

## MB Ag /Roseau River IWMP/ July 2016

### A. MB Ag response to questions; (from the Agri-Resources Branch)

1. What are the major issues facing agriculture in the watershed? What recommendations can you provide to address these issues?

- Loss of agricultural land to conservation organizations
- Abandonment of marginal lands
- Current ad hoc drainage of fields; wetlands and land cover reduction has reduced the capacity of the land to handle extremes of weather.
- Poor road conditions impacting agriculture
- Lack of integrated Provincial Surface Water Management Plan with R.M infrastructure.
- Ag policy has encouraged land use practices favoring production of marginal lands (i.e.- MASC)
- Lack of maintenance on existing municipal and provincial drains.
- Recommendations- Watershed management extension by CDs and Province; enforcement of Regulations, drain maintenance; enhanced EG & S funding.
- Ensure that CAs allow grazing. Especially important to contain aspen encroachment on native lands.

2. To what extent has land use and land cover changed in the watershed over the past 30 years? What are the driving factors behind these changes?

- Aspen encroachment has reduced grazing capacity. Possibly the BSE crisis drove down the herd size in early 2000's which reduced grazing control of aspen.
- Nature Conservancy is becoming a significant landowner in the area, with different priorities; not managing land for agricultural purposes
- In the last 30 years the farmers have improved the land to include perennial forage and pasture where the land is best suited. A lot of the marginal land is Crown Land where improvements are fence lines and some bush removal.
- The trend as in all areas is the reduction in the number of farmers and the remaining farms getting bigger. The trend also is to improve production of existing owned acres.

3. What types of soils are more prevalent in the watershed? Are there certain land use activities that should be restricted from occurring in specific regions of the watershed or on certain types of land/soil?

- The watershed has a range of soils, reflecting where Glacial Lake Agassiz was located. In the western side, where the water was deeper, more clay sediments now form soils having Agricultural Capability ratings of Class 1, 2&3. Moving west to east, soils tend to have more sands and gravels, although they are poorly drained, having a high water table, with the occurrence of organic soils increasing especially in the RM of Piney.
  - Soils suited to pasture and forage production increase from west to east, and make up most of the land in the RM of Stuartburn.
  - Wetland drainage should be restricted.
4. Are there specific BMPs that could be implemented to reduce nutrient loading and where should these activities be targeted?
- Soil testing; however, most of the production issues relate to low fertility on pastures
  - Grazing management plan as a requirement for high risk lands, including Riparian areas.
  - BMP: to fence off livestock access to provincial and municipal drains so that managed grazing and over wintering will not contribute to nutrient runoff.
  - Riparian area maintenance and enhancement
  - Perennial cover of sensitive lands
  - Wetland restoration/creation, and engineered water retention
  - Projects need to be targeted along waterways, where landowners are willing, and where analysis indicates the impact of storage would be appropriate for cost.
5. Are there specific BMPs that could be implemented to help retain water during periods of drought or manage excess water during wet periods?
- Water retention structures
  - Wetland restoration/creation
  - Soil management practices which increase organic matter
  - Cover crops
6. What adaptation tools or activities can residents of the watershed adopt to prepare for climate change and variability?
- Surface water retention
  - Perennial crops
  - Managed livestock grazing practices
  - wetland preservation
  - Land cover preservation.
  - Land use policies which prevent rural residential development and land fragmentation
  - Agricultural Land use polices which protect viable lands (Class 4,5&6) from inappropriate development
  - Adaptation planning at the watershed scale
  - Prairie Climate Centre is a resource which can be used

## B. Agricultural Background

**Canadian Land Classification for Soils/ Capability for Agriculture:** This evaluation utilizes the 7 class Canada Land Inventory system (CLI, 1965). Classes 1 to 3 represent the Prime agricultural land suited to annual crop production, class 4 land is marginal for sustained cultivation, class 5 land is can support 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 agriculture. Organic soils are not suited to the growing of crops, in the undrained state.

### Percent Agricultural Soil Capability for Municipalities within the Watershed (from the Soils and Terrain Bulletins)

CLI Class	Montcalm	Franklin-Emerson	Stuartburn	Piney
1	3.3	3.5	-	-
2	76.6	39.7	7.4	3.9
3	18.2	45.8	15.0	7.0
4	-	0.1	21.1	15.1
5	0.4	9.0	30.8	25.0
6	-	1.3	16.1	6.8
7	-	0.1	0	0
Water	0.8	0.5	0.3	1.1
Organic	-	0	9.3	41.0

**RM of Montcalm:** The municipality is located entirely in the Red River Valley subsection of the Manitoba Plain. This area is very flat with slopes of less than 2%. Surface drainage is very slow, with man-made drainage supporting agricultural production. Soils are primarily clay lacustrine sediments from Glacial lake Agassiz. The flat topography and high clay content cause soils to be imperfect to poorly drained. Prime agricultural soils make up 98.1 % of the municipality. To keep these soils in production, there is a well established system of municipal and provincial drains.

**RM of Franklin-Emerson:** The municipality is located in the Manitoba Plain and consists of two distinct landscapes; the level to very gently sloping Red River Valley in the west, and the gently sloping, slightly ridged terrain of the Southeastern plain to the east. Local relief is generally less than 3 meters, and slopes are less than 2%. Surface drainage is slow. Soil material deposited by Glacial Lake Agassiz is primarily clayey lacustrine sediments underlain in some areas by glacial till. In the Southeast plain, thin sandy to coarse loamy and loamy lacustrine sediments overlay loam textured glacial tills. Most of the soils are highly productive Prime Class 1, 2, & 3 (89% of RM). The flat topography, high clay content and high water table result in two-thirds of the area being imperfectly drained, and the remainder as poorly drained. Land use is primarily agricultural, with drainage being important for crop production purposes.

**Stuartburn;** The municipality is located mainly in the Southeastern Plain section of the Manitoba Plain, with the major part of the area consisting of gently sloped slightly ridged terrain, with local relief of less

than 3 meters and slopes less than 2%. Local areas in the east have slightly higher relief and slopes. Generally, surface drainage is slow. Soil material consists primarily of thin sandy to coarse loamy textured lacustrine sediments underlain by stony, extremely calcareous loam textured glacial till. Areas of waterworked extremely calcareous stony loam till and local areas of gravelly sand outwash are common. Large areas of fen and forest peat deposits are found on the eastern and northern parts. Flat topography and high water tables result in 43% of the area being imperfectly drained, 25% poorly drained, and 27% very poorly drained. Soils are rated dominantly Viable Class 4 (21%) and Class 5 (31%). Organic soils cover 9% and are not suited to agricultural production. Land use is primarily agricultural for grazing purposes.

**Piney:** Physiographically, the central portion is dominated by the Bedford Hills, which is a gently sloping to hummocky area with local relief under 3 meters and slopes of 2-5%. The Whitemouth Lake lowlands to the east and the Southeastern plains to the west are level to gently sloping. Surface gradients are low, resulting in extensive areas of poorly drained soils. Soils consists of sandy and gravelly outwash and beach deposits, local areas of stony calcareous loam textured glacial till overlain in parts by sandy to coarse-loamy textured lacustrine deposits and extensive areas of shallow to deep organic deposits. Clay lacustrine deposits are located in the Whitemouth Lake Lowlands. Slightly more than 50% of the area is affected by poor to very poor drainage. Imperfectly drained areas occupy 19%. 30% of the land drainage is well to rapid (Bedford Hills area). Mineral soils are rated as being Class 3 (7%) and 5 (25%). Organic soils cover 41% and are not suited to agricultural use, in the undrained state. The majority of the soils are not suited to cultivated agriculture, so that grazing of livestock and forestry are the dominant resource uses.

### Canada Census information

**Number of farmers;** Just as everywhere else across Canada, the number of farmers reporting has been dropping, as the age of farmers increases, retirements occur, and land gets consolidated into larger operations. This is significant in the RMs of Montcalm and Piney, in particular. In some areas there may be a number of small hobby farms, but these are not considered as farms, but rural residential.

#### Number of Farmers Reporting: Canada Census Information

Municipality	1991	1996	2001	2006	2011
Montcalm	168	148	116	97	88
Franklin-Emerson	255	249	219	191	169
Stuartburn	209	225	208	191	179
Piney	146	126	101	92	50

**Acres of Agricultural Land:** Agricultural land is located on CLI Classes 1 through 6. Agricultural Capability Classes 1, 2 & 3 are suited to annual crop production, whereas Classes 4, 5 and 6 are capable of supporting perennial crops. It should be noted that the amount of annual cropland is often related to the amount of agricultural drainage.

A significant decrease in agricultural land based on census information seems to have occurred in the Municipality of Piney. However, MB Ag staff **does not agree** with this, reporting that the agricultural land has remained in production, and often has been improved in the process, although the number of farms has decreased. There have been some reductions in farmland reported across the province due to residential development, or building of roads and drainage, but these numbers need to be examined closely for this area, as there is some uncertainty related to what the census has reported.

In Development Plan designations, agricultural land is located within areas zoned for rural or agricultural purposes. These areas have not seen a large impact from residential developments as this area is not close to any major centre, and agriculturally designated areas has remained stable.

**Acres of Farmland reported by Canada Census**

Municipality	1991	1996	2001	2006	2011
Montcalm	138,569	138,644	117,886	119,021	111,040
Franklin-Emerson	174,577	176,603	184,751	181,599	182,809
Stuartburn	123,348	137,616	140,169	156,048	149,974
Piney	74,914	64,406	67,362	65,099	38,842

**Acres of annual cropland**

Municipality	1991	1996	2001	2006	2011
Montcalm	134,406	128,942	111,646	111,924	98,478
Franklin-Emerson	124,512	120,530	122,663	126,589	131,759
Stuartburn	33,393	36,446	41,686	43,065	46,174
Piney	31,543	27,207	30,379	27,998	18,968

**Acres of Native Pasture:** Native pasture lands are usually found on Class 5 and 6 soils, as more productive soils have been cultivated. The amount of native pasture tends to be relatively stable within a municipality unless there is strong pressure to develop the land for residential or recreational purposes. (Note; here again, Canada Census information for Piney appears to be inaccurate, with significant declines in native pasture reported)

Native lands are recognized as having the greatest potential to deliver environmental goods and services, especially related to biodiversity, and mitigation to climate change impacts. The area in this watershed is noted as being Tall Grass Prairie, and has been highly impacted by

agricultural development. Community Pastures (now operated by the Association of Manitoba Community Pastures) and Crown land are important for preserving these areas. The RM of Stuartburn includes a community pasture and significant Crown land. This municipality has also been targeted by the Nature Conservancy of Canada for conservation purposes, effectively transferring large blocks of land from individual cattle producers to environmental management, with an emphasis away from cattle production.

Studies on the federal community pastures indicated that environmental benefits form a significant component of the total benefits provided. In one study, carbon sequestration accounted for 37.4%, Wildlife and waterfowl 6.9%, soil conservation 3.8% and biodiversity 0.4%. (Kulshreshtha et al; 2008);

Benefits related to water retention, and climate change adaptation strategies have not been fully evaluated. The range of opportunity for environmental benefits on native and improved pastures is much greater than on cultivated lands. The conservation district realizes this, however, and is working to target water retention appropriately.

**Acres of Native Pasture reported: Canada Census**

<b>Municipality</b>	<b>1991</b>	<b>1996</b>	<b>2001</b>	<b>2006</b>	<b>2011</b>
<b>Montcalm</b>	<b>938</b>	<b>3477</b>	<b>804</b>	<b>2986</b>	<b>3579</b>
<b>Franklin-Emerson</b>	<b>31,940</b>	<b>34,218</b>	<b>34,060</b>	<b>36,167</b>	<b>34,568</b>
<b>Stuartburn</b>	<b>67,808</b>	<b>66,183</b>	<b>69,019</b>	<b>73,351</b>	<b>72,920</b>
<b>Piney</b>	<b>19,480</b>	<b>12,328</b>	<b>14,624</b>	<b>10,387</b>	<b>4,595</b>

**Acres of Improved Pasture reported: Canada Census**

<b>Municipality</b>	<b>1991</b>	<b>1996</b>	<b>2001</b>	<b>2006</b>	<b>2011</b>
<b>Montcalm</b>	<b>640</b>	<b>738</b>	<b>362</b>	<b>374</b>	<b>454</b>
<b>Franklin-Emerson</b>	<b>5,512</b>	<b>6,152</b>	<b>8,110</b>	<b>3,443</b>	<b>3,816</b>
<b>Stuartburn</b>	<b>4,717</b>	<b>6,675</b>	<b>7,321</b>	<b>3,242</b>	<b>6,699</b>
<b>Piney</b>	<b>3,430</b>	<b>3,446</b>	<b>3,672</b>	<b>2,392</b>	<b>1,835</b>

**Livestock:** The cattle industry accounts for the largest segment of livestock, and the number one management option for the viable Class 4, 5, and 6 soils. Negative impacts to the cattle industry, such as BSE, impact significantly on what ranchers can invest back into the land, such as fencing, and watering systems to rotate cattle appropriately.

Hog numbers have fluctuated with markets and new regulations. New hog operations will likely not be significant in the near future, and not allowed in the red River Valley as regulations will require enough land for spreading of manure, based on phosphorus content, which is approximately double of the land requirement for the past nitrogen based application rates.

**Number of cattle and calves:**

**Total number of cows and calves**

Municipality	1991	1996	2001	2006	2011
Montcalm	1,457	1,572	1,484	819	897
Franklin-Emerson	13,143	15,437	13,445	14,668	15,770
Stuartburn	12,560	17,074	15,013	16,876	16,750
Piney	4,279	4,381	4,071	6,622	3,097

**Number of Hogs:**

**Total number of Hogs**

Municipality	1991	1996	2001	2006	2011
Montcalm	16	15,634	14,578	13,236	x
Franklin-Emerson	13	11,895	26,411	12,689	16,819
Stuartburn	26	14,071	12,481	19,082	19,743
Piney	15	x	5890	x	x

X: denotes suppressed data

**Farmland Values:** Values across the watershed have seen a steady increase over the period of 1991-2011. Farmland values have risen across the province as the price of farmland is closely associated with the price of commodities. However in parts of this watershed, the value of farmland is much lower than other parts of the province, reflecting the predominance of pasture and marginal lands.

**Average Farmland Value \$ per acre**

Municipality	1996	2001	2006	2011
Montcalm	803	913	955	1876
Franklin-Emerson	494	633	712	1176
Stuartburn	268	267	344	617
Piney	305	365	504	686

### Land use from Soils Bulletin descriptions (Based on 1995 Satellite Imagery)

**Montcalm:** Most of the municipality is under annual crop production (88.1%). Forages account for an additional 0.2% and grasslands 3.5%. Trees account for 2.7% (which is less than the area covered by urban and transportation uses (3.9%). Wetlands and water account for 2%, combined.

**Franklin-Emerson:** The dominant land use in the municipality is agriculture, with 57.5 % of the land being used for annual crops, 21.1% for grasslands, and 5.3% for forages. Most of the cultivated production is located on the Red River Valley in the western side. Grasslands (21.1%) and treed areas (11.7 %) are found mainly in the eastern portion, providing grazing capacity and wildlife habitat.

**Stuartburn:** Grasslands account for 38.5 % of the area, which is similar to tree cover (38.7%). Forages are 3.6%. Annual cropland is only 7.6% of the landcover. Wetlands and water account for 10.2%.

**Piney:** The municipality is sparsely populated, with much of it preserved as Provincial Forests of Sandilands, Cat Hills, and Wampum. Trees cover over half of the area (54.2%) wetlands are 29.3%, while annual crop land only covers about 5.7%, forages 1.4%, and grasslands 7.4%.

### Land Use Percentages (Soil Bulletin Information, 1995)

Class	Montcalm	Franklin-Emerson	Stuartburn	Piney
Annual Crop Land	88.1	57.5	7.3	5.7
Forage	0.2	5.3	3.6	1.4
Grassland	3.5	21.1	38.5	7.4
Trees	2.7	11.7	38.7	54.2
Urban/transportation	0.1	0.4	9.8	1.3
Water	1.5	0.7	0.4	0.8
Wetlands	3.9	3.4	1.7	29.3

**Note: This land cover information needs to be updated from 1995.**