Submission Received July 8, 2016
(Manitoba Indigenous and Municipal Relations)

SITE ASSESSMENT

For Large Livestock Operation Proposals (300 Animal Units or more)

1.0 Purpose

The set up, or expansion, of a livestock operation that has 300 Animal Units or more is subject to **Part 7 of *The Planning Act***. This includes consideration as a conditional use by the municipal council or planning district board. It also includes a review by the Technical Review Committee (TRC) appointed by the Minister of Local Government. The **Technical Review Committee Regulation** requires a site assessment to help the committee do its review and allow people who will be affected by the livestock operation to comment on the proposal.

2.0 Assistance

For assistance in completing the Site Assessment Form please refer to the following.

For links to resources, click on the **highlighted underlined items.**

For additional information on a particular item, please click on the (?) **"Learn More"** icon.

For definitions, click on the **Glossary of Terms**.

For help with mapping, contact your **Community and Regional Planning Regional Office**.

For additional help, contact the **Technical Review Coordination Unit**.

3.0 Description of Livestock Operation

Operation legal name, if other than the owner's name:

Delta II

Operation location (project site): North 1/2 of SE 3-14-3 W.P.M.

Rural Municipality (RM) of Woodlands

Legal description: section, township, range or river lot(s)
North 1/2 of SE 3-14-3 W.P.M.

Manitoba Premises Identification Number: _____

Municipal tax roll number(s): 125900

Show the location of the operation (project site) on a location map. (See **Location Map** for example).

☒ Location Map attached

R.M. OF WOODLANDS

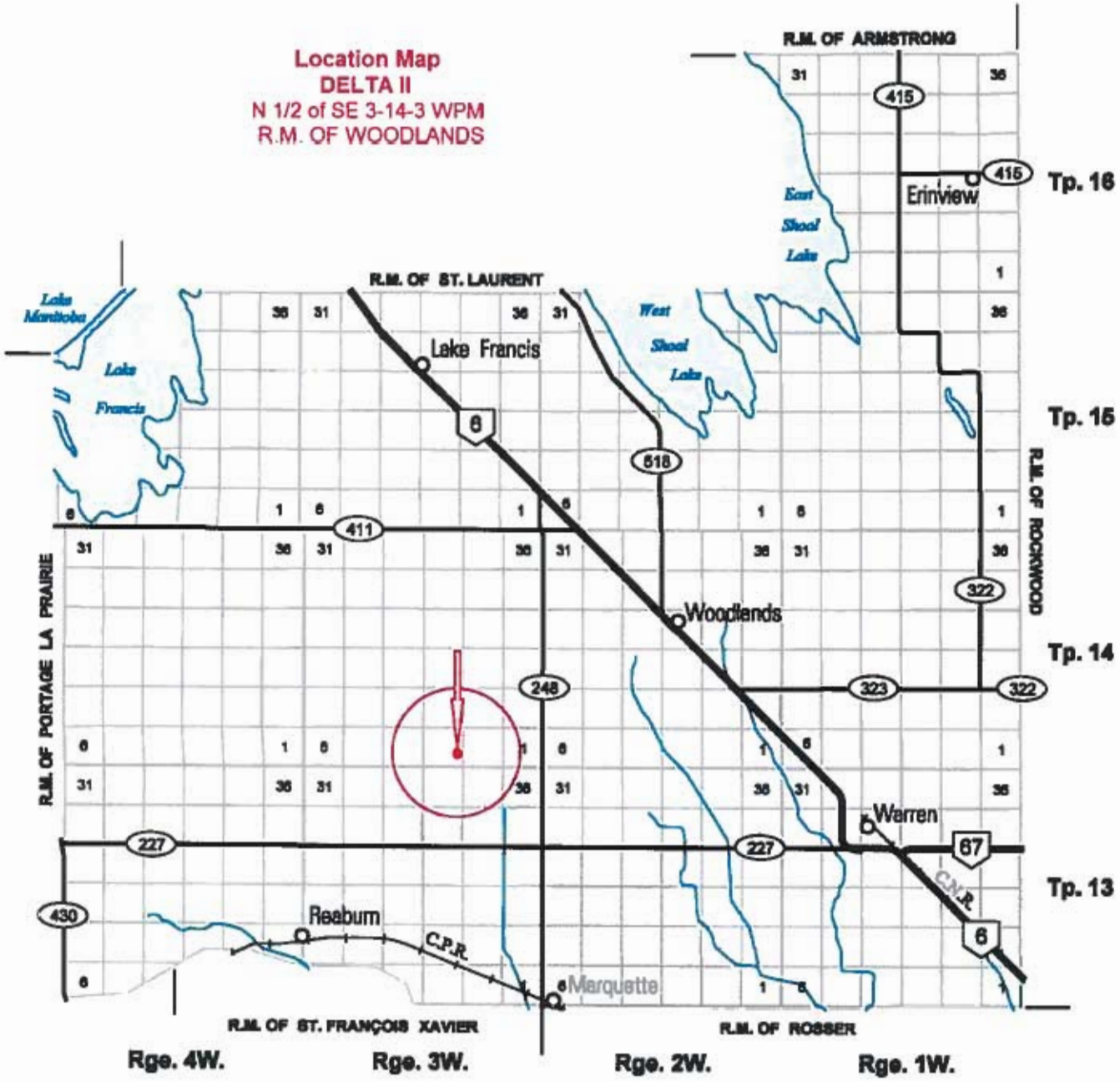
0 5
SCALE IN KILOMETRES

PROVINCE OF MANITOBA
INFRASTRUCTURE AND TRANSPORTATION
HIGHWAY PLANNING AND DESIGN BRANCH
GEOGRAPHIC & RECORDS MANAGEMENT SECTION
WINNIPEG
JANUARY, 2015

LEGEND

PROVINCIAL TRUNK HIGHWAYS 6
PROVINCIAL ROADS 518
ACCESS ROADS .....
RAILWAYS .....

Location Map
DELTA II
N 1/2 of SE 3-14-3 WPM
R.M. OF WOODLANDS



SHEET 1 OF 1

4.0 Nature of Project

☒ **New operation**

☐ **Expansion of existing operation**

State if any existing buildings will be replaced or demolished. If existing buildings will be reused or expanded, state how they will be reused or expanded.

_____

_____

_____

5.0 Proposed Type and Size of Operation
State the proposed type and size of the operation. (See **Animal Units Calculation Table**.)

Type of operation (Column B from Animal Units Calculation Table)	**Existing number of animals** (Column C from Animal Units Calculation Table)	**Total Animal Units** (Column F from Animal Units Calculation Table)
HOG FINISHERS & BOARS		**450.7**

☒ Animal Units Calculation Table attached

6.0 Animal Confinement Facilities

Outdoor Confined Livestock Area

To ensure that it can be built in a way that the environment is protected, a permit is required for construction and expansion of **confined livestock areas** for operations with 300 Animal Units or more. Permits are required by the **Livestock Manure and Mortalities Management Regulation** (MR 42/98), under *The Environment Act*.

Confined Livestock Area: ☐ outdoor seasonal feeding area ☐ feedlot ☒ not applicable

Indoor Barn/Animal Housing

Indoor Animal Housing: ☒ barn ☐ other (describe) _____ ☐ not applicable

Animal Units Calculation Table

A	B	C	D	E	F	G
Animal Type	Type of Operation	Existing Number of Animals	Proposed Additional Number of Animals	Animal Units per Head	Total Animal Units	Annual Confinement Period (Days)
Dairy [1]	Mature cows (lactating and dry) including associated livestock			2	-	
	Mature cows (lactating and dry)			1.35	-	
	Heifers (0 to 3 months)			0.16	-	
	Heifers (4 to 13 months)			0.41	-	
	Heifers (> 13 months)			0.87	-	
	Bulls			1.35	-	
	Veal calves			0.13	-	
Beef	Beef cows including associated livestock			1.25	-	
	Backgrounder			0.5	-	
	Summer pasture / replacement heifers			0.625	-	
	Feeder cattle			0.769	-	
Pigs	Sows - farrow to finish (234-254 lbs)			1.25	-	
	Sows - farrow to weanling (up to 11 lbs)			0.25	-	
	Sows - farrow to nursery (51 lbs)			0.313	-	
	Boars (artificial insemination units)		1,018	0.2	203.60	
	Weanlings, Nursery (11-51 lbs)			0.033		
	Growers / Finishers (51-249 lbs)		1,728	0.143	247.10	
Chickens	Broilers			0.005	-	
	Roasters			0.01	-	
	Layers			0.0083	-	
	Pullets			0.0033	-	
	Broiler breeder pullets			0.0033	-	
	Broiler breeder hens			0.01	-	
Turkeys	Broilers			0.01	-	
	Heavy Toms			0.02	-	
	Heavy Hens			0.01	-	
Horses	Mares			1.333	-	
Sheep	Ewes			0.2	-	
	Feeder lambs			0.063	-	
Other Livestock	Type:				-	
	Type:				-	
				Total AUs	450.70	

Footnotes:

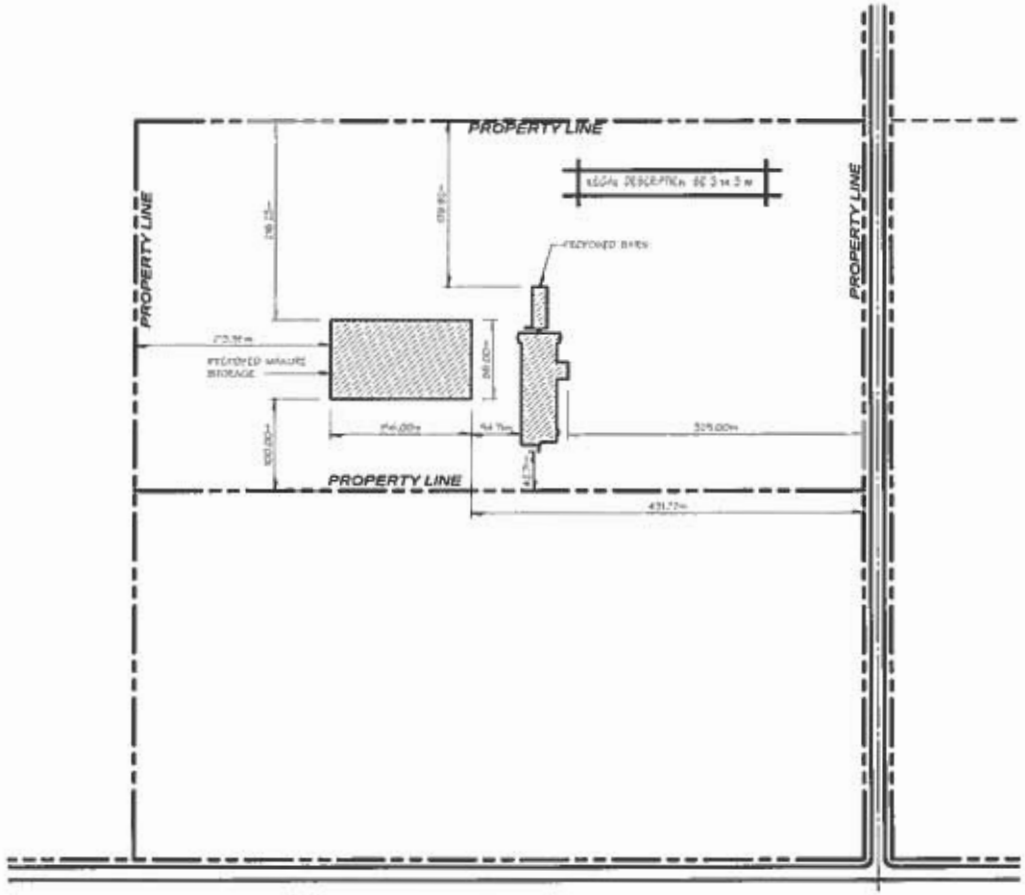
[1] There are 2 methods for calculating animal units for dairy (Farm Practices Guidelines for Dairy Producers in Manitoba, 1995). You can enter the total number of mature cows in the milking herd under the "Mature cows (lactating and dry) including associated livestock" category and the animal units will be calculated by multiplying this number by 2. This calculation assumes 85 lactating, 15 dry, 12 heifers (0 to 3 months), 36 heifers (4 to 13 months) and 50 heifers (> 13 months) for an operation with 100 mature cows. "Associated livestock" includes all of the heifer calves and replacement heifers. Alternatively, you can enter animal numbers in the individual categories (mature cows, heifers (0 to 3 months), heifers (4 to 13 months) and heifers (> 13 months)) and they will be summed at the bottom of the table. Bulls and veal calves are always calculated separately.

For all other livestock or operation types please inquire with your
Manitoba Agriculture, Food and Rural Initiatives GO office to determine the animal units per head.
www.gov.mb.ca/agriculture/contact/agoffices.html

A permit under the Livestock Manure and Mortalities Management Regulation is not required for an indoor housing area or barn unless there is a manure storage facility within the building (an under barn storage capable of storing manure for 30 days or more).

Show all existing, proposed buildings and additions to existing buildings on the project site plan. See **Project Site Plan example** and the Project ***Site Plan Guide*** for help creating your site plan.

☒ Project Site Plan attached



ISSUED FOR PERMIT

DGH ENGINEERING LTD.

TOPIGS NORSVIN

201-1485 BUFFALO PLACE
WINNIPEG, MB R3T 1L8

DELTA II
TEST SITE

RM OF WOODLANDS, MB

SITE PLAN LAYOUT

C1

7.0 Environmental Farm Planning
Environmental farm planning is a voluntary, confidential self-assessment process designed to help farm managers identify the environmental strengths and weaknesses of their operations.

Do you have an **Environmental Farm Plan** ☐ yes ☒ no

If so, is it current (completed within past 5 years) ☐ yes ☐ no

8.0 Water

Project Sites Unsuitable for Development

To protect water quality, the **Nutrient Management Regulation** (MR 62/2008), under *The Water Protection Act*, prohibits the set up or expansion of nutrient generating facilities in Nutrient Management Zone 4 (Agriculture Capability Class 6, 7 and unimproved organic soils) and Nutrient Buffer Zones. Nutrient generating facilities include barns, confined livestock areas and manure storage facilities.

Nutrient Buffer Zone as defined in section 3(3) of the regulation includes areas of land along water bodies such as rivers, lakes, streams and drains.

The proposed indoor housing area, barn, confined livestock area and/or manure storage facility:

will ☐
will not ☒

be located within Nutrient Management Zone 4 (Class 6, 7 and unimproved organic soils) or any Nutrient Buffer Zone.

Determine the agriculture capability class(es) of the project site, and its limitations. This information is available from Manitoba Agriculture, Food and Rural Development (MAFRD) at 204-945-3869 in Winnipeg. Alternatively, use the following link: Land Based Calculator.

Water Source
To be sustainable, a livestock operation must have access to a sufficient quantity and quality of water for livestock.

Water source for operation:

☐ pipeline (public)	☐ water co-operative
☒ proposed well	☐ existing well
☐ river	☐ lake
☐ dugout (dimensions : ____ x ___ x ____)	

If using an existing well, provide a copy of the water well log and logs for other wells on the property. Logs can be obtained from Manitoba Conservation and Water Stewardship by calling (204) 945-7418 in Winnipeg; 1-800-214-6497 toll free.

Source Water Analysis Reports

Annual livestock source water monitoring analysis reports must be submitted to Manitoba Conservation and Water Stewardship for any operations of 300 Animal Units or more.

If an existing livestock operation of 300 Animal Units or more, have you submitted an annual source water monitoring report for the current calendar year? ☐ yes ☐ no

Will livestock have direct access to surface water (not including dugouts)? ☐ yes ☒ no

If yes, identify:
Name of the surface water feature: _____

List any steps that will be taken to prevent direct access of livestock to the water body.

_____

_____

Water Requirements

Protecting the interests of domestic users and the environment, in addition to existing licensees, is the intended purpose of the water rights licensing scheme.

In order to protect the sustainability of water sources, all operations using more than 25,000 litres (5,499 imperial gallons) per day must possess a Water Rights Licence required by the Water Rights Regulation (MR 126/87) under *The Water Rights Act*.

For more information on the Water Rights Licensing process, contact the Water Use Licensing Section at (204) 945-3983 in Winnipeg; 1-800-214-6497 toll free.

Water Use
To calculate the total water use, go to the **Water Requirement Calculation Table**.

Maximum daily use: 9,062 ☒ imperial gallons or ☐ litres
Maximum annual use: 3,307,557 ☐ acre-feet or ☐ cubic decameters

☒ Water Requirement Calculation Table attached

Groundwater (Contamination Risk Protection)

Improper storage and handling of manure or mortalities increases the risk of contaminating groundwater. Beneficial management practices (BMP), mitigation measures and requirements for the permit process reduce this risk. Soil testing, manure management planning and proper engineering, along with construction and management of manure storage structures reduce the risk of contaminating groundwater.

Water Requirement Calculation Table

Livestock	Number	IG/day per animal in winter	IG/day per animal in summer	IG/day (Imperial gallons per day)
Beef/Dairy/Bison *				
Feeder/heifer/steer (600 lb.)		5	9	-
Feeder (900 lb.)		7	12	-
Feeder (1250 lb.)		10	15	-
Cow/calf pair		12	15	-
Dry milking cow **		10	12	-
Lactating cow **		25	30	-
Bison		8	10	-
Horses				
Horses		8	11	-
Hogs				
Sow (Farrow/wean)		6.5		-
Dry Sow/Boar		4		-
Feeder	2,746	3		8,238
Nursery (33 lb.)		2		-
Chickens				
Broilers		0.035		-
Roasters/Pullets		0.04		-
Layers		0.055		-
Breeders		0.07		-
Turkeys				
Turkey Growers		0.13		-
Turkey Heavies		0.16		-
Sheep/Goats				
Sheep/Goats		2		-
Ewes/Does		3		-
Lambs/Kids (90 lb.)		1.6		-
		TOTAL (IG/day)		8,238
	***	TOTAL with 10% wash water		9,062

* For beef, dairy, bison and horse enterprises:
Use summer numbers if appropriate for the operation.
Otherwise base projections on winter values.
Always use the greater of the two values.

** For intensive Dairy operations, please use the Dairy Barn Water Requirement Estimator found on separate sheet.

Enter this number on page 7 of Application Form.

*** 10% of the total is added to allow for wash water

Unit Conversions		
Total per day	Total per year	Unit
9,062	3,307,557	IG
37,450	13,669,231	litres
0.037	14	cubic decametres (dam^3)

Enter this number on page 7 of Application Form.

Other consumption:

Normal household consumption:
60-75 IG/day per person or
(272-340 l/day/person)

Conversion Factor: 1 IGPM = 4.546 l/m

Check off the mitigation measures used for the existing components of the operation that may pose a risk of contamination. Also check off any measures that may be used with the proposed components for this expansion, if applicable:

	Existing	Proposed
Manure is stored in a storage facility built by permit or registered by Manitoba Conservation and Water Stewardship	☐	☒ Y
Storage includes leachate collection	☐	☒ Y
Earthen storage has between 400 and 500 days storage	☐	☒ Y
Steel/concrete tank has between 250 and 500 days storage	☐	☒ N/A
Manure storage facility meets required setbacks	☐	☒ Y
Field storage (solid manure) locations are changed annually	☐	☒ N/A
Field storage meets required setbacks	☐	☒ N/A
All application fields are soil tested annually for nitrate-N and Olsen phosphorus	☐	☒ Y
All manure is applied according to a manure management plan	☐	☒ Y
Licensed commercial manure applicator is used to apply manure	☐	☒ Y
Abandoned wells have been properly sealed	☐	☒ N/A

Other:

Building in Flood Areas

The **Livestock Manure and Mortalities Management Regulation** prohibits an operator from putting a manure storage facility within the boundaries of the 100-year flood plain elevation. **Manure storage facilities** that are constructed with protection for a flood-water level at least 0.6 meters higher than the 100-year flood water level are exempt.

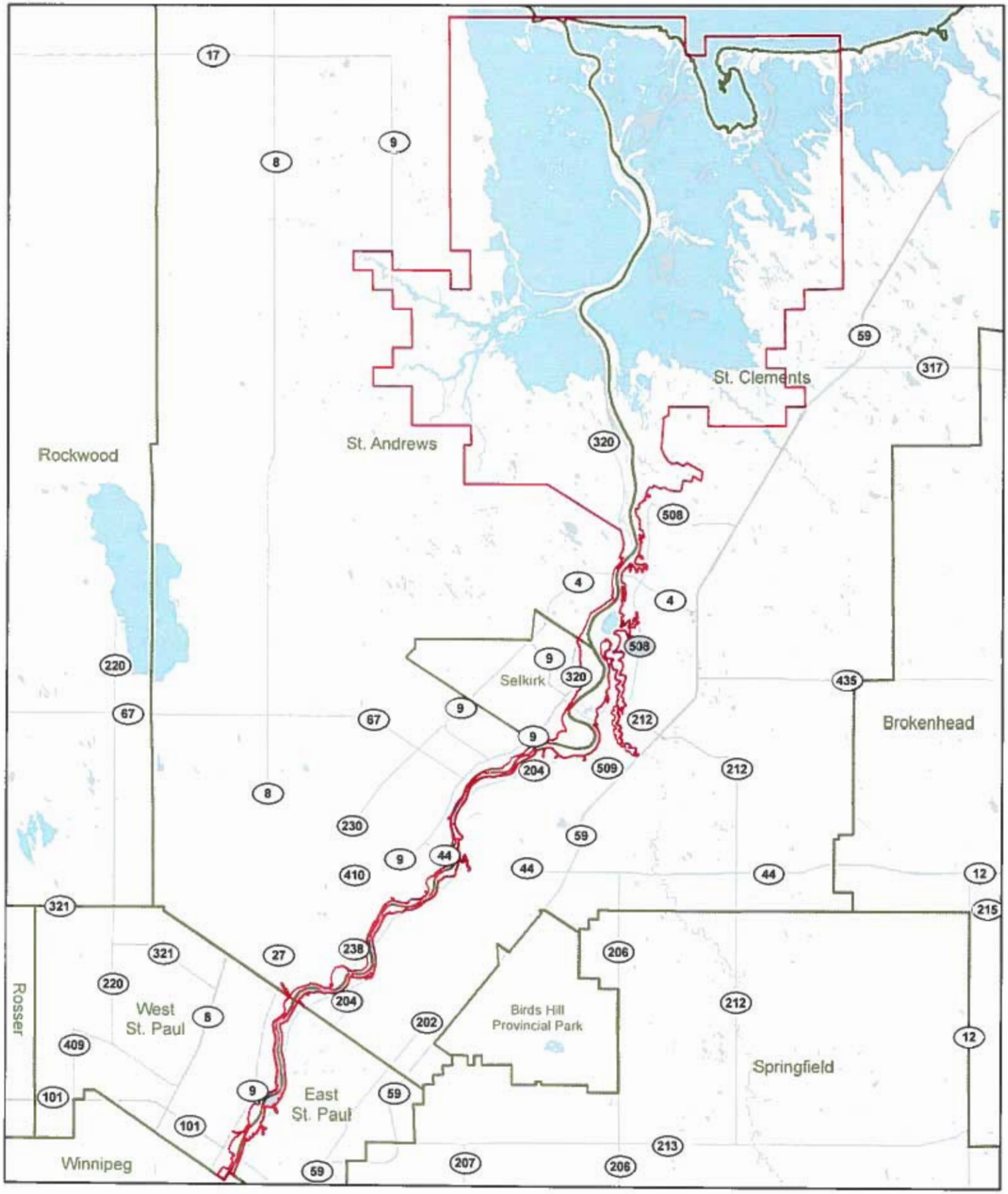
The **Designated Flood Area Regulation** under *The Water Resources Administration Act* requires a Designated Flood Area Permit before a proposed structure (such as a barn) can be built within a Designated Flood Area.

The flood protection level for structures located within a Designated Flood Area is the site specific design flood level plus freeboard, as provided by the Hydraulic Forecasting Branch of Manitoba Infrastructure and Transportation. Contact the Hydrologic Forecasting Branch at (204) 945-2121 in Winnipeg; 1-800-214-6497 toll free.

The proposed site:

is ☐ is not ☒

located in a Designated Flood Area: **Red River Valley Designated Flood Area** or **Lower Red River Designated Flood Area**



Lower Red River Designated Flood Area

Manitoba
Dept. of Local Government

Note: At the time a permit is issued, verification is needed to ensure any proposed structure(s) are located within the 100-year flood plain elevation; or at an elevation set by Manitoba Infrastructure and Transportation.

Watershed Management Planning
Integrated watershed management planning is a co-operative effort by local residents, stakeholders and governments to create a long term plan to manage water and land-based activities for watersheds.

What are the names of the **watershed** and **sub-watershed** where the livestock operation and the fields identified for manure application are located?

Name of watershed(s): West Shoal Lake and Adjacent Area

Name of sub-watershed(s): _____

Name of **Integrated Watershed Management Plan** for the proposed project site, if applicable: Southwest Interlake

For more on Integrated Watershed Management Planning, call Watershed Planning and Programs at (204) 945-7408 in Winnipeg; 1-800-214-6497 toll free.

9.0 Manure

The **Livestock Manure and Mortalities Management Regulation** sets requirements for the use, management and storage of livestock manure in agricultural operations, to ensure it is handled in an environmentally sound manner. For more information on this, call Manitoba Conservation and Water Stewardship at (204) 619-2230 in Winnipeg.

Improper storage, handling and/or land application of manure can contaminate water and/or cause unacceptable odours for neighbours. The following is used to assess the manure management system.

Manure Type
The type of manure generated and used by the operation influences storage, handling and land application options available.

What type(s) of manure will be generated?

☐ solid ☐ semi-solid ☒ liquid

Manure Volume or Weight
Manure production can be estimated using the Manure Production Calculator Table. The sizing of the manure storage is the responsibility of the operator and must be constructed in accordance with the **Livestock Manure and Mortalities Management Regulation**. Design and construction of a manure storage facility is dependent on the type of structure; earthen manure storage facilities must have between 400 and 500 days capacity, a steel or concrete storage tank must have between 250 and 500 days capacity. This ensures the facility has sufficient capacity eliminating the need for winter application.

What will be the total volume or weight of manure generated annually by the livestock operation? (See **Manure Production Calculator Table**.)

liquid volume: 274,600 cubic feet solid weight: _____

☒ Manure Production Calculator Table attached

Manure Storage Type and Capacity

The type of storage system used will affect the capacity requirements for the manure storage facility or field storage area.

What type of **manure storage facility** will be used by the operation?

☐ under-barn concrete ☒ **earthen manure storage** ☐ concrete tank(s)
☐ steel tank(s) ☐ **field storage** ☐ **molehill**

Provide the dimensions of the existing and/or proposed manure storage facilities, if applicable. (See **Existing and Proposed Manure Storage Facility Dimensions Table**.)

☒ Proposed Manure Storage Facility Dimensions Table attached

Odour Control Measures (project site)

Barns and manure storage facilities can be significant sources of livestock odours. The use of manure storage covers and shelterbelts can reduce this, particularly for neighbours in the vicinity of the operation.

What odour control measures are you planning to use?

Manure storage cover: ☐ yes ☒ no

Type of cover: _____

Shelterbelt planting: ☒ yes ☐ no ☐ existing shelterbelt

Other measures (specify): _____

Manure Treatment

Under *The Environment Act,* the director must not issue a permit for the modification, expansion, or construction of a manure storage facility accommodating an increase in the number of animal units for pigs, unless the manure is treated using anaerobic digestion or another environmentally sound treatment that is similar to or better than anaerobic digestion, according to Manitoba Conservation and Water Stewardship.

Does your proposal include anaerobic digestion or another environmentally sound treatment for manure?

☒ yes ☐ no ☐ not applicable

Animal Type (A)	Animal Sub-type (B)	Daily Manure Production				Production Period [2] (Days) (G)	Number of Animals [3] (Capacity) (H)	Total Manure Volume (ft^3) (FxGxH)	Total Manure Volume for Semi-Solid and Liquid Manure (Imp Gal)
		References (C)	Manure Type (D)	Default Manure Production (ft^3/animal/day) (E)	Operation Manure Production [1] (ft^3/animal/day) (F)				
Dairy (milking cows[4] and associated livestock)	Free Stall	Table 6, pg 59, FPGs for Dairy 1995	Semi-Solid [5]	3.5				-	0.0
			Solid	3.4				-	
			Liquid [5]	3.5				-	0.0
	Tie Stall		Semi-Solid [5]	3.6				-	0.0
			Solid	3.5				-	
			Liquid [5]	3.6				-	0.0
	Loose Housing		Solid	3.0				-	
	Milking Parlour Manure and Washwater		Liquid	0.5					
Beef	Beef cows including associated livestock	pg 117, FPGs for Hogs 1998	Solid	1.2				-	
	Backgrounder (200 day)		Solid	0.73				-	
	Summer pasture / replacement heifers		Solid	0.85				-	
	Feeder cattle		Solid	1.1				-	
Pigs	Sows - farrow to finish (234 - 254 lbs)	MAFRI website, FPGs for Pigs 2007	Liquid	2.3				-	0.0
	Sows - farrow to wean (up to 11 lbs)		Liquid	0.8				-	0.0
	Sows - farrow to nursery (51 lbs)		Liquid	1				-	0.0
	Weanlings, Nursery (11 - 51 lbs)		Liquid	0.1				-	0.0
	Grower / Finisher (51 - 249 lbs)		Liquid	0.25	0.25	400.00	2,746	274,600.00	1,710,756.0

Animal Type	Type of Operation		Yearly Manure Production		Production Period [2] (Days)	Number of Birds [3] (Capacity)	Total Manure Volume (ft^3) (F/365xGxH)	Total Manure Volume for Semi-Solid and Liquid Manure (Imp Gal)
			Default Manure Production (ft^3/year/bird space)	Operation Manure Production [1] (ft^3/year/bird space)				
Chickens	Broilers – floor [6]	Table 3, pg 85, FPGs for Poultry 2000	1.23				-	
	Broiler breeder hens [7]		2.3				-	
	Broiler breeder pullets [8]		0.99				-	
	Roasters – floor [6]		1.16				-	
	Layers – cage [8]		2.33				-	0.0
	Layers – floor [7]		1.68				-	
	Layers – solid pack [9]						-	
	Pullets – cage [8]		0.71				-	0.0
	Pullets – floor [6]		0.75				-	
	Pullets – solid pack [9]						-	
Turkeys	Broilers [8]	Table 3, pg 85, FPGs for Poultry 2000	2.83				-	
	Heavy toms [6]		5.58				-	
	Heavy hens [6]		3.32				-	

Sizing of a manure storage facility in accordance with all requirements of the *Livestock Manure and Mortalities Management Regulation* (M.R. 42/98) is the responsibility of the operator.

Instructions and footnotes:

[1] ENTER the manure production estimate for your operation. If no estimate is available, use the default value provided in colum E. References for default daily and yearly manure production are provided in column C.

[2] ENTER the number of days worth of manure that will be produced. For earthen manure storage facilities the minimum storage requirement is 400 days. For steel and concrete manure storage facilities the minimum storage requirement is 250

[3] ENTER the total number of animals or birds that the operation can hold (e.g. barn or feedlot capacity).

[4] Milking cows includes all lactating and dry cows.

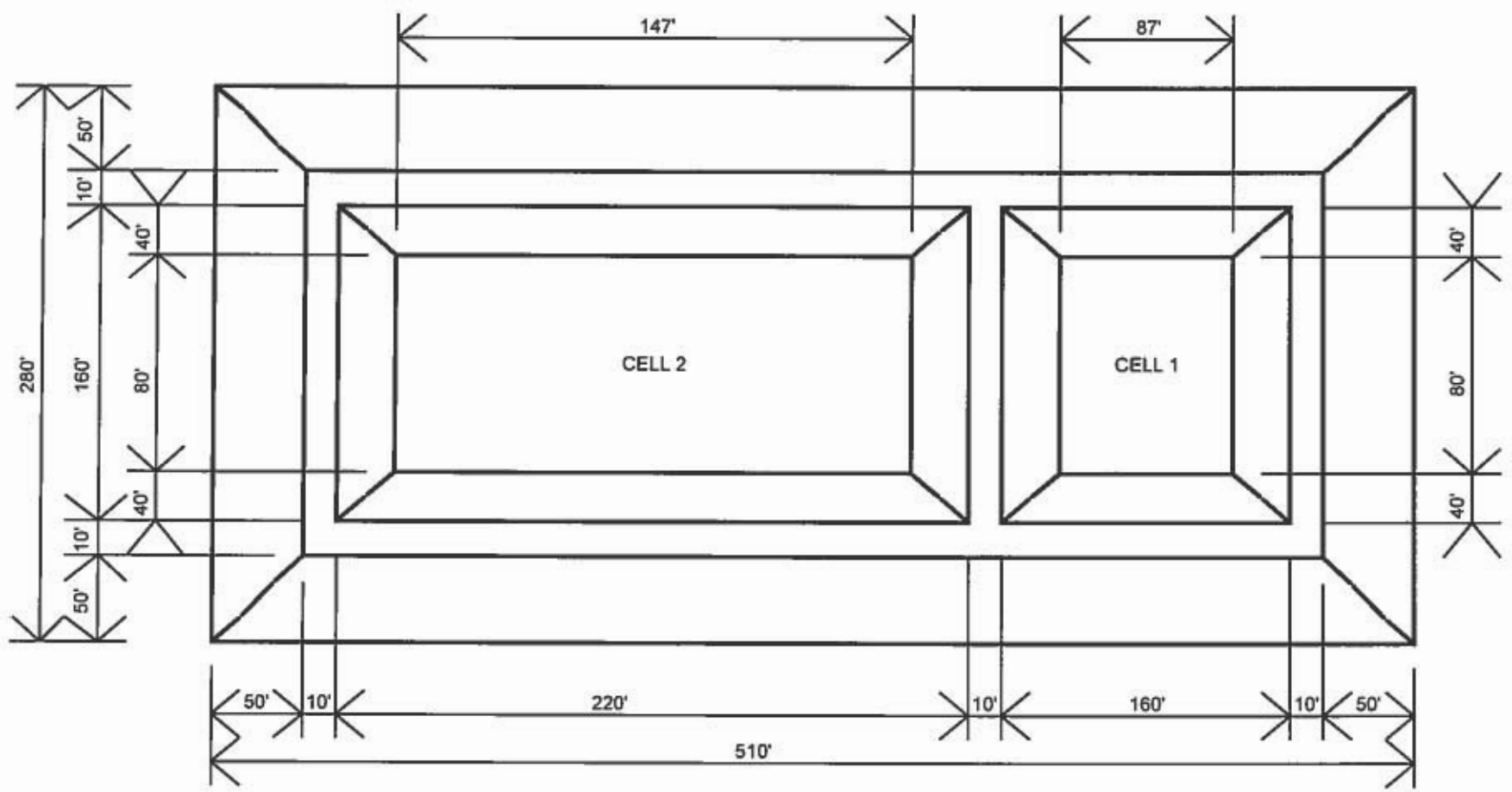
[5] Default manure production estimates for semi-solid and liquid dairy manure include manure and washwater from the milking parlour.

[6] 2 inches of wood shavings or 4 inches of straw placed on floor. Manure and litter removed from barn at 25% moisture content, with a density of 20 lb/ft^3

[7] One-third litter floor, two-thirds slatted floor. Manure and litter removed from barn at 40% moisture content, with a density of 25 lb/ft^3

[8] Manure removed from barn at 90% moisture content with a density of 59 lb/ft^3

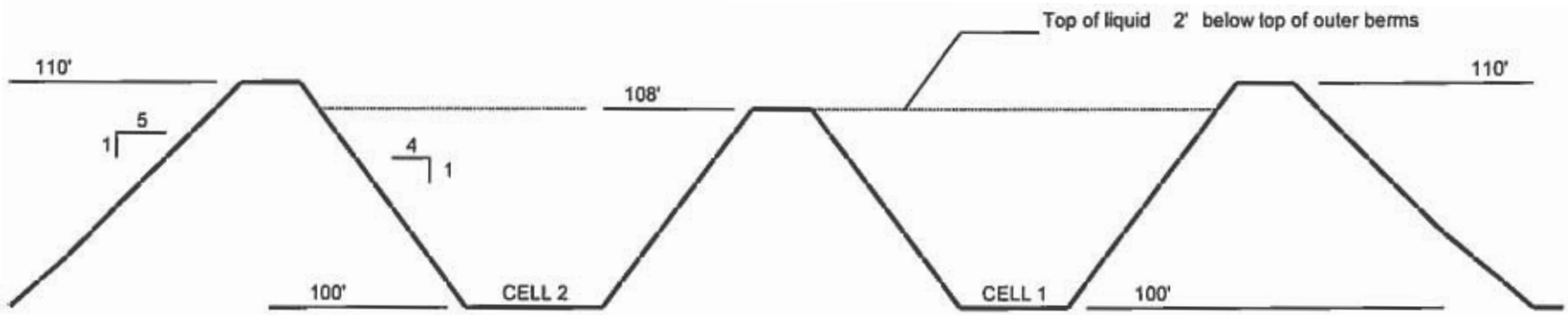
[9] Poultry operations using litter (solid pack) must provide an estimate of yearly manure production



DGH ENGINEERING LTD.

Delta II 2-cell EMS
2746 hog feeders 418 days
N 1/2 of SE 3-14-3 W

N.T.S.



DGH ENGINEERING LTD.

N.T.S.

Delta II 2-cell EMS
2746 hog feeders 418 days
N 1/2 of SE 3-14-3 W

If yes, please describe in compliance with Pig Production Special Pilot Project requirements

Manure Application Method

The **Livestock Manure and Mortalities Management Regulation** requires the registration of annual manure management plans for new or expanding operations with 300 Animal Units or more.

Does the operation currently file an annual **Manure Management Plan** with Manitoba Conservation and Water Stewardship? (For operations with 300 Animal Units or more, only)

☐ yes ☒ no

Manure application methods and the season in which manure is applied affect odour, nutrient availability, crop response, land base requirements and the risk of water contamination.

Proposed application method:

☐ broadcast ☒ broadcast and incorporation within 48 hours ☒ injection

The **Livestock Manure and Mortalities Management Regulation** prohibits the application of manure from November 10 of one year to April 10 of the following year (winter application).

Time of year for application: ☒ spring ☒ summer ☒ fall

The **Livestock Manure and Mortalities Management Regulation** puts restrictions on fall application of manure in the Red River Valley Special Management Area.

The proposed spread fields:

are ☐

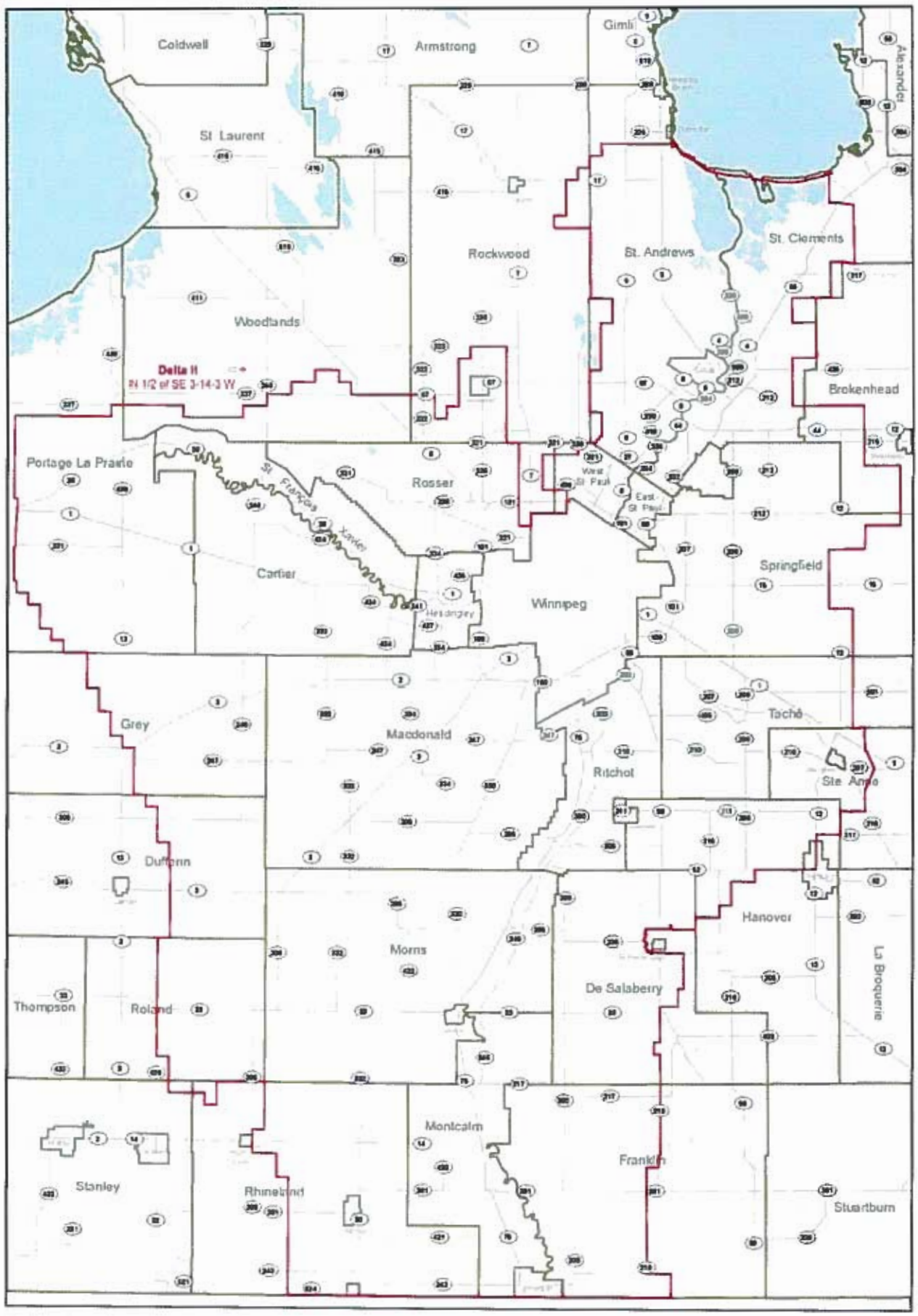
are not ☒

in the **Red River Valley Special Management Area**.

Land Available for Manure Application

The land available for manure application includes all suitable land (owned, leased or under agreement) that is available to the operation for manure application.

Under the **Livestock Manure and Mortalities Management Regulation** and the **Nutrient Management Regulation**, application of nutrients is not permitted on Agriculture Capability Class 6, 7 and unimproved organic soils (Nutrient Management Zone 4) and within Nutrient Buffer Zones.



Red River Valley

Special Management Area

Municipal Boundaries
Provincial Roadways
Red River Valley Special Management Area

Manitoba
Dept. of Local Government

Areas of a field that are Class 6, 7, unimproved organic soils (Nutrient Management Zone 4) or areas within the nutrient buffer zones are considered unsuitable for manure application. In addition, fields with 60 parts per million (ppm) Olsen phosphorus (P) in the top six inches (15 centimetres) of soil cannot be included in the land base calculation.

Nutrients cannot be applied within the Nutrient Buffer Zones as outlined in the Nutrient Management Regulation (62/2008) and illustrated in the **Setback Requirements From Water Features Table**.

Has the setback area for all water features been observed and excluded from land base calculations for this operation?

☒ yes ☐ no

Use the **Manure Application Field Characteristics Table** to determine the following:

Total suitable area available for manure application	1,893.6

☒ Manure Application Field Characteristics Table attached

Copies of **soil test reports** that are no more than 12 months old must also be included with this submission.

☒ Soil test reports for the required area for manure application attached.

Land Required for Manure Application

Long term, land base requirements for manure application are calculated based on estimates of the quantity of nutrients (nitrogen and phosphorus) excreted by livestock and the removal of nutrients by the proposed crops.

Phosphorus

The quantity of phosphorus excreted by the livestock depends on the type, number and size of livestock, the quantity and availablility of phosphorus fed to the livestock and the amount retained by the livestock.

The removal of phosphorus by crops depends on the crops grown and the historical crop yield averages. (See the **Crop Rotation Table**).

The **Livestock Manure and Mortalities Management Regulation** requires that "sufficient land is available to the operator to implement an appropriate manure management plan" before Manitoba Conservation and Water Stewardship will issue a permit for a manure storage facility.

"*Certain Areas*" are defined by the **Livestock Manure and Mortalities Management Regulation** (M.R. 42/98) as areas where the amount of phosphorus in the manure produced annually by livestock in an area of not less than 93.24 km^2 is greater than two times the annual crop removal rate of P_2O_5 in that area. Currently the rural municipalities of Hanover and La Broquerie are considered to be "*certain areas*".

A livestock operation is considered to be located within a "*certain area*" if any part of the operation is located within the "*certain area*". This may include, but not limited to, barn(s), confined livestock area(s), field storage location(s), manure storage facility(ies), and/or spread filed(s).

MANURE APPLICATION FIELD CHARACTERISTICS TABLE

	A	B	C	D	E	F	G	H	I	J	K
Field	Legal Description	Rural Municipality	O/L/A	Total Acreage	Setbacks, including features	Net Acreage for Manure Application	Agriculture Capability Class and Subclass	Soil Nitrate (lb/acre) 0-24 inches	Soil Phosphorus (ppm Olsen P) 0-6 inches	Development Plan Designation	Zoning
1	SE12-14-3w	Woodlands	A	116.3		116.3	2w	26	8	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
2	E1-14-3w	Woodlands	A	277.6		277.6	2w	77	5	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
3	W6-14-2w	Woodlands	A	216.4	Order 2 Drain	215.7	2w	43	11	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
4	E6-14-2w	Woodlands	A	308.9	Order 2 Drain	307.9	2w	42	12	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
5	SW7-14-2w	Woodlands	A	136.5		136.5	2w	113	30	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
6	W5-14-2w	Woodlands	A	253.7	Order 2 Drain	253.1	2w	89	36	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
7	E5-14-2w	Woodlands	A	295.4	Order 2 Drain	294.2	2w	89	14	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
8	SW4-14-2w	Woodlands	A	135.5		135.5	2w	106	20	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
9	SE32-13-2w	Woodlands	A	157.4	Surface water	156.8	3nw	40	31	Agricultural Area "AA" 2643-14	Rural Area Zone "RA" 2648/14
						1893.6					

A. Enter the legal description for each parcel of land that will receive manure: Sec, Twp, Rge or River Lot (including parish).
B. Identify the Rural Municipality in which the parcel is located.
C. Indicate how the land has been secured for manure application: O – Own / L – Lease / A – Agreement
D. Enter the total acreage for the parcel.
E. Enter setbacks from surface water or groundwater features that reduce the land available for manure application; include identification of type of feature (e.g. 8m, Order 3 drain).
F. Enter the net long-term acreage available for manure application for the parcel after taking into account setbacks and excluding Class 6, 7 and unimproved organic soils.
G. Enter the agriculture capability class and subclass ratings for the acreage available for manure application.
H. Provide soil test results for nitrate-N in lb/ac at the 0-24 inch depth. Soil test results must be no more than 12 months old and must be completed by an accredited soil-testing laboratory.
I. Provide soil test results for phosphorus ppm Olsen P at 0-6 inch depth. Soil test results must be no more than 12 months old and must be completed by an accredited soil-testing laboratory.
J. Please indicate the Development Plan and its by-law number in addition to the map designation for each field
K. Please indicate the Zoning By-law and its by-law number in addition to the zoning for each field

			Soil Tests				Rotation									
FieldName	Size	W Setbacks	Zone 1	Zone 2	Zone 3	Zone 4	corn	wheat	canola	sunflowers	Soybeans	CI Soil Zone	Ag Capability	Water Feature	Distance of ordered Drain	Acres
SE12-14-3w	116.3	116.3	6,8	18,7	26,6		29.1	29.1	29.1	29.1		h	2w	no		
E1-14-3w	277.6	277.6	77,5				69.4	69.4	69.4	69.4		h	2w	no		
W6-14-2w	216.4	215.7	32,11	43,8			53.9	53.9	53.9	53.9		f	2w	yes	2876	0.7
E6-14-2w	308.9	307.9	25,6	42,12			61.6	61.6	61.6	61.6	61.6	f	2w	yes	4377	1.0
SW7-14-2w	136.5	136.5	35,16	90,30	113,18	98,28	27.3	27.3	27.3	27.3	27.3	f	2w	no		0.0
W5-14-2w	253.7	253.1	61,36	89,21	57,26		50.6	50.6	50.6	50.6	50.6	f	2w	yes	2790	0.6
E5-14-2w	295.4	294.2	89, 12	73,14	47,13		58.8	58.8	58.8	58.8	58.8	f	2w	yes	5268	1.2
SW4-14-2w	135.5	135.5	106,20	41,14	53,12		27.1	27.1	27.1	27.1	27.1	g	2w	no		0.0
SE32-13-2w	157.4	156.8	40,31	36,11	37,9		31.4	31.4	31.4	31.4	31.4	h	3nw	yes	2671	0.6
	1897.7	1893.6					409.2	409.2	409.2	409.2	256.8	f,h,g				4.1
												Risk Area 11				

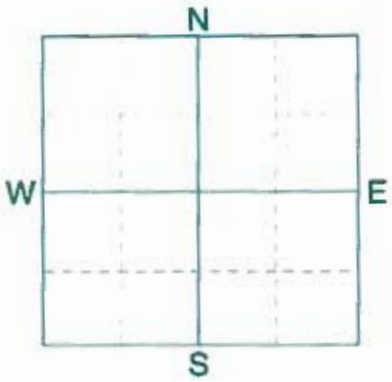
Note: NW32-13-2w was also identified as a potential spread field but at the time of application we did not have a soil test for it therefore we did not include it in filling out the Manure Application Field Characteristics Table.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 18 - Big Hieberts
SAMPLE ID 1
FIELD NAME 18 - Big Hieberts
COUNTY
TWP 14 RANGE 3
SECTION 1 QTR E1/2 ACRES 286.1
PREV. CROP Corn-Grain



SUBMITTED FOR:
Elskamp
Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1438872 BOX # 0
LAB # NW177686

Date Sampled | Date Received 11/04/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	23 lb/ac	
Nitrate 6-24"	54 lb/ac	
Nitrate 0-24"	77 lb/ac	
Phosphorus Olsen	5 ppm	
Potassium	120 ppm	
Chloride 0-24"	36 lb/ac	
Sulfur 0-6"	16 lb/ac	
Sulfur 6-24"	60 lb/ac	
Boron	0.9 ppm	
Zinc	0.41 ppm	
Iron	24.7 ppm	
Manganese	1.9 ppm	
Copper	0.72 ppm	
Magnesium	932 ppm	
Calcium	5243 ppm	
Sodium	18 ppm	
Org.Matter	3.9 %	
Carbonate(CCE)	4.3 %	
Sol. Salts 0-6"	0.28 mmho/cm	
Sol. Salts 6-24"	0.28 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
2400 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	43		N			N		
P_2O_5	29	Band *	P_2O_5			P_2O_5		
K_2O	36	Band *	K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	5	Band (Trial)	S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	1	Band (Trial)	Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.2 6-24" 8.4		34.4 meq	(65-75) 76.3	(15-20) 22.6	(1-7) 0.9	(0-5) 0.2	(0-5)

General Comments: Texture is not estimated on high pH soils.

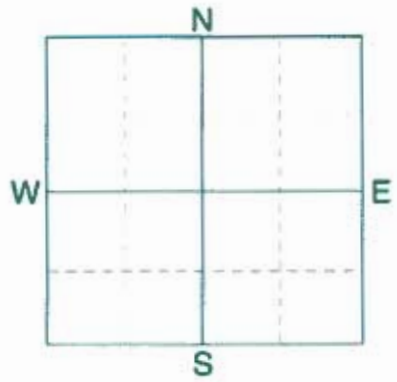
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 22 K2O = 26 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 19 Brungers 248
SAMPLE ID 1
FIELD NAME 19 Brungers 248
COUNTY
TWP 14 RANGE 3
SECTION 12 QTR SE ACRES 136.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1293736 BOX # 0
LAB # NW108631

Date Sampled | Date Received 10/02/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow Low Med High)
0-6" / 6-24" Nitrate	3 lb/ac / 3 lb/ac	*
0-24" Nitrate	6 lb/ac	
Olsen Phosphorus	8 ppm	
Potassium	112 ppm	
0-24" Chloride	68 lb/ac	
0-6" / 6-24" Sulfur	18 lb/ac / 36 lb/ac	
Boron	0.9 ppm	
Zinc	1.08 ppm	
Iron	29.2 ppm	
Manganese	2.7 ppm	
Copper	0.64 ppm	
Magnesium	681 ppm	
Calcium	4800 ppm	
Sodium	25 ppm	
Org.Matter	3.7 %	
Carbonate(CCE)	4.0 %	
0-6" / 6-24" Sol. Salts	0.26 mmho/cm / 0.16 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
1800 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	84		N			N		
P_2O_5	19	Band *	P_2O_5			P_2O_5		
K_2O	28	Band *	K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	5	Band (Trial)	S			S		
B	0		B			B		
Zn	0		Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	1	Band (Trial)	Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.2 6-24" 8.6		30.1 meq	(65-75) 79.8	(15-20) 18.9	(1-7) 1.0	(0-5) 0.4	(0-5)

General Comments: Texture is not estimated on high pH soils.

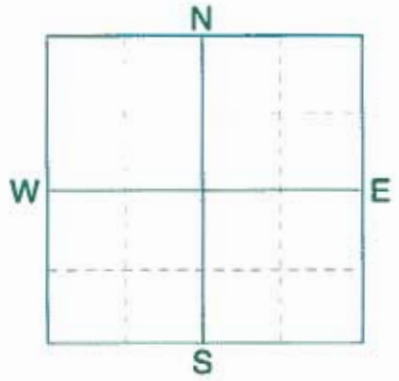
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 16 K2O = 20 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 19 Brungers 248
SAMPLE ID 2
FIELD NAME 19 Brungers 248
COUNTY
TWP 14 RANGE 3
SECTION 12 QTR SE ACRES 136.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1293737 BOX # 0
LAB # NW108579

Date Sampled | Date Received 10/02/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
0-6" / 6-24" Nitrate	9 lb/ac / 9 lb/ac	
0-24" Nitrate	18 lb/ac	
Olsen Phosphorus	7 ppm	
Potassium	117 ppm	
0-24" Chloride	32 lb/ac	
0-6" / 6-24" Sulfur	38 lb/ac / 60 lb/ac	
Boron	0.8 ppm	
Zinc	0.37 ppm	
Iron	23.0 ppm	
Manganese	2.7 ppm	
Copper	0.94 ppm	
Magnesium	823 ppm	
Calcium	4620 ppm	
Sodium	24 ppm	
Org.Matter	3.2 %	
Carbonate(CCE)	3.8 %	
0-6" / 6-24" Sol. Salts	0.36 mmho/cm / 0.26 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
2400 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	102		N			N		
P_2O_5	27	Band *	P_2O_5			P_2O_5		
K_2O	37	Band *	K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.1 6-24" 8.5		30.4 meq	(65-75) 76.1	(15-20) 22.6	(1-7) 1.0	(0-5) 0.3	(0-5)

General Comments: Texture is not estimated on high pH soils.

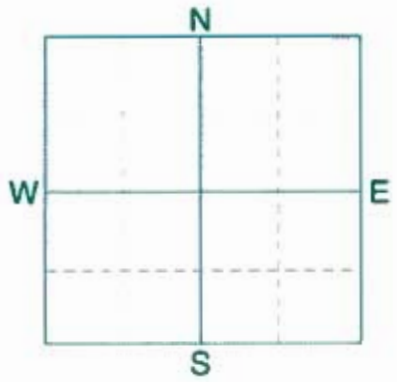
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 22 K2O = 26 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 19 Brungers 248
SAMPLE ID 3
FIELD NAME 19 Brungers 248
COUNTY
TWP 14 RANGE 3
SECTION 12 QTR SE ACRES 136.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1293738 BOX # 0
LAB # NW108673

Date Sampled | Date Received 10/02/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (V.Low / Low / Med / High)
Nitrate	0-6" 11 lb/ac 6-24" 15 lb/ac 0-24" 26 lb/ac	
Phosphorus	Olsen 6 ppm	
Potassium	138 ppm	
Chloride	0-24" 24 lb/ac	
Sulfur	0-6" 16 lb/ac 6-24" 36 lb/ac	
Boron	0.8 ppm	
Zinc	0.77 ppm	
Iron	26.5 ppm	
Manganese	2.1 ppm	
Copper	0.76 ppm	
Magnesium	668 ppm	
Calcium	4242 ppm	
Sodium	21 ppm	
Org.Matter	3.6 %	
Carbonate(CCE)	3.9 %	
Sol. Salts	0-6" 0.23 mmho/cm 6-24" 0.25 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
2600 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	104		N			N		
P_2O_5	31	Band *	P_2O_5			P_2O_5		
K_2O	34	Band *	K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	5	Band (Trial)	S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	1	Band (Trial)	Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.1 6-24" 8.4		27.2 meq	(65-75) 77.9	(15-20) 20.4	(1-7) 1.3	(0-5) 0.3	(0-5)

General Comments: Texture is not estimated on high pH soils.

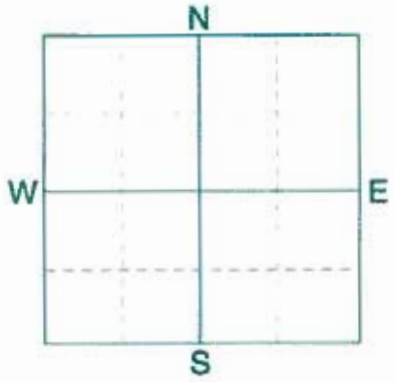
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 23 K2O = 29 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 20 - Scotts 220
SAMPLE ID 1
FIELD NAME 20 - Scotts 220
COUNTY
TWP 14 RANGE 2
SECTION 6 QTR W1/2 ACRES 228.3
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1293774 BOX # 0
LAB # NW93810

Date Sampled | Date Received 09/25/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	14 lb/ac	
Nitrate 6-24"	18 lb/ac	
Nitrate 0-24"	32 lb/ac	
Phosphorus Olsen	11 ppm	
Potassium	138 ppm	
Chloride 0-24"	76 lb/ac	
Sulfur 0-6"	10 lb/ac	
Sulfur 6-24"	72 lb/ac	
Boron	1.2 ppm	
Zinc	1.15 ppm	
Iron	25.5 ppm	
Manganese	2.2 ppm	
Copper	0.93 ppm	
Magnesium	945 ppm	
Calcium	4389 ppm	
Sodium	23 ppm	
Org.Matter	3.9 %	
Carbonate(CCE)	4.7 %	
Sol. Salts 0-6"	0.25 mmho/cm	
Sol. Salts 6-24"	0.27 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
	LB/ACRE	APPLICATION		LB/ACRE	APPLICATION		LB/ACRE	APPLICATION
N			N			N		
P_2O_5			P_2O_5			P_2O_5		
K_2O			K_2O			K_2O		
Cl			Cl			Cl		
S			S			S		
B			B			B		
Zn			Zn			Zn		
Fe			Fe			Fe		
Mn			Mn			Mn		
Cu			Cu			Cu		
Mg			Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.4 6-24" 8.6		30.3 meq	(65-75) 72.5	(15-20) 26.0	(1-7) 1.2	(0-5) 0.3	(0-5)

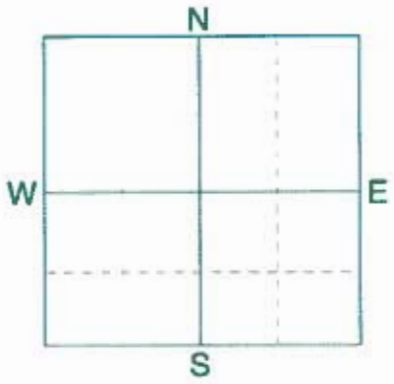
General Comments: Texture is not estimated on high pH soils.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 20 - Scotts 220
SAMPLE ID 2
FIELD NAME 20 - Scotts 220
COUNTY
TWP 14 RANGE 2
SECTION 6 QTR W1/2 ACRES 228.3
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1293775 BOX # 0
LAB # NW93563

Date Sampled | Date Received 09/25/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate	0-6" 16 lb/ac 6-24" 27 lb/ac 0-24" 43 lb/ac	
Phosphorus	Olsen 8 ppm	
Potassium	128 ppm	
Chloride	0-24" 36 lb/ac	
Sulfur	0-6" 16 lb/ac 6-24" 84 lb/ac	
Boron	1.7 ppm	
Zinc	0.59 ppm	
Iron	22.3 ppm	
Manganese	1.7 ppm	
Copper	0.8 ppm	
Magnesium	1086 ppm	
Calcium	4778 ppm	
Sodium	22 ppm	
Org.Matter	3.7 %	
Carbonate(CCE)	5.0 %	
Sol. Salts	0-6" 0.35 mmho/cm 6-24" 0.34 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
160 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	149		N			N		
P_2O_5	56	Band *	P_2O_5			P_2O_5		
K_2O	42	Band *	K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	4	Band	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.3 6-24" 8.6		33.4 meq	(65-75) 71.6	(15-20) 27.1	(1-7) 1.0	(0-5) 0.3	(0-5)

General Comments: Texture is not estimated on high pH soils.

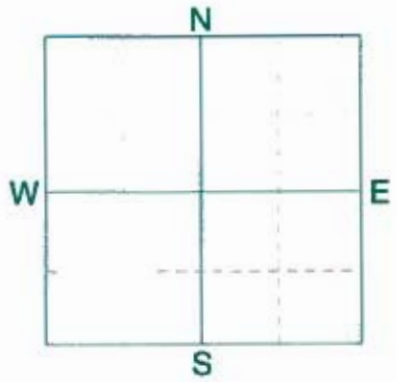
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 64 K2O = 43 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 22 - Sorensons 1 2
SAMPLE ID 1
FIELD NAME 22 - Sorensons 1 2
COUNTY
TWP 14 RANGE 2
SECTION 6 QTR E1/2 ACRES 308.2
PREV. CROP Canola-bu



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1293770 BOX # 0
LAB # NW93764

Date Sampled | Date Received 09/25/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	10 lb/ac	
Nitrate 6-24"	15 lb/ac	
Nitrate 0-24"	25 lb/ac	
Phosphorus Olsen	6 ppm	
Potassium	151 ppm	
Chloride 0-24"	48 lb/ac	
Sulfur 0-6"	24 lb/ac	
Sulfur 6-24"	132 lb/ac	
Boron	1.9 ppm	
Zinc	0.41 ppm	
Iron	15.4 ppm	
Manganese	1.2 ppm	
Copper	0.95 ppm	
Magnesium	1654 ppm	
Calcium	4289 ppm	
Sodium	43 ppm	
Org.Matter	3.8 %	
Carbonate(CCE)	7.5 %	
Sol. Salts 0-6"	0.36 mmho/cm	
Sol. Salts 6-24"	0.41 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain			Wheat-Spring			Soybeans		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
160 BU			80 BU			40 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band			Band/Maint.			Band/Maint.		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	167		N	191		N	***	
P_2O_5	65	Band *	P_2O_5	52	Band *	P_2O_5	35	Band *
K_2O	30	Band *	K_2O	30	Band *	K_2O	60	Band *
Cl		Not Available	Cl	0		Cl	0	
S	0		S	0		S	5	Band (Trial)
B	0		B	0		B	0	
Zn	4	Band	Zn	3	Band (Trial)	Zn	3	Band (Trail)
Fe	0		Fe	0		Fe	0	
Mn	0		Mn	0		Mn	0	
Cu	0		Cu	0		Cu	0	
Mg	0		Mg	0		Mg	0	
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.5 6-24" 8.7		35.8 meq	(65-75) 59.9	(15-20) 38.5	(1-7) 1.1	(0-5) 0.5	(0-5)

General Comments: Texture is not estimated on high pH soils.

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 64 K2O = 43 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 50 K2O = 30 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

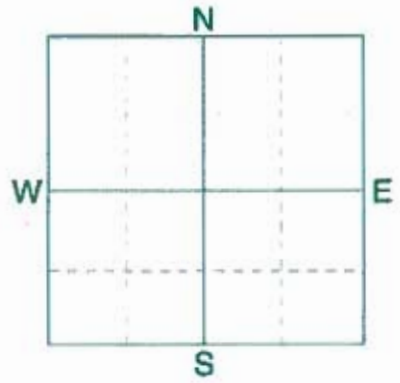
Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is high based on the salt and carbonate levels. Crop Removal: P2O5 = 35 K2O = 60 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them. Soybeans may respond to nitrogen on fields testing less than 60 lb/ac with a limited soybean history.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 22 - Sorensons 1 2
SAMPLE ID 2
FIELD NAME 22 - Sorensons 1 2
COUNTY
TWP 14 RANGE 2
SECTION 6 QTR E1/2 ACRES 308.2
PREV. CROP Canola-bu



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1293771 BOX # 0
LAB # NW93648

Date Sampled | Date Received 09/25/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	15 lb/ac	
Nitrate 6-24"	27 lb/ac	
Nitrate 0-24"	42 lb/ac	
Phosphorus Olsen	12 ppm	
Potassium	162 ppm	
Chloride 0-24"	44 lb/ac	
Sulfur 0-6"	18 lb/ac	
Sulfur 6-24"	120 lb/ac	
Boron	1.9 ppm	
Zinc	1.45 ppm	
Iron	14.7 ppm	
Manganese	1.6 ppm	
Copper	0.99 ppm	
Magnesium	1383 ppm	
Calcium	4717 ppm	
Sodium	39 ppm	
Org.Matter	4.1 %	
Carbonate(CCE)	6.6 %	
Sol. Salts 0-6"	0.34 mmho/cm	
Sol. Salts 6-24"	0.33 mmho/cm	

1st Crop Choice		
Corn-Grain		
YIELD GOAL		
200 BU		
SUGGESTED GUIDELINES		
Band		
LB/ACRE		APPLICATION
N	198	
P_2O_5	50	Band *
K_2O	30	Band *
Cl		Not Available
S	0	
B	0	
Zn	3	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

2nd Crop Choice		
Wheat-Spring		
YIELD GOAL		
80 BU		
SUGGESTED GUIDELINES		
Band		
LB/ACRE		APPLICATION
N	174	
P_2O_5	36	Band *
K_2O	21	Band *
Cl	0	
S	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

3rd Crop Choice		
YIELD GOAL		
SUGGESTED GUIDELINES		
LB/ACRE		APPLICATION
N		
P_2O_5		
K_2O		
Cl		
S		
B		
Zn		
Fe		
Mn		
Cu		
Mg		
Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.4 6-24" 8.6		35.7 meq	(65-75) 66.1	(15-20) 32.3	(1-7) 1.2	(0-5) 0.5	(0-5)

General Comments: Texture is not estimated on high pH soils.

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 80 K2O = 54 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

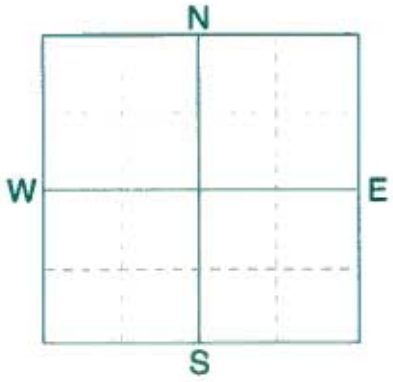
Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 50 K2O = 30 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 24 - Riemers 1-2
SAMPLE ID 2
FIELD NAME 24 - Riemers 1-2
COUNTY
TWP 14 RANGE 2
SECTION 5 QTR E1/2 ACRES 305.7
PREV. CROP Canola-bu



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306448 BOX # 0
LAB # NW108601

Date Sampled | Date Received 10/02/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	26 lb/ac	
Nitrate 6-24"	63 lb/ac	
Nitrate 0-24"	89 lb/ac	
Phosphorus Olsen	12 ppm	
Potassium	181 ppm	
Chloride 0-24"	184 lb/ac	
Sulfur 0-6"	120 +lb/ac	
Sulfur 6-24"	360 +lb/ac	
Boron	3.2 ppm	
Zinc	0.44 ppm	
Iron	16.2 ppm	
Manganese	1.9 ppm	
Copper	1.26 ppm	
Magnesium	1990 ppm	
Calcium	4531 ppm	
Sodium	225 ppm	
Org.Matter	4.5 %	
Carbonate(CCE)	11.6 %	
Sol. Salts 0-6"	1.0 mmho/cm	
Sol. Salts 6-24"	1.15 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Wheat-Spring								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
60 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	73		N			N		
P_2O_5	27	Band *	P_2O_5			P_2O_5		
K_2O	10	Band (Starter)*	K_2O			K_2O		
Cl	0		Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.3 6-24" 8.5		40.7 meq	(65-75) 55.7	(15-20) 40.8	(1-7) 1.1	(0-5) 2.4	(0-5)

General Comments: Texture is not estimated on high pH soils.

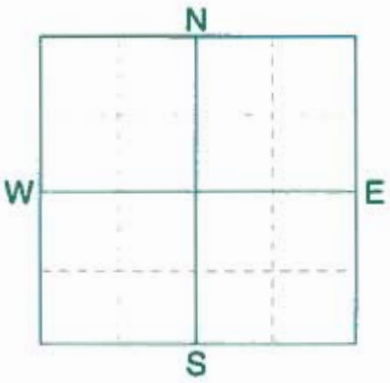
Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 23 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 24 - Riemers 1-2
SAMPLE ID 3
FIELD NAME 24 - Riemers 1-2
COUNTY
TWP 14 RANGE 2
SECTION 5 QTR E1/2 ACRES 305.7
PREV. CROP Canola-bu



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306449 BOX # 0
LAB # NW109288

Date Sampled | Date Received 10/02/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow Low Med High)
Nitrate 0-6"	28 lb/ac	
Nitrate 6-24"	45 lb/ac	
Nitrate 0-24"	73 lb/ac	
Phosphorus Olsen	14 ppm	
Potassium	207 ppm	
Chloride 0-24"	304 lb/ac	
Sulfur 0-6"	120 +lb/ac	
Sulfur 6-24"	360 +lb/ac	
Boron	3.3 ppm	
Zinc	0.55 ppm	
Iron	16.2 ppm	
Manganese	1.9 ppm	
Copper	1.08 ppm	
Magnesium	1793 ppm	
Calcium	4816 ppm	
Sodium	128 ppm	
Org.Matter	5.0 %	
Carbonate(CCE)	6.8 %	
Sol. Salts 0-6"	0.68 mmho/cm	
Sol. Salts 6-24"	1.16 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Wheat-Spring								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
75 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	130		N			N		
P_2O_5	29	Band *	P_2O_5			P_2O_5		
K_2O	10	Band (Starter)*	K_2O			K_2O		
Cl	0		Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.2 6-24" 8.4		40.1 meq	(65-75) 60.0	(15-20) 37.3	(1-7) 1.3	(0-5) 1.4	(0-5)

General Comments: Texture is not estimated on high pH soils.

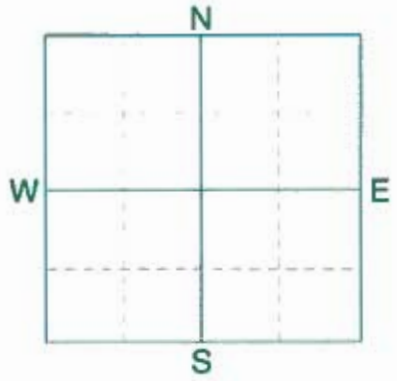
Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 47 K2O = 28 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 24 - Riemers 1-2
SAMPLE ID 4
FIELD NAME 24 - Riemers 1-2
COUNTY
TWP 14 RANGE 2
SECTION 5 QTR E1/2 ACRES 305.7
PREV. CROP Canola-bu



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306450 BOX # 0
LAB # NW108629

Date Sampled | Date Received 10/02/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	17 lb/ac	
Nitrate 6-24"	30 lb/ac	
Nitrate 0-24"	47 lb/ac	
Phosphorus Olsen	13 ppm	
Potassium	212 ppm	
Chloride 0-24"	456 lb/ac	
Sulfur 0-6"	120 +lb/ac	
Sulfur 6-24"	360 +lb/ac	
Boron	3.3 ppm	
Zinc	0.60 ppm	
Iron	18.9 ppm	
Manganese	2.1 ppm	
Copper	1.02 ppm	
Magnesium	1897 ppm	
Calcium	4574 ppm	
Sodium	151 ppm	
Org.Matter	5.5 %	
Carbonate(CCE)	9.1 %	
Sol. Salts 0-6"	0.82 mmho/cm	
Sol. Salts 6-24"	1.32 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Wheat-Spring								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
90 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	196		N			N		
P_2O_5	38	Band *	P_2O_5			P_2O_5		
K_2O	10	Band (Starter)*	K_2O			K_2O		
Cl	0		Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.3 6-24" 8.4		39.9 meq	(65-75) 57.3	(15-20) 39.6	(1-7) 1.4	(0-5) 1.6	(0-5)

General Comments: Texture is not estimated on high pH soils.

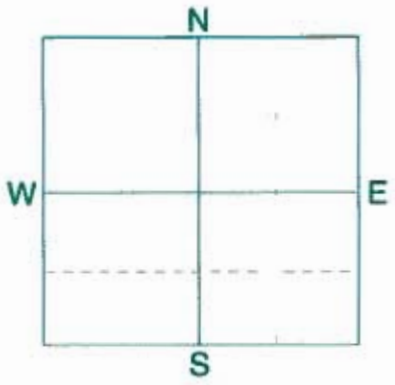
Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 56 K2O = 34 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 27 - Gladys Yule
SAMPLE ID 1
FIELD NAME 27 - Gladys Yule
COUNTY
TWP 14 RANGE 2
SECTION 5 QTR W1/2 ACRES 255.5
PREV. CROP Soybeans



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1391760 BOX # 0
LAB # NW158637

Date Sampled | Date Received 10/23/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow Low Med High)
0-6" / 6-24" Nitrate	13 lb/ac / 48 lb/ac	
0-24" Nitrate	61 lb/ac	
Olsen Phosphorus	36 ppm	
Potassium	311 ppm	
0-24" Chloride	192 lb/ac	
0-6" / 6-24" Sulfur	120 +lb/ac / 360 +lb/ac	
Boron	2.8 ppm	
Zinc	1.43 ppm	
Iron	21.1 ppm	
Manganese	2.4 ppm	
Copper	1.44 ppm	
Magnesium	1864 ppm	
Calcium	5271 ppm	
Sodium	80 ppm	
Org.Matter	6.2 %	
Carbonate(CCE)	6.6 %	
0-6" / 6-24" Sol. Salts	0.73 mmho/cm / 0.85 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Canola-bu								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
35 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	47		N			N		
P_2O_5	10	Band (Starter)*	P_2O_5			P_2O_5		
K_2O	0		K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	10	Band	S			S		
B	0		B			B		
Zn	0		Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.1 6-24" 8.4		43.0 meq	(65-75) 61.2	(15-20) 36.1	(1-7) 1.9	(0-5) 0.8	(0-5)

General Comments: Texture is not estimated on high pH soils.

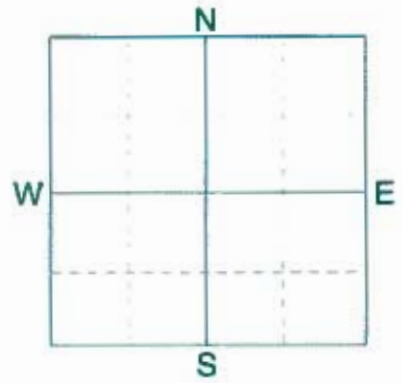
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 32 K2O = 16 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 27 - Gladys Yule
SAMPLE ID 2
FIELD NAME 27 - Gladys Yule
COUNTY
TWP 14 RANGE 2
SECTION 5 QTR W1/2 ACRES 255.5
PREV. CROP Soybeans



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1391761 BOX # 0
LAB # NW158642

Date Sampled | Date Received 10/23/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow Low Med High)
Nitrate 0-6"	17 lb/ac	
Nitrate 6-24"	72 lb/ac	
Nitrate 0-24"	89 lb/ac	
Phosphorus Olsen	21 ppm	
Potassium	207 ppm	
Chloride 0-24"	44 lb/ac	
Sulfur 0-6"	30 lb/ac	
Sulfur 6-24"	156 lb/ac	
Boron	2.6 ppm	
Zinc	0.87 ppm	
Iron	17.6 ppm	
Manganese	1.6 ppm	
Copper	0.89 ppm	
Magnesium	1751 ppm	
Calcium	4980 ppm	
Sodium	52 ppm	
Org.Matter	6.0 %	
Carbonate(CCE)	6.9 %	
Sol. Salts 0-6"	0.38 mmho/cm	
Sol. Salts 6-24"	0.39 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Canola-bu								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
45 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	54		N			N		
P_2O_5	10	Band (Starter)*	P_2O_5			P_2O_5		
K_2O	0		K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	15	Band	S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.3 6-24" 8.7		40.2 meq	(65-75) 61.9	(15-20) 36.3	(1-7) 1.3	(0-5) 0.6	(0-5)

General Comments: Texture is not estimated on high pH soils.

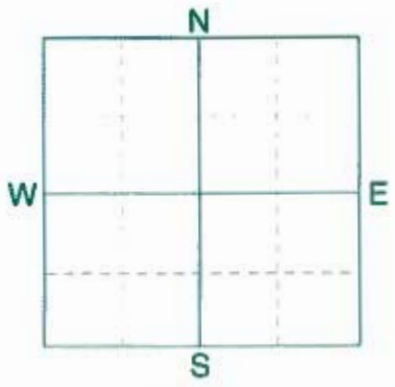
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 41 K2O = 20 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 27 - Gladys Yule
SAMPLE ID 3
FIELD NAME 27 - Gladys Yule
COUNTY
TWP 14 RANGE 2
SECTION 5 QTR W1/2 ACRES 255.5
PREV. CROP Soybeans



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1391762 BOX # 0
LAB # NW158639

Date Sampled | Date Received 10/23/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow Low Med High)
Nitrate 0-6"	18 lb/ac	
Nitrate 6-24"	39 lb/ac	
Nitrate 0-24"	57 lb/ac	
Phosphorus Olsen	26 ppm	
Potassium	211 ppm	
Chloride 0-24"	48 lb/ac	
Sulfur 0-6"	74 lb/ac	
Sulfur 6-24"	84 lb/ac	
Boron	2.6 ppm	
Zinc	1.27 ppm	
Iron	14.0 ppm	
Manganese	1.7 ppm	
Copper	0.71 ppm	
Magnesium	1298 ppm	
Calcium	4850 ppm	
Sodium	28 ppm	
Org.Matter	6.1 %	
Carbonate(CCE)	6.5 %	
Sol. Salts 0-6"	0.49 mmho/cm	
Sol. Salts 6-24"	0.38 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Canola-bu								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
55 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	121		N			N		
P_2O_5	10	Band (Starter)*	P_2O_5			P_2O_5		
K_2O	0		K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	10	Band	S			S		
B	0		B			B		
Zn	0		Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.2 6-24" 8.5		35.7 meq	(65-75) 67.9	(15-20) 30.3	(1-7) 1.5	(0-5) 0.3	(0-5)

General Comments: Texture is not estimated on high pH soils.

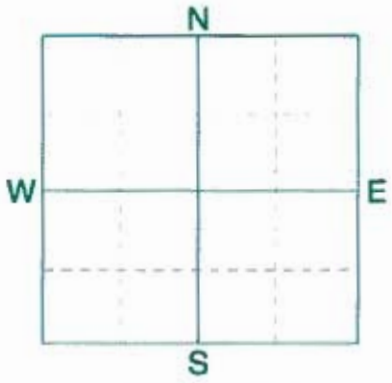
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 50 K2O = 25 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 28 - Kitty Corner
SAMPLE ID 1
FIELD NAME 28 - Kitty Corner
COUNTY
TWP 14 RANGE 2
SECTION 4 QTR SW ACRES 149.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306437 BOX # 0
LAB # NW126775

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow Low Med High)
Nitrate 0-6"	25 lb/ac	
Nitrate 6-24"	81 lb/ac	
Nitrate 0-24"	106 lb/ac	
Phosphorus Olsen	20 ppm	
Potassium	195 ppm	
Chloride 0-24"	324 lb/ac	
Sulfur 0-6"	120 +lb/ac	
Sulfur 6-24"	360 +lb/ac	
Boron	2.4 ppm	
Zinc	0.42 ppm	
Iron	14.5 ppm	
Manganese	1.3 ppm	
Copper	1.43 ppm	
Magnesium	2143 ppm	
Calcium	6039 ppm	
Sodium	374 ppm	
Org.Matter	5.2 %	
Carbonate(CCE)	11.4 %	
Sol. Salts 0-6"	1.93 mmho/cm	
Sol. Salts 6-24"	1.98 mmho/cm	

1st Crop Choice		
Sunflower		
YIELD GOAL		
1800 LBS		
SUGGESTED GUIDELINES		
Band		
LB/ACRE		APPLICATION
N	5	
P_2O_5	11	Band *
K_2O	14	Band *
Cl		Not Available
S	0	
B	0	
Zn	3	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

2nd Crop Choice		
YIELD GOAL		
SUGGESTED GUIDELINES		
LB/ACRE		APPLICATION
N		
P_2O_5		
K_2O		
Cl		
S		
B		
Zn		
Fe		
Mn		
Cu		
Mg		
Lime		

3rd Crop Choice		
YIELD GOAL		
SUGGESTED GUIDELINES		
LB/ACRE		APPLICATION
N		
P_2O_5		
K_2O		
Cl		
S		
B		
Zn		
Fe		
Mn		
Cu		
Mg		
Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.2 6-24" 8.4		50.2 meq	(65-75) 60.2	(15-20) 35.6	(1-7) 1.0	(0-5) 3.2	(0-5)

General Comments: Texture is not estimated on high pH soils.

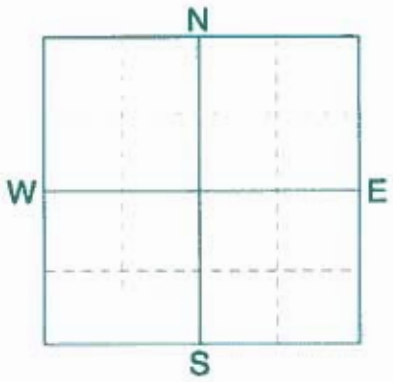
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. High salt levels may decrease yields in portions of this field. Crop Removal: P2O5 = 16 K2O = 20 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 28 - Kitty Corner
SAMPLE ID 2
FIELD NAME 28 - Kitty Corner
COUNTY
TWP 14 RANGE 2
SECTION 4 QTR SW ACRES 149.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306438 BOX # 0
LAB # NW126801

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow Low Med High)
Nitrate 0-6"	14 lb/ac	
Nitrate 6-24"	27 lb/ac	
Nitrate 0-24"	41 lb/ac	
Phosphorus Olsen	14 ppm	
Potassium	236 ppm	
Chloride 0-24"	164 lb/ac	
Sulfur 0-6"	52 lb/ac	
Sulfur 6-24"	360 +lb/ac	
Boron	2.4 ppm	
Zinc	0.45 ppm	
Iron	17.3 ppm	
Manganese	1.8 ppm	
Copper	1.32 ppm	
Magnesium	1561 ppm	
Calcium	5303 ppm	
Sodium	81 ppm	
Org.Matter	4.2 %	
Carbonate(CCE)	12.9 %	
Sol. Salts 0-6"	0.39 mmho/cm	
Sol. Salts 6-24"	0.66 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
2200 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	69		N			N		
P_2O_5	19	Band *	P_2O_5			P_2O_5		
K_2O	7	Band *	K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.4 6-24" 8.5		40.5 meq	(65-75) 65.5	(15-20) 32.1	(1-7) 1.5	(0-5) 0.9	(0-5)

General Comments: Texture is not estimated on high pH soils.

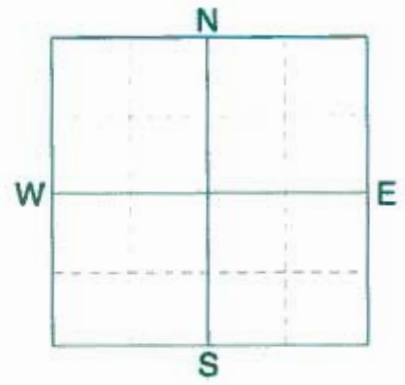
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 20 K2O = 24 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 28 - Kitty Corner
SAMPLE ID 3
FIELD NAME 28 - Kitty Corner
COUNTY
TWP 14 RANGE 2
SECTION 4 QTR SW ACRES 149.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306439 BOX # 0
LAB # NW126789

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	20 lb/ac	
Nitrate 6-24"	33 lb/ac	
Nitrate 0-24"	53 lb/ac	
Phosphorus Olsen	12 ppm	
Potassium	221 ppm	
Chloride 0-24"	48 lb/ac	
Sulfur 0-6"	38 lb/ac	
Sulfur 6-24"	360 +lb/ac	
Boron	2.1 ppm	
Zinc	0.50 ppm	
Iron	17.0 ppm	
Manganese	1.7 ppm	
Copper	1.81 ppm	
Magnesium	1742 ppm	
Calcium	5367 ppm	
Sodium	49 ppm	
Org.Matter	5.3 %	
Carbonate(CCE)	6.2 %	
Sol. Salts 0-6"	0.44 mmho/cm	
Sol. Salts 6-24"	0.62 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
2600 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	77		N			N		
P_2O_5	25	Band *	P_2O_5			P_2O_5		
K_2O	13	Band *	K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.3 6-24" 8.6		42.1 meq	(65-75) 63.7	(15-20) 34.5	(1-7) 1.3	(0-5) 0.5	(0-5)

General Comments: Texture is not estimated on high pH soils.

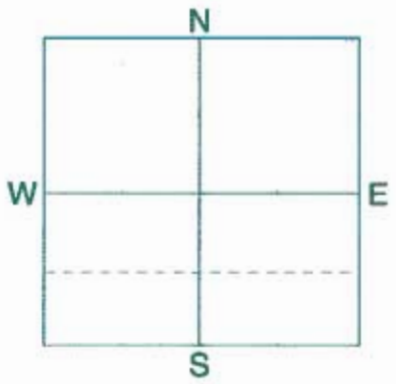
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 23 K2O = 29 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 53 - Jeff Scorenson
SAMPLE ID 1
FIELD NAME 53 - Jeff Scorenson
COUNTY
TWP 14 RANGE 2
SECTION 7 QTR SW ACRES 145.1
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306440 BOX # 0
LAB # NW126796

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	17 lb/ac	
Nitrate 6-24"	18 lb/ac	
Nitrate 0-24"	35 lb/ac	
Phosphorus Olsen	16 ppm	
Potassium	199 ppm	
Chloride 0-24"	60 lb/ac	
Sulfur 0-6"	46 lb/ac	
Sulfur 6-24"	120 lb/ac	
Boron	1.6 ppm	
Zinc	0.59 ppm	
Iron	26.4 ppm	
Manganese	3.3 ppm	
Copper	1.04 ppm	
Magnesium	1692 ppm	
Calcium	4297 ppm	
Sodium	69 ppm	
Org.Matter	4.8 %	
Carbonate(CCE)	2.4 %	
Sol. Salts 0-6"	0.4 mmho/cm	
Sol. Salts 6-24"	0.32 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Wheat-Winter								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
60 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	109		N			N		
P_2O_5	19	Band *	P_2O_5			P_2O_5		
K_2O	10	Band (Starter)*	K_2O			K_2O		
Cl	0		Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.3 6-24" 8.6		36.4 meq	(65-75) 59.0	(15-20) 38.7	(1-7) 1.4	(0-5) 0.8	(0-5)

General Comments: Texture is not estimated on high pH soils.

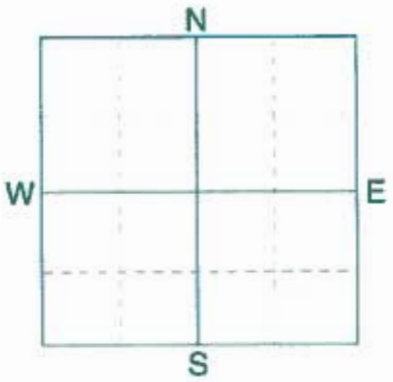
Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 23 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 53 - Jeff Scorenson
SAMPLE ID 2
FIELD NAME 53 - Jeff Scorenson
COUNTY
TWP 14 RANGE 2
SECTION 7 QTR SW ACRES 145.1
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306441 BOX # 0
LAB # NW126797

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	39 lb/ac	
Nitrate 6-24"	51 lb/ac	
Nitrate 0-24"	90 lb/ac	
Phosphorus Olsen	30 ppm	
Potassium	231 ppm	
Chloride 0-24"	44 lb/ac	
Sulfur 0-6"	90 lb/ac	
Sulfur 6-24"	216 lb/ac	
Boron	2.6 ppm	
Zinc	1.07 ppm	
Iron	20.4 ppm	
Manganese	2.8 ppm	
Copper	1.02 ppm	
Magnesium	1700 ppm	
Calcium	4882 ppm	
Sodium	55 ppm	
Org.Matter	5.6 %	
Carbonate(CCE)	6.2 %	
Sol. Salts 0-6"	0.5 mmho/cm	
Sol. Salts 6-24"	0.37 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Wheat-Winter								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
70 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	78		N			N		
P_2O_5	15	Band (Starter)*	P_2O_5			P_2O_5		
K_2O	10	Band (Starter)*	K_2O			K_2O		
Cl	0		Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	0		Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.3 6-24" 8.4		39.4 meq	(65-75) 61.9	(15-20) 35.9	(1-7) 1.5	(0-5) 0.6	(0-5)

General Comments: Texture is not estimated on high pH soils.

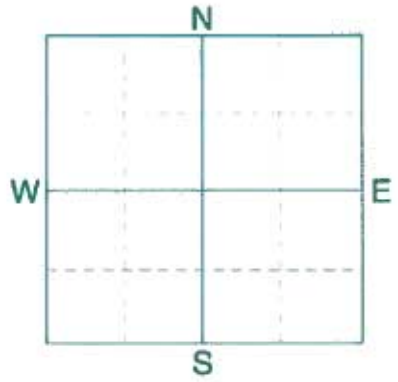
Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 44 K2O = 26 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 53 - Jeff Scorenson
SAMPLE ID 3
FIELD NAME 53 - Jeff Scorenson
COUNTY
TWP 14 RANGE 2
SECTION 7 QTR SW ACRES 145.1
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306442 BOX # 0
LAB # NW126757

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (V.Low / Low / Med / High)
0-6" / 6-24" Nitrate	38 lb/ac / 75 lb/ac	
0-24" Nitrate	113 lb/ac	
Olsen Phosphorus	18 ppm	
Potassium	209 ppm	
0-24" Chloride	28 lb/ac	
0-6" / 6-24" Sulfur	26 lb/ac / 30 lb/ac	
Boron	1.8 ppm	
Zinc	0.79 ppm	
Iron	19.3 ppm	
Manganese	2.2 ppm	
Copper	0.71 ppm	
Magnesium	1214 ppm	
Calcium	5249 ppm	
Sodium	27 ppm	
Org.Matter	6.3 %	
Carbonate(CCE)	3.9 %	
0-6" / 6-24" Sol. Salts	0.42 mmho/cm / 0.33 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Wheat-Winter								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
80 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	79		N			N		
P_2O_5	20	Band *	P_2O_5			P_2O_5		
K_2O	10	Band (Starter)*	K_2O			K_2O		
Cl	12	Broadcast	Cl			Cl		
S	5	Band (Trial)	S			S		
B	0		B			B		
Zn	2	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	1	Band (Trial)	Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.0 6-24" 8.4		37.0 meq	(65-75) 70.9	(15-20) 27.3	(1-7) 1.4	(0-5) 0.3	(0-5)

General Comments: Texture is not estimated on high pH soils.

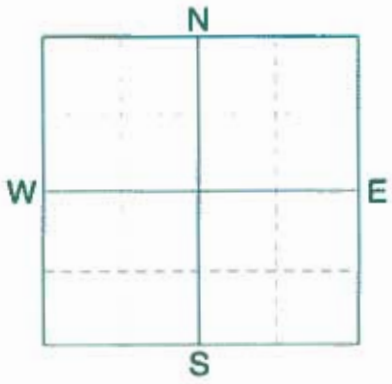
Crop 1: 26 lbs of 0-0-60 = 12 lbs of Chloride" * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 50 K2O = 30 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 53 - Jeff Scorenson
SAMPLE ID 4
FIELD NAME 53 - Jeff Scorenson
COUNTY
TWP 14 RANGE 2
SECTION 7 QTR SW ACRES 145.1
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1306443 BOX # 0
LAB # NW126755

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	38 lb/ac	
Nitrate 6-24"	60 lb/ac	
Nitrate 0-24"	98 lb/ac	
Phosphorus Olsen	28 ppm	
Potassium	302 ppm	
Chloride 0-24"	32 lb/ac	
Sulfur 0-6"	30 lb/ac	
Sulfur 6-24"	36 lb/ac	
Boron	1.1 ppm	
Zinc	1.91 ppm	
Iron	30.7 ppm	
Manganese	2.4 ppm	
Copper	0.69 ppm	
Magnesium	787 ppm	
Calcium	4044 ppm	
Sodium	21 ppm	
Org.Matter	6.6 %	
Carbonate(CCE)	1.1 %	
Sol. Salts 0-6"	0.41 mmho/cm	
Sol. Salts 6-24"	0.33 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Wheat-Winter								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
90 BU								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	118		N			N		
P_2O_5	15	Band (Starter)*	P_2O_5			P_2O_5		
K_2O	10	Band (Starter)*	K_2O			K_2O		
Cl	8		Cl			Cl		
S	5	Band (Trial)	S			S		
B	0		B			B		
Zn	0		Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	1	Band (Trial)	Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.7 6-24" 8.3		27.6 meq	(65-75) 73.1	(15-20) 23.7	(1-7) 2.8	(0-5) 0.3	(0-5)

General Comments: Texture is not estimated on high pH soils.

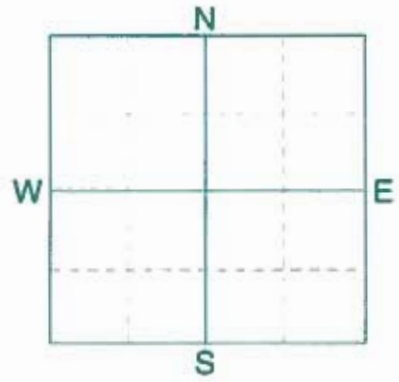
Crop 1: 17 lbs of 0-0-60 = 8 lbs of Chloride" * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 56 K2O = 34 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 29 - Sharons
SAMPLE ID 1
FIELD NAME 29 - Sharons
COUNTY
TWP 13 RANGE 2
SECTION 32 QTR SE ACRES 160.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1333435 BOX # 0
LAB # NW126397

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	13 lb/ac	
Nitrate 6-24"	27 lb/ac	
Nitrate 0-24"	40 lb/ac	
Phosphorus Olsen	31 ppm	
Potassium	310 ppm	
Chloride 0-24"	92 lb/ac	
Sulfur 0-6"	72 lb/ac	
Sulfur 6-24"	360 +lb/ac	
Boron	2.9 ppm	
Zinc	0.62 ppm	
Iron	21.0 ppm	
Manganese	1.4 ppm	
Copper	1.39 ppm	
Magnesium	2163 ppm	
Calcium	4738 ppm	
Sodium	172 ppm	
Org.Matter	5.1 %	
Carbonate(CCE)	11.5 %	
Sol. Salts 0-6"	0.6 mmho/cm	
Sol. Salts 6-24"	0.87 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
1800 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	50		N			N		
P_2O_5	10	Band (Starter)*	P_2O_5			P_2O_5		
K_2O	0		K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.4 6-24" 8.5		43.3 meq	(65-75) 54.8	(15-20) 41.7	(1-7) 1.8	(0-5) 1.7	(0-5)

General Comments: Texture is not estimated on high pH soils.

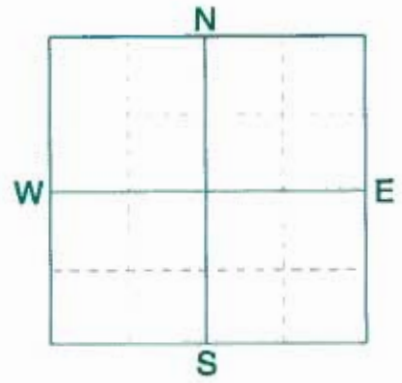
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 16 K2O = 20 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 29 - Sharons
SAMPLE ID 2
FIELD NAME 29 - Sharons
COUNTY
TWP 13 RANGE 2
SECTION 32 QTR SE ACRES 160.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1333436 BOX # 0
LAB # NW126798

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate	0-6" 12 lb/ac 6-24" 24 lb/ac 0-24" 36 lb/ac	
Phosphorus	Olsen 11 ppm	
Potassium	284 ppm	
Chloride	0-24" 44 lb/ac	
Sulfur	0-6" 56 lb/ac 6-24" 246 lb/ac	
Boron	2.9 ppm	
Zinc	0.54 ppm	
Iron	16.6 ppm	
Manganese	1.6 ppm	
Copper	1.34 ppm	
Magnesium	2286 ppm	
Calcium	4961 ppm	
Sodium	100 ppm	
Org.Matter	6.0 %	
Carbonate(CCE)	13.7 %	
Sol. Salts	0-6" 0.61 mmho/cm 6-24" 0.58 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
2200 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	74		N			N		
P_2O_5	21	Band *	P_2O_5			P_2O_5		
K_2O	0		K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.3 6-24" 8.5		45.0 meq	(65-75) 55.1	(15-20) 42.3	(1-7) 1.6	(0-5) 1.0	(0-5)

General Comments: Texture is not estimated on high pH soils.

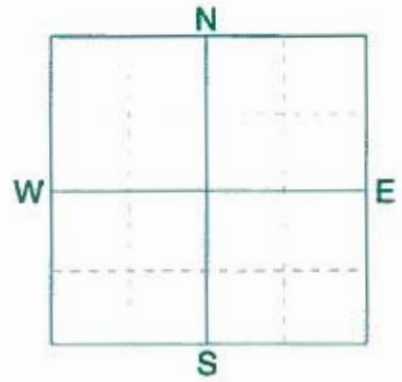
Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 20 K2O = 24 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

FIELDSMART PRODUCTION SOLUTIONS

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 29 - Sharons
SAMPLE ID 3
FIELD NAME 29 - Sharons
COUNTY
TWP 13 RANGE 2
SECTION 32 QTR SE ACRES 160.8
PREV. CROP Wheat-Spring



SUBMITTED FOR:
Elskamp

Woodlands, MB R0C3H0

SUBMITTED BY: EN5402
ENNS BROTHERS LTD
CHERYL BARTMANOVIC
310-400 FORT WHYTE W
OAK BLUFF, MB R4G 0B1

REF # 1333437 BOX # 0
LAB # NW126396

Date Sampled | Date Received 10/09/2015 | Date Reported 4/12/2016

Nutrient In The Soil		Interpretation (VLow / Low / Med / High)
Nitrate 0-6"	10 lb/ac	
Nitrate 6-24"	27 lb/ac	
Nitrate 0-24"	37 lb/ac	
Phosphorus Olsen	9 ppm	
Potassium	271 ppm	
Chloride 0-24"	68 lb/ac	
Sulfur 0-6"	50 lb/ac	
Sulfur 6-24"	342 lb/ac	
Boron	1.9 ppm	
Zinc	0.65 ppm	
Iron	19.1 ppm	
Manganese	1.6 ppm	
Copper	1.19 ppm	
Magnesium	1920 ppm	
Calcium	5567 ppm	
Sodium	78 ppm	
Org.Matter	5.9 %	
Carbonate(CCE)	11.2 %	
Sol. Salts 0-6"	0.65 mmho/cm	
Sol. Salts 6-24"	0.81 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Sunflower								
YIELD GOAL			YIELD GOAL			YIELD GOAL		
2600 LBS								
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band								
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	93		N			N		
P_2O_5	28	Band *	P_2O_5			P_2O_5		
K_2O	0		K_2O			K_2O		
Cl		Not Available	Cl			Cl		
S	0		S			S		
B	0		B			B		
Zn	3	Band (Trial)	Zn			Zn		
Fe	0		Fe			Fe		
Mn	0		Mn			Mn		
Cu	0		Cu			Cu		
Mg	0		Mg			Mg		
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 8.2 6-24" 8.4		44.9 meq	(65-75) 62.0	(15-20) 35.7	(1-7) 1.5	(0-5) 0.8	(0-5)

General Comments: Texture is not estimated on high pH soils.

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 23 K2O = 29 AGVISE Band guidelines will build P & K test levels to the medium range over many years.

In "*certain areas*" it is Manitoba Conservation and Water Stewardship policy to consider a manure storage facility permit if the operation shows it has access to sufficient suitable land to apply manure at a rate equivalent to one times the crop removal rate of phosphorus.

Is the livestock operation located in "*certain areas*"?

☐ yes ☒ no

In areas which are not considered to be "*certain areas*", Manitoba Conservation and Water Stewardship may issue a manure storage facility permit, if the operation shows it has access to sufficient suitable land to apply manure at a rate equivalent to two times the crop removal rate of phosphorus.

For more information on obtaining a manure storage facility permit, please contact Manitoba Conservation and Water Stewardship, Environmental Approvals branch at (204) 945-5081.

Use the **Land Base Calculator** to calculate the minimum area required for manure application.

Total minimum area required for manure application at two times crop removal, for operations outside of Hanover and La Broquerie	**759 acres**
Total minimum area required for manure application at one times crop removal, for operations within Hanover and La Broquerie AND For Pig Production Special Pilot Project	**1,411 acres**

For more information on completing land base calculations, call Manitoba Agriculture, Food and Rural Initiatives (MAFRI) at (204) 945-3869 in Winnipeg.

☒ Land Base Calculator attached

Land Base Requirement Summary

By comparing the land **available** for manure application with the land **required** for manure application, state whether sufficient suitable land for manure application:

☐ has not been identified

☐ has been identified for two times the crop removal rate of phosphorus (for operations outside of the RMs of Hanover or La Broquerie)

☒ has been identified for one times the crop removal rate of phosphorus (for Pig Prodution Special Pilot Project)

Pig/Operation Type	Storage Type	Volatilization	Animal Numbers (Places)	Weight In (lb)	Weight Out (lb)	Average Animal Wt (lb)	Days on Feed per Cycle (days)	Number of Cycles for the Place per Year (days)	Feed Consumed Per Pig Per Day (kg/day)	Protein %	N Excreted Per Herd Adjusted for Storage N (lb/yr/herd)	Phosphorus Content of Feed (Dbl) %	P2O5 Excreted Per Herd Per Year (lb/yr/herd)
Gestating Sow	Liquid Uncovered Earthen	30%		447	630	539	121	3	2.3	14%	0	0.53%	0
Nursing Sow	Liquid Uncovered Earthen	30%		539	539	539	21	15.2	6.5	20%	0	0.63%	0
Nursing Litter	Liquid Uncovered Earthen	30%		3.1	13.8	8	21	15.2	0	n/a	0	n/a	0
Live Cull Sow	Liquid Uncovered Earthen	30%		630	630	630	14	26.1	2.3	14%	0	0.46%	0
Bred Gilt	Liquid Uncovered Earthen	30%		340	447	394	121	3	2.3	14%	0	0.53%	0
Gilts (Purchased)	Liquid Uncovered Earthen	30%		290	340	315	28	13.0	3.2	16%	0	0.46%	0
Boars (Purchased)	Liquid Uncovered Earthen	30%	1018	270	660	465	365	1	2.5	14%	39295	0.46%	19824
Weanlings	Liquid Uncovered Earthen	30%		13.8	61.8	38	52	6.9	0.7	20%	0	0.64%	0
Growers/Finishers	Liquid Uncovered Earthen	30%	1726	61.8	280	171	112	3	2.8	18%	44771	0.46%	22129
Sows, farrow to 6.2 kg	Liquid Uncovered Earthen	30%		n/a	n/a	n/a	365	1	n/a	n/a	0	n/a	0
Sows, farrow to 28 kg	Liquid Uncovered Earthen	30%		n/a	n/a	n/a	365	1	n/a	n/a	0	n/a	0
Sows, farrow to finish	Liquid Uncovered Earthen	30%		n/a	n/a	n/a	365	1	n/a	n/a	0	n/a	0

Last Revised April 13, 2016

Crop	Removal P2O5	Removal N	Uptake N	Units	Yield	Units	Acreage	Removal P2O5 (lb)	Removal N (lb)	Uptake N (lb)
Alfalfa	13.8	58	58	lb/ton		ton/ac		-	-	-
Barley Grain	0.42	0.97	1.39	lb/bu		bu/ac		-	-	-
Barley Silage	11.8	34.4	34.4	lb/ton		ton/ac		-	-	-
Canola	1.04	1.93	3.19	lb/bu	31.4	bu/ac	409.2	13363	24798	40988
Corn Grain	0.44	0.97	1.53	lb/bu	103.9	bu/ac	409.2	18707	41240	65049
Corn Silage	12.7	31.2	31.2	lb/ton		tons/ac		-	-	-
Dry Edible Beans	1.39	4.17		lb/cwt		cwt/ac		-	-	-
Fababeans	1.79	5.02	8.4	lb/cwt		cwt/ac		-	-	-
Flax	0.65	2.13	2.88	lb/bu		bu/ac		-	-	-
Grass Hay	10	34.2	34.2	lb/ton		tons/ac		-	-	-
Lentils	1.03	3.39	5.08	lb/cwt		cwt/ac		-	-	-
Oats	0.26	0.62	1.07	lb/bu		bu/ac		-	-	-
Pasture (grazed)	10	34.2	34.2	lb/ton	0.5	ton/ac		-	-	-
Peas	0.69	2.34	3.06	lb/bu		bu/ac		-	-	-
Potatoes	0.09	0.32	0.57	lb/cwt		cwt/ac		-	-	-
Rye	0.45	1.06	1.67	lb/bu		bu/ac		-	-	-
Soybeans	0.84	3.87	5.2	lb/bu	32.1	bu/ac	256.8	6924	31901	42865
Sunflower	1.1	2.8		lb/cwt	14.56	cwt/ac	409.2	6554	16682	-
Wheat - Spring	0.59	1.5	2.11	lb/bu	44.5	bu/ac	409.2	10744	27314	38422
Wheat - Winter	0.51	1.04	1.35	lb/bu		bu/ac		-	-	-
						Sub Total	1893.6	56291	141937	187324
						Estimated Average Removal/Uptake (lb/ac)		29.7	75.0	98.9
						Additional Acres				
						Crop Planned on Additional Acres				
						Total Acreage	1893.6			

Note: Additional acres include acres for which crop removal or soil data is limited or unavailable.

Last revised August 20, 2014

Species	Animal Category/Operation type	N (lb/year)	P2O5 (lb/year)
Pigs	Gestating Sow	0	0
	Nursing Sow	0	0
	Nursing Litter	0	0
	Live Cull Sows	0	0
	Bred Gilts	0	0
	Gilts	0	0
	Boars	30295	19824
	Weanlings	0	0
	Growers/finishers	44771	22120
	Sows, farrow to 5 kg	0	0
	Sows, farrow to 23 kg	0	0
	Sows, farrow to finish	0	0
Beef	Mature Cows (>2 years old)	0	0
	Bred Heifer (14 mo - 2 years)	0	0
	Replacement Heifers (7 mo-14 mo)	0	0
	Unweaned Calves (0-7 mo)	0	0
	Bulls	0	0
	Mature Cows and Bred Heifers, plus associated livestock	0	0
	Feedlot Cattle - long keep	0	0
	Feedlot Cattle - short keep	0	0
	Backgrounders - pasture	0	0
	Backgrounders - confined	0	0
Dairy	Lactating cow	0	0
	Dry cow	0	0
	Calf, 0-3 months	0	0
	Calf, 4-13 months	0	0
	Replacements, >13 months	0	0
	Mature Cows, plus assoc livestock	0	0
Sheep	Ewes	0	0
	Replacement Ewes	0	0
	Rams	0	0
	Lambs	0	0
	Ewes, plus assoc livestock	0	0
	Feeder	0	0
Chickens	Broilers	0	0
	Broiler Breeder Pullets	0	0
	Broiler Breeder Hens	0	0
Layers	Layer Pullets	0	0
	Layer Hens	0	0
	Breeder Pullets	0	0
	Breeder Hens	0	0
Turkeys	Broiler Hens (0-9 wks)	0	0
	Hens (0-11 wks)	0	0
	Heavy Hens (0-14 wks)	0	0
	Light Toms (0-12 wks)	0	0
	Toms (0-13 wks)	0	0
	Heavy Toms (0-15 wks)	0	0
	Breeding Hen Growers (0-30 wks)	0	0
	Breeding Hens (30-60 wks)	0	0
	Breeding Tom Grower (0-18 wks)	0	0
	Breeding Tom Grower (0-30 wks)	0	0
	Breeding Tom (30-60 wks)	0	0
	Total	75067	41944

Note: Be sure all livestock species on your farm are represented in this table, not just the livestock in the proposed expansion.

Nutrients Excreted	lbs
Nitrogen	75067
P2O5	41944

Crop Nutrient Use	lb/ac
Nitrogen Uptake	98.9
P2O5 Removal	29.7

Land Base Requirements	acres
Acres for Nitrogen Uptake	759
Acres for 2 x P2O5 Removal	705
Acres for 1 x P2O5 Removal	1411

mmpp.com Benchmarks for Better Farm Management

Web address: http://www.mmpp.com/mmpp.nsf/mmpp_browser_fertilizer.html

MMPP Fertilizer Data Browser - (Query Help)

Save Raw Data | New Search

Search Summary

Your selected search:

Region(s) Selected: RISK AREA 11

Crop(s) Selected: SOYBEANS

Soil Zone(s) Selected: SOIL TYPE F, SOIL TYPE G, SOIL TYPE H

Period Selected: 2006 to 2015

This search returned 23 records from the MASC database, summarized below:

Total Acres:	**47,494 acres**	
Yield per Acre:	**32.1 Bushels / acre**	(0.873 tonnes / acre)

Fertilizer Applied per Acre (actual product):

Nitrogen:	**5.8 lbs / acre**	(0.003 tonnes / acre)
Phosphorus:	**29.2 lbs / acre**	(0.013 tonnes / acre)
Potassium:	**16.7 lbs / acre**	(0.008 tonnes / acre)
Sulfur:	**3.4 lbs / acre**	(0.002 tonnes / acre)

View Raw Data

Save Raw Data | New Search

Canada MASC Manitoba

mmpp.com Benchmarks for Better Farm Management

Web address: http://www.mmpp.com/mmpp.nsf/mmpp_browser_fertilizer.html

MMPP Fertilizer Data Browser - (Query Help)

Save Raw Data | New Search

Search Summary

Your selected search:

Region(s) Selected: RISK AREA 11

Crop(s) Selected: OIL SUNFLOWERS

Soil Zone(s) Selected: SOIL TYPE F, SOIL TYPE G, SOIL TYPE H

Period Selected: 2006 to 2015

This search returned 19 records from the MASC database, summarized below:

Total Acres:	**5,608 acres**	
Yield per Acre:	**1,631 Pounds / acre**	(0.740 tonnes / acre)

Fertilizer Applied per Acre (actual product):

Nitrogen:	**83.1 lbs / acre**	(0.038 tonnes / acre)
Phosphorus:	**26.7 lbs / acre**	(0.012 tonnes / acre)
Potassium:	**5.9 lbs / acre**	(0.003 tonnes / acre)
Sulfur:	**9.0 lbs / acre**	(0.004 tonnes / acre)

View Raw Data

Save Raw Data | New Search

Canada MASC Manitoba

mmpp.com Benchmarks for Better Farm Management

Web address: http://www.mmpp.com/mmpp.nsf/mmpp_browser_fertilizer.html

MMPP Fertilizer Data Browser - (Query Help)

Save Raw Data | New Search

Search Summary

Your selected search:

Region(s) Selected: RISK AREA 11

Crop(s) Selected: ARGENTINE CANOLA

Soil Zone(s) Selected: SOIL TYPE F, SOIL TYPE G, SOIL TYPE H

Period Selected: 2006 to 2015

This search returned 28 records from the MASC database, summarized below:

Total Acres:	**490,523 acres**	
Yield per Acre:	**31.4 Bushels / acre**	(0.713 tonnes / acre)

Fertilizer Applied per Acre (actual product):

Nitrogen:	**91.7 lbs / acre**	(0.042 tonnes / acre)
Phosphorus:	**31.0 lbs / acre**	(0.014 tonnes / acre)
Potassium:	**11.6 lbs / acre**	(0.005 tonnes / acre)
Sulfur:	**14.4 lbs / acre**	(0.007 tonnes / acre)

View Raw Data

Save Raw Data | New Search

Canada MASC Manitoba

mmpp.com Benchmarks for Better Farm Management

Web address: http://www.mmpp.com/mmpp.nsf/mmpp_browser_fertilizer.html

MMPP Fertilizer Data Browser - (Query Help)

Save Raw Data | New Search

Search Summary

Your selected search:

Region(s) Selected: RISK AREA 11

Crop(s) Selected: RED SPRING WHEAT

Soil Zone(s) Selected: SOIL TYPE F, SOIL TYPE G, SOIL TYPE H

Period Selected: 2006 to 2015

This search returned 28 records from the MASC database, summarized below:

Total Acres:	**283,959 acres**	
Yield per Acre:	**44.5 Bushels / acre**	(1.212 tonnes / acre)

Fertilizer Applied per Acre (actual product):

Nitrogen:	**83.6 lbs / acre**	(0.038 tonnes / acre)
Phosphorus:	**31.9 lbs / acre**	(0.014 tonnes / acre)
Potassium:	**11.0 lbs / acre**	(0.005 tonnes / acre)
Sulfur:	**3.7 lbs / acre**	(0.002 tonnes / acre)

View Raw Data

Save Raw Data | New Search

Canada MASC Manitoba

mmpp.com Benchmarks for Better Farm Management

Web address: http://www.mmpp.com/mmpp.nsf/mmpp_browser_fertilizer.html

MMPP Fertilizer Data Browser - (Query Help)

Save Raw Data | New Search

Search Summary

Your selected search:

Region(s) Selected: RISK AREA 11

Crop(s) Selected: GRAIN CORN

Soil Zone(s) Selected: SOIL TYPE F, SOIL TYPE G, SOIL TYPE H

Period Selected: 2006 to 2015

This search returned 20 records from the MASC database, summarized below:

Total Acres:	**6,059 acres**	
Yield per Acre:	**103.8 Bushels / acre**	(2.638 tonnes / acre)

Fertilizer Applied per Acre (actual product):

Nitrogen:	**112.7 lbs / acre**	(0.051 tonnes / acre)
Phosphorus:	**38.8 lbs / acre**	(0.018 tonnes / acre)
Potassium:	**22.0 lbs / acre**	(0.010 tonnes / acre)
Sulfur:	**10.9 lbs / acre**	(0.005 tonnes / acre)

View Raw Data

Save Raw Data | New Search

Canada MASC Manitoba

Long-Term Environmental Sustainability

The Government of Manitoba has included phosphorus as a nutrient by which applications of manure, synthetic fertilizer and municipal waste sludge to agricultural lands may be limited.

Over the short-term for fields with low phosphorus, regulations allow manure to be applied to meet the nitrogen requirements of the crop. This often results in over-application of phosphorus and a build-up of phosphorus in soils. When soil test phosphorus levels reach 60 ppm Olsen P, manure application rates must consider how much phosphorus will be removed in the harvested portion of the crop. At 60 to 119 ppm Olsen P, the amount of phosphorus that can be applied cannot exceed twice (two times) what the crop can remove in order to slow the build-up of soil phosphorus. Once soil test phosphorus levels reach 120 ppm Olsen P, applications of phosphorus are restricted to no more than what the crop can remove (one times) in order to stop further soil test phosphorus build-up. At 180 ppm Olsen P, no additional phosphorus may be applied.

It should be noted that soil-test phosphorus levels of 60 ppm Olsen P or greater are agronomically very high and at these levels most crops will not benefit from additional phosphorus beyond starter phosphorus. As phosphorus levels build up in soils, the concentration of phosphorus in runoff increases.

Therefore, to remain environmentally sustainable over a long-term planning horizon of 25 years or more, phosphorus applications from applied manure and other nutrient sources such as commercial fertilizers must be balanced with crop removal to avoid further build-up in soils. Consequently, sufficient land must be available in relatively close proximity to the operation to balance phosphorus applications with crop phosphorus removals (one times) so that manure treatment and export of phosphorus from the region is not required.

☒ I acknowledge that up to 1,411 acres (one times crop removal from table above) may be required for the long term environmental sustainability of the operation.

10.0 Mortalities (Dead Animal) Disposal

The **Livestock Manure and Mortalities Management Regulation** sets requirements for the use, management and storage of livestock mortalities in agricultural operations. It helps ensure livestock mortalities are handled in an environmentally sound manner. Winter application of composted mortalities is prohibited.

Type of disposal:
- [X] rendering
- [ ] composting
- [ ] incineration (in approved incinerator only)

Mass Mortalities

- [ ] A plan for **mass mortalities** is in place.

What steps will be taken in the case of mass mortalities?

MB Conservation will be contacted to provide direction with respect to clean up activities and appropriate disposal land fill site. Incineration is a consideration subject to an approval from MB Conservation.

11.0 Project Site Description: Land Use Planning Considerations

For assistance contact your **Community and Regional Planning Regional Office**.

Development Plan and Zoning Bylaw

The Planning District or Municipal Development Plan and Zoning By-law adopted under ***The Planning Act,*** set policy and regulations for the use and development of land. A proposed livestock operation must comply with the requirements of this bylaw. In the absence of a By-law, the **Provincial Planning Regulation** under ***The Planning Act*** applies.

Development Plan

Every Development Plan must contain a livestock operation policy (LOP) that identifies areas where new or expanded livestock operations may be allowed. It must also set general standards for the location and setback of livestock operations. Identifying the Development Plan's land use designation and policies (for the planning district or municipality that affect the site) will help confirm the project site's compliance. The Development Plan designations for the spread fields (if something other than agricultural) will indicate the potential loss of the fields in the future due to possible development.

Name of Planning District	The Rural Municipality of Woodlands
Development Plan by-law number	2643/14
Land use designation of project site	AA--- Agriculture Area
Livestock operation policies – quote supportive policy numbers	Policy 6 of 3.4.1
Other Development Plan policies – quote supportive policy numbers	N/A
Non-supportive Development Plan policies	N/A

[X] The Development Plan livestock operation policies support the size and location of the proposed operation.

[X] The Development Plan designations support the long term use of the proposed spread fields.

Zoning By-law

Identifying the zoning for the project site, the proposed spread fields and the related zoning provisions, helps determine the project's compliance and the minimum separation distances needed between the operation and property boundaries and other natural features and land uses. The zoning bylaw contains specific regulations that govern location and setback of livestock operations.

What are the minimum project site requirements stated in the Zoning By-law?

	Project site dimensions	Minimum zoning bylaw site requirements
Minimum site area	80 acres	80 acres
Minimum site width	1,320 ft	600 ft
Minimum front yard	1066 ft	75 ft
Minimum side and rear yard	side 140 ft, rare 701 ft	side 25 ft, rare 30 ft

If any project (front, side or rear) yard site dimensions are less than the Zoning By-law minimum, a Variation Order from the Municipality will be required.

Separation Distances (Zoning Bylaw or Provincial Planning Regulation)
Using the proposed size of the operation (see **Animal Units Calculation Table**) and the type of animal housing and manure storage facility, complete the following table.

Indicate the distance from:

a. earthen manure storage facility or b. feedlot and
c. animal confinement facility or d. non-earthen manure storage facility…

…to the following land use features (if applicable)	**Indicate minimum separation distance required in the zoning bylaw or Provincial Planning Regulation (Check appropriate box(es)**		**If land use feature is less than the minimum separation distance**	
	☒ a. ☐ b.	☐ c. ☐ d.	Provide actual distance	Provide location or name of feature (e.g. Red River)
Residence/ dwelling	1,640 feet		3,630 feet	NW 35-13-3 W
Designated area (non-agricultural)	6,561 feet		22,457 feet	rural recreation zone NE19-14-2W
Surface water	100 m		246 m	lake, intermittet to southeast
Surface watercourse	100 m		431 m	road ditch to east
Crown land			569 m	Crown leased SW 34-14-3 W
Wildlife Management Area			8.4 miles	11-15-2 W
Livestock operation			470 m	SW 2-14-3 W cattle
Other significant features/land uses			N/A	

If Crown Lands are located within one mile, provide coding. Information can be obtained from the Interdepartmental Operations Crown Lands Plans through the **Manitoba Legislative Library** or contact Manitoba Conservation and Water Stewardship at (204) 619-2230.

If undesignated Crown Lands will be used for manure spreading purposes, including the laying of pipe or clearing activity, and use will require a Crown Lands General Permit disposition for the use and access of the subject Crown Lands Parcel(s).

In cases where minimum separation distances are not stated in the Zoning By-law or Development Plan, the minimum separation distances in the **Provincial Planning Regulation** apply.

Note: If any separation distance is less than the zoning by-law minimum, a Variation Order will be required from the Municipality.

Setback Distances (Livestock Manure and Mortalities Management Regulation)
Using the following table to indicate the distance from:

Feature	Structure	Minimum setback distance required	Provide actual distance (m)	Provide location or name of feature (e.g. Red River)
Surface watercourse, sinkhole, spring, or well	Manure storage facility	100 m	431 m	east ditch along road
	Field storage	100 m	N/A	
	Composing site	100 m	N/A	
	Confined livestock area	100 m	N/A	
Property Line	Manure storage facility	100 m	100 m	south property line
	Composing site	100 m	N/A	
	Confined livestock area	100 m	N/A	

If any setback distances have not been met, please provide explanation below:

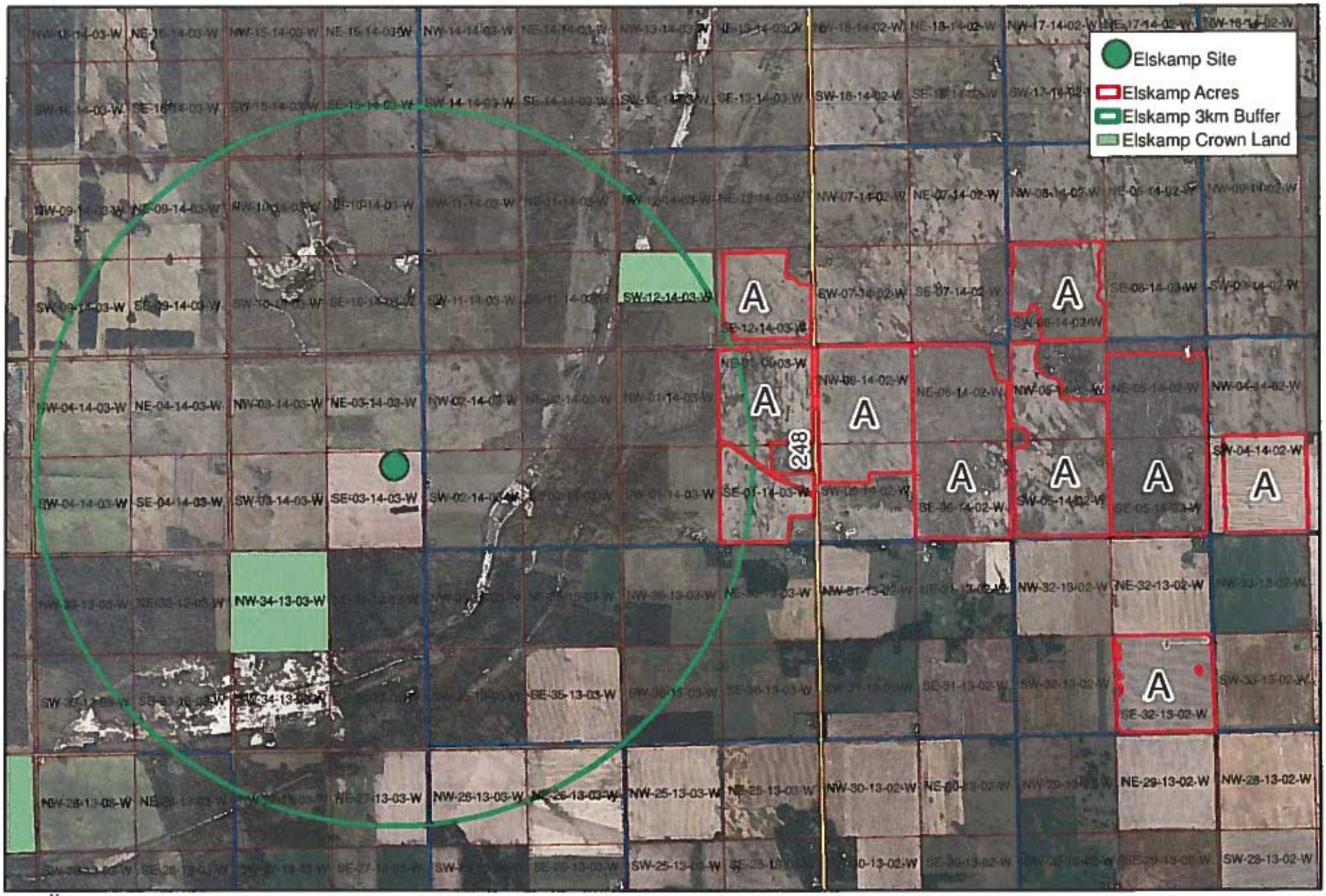
_____

_____

_____

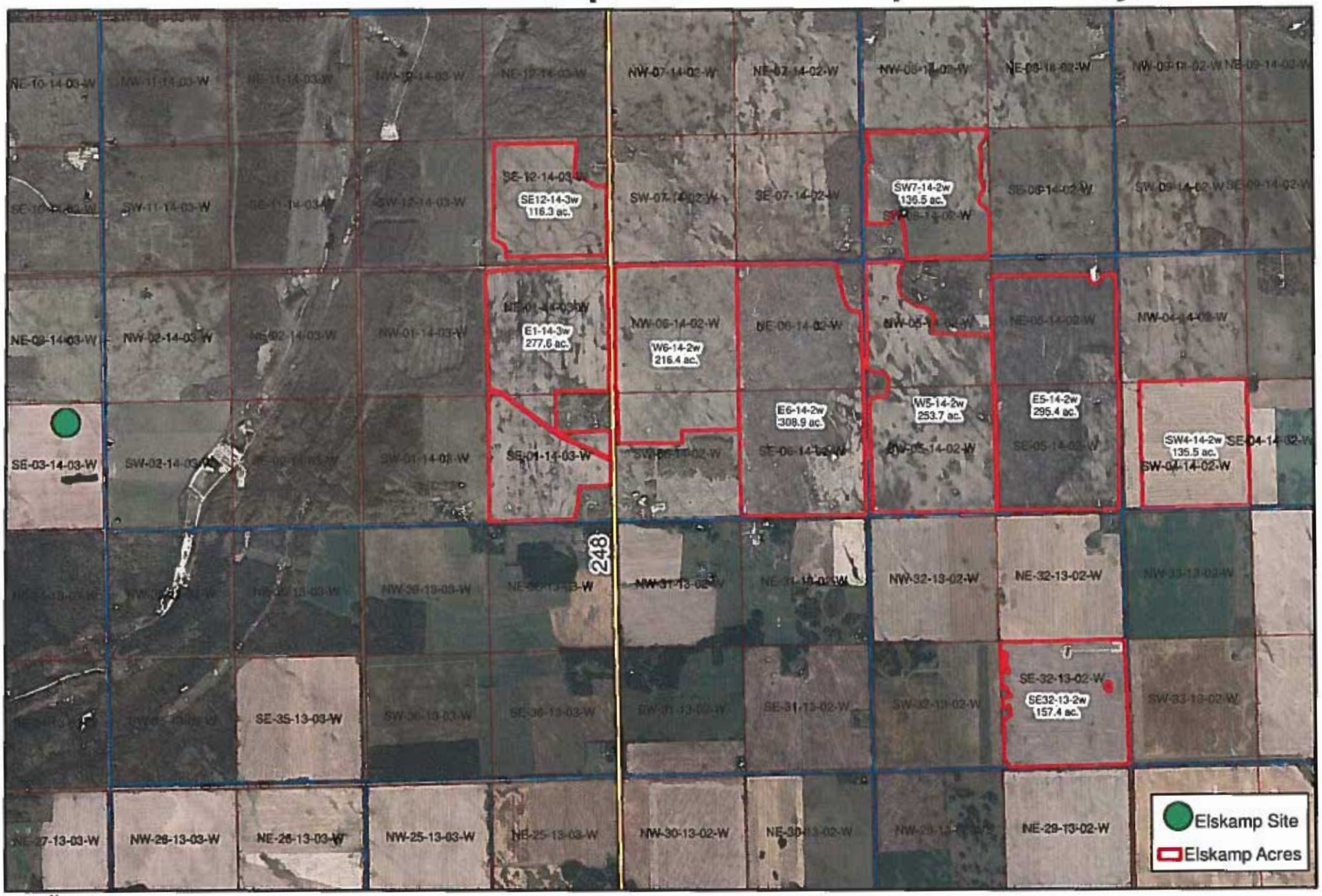
Show: a) location of the project site, location and ownership of spread fields and b) land uses and significant features including dwellings (i) within a 1 mile radius of the project site and (ii) within and adjacent to each spread field on a Land Use & Spread Field Map. (See **Land Use & Spread Field Map Example**).

Elskamp Land Use - Delta Project



AGRA - GOLD Consulting Ltd.

Elskamp Land Base Map - Delta Project



N
W E
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Miles

AGRA - GOLD
Consulting Ltd.

Elskamp Ag. Capability - Delta Project

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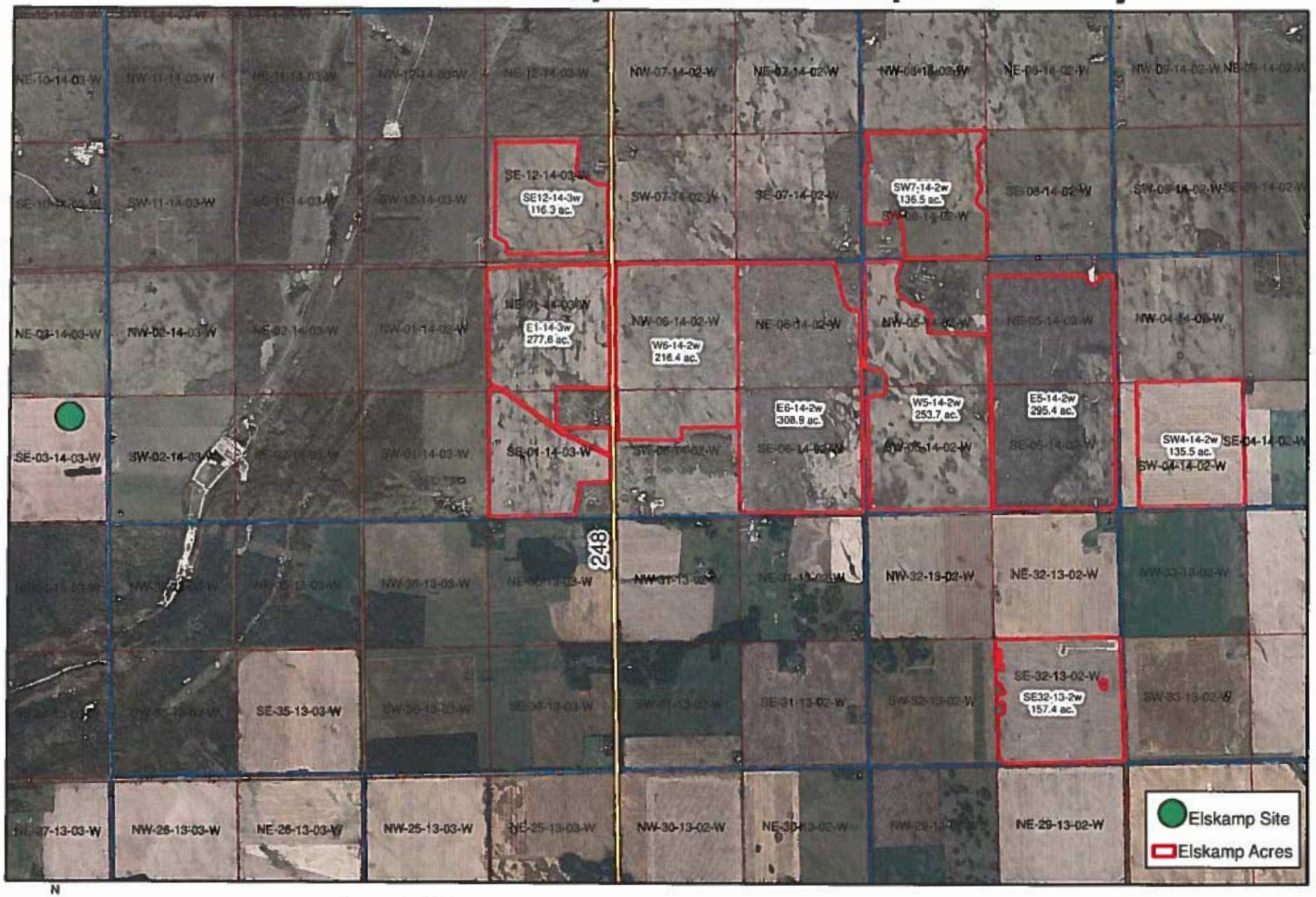
Miles

AGRA - GOLD
Consulting Ltd.

Elskamp Land Base Map - Delta Project



N
W E
S

0 0.35 0.7 1.4 2.1
Miles

AGRA-GOLD Consulting Ltd.

Manure Spread Agreement

This agreement made this 5 day of May, 2016

Between Topigs Norsvin Canada Inc. (Livestock Operator)

And: Aaron Elskamp (Land Manager)

The Land Manager grants the Livestock Operator full and exclusive rights to applying hog manure onto the described land subject to the following terms and agreements.

1. The Livestock Operator agrees to apply manure in such a way that it complies with Environmental Regulations and that it follows general soil fertility recommendations.

2. The Land Manager agrees to allow the Livestock Operator or its agents full rights of access to the described land for the purpose of soil testing, manure application and other related activities.

3. Should the Land Manager decide to sell the land described, the Land Manager shall notify the Livestock Operator prior to selling so that the Livestock Operator can transfer the existing manure spreading agreement to the new owner if desired.

4. This agreement will remain in effect for a period of 3 years.

Listed Land
SE12-14-3w, E1-14-3w, W6-14-2w, E6-14-2w, SW7-14-2w, W5-14-2w, E5-14-2w, SW4-14-2w, NW32-13-2w, SE32-13-2w, SE3-14-3w
(as shown on attached map)

Land Manager Name: Aaron Elskamp

Land Manager Signature:

Livestock Operator Name: MIKE SHAW

Livestock Operator Signature:

Date: 5 MAY 2016

12.0 Truck Haul Routes and Access Points

One consideration with new or expanding livestock operations is the potential impact on existing public roads (municipal and provincial), access and the need for improvements or mitigation. Complete the following table.

Vehicle Type	Estimated Average Number of times per day accessing		Access from PTH/PR onto site will mainly require a Left or Right Hand Turn Please check one				Access onto PTH/PR from site will mainly require a Left or Right Hand Turn Please check one			
	Provincial Trunk Highway (PTH)	Provincial Road (PR)	Provincial Trunk Highway (PTH)		Provincial Road (PR)		Provincial Trunk Highway (PTH)		Provincial Road (PR)	
			LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
Truck	0.6	0.6	X			X		X	X	
Tractor Trailer										
Other – Specify										

Identify what roads and access points will be used for the proposed operation? (See **Truck Haul Routes and Access Points Map** for an example).

For help with mapping, contact your **Community and Regional Planning Regional Office**.

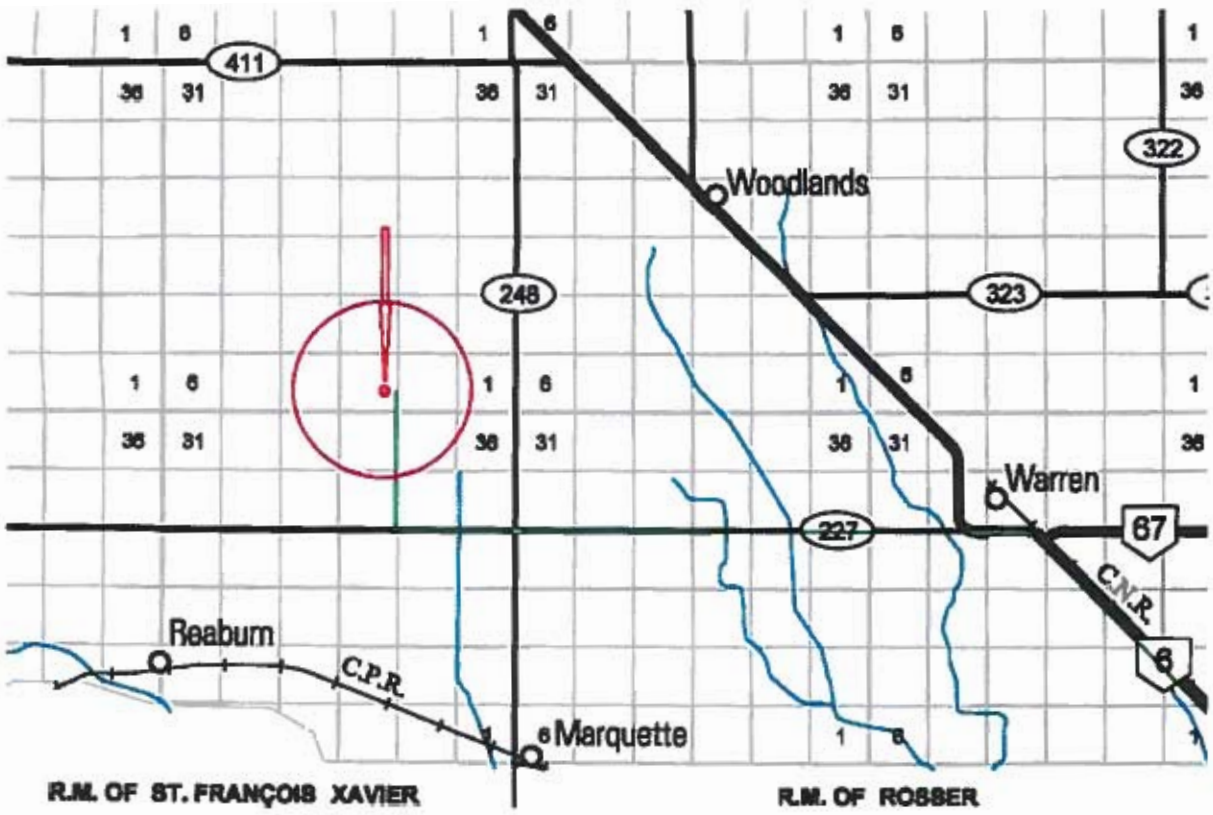
☒ Truck Haul Routes and Access Points Map attached

13.0 Conservation Data Centre Report

A Conservation Data Centre Report must be requested and the response attached to this site assessment. The request may be submitted electronically at:
www.gov.mb.ca/conservation/cdc

Were rare species identified in the Conservation Data Centre Report?

☐ Yes
☒ No



Truck Haul Routes and Access Map
N ½ of SE 3-14-3 W
R.M. OF WOODLANDS

LEGEND

Truck Haul Route

Chunhe Liu

From: Friesen, Chris (CWS) <Chris.Friesen@gov.mb.ca>
Sent: April-08-16 9:01 AM
To: Chunhe Liu
Subject: Delta II in RM of Woodland

Charles

Thank you for your information request. I completed a search of the Manitoba Conservation Data Centre's rare species database and found no occurrences at this time for your area of interest.

The information provided in this letter is based on existing data known to the Manitoba Conservation Data Centre at the time of the request. These data are dependent on the research and observations of CDC staff and others who have shared their data, and reflect our current state of knowledge. An absence of data in any particular geographic area does not necessarily mean that species or ecological communities of concern are not present; in many areas, comprehensive surveys have never been completed. Therefore, this information should be regarded neither as a final statement on the occurrence of any species of concern, nor as a substitute for on-site surveys for species as part of environmental assessments.

Because the Manitoba CDC's Biotics database is continually updated and because information requests are evaluated by type of action, any given response is only appropriate for its respective request. Please contact the Manitoba CDC for an update on this natural heritage information if more than six months pass before it is utilized.

Third party requests for products wholly or partially derived from Biotics must be approved by the Manitoba CDC before information is released. Once approved, the primary user will identify the Manitoba CDC as data contributors on any map or publication using Biotics data, as follows as: Data developed by the Manitoba Conservation Data Centre; Wildlife & Fisheries Branch, Manitoba Conservation and Water Stewardship.

This letter is for information purposes only - it does not constitute consent or approval of the proposed project or activity, nor does it negate the need for any permits or approvals required by the Province of Manitoba.

We would be interested in receiving a copy of the results of any field surveys that you may undertake, to update our database with the most current knowledge of the area.

If you have any questions or require further information please contact me directly at (204) 945-7747.

Chris Friesen
Coordinator
Manitoba Conservation Data Centre
204-945-7747
chris.friesen@gov.mb.ca
http://www.gov.mb.ca/conservation/cdc/

-----Original Message-----
From:
Sent: April-01-16 4:20 PM
To: Friesen, Chris (CWS)
Subject: WWW Form Submission

Below is the result of your feedback form. It was submitted by WWW Information Request () on Friday, April 1, 2016 at 16:20:22

DocumentID: Manitoba_Conservation

Project Title: Delta II in RM of Woodland

Date Needed: 2016-04-15

Name: Charles Liu

Company/Organization: DGH Engineering Ltd.

Address: 12 Aviation Blvd.

City: St. Andrews

Province/State: Manitoba

Phone: 204-510-4162

Fax: 204-334-6965

Email: cliu@dghengineering.com

Project Description: a proposed hog operation. The information is required by Livestock Technical Review Committee.

Information Requested: Conservation Data Center report

Format Requested: email

Location: SE 3-14-3 W

action: Submit

14.0 Supporting Documents

Check off the supporting documents included in this submission:

- [X] Contact Information and Privacy and Publication Notice
- [X] Location Map (shows proposed project within rural municipality)
- [X] Animal Units Calculation Table
- [X] Water Requirement Calculation Table
- [X] Manure Production Calculator Table
- [X] Existing and Proposed Manure Storage Facility Dimensions Tables (if applicable)
- [X] Manure Application Field Characteristics Table
- [X] Crop Rotation Table
- [X] Recent manure application field soil sample results (Nitrate- N lb/ac at 0-6 and 6-24 inch depths, Phosphorus – ppm at 0-6 inch depth)
- [X] Land Base Calculator
- [X] Project Site Plan (proposed operation showing current and proposed structures)
- [X] Land Use and Spread Field Map (location and ownership of operation, spread fields, location and distance to non-agricultural uses, development plan designation, zoning for project site and spread fields)
- [X] Truck Haul Routes and Access Points Map (with routes and access points on municipal/provincial roads and/or provincial trunk highways)
- [X] Response from the Conservation Data Centre
- [ ] Other, please specify:

_____

_____

_____

15.0 Declaration

I do hereby verify that the information contained in the Site Assessment and all required Supporting Documents is accurate and complete to my knowledge

Date: 19 MAY 2016

Signature: