TECHNICAL REVIEW COMMITTEE

A TECHNICAL REVIEW REPORT PREPARED FOR

THE RURAL MUNICIPALITY OF

THOMPSON

BIRKLAND FARMS

Pt. NE 8-4-5 WPM

TRC 12 – 026

May 24, 2017

A. INTRODUCTION – THE TEAM

The Technical Review Committee (TRC) is supported by the following department personnel:

- Agriculture (Ag); Livestock Environment, Nutrient Management and Business Development Specialists, Agricultural Engineer, and Veterinarians
- Indigenous and Municipal Relations (IMR); Community Planners
- Infrastructure (MI); Development Review Technologists, Engineering and Operations Division; Development Review Officers, Water Management and Structures Division
- Sustainable Development (SD); Technical Review Officer, Soils Specialist, Environmental Engineer, Environment Officer, Habitat Mitigation Biologist, Regional Wildlife Manager, Nutrient Management Regulation Supervisor, Groundwater Specialist, Water Rights Licensing Manager and Resource Planner

  and

- Any other specialist or department that may have an interest, which may be consulted during the process.

The Technical Review Coordinator, (Senior Planner, IMR) chairs the committee.

THE REPORT (TRC Process Box 17)

Prime Purpose of TRC Reports

To provide objective, highly credible, technically-based assessments that:

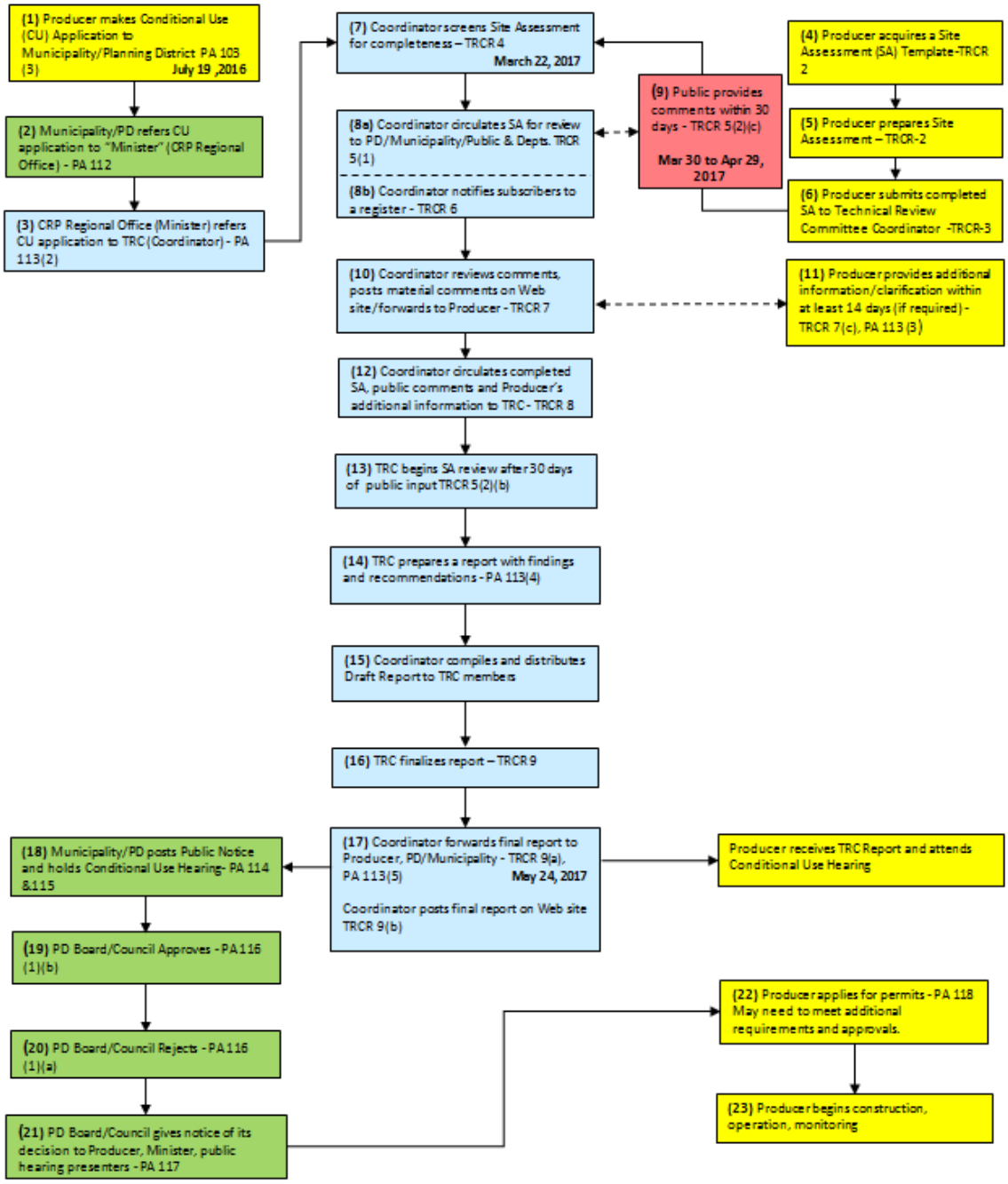
a) Enable municipal councils to make informed Conditional Use Permit decisions;
b) Create a common stakeholder understanding of a livestock proposal, potential impacts and related regulatory requirements and safeguards;
c) Provide a vehicle/forum that enables the sharing of public concerns and proponent responses;
d) Offer recommendations to both municipal councils and proponents; and

e) Represents the fulfillment of the TRC's role as per 116(1)(b)(i) of The Planning Act – to determine, based on available information, that the proposed operation will not create a risk to health, safety or the environment, or that any risk can be minimized through the use of appropriate practices, measures and safeguards

Should the Municipal Council provide conditional approval of the proposal, the project proponent may be required to obtain various permits and licenses from the Province to address in greater detail environmental aspects of the proposal.

The Technical Review Process:

TRC-12-026
Birkland Farms



B. DESCRIPTION OF PROPOSED LIVESTOCK OPERATION

To view a detailed description, go to

www.gov.mb.ca/ia/programs/livestock/public_registries.html

Applicant: Birkland Farms.

Site Location: Approximately 6 miles north of the City of Morden (NE 8-4-5 WPM) Refer to map below.

Proposal: To expand a current Feeder Cattle operation established in 1986, from 2800 animals (2153 AU) to 4500 animals (3461 AU) within a confined livestock area.

This will involve the following:

- Construction of 6 new feeding pens expanding the feedlot from eleven to seventeen feeding pens
- Manure – total annual field storage (990,000 ft ^{3} solid volume)
- Consuming 54,000 imperial gallons of water per day (from an existing well)
- Composting mortalities
- Using the truck haul routes as shown below

TRUCK HAUL ROUTES &ACCESS POINTS MAP

C.SITE ASSESSMENT OVERVIEW

Assessment Overview Table

Provincial Technical Overview of:			
Items Provided by Project Proponent	**Con-firmed**	**Related Existing Provincial Safeguards**	**Dept**
1. Submitted complete Site Assessment	X	Should the Municipal Council provide conditional approval of the proposal, the project proponent may be required to obtain various permits and licenses from the Province to address in greater detail environmental aspects of the proposal.	IMR
2. Clearly defined the project as a X Confined Livestock Area	X	Construction of Confined Livestock Areas (CLA) are subject to provincial requirements (see Appendix A)	IMR
3. Proposed Project Site Physical Suitability	X	The proposed expansion is for an existing operation. (see Appendix B for site photos taken by IMR)	AG
4. Proposed Project Site Flood Risk Potential	X	Water Management, Planning and Standards is not aware of any major overland flooding risk at this location.	MI
5. Identified 54,000 IG/day required for proposed operation	X	Water Use Licensing has received an "Application to Construct a Well and Divert Groundwater", under The Water Rights Act, from the proponent for this project.	SD
6. Proposed measures to meet storage and application regulations for manure		At the property on which the proposed expansion of the Confined Livestock Area (CLA) is situated there is a Manure Storage Facility constructed under Permit LM-0277 (originally issued June 26, 1995, as Permit 03-95-004). The applicant appears to refer to this facility as the "existing sedimentation and evaporation pond". It should be clarified if this facility is a Collection Basin or a Manure Storage Facility under the definitions and requirements of the Livestock Manure and Mortalities Regulation, and the appropriate provisions of the regulation applied to the facility.	SD

Provincial Technical Overview of:			
Items Provided by Project Proponent	**Con-firmed**	**Related Existing Provincial Safeguards**	**Dept**
		Details on requirements for permits for construction/expansion/modification of manure storage facilities, confined livestock areas and collection basins as well as annual manure management plans are available at www.gov.mb.ca/sd/envprograms/livestock. Collection basin requirements are included at the end of this document (see Appendix A). Manitoba Sustainable Development issued an approval dated November 23, 2015, under Section 16(3) of the Livestock Manure and Mortalities Regulation, to reduce to 50 m the required the setback distance from the CLA to the west boundary of the property. This approval was issued in response to a request by owner specifying the property boundary west of the CLA for purposes of subdividing the property. The proposed expansion of the CLA proposes a distance of 50 m from the CLA to the property boundary on the east side of the CLA. This setback distance is not addressed by the approval of November 23, 2015, which applies only to boundary west of the CLA. Sustainable Development has received a variance application for the reduced setback on the east side.	
7. Proposed Project Site with suitable mortalities disposal methods (rendering)	X	Composting, which is an approved method of disposal under the Livestock Manure and Mortalities Management Regulation, is proposed.	SD
8. Proposed Project Site with acceptable odour control measures	X	Birkland Farms has indicated that they will use existing shelterbelts. Should odour become a problem for neighbouring residents, there is a complaints process under *The Farm Practices Protection Act*. A person who is disturbed by any odour, noise, dust, smoke or other disturbance resulting from an agricultural operation may make a complaint, in writing, to the Manitoba Farm Industry Board. *The Act* is intended to provide for a quicker, less expensive and more effective way than lawsuits to resolve nuisance complaints about farm practices. It may create an understanding of the nature and circumstances of an agricultural operation, as well as bring about changes to the mutual benefit of all concerned, without the confrontation and the expense of the courts.	Ag

Provincial Technical Overview of:			
Items Provided by Project Proponent	**Con-firmed**	**Related Existing Provincial Safeguards**	**Dept**
9. Proposed Project Site that meets development plan and zoning By-law requirements	X	The proposed project meets the intent of the MSTW Development Plan, "**Agricultural**" Designation, By-law No. 1-2014. The proposal complies with Development Plan Policies 2.10 pertaining to Livestock Operations Policies. The proposed project is less than the minimum parcel size requirement for the "**AG" Agricultural General Zone** in the R.M. of Thompson Zoning By-law No. 3/08. The proposed parcel site is 50.42 acres and the applicant obtained a variation order to vary the minimum parcel size from 80 acres to 50 acres from the R.M. of Thompson (see Appendix C for Approved Variation Order 2/16). The proposal meets the 600 ft minimum site width, 125 ft minimum front yard and 25 ft minimum side and rear yard requirements.	IMR
10. Proposed Project Site that is a sufficient distance from native prairie, Wildlife Managements Areas and Crown Land.	X	No wildlife related concerns. No Crown land is proposed to be utilized or impacted by the applicant.	SD
11. Proposed Spreadfields that are sufficient, and suitable for manure spreading	X	Birkland Farms has demonstrated that they have access to sufficient suitable land for manure spreading. In the RM of Thompson, beef operations are required to demonstrate access to sufficient suitable land for all of the nitrogen and half of the phosphorus excreted by the cattle. The land requirement for Birkland Farms was determined in consultation with Manitoba Agriculture staff using the Manitoba Agriculture land calculator. The calculator estimates nitrogen (N) and phosphorus (P) excretion by the livestock based on the proposed livestock inventory for Birkland Farms and typical Manitoba feeding practices for beef. The excretion rates are balanced with estimates of crop N utilization and crop P removal. The yields used by Birkland Farms to determine realistic rates of crop utilization and removal are based on Manitoba Agricultural Services Corporation (MASC) 23 year crop yield averages for the RM of Thompson. These are likely conservative averages as yields have improved in recent years. The agriculture capability of the lands under agreement with Birkland Farms varies from Class 1 to 3, all of which is considered prime agricultural land. The primary limitation is slight to moderate droughtiness (M). Low lying areas may	AG

Provincial Technical Overview of:			
Items Provided by Project Proponent	**Con-firmed**	**Related Existing Provincial Safeguards**	**Dept**
		also experience slight to moderate wetness (W) and areas along waterways may experience inundation (I) in the spring. Phosphorus levels in the top 6 inches of soil are all below 60 ppm Olsen P, as required by the Technical Review Committee for development proposals.	
12. Proposed Spreadfields with sufficient minimum setbacks on Spreadfields from natural features (water sources etc.)	X	The proponent has acknowledged the setback areas for all water features have been observed and excluded from landbase calculations. Setbacks should be clearly communicated and observed by those involved in manure application to minimize the risk of nutrients entering surface waters.	SD
13. Proposed Spreadfields that have been secured by spread agreements	X	Birkland Farms has indicated that all of the land provided in the proposal is under agreement for manure application.	AG
14. Proposed spread fields that meet development plan and zoning by-law requirements	X	The spread fields meet the intent of the MSTW Development Plan "**Agricultural**" Designation, By-law No. 1-2014. The proposal complies with Development Plan Policies 2.10 pertaining to Livestock Operations Policies. The spread fields in the "**AG" Agricultural General Zone** in the R.M. of Thompson Zoning By-law No. 3/08 are in compliance with the 100 meter minimum setback distance required.	IMR
15. Proposed trucking routes and access points that do not impact Provincial Roads or Provincial Trunk Highways	X	We have no concerns with this proposal	MI
16. Proposed trucking routes – local roads	X	Under The Planning Act, municipalities as a condition of approval may require Birkland Farms to enter into a Development Agreement regarding the condition and upkeep of local roads used as truck haul routes.	IMR

Provincial Departments

- Ag – Agriculture
- IMR – Indigenous and Municipal Relations
- MI – Infrastructure
- SD – Sustainable Development

D. PUBLIC COMMENTS & DISPOSITIONS

Public Comment Summary	
1. **David Elias** **Grey Hawk Farm Ltd**	As a neighbor of Birkland Farms feedlot I fully support the proposed expansion north of Morden. Having seen them operate for the last few years has convinced me that they are good stewards of the land and are a definite advantage to our local economy. They are honest hard working citizens and responsible feedlot managers.
2. **Andrew Elias**	I as a neighbor, fellow farmer and livestock owner fully support Birkland Farm's proposed feedlot expansion 6.5 miles north of Morden. Birkland's owners and employees are hard working honest people providing many good local jobs while generating healthy economic spin offs. I look forward to years of collaboration and co-existence with them. Let's make this proposed growth to Manitoba's livestock industry easy and efficient.
3. **Wayne Rempel,** **President & CEO** **Kroeker Farms Limited**	On behalf of Kroeker Farms Limited, I would like to express my affirmation for this expansion. Our organization operates in this area as well, and we believe that the approval of this expansion would be a positive step for the Rural Municipality of Thompson and positive for the community as a whole.
4. **Linda and Wayne Duncan**	Strongly oppose the proposal.

Morden, MB	The Duncan Family Farm that has existed for 126 years needs to express their concerns regarding the expansion of a Feedlot in the RM of Thompson. We recognize the present feedlot has been in existence for many years. The previous owners/operators appreciated the need to honour traditional “best farming practices” and “sustainable waste management”. But, with this proposed expansion the risks increase. The risks include but are not limited to - Impact of waste management on soil - Impact of waste management on water - Timing of manure application - Retention of liquid and solid manure - Amplified odour for neighbours - Increased fly populations in adjacent areas - Wear / tear on the municipal road systems Why jeopardize “the quality of life” of the adjacent residents/land owners/taxpayers? How are the neighbouring residents/land owners/taxpayers going to be compensated for these increased risks and impacts? Who will be responsible for monitoring these issues? Once established, there will be little recourse when problems occur and persist. Water, soil health, conservation and sustainable farming practices are paramount issues in today’s society. Why is it necessary to enlarge intensive livestock operations in the middle of areas that are encouraging young farmers/residents to locate to these communities?

For a full account of public comments go to: http://www.gov.mb.ca/imr/mr/livestock/trc-12-026.html

E.CONCLUSIONS & RECOMMENDATIONS

Overall Conclusion

The information contained in the Site Assessment submitted by the proponent generally meets Provincial requirements. In addition, based on available information it has been determined that the proposed operation will not create a risk to health, safety or the environment, or that any risk can be minimized through the use of appropriate practices, measures and safeguards.

Recommended Actions to Council

- As per Section 114(1) of The Planning Act, Council must set a date for a Conditional Use hearing which must be at least 30 days after it receives this report
- As per Section 114(2) of The Planning Act, at least 14 days before the date of the hearing, Council must:
    a) send notice of the hearing to
        (1) the applicant,
        (2) the minister, (c/o the Morden Community & Regional Planning Office)
        (3) all adjacent planning districts and municipalities, and
        (4) every owner of property located within three kilometres of the site of the proposed livestock operation, even if the property is located outside the boundaries of the planning district or municipality;
    b) publish the notice of hearing in one issue of a newspaper with a general circulation in the planning district or municipality; and
    c) post a copy of the notice of hearing on the affected property in accordance with Section 170 of The Planning Act.
- Council should specify the type(s) of operation, legal land location, number of animals in each livestock category and total animals units in its Conditional Use Order.

- As per Section 117 of The Planning Act, Council must send a copy of its (Conditional Use Order) to
    a) the applicant;
    b) the minister (c/o the Morden Community & Regional Planning Office); and
    c) every person who made representation at the hearing.

Council is welcome to contact Manitoba Sustainable Development's Technical Review Officer with Environmental Approvals Branch as well as regional Environmental Compliance and Enforcement staff to discuss environmental compliance issues, if applicable, with respect to the Livestock Manure and Mortalities Management Regulation (M.R. 42/98).

Recommended Actions to Proponent

That any additional measures identified through subsequent Provincial and Federal licensing or permitting in order to minimize any identified risks to health, safety and the environment be undertaken.

F. TECHNICAL REVIEW COMMITTEE MEMBERS

Name	Department	Title	Telephone
Don Malinowski Chair	Indigenous and Municipal Relations	Senior Planner Community & Regional Planning Branch	945-8353
Petra Loro	Agriculture	Livestock Environment Specialist Agri-Resource Branch	945-3869
Jen Webb	Sustainable Development	Manager Environmental Approvals Branch	945-8541
Jeff DiNella	Infrastructure	Senior Development Review Technologist Highway Planning and Design Branch	945-2664

Appendix A

LIVESTOCK TECHNICAL REVIEW COMMITTEE

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT:	**Birkland Farms**
PROPOSAL NAME:	**Birkland Farms**
TYPE OF OPERATION:	**3461 animal unit Feeder Cattle**
RURAL MUNICIPALITY:	**Thompson**
OPERATION LOCATION:	**NE 8-4-5 WPM**

Environmental Stewardship Division; Environmental Approvals Branch

Any applicable permit or annual submissions under the Livestock Manure and Mortalities Management Regulation would be processed by Environmental Approvals Branch of Sustainable Development. Therefore, the Branch has not reviewed any information associated with storage or application of manure including, but not limited to, the manure storage facility, plans for manure management/soil tests, and land base assessment. Sustainable Development has received a variance application for the reduced setback on the east side.

Details on requirements for permits for construction/expansion/modification of manure storage facilities, confined livestock areas and collection basins as well as annual manure management plans are available at www.gov.mb.ca/sd/envprograms/livestock. Collection basin requirements are included at the end of this document.

Environmental Stewardship Division; Environmental Compliance & Enforcement Branch, Central Region

Environmental Compliance and Enforcement has reviewed the proposal identified as Birkland Farms, NE-08-04-05 W, RM of Thompson – Expansion of Confined Livestock Area (CLA), and has the following comments:

At the property on which the proposed expansion of the CLA is situated there is a Manure Storage Facility constructed under Permit LM-0277 (originally issued June 26, 1995, as Permit 03-95-004). The applicant appears to refer to this facility as the "existing sedimentation and evaporation pond". It should be clarified if this facility is a Collection Basin or a Manure Storage Facility under the definitions and requirements of the Livestock Manure and Mortalities Regulation, and the appropriate provisions of the regulation applied to the facility.

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Biodiversity & Land Use Division; Wildlife & Fisheries Branch; Habitat, Biodiversity & Endangered Species section

- No wildlife related concerns.

Parks and Regional Services Division; Central Region

- No comment.

Water Stewardship Division; Water Science & Management Branch

Staff in the Water Science and Watershed Management Branch have reviewed the site assessment for Birkland Farms in the RM of Thompson and have the following comments:

- Proper nutrient management applications that avoid excess loss of nutrients to surface waters are needed on lands receiving manure in southern Manitoba because long-term trend analysis of total phosphorus and total nitrogen has shown significant increases in these nutrients in the Assiniboine and Red rivers (Jones and Armstrong 2002).

- The proponent plans to fall surface broadcast solid manure without incorporating within
- 48 hours. To minimize risk of phosphorus loss in spring runoff, fall incorporation is preferable as a significantly greater portion of the manure can remain exposed to runoff waters when unincorporated. In order to reduce the risk of runoff losses, application should not occur to saturated, frozen or snow covered soils or when heavy rainfall is expected within 24 hours. Fall broadcast applications are best completed by mid-October or earlier as manure broadcast shortly before freeze up is.more susceptible to nutrient runoff losses during spring snowmelt compared to manure broadcast earlier in the fall.

- Manure tends to have an excess of phosphorus (P) compared to nitrogen (N) and as a result, for most crops, application at N-based rates causes a buildup of soil P. Practices which minimize N losses improve the N:P ratio in the manure and help reduce P buildup when manure is applied at N-based rates.

- The proponent has acknowledged the setback areas for all water features have been observed and excluded from landbase calculations. Setbacks should be clearly communicated and observed by those involved in manure application to minimize the risk of nutrients entering surface waters.

  The agricultural capability class and subclass information in the Manure Application Field Characteristics Table is incorrect for many fields. This needs to be corrected so that the proponent is aware of the appropriate residual nitrate-nitrogen limits. TRC Coordinator's Note: Manitoba Agriculture has reviewed the agriculture capability information and indicated in its write-up that this is all prime agricultural land.

- Manitoba has included phosphorus as a nutrient by which fertilizer application through manure, synthetic fertilizer, and municipal waste sludge to agricultural lands may be limited. To remain environmentally sustainable over a long-term planning horizon of25 years or more, the proponent must be able to balance phosphorus inputs from applied manure and other nutrient sources such as commercial fertilizers with crop removal rates to avoid further build-up in soils. Consequently, sufficient land base must be available such that manure can be applied at no more than 1 times crop removal rates. For long- term planning purposes, the proponent needs to have sufficient land available to ensure that manure can be applied at 1 times crop removal. The proponent has identified sufficient land to apply at 2 times crop removal (meets regulatory requirements). It is important to rotate manure application across all spread fields so as to prevent excessive P buildup.

- The collection basin size appears inadequate and may pose a risk of runoff entering surface waters during heavy precipitation events or possibly leaching to groundwater as no information on hydraulic conductivities of subsoil are provided (neither the location nor depths of testholes are clear in the proposal). Further information is required as to the size of drainage area and management of water in collection basin (such as where will land application will occur).

- All unused and abandoned wells on the site and spread fields should be properly sealed. A sealed well report should be filed with the Groundwater Management Section of Sustainable Development for each well sealed. Information on well sealing is available from Sustainable Development (204-945-6959) or: http://www.gov.mb.ca/conservation/ waterstewardship/water info/mise/abandoned wells.pdf. It is recommended that all but the most basic wells should be sealed by a well drilling professional. A list of currently licensed well drilling professionals is located http://www.gov.mb.ca/conservation/ waterstewardship/water quality/wells groundwater/well drillers.html;

- During manure application all groundwater features, including water wells, should be given as a minimum, the amount of buffer as outlined in the regulations.

- Note that the Well Standards Regulation under the Groundwater and Water Well Act requires a 100 metre separation distance between newly constructed wells and confined livestock areas.

- The spreadfields on the NE02-04-05W and Section 11-14-05W are located within the primary recharge area for the Winkler aquifer. Additional care and caution should be exercised when applying manure on these fields and it would be prudent not to use these locations for field storage of manure.

Water Stewardship Division; Water Use Licensing Branch; Groundwater Licensing section

- Water Use Licensing has received an "Application to Construct a Well and Divert Groundwater", under The Water Rights Act, from the proponent for this project.

Biodiversity & Land Use Division; Lands Branch; Provincial & Regional Land Management Planning section

- Please be advised that Land Management & Planning Section has reviewed the TRC Report and based on the information presented has no concerns. No Crown land is proposed to be utilized or impacted by the applicant.

PREPARED BY:
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Manitoba

Conservation

Construction Requirements for Confined Livestock Areas and Collection Basins

The *Livestock Manure and Mortalities Management Regulation* provides the following definitions:

> "**confined livestock area**" means an outdoor, non-grazing area where livestock are confined by fences or other structures, and includes a feedlot, paddock, corral, exercise yard, holding area and hoop structure;
> "**collection basin**" means a structure
> (a) intended to collect runoff water contaminated with manure in an agricultural operation, and
> (b) constructed primarily from soil by excavating or forming dikes;

Confined livestock areas most commonly refer to outdoor, open livestock facilities such as beef feedlots or cow-calf operation facilities ("open confined livestock areas"). The amendments to the MR42/98 have included covered structures used for the rearing of livestock that feature a floor design that constitutes an effective water barrier, such as concrete ("Covered Confined Livestock Areas"). Examples include biotech shelters for feeder pig production, broiler houses and dairy loose housings.

Confined livestock areas differ from earthen manure storage structures in that manure at the soil surface is generally solid, with moisture content ranging from 50% to 75%, which departs from the continuously saturated conditions on the floor of earthen manure storage structures. Another point of distinction is that while the floor of confined livestock areas is often dry from mid-summer to late fall, it is also frozen from early winter to late spring. For these reasons, and in spite of research evidence pointing to significant leaching in some areas of confined livestock area pens, the design threshold saturated hydraulic conductivity for confined livestock area floors and collection basins is 1×10^{-6} cm/sec. This design threshold is under revision, pending the availability of new information on the spatial variability of leaching under confined livestock areas.

Collection basins are earthen structures meant for short -term storage of runoff from areas where manure accumulates (*e.g.* beef feedlot or overwintering facilities for cow-calf operations). The regulation indicates that collection basins must have a capacity of at least 75-mm of runoff over the collection area. The regulation limits the maximum size of the collection basin to 150-mm of runoff, with the intent to have the operator empty the collection basin shortly after a major runoff event. As a result, the maximum hydraulic conductivity for material separating the bottom of a collection basin and the top of an aquifer or bedrock is also 1×10^{-6} cm/sec; this threshold hydraulic conductivity may be decreased in environmentally sensitive areas. Collection basins designed for longer storage duration are considered earthen manure storage structures and are subject to the relevant articles of the regulation and design requirements.

I) Subsoil investigation criteria

1 - Construction requirements are dependent on geotechnical information obtained by the site investigation. Site investigation requires either excavation or drilling of test-holes to a minimum depth of 5-m. However, test-hole depths greater than 5-m may be required to determine the extent of any observed water bearing zones, potential groundwater anomalies or as required to ensure meeting the separation distance from the floor of the confined livestock area and/or collection basin and the uppermost top of an aquifer.

2 - Confined livestock areas with dimensions less than 8 ha (20 acres) must have minimum three (3) testholes in the immediate area of the confined livestock area plus at least one (1) test-hole located in the area intended for the siting of a collection basin, when a collection basin is included in the contaminated runoff management system. Large collection basins may require additional test-holes.

3 - Confined livestock areas with dimensions greater than 8 ha (20 acres) require additional test-holes at a test-hole density dependent on pen dimensions and area. Test-holes should on a maximum 200-m grid pattern. Additional testing outside of the confined livestock area may be required to delineate potential water bearing zones near the edge of the facility .The table and diagram below can be used for guidance in designing a test-hole sampling grid.

Figure 1. Suggested Test-Hole Grid Patterns for Large Confined Livestock Areas

Table 1. Number of test-hole required for characterisation of a site for constructing a confined livestock area along with laboratory analyses requirements for representative soil formations under the floor of the proposed area or runoff collection basin.

Area (acres)	Number of test-holes for the confined livestock area	Minimum number of sub-samples representative of the soil strata in the profile which are to be sent to a laboratory for detailed analyses
<20	3	3
20	5	4
40	9	6
80	15	8
160	25	12

4 - Post investigation requirements – all soil coring location and test pits must be sealed as follows:

4.a. All soil cores entry holes must be completely sealed with bentonite.

4.b. Where a test pit is dug out with an excavator, the site must be restored by

4.b.1. Backfilling the excavated material into the test pit;

4.b.2. Compacting the material in the upper 1.2-m of soil

4.b.3. Landscaping the surface area of the backfilled test pit to ensure that a depression will not form following backfilling

4.b.4. Seed the affected area with forage grasses.

5 - Laboratories – Only laboratories approved by the regulatory authority shall be used to analyze materials to be used in the construction of confined livestock areas for particle size distribution, Atterberg limits and hydraulic conductivity.

6 - Testing Requirements for Material Characterization – The soil permeability requirement for earthen floors in confined livestock areas and earthen collection basins is 1×10^{-6} cm per second. In order for the material at a site to be approved for use in the construction ofa confined livestock area or a collection basin without the need for additional testing, the material at the site must meet the criteria described in Subsections 6.b.1 and 6.b.2.

6.a. All materials to be used in the construction of a collection basin, or the soil under the anticipated floor of a confined livestock area shall be analyzed for particle size distribution following ASTM D2487 and ASTM 422-63, and Atterberg Limits following ASTM D4318 or any other method pre-approved by Manitoba Conservation.

6.b. If the distribution of the particle size classes and the Atterberg limits fall within the ranges given in Subsection 6.b.1 and 6.b.2, the material is considered acceptable for construction of a collection basin or siting of a confined livestock area without the need for additional laboratory testing providing it is installed using the recommended equipment as described in section II, III and IV. The use of materials (as defined above) with the appropriate construction methodologies and equipment are expected to produce in-situ and constructed structures with hydraulic conductivities of 1×10^{-6} cm/s or less.

6.b.1. Acceptable Particle Size Ranges (by weight):

- Percent Fines $\geq$ 50 %;
- Clay Content $\geq$ 15 %;
- Sand Content $\leq$ 45 %; and

where the fines are defined as the soil fraction which passes through a No. 200 (75-µm) US standard sieve, and clay and sand are defined in the ASTM D2487-00 standard.

6.b.2. Acceptable Atterberg Limits:

- Plasticity Index (PI): PI $\geq$ 16 %
- Liquid Limit (LL): LL $\geq$ 30 %

6.b.3. Poorly graded materials with high silt content may not be considered acceptable. Such materials do not compact well and are highly erodible.

6.c. If the distribution of the particle size classes and the Atterberg limits **do not** fall within the acceptable ranges given in Subsection 6.b.2.1 and 6.b.2.2, an alternative design acceptable to the director of Manitoba Conservation will be required.

II) Construction requirements for confined livestock areas: Open Confined Livestock Areas

1 - Open confined livestock areas must be located at least 100 m from any watercourse that is flowing outside the property of the livestock operation or any well, inclusive of the wells currently on the operator's property or planned as part of the confined livestock operation proposal, or the property's boundaries.

2 - Confined livestock areas capable of housing 300 animal units or greater must be designed and certified by a professional engineer licensed to practice in Manitoba.

3 - Open confined livestock area designs must include provisions for preventing upland runoff water from entering into the confined livestock area and means for managing runoff water contaminated with manure. One method for managing contaminated runoff is by intercepting

runoff in a collection basin and to land apply very shortly after a runoff event. Other methods will require pre-approval by the director.

4 - The minimum separation distance to the uppermost aquifer, as specified throughout this document, applies to facilities after construction such that cuts and fills must be considered.

5 - Operations located on land in which more than 5 m of overburden having an expected hydraulic conductivity of 1 x 10^{-6} cm per second or less will separate the lowermost point of the area where manure accumulates from the top of the uppermost underlying aquifer or fractured rock are required to construct the pen area at a 2% slope or greater.

6 - Operations located on land in which an aquifer exists when less than 5 m but more than 2 m of overburden separates the lowermost point of the area where manure accumulates from the top of the uppermost underlying aquifer or fractured rock are subject to the following requirements:

6.a. where the overburden has an expected hydraulic conductivity of 1 x 10^{-7} cm per second or less, the floor of the confined livestock area must be constructed at a 2% or greater slope;

6.b. where the overburden has an expected hydraulic conductivity between 1 x 10^{-7} cm per second and 1 x 10^{-6} and per second, the floor of the confined livestock area must be constructed at a 3% or greater slope.

6.c. In all situations falling under section 6, the confined livestock areas will be subject to the Installation of groundwater monitoring wells located and designed in a manner acceptable to Manitoba Conservation.

7 - Operations located on land in which an aquifer exists when less than 2 m of overburden having an expected hydraulic conductivity of 1 x 10^{-6} cm per second or less will separate the lowermost point of the area where manure accumulates from the top of the uppermost underlying aquifer or fractured rock will require special design criteria to be submitted by a professional engineer. Groundwater monitoring wells located and designed in a manner acceptable to Manitoba Conservation will be required.

8 - Construction methods for confined livestock areas where earthmoving is necessary for creating slopes that meet the above design requirements:

8.a. topsoil shall be stripped from the area where any slope is to be constructed before excavation and compaction;

8.b. all excavated material shall be placed in 0.15 m lifts and then compacted;

8.c. compaction is to be carried out with a fully ballasted sheepsfoot packer, or other compaction equipment approved by the director, to at least 95% of maximum Standard Proctor dry density, determined by testing in accordance with ASTM Standard D698 at a moisture content between 0.9and 1.2 optimum, and a maximum hydraulic conductivity no more than 1 x 10^{-6} cm per second.

III) Construction requirements for confined livestock areas: Covered confined livestock areas

1 - Covered confined livestock areas must be located at least 100 m from any watercourse that is flowing outside the property of the livestock operation or any well, inclusive of the wells currently on the operator's property or planned as part of the confined livestock operation proposal, or the property's boundaries.

2 - Confined livestock areas of 300 animal units or greater must be designed and certified by a professional engineer licensed to practice in Manitoba.

3 - Covered confined livestock area designs must include provisions for preventing upland runoff water from entering into the confined livestock area and means for managing any runoff water contaminated with manure.

4 - The minimum separation distance to the uppermost aquifer, as specified throughout this document, applies to facilities after construction such that cuts and fills must be considered.

5 - Operations located on land in which more than 5 m of overburden having an expected hydraulic conductivity of 1 x 10^{-6} cm per second or less will separate the lowermost point of the area where manure accumulates from the top of the uppermost underlying aquifer or fractured rock are required to ensure that roof water does not infiltrate the soil under the covered confined livestock area. The operation must provide 3-m wide graded slopes around each confined livestock area housing having a minimum grade of 5% away from the building along with any other means necessary to effectively divert roof water away from the sides of the building. The site layout and landscaping must provide for diversion of uncontaminated roof water to watercourses.

6 - Operations located on land in which an aquifer exists when less than 5 m of overburden having an expected hydraulic conductivity of 1 x 10^{-6} cm per second or less will separate the lowermost point of the area where manure accumulates from the top of the uppermost underlying aquifer or fractured rock are required:

6.a. to ensure that roof water does not infiltrate the soil under the covered confined livestock area.
The operation must provide 3-m graded slopes around each confined livestock area housing having a minimum grade of 5% away from the building along with any other means necessary to effectively divert roof water away from the sides of the building. The site layout and landscaping must provide for diversion of uncontaminated roof water to watercourses, and;

6.b. to provide a suitable floor system under the confined livestock area housing to prevent any leaching of liquids or contaminant from the accumulated manure.

IV) Construction requirements for runoff collection basins

1 - A collection basin is short-term containment structure for water contaminated with manure, which remains by definition, manure. Because of the short-term containment intent, a collection basin does not specifically require a construction permit.

1.a. In the event that a collection basin is proposed as part of the construction of a new or expanded confined livestock area requiring a construction permit (ie. housing 300 or more animal units), the terms for the construction of the collection basin will be included in the permit for the confined livestock area.

2 - A collection basin must have a holding capacity of at least 0.075-m and no greater than 0.150-m of runoff from the collection area plus a 0.3-m freeboard.

2.a. A collection basin constructed larger than 0.150-m of runoff holding capacity will be considered a manure storage facility (long-term storage) and be subjected to the requirements for obtaining a permit to construct a manure storage facility.

3 - When proposed as part of a new or expanded confined livestock area, collections basins must be located 100 m away from watercourses, wells and property boundaries.

3.a. When a collection basin is proposed by an operator or ordered by Manitoba Conservation for an existing confined livestock area, the 100 m setback requirement does not apply.

4 - Collection basins proposed on land in which an aquifer exists when less than 2 m of overburden having an expected hydraulic conductivity of 1 x 10^{-6} cm per second or less will separate the lowermost point of the collection basin from the top of the uppermost underlying aquifer or fractured rock will require special design criteria to be submitted by a professional engineer. Groundwater monitoring wells located and designed in a manner acceptable to Manitoba Conservation will be required.

5 - Construction methods for dykes and any other compacted area are as follows:

5.a. topsoil shall be stripped from the area where any dyke is to be constructed before excavation and compaction;

5.b. all excavated material shall be placed in 0.15 m lifts and then compacted;

5.c. compaction is to be carried out with a fully ballasted sheepsfoot packer, or other compaction equipment approved by the director, to at least 95% of maximum Standard Proctor dry density, determined by testing in accordance with ASTM Standard D698 at a moisture content between 0.9 and 1.2 optimum, and a maximum hydraulic conductivity no more than 1 x 10^{-6} cm per second;

6 - The slopes (inside and outside) and the floor of the collection basin must be completely seeded to flood resistant grasses within one year of construction. The grass stand must be managed so as to protect the collection basin from erosion at all times.

CLA Construction Requirements - Spring 2005

Appendix B

Site Assessment –Birkland Farms Feeder Cattle Operation (NE ¼ 8-4-5W R.M. of Thompson)

Photos by Manitoba IMR

Appendix C

THE RURAL MUNICIPALITY OF THOMPSON

UNDER THE PLANNING ACT

VARIATION ORDER

VARIATION ORDER NO. 2/16

WHEREAS Kroeker Farms Ltd., owners of the property legally described as the North East ¼ 8-4-5 WPM, Miami, Manitoba applied to the Council of the Rural Municipality of Thompson to vary the Rural Municipality of Thompson Zoning By-law No.3/08 provided under:

Part 6, Section 94 of *The Planning Act* as it applies to the property in order to vary the established requirements as follows:

From (zoning requirements): to establish and allow the property line distance to 50 meters from 100 meters AND to vary the zoning requirement from 80 acres to 50 acres
- for the purpose of subdividing

And after careful consideration of the application and any representations made for or against the variation sought by the applicant, the Council of the Rural Municipality of Thompson in meeting duly assembled this 24th day of March A.D. 2016

APPROVED the said Variation.

This order shall expire if not acted upon within 12 months of the date of making.

Jody Oakes
Chief Administrative Officer

Brian Callum
Reeve