Technical Document LA24008

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

NRCB USE ONLY	Application number	Legal land description
☑ Approval ☐ Registration ☐ Authorization ☐ Amendment	LA24008	SE 9-12-21-W4

APPLICATION DISCLOSURE

This information is collected under the authority of the *Agricultural Operation Practices Act* (AOPA), and is subject to the provisions of the *Freedom of Information and Protection of Privacy Act*. This information is public unless the NRCB grants a written request that certain sections remain private.

Any construction prior to obtaining an NRCB permit is an offence and is subject to enforcement action, including prosecution.

I, the applicant, or applicant's agent, have read and understand the statements above, and I acknowledge that the information provided in this application is true to the best of my knowledge.

Feb 24, 2024 — Date of signing

[redacted] — Signature

AVE Farms Ltd. — Corporate name (if applicable)

Stan Vanessen — Print name

GENERAL INFORMATION REQUIREMENTS

Proposed facilities: list all proposed confined feeding operation facilities and their dimensions. Indicate whether any of the proposed facilities are additions to existing facilities. (attach additional pages if needed)

Proposed facilities	Dimensions (m) (length, width, and depth)
Hog Barn (farrowing and gestation)	38.4 x 21.6 x 0.6
	39 x 29.9 x 2.4
The two proposed hog barns are partially on top of existing feedlot pens (southeast pens)	
(see next page for the earth liquid manure storage)	

Existing facilities: list **ALL** existing confined feeding operation facilities and their dimensions

Existing facilities	Dimensions (m) (length, width, and depth)	NRCB USE ONLY
Hog Barn 1	64x14	confirmed
Hog Barn 2 (L Shape)	62x14 and 57x12	confirmed
Hog Barn 3 (gestation barn LA05033)	58.3x19.5	confirmed

NRCB USE ONLY

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

Existing facilities continued	Dimensions (m) (length, width, and depth)	NRCB USE ONLY
Feedlot pens south east row	134x91	consists of two rows 131x46 m&93x38 m
Feedlot pens north east row	62x240	confirmed
Feedlot pens south west row	232x82 and 79x20	confirmed
Feedlot pens northwest row	300x84	confirmed
Feedlot pens (LA 15016)	58x74 (each)	Two rows: 236 x 71 m and 290 m x 74 m
Catch Basin	47x60x4.5	confirmed
Earthen Liquid Manure Storage	50 x 50 x 7 m	50x46 m (depth 58 m)
Feedlot Pens	280x70 + 70x24 m	LA20037 confirmed
The earthen liquid manure storage (approved in Approval LA15016) was constructed smaller than permitted. The dimensions in Approval LA15016 state: 74 m x 36.6 m x 4.5 m deep (5,290 m^3 storage volume). The dimensions of the constructed EMS are: 50 m x 46 m x 5.8 m deep (4,914 m^3 storage volume). This approval (LA24008) includes the amendment of the permitted dimensions to reflect the "as-built" dimensions.		


LA 15016
LA2 0037
north east row
catch basin
North
Ems
south east row
South west row
Farrowing
Hog Barns 1, 2, 3
north west row
Gestation

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

If a new facility is replacing an old facility, please explain what will happen to the old facility and when. ☐ N/A

Construction completion date for proposed facilities Dec 1 2027

Additional information

Livestock numbers: Complete only if livestock numbers are different from what was identified in the Part 1 application. Note: if livestock numbers increase in your Part 2 application, a new Part 1 application must be submitted which may result in a loss of priority for minimum distance separation (MDS).

Livestock category and type (Available in the Schedule 2 of the Part 2 Matters Regulation)	**Permitted number**	**Proposed increase or decrease in number (if applicable)**	**Total**

The applicant proposed to change the 180 sow farrow to finish plus 40 sow farrow to wean portion of the CFO to 500 sow farrow to wean.
The 8000 beef finishers remain.

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

DECLARATION AND ACKNOWLEDGMENT OF APPLICANT CONCERNING *WATER ACT* LICENCE
issued by Alberta Environment and Protected Areas (EPA) for a confined feeding operation (CFO)
Date and sign one of the following four options

OPTION 1: Applying through the NRCB for both the AOPA permit and the *Water Act* licence

I **DO** want my water licence application coupled to my AOPA permit application.

Signed this ____day of _____, 20____. _____
Signature of Applicant or Agent

OPTION 2: Processing the AOPA permit and *Water Act* licence separately

1. I (we) acknowledge that the CFO will need a new water licence from EPA under the *Water Act* for the development or activity proposed in this AOPA application.
2. I (we) request that the NRCB process the AOPA application **independently of** EPA's processing of the CFO's application for a water licence.
3. In making this request, I (we) recognize that, if this AOPA application is granted by the NRCB, the NRCB's decision will not be considered by EPA as improving or enhancing the CFO's eligibility for a water licence under the *Water Act*.
4. I (we) acknowledge that any construction or actions to populate the CFO with livestock pursuant to an AOPA permit in the absence of a *Water Act* licence will **not** be relevant to EPA's consideration of whether to grant the *Water Act* licence application.
5. I (we) acknowledge that any such construction or livestock populating will be at the CFO's sole risk if the *Water Act* licence application is denied or if the operation of the CFO is otherwise deemed to be in violation of the *Water Act*. This risk includes being required to depopulate the CFO and/or to cease further construction, or to remove "works" or "undertakings" (as defined in the *Water Act*).
6. **AS RELEVANT:** I (we) acknowledge that the CFO is located in the South Saskatchewan River Basin and that, pursuant to the *Bow, Oldman and South Saskatchewan River Basin Water Allocation Order* [Alta. Reg. 171/2007], this basin is currently closed to new surface water allocations.
7. **Provide:** Water licence application number(s) _____

Signed this ____ day of _____, 20____. _____
Signature of Applicant or Agent

OPTION 3: Additional water licence not required

1. I (we) declare that the CFO will not need a new licence from EPA under the *Water Act* for the development or activity proposed in this AOPA application.
2. **Provide**: Water license number(s) or water conveyance agreement details 001423770000

Signed this 20 day of February, 2024. [redacted]
Signature of Applicant or Agent

OPTION 4: Uncertain if *Water Act* licence is needed; acknowledgement of risk (for existing CFOs only)

1. At this time, I (we) do not know whether a new water licence is needed from EPA under the *Water Act* for the development or activity proposed in this AOPA application.
2. If a new *Water Act* licence is needed, I (we) request that the NRCB process the AOPA application **independently of** EPA's processing of the CFO's application for a water licence.
3. In making this request, I (we) recognize that, if this AOPA application is granted by the NRCB, the NRCB's decision will not be considered by EPA as improving or enhancing the CFO's eligibility for a water licence under the *Water Act*.
4. I (we) acknowledge that any construction or actions to populate the CFO with additional livestock pursuant to an AOPA permit in the absence of a *Water Act* licence will **not** be relevant to EPA's consideration of whether to grant my *Water Act* licence application, if a new water licence is needed.
5. I (we) acknowledge that any such construction or livestock increase will be at the CFO's sole risk if the *Water Act* licence application is denied or if the operation of the CFO is otherwise deemed to be in violation of the *Water Act*. This risk includes being required to depopulate the CFO and/or to cease further construction, or to remove "works" or "undertakings" (as defined in the *Water Act*).
6. **AS RELEVANT:** I (we) acknowledge that the CFO is located in the South Saskatchewan River Basin and that, pursuant to the *Bow, Oldman and South Saskatchewan River Basin Water Allocation Order* [Alta. Reg. 171/2007], this basin is currently closed to new surface water allocations.
7. **Provide**: Water license number(s) or water conveyance agreement details _____

_____

Signed this _____ day of _____, 20____. _____

Signature of Applicant or Agent

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GENERAL ENVIRONMENTAL INFORMATION

(complete this section for the worst case of the existing facility which is the closest to water bodies or water wells and for each of the proposed facilities)

Facility description / name *(as indicated on site plan)*

Existing: CFO **Proposed 1:** Barn

Proposed 2: _____ **Proposed 3:** _____

Facility and environmental risk information		Facilities				NRCB USE ONLY	
		Existing	Proposed 1	Proposed 2	Proposed 3	Meets requirements	Comments
Flood plain information	What is the elevation of the floor of the lowest manure storage or collection facility above the 1:25 year flood plain or the highest known flood level?	☒ >1 m ☐ ≤ 1 m	☒ >1 m ☐ ≤ 1 m	☐ >1 m ☐ ≤ 1 m	☐ > 1 m ☐ ≤ 1 m	☒ YES ☐ NO ☐ YES with exemption	Not located in known flood plain
Surface water information	How many springs are within 100 m of the manure storage facility or manure collection area?	n/a	//			☒ YES ☐ NO ☐ YES with exemption	No spring within 100 m confirmed during site visit and EPA database
	How many water wells are within 100 m of the manure storage facility or manure collection area?	n/a	//			☒ YES ☐ NO ☐ YES with exemption	No well within 100m confirmed during site visit and EPA database
	What is the shortest distance from the manure collection or storage facility to a surface water body? (e.g., lake, creek, slough, seasonal)	n/a	//			☒ YES ☐ NO ☐ YES with exemption	There is an ephemeral drain 290 m to the southeast.
Groundwater information	What is the depth to the water table?	>10m	//			☒ YES ☐ NO ☐ YES with exemption	Below 9 m (drilling reports submitted in LA20037 +LA15016)
	What is the depth to the groundwater resource/aquifer you draw water from?	n/a	//			☒ YES ☐ NO ☐ YES with exemption	No water wells in area Below drilling depth of 9 m

Additional information (attach supporting information, e.g. borehole logs, records, etc. you consider relevant to your application)

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

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NRCB USE ONLY

ENVIRONMENTAL RISK SCREENING INFORMATION

ERST for **proposed** facilities See Decision Summary LA24008

Facility	Groundwater score	Surface water score	File number
EMS (with deeper dimensions)	low	low	LA24008

ERST for **existing** facilities All facilities were assessed in 2018 and were low for risk to groundwater and surface water

Facility	Groundwater score	Surface water score	File number

ERST related comments:

Part 2 — Technical Requirements

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

NRCB USE ONLY

WATER WELL AND SURFACE WATER INFORMATION

Well IDs: No wells within 400 m of the CFO

Surface water related concerns from directly affected parties or referral agencies: ☐ YES ☒ NO

Groundwater related concerns from directly affected parties or referral agencies: ☐ YES ☒ NO

Water wells ☒ N/A

If applicable, exemption for 100 m distance requirements applied: ☐ YES ☐ NO Condition required: ☐ YES ☐ NO

Surface water ☒ N/A

If applicable, exemption for 30 m distance requirements applied: ☐ YES ☐ NO Condition required: ☐ YES ☐ NO

Water Well Exemption Screening Tool ☒ N/A

Water Well ID	Preliminary Screening Score	Secondary Screening Score	Facility

Groundwater or surface water related comments:

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

DISTANCE OF ANY MANURE STORAGE FACILITY (EXISTING OR PROPOSED) TO NEIGHBOURING RESIDENCES

			NRCB USE ONLY				
Neighbour name(s)	**Legal land description**	**Distance (m)**	**Zoning (LUB) category**	**MDS category (1-4)**	**Distance (m)**	**Waiver attached (if required)**	**Meets regulations**
Paul Jakober	SW-10-12-21-W4	200	RA	1	190 m	yes	yes with waiver
Tim Hummel	NW-9-12-21-W4	1300	RA	1	1268 m		yes
Stan Brecka	SE-8-12-21-W4	1250	RA	1	1214 m		yes
Albion ridge owned residence	NE 5-12-21 W4		RA	1	892 m		yes

RA= Rural Agriculture

LAND BASE FOR MANURE AND COMPOST APPLICATION (complete only if an increase in livestock or manure production will occur)

				NRCB USE ONLY	
Name of land owner(s)*	**Legal land description**	**Usable area** (ha)**	**Soil zone *****	**Usable area (ha)**	**Agreement attached (if required)**
Vande Munt Dairy	NW-15-12-21	65 (ha)	irrigated		yes
	NE-15-12-21	65 (ha)	irrigated		yes
AVE Farms		1060 acres 680	irrigated		
		640 acres	dry land (brown)		
			Total	1380 acres irrigated + 640 acres dry land see below	

* If you are **not** the registered landowner, you must attach copies of land use agreements signed by all landowners.

** Available manure spreading area (excluding setback areas from residences, common bodies of water, water wells, etc. as identified in Agdex 096-5 Manure Spreading Regulations)

*** Brown, dark brown, black, grey wooded, or irrigated

Additional information (attach any additional information as required)

The following quarter section are available for manure spreading (all irrigated): N1/2 10-12-21, E1/2 9-12-21, SW 9-12-21, NW 4-12-21, NE 6-12-21 and section 2-12-22 (dryland)

Feb 20, 2024

The following is a manure spreading agreement between

AVE Farms Ltd.

And

VandeMunt Dairy Corp

Term of agreement is 5 years from March 1, 2024 to Feb 28, 2029

Land Location is NW-15-12-21-W4 and NE-15-12-21-W4

Which is appox. 310 acres of irrigated land

Signed

AVE Farms –Stan Vanessen

[redacted]

VandeMunt Dairy Corp-Ed Vandemunt

[redacted]

Minimum Distance Separation (MDS) Waiver (declaration)

Applicant information NRCB application number: _____

Operator/operation name: AVE Farms Ltd.

Address: P.O. Box 104 Postal Code: T0K 1V0

Legal land location of confined feeding operation: SE-9-12-21-W4

I have requested the residence owner(s) named below to waive the required minimum distance separation (MDS) to their residence for the *Agricultural Operation Practices Act* (AOPA) permit application identified above. In making this request, I have provided the owner(s) with an opportunity to review my permit application and a copy of the Natural Resources Conservation Board (NRCB) Fact Sheet "Minimum Distance Separation (MDS) Waivers" available on the NRCB website at www.nrcb.ca. I have also explained:

- The MDS requirement set out in section 3 of the Standards and Administration Regulation of AOPA. I have advised the owner(s) that section 3(6)(a) of the Standards and Administration Regulation allows this requirement to be waived by the owners of residences, if they agree in writing to grant a waiver;
- That my proposed development does not meet the required MDS to the owner's residence; and,
- That this waiver applies only to this application as described. An increase in livestock capacity, annual manure production, level of odour production, change to the site plan or change to a facility that would increase the MDS would require a new waiver.

Following is a summary of the proposed development:

- The current scope of my confined feeding operation (CFO), including the type, number, and category of livestock, if any, is:
  180 sows f/f, 40 sow f/w
  8000 beef finishers
- My application for a new AOPA permit proposes the following changes to the existing livestock category, type and/or capacity at my CFO:
  increase from 40 sow f/w to 500 sow f/w
  decrease 180 sow f/f
- The proposed new CFO facility(ies), or changes to the existing CFO facilities, including manure storage, manure storage volume and any other pertinent details, if any, are (attach a site layout plan if available):
  construct 1 new hog barn ~~96x256~~ 31x23 and 53x33

I the applicant understand that the waiver is not valid unless ALL registered owners of the residence sign this document.

Permit Applicant: [redacted] Date: Feb 20,2024

Residence owner([redacted]

Minimum Distance Separation (MDS) Waiver (declaration)

Residence owner(s) information

ALL Names on land title: Paul and Lindsey Jakober

Legal land location of residence(s): SW 10-12-21 W4

Telephone number(s)[1]: 403 393-7346 Email address(es)[1]: [redacted]

Address(es)[1] and Postal code(s)[1]: Box 1048 Picture Butte AB T0K 1V0

[1] ***Please note that personal contact information is for NRCB use ONLY and not publicly released***

I am/we are the legal landowner(s) of a residence(s) located at the above noted legal land location/address:

- I/we have read the NRCB Fact Sheet "Minimum Distance Separation (MDS) Waivers";
- I/we have discussed this application with the applicant and understand its potential impacts to our residence(s);
- I/we understand that the application **does not** meet the MDS requirement to my/our residence(s), under the *Agricultural Operation Practices Act* (AOPA);
- **I/we understand that this waiver is not valid unless signed by ALL parties identified on the land title as owners;**
- **I/we are not obligated to waive the MDS requirement to our residence(s);**
- I/we understand that if I/we choose to waive the MDS requirement, I/we can revoke the waiver, by providing written notice to the NRCB approval officer, as set out in the "Minimum Distance Separation (MDS) Waivers" Fact Sheet; and
- I/we understand that this waiver is a public document.

Having considered my/our rights, I/we hereby waive the MDS requirement to my/our residence, with respect to

Appli [redacted]

Si

Paul Jakober Lindsey Jakober

Printed names of **all** residence owner(s) on title

Date: MARCH 9, 2024

Name
Address
Legal Land
Location

MDS Spreadsheet based on 2006 AOPA Regulations

Category of Livestock	Type of Livestock	Factor A	Technology Factor	MU	LSU Factor		LSU
Beef	Cows/Finishers (900+ lbs)	0.700	0.700	0.910	0.446		3,567.2
	Feeders (450 - 900 lbs)	0.700	0.700	0.500	0.245		-
	Feeder Calves (<550 lbs)	0.700	0.700	0.275	0.135		-
	Other						-
Dairy (*count lactating cows only)	*Free Stall – Lactating Cows with all associated dries, heifers, and calves	0.800	1.100	2.000	1.760		-
	*Free Stall – Lactating cows with Dry Cows only	0.800	1.100	1.640	1.443		-
	Free Stall – Lactating Cows only	0.800	1.100	1.400	1.232		-
	Tie Stall – Lactating cows only	0.800	1.000	1.400	1.120		-
	Loose Housing – Lactating cows only	0.800	1.000	1.400	1.120		-
	Dry Cow (Solid manure)	0.800	0.700	1.000	0.560		-
	Dry Cow (Liquid manure)						
	Replacements – Bred Heifers (Breeding to Calving)	0.800	0.700	0.875	0.490		-
	Replacements - Growing Heifers (350 lbs to breeding)	0.800	0.700	0.525	0.294		-
	Calves (< 350 lbs)	0.800	0.700	0.200	0.112		-
	Other						-
Swine Liquid (*count sows only)	Farrow to finish *	2.000	1.100	1.780	3.916		-
	Farrow to wean *	2.000	1.100	0.670	1.474		737.0
	Farrow only *	2.000	1.100	0.530	1.166		-
	Feeders/Boars	2.000	1.100	0.200	0.440		-
	Growers/Roasters	2.000	1.100	0.118	0.260		-
	Weaners	2.000	1.100	0.055	0.121		-
	Other						-
Swine Solid (*Count sows only)	Farrow to finish *	2.000	0.800	1.780	2.848		-
	Farrow to wean *	2.000	0.800	0.670	1.072		-
	Farrow only *	2.000	0.800	0.530	0.848		-
	Feeders/Boars	2.000	0.800	0.200	0.320		-
	Growers/Roasters	2.000	0.800	0.118	0.189		-
	Weaners	2.000	0.800	0.055	0.088		-
							-
Poultry	Chicken - Breeders - Solid	1.000	0.700	0.010	0.007		-
	Chicken - Layers - Liquid (includes associated pullets)	2.000	1.100	0.008	0.018		-
	Chicken - Layers - (Belt Cage)	2.000	0.700	0.008	0.011		-
	Chicken - Layers - (Deep Pit)	2.000	0.700	0.008	0.011		-
	Chicken - Pullets/Broilers	1.000	0.700	0.002	0.001		-
	Turkey - Toms/Breeders	1.000	0.700	0.020	0.014		-
	Turkey - Hens (light)	1.000	0.700	0.013	0.009		-
	Turkey - Broilers	1.000	0.700	0.010	0.007		-
	Ducks	1.000	0.700	0.010	0.007		-
	Geese	1.000	0.700	0.020	0.014		-
	Other						-
Horses	PMU	0.650	0.700	1.000	0.455		-
	Feeders > 750 lbs	0.650	0.700	1.000	0.455		-
	Foals < 750 lbs	0.650	0.700	0.300	0.137		-
	Mules	0.600	0.700	1.000	0.420		-
	Donkeys	0.600	0.700	0.670	0.281		-
	Other						-
Sheep	Ewes/Rams	0.600	0.700	0.200	0.084		-
	Ewes with lambs	0.600	0.700	0.250	0.105		-
	Lambs	0.600	0.700	0.050	0.021		-
	Feeders	0.600	0.700	0.100	0.042		-
	Other						-
Goats	Meat/Milk (per Ewe)	0.700	0.700	0.170	0.083		-
	Nannies/Billies	0.700	0.700	0.140	0.069		-
	Feeders	0.700	0.700	0.077	0.038		-
	Other						-
Bison	Bison	0.600	0.700	1.000	0.420		-
	Other						-
Cervid	Elk	0.600	0.700	0.600	0.252		-
	Deer	0.600	0.700	0.200	0.084		-
	Other						-
Wild Boar	Feeders	2.000	0.800	0.140	0.224		-
	Sow (farrowing)	2.000	0.800	0.371	0.594		-
	Other						-
					Total		4,304.2

For New Operations

Dispersion Factor 1

Category	Odour Objective	Distance	
		Feet	Metres
1	41.04	2,855	870
2	54.72	3,806	1,160
3	68.4	4,758	1,450
4	109.44	7,613	2,320

For Expanding Operations

Dispersion Factor 1
Expansion Factor 0.77

Category	Odour Objective	Distance	
		Feet	Metres
1	41.04	2,198	670
2	54.72	2,931	893
3	68.40	3,664	1,117
4	109.44	5,862	1,787

Name	0
Address	0
Legal Land	
Location	0

Landbase Requirements (hectares) based on 2006 AOPA requirements

Category of Livestock	Type of Livestock	Number of Animals	Dark Brown & Brown (ha)	Grey Wooded (ha)	Black (ha)	Irrigated (ha)
Beef	Cows/Finishers (900+ lbs)	8000	1000	832	624	496
	Feeders (450 - 900 lbs)	0	0	0	0	0
	Feeder Calves (<550 lbs)	0	-	-	-	-
	Other	0				
Dairy (*count lactating cows only)	*Free Stall – Lactating Cows with all associated dries, heifers, and calves	0	0	0	0	0
	*Free Stall – Lactating cows with Dry Cows only	0	-	-	-	-
	Free Stall – Lactating Cows only	0	-	-	-	-
	Tie Stall – Lactating cows only	0	-	-	0	0
	Loose Housing – Lactating cows only	0	-	-	-	-
	Dry Cow (Solid manure)	0	-	-	-	-
	Dry Cow (Liquid manure)	0	-	-	-	-
	Replacements – Bred Heifers (Breeding to Calving)	0	-	-	-	-
	Replacements - Growing Heifers (350 lbs to breeding)	0	-	-	-	-
	Calves (< 350 lbs)	0	-	-	-	-
	Other	0				
Swine Liquid (*count sows only)	Farrow to finish *	0	-	0	-	-
	Farrow to wean *	500	102.85	85.70	64.25	51.40
	Farrow only *	0	-	-	-	-
	Feeders/Boars	0	-	0	0	0
	Growers/Roasters	0	-	-	-	-
	Weaners	0	-	-	-	-
	Other	0				
Swine Solid (*Count sows only)	Farrow to finish *	0	-	-	-	-
	Farrow to wean *	0	-	-	-	-
	Farrow only *	0	-	-	-	-
	Feeders/Boars	0	-	-	-	-
	Growers/Roasters	0	-	-	-	-
	Weaners	0	-	-	-	-
	Other	0				
Poultry	Chicken - Breeders - Solid	0	-	-	-	-
	Chicken - Layers - Liquid (includes associated pullets)	0	-	0	0	0
	Chicken - Layers - (Belt Cage)	0	-	-	-	-
	Chicken - Layers - (Deep Pit)	0	-	-	-	-
	Chicken - Pullets/Broilers	0	-	0	0	0
	Turkey - Toms/Breeders	0	0	0	0	0
	Turkey - Hens (light)	0	-	-	-	-
	Turkey - Broilers	0	-	-	-	-
	Ducks	0	0	0	0	0
	Geese	0	0	0	0	0
	Other	0				
Horses	PMU	0	0	0	0	0
	Feeders > 750 lbs	0	-	0	-	-
	Foals < 750 lbs	0	-	-	-	-
	Mules	0	-	-	-	-
	Donkeys	0	-	-	-	-
	Other	0				
Sheep	Ewes/Rams	0	-	0	0	0
	Ewes with lambs	0	-	-	-	-
	Lambs	0	-	-	-	-
	Feeders	0	-	-	-	-
	Other	0				
Goats	Meat/Milk (per Ewe)	0	0	0	0	0
	Nannies/Billies	0	-	-	-	-
	Feeders	0	-	-	-	-
	Other	0				
Bison	Bison	0	0	0	0	0
	Other	0				
Cervid	Elk	0	0	0	0	0
	Deer	0	0	0	0	0
	Other	0				
Wild Boar	Feeders	0	-	0	0	0
	Sow (farrowing)	0	-	-	-	-
	Other	0				

Total Hectares	1102.9	917.7	688.3	547.4
Total Acres	2725.1	2267.6	1700.7	1352.6

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

NRCB USE ONLY

MINIMUM DISTANCE SEPARATION

Methods used to determine distance (if applicable): google earth

Margin of error (if applicable): +/- 3 m

Requirements (m): Category 1: 870 m Category 2: 1160 m Category 3: 1450 m Category 4: 2320 m

Technology factor: ☐ YES ☒ NO

Expansion factor: ☐ YES ☒ NO

MDS related concerns from directly affected parties or referral agencies: ☐ YES ☒ NO

The residence on NW 4-12-21 is owned by AVE Farms

LAND BASE FOR MANURE AND COMPOST APPLICATION

Land base required: 1352 acres irrigated

Land base listed: 1380 acres irrigated + 640 acres dry-brown

Area not suitable: already subrtracted

Available area 1380 acres irrigated + 640 acres dry Requirement met: ☒ YES ☐ NO

Land spreading agreements required: ☒ YES ☐ NO

Manure management plan: ☐ YES ☒ NO If yes, plan is attached: ☐

PLANS

Submitted and attached construction plans: ☒ YES ☐ NO

Submitted aerial photos: ☒ YES ☐ NO

Submitted photos: ☐ YES ☒ NO

GRANDFATHERING

Already completed: ☒ YES ☐ NO ☐ N/A

If already completed, see LA15016

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

NRCB USE ONLY

ALL SIGNATURES IN FILE ☒ YES ☐ NO

DATES OF APPROVAL OFFICER SITE VISITS

April 30, 2024	

CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES

Date deeming letters sent: March 19, 2024

Municipality: Lethbridge County

☒ letter sent ☒ response received ☒ written/email ☐ verbal ☐ no comments received

Alberta Health Services: NA

☐ letter sent ☐ response received ☐ written/email ☐ verbal ☐ no comments received

Alberta Environment and Parks: ☐ N/A

☒ letter sent ☒ response received ☒ written/email ☐ verbal ☐ no comments received

Alberta Transportation: ☐ N/A

☒ letter sent ☒ response received ☒ written/email ☐ verbal ☐ no comments received

Alberta Regulatory Services: ☒ N/A

☐ letter sent ☐ response received ☐ written/email ☐ verbal ☐ no comments received

Other: LNID, Lethbridge North potable water Coop, CWNG (Atco) ☐ N/A

☒ letter sent ☒ response received ☐ written/email ☐ verbal ☒ no comments received

LNID All other agencies

Other: _____ ☐ N/A

☐ letter sent ☐ response received ☐ written/email ☐ verbal ☐ no comments received

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area and/or manure storage facility(ies)

LIQUID MANURE COLLECTION AND/OR STORAGE: In-barn - Concrete liner

*(complete a copy of this section for **EACH** proposed in-barn liquid manure storage facility with a concrete liner)*

Facility description / name *(as indicated on site plan)*

1. farrowing
2. gestation
3. _____

Manure storage capacity *(use one row in the table for **EACH** in-barn storage. Attach additional pages if you require more rows)*

	Length (m)	Width (m)	Total depth (m)	Depth below ground level (m)	**NRCB USE ONLY** Calculated storage capacity (m^3)
1.	38.4	21.6	0.6	0.6	neglectable
2.	39	29.9	2.4	2.4	2216 m^3
3.					
				TOTAL CAPACITY	2216 m^3

Concrete liner details

Scrape alleys or unslatted portions of barn floors (if applicable)	Concrete thickness 20 cm	Method of sulphate protection type 50	
	Concrete strength 32 mpa	Concrete reinforcement size and spacing 15mm rebar 30 cm spacing	
In-barn manure pit floors	Concrete thickness 20 cm	Method of sulphate protection type 50	
	Concrete strength 32 mpa	Concrete reinforcement size and spacing 10 mm rebar 30 cm spacing	
In-barn manure pit walls	Concrete thickness 20 cm	Method of sulphate protection type 50	
	Concrete strength 32 mpa	Horizontal reinforcement size and spacing 10 mm rebar 30 cm spacing	Vertical reinforcement size and spacing 10 mm rebar 30 cm spacing

Part 2 — Technical Requirements

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area and/or manure storage facility(ies)

LIQUID MANURE COLLECTION AND/OR STORAGE: In-barn - Concrete liner (cont.)

Describe how the joints at the junction of the pit walls, pit floors and any other joints will be sealed
Volclay RX101 Waterstop applied at joints and junctions

Describe sealing practices for piping, etc. that penetrates the liner
Volclay RX101 Waterstop applied for all piping penetrating liner

Concrete requirements can be found in Technical Guideline Agdex 096-93
Guideline minimums:
Solid manure: 25MPa (D)
Solid manure (wet): 30MPa (C)
Liquid manure: 32MPa (B)
Category A is required to be engineered
Method of sulphate protection:
Type 50 or Type 10 with fly ash or equivalent

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO
Condition required: ☒ YES ☐ NO

Additional information

NRCB USE ONLY

Liquid manure storage volume calculator attached: ☒ YES ☐ NO

Depth to water table: Below 9 m (drilling depth) Requirements met: ☒ YES ☐ NO

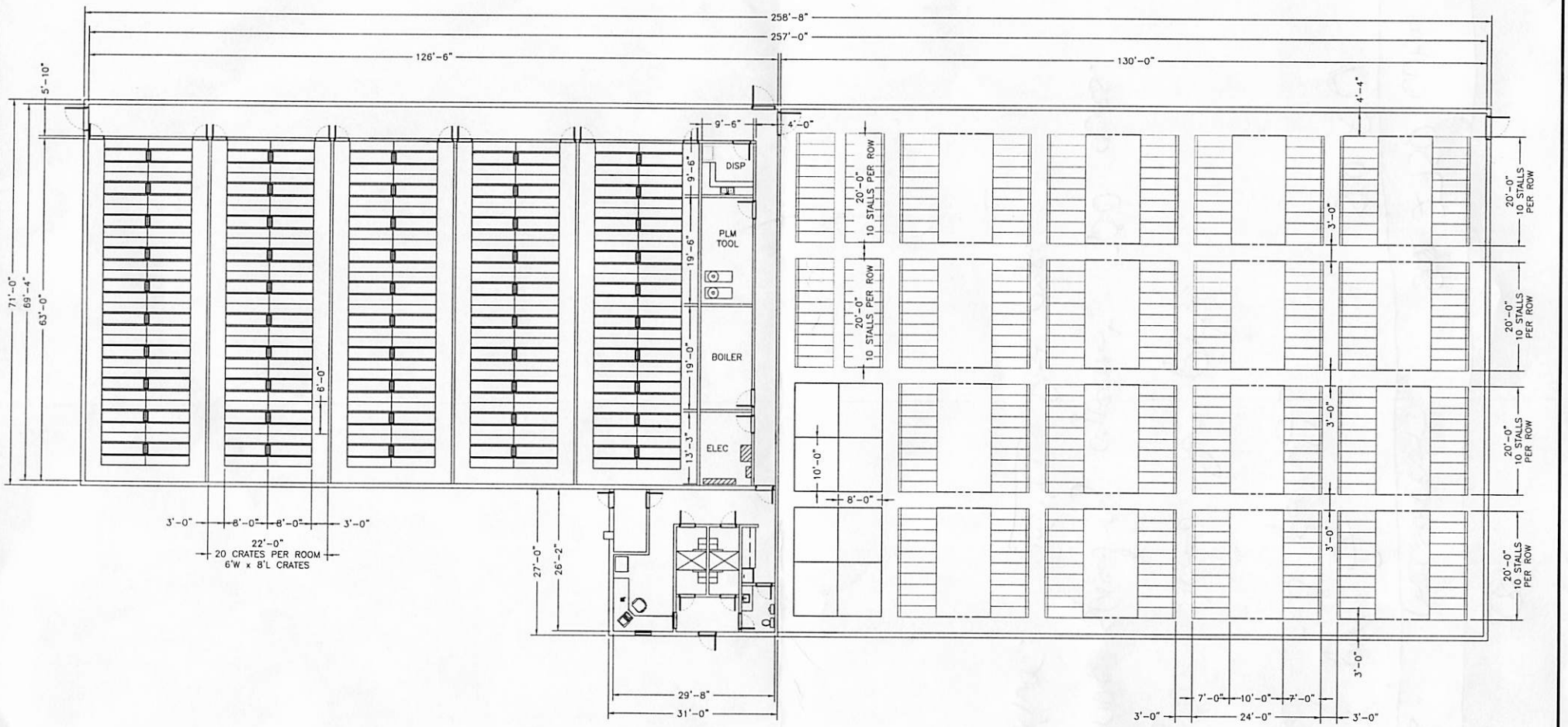
Depth to uppermost groundwater resource: No UGR identified below 9 m drilling depth Requirements met: ☒ YES ☐ NO

ERST completed: ☒ see ERST page for details

Concrete liner requirements

Leakage detection system required: ☐ YES ☒ NO If yes, please explain why

A condition will be included requiring the concrete to meet the specifications set out in Technical Guideline 096-93 Non-engineered concrete liners for manure collection and storage areas, category B - liquid manure (shallow pits with a depth of 2.4 m or less).



ENGINEER'S SEAL

ISSUE

ISSUED FOR
PERMIT USE ONLY

REVISIONS			
REV NO.	DESCRIPTION	DATE	BY

ENVIROTECH AG SYSTEMS LTD.
6 Nicolas Avenue, Winnipeg, MB Canada R2J 0T5
Phone: (204) 231-3354 Fax: (204) 231-8574

CLIENT: STAN VAN ESSEN
ALBERTA

PROJECT NAME: 500 SOW BARN
OPTION 4

DATE CREATED	DRAWN	LAST EDIT
February 5, 202		MCRUZ
DATE: February 5, 202	SCALE: AS NOTED	FILE:

SHEET TITLE: LAYOUT

SHEET NO.: 1

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area and/or manure storage facility(ies)

NRCB USE ONLY

LIQUID MANURE STORAGE VOLUME CALCULATOR (if applicable)

Facility 1	
Name / description: EMS	Capacity: 4914 m^3
Facility 2	
Name / description: In-barn pit of new barn	Capacity: 2216 m^3
Facility 3	
Name / description	Capacity
Facility 4	
Name / description	Capacity
TOTAL CAPACITY	**7130 m^3**
REQUIRED 9 MONTH STORAGE CAPACITY	**3960 m^3**
MEETS THE REQUIREMENTS FOR A MINIMUM OF 9 MONTHS STORAGE	☒ YES ☐ NO

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area and/or manure storage facility(ies)

LIQUID MANURE STORAGE: Earthen manure storage (EMS): Naturally occurring protective layer

*(complete a copy of this section for **EACH** proposed earthen liquid manure storage facility with a naturally occurring protective layer)*

Facility description / name *(as indicated on site plan)*

1. EMS - pemritted in LA15016 but constructed differently
2. _____

Manure storage capacity *(complete a separate row of this table for each cell of the EMS)*

	Length (m)	Width (m)	Total depth (m)	Depth below ground level (m)	Slope run:rise			NRCB USE ONLY	
					Inside end walls	Inside side walls	Outside walls	Calculated storage capacity (m^3) (excl. 0.5 m freeboard)	Filled in lower ¼? Y/N
1.	50	46	5.8	5.8	3:1	3:1	4:1		
2.									
							TOTAL CAPACITY	4913 m^3	

Surface water control systems

Describe the run-on and runoff control system

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	_____ (m)	Provide details (as required) see report below	
Soil texture	_____% sand	_____% silt	_____% clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested: 10.5 m	Hydraulic conductivity (cm/s): 2.4 E -8 cm/sec	Describe test standard used: Modified falling head

Additional information *(attach copies of soil test reports)*

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO

Condition required: ☐ YES ☒ NO

Report attached: ☒ YES ☐ NO

AO comment: The EMS continues to meet AOPA liner requirments.

Part 2 — Technical Requirements

NRCB Natural Resources Conservation Board

Application under the *Agricultural Operation Practices Act* for a confined feeding operation, manure collection area and/or manure storage facility(ies)

NRCB USE ONLY

Liquid manure storage volume calculator attached: ☒ YES ☐ NO

Depth to water table: 9 m below ground Requirements met: ☒ YES ☐ NO

Depth to uppermost groundwater resource: 9 m below ground Requirements met: ☒ YES ☐ NO

Comments:

ERST completed: ☒ see ERST page for details

Surface water control systems

Requirements met: ☒ YES ☐ NO Details/comments:

Naturally occurring protective layer details

Layer specification comments (e.g. description of the layer texture, layer thickness/depth and the methodology used to collect this information such as sand lenses, number, and location of boreholes):

stif medium plastic clay to clay loam. Uniform layering

Leakage detection system required: ☐ YES ☒ NO If yes, please explain why.

July 22, 2016

Amec Foster Wheeler File: BX30422

AVE Farms Ltd.
P.O. Box 104
Picture Butte, Alberta T0K 1V0

Attention: Mr. Andy Van Essen

Re: Geotechnical Review and Evaluation
Proposed Catch Basin, Proposed Lagoon Expansion
SE-9-12-21-W4, near Picture Butte, Alberta

As requested, Amec Foster Wheeler Environment & Infrastructure has carried out a geotechnical review and evaluation of the above captioned site relative to the required protection of the groundwater resource, as required by the Agricultural Operation Practices Act, AB Reg. 267/2001 (hereinafter referred to as "AOPA").

This letter encompasses the soil conditions associated with existing lagoons near the northwest corner of the site (proposed expansion), and the construction of a new catch basin near the north centre portion of the feedlot area (see Figure 1).

In order to demonstrate the suitability of the natural clay soils for consideration as a naturally occurring protective layer, two boreholes were advanced at the site on June 27, 2016, at the approximate locations illustrated on Figure 1. The boreholes were advanced by a truck-mounted drill rig owned and operated by Chilako Drilling Services, and extended to depths ranging between of about 9.0 m and 10.5 m below existing grades. These boreholes were logged by Mr. Larry DeLong of Chilako Drilling Services Ltd (see attachments).

In general, the soils encountered within the current test holes included clay till to the termination depths of each of the boreholes.

In order to demonstrate the permeability of the subsurface soils, 50 mm diameter PVC monitoring wells were constructed in both boreholes. Borehole AVE1-16 was screened from 7.2 m to 9.5 m depth while borehole AVE2-16 was screened from 8.8 m to 10.5 m depth. Well saturation of the 50 mm diameter monitoring wells was carried out by filling the monitoring well to the top of the well for several consecutive days. After several days, the 24 hour water drop in the standpipe was about 0.76 m (AVE1-16) and 0.56 (AVE2-16).

In order to calculate the permeability of the screened portion of the clay stratum at the two wells, a modified falling head test (as outlined in the USBR *Engineering Geology Field Manual Volume 2* [2001]) was used. The input variables and output data are outlined on the *In Situ Permeability Test* reports, attached. As outlined on the report, the results of the *in situ* permeability testing indicate a hydraulic conductivity, k_s, in the order of **3.6×10^{-8} cm/s** (AVE1-16) and **2.4×10^{-8} cm/s** (AVE2-16)

Amec Foster Wheeler
Environment & Infrastructure
469 – 40 Street South
Lethbridge, AB, CANADA T1J 4M1
Tel +1 (403) 327-7474
Fax +1 (403) 327-7682
www.amecfw.com

Using the measured permeability of the clay stratum, the 1.8 m portion of clay which has been screened at borehole AVE1-16 has been estimated to represent an equivalent of about 50 m of naturally occurring materials having a hydraulic conductivity of 1×10^{-6} cm/s while the 1.7 m of clay screened at borehole AVE2-16 has been estimated to represent an equivalent of about 70 m of naturally occurring materials having a hydraulic conductivity of 1×10^{-6} cm/s. This represents natural material protection in excess of the minimum requirements outlined by the AOPA for both liquid manure storage (minimum 10 m, Section 9.5-a) and catch basins (minimum 5 m, Section 9.5-b).

Conclusion

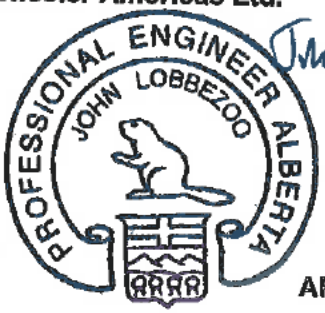
Based on the results of the current investigation and permeability testing, and our understanding of the site and proposed development at the site, it is Amec Foster Wheeler's opinion that the naturally occurring materials at the site satisfy the requirements for a naturally occurring 'protective layer' at the subject lagoons and location of the proposed catch basin, as outlined in the AOPA.

Perimeter berms, if required, should have a minimum top width of 3 m, slideslopes no steeper than 3H:1V, and be constructed of low-permeable clay compacted in maximum 150 mm thick lifts to a minimum of 98 percent of Standard Proctor Maximum Dry Density (SPMDD). Full time compaction testing, including review of topsoil stripping, should be provided for any berm construction.

We trust this satisfies your present requirements. If you have questions or require further information or clarification, please don't hesitate to contact the undersigned.

Respectfully submitted,

Amec Foster Wheeler Environment & Infrastructure
A division of Amec Foster Wheeler Americas Ltd.



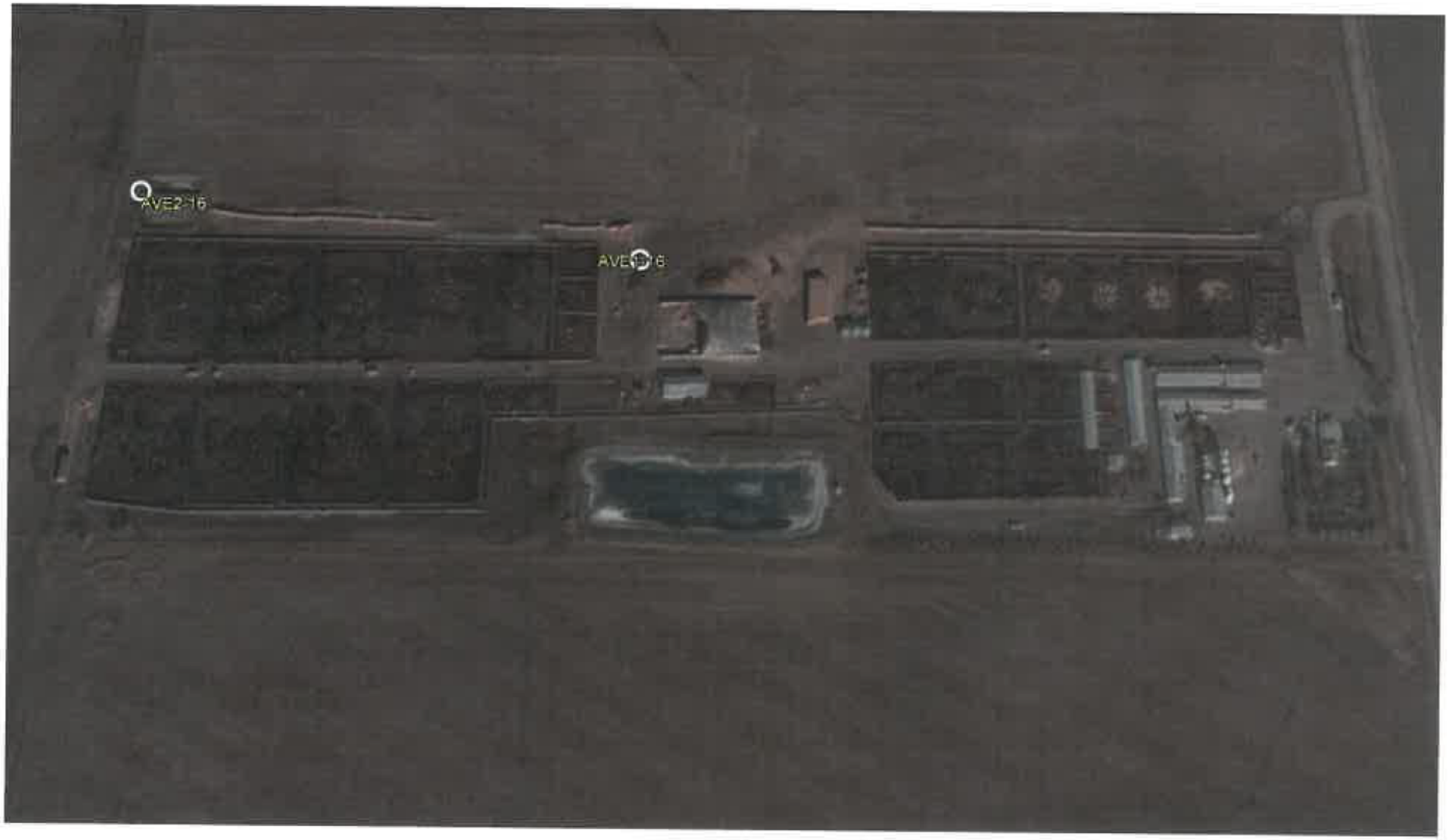
July 22, 2016

John Lobbezoo, P.Eng.
Senior Geotechnical Engineer

APEGA Permit: P04546

Attachments:
Figure 1 – Borehole Location Plan
In Situ Permeability Test Calculations – AVE1-16 & AVE2-16
Soil Profile and Parent Material Description, Chilako Drilling Services

Figure 1
AVE Farms Ltd. Borehole Location Plan
July, 2016



AVE1-16

In Situ Permeability Test

Modified Falling Head Permeability Equation

$$K_s = \frac{r^2}{2\ell\Delta t}\left[\frac{\sinh^{-1}\frac{\ell}{r_e}}{2}\ln\left[\frac{2H_1-\ell}{2H_2-\ell}\right]-\ln\left[\frac{2H_1H_2-\ell H_2}{2H_1H_2-\ell H_1}\right]\right]$$

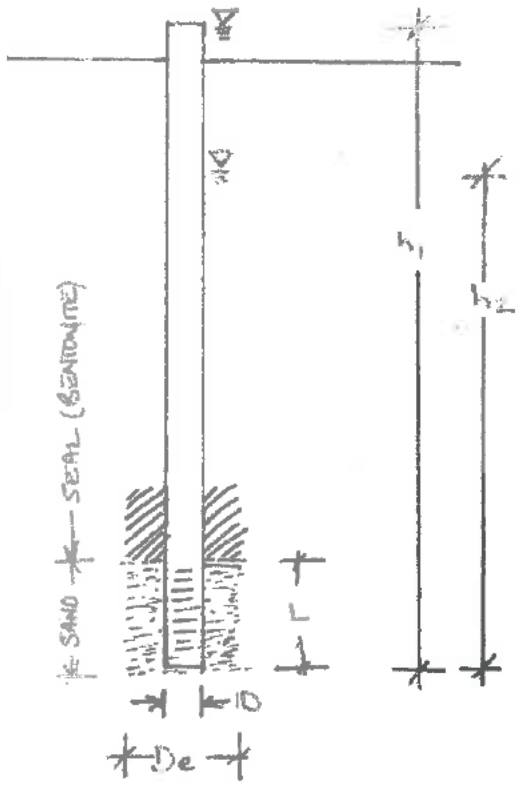
taken from USBR Engineering Geology Field Manual Volume 2 (2001)

AVE1-16 - AVE Farms Ltd.

Amec Foster Wheeler File: BX30422

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	1.80	length of sand section (m)
	h1	9.70	initial height of water above base of hole (m)
	h2	8.94	final height of water above base of hole (m)
	t	24.0	time of test (h)

Ks =	3.6E-08	cm/sec



AVE2-16

In Situ Permeability Test

Modified Falling Head Permeability Equation

$$K_s = \frac{r^2}{2\ell\Delta t}\left[\frac{\sinh^{-1}\frac{\ell}{r_e}}{2}\ln\left[\frac{2H_1-\ell}{2H_2-\ell}\right]-\ln\left[\frac{2H_1H_2-\ell H_2}{2H_1H_2-\ell H_1}\right]\right]$$

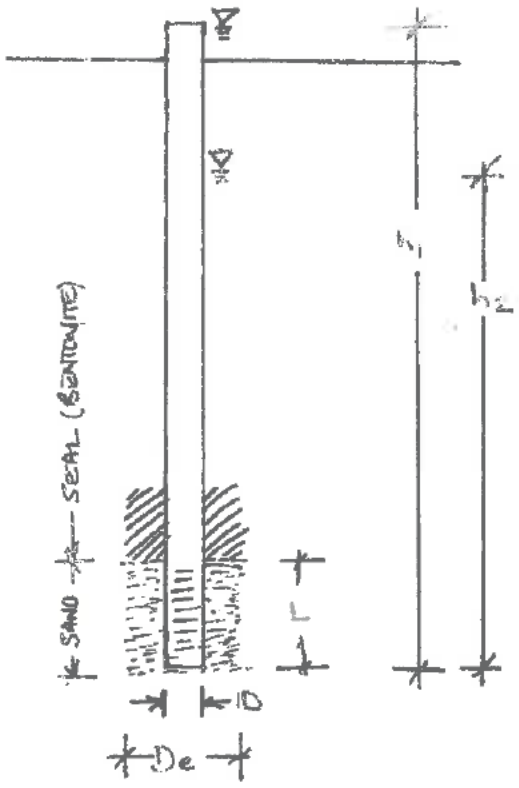
taken from USBR Engineering Geology Field Manual Volume 2 (2001)

AVE2-16 - AVE Farms Ltd.

Amec Foster Wheeler File: BX30422

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0 1500	diameter of borehole (m)
	L	1.70	length of sand section (m)
	h1	11 10	initial height of water above base of hole (m)
	h2	10.54	final height of water above base of hole (m)
	t	24.0	time of test (h)

Ks =	2.4E-08	cm/sec



CHILAKO DRILLING SERVICES LTD

Box 942 Coaldale, Alberta, T1M 1M8
(403) 345-3710

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: SE9-12-21W4 AVE Farms

Date: 27-Jun-16

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
AVE1-16	Catch basin	0-0.4	CL	D	Fill		
	area	0.4-1.2	CL	D	Till		Stiff, med plastic, brown
	0370277	1.2-1.5	C	M	Till		Stiff, med plastic, gray
	5537623	1.5-7.4	C	M	Till		Stiff, med plastic, gray
		7.4-9.0	C-SiC	M	Till		Stiff, med plastic, yellow brown
							50mm H.C. Well installed to 9.0m
							Screen: 9.0-7.5m
							Sand: 9.0-7.2m
							Bentonite: 7.2-4.5m
							Stickup: 0.7m
							Hole Diameter: 0.15m
AVE2-16	Lagoon	0-0.5	CL	M	Till		sand lenses
	0369955	0.5-1.5	CL-C	M	Till		Stiff, med plastic, yellow brown
	5537674	1.5-4.8	C	M	Till		Stiff, med plastic, yellow brown
	9m west	4.8-10.5	C	M	Till		Stiff, med plastic, yellow brown, oxidized
	of lagoons						50mm H.C. Well installed to 10.5m
							Screen: 10.5-9.0m
							Sand: 10.5-8.8m
							Bentonite: 8.8-5.9m
							Stickup: 0.6m
							Hole Diameter: 0.15m

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH1

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (SPT 20 40 60 80)	Well Data	Remarks
0 / 0		Ground Surface	0							
		Top Soil Clay Loam top soil, friable, Dk brown, dry/moist with organics.	100 / 1.52							BH dry on completion
		Clay Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.	98.5							Stand Pipe Installed
10 / 3		***Clay Loam*** Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and Oxidization.	9.99 / 90							
20 / 6			20							

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH2

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (O 20 40 SPT 60 80 O)	Well Data	Remarks
0 / 0		Ground Surface	0							
		Top Soil Clay Loam top soil, friable, Dk brown, dry/moist with organics.	100 0.89 99.1							BH dry on completion
1 / 2		***Heavy Clay*** Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.								Stand Pipe Installed
3 / 1										
4 / 5										
6 / 2										5' sample
7 / 8										
9 / 10 / 3										
11			10.9							
		Clay Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and Oxidization.	89.1							
12 / 13 / 4										
14 / 15										
16 / 5										
17 / 18										
19 / 20 / 6			20							

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH3

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (SPT)	Well Data	Remarks
0 / 0		Ground Surface	0							
		Top Soil A_B, Clay Loam top soil, friable, Dk brown, dry/moist with organics.	100 0.89 99.1							BH dry on completion
1 / 0		***Clay/ Clay Loam*** Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.								Stand Pipe Installed
2 / 1										
3 / 1										
4 / 2										
5 / 2										
6 / 2										
7 / 2										
8 / 3			8.01 92							
9 / 3		***Clay Loam*** Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and Oxidization.								
10 / 3										10' sample
11 / 3										
12 / 4										
13 / 4										
14 / 4										
15 / 5										
16 / 5										
17 / 5										
18 / 5										
19 / 6										
20 / 6			20							20' sample

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH4

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (SPT)	Well Data	Remarks
0 / 0		Ground Surface	0							
		Top Soil A_B, Clay Loam top soil, friable, Dk brown, dry/moist with organics.	100 0.89							BH dry on completion
1 /			99.1							
2 /		***Clay/ Clay Loam*** Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.								
3 / 1										Stand Pipe Installed
4 /										
5 /										
6 / 2										
7 /										
8 /			8.01							
9 /		***Clay Loam*** Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and Oxidization.	92							
10 / 3										
11 /										
12 /										
13 / 4										
14 /										
15 /										
16 / 5										
17 /										17.5' sample
18 /										
19 /										
20 / 6			20							

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH5

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (O 20 40 SPT 60 80 O)	Well Data	Remarks
0 / 0		Ground Surface	0							
		Top Soil A_B, Clay Loam top soil, friable, Dk brown, dry/moist with organics.	100 0.89							BH dry on completion
1			99.1							
2		***Clay Loam*** Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.								
3 / 1										Stand Pipe Installed
4										
5										
6 / 2			6.03							
7		***Clay Loam*** Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and oxidization.	94							
8										
9										
10 / 3										
11										
12										
13 / 4										12.5' sample
14										
15										
16										
17 / 5										
18										
19										
20 / 6			20							

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH6

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (O 20 SPT 40 60 80 O)	Well Data	Remarks
0 / 0		Ground Surface	0							
		Fill Fill, Clay Loam , Dk brown, dry/moist	100 0.89 99.1							BH dry on completion
1 / 1		***Clay*** Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.								Stand Pipe Installed 5' sample
6 / 2			6.03							
		Clay Loam Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and oxidization.	94							
20 / 6			20							

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH7

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (SPT) 20 40 60 80	Well Data	Remarks
0 / 0		Ground Surface	0							
		Fill Fill, Clay Loam , Dk brown, dry/moist	100 0.89 99.1							BH dry on completion
1 / 1		***Clay*** Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.								Stand Pipe Installed 5' sample
6 / 2			6.03							
		Clay Loam Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and oxidization.	94							
10 / 3			9.97							
		End of Borehole	90							
20 / 6										

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Sheet: 1 of 1

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH8

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (SPT)	Well Data	Remarks
0 / 0		Ground Surface	0							
		Fill Fill, Clay Loam , Dk brown, dry/moist	100 0.89							BH dry on completion
			99.1							
1 / 1		***Clay*** Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.								Stand Pipe installed 5' sample
5 / 2			5.04							
		Clay Loam Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and oxidization.	95							
10 / 3			9.97							
		End of Borehole	90							
20 / 6										

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Sheet: 1 of 1

Project No: EA05082

Project: Proposed Hog Barn

Client: Van Essen

Location: Picture Butte, Alberta

Borehole #: BH9

Enclosure: 1

Engineer: BK

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Standard Penetration Test blows/ft (SPT 20 40 60 80)	Well Data	Remarks
0 / 0		Ground Surface	0							
		Fill Fill, Clay Loam , Dk brown, dry/moist	100 0.89							BH dry on completion
1			99.1							
2		***Clay*** Moist, Stiff, Medium/ high Plastic, Olive Brown, Moist ot Wet.								
3 / 1										Stand Pipe Installed
4										
5			5.04							
6		***Clay Loam*** Clay Loam Till, Stiff, Med to Hi plastic, Moist, Olive Brown with pebbles coal and oxidization.	95							8' sample
7 / 2										
8										
9										
10 / 3			9.97							
11		End of Borehole	90							
12										
13 / 4										
14										
15										
16 / 5										
17										
18										
19										
20 / 6										

Drilled By: Inland Anchor

Drill Method: S/S Auger

Drill Date: July 07/05

Enviro-Ag Consulting
#3, 4010 - 9 Ave North
Lethbridge, Alberta
T1H 6T8

Hole Size: 152mm

Datum:

Sheet: 1 of 1