



TECHNICAL REVIEW COMMITTEE

A TECHNICAL REVIEW REPORT

PREPARED FOR

**THE RURAL MUNICIPALITY
OF WOODLANDS**

BOONSTRA FARMS LTD.

SW 06-13-01W

TRC 12-095

July 28, 2022

A. INTRODUCTION – THE TEAM

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

Agriculture (AGR)

- Agricultural Engineer
- Business Development Specialist
- Veterinarians
- Livestock Environment Specialist
- Nutrient Management Specialist

Natural Resources and Northern Development (NRND)

- Crown Lands Manager
- Fish Habitat Specialist
- Habitat Mitigation Biologist

Environment, Climate and Parks (ECP)

- Environmental Engineer
- Environment Officer
- Water Rights Licensing Technologist
- Land-Water Specialist
- Groundwater Specialist

Manitoba Transportation and Infrastructure (MTI)

- Senior Development Review Technologist
- Senior Flood Protection Planning Officer

Municipal Relations (MR)

- Community Planners

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

THE TECHNICAL REVIEW COMMITTEE (TRC) REPORT

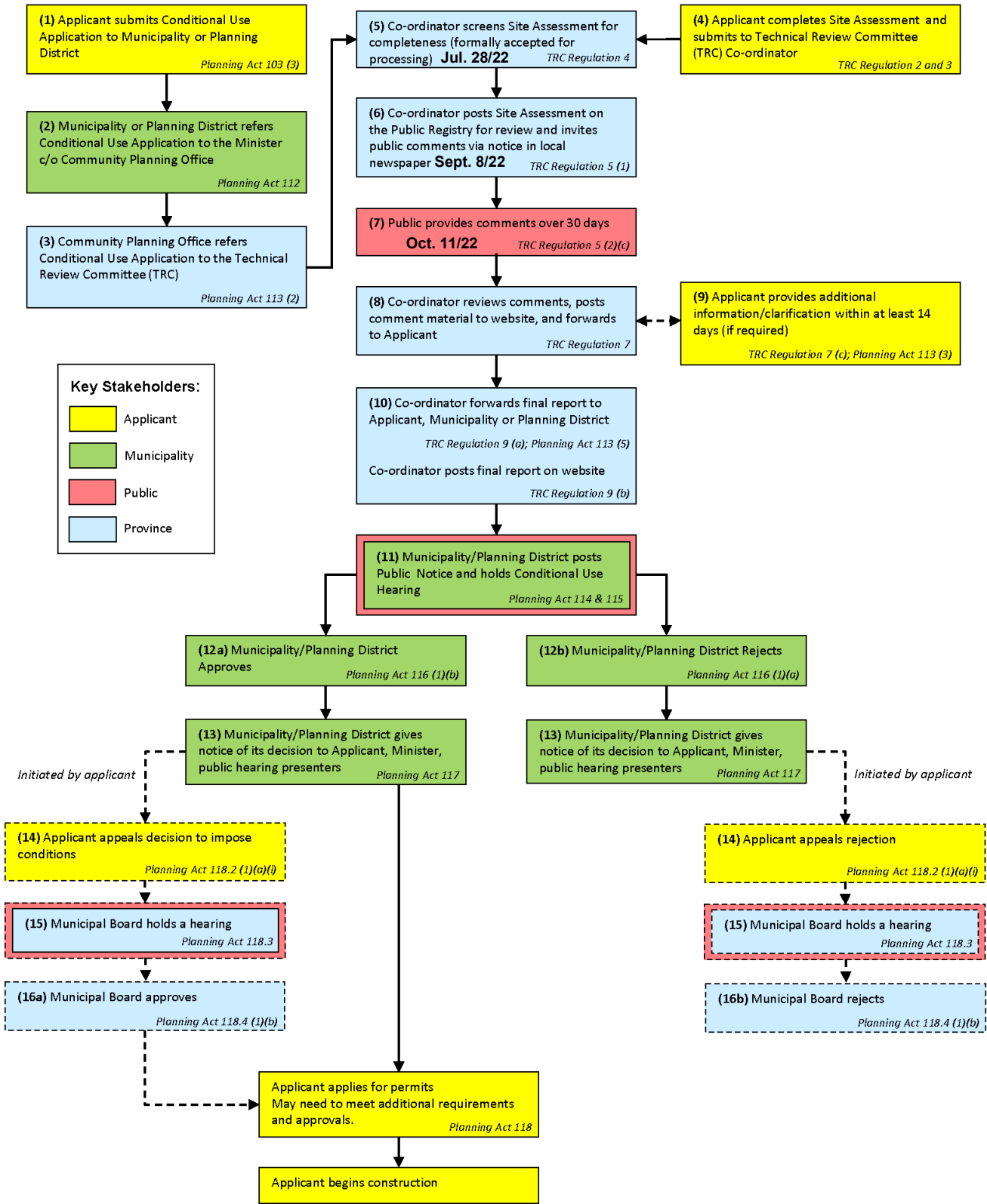
Purpose of TRC Reports

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

- a) Enable municipal councils or planning districts 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, planning districts 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, measure 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. As of November 1, 2019, a proponent may appeal a municipal council's rejection of their application or appeal a condition imposed related to municipal council's approval. Appeals are made to the Municipal Board.

Livestock Technical Review Process (November 1, 2019)



B. DESCRIPTION OF PROPOSED LIVESTOCK OPERATION

Further information can be found at https://www.gov.mb.ca/mr/livestock/public_registries.html

Applicant: Boonstra Farms Ltd.

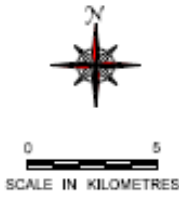
Site Location: SW 06-13-01W Refer to map below.

Proposal: To expand an existing operation from 600 milking cows (1200 AU) plus associated livestock to 2000 milking cows (4000 AU) plus associated livestock.

This will involve the following:





- Reuse and expansion of existing buildings etc.
- Earthen manure storage
- Estimated daily water use of 108,000 imperial gallons from an existing well.
- Composting mortalities
- Truck haul routes as shown in map below

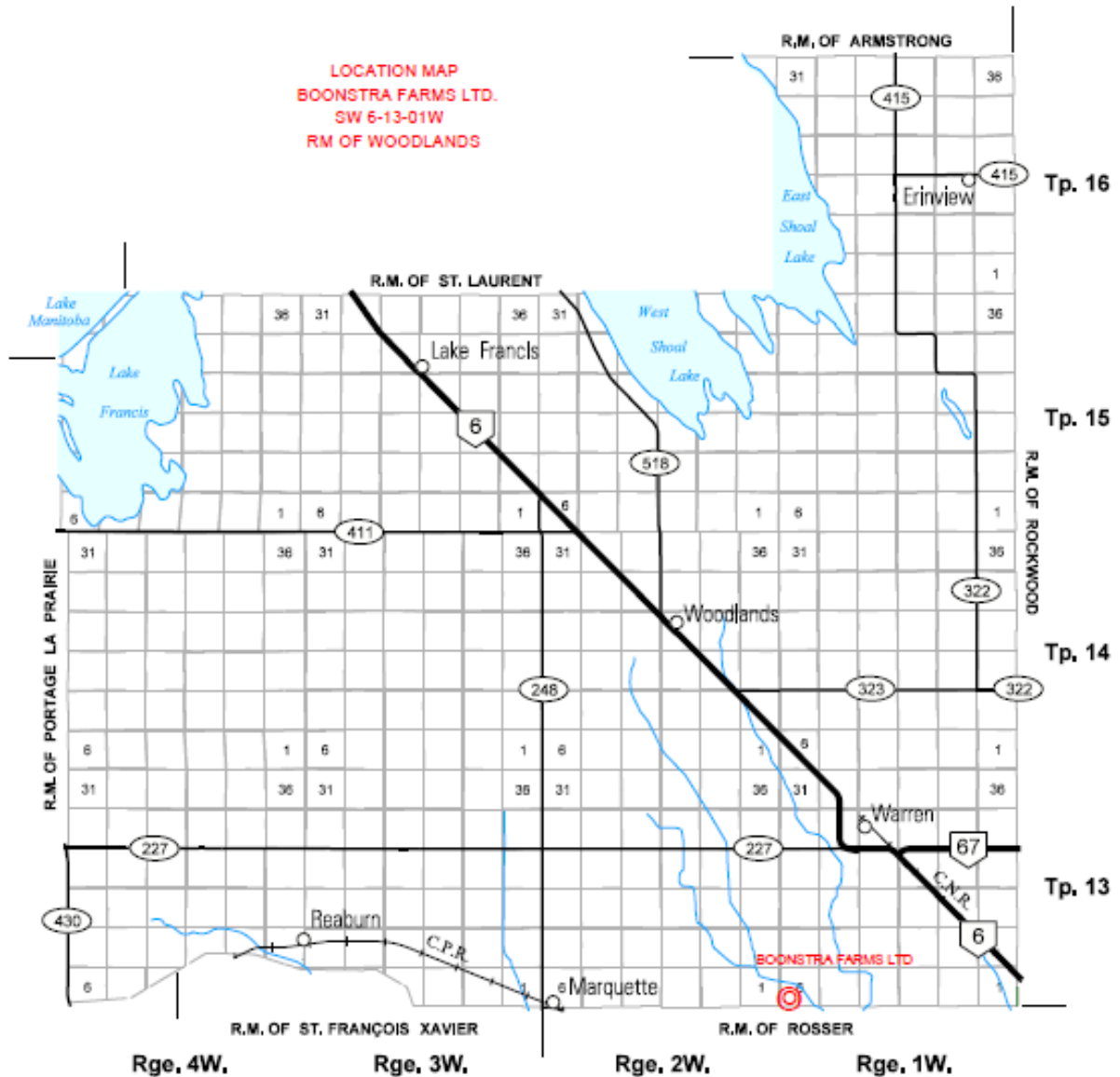
R.M. OF WOODLANDS



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

LEGEND

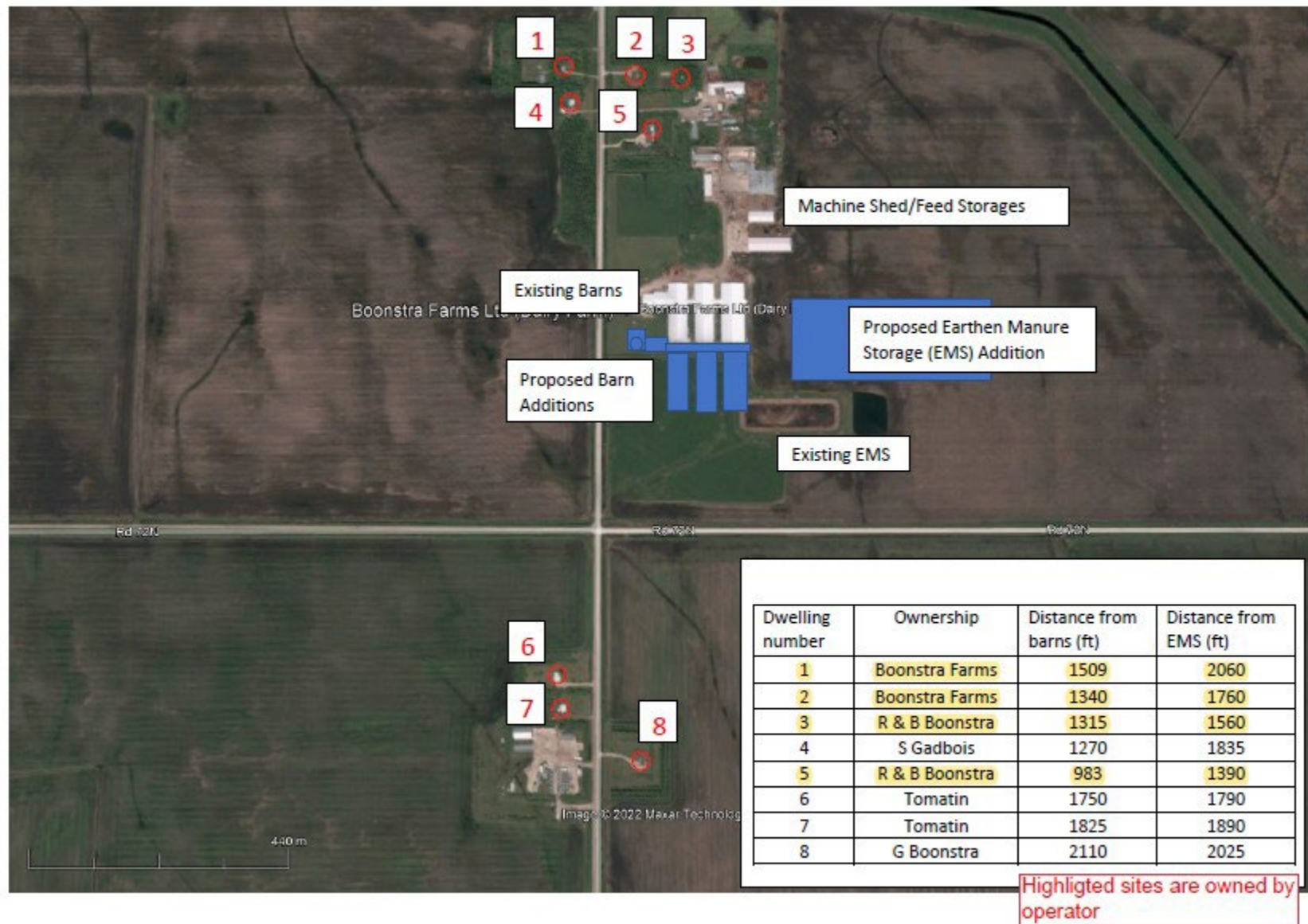
- PROVINCIAL TRUNK HIGHWAYS  ACCESS ROADS 
- PROVINCIAL ROADS  RAILWAYS 



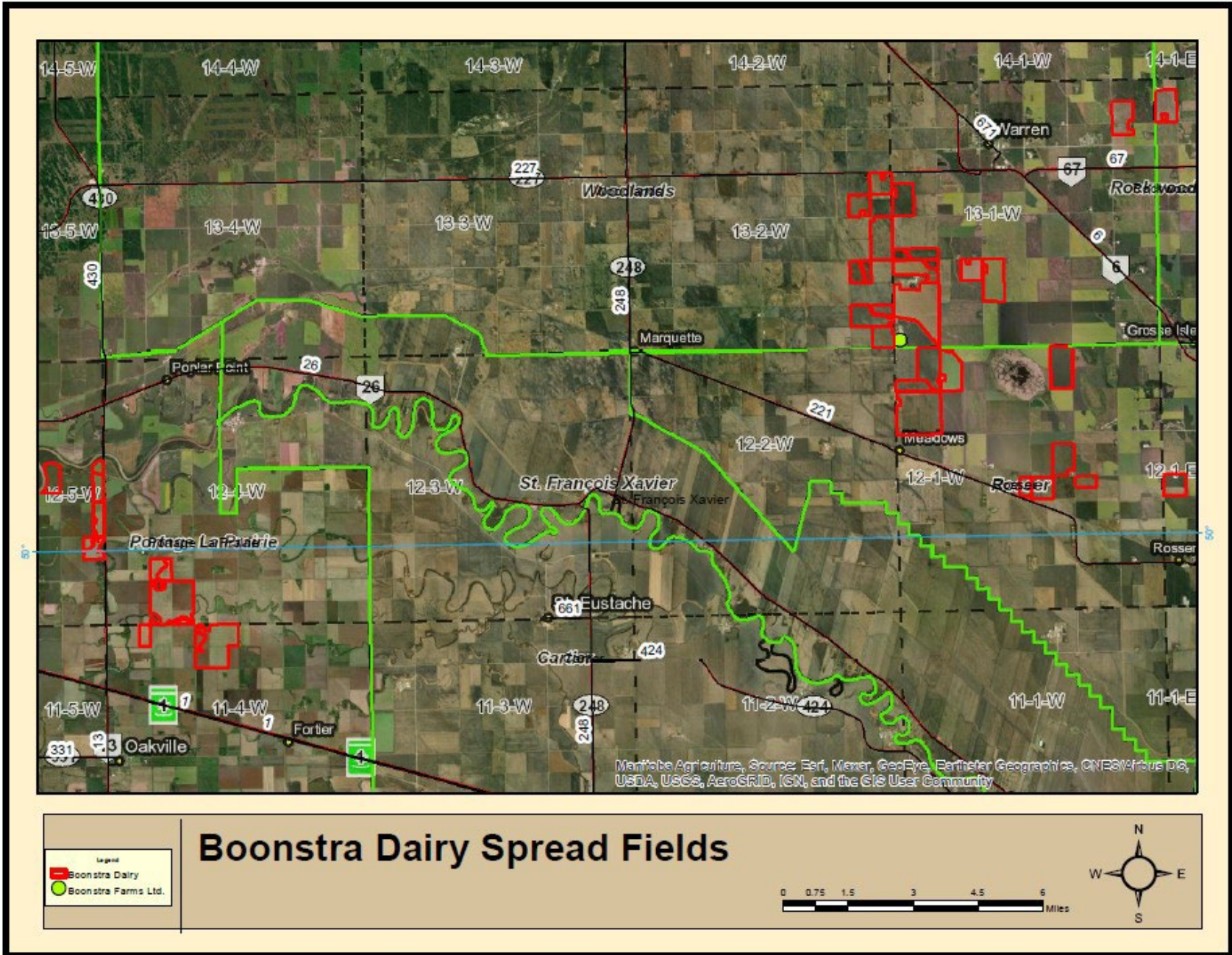
SHEET 1 OF 1



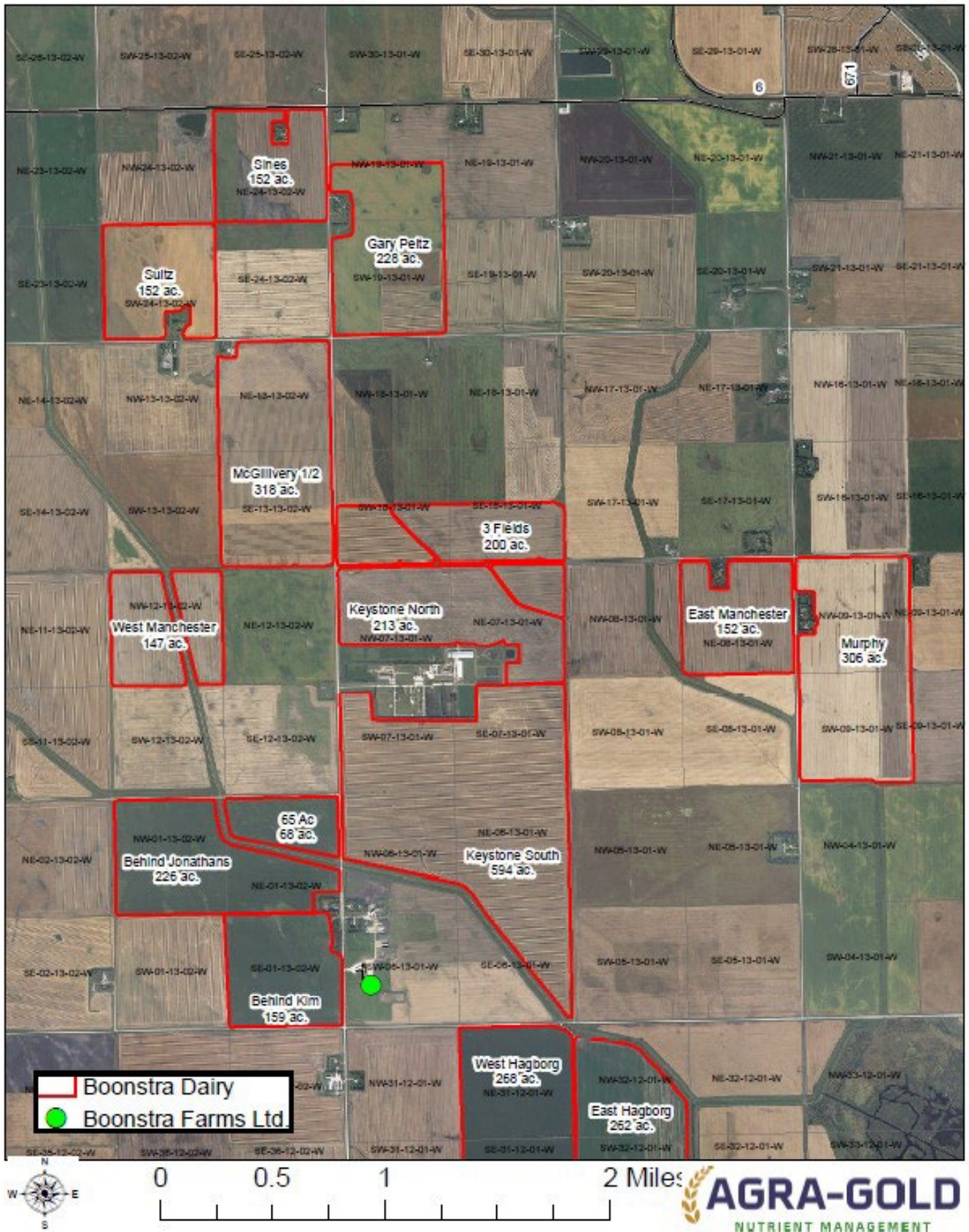
SITE PLAN – BOONSTRA DAIRY FARM LTD.



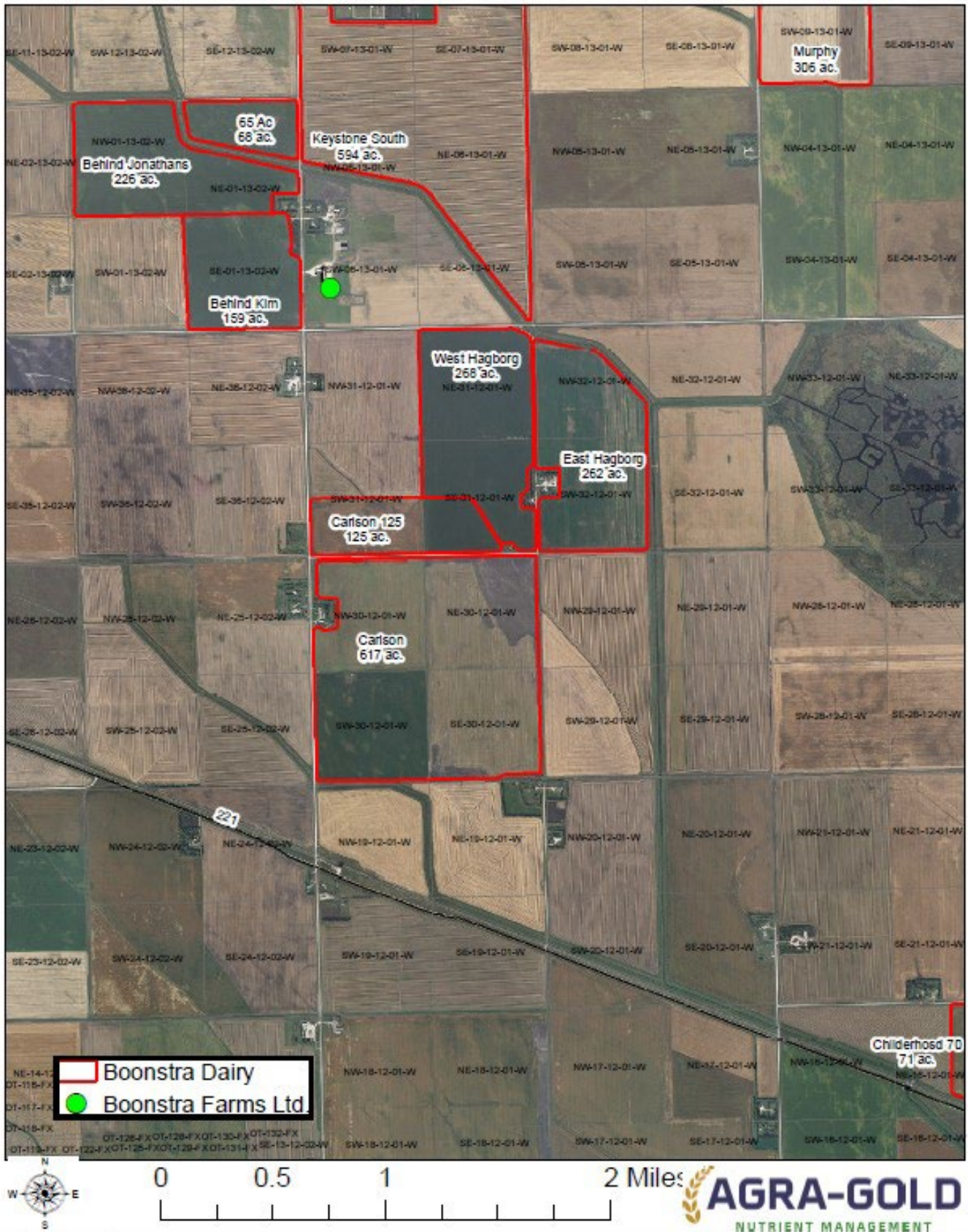
Setbacks from Barns and EMS to Nearest Dwellings



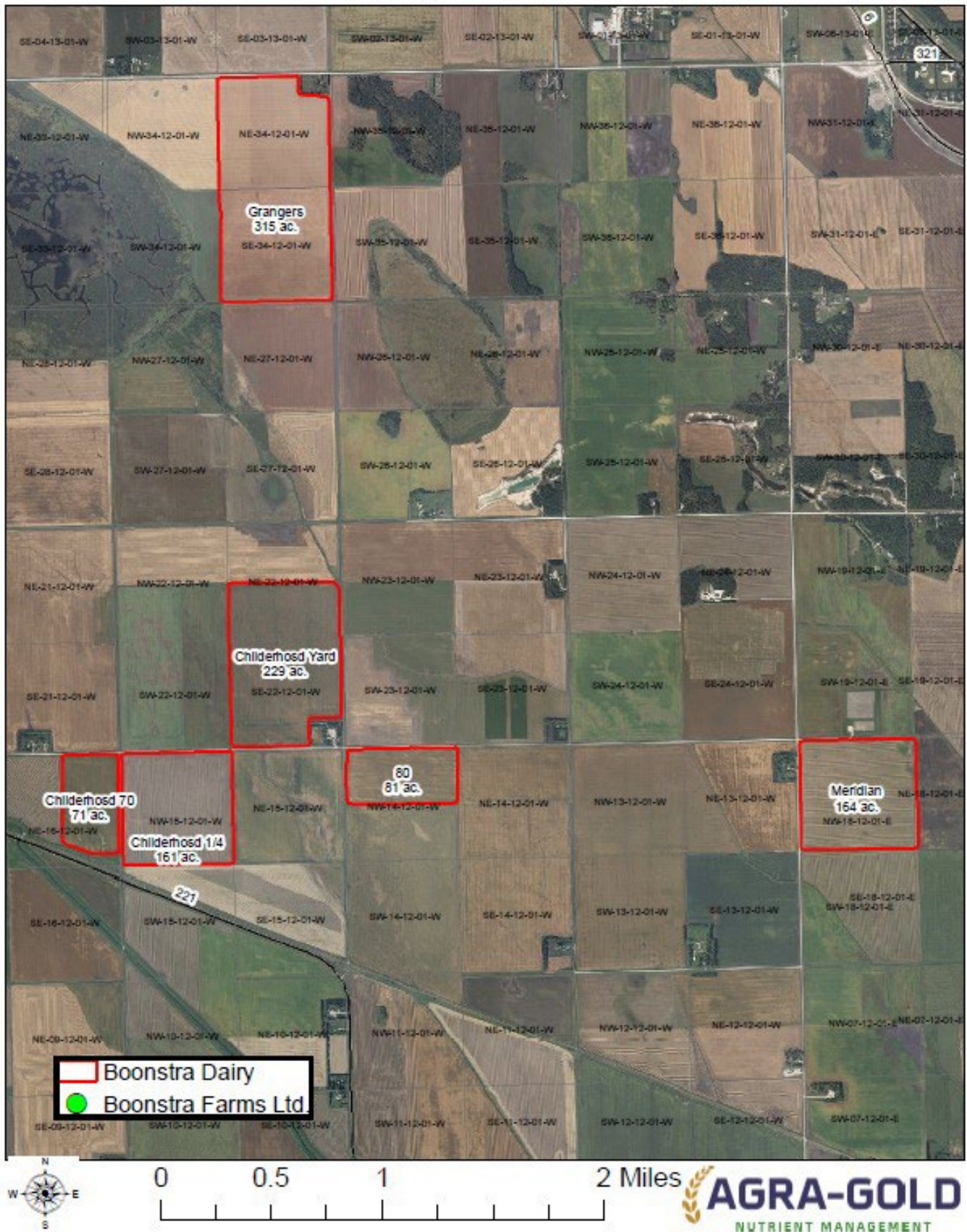
Boonstra Dairy Spread Fields (Central North Area)



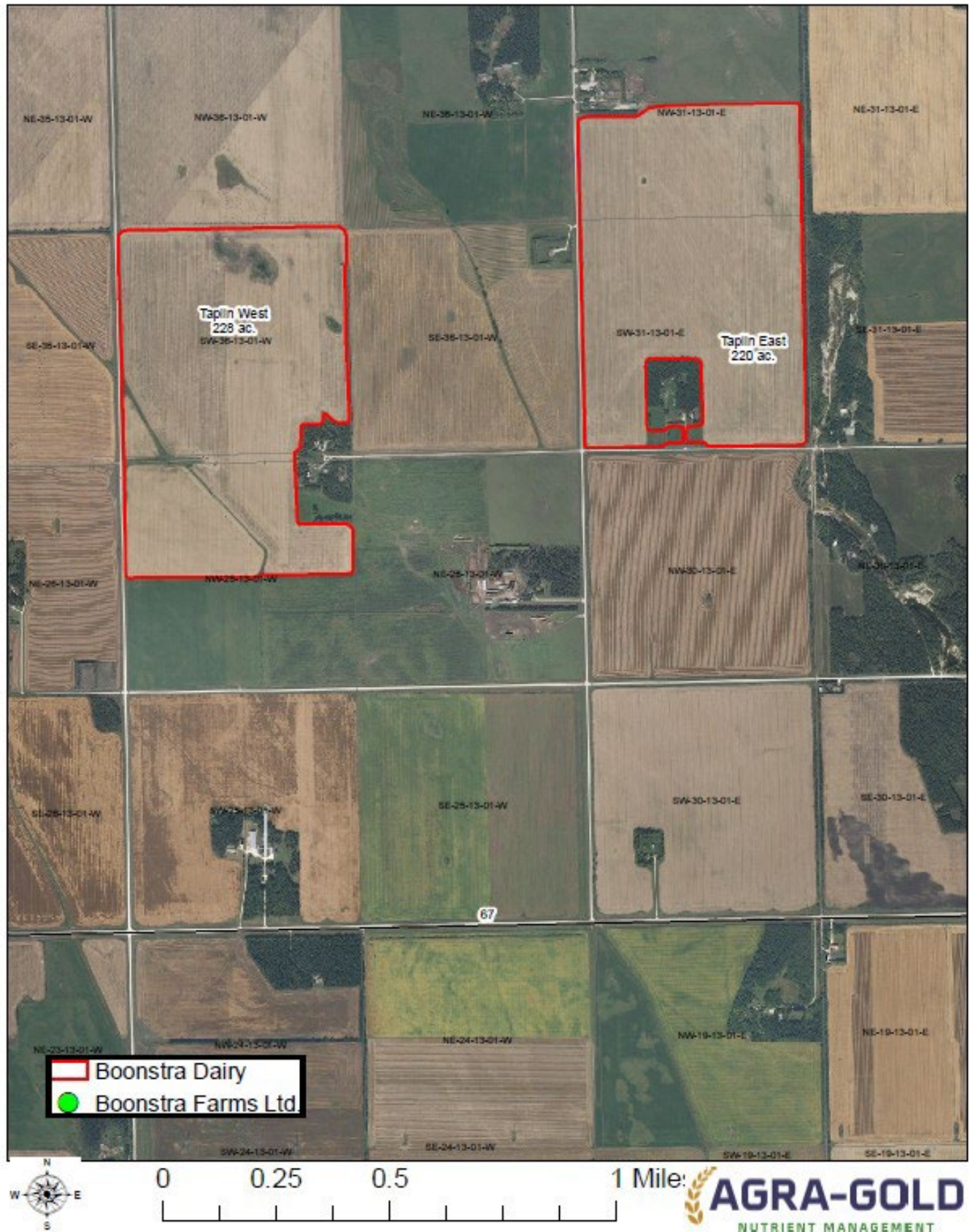
Boonstra Dairy Spread Fields (Central South Area)



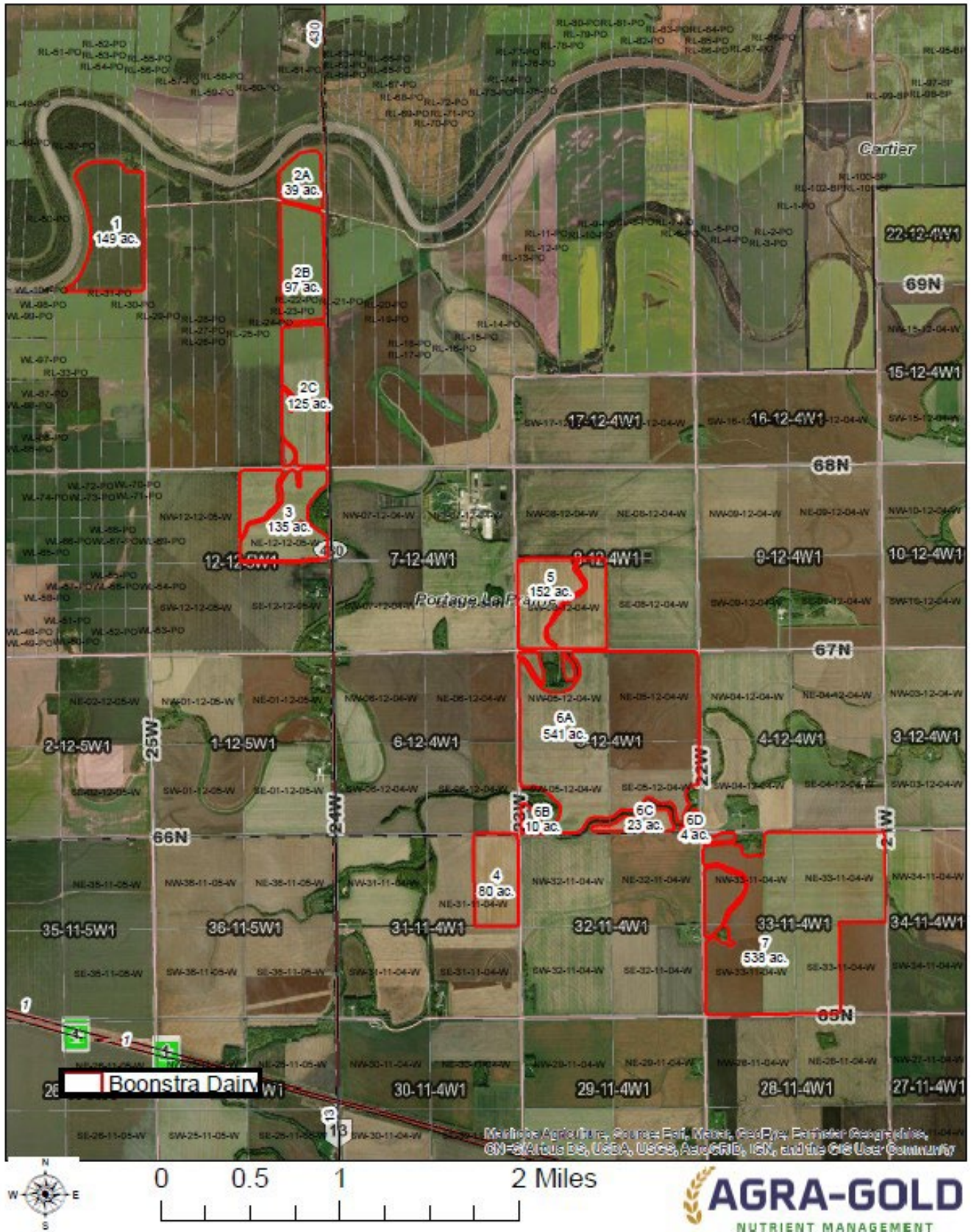
Boonstra Dairy Spread Fields (East Area)



Boonstra Dairy Spread Fields (North East Area)



Boonstra Dairy Spread Fields (South West Area)



Boonstra Dairy Farm Access and Truck Route



C. SITE ASSESSMENT OVERVIEW

Provincial Technical Overview of TRC 12-095 – Boonstra Farms Ltd.				
Item No.	Provincial Requirements	Confirmed	Related Provincial Safeguards	Dept.
1	Submitted complete site assessment	X	Technical Review Committee Regulation 119/2011 requires an applicant to submit a completed site assessment.	MR
2	Clearly identified the current and proposed type and number of animals and animal units	X	Boonstra Farms Ltd is currently seeking Conditional Use approval to expand their dairy operation from 600 mature cows (lactating and dry plus associated livestock) to 2000 mature cows (lactating and dry plus associated livestock) for a total of 4000 animal units.	AGR
3	Project clearly defined as: <u>4000 AU animal confinement facility</u>	X	The project is not defined as a confined livestock facility.	ECP
		X	Proposing to increase the existing livestock (dairy) operation to 4,000 AU (2,000 Milking Cows). Adding 4 new barns and one milking parlour, as well as a new Earthen Manure Storage (EMS).	MR
4	Identified all existing and proposed buildings and structures and related separation distances	X	<p>Proposed development is located within the Rural Area Zone (RA) of the RM of Woodlands Zoning By-law No. 2648/14 (Zoning By-law). Livestock Operation greater than or equal to 300 AU requires Conditional use approval from Council.</p> <p>Proposed development does not meet minimum setback separation distance from the proposed Earthen Manure Storage Facility (EMS) and Animal Housing Facility/Confined Livestock to the existing residences as per Table 4.8 of the Zoning By-law. Table 4.8 requires a minimum separation distance of 2,625 feet from a Single residence to the Earthen Manure Storage Facility/Feedlot, and of 1,312 feet to the Animal Housing Facility/Confined Livestock Area/Non-Earthen Manure Storage.</p> <p>The applicant will need to apply for variances with the RM.</p>	MR
5	Demonstrated project site is not located within Nutrient Management Zone N4 or any Nutrient Buffer Zone	X	Project site is not located within Nutrient Management Zone N4 or any Nutrient Buffer Zone	ECP

Provincial Technical Overview of TRC 12-095 – Boonstra Farms Ltd.

Item No.	Provincial Requirements	Confirmed	Related Provincial Safeguards	Dept.
6	Identified suitable water source: Existing Wells and a water consumption rate of 108,000 imperial gallons per day	X	Boonstra Farms Ltd. currently holds a valid Water Rights Licence with the Water Use Licensing Section; however, they will need to submit an application to amend the existing licence in order to include the additional animals.	ECP
7	Proposed project site meets development plan, zoning by-law	X	<p><i>The Planning Act</i> requires that development plans must include a livestock operation policy that guides zoning by-laws dealing with livestock operations.</p> <p><i>The Planning Act</i> requires municipalities to issue development permits for any development on a site. All development must comply with the Zoning By-law and Development Plan. Any proposed development that does not meet the separation distances or setbacks requires Council approval and a public process to vary those requirements.</p> <p>Designation The proposed livestock operation, located in the SW ¼ 06-13-01WPM in the RM of Woodlands, is designated Agricultural Area (AA) (RM of Woodlands Development Plan By-law No. 2643/14). Subject to obtaining variances from the RM, the proposal will comply with Development Policies 3.4.1(6) (Livestock Operation Policies).</p> <p>Zoning The proposed site is zoned “RA” Rural Area Zone (RM of Woodlands Zoning By-law No.2648/14) and has a minimum site area requirement of 80 acres with a minimum site width requirement of 600 feet.</p> <p>The proposed development will require a variance to vary the minimum mutual setback requirements from the existing residences to the proposed Earthen Manure Storage Facility and Animal Housing Facility/Confined Livestock Area (Table 4.8).</p>	MR

Provincial Technical Overview of TRC 12-095 – Boonstra Farms Ltd.

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8	Identified any unsealed abandoned wells on the project site or spread fields	X	<p>The proposal identifies that the water use for the proposed livestock operation is from the existing wells. The well locations are not specified in the site assessment report. The proposal indicates no abandoned wells present on the site or spread fields, however the provincial water well database indicates that there are wells present within the proposed spread field locations at SW31-13-1W, SW36-13-1W, 19-13-1W, NW7-13-1W, NE8-13-1W, NW6-13-1W, SW32-12-1W, 30-12-1W, 8-12-4W and NW5-12-4W. The accuracy of the well location and its status is not known. If any of these wells are in use then a minimum buffer as outlined in regulations must be maintained during spreading. The wells should be located and properly sealed if still present and not in use and a sealed well report must be filed with the Groundwater Management Section of MB Environment, Climate and Parks.</p> <p>Information on well sealing and well sealing reports are available from MB Environment, Climate and Parks (204-945-6959) or: https://www.gov.mb.ca/water/groundwater/wells_groundwater/index.html. A well drilling professional should seal all but the most basic wells. A list of currently licensed well drilling professionals can also be accessed from the above web page.</p> <p>During manure spreading, the set back distances to all groundwater features as prescribed under the Environment Act Livestock Manure and Mortalities Management Regulation should be considered as a minimum distance.</p>	ECP

Provincial Technical Overview of TRC 12-095 – Boonstra Farms Ltd.

Item No.	Provincial Requirements	Confirmed	Related Provincial Safeguards	Dept.
9	Identified suitable manure storage methods	X	<p>The applicant will modify or expand an existing manure storage. Under the Livestock Manure and Mortalities Management Regulation, the applicant must obtain a permit from Environment, Climate and Parks to modify or expand the storage. Once in operation the applicant must:</p> <ul style="list-style-type: none"> • Ensure there is sufficient capacity to store all manure through the winter. • Maintain the structural integrity of the storage. • Operate the storage so that it does not pollute surface water, ground water or soil. <p>The applicant will also store solid manure as field storage. Under the Livestock Manure and Mortalities Management Regulation, the applicant must:</p> <ul style="list-style-type: none"> • Locate the manure at least 100 m from any surface watercourse, sinkhole, spring, or well. • Ensure the manure does not pollute surface water, groundwater, or soil. • Land-apply the stored manure the following year. 	ECP
10	Identified acceptable manure application methods	X	<p>Under the Livestock Manure and Mortalities Management Regulation, the applicant must:</p> <ul style="list-style-type: none"> • Operate with an annual manure management plan which includes: <ul style="list-style-type: none"> • Manure type, volume, and nutrient values • Spread field location and soil class • Soil tests showing nitrogen and phosphorus levels • Crops to be grown • Manure application rate • Ensure manure does not pollute groundwater, soil or escape the operation's boundaries. • Follow requirements for the land application of manure, including nitrogen limits and phosphorus thresholds. 	ECP
11	Mortalities disposal methods identified: composting	X	<p>The applicant will compost mortalities. Under the Livestock Manure and Mortalities Management Regulation, the applicant must:</p> <ul style="list-style-type: none"> • Ensure the composting does not pollute surface water, groundwater, or soil. • Locate the composting site at least 100 m from any surface watercourse, well, or the operation's boundaries. • Ensure the composting facilities and process are acceptable to the Director. 	ECP

Provincial Technical Overview of TRC 12-095 – Boonstra Farms Ltd.

Item No.	Provincial Requirements	Confirmed	Related Provincial Safeguards	Dept.
12	Proposed suitable setback distances from water and property lines for manure, livestock and mortalities	X	The applicant has indicated that all setback distances meet minimum requirements set out in the Livestock Manure and Mortalities Management Regulation.	ECP
13	Indicated if proposed project site is within designated flood area or is otherwise at risk of flooding	X	We do not have any information to assess the flood risk in this area. The property does not appear to be at risk of flooding from the Assiniboine River. Some of the spread fields are located in areas at risk of flooding from the Assiniboine River. Additional details can be found in Appendix A.	MTI
14	Proposed acceptable odour control measures	X	The proponent has indicated that the crust on the manure storage facility will reduce odours from the storage. 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.	AGR
		X	The applicant has indicated the daily manure will form a crust over the storage, which will tends to reduce odours. No additional measures have been identified by the applicant to reduce potential odour in accordance with Section 3.11.1.c.ii. of the RM of Woodlands Zoning By-law in term of using a cover on the manure storage facility and / or the use of shelterbelts around the around the manure storage facility. As per Section 3.11.1.d.iii., Council may require the development agreement to address the construction and maintenance of shelterbelts.	MR
15	Proposed sufficient and suitable land for manure spreading with minimum setbacks from water sources	X	The required land base for Boonstra Farms Ltd is 5343 acres. Boonstra Farms Ltd has met the land requirement by demonstrating that they have access to 7547 suitable acres. Additional details can be found in Appendix B.	AGR
		X	Under the Livestock Manure and Mortalities Management Regulation, manure spreading must meet setback distances to all surface watercourse and groundwater features.	ECP

Provincial Technical Overview of TRC 12-095 – Boonstra Farms Ltd.

Item No.	Provincial Requirements	Confirmed	Related Provincial Safeguards	Dept.
16	Indicated if spread fields are located in the Red River Valley Special Management Area or any other regularly inundated area	X	The applicant has indicated that some spread fields are located within a regularly inundated area. Under the Livestock Manure and Mortalities Management Regulation, manure applied there between September 10 and November 10 must be injected or incorporated within 48 hours. This does not apply where perennial forages are established, or the soil is not disturbed except for seed planting or commercial fertilizer application and has adequate crop residue to control erosion.	ECP
17	Proposed spread fields that meet development plan and zoning by-law requirements	X	<p>All lands identified for manure spreading appears to be designated “Agricultural Area (AA)” in the RM of Woodlands Development Plan By-law No. 2643/14, and “Rural Area Zone (RA)” in the RM of Woodlands Zoning By-law No. 2648/14 (Zoning By-law), as well as “Agricultural Rural Area (A)” in the South Interlake Planning District (SIPD) Development Plan By-law No. 3/10, and “Agricultural General Zone (AG)” in the RM of Rosser Zoning By-law No. 4-21.</p> <p>The RM of Woodlands Zoning By-law includes “use or disposal of organic wastes for agricultural purposes” under the Agricultural Operations definition. The SIPD Development Plan and RM of Rosser Zoning By-law do not have regulations for the spreading of manure.</p>	MR
18	Proposed acceptable manure transportation method: dragline	X	No comment from department	ECP
		X	Please be advised that any structures placed within the controlled area of PR 221, PR 227, PR 248, and PTH 6 or any Provincial Road (PR) or Provincial Trunk Highway (PTH) within this area (125 feet from the edge of the right-of-way) excepting PTH 1 requires a permit from our office. The contact is Erica Paulo at 431-338-9897 or Erica.Paulo@gov.mb.ca . The placements of temporary drag lines or any other temporary machinery/equipment for manure application within the right-of-way of the above noted highways requires permission from our regional office in Steinbach. Please contact the Regional Planning Technologist, Rob Fender at (204) 346-6266 or Rob.Fender@gov.mb.ca . In addition, please notify the Regional Planning Technologist for the placement of temporary draglines or other temporary equipment for manure application within the controlled area of the above noted highways (125 feet from the edge of the right-of-way).	MTI

Provincial Technical Overview of TRC 12-095 – Boonstra Farms Ltd.

Item No.	Provincial Requirements	Confirmed	Related Provincial Safeguards	Dept.
19	Identified suitable trucking routes and access points	X	The subject farm has frontage along municipal roads. The proposed truck haul route will utilize an existing GRA connecting onto PTH 6 at Grosse Isle. We have no concerns.	MTI
20	Identified proposed trucking routes – local roads	X	The proposed site is accessed by municipal road / PR / PTH. As per Section 116(2) of <i>The Planning Act</i> , municipalities as a condition of approval may require proponent to enter into a development agreement regarding the condition and upkeep of local roads used as truck haul routes.	MR
21	Known rare species will not be impacted on new sites/lands	X	The information provided in the assessment suggest that there will not be any conflicts with species protected under the <i>Endangered Species and Ecosystems Act</i> and/or <i>Species at Risk Act</i> , or designated as rare or uncommon by the Manitoba Conservation Data Centre (MBCDC). This review is based on existing data known to the MBCDC of the Fish and Wildlife Branch at the time of the review. These data are dependent on the research and observations of our scientists and reflects our current state of knowledge. An absence of data does not confirm the absence of any rare or endangered species. Many areas of the province have never been thoroughly surveyed, however, and the absence of data in any particular geographic area does not necessarily mean that species or ecological communities of concern are not present. The information should, therefore, not be regarded as a final statement on the occurrence of any species of concern. All future observations of rare or endangered species made by the proponent should be reported to the MBCDC for further review.	NRND

Provincial Departments: Agriculture (AGR); Environment, Climate and Parks (ECP); Transportation and Infrastructure (MTI); Municipal Relations (MR)

D. PUBLIC COMMENTS AND DISPOSITIONS

No public comments received for this application.

E. CONCLUSIONS AND RECOMMENDATIONS

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

1. 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
 - i. the applicant,
 - ii. the Minister (c/o the Interlake Community Planning Office),
 - iii. all adjacent planning districts and municipalities, and
 - iv. 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; and
 - b) publish the notice of hearing in one issue of a newspaper with a general circulation in the planning district or municipality or, when there is no newspaper with a general circulation in the area, post the notice in the office of the planning district or municipality and at least two other public places in the 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*.
2. Council should specify the type(s) of operation, legal land location, number of animals in each livestock category and total animal units in its Conditional Use Order.
3. 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 Interlake Community Planning Office), and
 - c) every person who made representation at the hearing.
4. According to the RM of Woodlands Zoning By-law 2648/14, the required minimum separation distance between the Earthen Manure Storage Area and a single residence is approximately 2625 ft. The minimum separation distance required between an Animal Housing Facility/Confined Livestock Area/Non-Earthen Manure Storage and a single residence for a 3201-6400 AU operation is 1312 ft. As a result, Council will require the proponent to apply for a variance.
5. As per Section 169(4)(b) of *The Planning Act*, a copy of the notice of hearing to vary the separation distance involving a livestock operation must be sent to every owner of property located within the separation distance that is proposed to be varied.
6. As per Section 174(1) of *The Planning Act*, Council can hold all required hearings together in a single combined hearing. It is recommended that during the course of this public hearing, Council first deal with the conditional use order followed by the variance order.
7. As per Section 174(2) of *The Planning Act* the notice of hearing for each matter to be considered at a combined hearing may be combined into a single notice of hearing.

8. Councils are requested to include in their resolution and/or Conditional Use Order, notification that the applicant may appeal council's decision to reject the application or appeal a condition imposed by council related to its approval as per Section 118.2 of *The Planning Act*.
 - As per Section 118.2(2)(b), an applicant may appeal the following decisions of a board or council to the Municipal Board:

for an application for approval of a conditional use made in respect of a large-scale livestock operation,

 - (i) a decision to reject the application,
 - (ii) a decision to impose conditions.
9. As per Section 118, no development or expansion of a livestock operation that is the subject of an application under this Division may take place until
 - (a) the application is approved and the applicant complies, or agrees to comply, with any condition imposed on the approval under this Division; and
 - (b) the applicant obtains every approval, including any permit or licence, required under an Act, regulation or by-law in respect of the proposed operation or expansion, and complies with, or agrees to comply with, any condition attached to the approval.
10. Council is welcome to contact Manitoba Environment, Climate and Parks, Environmental Approvals Branch or Regional Environmental Compliance and Enforcement staff with respect to the Livestock Manure and Mortalities Management Regulation (M.R. 42/98) including compliance and enforcement issues.

Recommended Actions to Proponent

1. That a variance be applied for prior to the Conditional Use Hearing to vary the separation distance between the designated area of an Earthen Manure Storage Area and Animal Confinement Facility and the single residences not including the residence of the owner/operator. This will provide council with the option of holding a combined Conditional Use and Variance Hearing.
2. That the proponent request the municipality hold a combined hearing.
3. That any additional measures identified through subsequent provincial licencing or permitting in order to minimize any identified risks to health, safety and the environment be undertaken.
4. That as per Section 118.2(2)(b), an applicant may appeal the following decisions of a board or council to the Municipal Board:
 - (i) a decision to reject the application,
 - (ii) a decision to impose any condition on the approval.

F. TECHNICAL REVIEW COMMITTEE MEMBERS

Name	Department	Title Branch	Contact
Erin McCleery	Municipal Relations	Manager, Winnipeg Office <i>Community Planning and Development Branch</i>	204-945-1143
Petra Loro	Agriculture	Livestock Environment Specialist <i>Land Use and Ecosystem Resilience Branch</i>	204-918-0325
Vacant	Natural Resources and Northern Development		
Bryce Wood	Environment, Climate and Parks	Environmental Officer <i>Environmental Approvals Branch</i>	204-781-7226
Jeff DiNella	Transportation and Infrastructure	Senior Development Review Technologist <i>Highway Planning and Design Branch</i>	204-945-2664

Appendix A

Some of the spread fields are adjacent to Meadows Drain, Sturgeon Creek, Sturgeon Creek (East Branch), Sturgeon Lateral Drain (West Branch) and Upper Sturgeon Creek (West Branch), which are all designated Provincial Waterways.

Provincial Waterways are subject to Section 14 of the Water Resources Administration Act, which states:

“No person shall place any material on, remove any material from, or construct, carry out, reconstruct, establish, or place, any works or structures on, over, or across, a provincial waterway, except as may be authorized in writing by the minister and subject to such terms and conditions as the minister may prescribe.”

Water Management and Structures requires a Provincial Waterway Authorization be obtained for any development crossing or along a Provincial Waterway, including the use of temporary manure hoses.

The permit application is available on the Provincial Waterways section on the Manitoba Government Website:

<https://www.gov.mb.ca/mit/wms/permit/authorizations.html#:~:text=Section%2014%20%284%29%20of%20the%20Act%20requires%20that,that%20is%20proposing%20use%20of%20the%20Provincial%20Waterway.>

Once completed, applications can be forwarded to:

Development Review
Manitoba Infrastructure
Second Floor, 280 Broadway
Winnipeg, Manitoba R3C 0R8

Appendix B

Land Use and Ecosystem Resilience Branch – Manitoba Agriculture

In areas of lower livestock intensity such as the RM of Woodlands, it is currently the Province of Manitoba's policy to require sufficient suitable land for all of the nitrogen and half of the phosphorus generated by the livestock. This policy assumes that more land is available in the region to balance manure phosphorus with crop phosphorus removal, should it be necessary in the future.

Typical, modern feeding practices for dairy production were used to estimate nutrient excretion for Boonstra Farms Ltd. Realistic, long-term 10-year crop yields from the Manitoba Agricultural Services Corporation (MASC) for the RMs of Woodlands, Rosser, Portage la Prairie and Rockwood were used to estimate crop nitrogen uptake and phosphorus removal rates for the crop rotation specified in the proposal.

Land suitability is determined using soil testing for phosphorus and soil survey to establish the agriculture capability. Soils must be below 60 ppm Olsen P to be considered suitable. Detailed and reconnaissance soil survey are available in the area to determine the agriculture capability of the land. The land is primarily Class 2 and 3 (prime agricultural land). The primary limitation in the area is wetness (W) with areas of dense soils (D), salinity (N) and inundation (I).

The required land base for Boonstra Farms Ltd is 5343 acres. Boonstra Farms Ltd has met the land requirement by demonstrating that they have access to 7547 suitable acres.

Water Science and Watershed Management Branch – Environment, Climate and Parks (ECP)

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 2001).

The proponent is planning to apply manure in fall and manure will be applied by partial-injection or broadcast and incorporated. Injection and broadcast with incorporation will reduce the risk to surface water when compared to broadcast only application methods.

For most crops, manure contains an excess of phosphorus (P) compared to nitrogen (N) and as a result, application at N-based rates causes a buildup of soil P. Practices which reduce N losses from the manure improve the N:P ratio in the manure and help slow P buildup when manure is applied at N-based rates. Injection and incorporation are both practices which reduce N loss when compared to broadcast only application methods.

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

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. Many agricultural soils in Manitoba, especially areas with low livestock intensity, are considered phosphorus deficient and therefore, manure is an ideal fertilizer to support crop production. However, manure application can increase soil phosphorus over time and other spread fields may need to be added to prevent

excessive soil phosphorus build up. As excess phosphorus levels build up in soils, greater losses occur to surface and ground water. 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 agronomically very high). In areas of lower livestock intensity, such as the RM of Woodlands, it is currently the Province of Manitoba's policy to require sufficient suitable land for all of the nitrogen and half of the phosphorus generated by the livestock. This policy assumes that more land is available in the region to balance manure phosphorus with crop phosphorus removal, should it be necessary in the future for long-term sustainability. To remain environmentally sustainable over a long-term planning horizon of 25 years or more the proponent acknowledges that 8061 acres may be required for the operation. The proponent has identified 7547 acres for manure application at this time. Application to meet crop N requirements is estimated to use 5343 acres. Application at 2 times the crop removal of P is estimated to use 4030 acres (8061 acres is estimated to achieve P balance [phosphorus removal equal to phosphorus application] with current crop choices and yield potential).

As phosphorus levels build up in soils, the concentration of phosphorus in runoff to surface waters increases. It is important to rotate manure application across all spread fields and whenever possible focus manure applications on fields with low Olsen-P soil test levels so as to prevent excessive P buildup when applying manure at rates above P balance (P removal by harvested crops).

Soil test results indicate elevated levels of soil salinity on S1/2 31-12-1W1, SE 22-12-1W and 30-12-1W1. Saline areas generally have reduced yields and are therefore prone to nutrient buildup when manure (or fertilizer) is applied at the same rate as to the more productive parts of the field. Field areas that are less productive should be monitored for nutrient buildup and may require different management.

During manure spreading, setback distances to all groundwater features as prescribed under the Livestock Manure and Mortalities Management Regulation should be considered as a minimum distance.