Agriculture and Agri-Food Canada
Agriculture et Agroalimentaire Canada

Rural Municipality of Victoria

Information Bulletin 97-18

Soils and Terrain

An introduction
to the land resource

Land Resource Unit
Brandon Research Centre

Canada

Rural Municipality of Victoria

Information Bulletin 97-18

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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 in southern Manitoba with digital soil and terrain map information.

INTRODUCTION

The location of Victoria municipality is shown in Figure 1. The soil information was derived from semi-detailed 1:20 000 scale surveys (Soils of the Rural Municipality of Victoria, Report D75). A brief overview of the database information assembled, and general environmental conditions is presented. A set of maps derived from the data for typical agricultural land use and planning applications is also included.

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

LAND RESOURCE DATA

The soil and terrain (landscape) 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.

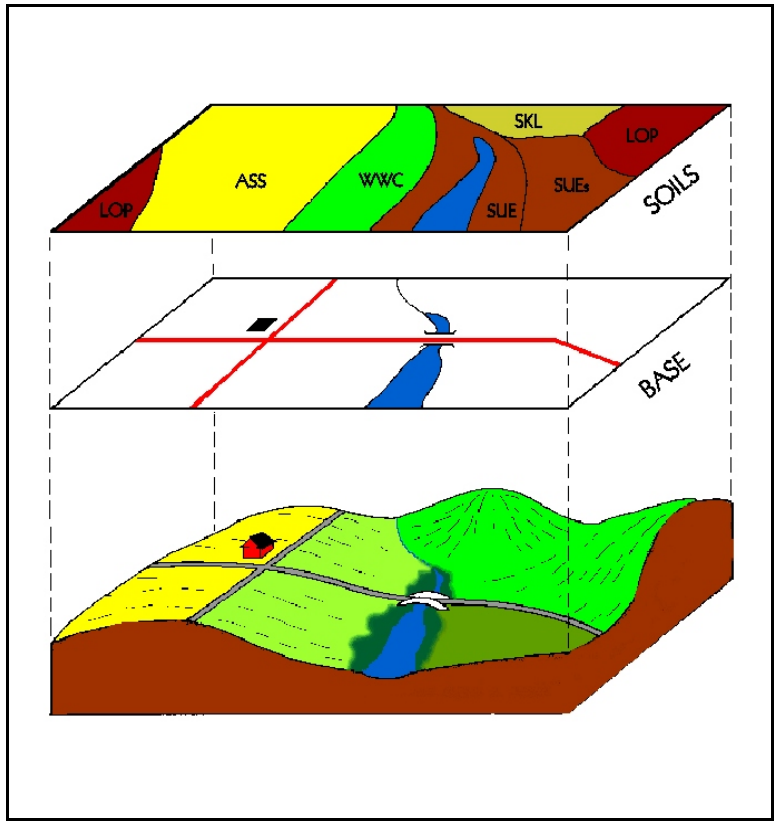


Figure 2. Soil and Base Map data.

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. The soil was added and aligned ("georeferenced") to the digital base map.

A comprehensive semi-detailed (1:20 000 scale) soil map (Langman, 1989), was 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 erosion, slope, stoniness, and salinity classes. Soil database information was produced for each polygon, to meet national standards (MacDonald and Valentine, 1992). Slope length classes were added, based on photo-interpretation.

Each soil polygon on the map was assigned the following legend characteristics:

soil series
modifier codes
polygon number

The soil and modifier codes provide a link to additional databases of soil properties. In this way, soil map polygons were related to soil drainage, surface texture, and other properties to produce the generalized, derived, and interpretative maps presented in this bulletin.

SOIL AND TERRAIN OVERVIEW

The Rural Municipality of Victoria is situated in the South-Central part of Manitoba. It is bordered by the RM's of South Cypress and North Cypress to the west, South Norfolk to the east, Lorne to the south and North Norfolk to the north. The RM covers approximately 675 km^2 in Townships 7 to 9 and Ranges 10 to 12 west. The towns of Cypress River, Landseer and Holland are the main population centres. Land use within the rural municipality is predominantly agriculture.

Based on climatic data from Cypress River (Environment Canada, 1993), the mean annual temperature is 2.7°C; mean annual precipitation is 526 mm; degree days above 5°C is 1785, and the mean frost-free period is 110 days (Environment Canada, 1982). The seasonal moisture deficit for the period May to September is 200 to 250 mm; effective growing degree days (EGDD) above 5°C for the same period is 1400 to 1500. This parameter provides an indication of heat energy available for crop growth (Agronomic Interpretations Working Group, 1995). These conditions are generally adequate for cereal crops.

The following discussion is an exerpt from Soils of the RM of Victoria (1:20 000), Report D75 (Langman, 1989).

The Rural Municipality of Victoria is situated on the eastern limits of the Saskatchewan Plain physiographic division (Canada-Manitoba Soil Survey, 1980). Upland parts of this division are found in the southeast (Pembina Hills Upland) and the southwest (Tiger Hills Upland) areas of the Municipality. The remainder of Victoria lies within the Assiniboine River Plain section. This area is subdivided into the Upper Assiniboine Delta in the north and the Brandon Lake Plain subsection in the central portion of the Municipality. The physiographic features of these areas combine with the effects of vegetation, climate and soil to produce distinct ecoclimatic regions in the study area.

The Rural Municipality of Victoria occurs mostly within subregion 2 of the Grassland transition ecoclimatic region (Canada-Manitoba Soil Survey, 1979) where aspen parkland and grassland vegetation converge. The extreme southeast of the Municipality, at higher elevations, lies in subregion 2 of the Low Boreal Subhumid ecoclimatic region (LBs_2). This is the southernmost and warmest portion of the Boreal Ecoprovince in Manitoba and it consists of a near continuous forest stand of hard-woods and mixed woods. Due to local variations in soils, relief and land use, five soil-landscape relationships can be described in the RM of Victoria:

A. A forested lacustrine sand area dominates north of the Assiniboine River and west of the Cypress River. These wind-modified sands occur at approximately 375 m a.s.l. with a local relief in duned landscapes of 5 to 10 m. The sand deposits are highly permeable and drain rapidly but drainage can be restricted in low lying areas. Groundwater in this area generally flows toward the Assiniboine and Cypress Rivers and exits the Municipality to the east. Regosol soils predominate on steeper slopes where soil development is minimal and wind erosion is a hazard. Map delineations of Shilox and similar sandy soil types are common. Poorly drained depressions associated with the dunes contain mostly Humic Gleysol or Terric Mesisol soils. Map units containing Perillo and similar organic soils, or peaty phases of sandy mineral soils are mapped in these depressions. Land use is predominantly for natural grazing, recreational activities and wild life habitats. Approximately 8 900 ha of the forested sands in the western portion of the Municipality have been incorporated into the Spruce Woods Provincial Park. Dark Gray Chernozemic soils occur where sufficient soil development has taken place. These areas are mapped as dominantly Dobbin soils with inclusions of imperfectly or poorly drained sandy soils. Mostly Dobbin soils have been cleared and cultivated for crop production.

B. The Assiniboine River and its tributaries drain most of the central and southern portions of Victoria. The present-day river meanders within an ancient channel. Dominantly loamy fluvial-lacustrine deposits are found in the channel on level terraces varying from 1 to 3 km in width at elevations of 300 to 380 m a.s.l. High level terraces within this valley are mostly well drained while those closer to the present river level are imperfectly drained with a relatively high seasonal water table. Occasional flooding adds new sediment to the low level terraces, producing soils which are

dominantly Cumulic Regosols. Gervais and La Salle soils dominate map delineations in the eastern part of the study area. Mowbray and Assiniboine soils dominate in map delineations west of Highway 23 along the Cypress and Assiniboine Rivers. Black Chernozemic soils occur in areas located above the threat of flooding and are commonly mapped as Janick, Croyon and Ramada soils. Steep forested valley slopes between the level terraces contain Black and Dark Gray Chernozemic soils. Halstead soils are described in map delineations on these slopes.

Level terrace soils generally have a high agricultural capability (mostly CLI class 2) and support a wide variety of crops. Small deposits of sand and gravel also occur in the terraces and have been exploited as an aggregate source for road construction.

C. A flat-lying, lacustrine plain extends south of the Assiniboine River to the Pembina and Tiger Hills, and east from the Cypress River to the eastern limit of the Municipality. The plain occurs at approximately 370 m.a.s.l. and has less than 5 m of local relief. The moderately permeable loamy to fine loamy deposits common to the area are drained into the Assiniboine and Cypress Rivers by a series of short, shallow tributaries. Soils are mostly well drained, highly fertile (CLI class 1), Black Chernozems which produce a wide variety of crops including cereals, oil seeds, corn and potatoes. Map delineations in this area range from dominantly well drained Fairland, Ramada and Stockton to imperfectly drained Prodan and Charman soils. Water erosion is a potential soil hazard on strongly sloping land adjacent to stream tributaries and near the Assiniboine River valley.

D. A low relief glacial meltwater channel from 1 to 1.5 km wide cuts between discontinuous till ridges south of, and approximately parallel to, Highway 2. This channel occurs at 375 m a.s.l. and has less than 5 m of local relief. Fine loamy to clayey deposits, estimated to be 1 to 5 m thick over shale bedrock, dominate in the area. Surface runoff drains slowly to the east through a series of marshes, ditches and sloughs into the Boyne River. Internal drainage is restricted by slowly permeable soils, proximity to slowly pervious bedrock, and a high water table. Soils are mostly Rego Humic Gleysols and are generally moderately to strongly saline. Map delineations are mostly Tadpole soils or marsh complexes. Areas of imperfect drainage at the edges of the channel are described by map delineations of Oliver and Prodan soils. Much of the land in the area has low agriculture potential (CLI class 5) due to wet soil, seasonal ponding, poor soil structure and soil salinity. Land in this area is used mostly for natural grazing on drier sites and for a wildlife habitat in ponded areas.

E. A bedrock-controlled, hummocky morainic landscape occurs in the extreme southeast of the Municipality. This upland area ranges in elevation from 380 to 495 m a.s.l. with a local relief of 5 to 15 m on isolated knolls. Surface deposits consist dominantly of a variable thickness of loamy to fine loamy, slightly stony Lennard till over shale bedrock from the Vermilion River Formation. Dark Gray Chernozems dominate on these well drained, moderately permeable soils in upland areas where runoff is rapid and the water table is usually below rooting depth. Map delineations of dominantly Dezwood soils occur in this area on mixed Lennard till. Fifere soils dominate in map delineations on non calcareous shale till. Altamont soils and its drainage associates are described in map delineations where the till is overlain by shallow lacustrine deposits. Humic Gleysols occur in depressional areas associated with the upland knolls. Drainage in these lows is poor and surface ponding is common. Steeply sloping uplands are mostly wooded or are cleared for native grazing. Gently sloping uplands are mostly deforested and cultivated for cereal crop production. The steep topography of the area is the main limitation (CLI class 6T and 4T) to agricultural productivity. Water erosion is also a soil hazard on steep landscapes.

DERIVED AND INTERPRETIVE MAPS

A large variety of computer derived and interpretive maps can be generated, once the soil and landscape data are stored in digital format. 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 surface soil texture, drainage, salinity, or slope class).

Interpretive maps portray more complex land evaluations based on information presented in the legend. 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
Surface Texture
Soil Drainage
Soil Salinity
Management Considerations

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 and complexity 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.

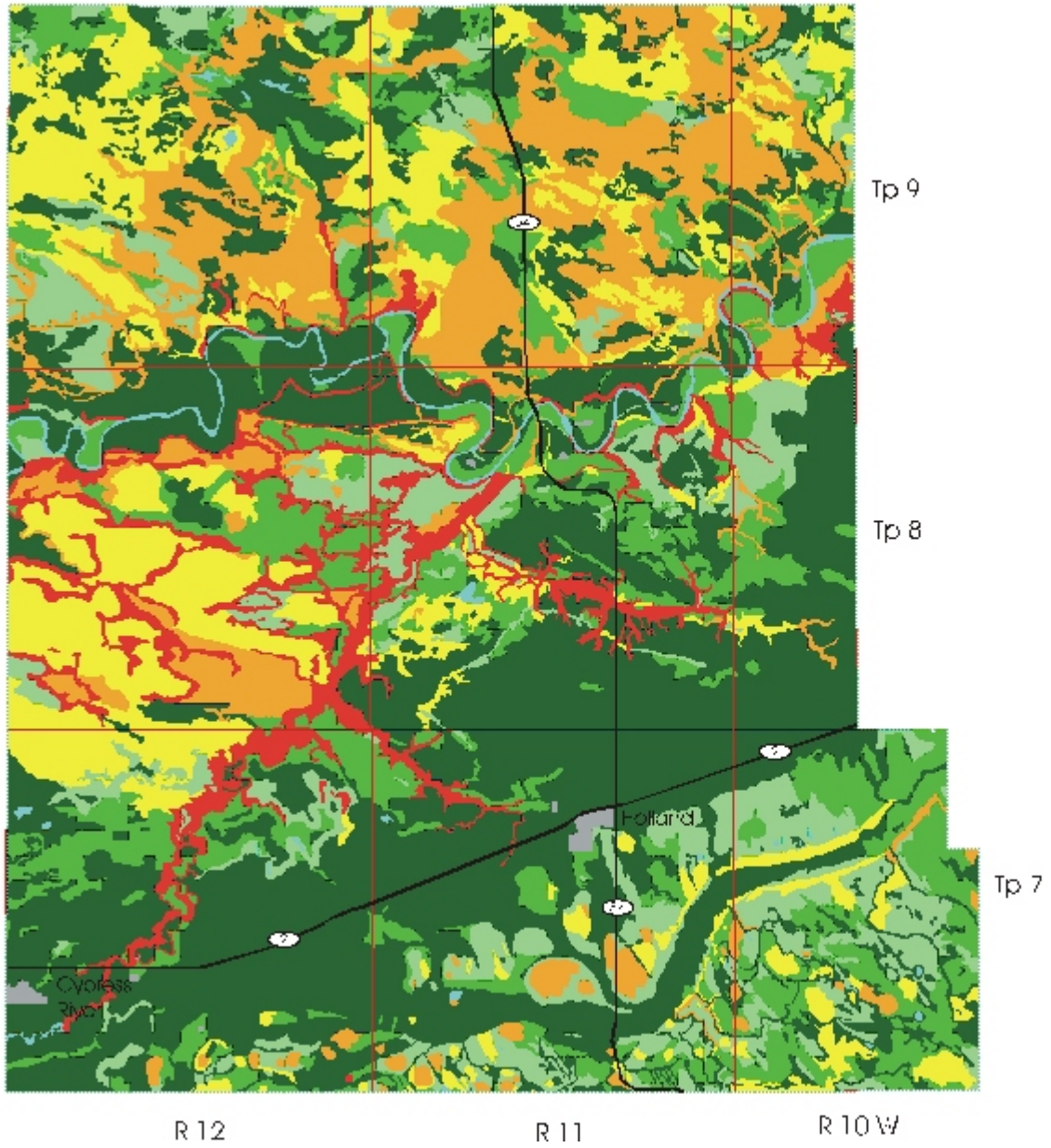
Table 1. Slope Classes[1]

Slope Class	Area (ha)	Percent of RM
0 - 2 %	26867	37.9
2 - 5 %	11398	16.1
5 - 9 %	7591	10.7
9 - 15 %	10644	15.0
15 - 30 %	9360	13.2
> 30 %	4277	6.0
Unclassified	160	0.2
Water	648	0.9
Total	70945	100.0

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

Rural Municipality of Victoria

Slope Map



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.)

Universal Transverse Mercator
(NAD27) Projection

Manitoba Land Resource Unit
Brandon Research Centre
October 1995

Surface Texture Map.

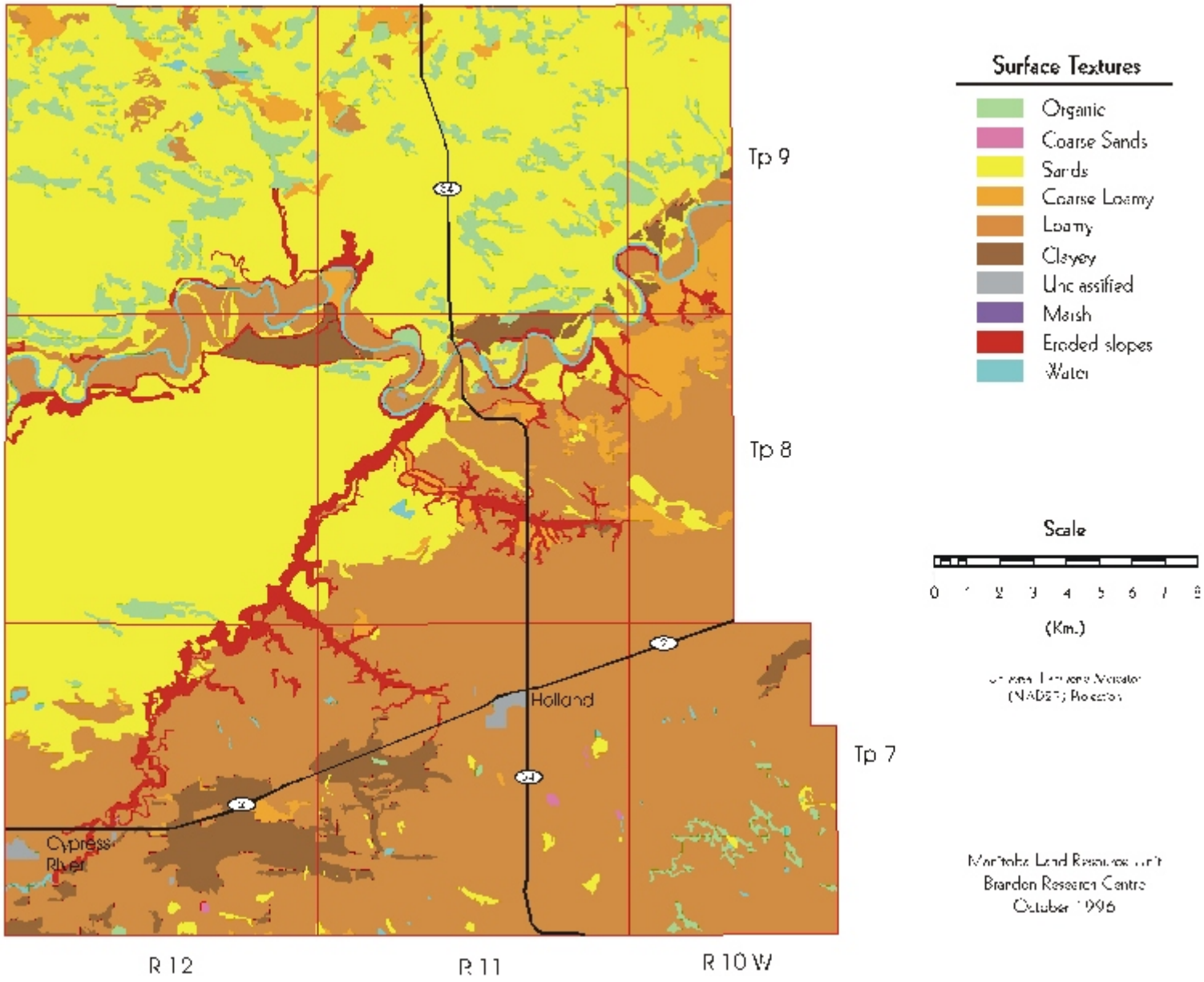
The soil textural class for the upper most soil horizon of the dominant soil series within a soil polygon was utilized for classification. Texture may vary from that shown with soil depth and location within the polygon.

Table 2. Surface Texture[1]

Surface Texture	Area (ha)	Percent of RM
Organics	3769	5.3
Coarse Sands	26	0.0
Sands	28953	40.8
Coarse Loamy	2479	3.5
Loamy	29442	41.5
Clayey	2860	4.0
Eroded Slopes	2608	3.7
Marsh	0	0.0
Unclassified	160	0.2
Water	648	0.9
Total	70945	100.0

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

Rural Municipality of Victoria Surface Texture 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. Drainage classification was based upon the dominant soil series of each individual soil polygon. A description of the various soil drainage classes can be found in Soils of the Rural Municipality of Victoria, Report No. D75 (Langman., 1989).

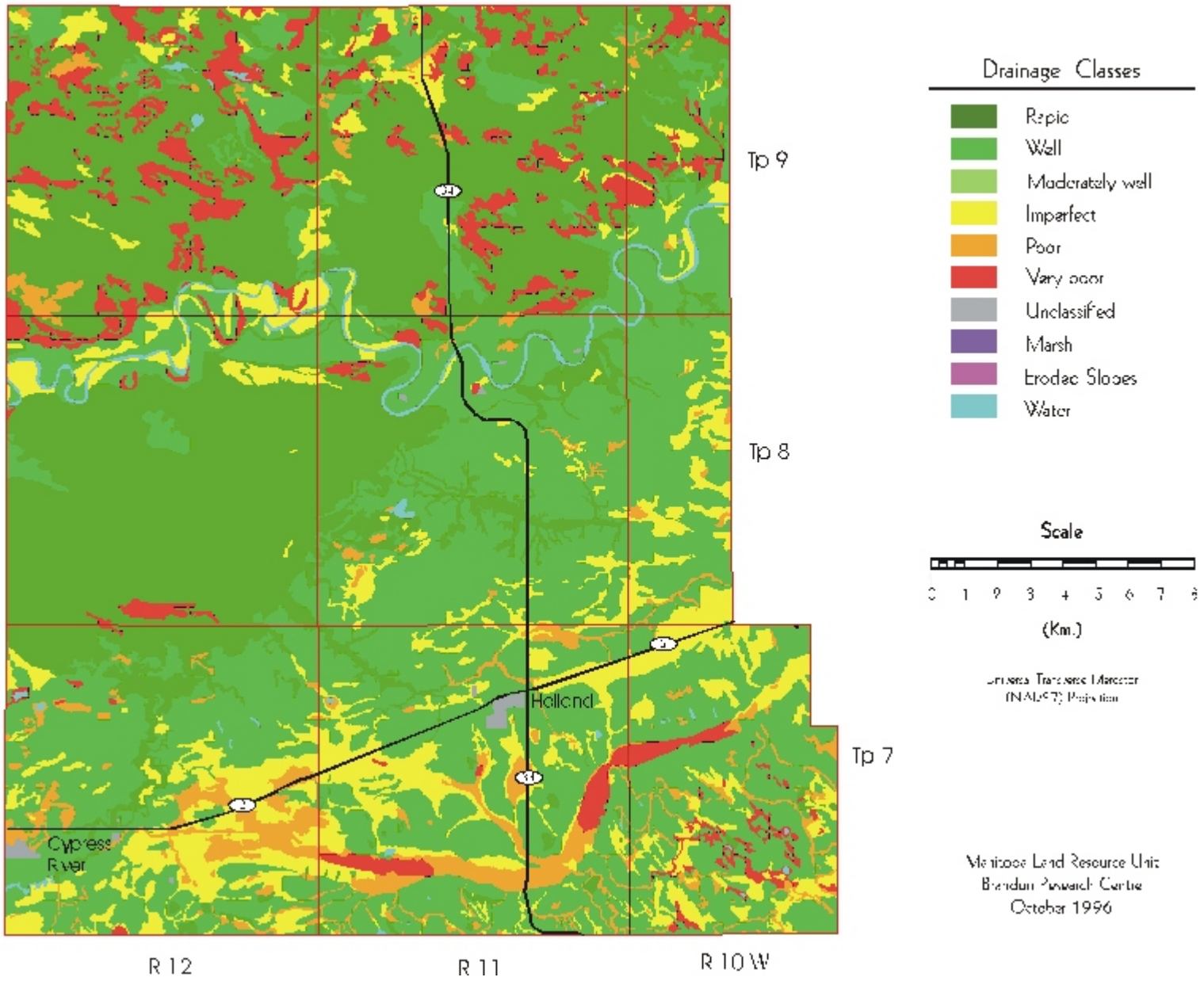
Table 3. Drainage Classes[1]

Drainage Class	Area (ha)	Percent of RM
Very Poor	4586	6.5
Poor	3327	4.7
Imperfect	8476	11.9
Moderately Well	0	0.0
Well	28680	40.4
Rapid	25068	35.3
Eroded Slopes	0	0.0
Marsh	0	0.0
Unclassified	160	0.2
Water	648	0.9
Total	70945	100.0

[1] Area has been assigned to the dominant drainage class for each soil polygon.

Rural Municipality of Victoria

Soil Drainage Map



Soil Salinity Map.

A saline soil contains soluble salts in such quantities that they interfere with the growth of most crops. Soil salinity is determined by the electrical conductivity of the saturation extract in decisiemens per metre (dS/m). Approximate limits of salinity classes are:

non-saline	0 to 4 dS/m
slightly saline	4 to 8 dS/m
moderately saline	8 to 16 dS/m
strongly saline	> 16 dS/m

The salinity classification of each individual soil polygon was determined by the most severe salinity classification present within that polygon.

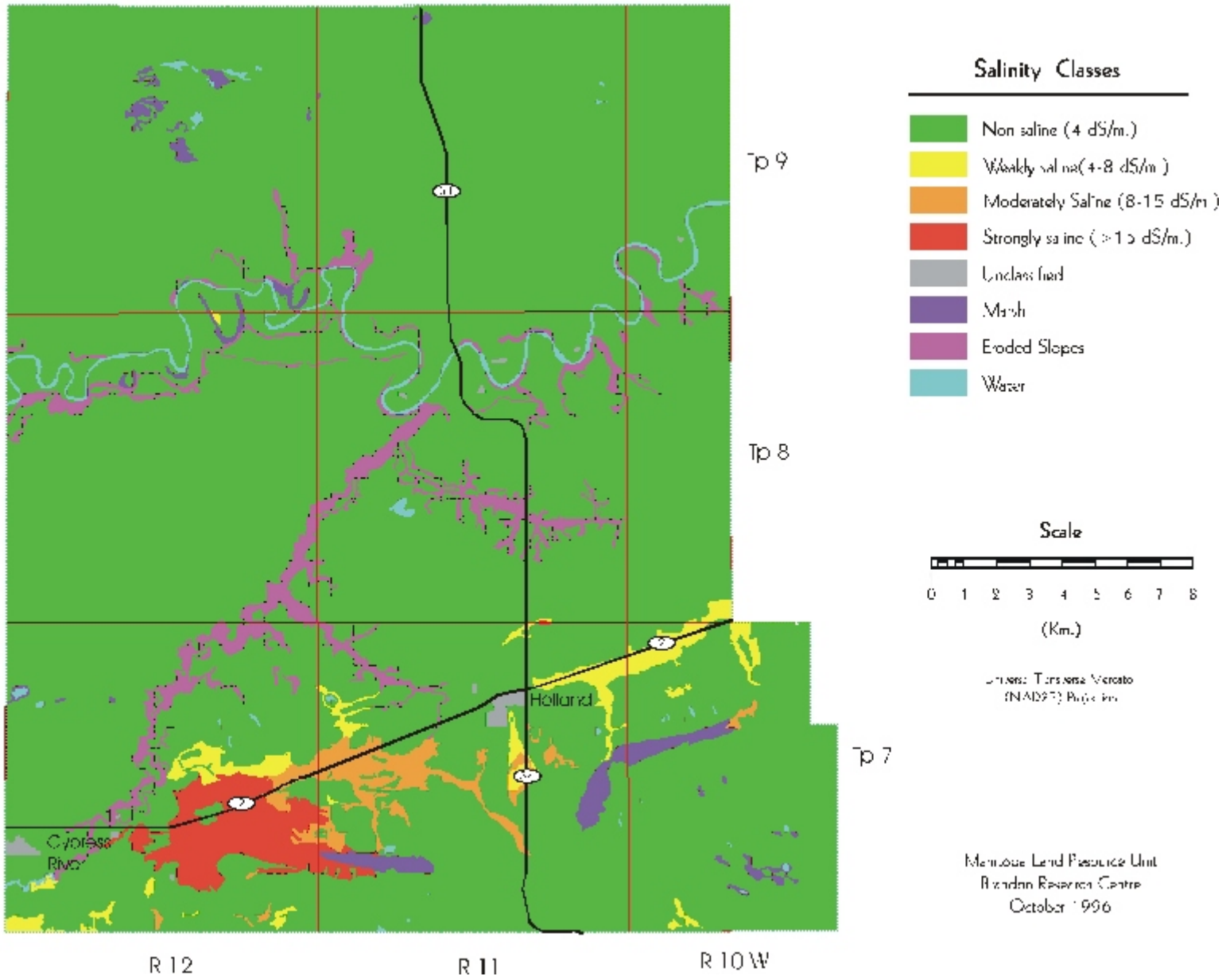
Table 4. Salinity Classes[1]

Salinity Class	Area (ha)	Percent of RM
Non Saline	62779	88.5
Weakly Saline	1240	1.7
Moderately Saline	986	1.4
Strongly Saline	1658	2.3
Eroded Slopes	2608	3.7
Marsh	867	1.2
Unclassified	160	0.2
Water	648	0.9
Total	70945	100.0

[1] Area has been assigned to the dominant salinity class for each soil polygon.

Rural Municipality of Victoria

Soil Salinity 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 that have **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.

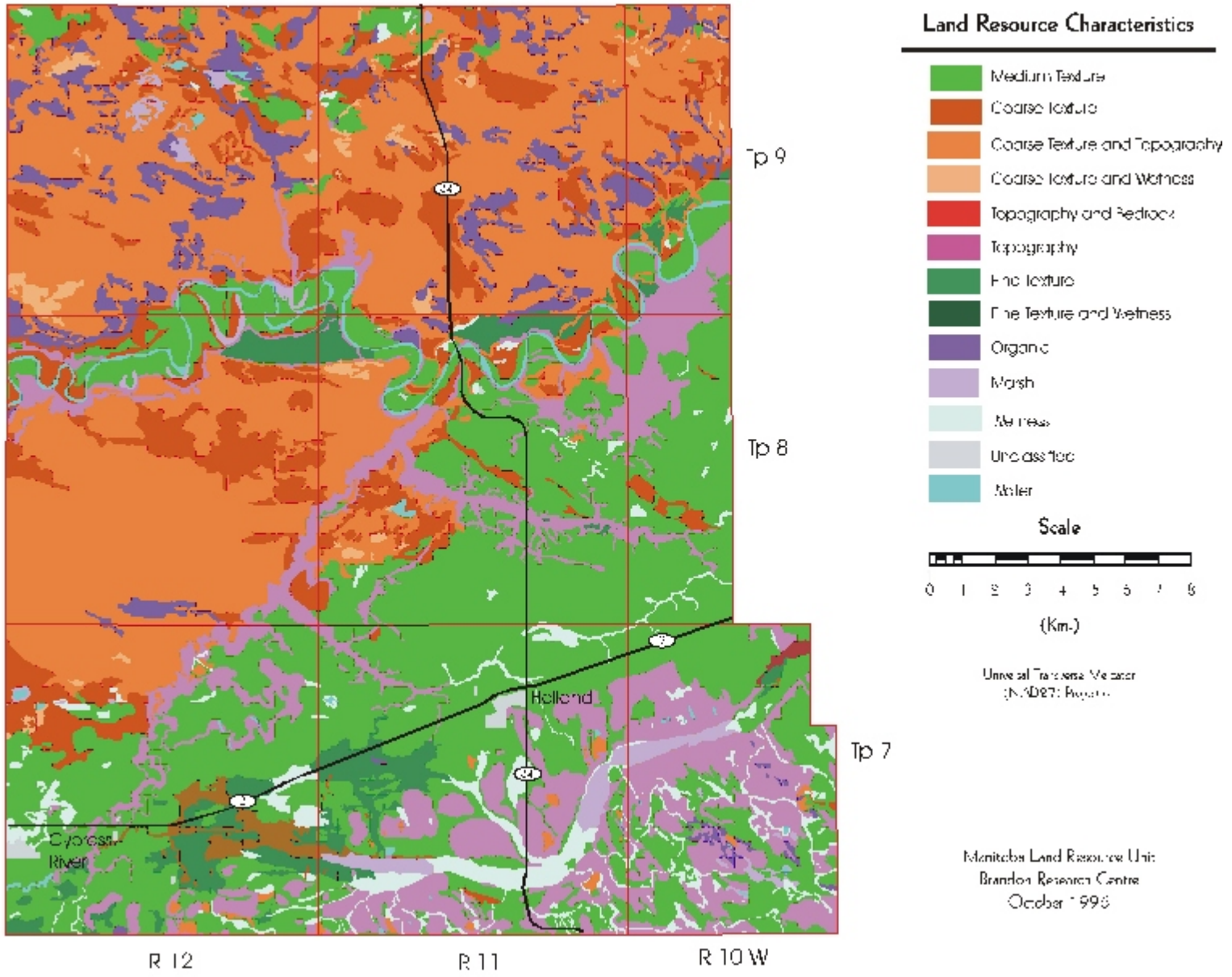
R = Bedrock - soil landscapes that have shallow depth to bedrock (< 50 cm) and/or exposed bedrock which may prevent the use of some or all tillage practices as well as the range of potential crop. They require special cropping and management practices to sustain agricultural production.

Table 5. Management Considerations[1]

Land Resource Characteristics	Area (ha)	Percent of RM
Fine Texture	2277	3.2
Fine Texture and Wetness	525	0.7
Fine Texture and Topography	58	0.1
Fine Texture, Wetness and Topography	0	0.0
Medium Texture	21629	30.5
Coarse Texture	6466	9.1
Coarse Texture and Wetness	653	0.9
Coarse Texture and Topography	22030	31.1
Coarse Texture, Wetness and Topography	0	0.0
Topography	9784	13.8
Topography and Bedrock	0	0.0
Wetness	2413	3.4
Wetness and Topography	0	0.0
Bedrock	0	0.0
Organic	3435	4.8
Marsh	867	1.2
Unclassified	160	0.2
Water	648	0.9
Total	70945	100.0

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

Rural Municipality of Victoria 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 permability (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]

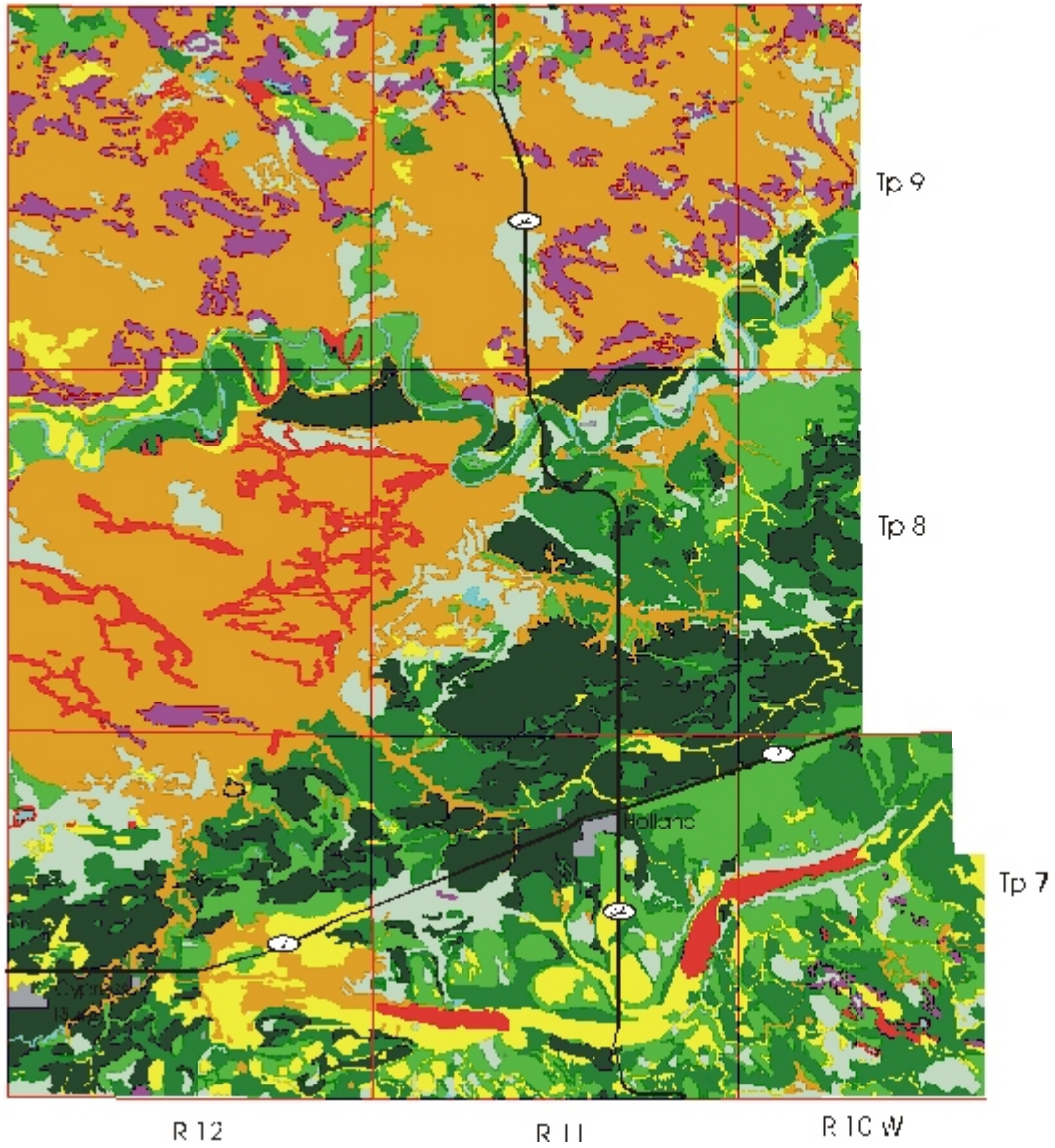
Class Subclass	Area (ha)	Percent of RM
1	**8047**	**11.3**
2	**10859**	**15.3**
2E	7	0.0
2I	528	0.7
2M	1106	1.6
2MT	997	1.4
2T	3701	5.2
2TE	11	0.0
2TI	503	0.7
2TW	877	1.2
2W	2920	4.1
2X	208	0.3
3	**8359**	**11.8**
3	43	0.1
3I	836	1.2
3M	2000	2.8
3MT	729	1.0
3N	995	1.4
3T	3374	4.8
3TE	321	0.5
3TI	42	0.1
3W	21	0.0

Table 6 (cont). Agricultural Capability[1]

Class Subclass	Area (ha)	Percent of RM
4	**7219**	**10.2**
4D	130	0.2
4DN	622	0.9
4EM	4	0.0
4ET	14	0.0
4M	4343	6.1
4ME	198	0.3
4MT	296	0.4
4N	69	0.1
4T	1511	2.1
4TE	35	0.0
5	**5431**	**7.6**
5EM	17	0.0
5ET	10	0.0
5M	615	0.9
5ME	22	0.0
5MT	33	0.0
5N	784	1.1
5T	1250	1.8
5TE	35	0.0
5W	2520	3.5
5WI	145	0.2
6	**24706**	**34.8**
6EM	29	0.0
6ET	10	0.0
6M	20737	29.2
6MT	268	0.4
6NW	585	0.8
6T	2743	3.9
6W	311	0.4
6WI	22	0.0
7	**2147**	**3.0**
7T	1284	1.8
7W	863	1.2
Unclassified	**160**	**0.2**
Water	**649**	**0.9**
Organic	**3442**	**4.8**
Total	**71019**	**100.0**

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

Rural Municipality of Victoria Agriculture Capability Map



Canada Land Inventory Classes

- Class 1
- Class 2
- Class 3
- Class 4
- Class 5
- Class 6
- Class 7
- Organic
- Unclassified
- Water

Scale

0 1 2 3 4 5 6 7 8

(Km.)

Universal Transverse Mercator
(NAD27) Projection

Land Resource Unit
Winnipeg Manitoba
June 2003

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 limitation 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.

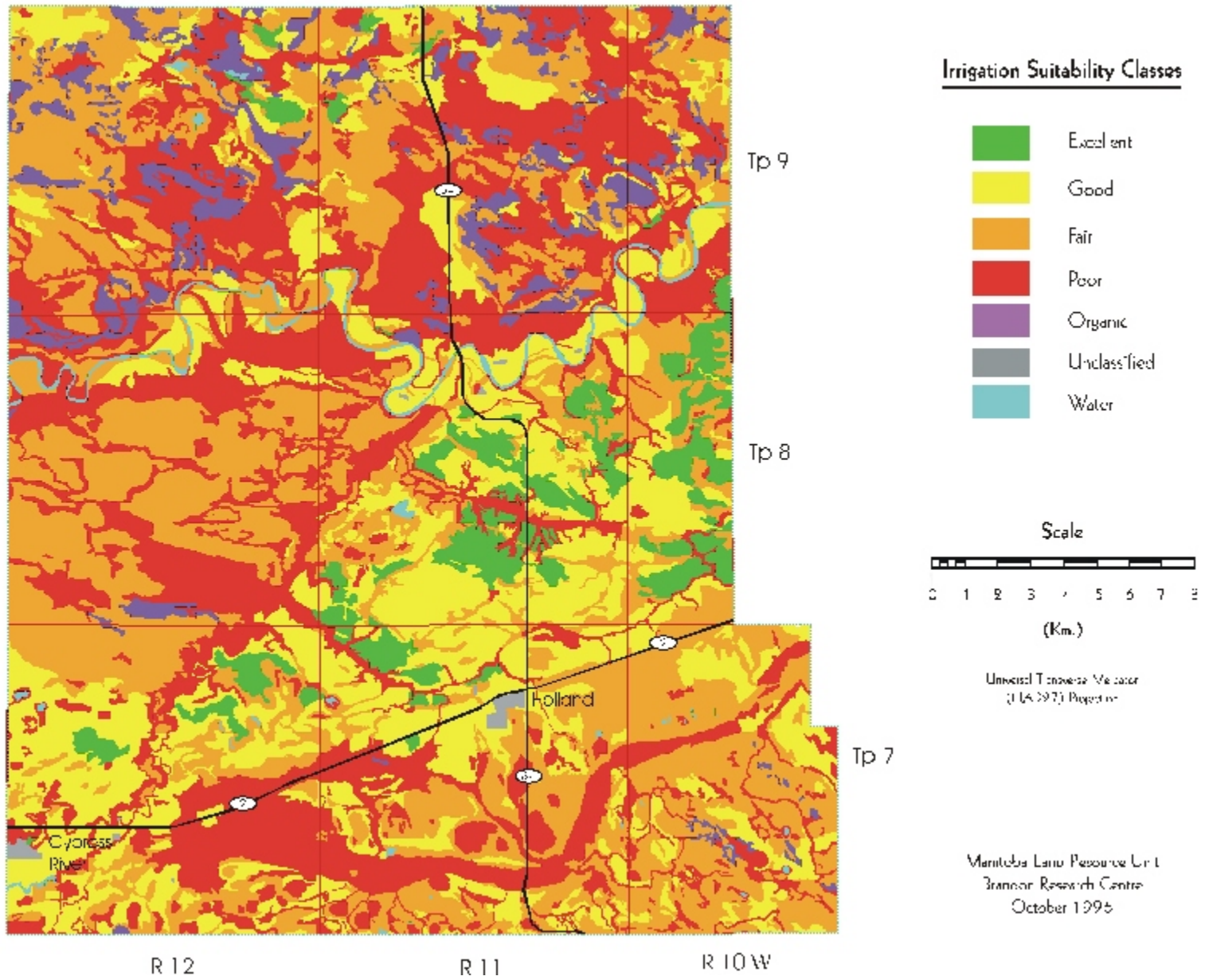
Table 7. Irrigation Suitability[1]

Class	Area (ha)	Percent of RM
Excellent	3561	5.0
Good	16919	23.8
Fair	24953	35.2
Poor	21269	30.0
Organic	3435	4.8
Unclassified	160	0.2
Water	648	0.9
Total	70945	100.0

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

Rural Municipality of Victoria

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.

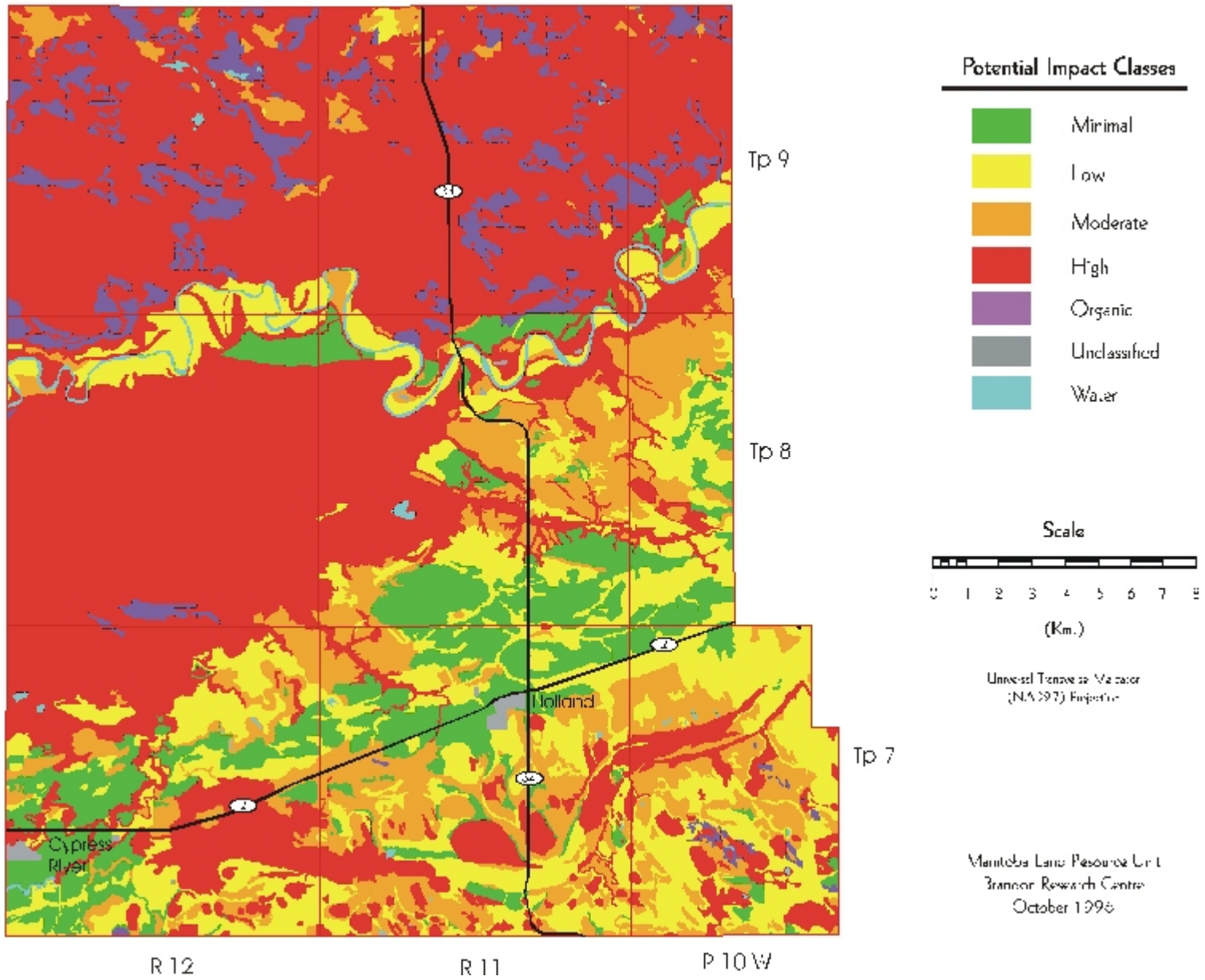
This generalized interpretive map is based on the dominant soil series and slope class for each soil polygon. The nature of the subclass limitations, and the classification of subdominant components is not shown at this generalized map scale.

Table 8. Potential Environmental Impact Under Irrigation[1]

Class	Area (ha)	Percent of RM
Minimal	7275	10.3
Low	12686	17.9
Moderate	9848	13.9
High	36892	52.0
Organic	3435	4.8
Unclassified	160	0.2
Water	648	0.9
Total	70945	100.0

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

Rural Municipality of Victoria **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

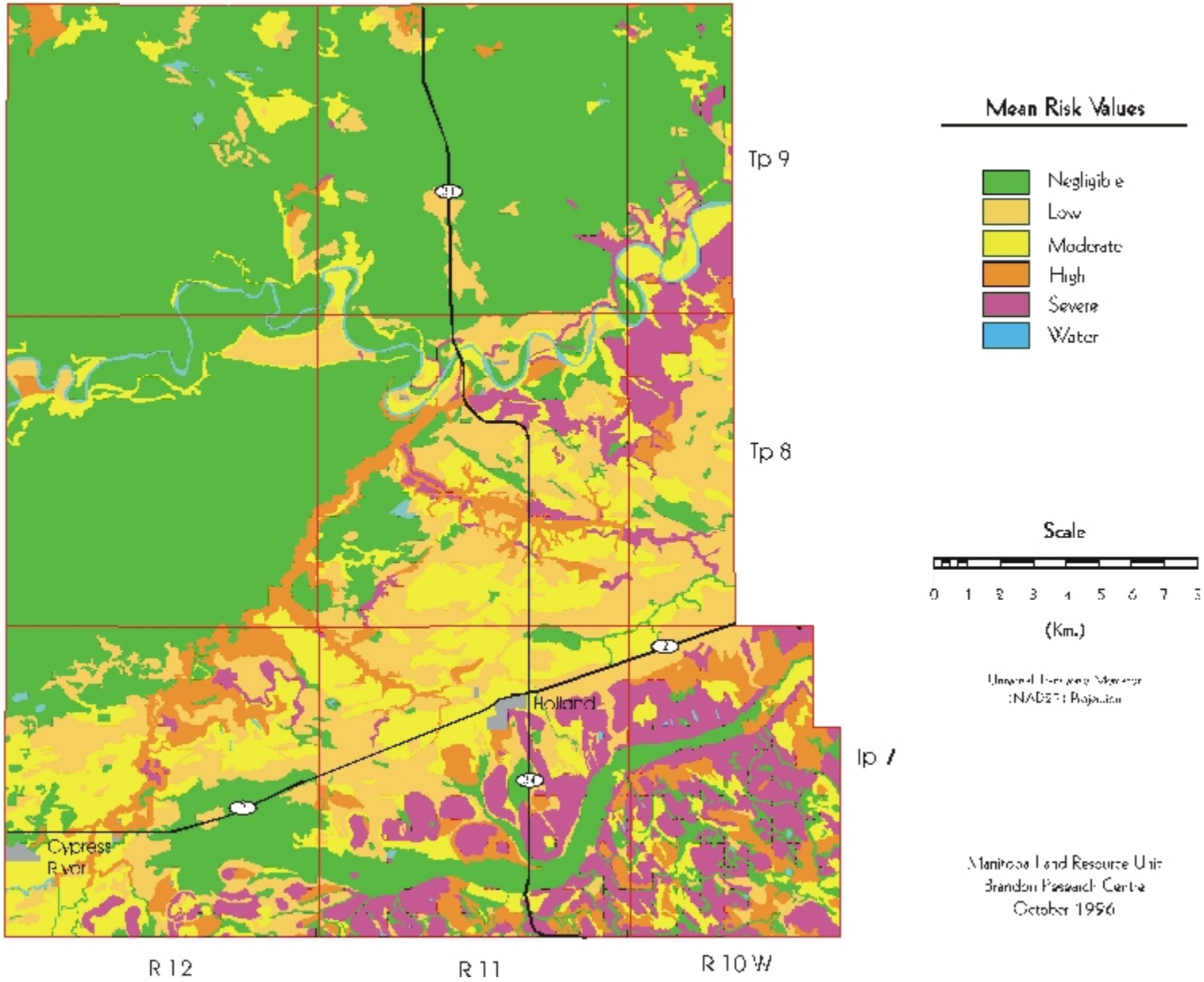
Cropping and residue management practices will significantly reduce this risk depending on crop rotation program, soil type, and landscape features.

Table 9. Water Erosion Risk[1]

Class	Area (ha)	Percent of RM
Negligible	**36011**	**50.8**
Low	**11172**	**15.7**
Moderate	**10463**	**14.7**
High	**5155**	**7.3**
Severe	**7336**	**10.3**
Unclassified	**160**	**0.2**
Water	**648**	**0.9**
Total	**70945**	**100.0**

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

Rural Municipality of Victoria 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.

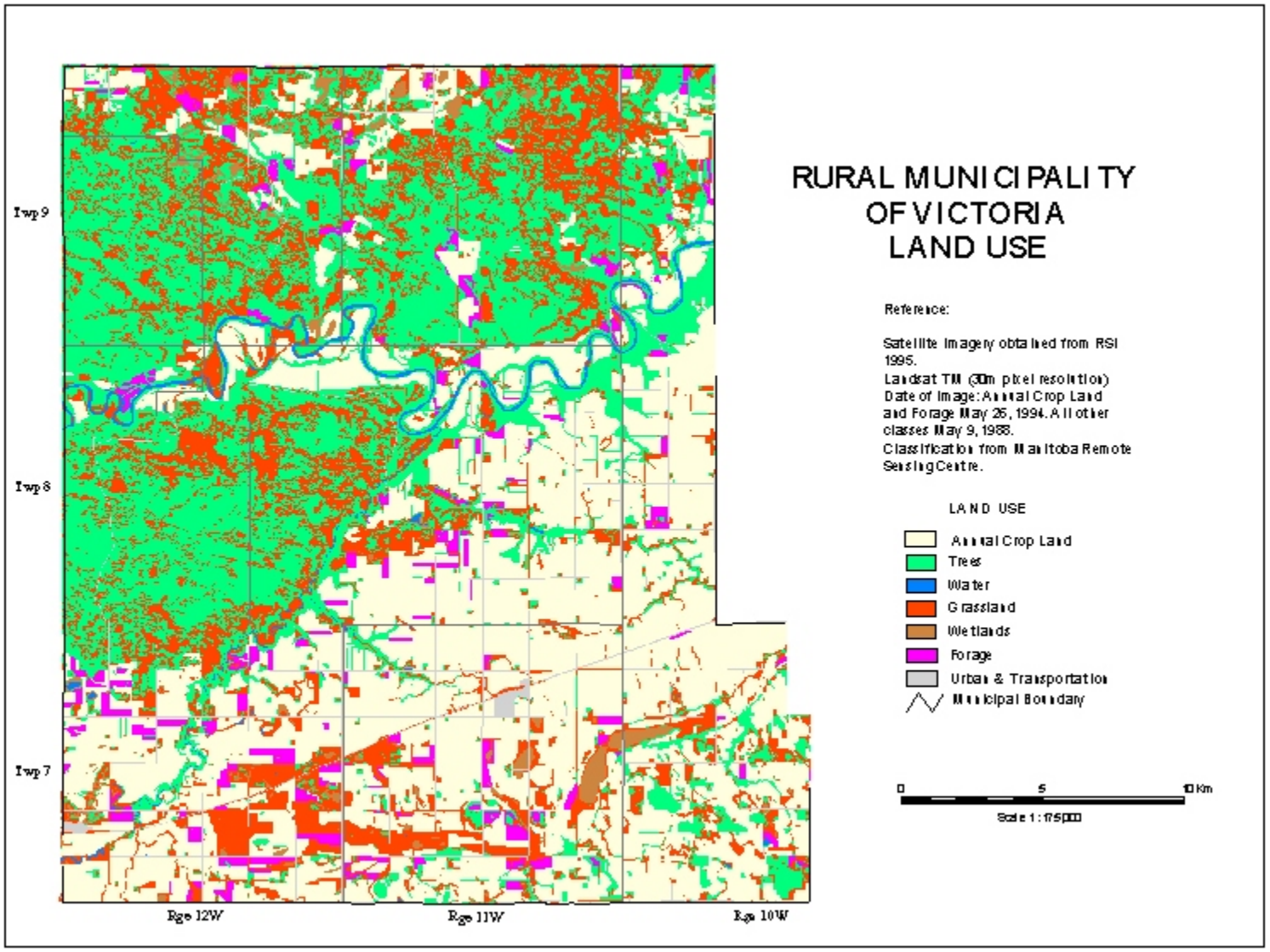
Water - open water - lakes, rivers streams, ponds, and lagoons.

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

Table 10. Land Use[1]

Class	Area (ha)	Percent of RM
Annual Crop Land	27460	38.4
Forage	2251	3.2
Grasslands	15043	21.1
Trees	23387	32.7
Wetlands	1083	1.5
Water	671	0.9
Urban and Transportation	1565	2.2
Total	71460	100.0

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


Twp 9
Twp 8
Twp 7
Rge 12W
Rge 11W
Rge 10W
RURAL MUNICIPALITY
OF VICTORIA
LAND USE
Reference:
Satellite Imagery obtained from RSI 1995.
Landsat TM (30m pixel resolution)
Date of Image: Annual Crop Land and Forage May 25, 1994. All other classes May 9, 1988.
Classification from Manitoba Remote Sensing Centre.
LAND USE
Annual Crop Land
Trees
Water
Grassland
Wetlands
Forage
Urban & Transportation
Municipal Boundary
0
5
10 Km
Scale 1:175000

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