



**TECHNICAL REVIEW COMMITTEE**  
**A TECHNICAL REVIEW REPORT**  
**PREPARED FOR**  
**THE RURAL MUNICIPALITY**  
**OF**  
**OAKVIEW**

**VERBRUGGEN PRAIRIE**  
**FARMS LTD.**  
**SW 13-14-21W**

**TRC 12 – 020**

**SEPTEMBER 29, 2016**

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## 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
  - 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)

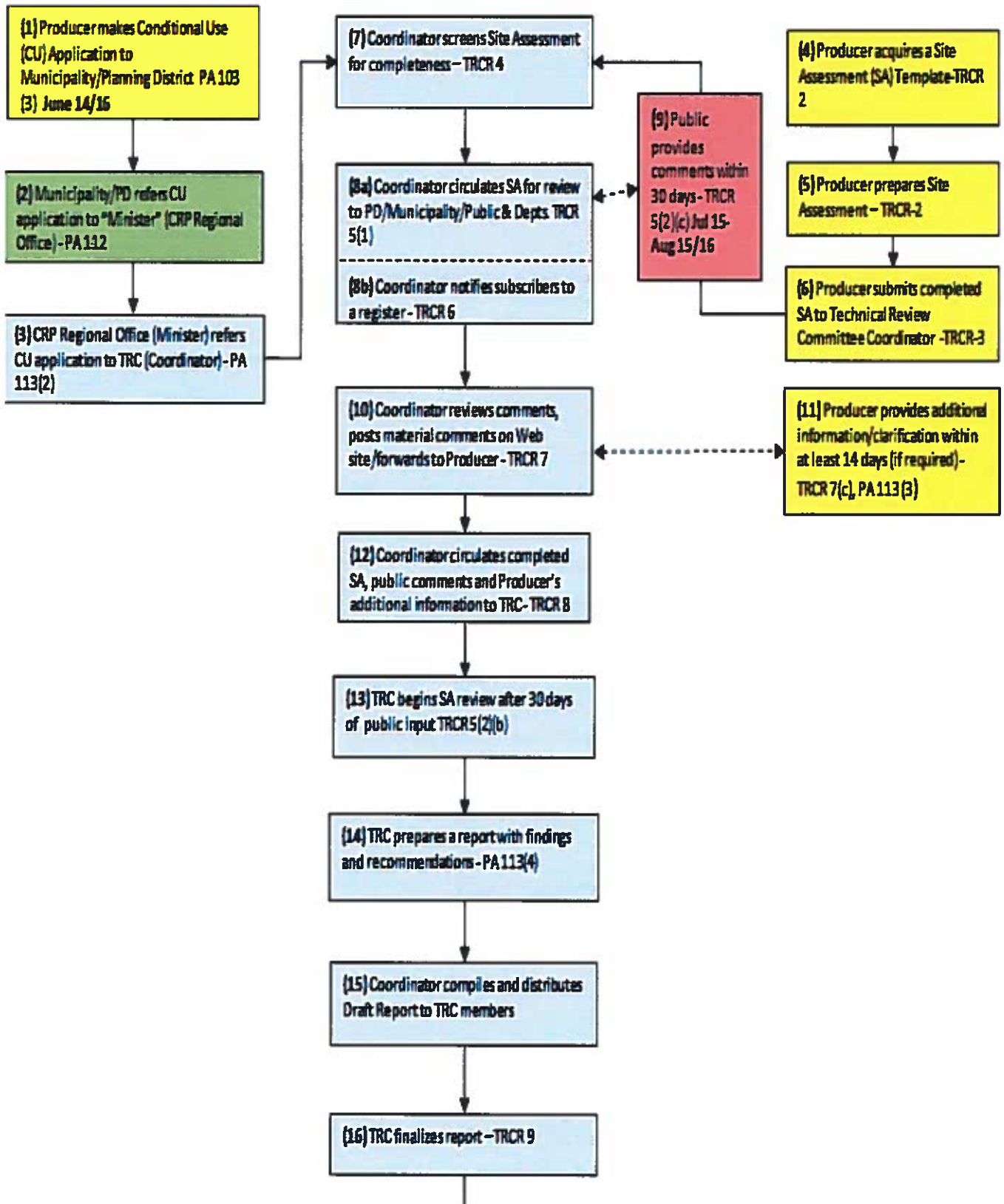
#### Prime Purpose of TRC Reports

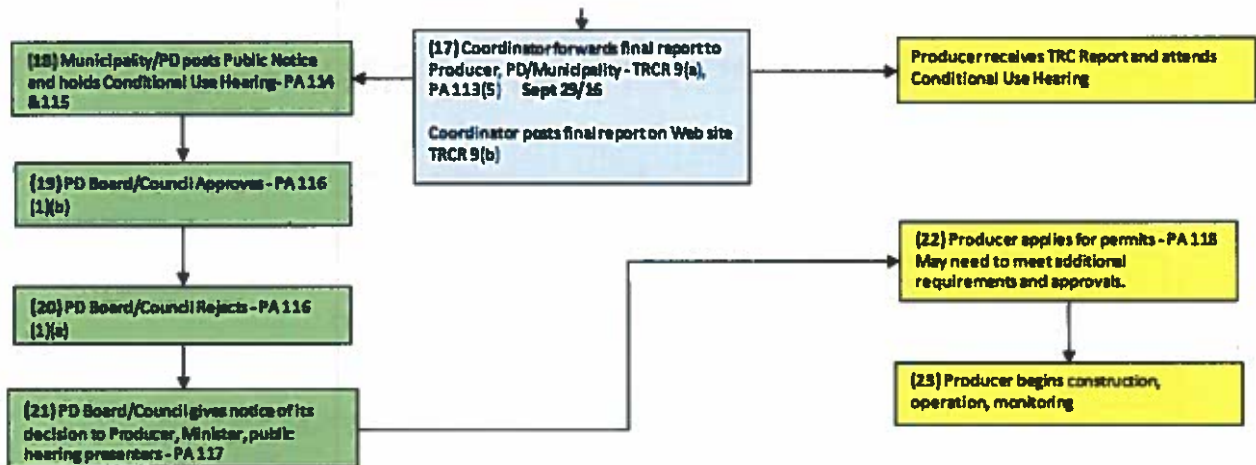
To provide objective, highly credible, technically-based assessments that:

- 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.

# New Livestock Technical Review Process Verbruggen Prairie Farms Ltd.





## B. DESCRIPTION OF PROPOSED LIVESTOCK OPERATION

To view detailed descriptions go to

[www.gov.mb.ca/ia/programs/livestock/public\\_registries.html](http://www.gov.mb.ca/ia/programs/livestock/public_registries.html)

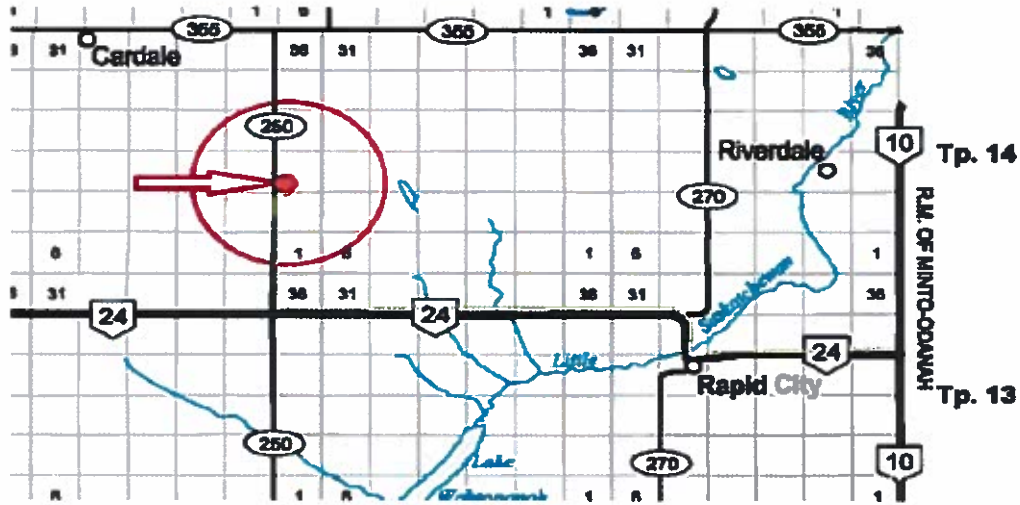
Applicant: Verbruggen Prairie Farms Ltd.

Site Location: Approximately 10 kms south east of the Community of Cardale (SW 13-14-21 WPM) Refer to map below.

Proposal: To establish a 858 Animal Unit hog grower/finisher operation (animal confinement facility)

This will involve the following:

- Construction of a new barn 58,000 sq ft (145 ft x 400 ft)
- Construction of a two cell earthen manure storage structure (405 day holding capacity)
- Consuming 19,800 imperial gallons of water per day (from a proposed well)
- Rendering mortalities
- Using the truck haul routes as shown below



**Truck Haul Routes and Access Map**  
 SW 13-14-21 W  
 R.M. of Oakview

**LEGEND:**  
 — Truck haul route

## C.SITE ASSESSMENT OVERVIEW

<b>Provincial Technical Overview of: Verbruggen Prairie Farms Ltd.</b>			
<b>Items Provided by Project Proponent</b>	<b>Con- firmed</b>	<b>Related Existing Provincial Safeguards</b>	<b>Dept</b>
1. Submitted complete Site Assessment	X	Not Applicable	IMR
2. Clearly defined the project as a <u>  X  </u> Animal Confinement Facility	X	Agricultural buildings such as barns over 600 square meters (6,458 sq ft), require a building permit from the Fire Commissioner's Office under <i>The Buildings and Mobile Homes Act</i> and the <i>Manitoba Building Code</i> .	IMR
3. Proposed sufficient, suitable land for manure spreading	X	<p>The proposal is consistent with Provincial requirements for pig developments under the Pig Production Special Pilot Project. The Pilot Project requires new and expanding pig operations to:</p> <ul style="list-style-type: none"> <li>• be located outside of Hanover and La Broquerie,</li> <li>• construct a 2-cell manure storage facility,</li> <li>• demonstrate access to sufficient suitable land to balance manure phosphorus with crop phosphorus removal,</li> <li>• inject or immediately incorporate manure that is applied to tilled land, and</li> <li>• maintain soil test levels below 60 ppm Olsen P.</li> </ul> <p>In any given year, the amount of land that actually receives manure will depend on the annual manure application rates and the volume of manure to be applied.</p> <p>If the operator uses professional services to develop the manure management plan, the manure management planner must successfully complete the Manure Management Planner's Course offered by Assiniboine Community College and be a member in good standing of the Manitoba Institute of Agrologists or a Certified Crop Advisor.</p> <p>If the services of a commercial manure applicator are obtained to land apply the manure, the applicator must be trained by the Assiniboine Community College and licenced by Manitoba Agriculture.</p>	Ag

**Provincial Technical Overview of: Verbruggen Prairie Farms Ltd.**

Items Provided by Project Proponent	Con- firmed	Related Existing Provincial Safeguards	Dept
4. Proposed spread fields that are properly designated (Dev Plan) and Zoned (ZBL)	X	<p>All lands are designated "Rural Policy Area" according to <u>MWPD Development Plan BL No. 3-2009</u>.</p> <p>All lands are zoned "AG" Agriculture General Zone according to <u>RM Saskatchewan ZBL No. 1195</u> and <u>RM Blanshard ZBL No. 2014-4</u>.</p> <p>Said land use designation and municipal zoning district (above) allow spreading of manure associated with newly siting and/or expanding livestock operations.</p>	IMR
5. Acknowledged Proposed sufficient minimum setbacks on spread fields from natural features (water sources etc)	X	<p>The proponent has acknowledged that the setback areas for all water features have been observed and excluded from land base calculations for this operation. It is important that these setbacks be clearly communicated and observed by everyone involved in manure application so as to minimize the risk of nutrients entering surface waters.</p>	SD
6. Identified 19,800 imp gals/day required for proposed operation	X	<p>The project requires a water rights use licence. The proponent is directed to contact Lorraine Thibert at 204-945-6693 if they have any questions regarding this requirement.</p>	SD
7. Proposed measures to meet storage and application regulations for manure	X	<p>Based on the number of proposed Animal Units, Verbruggen Prairie Farms Ltd. will be required to submit an annual Manure Management Plan by the regulated deadline for the storage, handling, disposing, or application of any livestock manure.</p> <p>Manitoba Sustainable Development regulates the construction of manure storage facilities (MSF) by requiring the proponent to submit an "Application for Permit to Construct, Modify or Expand a Manure Storage Facility".</p> <p>The MSF permit process under the Livestock Manure and Mortalities Management Regulation is separate from the TRC. The proponent has indicated a manure storage facility will be constructed.</p> <p>A new Pilot Project Evaluation Protocol has been developed. Sustainable Development will consider issuing manure storage facility permits for new and expanding operations if they meet the criteria of this Protocol.</p>	SD

**Provincial Technical Overview of: Verbruggen Prairie Farms Ltd.**

Items Provided by Project Proponent	Con- firmed	Related Existing Provincial Safeguards	Dept
8. Proposed suitable manure mortalities disposal methods (rendering)	X	<p>In accordance with the Livestock Manure and Mortalities Management Regulation (M.R. 42/98), mortalities must be kept in a secure storage room, covered container or secure location; and continuously frozen or refrigerated, if not disposed of within 48 hours after death.</p> <p>Rendering mortalities is acceptable method of disposal.</p> <p>The proponent should prepare a contingency plan in case of a catastrophic event resulting in mass mortalities</p>	SD
9. Identified acceptable odour control measures for the project site	X	<p>Under <i>The Farm Practices Protection Act</i>, 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. <i>The Act</i> 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.</p> <p>IMR - The proponent is proposing to develop a shelter belt around the earthen manure storage facility. Under <i>The Planning Act</i>, Council may require covers on manure storage facilities. Council may also enter into a development agreement with the owner which can be registered on the title of the property as a condition of approval.</p>	Ag/ IMR
10. Proposed a project site that meets development plan and zoning by-law requirements	X	<p>The proposed livestock operation satisfies the minimum requirements for a livestock operation of the size and type being proposed. It is noted however from the site plan contained in the Site Assessment that the proposed manure storage facility is located just 100 M (the minimum) from the nearest surface watercourse to the southwest. As water levels in this drain may fluctuate over time, the proponent may want to consider moving the manure storage facility further to the north.</p>	IMR



**Provincial Technical Overview of: Verbruggen Prairie Farms Ltd.**

<b>Items Provided by Project Proponent</b>	<b>Con- firmed</b>	<b>Related Existing Provincial Safeguards</b>	<b>Dept</b>
11. Proposed a project site that is a sufficient distance from native prairie, Wildlife Managements Areas and Crown Land.	X	Land Management & Planning Section has no comment (based on the information presented) as no Crown lands will be impacted by the project intent. Spread fields and location of the hog barn site (Including lagoon) are all on lands under private land tenure.  No wildlife related concerns.	SD
12. Proposed trucking routes and access points that do not impact Provincial Roads or Provincial Trunk Highways	X	No permits are required as proponent will use an existing Government Road Allowance accessing PR 250. However, we wish to note that the estimated number of trucks box was not filled in.	MI

**Provincial Departments**

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

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## D. PUBLIC COMMENTS & DISPOSITIONS

<b>Public Comment Summary</b>
<p><u>Henry and Christine Raupers on SW6-15-20:</u></p> <p>Completely against, with concerns related to:</p> <ul style="list-style-type: none"><li>- Long lasting smells (located 4 miles N of site);</li><li>-Existing hog barn located 3 mi S &amp; 2 mi W West View Pork uses large area to spread manure, and nutrient level is high ;</li><li>-Proximity of proposed barn is too close to existing barn; would increase nutrients to dangerous levels S of our farm;</li><li>-Quality of our life and property values will both decrease.</li></ul>
<p><u>Grant D. Gill ,RM of Oakview:</u> land owner within 3 km zone:</p> <ul style="list-style-type: none"><li>-No concerns with operation provided proponent follows all regulations laid out by the Province of Manitoba.</li></ul>
<p><u>Chris and Lindsey Raupers, SW 6-15-1W</u></p> <ul style="list-style-type: none"><li>-Reside 3mi N &amp; 2mi E of existing West View Pork which already pollutes air for months every year.</li><li>-Thought of another hog operation in closer proximity is outrageous;</li><li>-Value of our lives and property will decrease.</li></ul>
<p><u>Newdale Farm Corp.</u></p> <ul style="list-style-type: none"><li>-Has significant farm holdings operation near proposal;</li><li>-Oppose because:</li><li>-Resulting odours will impact residences on nearby properties they own;</li><li>-Possible impacts on groundwater; manure disseminating methods used; Onsite operator or not?</li><li>- Possible negative impact on property values.</li></ul>
<p><u>Gail Bridgeman &amp; Kirk Bridgeman, Bridgeman Land Livestock Ltd. - 2 ¼ mi E of proposal</u></p> <ul style="list-style-type: none"><li>- Have mixed operation: grain, cattle and a PMU operation.</li><li>-Concerns - water availability for size of operation and resulting impact on us and other area operations.</li><li>-Concerns with manure spreading and effect on ground water and runoff with drainage flows into Lake Wahtopanah.</li><li>-How will this affect our wells downstream from proposal?</li><li>-Increased large truck traffic on local roads &amp; maintenance costs.</li><li>-Can our environment sustain two large Hog Operations in our area where manure is already spread on fields?</li></ul>

## Public Comment Summary

### Kelly and Myra Bridgeman

Concerns with:

- Size of facility
- Quantity of water required and its impact on water table; Would it be more feasible to hook it up to pipeline along Hwy 24?
- With volume of manure being injected –will it impact Water Table?
- Odor control- time needed to grow shelterbelts; Would fans be useful here?
- Resulting high traffic; impact & upkeep for Hwy 23, Poor condition now with potholes and spring weight restrictions becomes rutted and dangerous to area families.
- Is size of operation negotiable? long term effects
- Best if we could talk and work things out as neighbors.

### Harm Deenen and Marieke Deenen –close neighbor live just S of proposal:

Concerns:

- Odor control, lagoon cover,
- Shelterbelts; Consider barn trough air cleaners”
- Spring Road restrictions-What plan is in place
- Water use –option for dugout
- Close ravine runs SW of barn toward us- if water well is used with water treatment –will there be a waste water Plan
- Where is it going, ravine or lagoon
- Impact on Property Values- effect on us
- Must look into more or better options for now and for future barns in MB.

### Sarah Clark , Derek Caldwell and Family on NW 18-14-20 W – less than 1 mi from proposal

- Opposed: Should be increased measures to improve on current shortcomings found with current barns
- No mention of lagoon covers or air scrubbers to reduce odor -not just shelterbelt -time to grow it
- Disease transmission through water and flies – we have children
- With earthen lagoon and no liner, potential exists for manure pathogens to leach into groundwater with flies also spreading same
- What constitutes a safe distance to neighboring residents –there are 10 within 3 km radius f site
- Taxes, roads, water, aquifer,
- Phosphorous levels and nitrate levels, impact on Lake WPG

## Public Comment Summary

Want everyone in RM to vote on increasing # of barns and by how many in RM

Courtney and Jan Raupers- 8 mi N of proposal

Oppose; Concerns: with smell, already existing barn in area, new site would be too close, would create dangerous nutrient levels S of our farm, impacts on quality of life and value of our property.

Beat and Regine Gamper, SW 6-14-20

Opposed

Concerns with original barn proponent developed then sold where neighbours had to move due to smell and

Concerns with new large barn close to one sold

-Smell/air quality –no odor control shown; no lagoon cover , and no fence identified

-Water- too close to wetland and ravine; our well is our only drinking source;

-Spread areas of ILO drain downstream to Rivers Lake- The town of Rivers Reservoir

-Is there proof a well for this ILO is possible? Impact on water table

-Note proponent doesn't own spread land shown in proposal – No signed agreement for land he wants to use.; We will not give permission to cross our land to get to his spread fields or sign any agreements to spread manure

-Roads- in bad shape already Who will pay to maintain

Concerns with identified spread fields and location to residences

Ray Frey,

Little Saskatchewan River Conservation District

-Not for or against any specific project

-Project Site is within the management and watershed zones for the Town of Rivers potable water utility

-Concern water quality of Lake Wahtopanah may further deteriorate if the water flowing into the lake has increased nutrient levels. Past experience is it is more economically feasible to protect the water source than to treat at the tap.

-Groundwater wells are present at individual yards on and adjacent to land involved in project.

-LSRCD recommends to address concerns:

Applications to construct water control works on spread lands should not be considered; Should be no drainage allowed; Restore any drained wetlands ; Seal abandoned wells; 3 metre veg buffer etc.; That Province put monitoring plan in place for ground and surface water, etc.

Disposition: It has been noted that the applicant has responded to the concerns as per Appendix B. As well, the proponent is directed to adhere to provincial requirements and safeguards as noted in the Provincial Technical Overview Table above.

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## 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 Brandon 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 Brandon 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.

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## 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	945-1801

# Appendix A

## LIVESTOCK TECHNICAL REVIEW COMMITTEE

### SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT:Wim Verbruggen  
PROPOSAL NAME:Verbruggen Prairie Farms Ltd.  
TYPE OF OPERATION: 858 AU Hog grower/finisher  
RURAL MUNICIPALITY:Oakview  
OPERATION LOCATION:SW 13-14-21 WPM

Environmental Stewardship Division: Environmental Approvals Branch: Soil, Animal Waste and Conservation Section  
Monitoring

- The proposed operation is a new facility and therefore has not submitted Source Water Quality Monitoring analysis to Manitoba Sustainable Development. Should approval be granted to establish, the proponent must annually submit Source Water Quality Monitoring reports to Manitoba Sustainable Development.

Manure Related:

- Based on the number of proposed Animal Units, Verbruggen Prairie Farms Ltd. will be required to submit an annual Manure Management Plan (MMP) by the regulated deadline for the storage, handling, disposing, or application of any livestock manure.
- Manitoba Sustainable Development regulates the construction of manure storage facilities (MSF) by requiring the proponent to submit an "Application for Permit to Construct, Modify or Expand a Manure Storage Facility".
- The MSF permit process under the Livestock Manure and Mortalities Management Regulation (LMMMR) M.R. 42/98 is separate from the TRC process. The proponent has indicated a manure storage facility will be constructed.
- Manure application must be completed in accordance with Section 12 of the LMMMR. All residual nutrient concentrations must be below the regulated levels to be eligible for registration in an MMP.
- As per section 13(5) of the LMMMR, Manitoba Sustainable Development requires soil tests for registration in a MMP. The department requires soil tests to be taken to a 24 inch depth in order to be considered for registration. The majorities of soil tests provided were not taken to a 24 inch depth and would not be considered eligible for registration in an MMP.
- Based on detailed soil survey and Agricultural Capability soil class 2, the maximum allowable residual nitrate nitrogen is 140 lbs/ac. In order to register the spreadfield as part of an MMP, the proponent must apply manure at an appropriate rate to ensure residual nitrate nitrogen levels are not exceeded. All residual nutrient concentrations must be below the regulated levels to be eligible for registration in a Manure Management Plan.
- As per Section 12(1.7) of the LMMMR, proposed spreadfields with soils of Agricultural Capability class 5 must not exceed 30 lbs/ac residual nitrate nitrogen in order to be considered for registration on an MMP.
- Fields with manure phosphorus levels equal to or exceeding 60 ppm Olsen P (0-15 cm) will not be registered as part of a MMP.
- In accordance with the LMMMR, manure cannot be applied to land from November 10 of one year to April 10 of the following year (winter application).

**Land Available/Required for Manure Application:**

- Manitoba Sustainable Development requires permits for construction of manure storage facilities and confined livestock areas. As part of the review, operators must identify adequate manure spreadfields to obtain a construction permit .
- Spreadfields identified in the Site Assessment to be used by Verbruggen Prairie Farms Ltd. have been identified on Manure Management Plans for other operations as confirmed spreadfields, specifically: NW & SW 13, NW. SE & SW 23, SW & SE 27, NW, NE & SE 22 -14-12 W, In order for sustainable use of these fields for manure application on a 1X application rate basis, the fields should only be used by one operation for to ensure sustainable long term use. The proponent should confirm long term access.
- A new Pilot Project Evaluation proposal has been developed by the Manitoba Pork Council. Sustainable Development will consider issuing manure storage facility permit for new and expanding operations if they meet the criteria of this proposal.
- The Manitoba Pork Council has reviewed a pilot project proposal from the applicant. In their opinion, the proposal meets the criteria and they support the proposal for consideration as part of the Pig Pilot Evaluation.
- The applicant has not provided enough information at this time to comment specifically on the ability of the manure storage facility to separate manure into low and high P manure products. An application for a Pilot Project permit must be submitted by the applicant and approved by the province prior to the issuance of a manure storage facility permit. In accordance with the Livestock Manure and Mortalities Management Regulation (M.R. 42/98), manure cannot be applied to land from November 10 of one year to April 10 of the following year (winter application).
- Manure application must be completed in accordance with Section 12 of the Livestock Manure and Mortalities Management Regulation (M.R. 42/98). All residual nutrient concentrations must be below the regulated levels to be eligible for registration in a Manure Management Plan.

**Mortalities Disposal:**

- In accordance with the Livestock Manure and Mortalities Management Regulation (M.R. 42/98), mortalities must be kept in a secure storage room, covered container or secure location; and continuously frozen or refrigerated, if not disposed of within 48 hours after death.
- Rendering mortalities is acceptable method of disposal.
- The proponent should prepare a contingency plan in case of a catastrophic event resulting in mass mortalities.

**Environmental Stewardship Division: Environmental Approvals Branch: Municipal and Industrial Section**

- No concerns.

**Environmental Stewardship Division: Environmental Compliance & Enforcement Branch, Brandon**

- No comments or concerns.

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

- No wildlife related concerns.

**Parks and Regional Services Division: Western Region**

- No concerns.

**Water Stewardship Division: Water Science & Management Branch**



Staff in the Water Science and Management Branch have reviewed the site assessment for Verbruggen Prairie Farms Ltd. in the RM of Oakview and have the following comments:

- In the application, the proponent has used the reconnaissance level soil survey information in determining Ag Capabilities when there is detailed soil survey information available for many of their fields. The 2011, 1:50,000, Report D90 - Soils of the Municipality of Blanshard covers most of the spread fields indicated in the proposal. The detailed information should be considered for any additional assessment and in future operation such as the development of manure management plans.
- Proper nutrient management applications that avoid excess loss of nutrients to surface waters are needed on lands receiving nutrients including 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 inject the manure. To reduce the risk of runoff losses of nitrogen and phosphorus, application should not occur to saturated, frozen or snow covered soils or when heavy rainfall is expected within 24 hours. To reduce the risk of nutrient loss to surface water runoff manure applications are best completed by mid-October or earlier as manure applied shortly before freeze up is more susceptible to nutrient runoff losses during spring snowmelt than if the manure is applied 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 such as manure injection and covering manure storages (straw or other material), 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 that the setback areas for all water features have been observed and excluded from land base calculations for this operation. It is important that these setbacks be clearly communicated and observed by everyone involved in manure application so as to minimize the risk of nutrients entering surface waters.
- 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 of 25 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 excessive build-up in soils. Consequently, sufficient land base or economically achievable treatment technologies must be available so that manure can be applied at no more than 1 times crop removal rates. It should be noted that Olsen soil-test phosphorus levels of 60 ppm are well above phosphorus needs for most crops (over 20 ppm is usually considered very high), and that as excess phosphorus levels build up in soils, greater losses occur to surface and ground water. 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 and it is noted that it is important to rotate manure application across all spread fields so as to prevent excessive P buildup.
  - 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 all sealed wells. The Well Sealing form is available at: [http://www.gov.mb.ca/conservation/waterstewardship/water\\_info/misc/well\\_sealing\\_report\\_2015.pdf](http://www.gov.mb.ca/conservation/waterstewardship/water_info/misc/well_sealing_report_2015.pdf). Information on well sealing is available from Sustainable Development (204-945-6959) or: [http://www.gov.mb.ca/conservation/waterstewardship/water\\_info/misc/abandoned\\_wells.pdf](http://www.gov.mb.ca/conservation/waterstewardship/water_info/misc/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](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 2012* requires a 100 metre separation distance between newly constructed wells and confined livestock areas. The regulation comes into effect on January 1, 2017 and therefore may be in effect at the time new well construction takes place for this operation. The separation distances are meant to protect groundwater quality and even if not in effect at the time the proposed well is constructed, it would be prudent to adhere to this and other separation distance outlined in the proposed regulation.

**Water Stewardship Division: Water Use Licensing Branch: Groundwater Licensing section**

- The project requires a water rights use licence. The proponent is directed to contact Lorraine Thibert at 204-945-6693 if they have any questions regarding this requirement.

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

- Land Management & Planning Section has no comment (based on the information presented) as no Crown lands will be impacted by the project intent. Spread fields and location of the hog barn site (including lagoon) are all on lands under private land tenure.

**PREPARED BY:**

Jen Webb  
Manager Environmental  
approvals Branch  
Environmental  
Stewardship Division  
Manitoba Sustainable  
Development

Telephone: (204) 945-8541  
E-Mail: jen.webb@gov.mb.ca



# Response to Neighbour's Concerns

Regarding a Proposed 6,000 Head Hog Finisher  
Barn for Verbruggen Farms  
SW 13-14-21W

Prepared by:

**DGH Engineering Ltd.**

12 Aviation Boulevard  
St. Andrews, Manitoba R1A 3N5

Doug Small, P.Eng.

September 1, 2016



### 1. Responses to Neighbour's Concerns

A total of ten responses were received by the Technical Review Committee and forwarded to Verbruggen Farms for comment. As many neighbours shared common concerns, the following is a response to the concerns expressed.

### 2. The Verbruggen Family

The proposed hog operation will be owned by Wim and Marlies Verbruggen. This is a family farm. The Verbruggens have lived in the area for many years and want to provide diversified income for their grain farm so that their children can have a future in farming.

The Verbruggens have been involved in hog farming their whole life and have the skills to operate a successful, well-managed operation. The barn will be antibiotic and hormone free and will be operated with the highest standards of cleanliness and sanitation.

The feed for the hogs will be from the grain grown on the Verbruggen farm. After the hogs remove approximately 30 percent of the nutrients from the grain for body growth, the manure (grain) is simply recycled as organic fertilizer for further grain production. The farm will be a model of environmental sustainability.

The Verbruggens live less than one-quarter mile from the proposed operation. They are part of the community and wish to be good neighbours. The family is dedicated to be good stewards of the land and the environment.

### 3. Odour Control

Odour is one of the primary concerns regarding swine farms. Odourants in swine manure result primarily from the partial decomposition of organic matter by anaerobic microorganisms. Although not present at toxic concentrations, livestock odours present a nuisance potential.

There are three sources of odour from swine operations: the facilities that house the animals, the manure storage, and the manure spreading operation. At the present time, it is not economically feasible to raise swine without some odour production. However, odours can be maintained at acceptable levels through the propose design and management of barns and proper planning and operation of manure management systems.

With frequent manure removal and by keeping the animal and floor as clean and dry as possible, odours within the proposed barns will be kept to a practical minimum. Manure will be flushed out of the barns on a two-week interval to exterior long-term storage. This will keep the in-barn production of the most noxious and odorous gases to a minimum. Hydrogen sulphide, mercaptans, and the noxious organic acid gases are produced and released in greater quantities when manure is stored in the barn for longer periods. A state-of-the-art ventilation system will be installed, with computerized controls to ensure that the animals are always comfortable and healthy. This promotes improved barn cleanliness and reduced odour production. Further, the facility will be operated in an all-in all-out fashion by room; with complete wash-down and disinfection of every room between subsequent groups of pigs, improving barn sanitation and reducing odour production.

The Verbruggens are up-to-date on European technology and are reviewing the possibility of using air scrubbers to remove odour from the exhaust. Should this technology prove feasible under Western Canadian conditions, it would be incorporated into the design. These scrubber would virtually eliminate barn odours.

Odours from the earthen manure storage will be completely eliminated through the use of a plastic cover. This technology involves a geosynthetic membrane that covers the complete storage surface and eliminates almost all gas emissions from the storage. Since the majority of barn site odours originate from the storage, this feature of the project is expected to have a profound impact on odour reduction. In combination with the setbacks outlined earlier, neighbouring residences are expected to experience very little impact from the project.

Historically it was reported that about 40% of the public complaints on odour nuisance from swine operations was related to land application of manure when broadcasting was used as the method of spreading. In contrast, the use of injection as the method of land application has virtually eliminated odour from land application.

In the proposed swine operation, manure will be injected into the topsoil using a cultivator. The liquids are not atomized; evaporation and exposure to the air is eliminated; nutrients in the manure are stabilized with respect to runoff; and odour release is negligible. Of the methods of manure applications available, injection results in the least odour during and after spreading. Due to the sparse population surrounding the spreading lands, the effect on area residents is predicted to be minimal.

Shelter belts around the hog facility will improve the aesthetic appearance of the area, and help to disperse odours. Windbreak buffers help decrease the effects of odours by creating greater lift and turbulence to better dissipate and diffuse odours.

The nearest weather station with wind data applicable to the project site is in Brandon. Weather patterns at the site are expected to be generally similar to those observed in Brandon (Figure 1). The annual prevailing winds in the area of the site are from the West.

The nearest neighbour to the proposed livestock operation is located northeast of the proposed site. This neighbour will potentially receive odour with winds originating from the southwest. According to meteorological data, for 96 percent of the time winds originate from a direction other than the southwest, carrying odour away from the neighbour.

The next closest neighbour is southeast of the proposed site. For 88 percent of the time winds originate from a direction other than northwest, carrying odour away from this neighbour.

The large separation distances from remaining neighbours provide adequate time and distance for any odours which may be produced from the facility to become dilute and thoroughly mix into the atmosphere, thereby reducing any impact on these residents.

Figure 1. Wind Direction, Brandon, MB

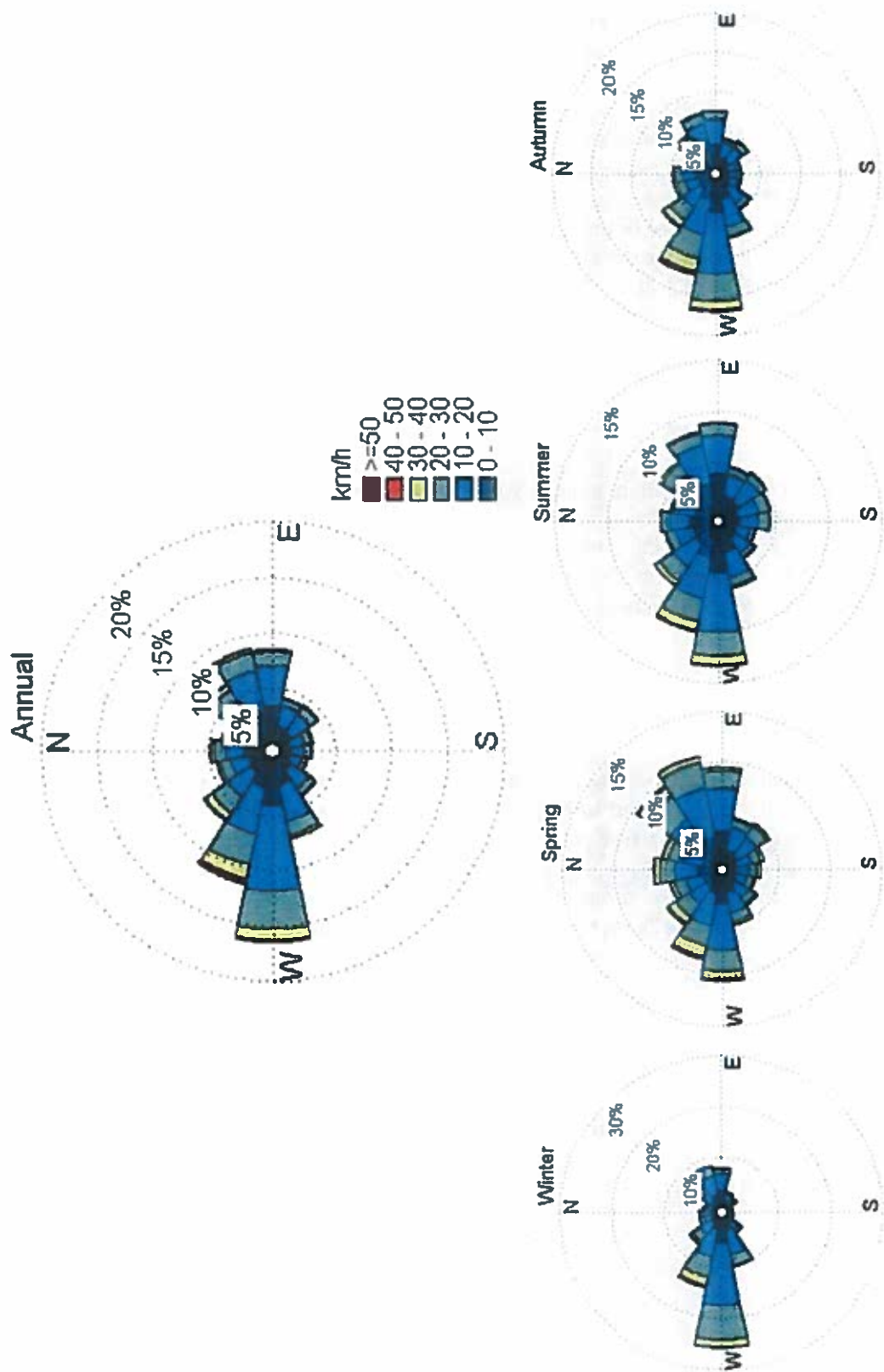


Figure 1 - Brandon Wind Roses for Hourly Wind Normals (1981-2010)

#### 4. Land Base Required to Recycle Crop Nutrients

Nutrients contained in the manure will be utilized as organic fertilizer for crop production. The organic material contained in the manure will act as a soil conditioner improving soil tilth, fertility, and water retention. Over the long term, increased soil organic content also builds a better and more stable soil structure less prone to erosion.

The manure will be applied as a fertilizer at rates that will match crop phosphorus and nitrogen uptake. An annual manure management plan must be filed with Manitoba Sustainable Development at least 60 days prior to application of manure to fields. This plan involves annual soil testing to ensure that there is no build-up of nutrients that could pose a risk to surface or groundwater. The manure application rate is calculated using target yield, crop nutrient uptake, and manure nutrient levels. Soil and manure nutrient contents are analysed annually.

As the manure management plans are filed with the Province annually, should a build-up of nutrients begin to occur, the Province would be alerted and require changes in the operation's manure management practices.

The land base required to sustainably support this proposed hog operation has been identified in the assessment filed with the Technical Review Committee (TRC). It is expected that TRC will verify that there is an adequate land base to recycle the nitrogen and phosphorous from this proposed operation.

Significant amounts of natural gas are used to manufacture chemical nitrogen fertilizer. The natural gas used to produce the chemical nitrogen to fertilize 70 acres of wheat producing 50 bushels per acre could heat a typical Manitoba home. The use of manure to fertilize crops conserves large amounts of natural gas.

No other manure fertilizers will be applied to the land base proposed for this operation.

All manure will be injected using a cultivator. Injection ensures the manure is immediately encapsulated by the soil, minimizing any potential runoff and virtually eliminating odours.

A three metre setback is recommended by Provincial Guidelines as a setback from watercourses when manure is injected. In addition to respecting this setback, Verbruggen Farms will maintain a vegetated buffer strip within this setback. Vegetated buffer strips have proven to be very effective in controlling nutrient runoff from cultivated crop land.

#### 5. Manure Storage Safety

An earthen manure storage (EMS) is proposed to contain the manure from this operation.

Earthen manure storages have been regulated by the Province of Manitoba since 1995. A permit to construct an EMS requires a detailed geotechnical assessment of soils; a design prepared by a professional engineer; review of the design and all relevant information by Manitoba Sustainable Development prior to issuing the permit; site supervision of the construction by the responsible engineer; and finally certification of the storage by the engineer when the work is completed.

The above process is required for all manure storages constructed in Manitoba. Since the legislation was enacted in 1995 many hundreds of hog, poultry and dairy storages have been constructed. This program is among the strongest legislation in North America and has an excellent record of providing safe containment of livestock manures.

Verbruggen Farms has retained DGH Engineering Ltd. to conduct a preliminary geotechnical site assessment to determine the type of liner required. Design features of this specific proposed storage include:

- High quality clay soils are present. The proposed storage will have a one metre re-compacted clay liner;
- Thick earthen berms, a minimum of five feet above grade. This design provides extremely high structural integrity and ensures that surface waters will not be impacted, and that surface water will not impact the storage;
- The interior and exterior slopes are designed to prevent erosion from occurring. The exterior berms will be grassed to further ensure bank stability.

Setbacks from surface watercourses are the final defense that, in conjunction with the above measures, will ensure that surface water is protected. The proposed EMS meets all setback requirements.

The design and construction standards enforced by the Province of Manitoba ensure that there is no risk of groundwater contamination.

Since this program originated, the Province annually conducts audits of manure storages. Any storages found to have experienced damage or deterioration are required to implement remedial repairs to ensure environmental safety. To date, no permitted storage in Manitoba has experienced an incident that has resulted in any significant environmental impact.

## 6. Water Consumption

The proposed 6,000 head finisher barn will require 19,800 imperial gallons per day or 13.75 gallons per minute. Well records indicate that an existing well located in the vicinity of the operation produces 75 imperial gallons per minute. A new well will be drilled for the proposed barn.

Prior to any new development of a water supply that exceeds 5,500 gallons per day, a Water Rights License must be obtained through Manitoba Sustainable Development. The license process includes the assessment of the proposed use on the aquifer and other uses. Manitoba Sustainable Development establishes withdrawal rates that prevent problems for other users prior to issuing a license. The local aquifer is expected to sustain all current uses as well as the proposed development without any concern.

Should the Provincial review indicate concerns with the availability of groundwater, Verbruggen Farms will construct a dugout. The dugout will collect and store spring runoff water to reduce and supplement groundwater supplies.

The Technical Review Committee, through their review of the proposal, will also consider this issue. The TRC is expected to comment on the ability of the local aquifer to sustainably provide the quantity of water required for this operation.



## 7. Traffic

Verbruggen Farms will provide most of the feed for the proposed barn with grain grown on their own farm. This essentially eliminates the need to have feed delivered, other than one truckload per week of supplemental ingredients.

The barn will receive one truck per week of weanlings and ship two trucks per week of market hogs. The resulting four truck loads per week will have negligible impact on the municipal roads. All trucks will access the site from Highway 250 and will respect applicable weight restrictions.

## 8. Quality of Life and Land Values

The quality of life and land values of neighbours adjacent to hog farms were studied a few years ago by Alberta Pork Producers and Alberta Agriculture. In the study, completed by Serecon Management Consulting Inc., 73 neighbours to existing hog operations were surveyed for their view. The study concluded as follows:

“While most neighbours share public concerns about odour, water quality and the impact of the operations on their quality of life, the large majority haven’t had any problems. They believe water quality, property impacts and aesthetics are important, but said that the existing operations did not significantly impact on these values.”

An additional study undertaken by Serecon examined the impact of intensive swine operations on neighbouring property values. This study occurred in the Lacombe and Rimbey areas of Alberta and concluded the following:

“Our findings in the analysis and supported by our expertise in this area is that generally intensive livestock operations, more specifically hog enterprises, do not have a negative impact on area land values. In fact, most of the purchasers surveyed found that land prices have increased in the areas studied due primarily to the number and density of livestock enterprises. This was due to the increased number of buyers in the area”.

The proposed hog farm is not expected to have any negative impact on quality of life or land values.

## 9. Public Health Risks

Pathogens in human fecal waste have the greatest potential to cause infection in other humans. Failure to properly process and dispose of human sewage poses a much greater threat to public health than manure from intensive hog production. Indeed, there have been at least 150 different bacteria, viruses, parasites, yeasts, and fungi found in human feces that are capable of causing disease when transmitted to other humans. Although purification reduces the levels of these organisms, the remaining sewage sludge contains a significant amount of viable pathogens. In comparison, there is a relatively small number (10-15) of pathogens that have been identified in swine which are known to be transmissible to and cause disease in humans. Pathogens can be transmitted by direct contact with the animals or their feces, or by consuming food or water which has been contaminated with animal feces.

Table 1 compares the prevalence of most commonly found pathogenic organisms in pigs with that found in humans, cattle, and poultry. These organisms are either bacteria or parasites. Note that the

bacterium *E. coli* O157:H7 has a very low incidence in pigs. Only one virus (swine influenza virus) can be transmitted between pigs and people. This virus does not survive well outside the pig, particularly in a dry, cold climate, and is therefore considered to be of no risk to people not in direct contact with pigs.

**Table 1. Prevalence of Enteric Pathogens in Humans, Pigs, Cattle, and Poultry**

Pathogen	Percent Prevalence			
	Human	Cattle	Pigs	Poultry
<i>Salmonella spp.</i>	1%	0 – 13%	0 – 38%	10 – 100%
<i>E. coli</i> O157:H7	1%	16%	0.4%	1.3%
<i>Campylobacter jejuni</i>	1%	1%	2%	100%
<i>Yersinia enterocolitica</i>	0.002%	<1%	18%	0%
<i>Giardia lamblia</i>	1 – 5%	10 – 100%	1 – 20%	0%
<i>Cryptosporidium spp.</i>	1%	1 – 100%	0 – 10%	0%

The people at greatest risk of contracting infections from pigs are barn workers and packing house workers, since they are in daily direct contact with the animals and are exposed to fresh feces and urine. Some basic preventative and hygiene procedures are commonly employed by barn staff to minimize exposure. These include the use of protective masks to reduce inhalation of dust particles, disposable gloves to reduce direct contact when handling animals, strategically placed wash stations to encourage frequent hand washing, and in-barn showers and laundry facilities to promote personal cleanliness. Despite their close daily contact with live animals, reported infections of swine barn workers are very rare.

Modern hog production units are designed for total confinement of all breeding stock and their offspring. Therefore, neighbouring residents do not have direct contact with the animals or their manure. There is no direct evidence to suggest that any pathogen carried by pigs can be transmitted via air to humans. Air exhausted by barn fans may contain bacteria or viruses, which adhere to dust particles generated by the barn. Most of these particles, however, have been shown to travel only a short distance (10 m) from the barn.

Food-borne transmission of pathogens can occur if contaminated pork is prepared improperly and consumed. Proper handling and cooking of pork in the same manner as any other raw meat will ensure its safety when consumed. Food-borne transmission may also occur if foods such as fruits and vegetables are directly sprayed or irrigated with fresh manure and then consumed without proper washing. Most frequently, manure is applied after harvest to farmland growing small grains, grass, or oilseeds, and thus poses no risk of coming into direct contact with food.

In order for transmission of pathogens to occur through water, four steps must be completed. Elimination of any one of these steps will break the chain and prevent infection from occurring.

First, the pathogen must be present and excreted by the pigs. As shown in Table 1, prevalence rates are quite variable, ranging from a low of 0.4% for *E. coli* O157:H7 to a high of 38% for *salmonella spp.* Recent studies have shown that many swine herds are entirely free of roundworms, thus eliminating any

risk from this pathogen. As well, many herds of high health status are free of the harmful strains of *salmonella*.

Secondly, once excreted, the pathogen must reach a water supply. In modern swine units, feces and urine are collected in shallow gutters in the barn and then drained via a series of sewer pipes into a long term storage, where they are stored for an average of 150 – 200 days. There is no opportunity for animals to defecate directly into surface water. Properly designed and located earthen manure storages such as lined earthen lagoons serve to protect groundwater from potential seepage and contamination during storage. Once in storage, most organisms do not survive well. For example, an Alberta survey of 50 farms found roundworm and *cryptosporidia* eggs in only 1% of lagoon samples, despite an overall prevalence in pigs on these farms of 8.5% and 2.8%, respectively. *Giardia* cysts, present in 8.5% of pigs, were degraded to a zero level in the lagoon. Table 2 shows the survival times of different bacterial pathogens in pig slurry, soil, and dry surfaces. Note that survival times for most organisms are relatively short, particularly once they are placed into warm soil or on a dry surface, as is typically done when hog manure is applied to fields.

Table 2. *Survival of Bacterial Fecal Pathogens in Different Environments*

Environment	Duration of Survival			
	<i>Salmonella</i>	<i>Campylobacter jejuni</i>	<i>Yersinia enterocolitica</i>	<i>E. coli</i> 0157:H7
Slurry	13 – 75 days	>112 days	12 – 28 days	10 – 100 days
Soil (warm)	4 weeks	1 week	10 days	2 days
Dry surfaces	1 – 7 days	1 day	1 day	1 day

Following long term storage, the slurry is applied to farmland using either direct injection or broadcasting followed by incorporation. Provincial guidelines discourage application of slurry immediately around surface watercourses or over potential aquifer recharge areas (gravel deposits, bedrock outcrops, sinkholes, etc.). This avoids the direct entry of slurry into surface and groundwater. The few remaining pathogens still alive in the slurry at the time of application must therefore continue to exist in the soil, where they are likely to become exposed to sunlight and dry conditions, both of which either cause the organism to quickly die or damage it so that it is unable to cause infection.

The final step that must occur in waterborne transmission is to have healthy, living organisms in sufficient numbers enter the water and then be consumed by humans. The minimum numbers of organisms needed to cause disease in humans varies between pathogens. *Campylobacter* and *salmonella* bacteria, for example, need to be ingested by the thousands, whereas only a few *cryptosporidia* may be necessary to cause illness. Injection or incorporation of slurry into the soil minimizes the risk of organisms entering the water by runoff and soil erosion. The elimination of the practice of spreading slurry on frozen ground prevents potential water contamination from spring snowmelt.

The fact that all four of the above outlined steps must occur in order to cause a waterborne infection means that there is a very low risk of such an event occurring. This is supported by the figures in Table 3, which list the number of reported waterborne-disease outbreaks in humans in the U.S. during the period of 1989 to 1996. Note that all of these organisms are present in many species including humans, so the source of the outbreaks is unknown in most cases. The role of livestock farms as a source has

been documented in very few cases. In these few cases, it is the water of the individual farms that has become contaminated by their own livestock. Very few waterborne disease outbreaks that affect more than the individual farmer have been directly linked with agriculture.

**Table 3. Documented Waterborne Disease Outbreaks in the U.S., 1989 – 1996**

Organism Involved	Number of Outbreaks		
	Total Outbreaks	No. from Drinking Water	No. from Recreational Water
<i>Giardia</i>	27	18	9
<i>Cryptosporidium</i>	21	8	13
<i>E. coli O157:H7</i>	11	3	8
<i>Campylobacter</i>	3	3	0
<i>Salmonella</i>	2	1	1

Finally, it is important to understand that the risk of water contamination from livestock manure is not related to the volume of manure produced, but the management practices in place to handle and dispose of the manure. A small operation allowing direct contamination of water by livestock manure poses a much greater risk to surface and groundwater than a large operation disposing of manure in accordance with the provincial requirements. Sound management practices that minimize the risk of contamination include:

- Total confinement of animals to avoid direct defecation into surface water supplies.
- Sound storage facilities constructed to avoid contamination from runoff into surface water or seepage into groundwater.
- Adequate volume of long-term storage to deactivate potential pathogens.
- Application of manure to farmland at agronomically sound rates to avoid soil saturation.
- Avoidance of potential groundwater recharge areas and margins of surface watercourses.
- Injection or application of manure to forages to avoid runoff.

The Verbruggen Farms will present a large negligible risk to neighbours and the surrounding community. Most activities, even the simple everyday task of driving a car, carry risks. It is hard to imagine any human activity that is entirely risk free. In spite of these inevitable risks to everyday activities, life must go on. As a society we institute reasonable safety measures to mitigate these risks, and act responsibly to allow these activities to go on. The risk of pathogens from Verbruggen Farms is no greater than the risks commonly accepted by our society. Under the manure management strategy outlined in this report the proposed operation will provide a high degree of safety.