DGH
ENGINEERING LTD.
CIVIL | STRUCTURAL | MECHANICAL | ELECTRICAL | INDUSTRIAL

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December 20th, 2021

Transmitted by email: jennifer.winsor@gov.mb.ca

Attention: Ms. Jennifer Winsor, P.Eng.
Environmental Approvals Branch
Manitoba Conservation and Climate
1007 Century Street, Winnipeg, MB R3H 0W4

Dear Ms. Winsor:

Re: Notice of Alteration (Licence No. 2986, Client File No. 2412.10)

On behalf of True North Foods, this is to submit a notice of alteration (NoA) for altering the slaughter blood disposal method. True North Foods is operating under Environment Licence No. 2986. The current blood disposal method is to ship and dispose to a Class 1 Landfill on a weekly basis in compliance with Term 14 of the license. True North Foods proposes to alter the current blood disposal practice to transfer blood collected in the slaughterhouse to the wastewater storage on site. Annually the waste water is applied by direct soil injection on croplands.

An assessment was undertaken by DGH Engineering on the potential environment effect caused by the proposed alteration. Our conclusion is that no adverse environment impacts can be anticipated from the proposed blood disposal alteration.

Please find attached supporting documents for this proposed alteration:

1. NoA form
2. Assessment Report

If you have any questions or concerns regarding this proposed alteration, please contact the undersigned.

Respectfully submitted,

DGH Engineering Ltd.

per: [redacted]

Charles Liu, P.Eng.

cc: True North Foods (calvin@truenorthfoods.ca)

Notice of Alteration Form

Manitoba
Sustainable Development

Client File No. : 2412.10	Environment Act Licence No. : 2986

Legal name of the Licencee: 6381023 MB Ltd. (True North Foods)

Name of the development: A cattle processing facility, and wastewater storage facility

Category and Type of development per Classes of Development Regulation:

Agriculture — Meat processing and slaughter plants

Licencee Contact Person: Calvin Vaags
Mailing address of the Licencee: Box 1259
City: Carman Province: Manitoba Postal Code: R0G 0J0
Phone Number: (204) 797-0803 Fax: Email: calvin@truenorthfoods.ca

Name of proponent contact person for purposes of the environmental assessment (e.g. consultant):
Dennis Hodgkinson, DGH Engineering Ltd.

Phone: (204) 334-8846	Mailing address: 12 Aviation Boulevard
Fax: (204) 334-6965	St. Andrews, Manitoba R1A 3N5

Email address: cliu@dghengineering.com

Short Description of Alteration *(max 90 characters)*:

1. licence holder's name; and
2. wastewater storage receiving blood.

Alteration fee attached: Yes: ☑ No: ☐

If No, please explain:

Date: 2021-12-07

Signature: [redacted]

Printed name: Calvin Vaags

A complete Notice of Alteration **(NoA)** consists of the following components:

- ☑ **Cover letter**
- ☑ **Notice of Alteration Form**
- ☑ **2 hard copies and 1 electronic copy of the NoA detailed report** (see "Information Bulletin - Alteration to Developments with Environment Act Licences")
- ☑ **$500 Application fee, if applicable** (Cheque, payable to the Minister of Finance)

Submit the complete NoA to:

Director
Environmental Approvals Branch
Manitoba Sustainable Development
1007 Century Street
Winnipeg, Manitoba R3H 0W4

For more information:

Phone: (204) 945-8321
Fax: (204) 945-5229
http://www.gov.mb.ca/sd/eal

Note: Per Section 14(3) of the Environment Act, Major Notices of Alteration must be filed through submission of an Environment Act Proposal Form (see "Information Bulletin – Environment Act Proposal Report Guidelines")

Report to Manitoba Conservation and Climate
Notice of Alteration EAL No. 2986

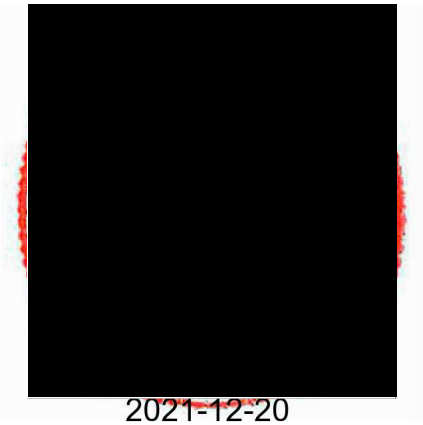
Prepared for:

True North Foods
SW 18-7-4 WPM
Box 1259
Carman MB R0G 0Z0

Prepared by:

12 Aviation Boulevard
St. Andrews, MB R1A 3N5

Contact: Charles Liu, P. Eng.



2021-12-20

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1.0 Introduction

True North Foods is a currently the largest beef processor in Manitoba. The operation commenced operation as Plains Processing Ltd. It was acquired, expanded and renamed to True North Foods and is currently in operation under Environment Act License No. 2986. The current blood disposal method is to ship and dispose to a Class 1 Landfill on a weekly basis in compliance with Term 14 of the license.

True North Foods proposes to alter the current blood disposal practice to transfer blood collected in the slaughterhouse to the wastewater storage on site. Annually the waste water is applied by direct soil injection on croplands.

An environmental assessment on the proposed alternation to blood disposal was undertaken by DGH Engineering as a supporting document to the Notice of Alteration (NoA).

2.0 Blood Collection Practice

The blood collection system in True North Foods was originally to be rendered and sold to pet food manufacturers or other manufacture (AAFC, 2011 P9). Blood handling currently used in True North Foods is one of the four methods approved by Canadian Food Inspection Agency (CFIA) to effectively prevent specified risk materials (SRM) cross contamination of bovine blood intended for use in feeds and food for animals within Canada (CFIA 2018).

In the stun area the leakage of brain material from the stun hole is prevented by applying CFIA approved edible grease to seal the stun hole consistent with the guideline “The Canadian Food Inspection Agency (CFIA) Position on Head Hides (Face Plates) from Cattle Slaughtered in Canadian Abattoirs” (AAFC 2011 P7).

Blood is collected within a curbed containment channel in the bleed area, and flows by gravity to a sump in the floor within the curbed area. The collected blood is drained into a sump and pumped to a blood storage tank for shipment. (AAFC, 2011 P3).

The proposed final disposal of the blood on cropland has no SRM contamination potential.

3.0 Wastewater Storage Holding Capacity

The effective volume of the wastewater storage is 36,333 m^3.

The wastewater generation rate based on the most recent discharge records covering a period of 375 days, is 34,810 m^3 per year; and the daily average is 95.4 m^3. The current holding capacity of the storage is 380 days. The detailed calculation results are shown in Table 1.

The blood shipping records show that 20 metric tons of blood was shipped in a typical work week. The density of cattle blood is approximately 1.0 kg/L. The daily average of blood collected is estimated to be 2.4 m^3.

Table 1. True North Foods Wastewater Generation Rate

Period		Discharge records	
from	to	imperial gallons	m^3
8/27/2020	4/5/2021	4,581,000	20,826
4/5/2021	9/6/2021	3,286,000	14,939
		Calculated results	
375 days		7,867,000	35,764
365 days		7,657,213	34,810
daily average		20,979	95.4

Table 2. True North Foods Blood Generation Rate (m^3)

typical work week	20
work day average	4
annual*	880
daily average#	2.4

* 220 work days in a year.

\# 365 days in a year.

The proposed blood discharge will result in the increase of the hydraulic loading rate to the wastewater storage from 95.4 m3 per day to 97.8 m3 per day. The holding capacity of the storage will be reduced from 380 days to 371 days.

True North Foods wastewater storage is covered with plastic (40 mil HDPE) membrane. Precipitation does not impact the holding capacity of the storage. The designed freeboard is 0.5 meters. The freeboard area can safely accommodate the volume increase by blood. The storage holding capacity is 400 days for wastewater including the extra volume of blood with a freeboard of 0.3 meters.

4.0 Wastewater Storage Effluent Character

Term 35 of License No. 2986 required the wastewater to be tested in accordance with the Nutrient Management Regulation 62/2008, the same requirement for livestock manure application. A basic manure analysis package including total nitrogen, ammonium-nitrogen (NH4-N), total P, total K and dry matter content is obtained from a sample of waste water prior to storage element.

The corresponding contents in cattle blood were reported by INFOVERT as Total protein 6.4~9.5 g/dl; Blood urea nitrogen (BUN) 7 ~25 mg/dl; Phosphorus 4.0~8.6 mg/dl; and Potassium 4.0~5.8 mEq/L. After the unit conversion and protein N calculation, the nutrients of blood are listed in Table 3. In the calculation, the high numbers were

used for conservative consideration. The nitrogen contents in protein were counted as 16%; and the blood urea nitrogen was assumed totally converting into ammonium N.

The latest wastewater test results (April 5, 2021 sample) are also shown in Table 3. After the proposed blood discharge, the nutrients in the effluent do not change significantly, except for nitrogen. The total nitrogen is to increase by 38%. As a result, the nutrient value of the wastewater is increased.

Table 3. True North Foods Annual Wastewater Present Character and Prediction for Proposed Blood Disposal

Nutrients	2021 April test results		Blood reported and calculated		Proposed wastewater + blood	
	volume m3	concentration mg/L	volume m3	concentration mg/L	volume m3	concentration mg/L
Total Nitrogen	34,810	933	880	15,450	35,690	1291
Ammonium N		295		250		294
Phosphorus		90		86		90
Potassium		45		226		49

5.0 Cropland Availability

The nutrient contents in the effluent of the wastewater storage were low. The limiting parameter for wastewater injection is the recommended hydraulic acceptance of the cropland. The application rate recommended in the Environment Act Proposal (EAP) filed in 2011 was 25 mm, 250 m^3 per hectare.

The proposed blood disposal will increase the wastewater volume by 2.5%. The total land required for True North Foods annual wastewater injection is 142 hectares (351 acres). True North Foods signed agreements with cropland owners for wastewater injection (DGH, 2011). The total land available acreage is 1,290 acres. It is

approximately 6 times of the requirement which provides True North Foods flexibility for their wastewater injection.

As the total nitrogen concentration is increased by blood addition, the nitrogen application rate will increase from 234 kg/ha to 325 kg/ha. This level of nitrogen application is well within the norms for manure application for cropland.

6.0 Summary

True North Foods proposes to alter the blood disposal method from landfill to cropland application. The proposed alteration does not pose SRM risk. The existing wastewater storage has sufficient holding capacity to receive and store the proposed blood discharge. True North Foods has agreements with the cropland owners for wastewater injection. The acreage available is more than sufficient for proposed alteration to wastewater injection including increase nitrogen levels.

No adverse environment effects can be anticipated in the proposed disposal of the slaughter blood to cropland with the slaughter wastewater.

References

AAFC 2011, Agriculture and Agri-Food Canada: Beef Processing Plant Expansion Environmental Assessment /Screening Report, Plains Processors Ltd, SIP-14, 11-01-61922, August 26, 2011.

CFIA 2018, Canadian Food Inspection Agency: https://inspection.canada.ca/animal-health/terrestrial-animals/diseases/reportable/bovine-spongiform-encephalopathy/srm/abattoirs-meat-processors/blood-collection/eng/1369327046691/1369327047551 , December 27, 2018.

DGH 2011, DGH Engineering Ltd: Environmental Impact Statement for Proposed Beef Meat Processing Plant Expansion, Plains Processors Ltd., March 12, 2011.

INFOVET, http://infovets.com/books/dairy/D/D080.htm

APPENDIX A

Canadian Food Inspection Agency

Specified Risk Material

Blood Collection during Slaughter

Government of Canada / Gouvernement du Canada

Specified risk material - Blood collection during slaughter

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The CFIA will continue to allow the exemption of cattle blood from being classified as Specified Risk Material (SRM), so long as cross contamination of blood with SRM is prevented.

The key concern is the prevention of neurological tissue externalized during the stunning process, from falling into the blood collection pit following sticking. The potential for such contamination is associated with the stunning method employed on over thirty month (OTM) cattle. It is the responsibility of the abattoir operator to develop and implement effective controls to prevent occurrence of this contamination.

Currently, there are four (4) CFIA approved methods to effectively prevent SRM cross contamination of bovine blood intended for use in feeds and food for animals within Canada:

1. Blood collected by open method from age verified under thirty month (UTM) will be considered exempted material if it does not contain blood from OTMs (over thirty months) (zero tolerance);
2. The application of edible grease, tampons or other equivalent devices to seal the stun hole, this method must only be considered after the grossly visible brain material is removed from the face plate by trimming, washing, scraping and/or vacuuming.
   The nasal cavity is considered likely compromised in double stunned or misplaced stunned animals. In such situations the collection of blood is acceptable only if a specific mitigation measure is included in the Preventive Control Plan (PCP). Where the nasal cavity has not been compromised, the CFIA will not require any additional measures to prevent the blood from being contaminated with nasal drip.
3. Humane stunning using a non-penetrative method (for example, electrical kill stunning, ritual slaughtering without stunning, etc.);
4. Closed blood collection method (for example, hollow knife or cannula).

Any cattle abattoir operator wishing to utilize an alternate procedure to prevent the risk of SRM cross-contamination of blood must submit a detailed written protocol to the CFIA or the competent authority prior to implementation.

Date modified:
2018-12-27

APPENDIX B

Agriculture and Agri-Food Canada
Environmental Assessment Documentation
Excerption Regarding True North Foods
Blood Collection

ENVIRONMENTAL ASSESSMENT DOCUMENTATION

CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

***Information may be accessible or protected as required under the provisions of the Access to Information Act**

1. PROJECT AND CONTACT INFORMATION

Project Title	**Project No./File No.**
Beef processing plant expansion in Carman. MB.	SIP - 14

Site Location
Box 1259, (Legal Address: 18-7-4) Carman, MB R0G 0J0

EA Start Date	**EA Notice of Commencement date**	**CEAR Number**
2011/04/18	2011/04/27	11-01-61922

Proponent of Project Proposal
Calvin Vaags Plains Processors Ltd. e-mail: calvaags@escape.ca Consultant: DGH Engineering Ltd. 12 Aviation Boulevard St. Andrews, Manitoba R1A 3N5 Doug Small, P.Eng.

Federal environmental assessment coordinator		
Canadian Environmental Assessment Agency	Wendy Botkin	204-984-7935

Requirement for environmental assessment
Trigger (check the trigger(s) appropriate to the proposal) (CEAA s.s.5(1)): ☐ Proponent ☒ Funding (SIP) ☐ Land Interest ☐ Regulatory Decision

FEDERAL COORDINATION	
Federal Authorities Notified: (as per Federal Coordination Regulations) ☒ Yes ☐ None Identified	
Agency and Individual Contacted: Canadian Food Inspection Agency – Scott Thompson Health Canada – Rick Grabowecky Environment Canada – Krista Flood	Date Contacted 2011/05/06

Inspection
Regular building inspections will be performed by qualified engineers during the construction phase. Following the completion of each building expansion, an inspection will take place and the building will be certified before occupancy.

2.4. Process Description

Resources
Overall usage of water, electricity, and propane will increase. However, the consumption of propane and electricity per animal slaughtered is expected to decrease due to increased operational efficiency. The current estimates of gas and electrical consumption are 752 000 kWh and 1,710,000 kWh, respectively. Natural gas will be used for building heat, air ventilation and heating water. Major electrical loads include refrigeration, lighting, processing equipment, motors and pumps.

Municipal water consumption will increase to accommodate the increase in slaughter capacity. From available historical water consumption records at Plains Processors, water usage was at a maximum for the yearly quarter from July 1, 2007 to September 30, 2007. During the aforementioned quarter, water usage was approximately 474,000 litres, which is equivalent to approximately 1,900 m^3 annually. Assuming a production increase from 40 head to 1000 head per week, and a water use efficiency of approximately 0.6 m^3 of water per head, water consumption will be approximately, 30,000 m^3 per year. R.M. of Dufferin, the local water treatment plant has enough capacity to support the operations at the abattoir. A copy of the water supply agreement from the R.M. of Dufferin is provided in Appendix 2. A small water reservoir tank will be installed onsite to allow for peak water consumption and to provide for contingency should the water supply be interrupted.

The traffic data for a 1000 head per week abattoir was calculated based on data from a similar scale abattoir. Cattle must be shipped to Plains Processors via truck. To sustain the process throughput rates, approximately 6.0 truckloads of cattle will be delivered to the holding barn every day.

2.4.1. Kill floor brief description

To assist in understanding the layout of the proposed kill floor a brief description of the process flow follows.

Animal Receiving
Live cattle will be transported from ranches to Plains Processors by truck. The cattle will be loaded in through the north facing doors of the animal holding barns. Cattle will be promenaded into the animal holding pens.

Slaughter
Live animals are handled from staging pens through a chute and into a raised knocking box. The operator restrains a single animal in the knocking box. The animals are stunned using a captive bolt stunner, rendering the animal unconscious. The stunned animal is discharged from the side of the knocking box onto a galvanized metal landing grate. The stunned animal is shackled by its right hind leg and suspended via an electric hoist on rail beam which is at an elevation of 6.5 m above finished floor. The stunned animal passes an in-line scale prior to being conveyed to a blood containment area where the jugular veins are severed and bled out. After bleeding, the carcasses are transferred to the dressing rail.

Blood collection
Blood collection on the floor in the plant is an interim step in the process. Blood is collected within a curbed containment channel in the bleed area, and flows by gravity to a sump in the floor within the curbed area. The collected blood will be drained into a sump and pumped to a blood storage tank for shipment.

Evisceration
The floor of the Kill and Evisceration Room are equipped with a trench style drain channel area to collect drippings from the hanging carcasses as they travel along the line. The channel has process floor drains based on an area of one drain per 40 square metres. The employee performing the initial hoisting and sticking operations will also work at the end of the blood containment area to remove the animal's front feet and horns utilizing a hydraulic clipper. Following removal of the horns and front feet, the bled carcasses are conveyed to

the working platform where the hind feet are removed. Removal of the hind feet will coincide with transferring the carcass from the bleeding rail to the slaughter hooks. The free hind leg is hooked above the knee and the foot removed. Next the second hind leg is released from the bleeding shackle and slaughter hooks placed and the foot removed. The carcass then moves to the pre-hiding station where pre-hiding work at the back of the animal takes place. Duties performed include removal of the tail as well as separation of the rectum and colon and tying of the bung. The carcass then moves to the frontal pre-hiding station, the roding (esophagus) station and then to the hide puller in preparation for dehiding operations.

All the inedible components to this point are collected in buggies and periodically transferred to the inedible load out. The carcass then moves to the front feet shackling station. The same employee is also responsible for opening the carcass breastbone. After opening the breastbone and shackling of the front feet, the same employee positions him/herself for the de-hider. The carcass proceeds to the hide pulling station where the carcass is secured to a stationary stand and the hide is removed by the hide pulling device. The hide is transferred via belt conveyor to the hide preparation area where hides are salted and stacked on pallets that are removed to the by-product load-out when full. The carcass moves to the clean side of the evisceration. The head is removed and washed, the tongue is dropped, the tonsils are removed and the lymph nodes are exposed for inspection. Identity of the heads is preserved until final disposition of the corresponding carcass. After inspection, the head is either taken to the head boning station or to inedible disposal. The edible head meat and tongues are harvested at the end of the red offal conveyor, chilled and then packaged.

Following head removal, the carcass is moved to the station where the viscera (white offal) are removed. The offal drops onto a processing table for paunches by a transfer chute, and the contents onto the conveyor. The empty stomach and manure are transported by buggy to the inedible and manure load-out trailer, respectively. Hearts, kidneys and livers are placed on hooks and in sequence with the heads after harvesting. Red offal generated on the evisceration floor is cooled for the shift adjacent to the kill floor and then transported between shifts across the kill floor and to the packaging area, to be packaged and frozen in a timely manner. The carcass is split along the spine. The spinal chord is completely removed from the split carcass.

The leakage of brain material from the stun hole will be prevented by applying CFIA approved edible grease to seal the stun hole consistent with the guideline “The Canadian Food Inspection Agency (CFIA) Position on Head Hides (Face Plates) from Cattle Slaughtered in Canadian Abattoirs”.

Carcass inspection

The carcass then proceeds to the carcass inspection station. If a carcass gives cause for concern, the carcass is pushed off the main carcass rail to a held rail for further inspection. Approved carcasses move to the final trimming station where blemishes, residual pieces of hide, blood clots, bruised tissue and contamination are removed. The carcass on the held rail is re-inspected, re-trimmed, or condemned. The carcasses that are passed as edible return to the main carcass rail prior to the final trimming station. Condemned carcasses are switched off of the held rail to the condemned carcass room, then sectioned and disposed into the inedible stream. Trimmed carcasses are then scaled, indexed, showered and stamped. The stamped carcasses are then transferred to manual rail system and transported to one of the drip coolers maintained at 2 to 4 degrees C prior to cutting and boning. The coolers are filled in an alternate pattern allowing for 24 hour holding prior to processing.

Cutting, Boning and Packaging

Chilled carcasses are transferred into the cutting and boning room past an inspection and trim station and a scale station. The carcasses are broken into fronts and hinds, transferred to the storage rails along the boning table. The quarters are broken and placed on the boning tables to be cut into primal sections and boned out. The boned primal cuts are placed in poly bags, shrink wrapped, labelled, packaged in cartons and palletized. The bones and inedible products are collected in buggies and at the end of shift the full buggies are transferred across the kill floor into the inedible disposal trailer and the buggies washed and returned.

The various cuts of meat are placed in plastic bags, inserted in a vacuum chamber to extract air, sealed and sent through a hot water bath to shrink the bag around the meat. The sealed bags are sorted as required and placed in cardboard boxes in quantities of 20 to 30kg which are then labelled and strapped, placed on pallets and transported to racks in the product storage cooler for shipment.

wholesome human food relying only on good sanitation practices and without any significant pathogen killing interventions. In addition all activities are carried out under the oversight of a CFIA veterinarian who is intimately aware of pathogen related issues commencing with the arrival of animals on site and following all subsequent parts of the operations.

Pathogens that are present in the wastewater will not be significantly reduced by screening. The extended retention in the wastewater pond may result in some die off but some pathogens will persist. Direct soil injection should however provide safe final treatment.

The pathogens will be characteristic of those indigenous to normal healthy livestock. The soil is routinely relied on to provide a safe receptor for animal manure from intensive animal production or under pasture. The abattoir wastewater is expected to be less "pathogen intensive" than manure application.

Manure

Setbacks for animal manure storage and livestock operations are presented in the R.M. of Dufferin zoning by-laws. The regulations are relevant to large livestock operations. However, since animals will be held in the animal holding barn, and manure will be generated, Plains Processors will abide by these zoning by-laws. The manure pad will be covered with a roof to divert precipitation. The quantity of manure is minimal as the animals are on-site on a temporary basis. The manure will be handled as a solid. The manure will not be treated, it will be removed from the site and incorporated with tillage into neighboring farmland as organic fertilizer as per the Livestock Manure Management Regulation MR 42/98.

Blood

Approximately 27,000 kg of blood will be produced during slaughter operations every week. Blood collection systems will be designed as part of the slaughter floor. The blood will be stored and sold to pet food manufacturers or other manufacture when the product is saleable and market receptive. Otherwise blood will be disposed of at an SRM approved landfill such as Brady Road. Approximately one truckload per week will be required to haul away blood.

Hides

Cow hides are removed by a hide puller. The cow hides are salted and palletized on-site. Approximately 4 truckloads of cow hide will leave the abattoir every week. The cow hides are a valuable commodity for tanneries.

Meat Packaging

Meat packaging operations will result in small amounts of cardboard and plastic waste. Proper employee training and equipment maintenance will minimize waste generation from packaging operations to a negligible level. All packaging materials are pre-manufactured customized products by the material supplier. They are shipped to the plant in "flat" bulk quantities and shaped or formed into the needed packages on site. There is no significant waste produced other than minor "accidental" damage in the process. Packaging waste will be recycled as much as possible otherwise it will be transported to a landfill. The final packaged edible products will be removed from Plains Processors by truck. Approximately two trailer loads of final product will leave Plains Processors everyday. Edible products will be sent to butchers for further separation, and eventually be sold at market.

	Per Head
Average Weight Before Slaughter	**576 kg**
Dressed Beef	**291 kg**
Inedible Material	**84 kg**
Paunch Manure	**24 kg**
Bone and Fat	**50 kg**
Blood	**27 kg**
Wastewater	**0.6 m^3**

Table 1 Breakdown of Slaughter Products (DGH Engineering Ltd., 2011)