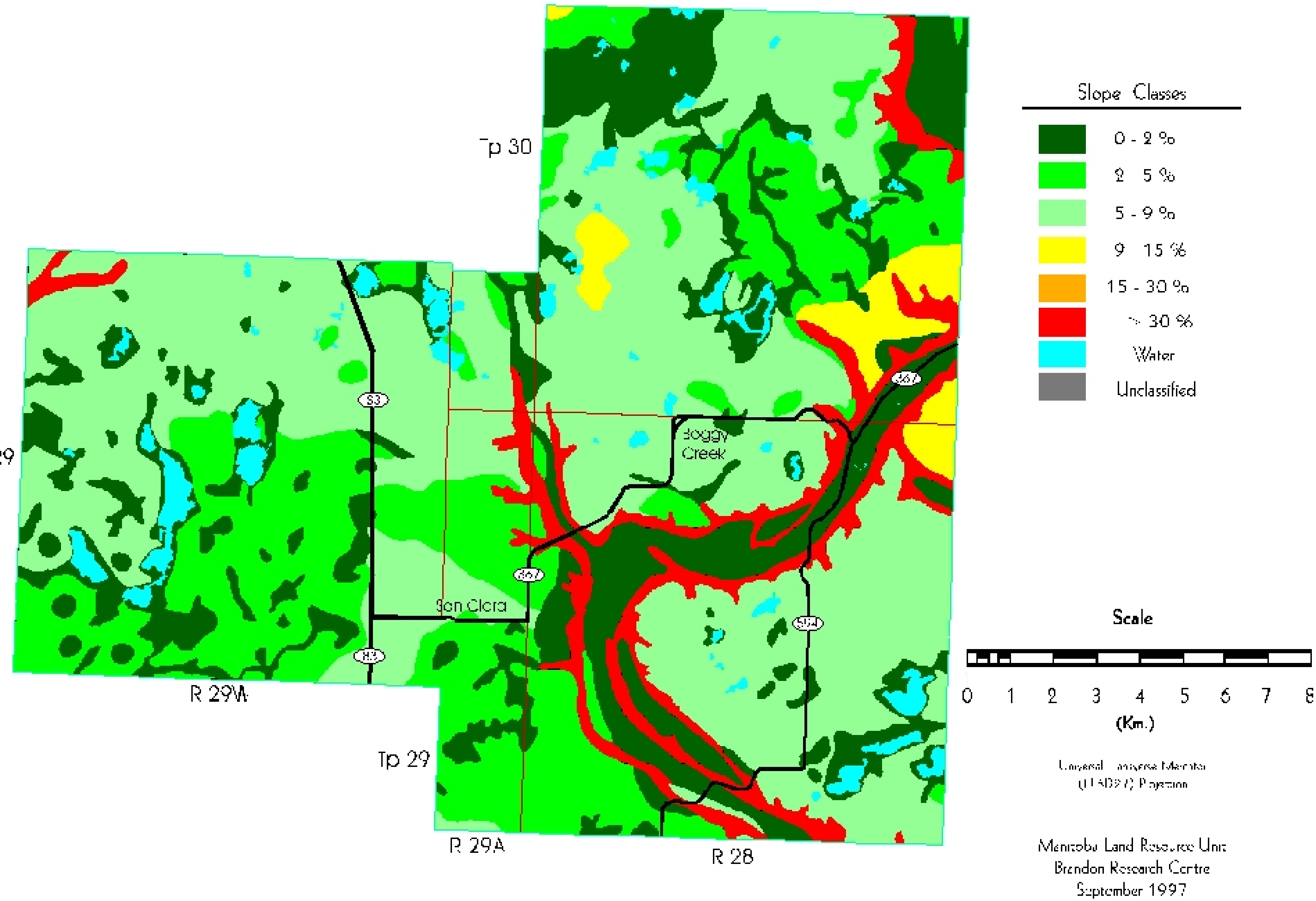
Slope describes the steepness of the landscape surface. The slope classes shown on this map are derived from the digital soil layer database. Specific colours are used to indicate the dominant slope class for each soil polygon in the RM. Additional slope classes may occur in each polygon area, but cannot be portrayed at this reduced map scale.

Table 1. Slope Classes[1]

Slope Class	Area (ha)	Percent of RM
0 - 2 %	6351	20.5
2 - 5 %	6789	22.0
5 - 9 %	13820	44.7
9 - 15 %	845	2.7
15 - 30 %	0	0.0
> 30 %	2158	7.0
Unclassified	0	0.0
Water	957	3.1
Total	30919	100.0

[1] Area has been assigned to the most significant limiting slope for each terrain polygon. Significant areas of lesser slope, and smaller areas of greater slope may occur in each terrain polygon.

Slope Map


Tp 30
Tp 29
Tp 29
R 29W
R 29A
R 28
Boggy Creek
San Clara
83
83
567
567
594
Slope Classes
0 - 2 %
2 - 5 %
5 - 9 %
9 - 15 %
15 - 30 %
> 30 %
Water
Unclassified
Scale
0 1 2 3 4 5 6 7 8
(Km.)
Manitoba Land Resource Unit
Brandon Research Centre
September 1997

Generalized Soil Map.

The most recently available soil maps were digitized to produce the new digital soil map. For older reconnaissance soil maps, areas of overprinted symbols or significant differences in topography have been delineated as new polygons. All soil polygons have been digitized and translated into modern soil series equivalents.

The general soil groups provide a very simplified overview of the soil information contained in the digital soil map. The hundreds of individual soil polygons have been simplified into broad groups of soils with similar parent material origins, textures, and drainage classes. The dominant soil in each polygon determines the soil group, area, and colour for the generalized soil map. Gleysolic soils groups have poor to very poor drainage, while other mineral soil groups typically have a range of rapid, well, or imperfectly drained soils.

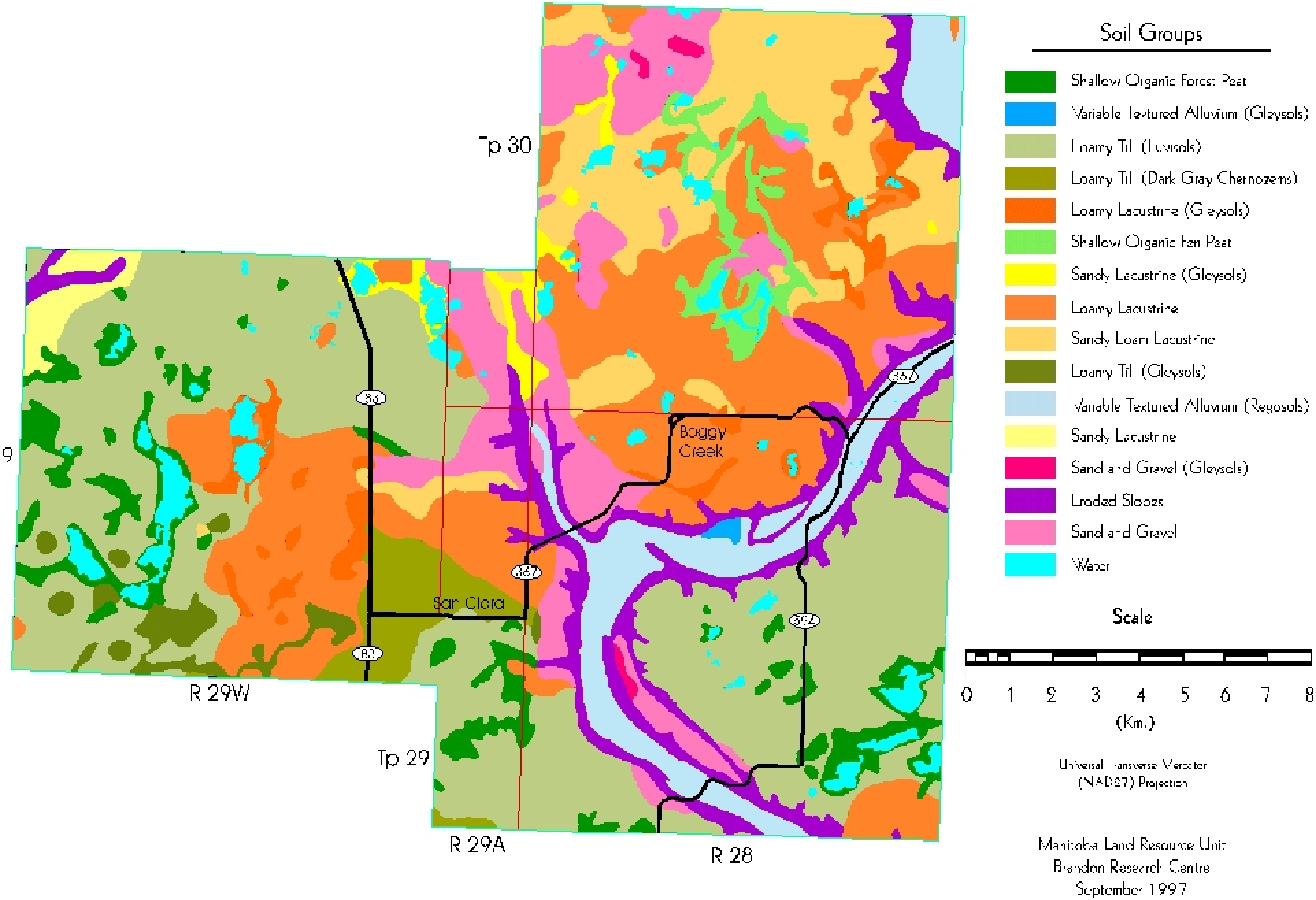
More detailed maps showing the dominant and subdominant soils in each polygon can also be produced at larger map scales.

Table 2. Generalized Soil Groups[1]

Soil Groups	Area (ha)	Percent of RM
Organic Forest Peat	1413	4.6
Variable Textured Alluvium (Gleysols)	33	0.1
Loamy Till (Luvisols)	9449	30.6
Loamy Till (Dark Gray Chernozem)	803	2.6
Loamy Lacustrine (Gleysols)	670	2.2
Shallow Organic Fen Peat	547	1.8
Sandy Lacustrine (Gleysols)	349	1.1
Loamy Lacustrine	6309	20.4
Sandy Loam Lacustrine	3059	9.9
Loamy Till (Gleysols)	463	1.5
Variable Textured Alluvium (Regosols)	1739	5.6
Sandy Lacustrine	297	1.0
Sand and Gravel (Gleysols)	67	0.2
Eroded Slopes	2158	7.0
Sand and Gravel	2608	8.4
Water	957	3.1
Total	30919	100.0

[1] Based on the **dominant** soil series for each soil polygon.

Generalized Soil Map



Soil Drainage Map.

Drainage is described on the basis of actual moisture content in excess of field capacity, and the length of the saturation period within the plant root zone. Six drainage classes plus four land classes are shown on this map.

Very Poor - Water is removed from the soil so slowly that the water table remains at or on the soil surface for the greater part of the time the soil is not frozen. Excess water is present in the soil throughout most of the year.

Poor - Water is removed so slowly in relation to supply that the soil remains wet for a large part of the time the soil is not frozen. Excess water is available within the soil for a large part of the time.

Imperfect - Water is removed from the soil sufficiently slowly in relation to supply to keep the soil wet for a significant part of the growing season. Excess water moves slowly down the profile if precipitation is the major source.

Moderately Well - Water is removed from the soil somewhat slowly in relation to supply. Excess water is removed somewhat slowly due to low perviousness, shallow water table, lack of hydaulic gradient, or some combination of these.

Well - Water is removed from the soil readily but not rapidly. Excess water flows downward readily into underlying materials or laterally as subsurface flow.

Rapid - Water is removed from the soil rapidly in relation to supply. Excess water flows downward if underlying material is pervious. Subsurface flow may occur on steep slopes during heavy rainfall.

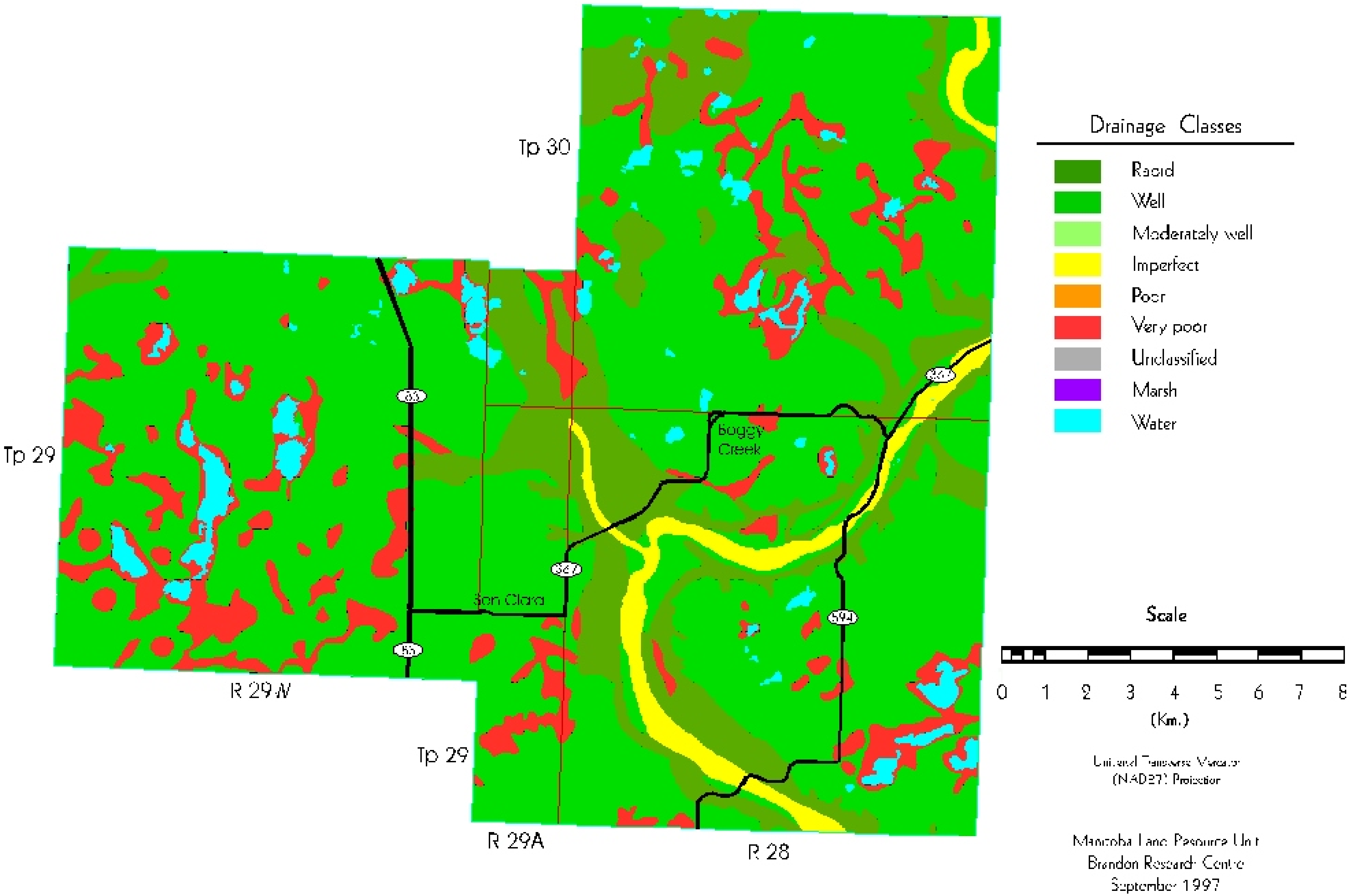
Drainage classification is based on the dominant soil series within each individual soil polygon.

Table 3. Drainage Classes[1]

Drainage Class	Area (ha)	Percent of RM
Very Poor	3541	11.5
Poor	0	0.0
Imperfect	984	3.2
Moderately Well	0	0.0
Well	20671	66.9
Rapid	4766	15.4
Marsh	0	0.0
Unclassified	0	0.0
Water	957	3.1
Total	30919	100.0

[1] Area has been assigned to the dominant drainage class for each soil polygon. Salinity may be present in localized areas too small to present at this generalized scale.

Soil Drainage Map



Management Considerations Map.

Management consideration maps are provided to focus on awareness of land resource characteristics important to land use. This map does not presume a specific land use. Rather it portrays the most common and wide spread attributes that apply to most soil landscapes in the province.

These maps **highlight attributes** of soil-landscapes that the land manager must consider for any intended land use.

- **Topography**
- **Wetness**
- **Coarse texture**
- **Medium texture**
- **Fine texture**
- **Organic**
- **Bedrock**

F = Fine texture - soil landscapes that have **fine textured soils (clays and silty clays)**, and thus low infiltration and internal permeability, require special considerations to mitigate surface ponding (water logging), runoff, trafficability. Timing and type of tillage practices used may be restricted.

C = Coarse texture - soil landscapes that have **coarse to very coarse textured soils (loamy sands, sands and gravels)**, and hence a high permeability throughout the profile, require special management practices related to application of agricultural chemicals, animal wastes, and municipal effluent to protect and sustain the long term quality of the soil and water resources. The risk of soil erosion can be minimized through the use of shelterbelts and maintenance of crop residues.

M = Medium texture - soil landscapes that have medium to moderately fine texture **(loams to clay loams)**, and hence have good water and nutrient retention properties, require good management and cropping practices to minimize leaching and the risk of erosion.

T = Topography - soil landscapes with **slopes greater than 5 %** are steep enough to require special management practices to minimize the risk of erosion.

W = Wetness - soil landscapes that have **poorly drained soils and/or >50 % wetlands** (due to seasonal and annual flooding, surface ponding, permanent water bodies (sloughs), and/or high water tables), require special management practices to mitigate adverse impact on water quality, protect subsurface aquifers, and sustain crop production during periods of high risk of water logging.

O = Organic - soil landscapes that have organic soils, require special management considerations of drainage, tillage, and cropping to sustain productivity and minimize subsidence and erosion.

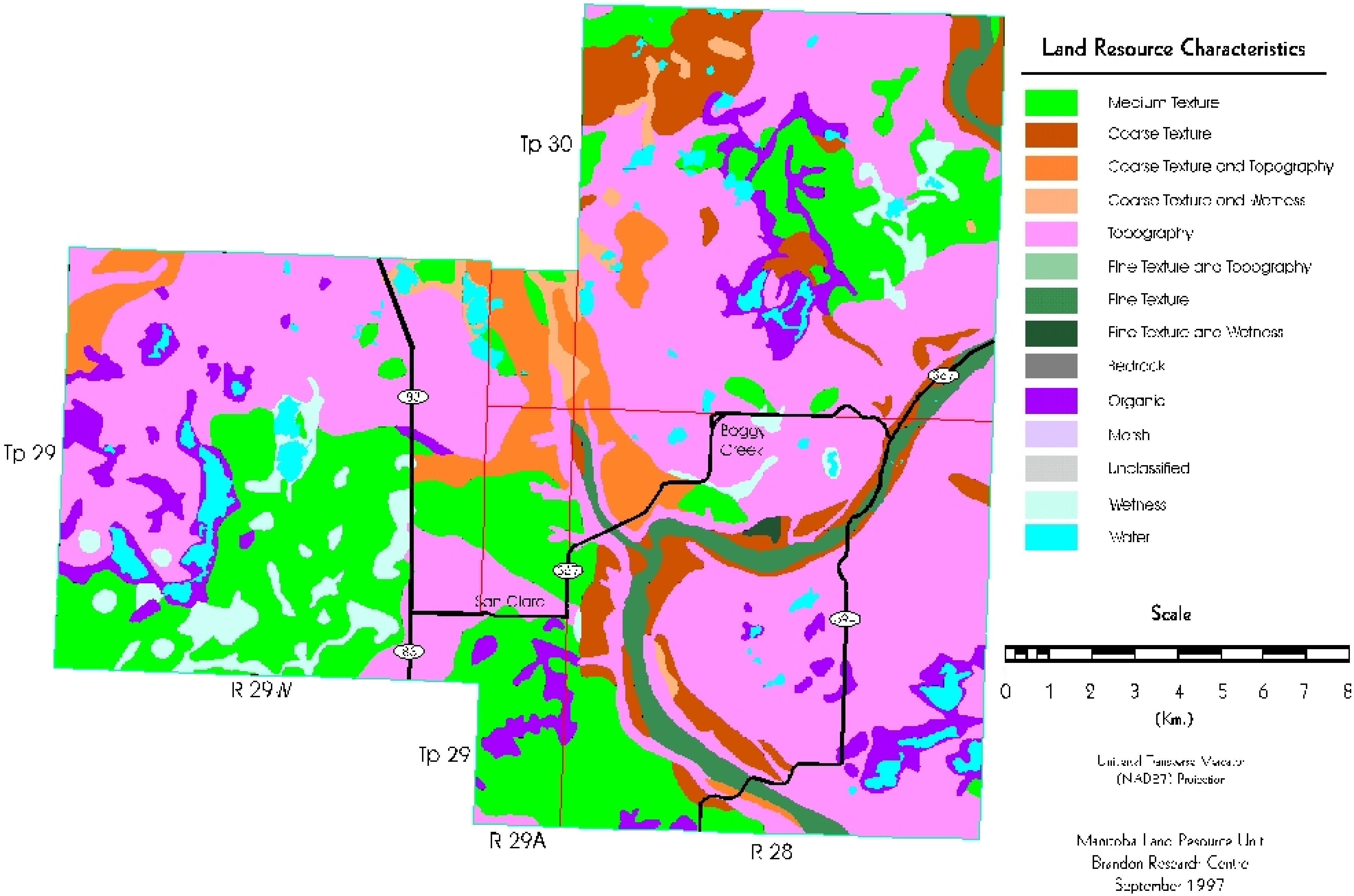
R = Bedrock - soil landscapes that have shallow depth to bedrock (< 50 cm) and/or exposed bedrock which may prevent the use of some or all tillage practices as well as the range of potential crop. They require special cropping and management practices to sustain agricultural production.

Table 5. Management Considerations[1]

Land Resource Characteristics	Area (ha)	Percent of RM
Fine Texture	984	3.2
Fine Texture and Wetness	33	0.1
Fine Texture and Topography	0	0.0
Medium Texture	6538	21.1
Coarse Texture	2077	6.7
Coarse Texture and Wetness	416	1.3
Coarse Texture and Topography	1583	5.1
Topography	15239	49.3
Topography and Bedrock	0	0.0
Wetness	1132	3.7
Wetness and Topography	0	0.0
Bedrock	0	0.0
Organic	1961	6.3
Marsh	0	0.0
Unclassified	0	0.0
Water	957	3.1
Total	30919	100.0

[1] Based on **dominant** soil series for each soil polygon.

Management Considerations Map



Agricultural Capability Map.

This evaluation utilizes the 7 class Canada Land Inventory system (CLI, 1965). Classes 1 to 3 represent the prime agricultural land, class 4 land is marginal for sustained cultivation, class 5 land is capable of perennial forages and improvement is feasible, class 6 land is capable of producing native forages and pasture but improvement is not feasible, and class 7 land is considered unsuitable for dryland agriculture. Subclass modifers include structure and/or permeability (D), erosion (E), inundation (I), moisture limitation (M), salinity (N), stoniness (P), consolidated bedrock (R), topography (T), excess water (W) and cumulative minor adverse characteristics (X).

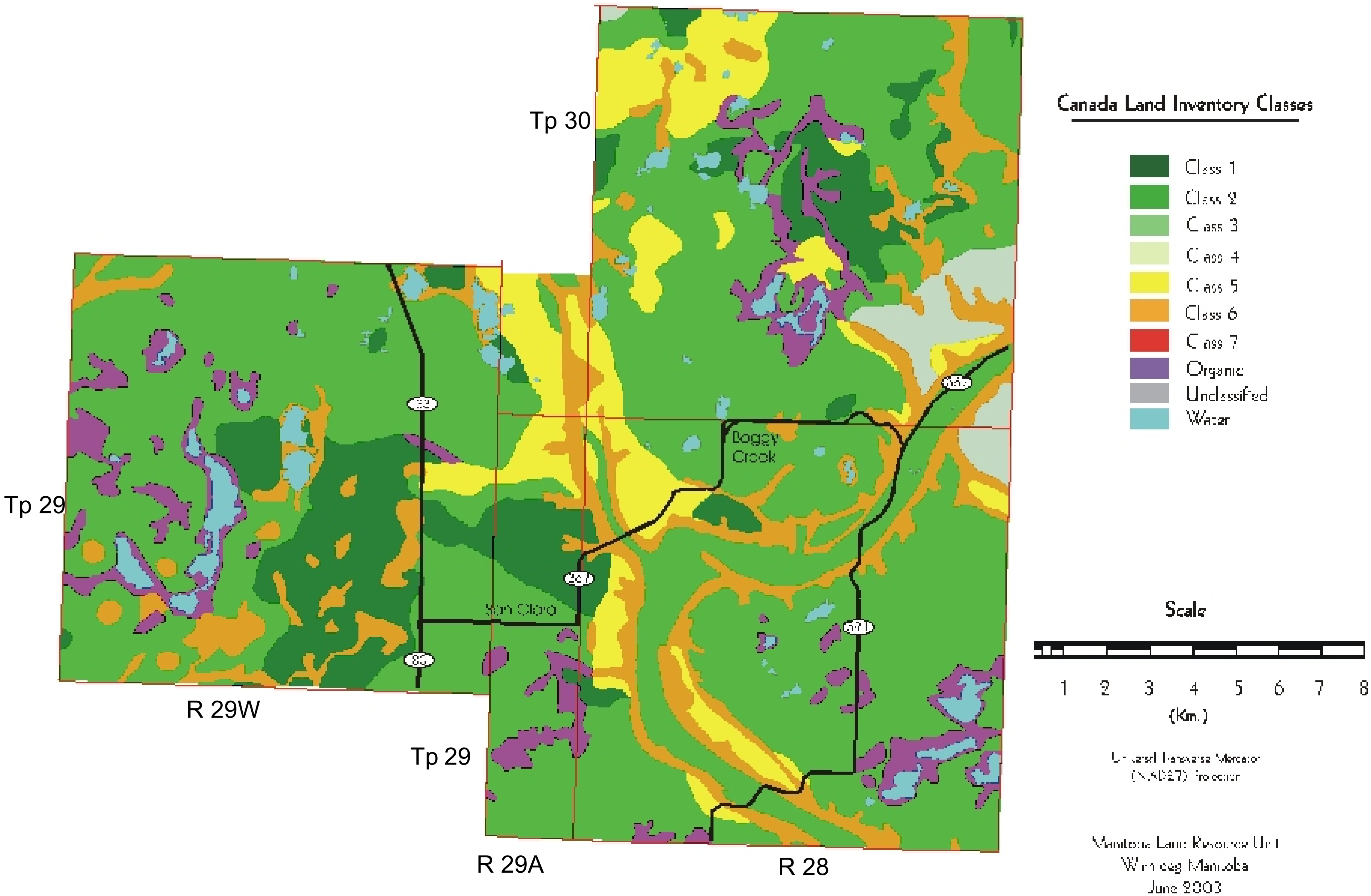
This generalized interpretive map is based on the dominant soil series and phases for each soil polygon. The CLI subclass limitations cannot be portrayed at this generalized map scale.

Table 6. Agricultural Capability[1]

Class Subclass	Area (ha)	Percent of RM
2	**3198**	**10.4**
2T	3198	10.4
3	**17747**	**57.5**
3I	984	3.2
3M	1625	5.3
3MT	2469	8.0
3T	10242	33.2
3X	2428	7.9
4	**686**	**2.2**
4T	686	2.2
5	**2602**	**8.4**
5M	2602	8.4
6	**3743**	**12.1**
6T	2158	7.0
6W	1552	5.0
6WI	33	0.1
Water	**954**	**3.1**
Organic	**1954**	**6.3**
Total	**30884**	**100.0**

[1] Based on **dominant** soil, slope gradient, and slope length of each soil polygon.

Agriculture Capability Map



Irrigation Suitability Map.

Irrigation ratings are based on an assessment of the most limiting combination of soil and landscape conditions. Soils in the same class have a similar relative suitability or degree of limitation for irrigation use, although the specific limiting factors may differ. These limiting factors are described by subclass symbols at detailed map scales. The irrigation rating system does not consider water availability, method of application, water quality, or economics of irrigated land use.

Irrigation suitability is a four class rating system. Areas with no or slight soil and/or landscape limitations are rated **Excellent** to **Good** and can be considered irrigable. Areas with moderate soil and/or landscape limitations are rated as **Fair** and considered marginal for irrigation providing adequate management exists so that the soil and adjacent areas are not adversely affected by water application. Soil and landscape areas rated as **Poor** have severe limitations for irrigation.

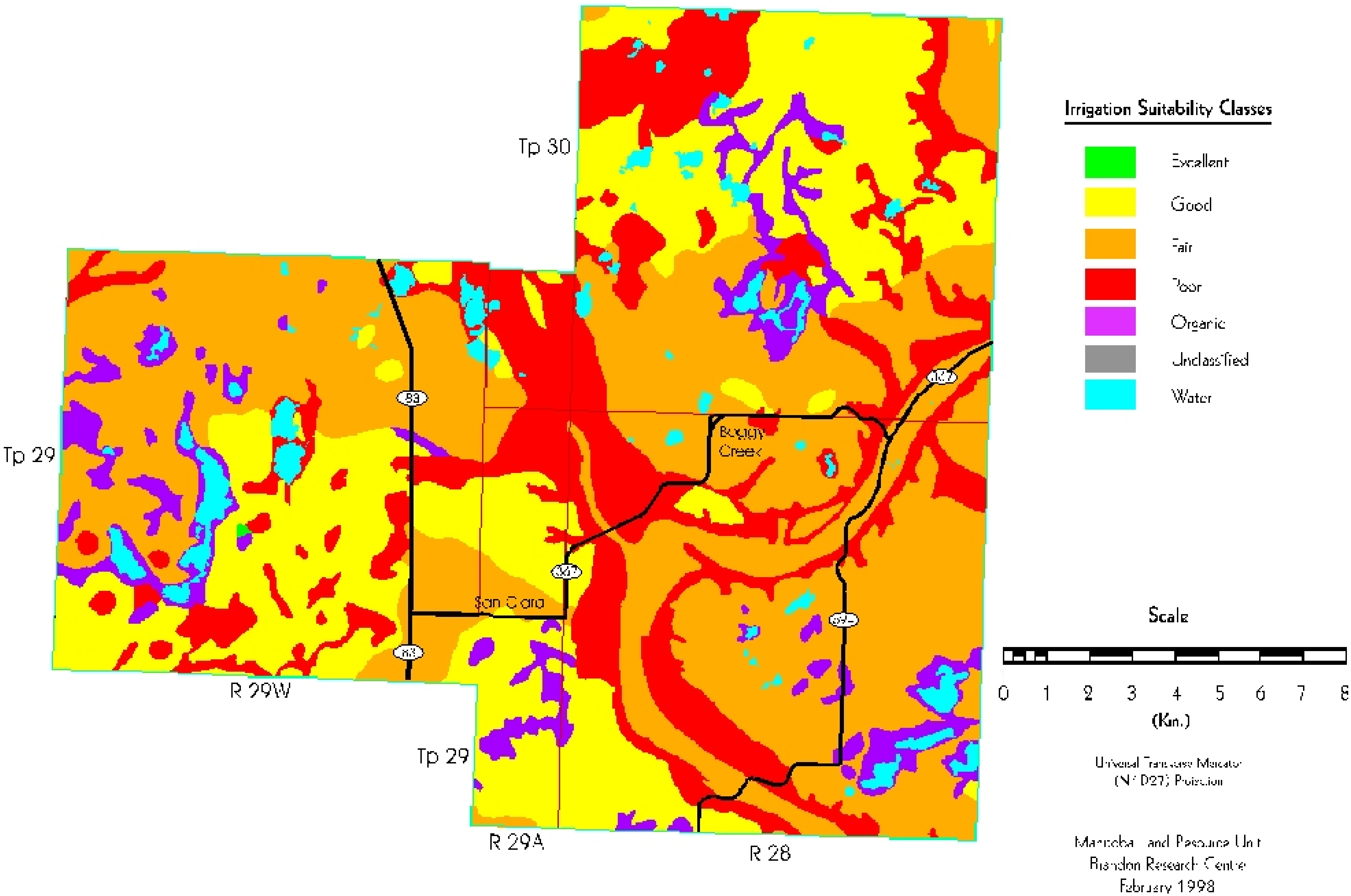
This generalized interpretive map is based on the dominant soil series for each soil polygon, in combination with the dominant slope class. The nature of the subclass limitations and the classification of subdominant components is not shown at this generalized map scale.

Table 7. Irrigation Suitability[1]

Class	Area (ha)	Percent of RM
Excellent	7	0.0
Good	8499	27.5
Fair	13149	42.5
Poor	6347	20.5
Organic	1961	6.3
Unclassified	0	0.0
Water	957	3.1
Total	30919	100.0

[1] Based on **dominant** soil, slope gradient, and slope length of each soil polygon.

Irrigation Suitability Map



Potential Environmental Impact Under Irrigation Map.

A major concern for land under irrigated crop production is the possibility that surface and/or ground water may be impacted. The potential environmental impact assessment provides a relative rating of land into 4 classes (minimal, low, moderate and high) based on an evaluation of specific soil factors and landscape conditions that determine the impact potential.

Soil factors considered are those properties that determine water retention and movement through the soil; topographic features are those that affect runoff and redistribution of moisture in the landscape. Several factors are specifically considered: soil texture, hydraulic conductivity, salinity, geological uniformity, depth to water table and topography. The risk of altering surface and subsurface soil drainage regimes, soil salinity, potential for runoff, erosion and flooding is determined by specific criteria for each property.

Use of this rating is intended to serve as a warning of potential environmental concern. It may be possible to design and/or give special consideration to soil-water-crop management practices that will mitigate any adverse impact.

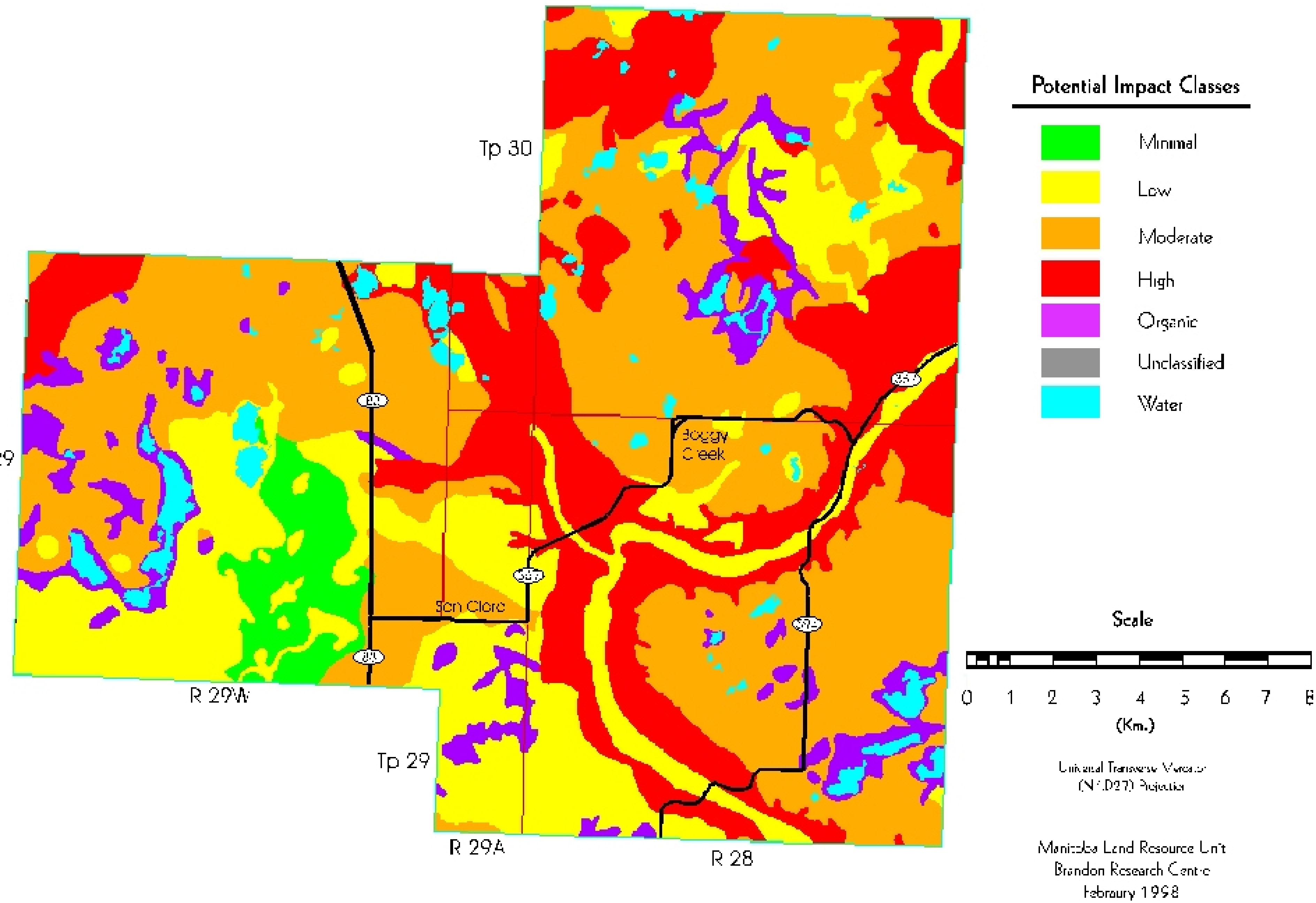
This generalized interpretive map is based on the dominant soil series and slope class for each soil polygon. The nature of the subclass limitations, and the classification of subdominant components is not shown at this generalized map scale.

Table 8. Potential Environmental Impact Under Irrigation[1]

Class	Area (ha)	Percent of RM
Minimal	**1016**	**3.3**
Low	**6765**	**21.9**
Moderate	**13305**	**43.0**
High	**6916**	**22.4**
Organic	**1961**	**6.3**
Unclassified	**0**	**0.0**
Water	**957**	**3.1**
Total	**30919**	**100.0**

[1] Based on **dominant** soil, slope gradient, and slope length of each soil polygon.

Potential Environmental Impact Under Irrigation



Water Erosion Risk Map.

The risk of water erosion was estimated using the universal soil loss equation (USLE) developed by Wischmeier and Smith (1965). The map shows 5 classes of soil erosion risk based on bare unprotected soil:

negligible
low
moderate
high
severe.

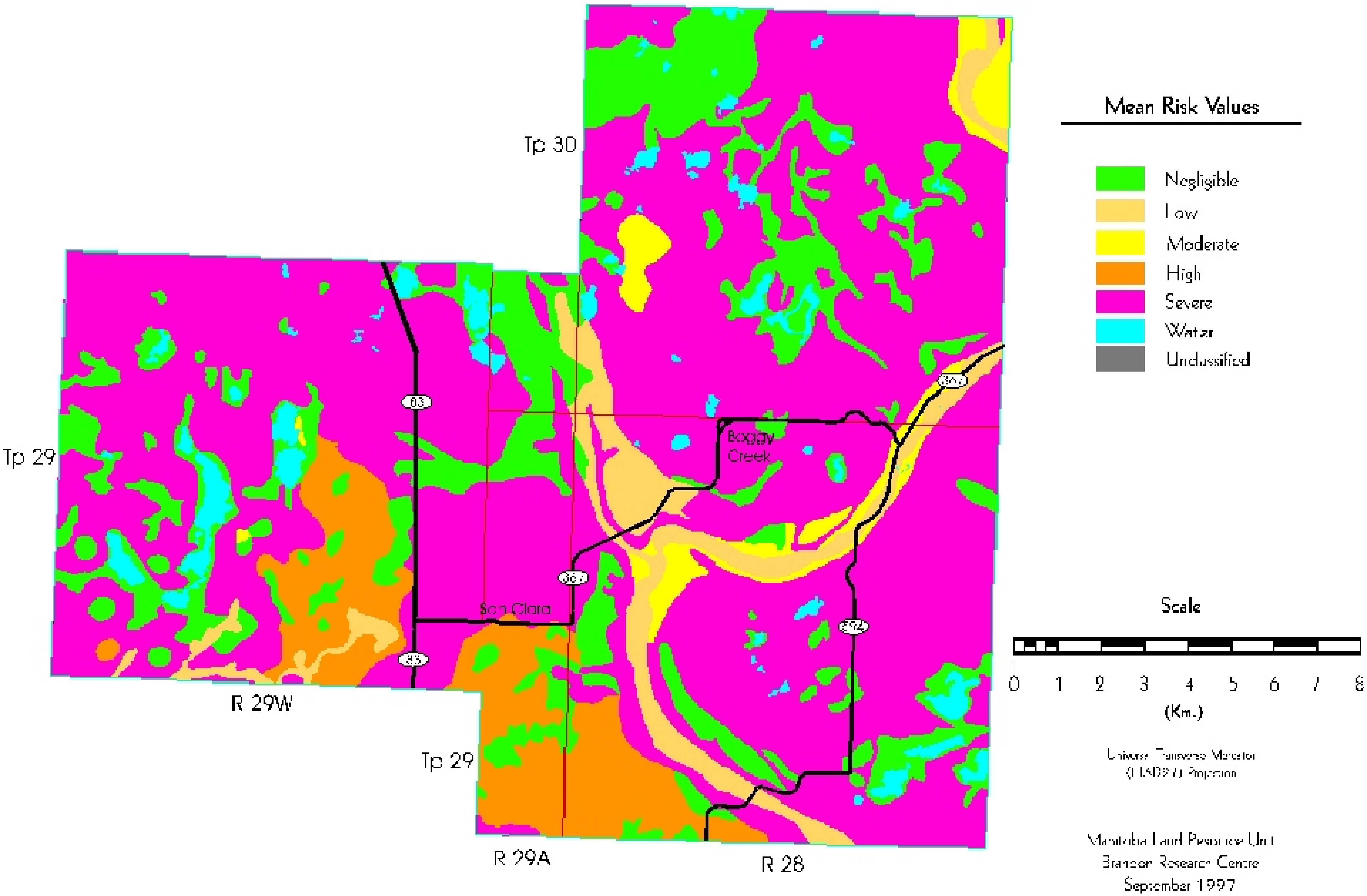
Cropping and residue management practices will significantly reduce this risk depending on crop rotation program, soil type, and landscape features.

Table 9. Water Erosion Risk[1]

Class	Area (ha)	Percent of RM
Negligible	**5266**	**17.0**
Low	**1705**	**5.5**
Moderate	**845**	**2.7**
High	**2531**	**8.2**
Severe	**19615**	**63.4**
Unclassified	**0**	**0.0**
Water	**957**	**3.1**
Total	**30919**	**100.0**

[1] Based on **dominant** soil, slope gradient, and slope length of each soil polygon.

Water Erosion Risk Map



Land Use Map.

The land use classification of the RM has been interpreted from LANDSAT satellite imagery, using supervised computer classification techniques. Many individual spectral signatures were classified and grouped into the seven general land use classes shown here. Although land use changes over time, and some land use practices on individual parcels may occasionally result in similar spectral signatures, this map provides a general representation of the current land use in the RM.

The following is a brief description of the land use classes:

Annual Crop Land - land that is normally cultivated on an annual basis.

Forage - perennial forages, generally alfalfa or clover with blends of tame grasses.

Grasslands - areas of native or tame grasses, may contain scattered stands of shrubs.

Trees - lands that are primarily in tree cover.

Wetlands - areas that are wet, often with sedges, cattails, and rushes.

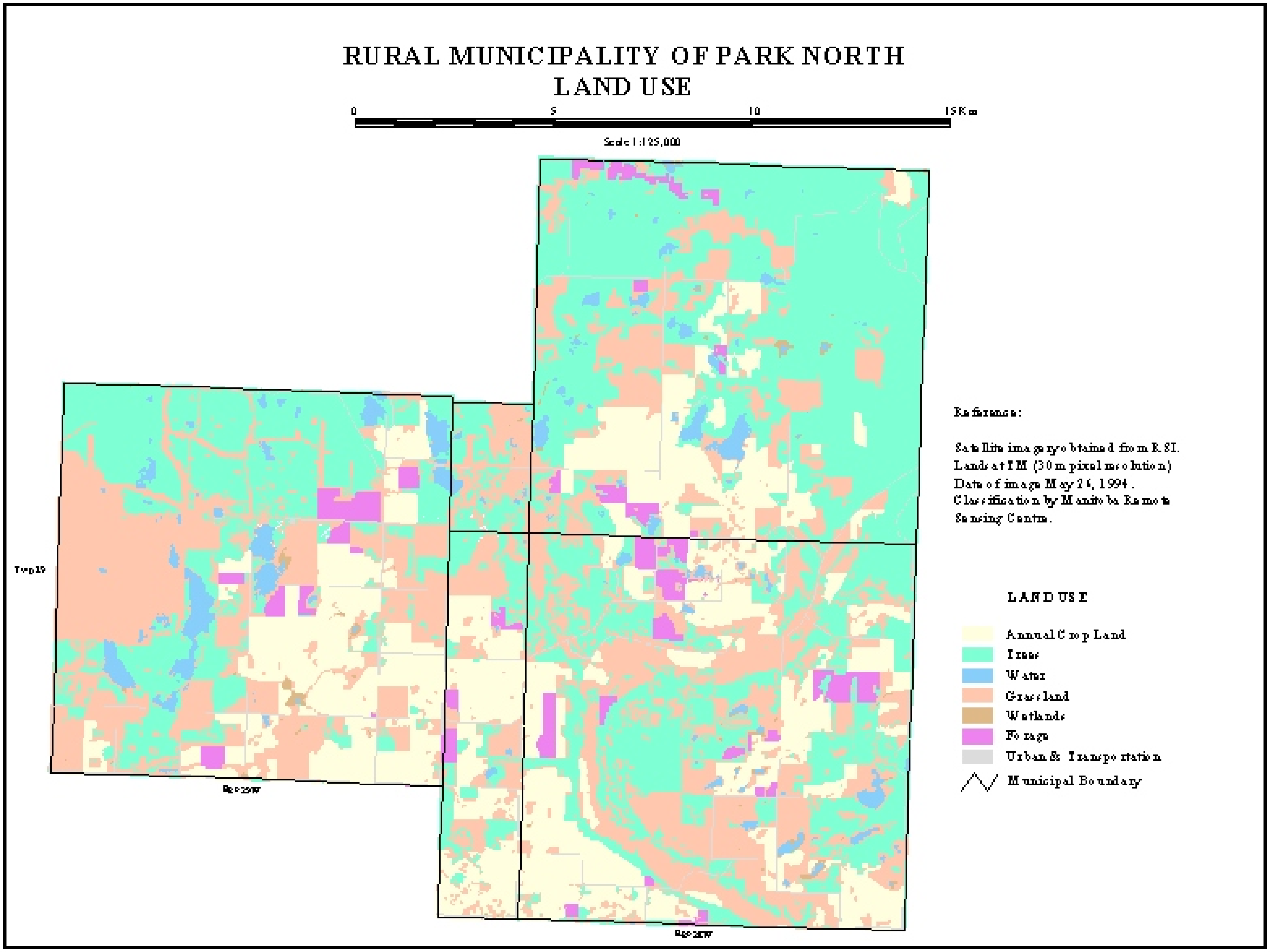
Water - open water - lakes, rivers streams, ponds, and lagoons.

Urban and Transportation - towns, roads, railways, quarries.

Table 10. Land Use[1]

Class	Area (ha)	Percent of RM
Annual Crop Land	6655	21.2
Forage	941	3.0
Grasslands	9498	30.3
Trees	12674	40.5
Wetlands	103	0.3
Water	899	2.9
Urban and Transportation	550	1.8
Total	31320	100.0

[1] Land use information (1995) and map supplied by PrairieFarm Rehabilitation Administration. Areas may vary from previous maps due to differences in analytical procedures.


RURAL MUNICIPALITY OF PARK NORTH
LAND USE
0
5
10
15 Km
Scale 1:125,000
Twp 19
Reference:
Satellite imagery obtained from RSI.
Landsat TM (30 m pixel resolution)
Date of image May 26, 1994.
Classification by Manitoba Remote Sensing Centre.
LAND USE
Annual Crop Land
Trees
Water
Grassland
Wetlands
Forage
Urban & Transportation
Municipal Boundary

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