Technical Document LA24003

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	LA24003	E½ 6-20-21 W4M W ½ 5-20-21 W4M

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 13/24
Date of signing

Feb 13/24 [redacted]
Corporate name (if applicable)

Signat [redacted]

Joseph L Decker
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)
Dairy Barn - NE-06-20-21 W4M	365' x 128' (111.5m x 39.0m)
Calf Barn - attached to Dairy Barn	21 m x 37. 7 m
Lagoon (EMS) - NW-05-020-21 W4M	85 m x 50 m x 4 m (deep)

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

Existing facilities	Dimensions (m) (length, width, and depth)	NRCB USE ONLY
SEE ATTACHED LIST		confirmed via site plan provided by applicant

NRCB USE ONLY

Proposing to increase dairy numbers by 50 (total of 150), a new dairy barn, and EMS. Applicant has been operating under deemed permit. Municipal Development Permit 20-069 (Vulcan County).

Last updated September 11, 2023

Newdale Colony's Existing Facilities: Converted numbers for existing facilities (taken from CFO layout map):

Layer Barn: 270'x 50 ' (82 m x 15 m)

Hog Barns (swine farrow to finish)
west barn : 282' x 40' (86 m x 12 m)
centre barn: 352' x 54 ' (107 m x 16.5 m)
east barn: 426' x 42' (130 m x 13 m)

Duck, Geese & Turkey Barn: 200 ' x 46' (61 m x 14 m)

Existing Dairy Barn:
east / west portion: 80' x 40' (24 m x 12.2 m)
north/ south portion: 324' x 42' (68.3 m x 12.8 m)

Slurry Tank: 1.2 million imperial gallons: 101 ft diameter x 25 ft deep (30.8 m x 7.6 m deep

Catch Basin: 600' x 200' x 25' deep (183 m x 61 m x 8 m deep)

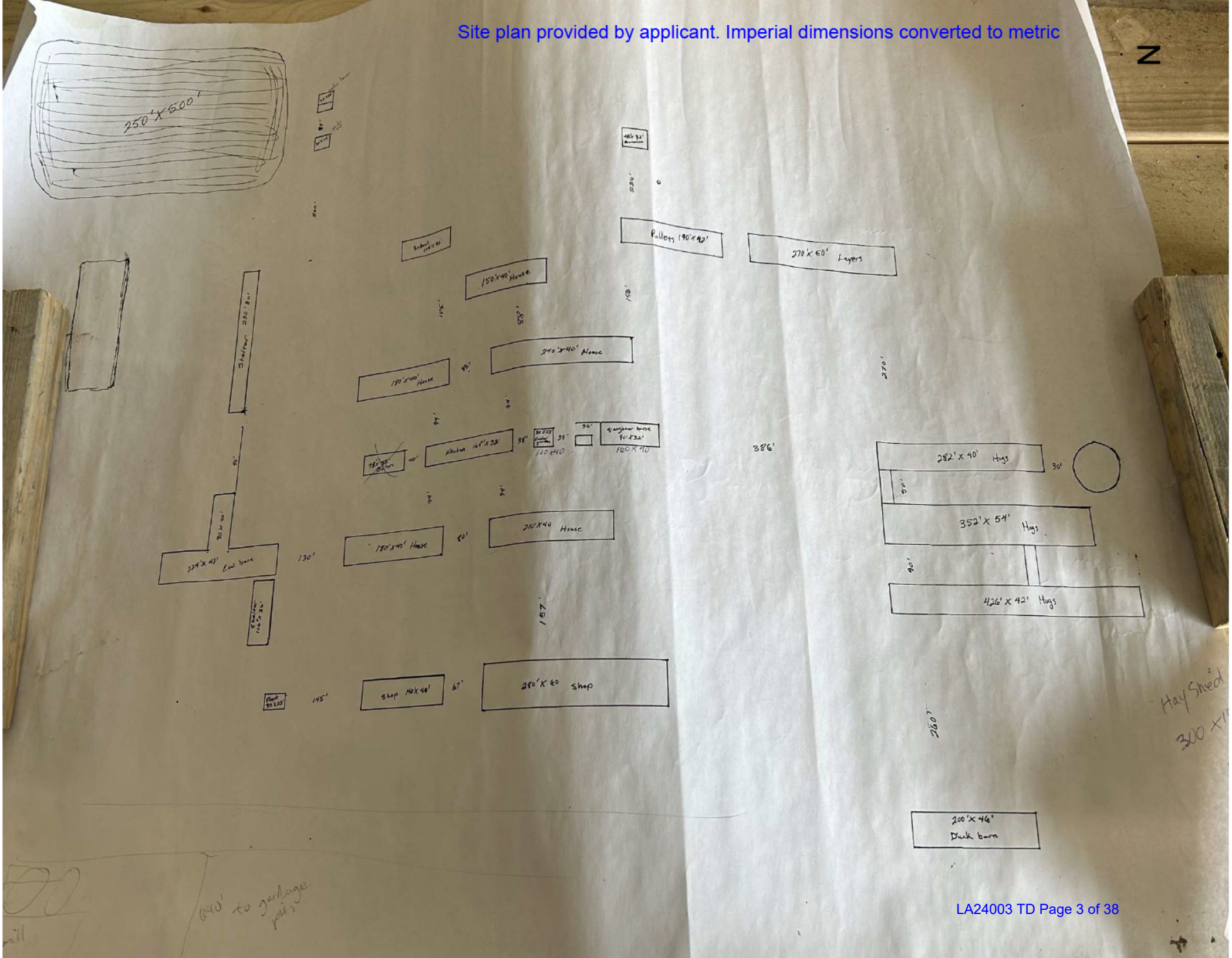
Pullet Barn: 190' x 42' (58 m x 13 m)

East Shelter Pen: 35.4 m x 72 m
West Shelter Pen:37.0 m x 60.2 m (irregular shape)

Pen 1: 25.2 m x 93.65
Pen 2: 26.5 m x 93.4 m (irregular shape)

Pen 3: 28.3m x 46.28 m (irregular shape)

Site plan provided by applicant. Imperial dimensions converted to metric



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

Decomission Old dairy barn for new dairy barn

AO Comment: see Appendix B of Decision Summary LA24003 for explanation of condition for decommissioning dairy barn

Construction completion date for proposed facilities Oct 2027.

Additional information

Livestock numbers taken from municipal development permit 20-069 (Vulcan County)

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**
Dairy	100	50	150
Farrow to Finish	300	0	300
Layers	10,000	0	10,000
Turkeys	500	0	500
Geese	500	0	500
Ducks	1,500	0	1,500
Beef Finishers (cattle feedlot)	200	0	200

Part 2 — Technical Requirements

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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 _____
   See attached BRID Water Use Agreement

Signed this 13 day of Feb _____, 20 24 [redacted]
Signature of Applicant or Agent

Last updated September 11, 2023

BOW RIVER IRRIGATION DISTRICT
ANNUAL RURAL WATER USE AGREEMENT

THIS AGREEMENT is made in duplicate this 23 day of Oct, 2023

BETWEEN: **BOW RIVER IRRIGATION DISTRICT**
P.O. Box 140, Vauxhall, in the Province of Alberta
(the "District")
OF THE FIRST PART

-and-

NEWDALE HUTTERIAN BRETHREN
Of R.R. #1, Milo, Alberta, T0L 1L0

(the "Applicant")
OF THE SECOND PART

WHEREAS the District is empowered under Section 19.1 of the Irrigation Districts Act to grant and enter into "Annual Rural Water Use Agreements", and

WHEREAS the Applicant(s) is/are the owners or lessees of parcels of land described on Certificate of Titles numbered: 93Z220 . & 93Z210 .

and legally described as:

THE SOUTH EAST QUARTER OF SECTION 6
IN TOWNSHIP 20
RANGE 21
WEST OF THE 4 MERIDIAN
CONTAINING 65.2 HECTARES (161 ACRES) MORE OR LESS
EXCEPTING THEREOUT AS TO THE NORTH 100 FEET OF THE
EAST 120 FEET OF THE SOUTH EAST QUARTER CONTAINING
0.113 OF A HECTARE (0.28 OF AN ACRE) MORE OR LESS
EXCEPTING THEREOUT ALL MINES AND MINERALS

And

MERIDIAN 4 RANGE 21 TOWNSHIP 20
SECTION 6
QUARTER NORTH EAST
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME
AREA: 64.7 HECTARES (160 ACRES) MORE OR LESS

(the "parcels"),

NOW THEREFORE the District does hereby authorize the diversion of a supply of water for rural water use on the parcels, subject to the following terms and conditions:

1. This agreement shall become effective on the date written above and will remain in force until cancelled by the District or the Applicant in the manner specified herein.

2. Either the District or the Applicant may cancel this agreement by the giving of written notice before March 1 in any calendar year.

3. The Applicant is allotted 2.0 acre-feet per acre per year. In the event that the number of acres is in excess of 10, **the maximum allotment is limited to 20.0 acre-feet per year.**

4. All water diverted from the works of the DISTRICT by the APPLICANT shall be metered by the APPLICANT through an accurate water meter located at or near the Point of Delivery installed and maintained in good working order at the cost of the APPLICANT, with unrestricted access to the meter by the DISTRICT, unless an alternate method of estimating volumes is agreed upon.

5. The Applicant shall on or before the last day of December of each year pay to the District a fee as determined by District By-Law pursuant to sections 115 and 177(2) of the *Irrigation Districts Act,* failure to do so will result in cancellation of this agreement notwithstanding Clause 3.

6. The Applicant is solely responsible for all approvals, authorizations and costs for the .construction and maintenance of their water diversion and distribution system to service the parcel

7. The Applicant acknowledges and agrees that the water in the irrigation system of the District may not be potable or may not be suitable for irrigation or other purposes, and the District makes no representation, warranty or guarantee, express or implied that the water delivered under this agreement is potable and fit for human consumption or suitable for irrigation purposes, livestock watering or recreational use.

8. The Applicant agrees to accept the water delivered in the condition in which it may be found at the Point of Delivery.

9. The Applicant acknowledges that the irrigation system of the District is an open ditch system subjecting the water therein to contamination from all manner of environmental, human and animal factors beyond the control of the District and the District does not regulate, control or monitor the quality of the water in its system.

10. The District shall not be liable for any claim of loss, injury or damage whatsoever arising out of the failure or inability of the District to supply water to the parcels.

IN WITNESS WHEREOF the District and the Applicant have executed this agreement as of the day and year first above written.

APPLICANT

[redacted]

[redacted]

Witness

DISTRICT:

[redacted]

George Thiessen

Land Admin.

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NRCB USE ONLY

ALL SIGNATURES IN FILE ☒ YES ☐ NO

DATES OF APPROVAL OFFICER SITE VISITS

October 10, 2023	
November 14, 2023	
December 20, 2023	

CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES

Date deeming letters sent: February 21, 2024

Municipality: Vulcan County

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

Alberta Health Services: ☒ N/A

☐ 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

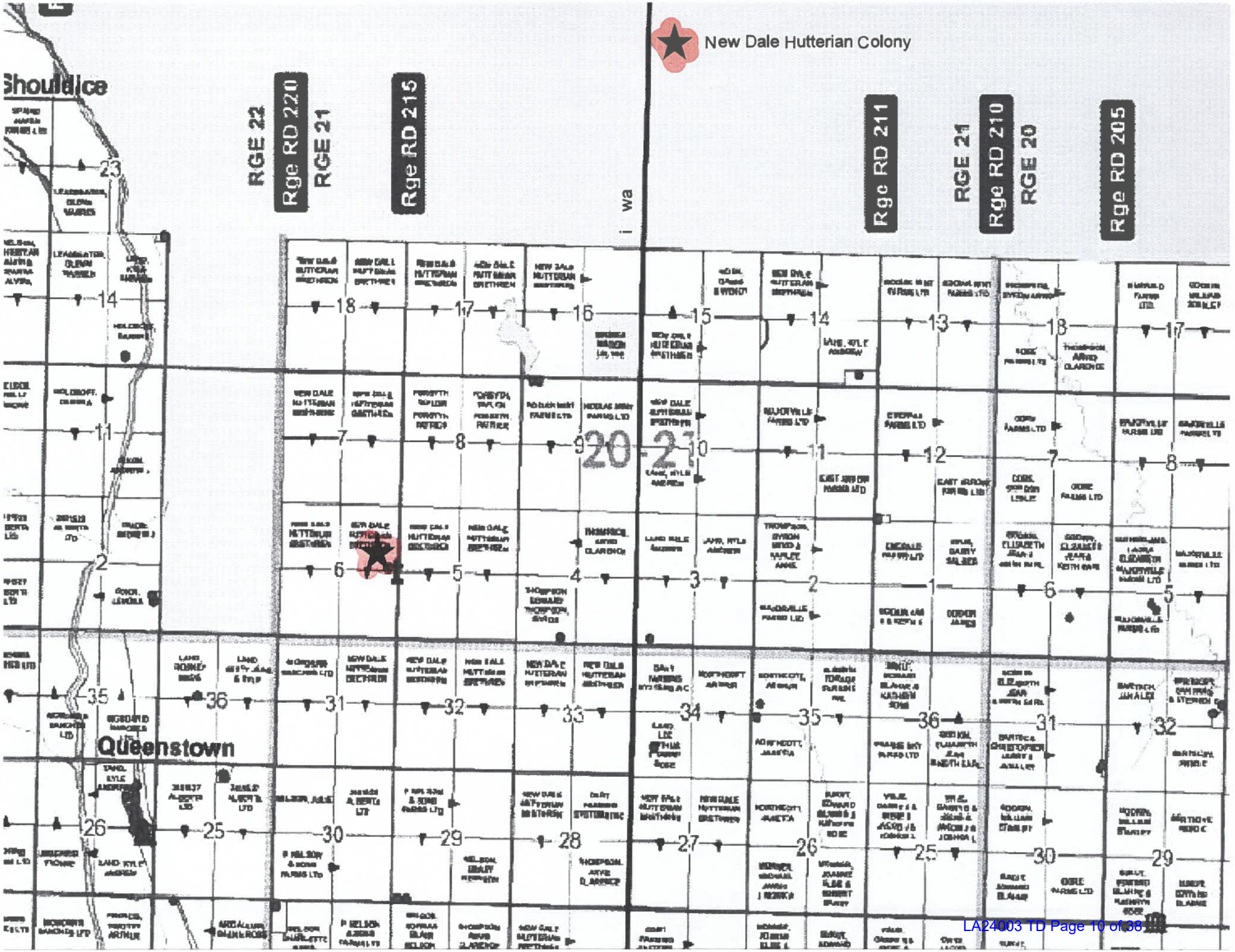
☐ letter sent ☐ response received ☐ written/email ☐ verbal ☐ no comments received

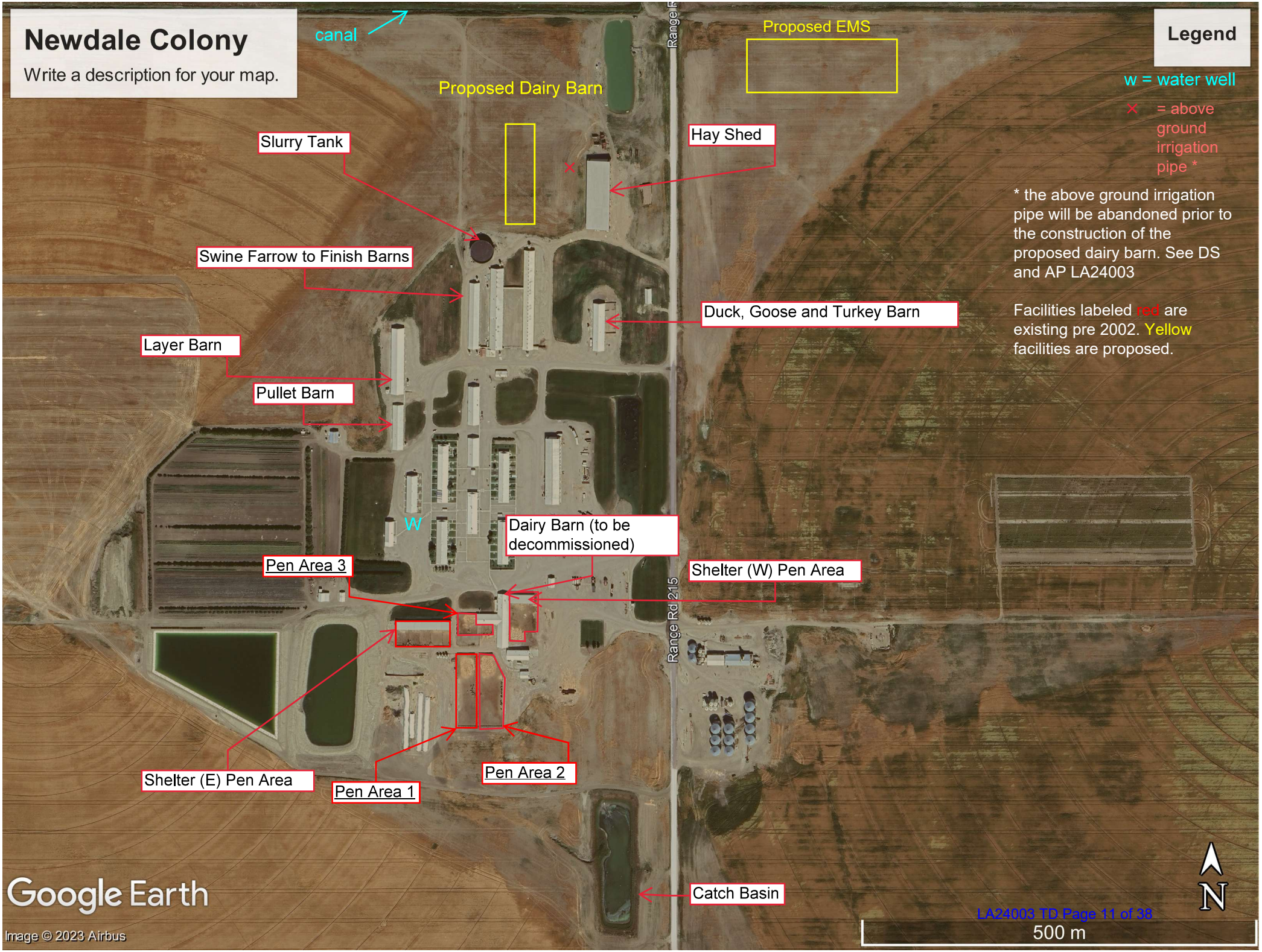
Other: Fortis Alberta, Sunshine Gas Co-op, Saturn Oil ☐ N/A

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

Other: Siksika Nation ☐ N/A

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


New Dale Hutterian Colony
Shouldice
Queenstown
RGE 22
Rge RD 220
RGE 21
Rge RD 215
Rge RD 211
RGE 21
Rge RD 210
RGE 20
Rge RD 205


Newdale Colony
Write a description for your map.
canal
Proposed Dairy Barn
Proposed EMS
Legend
w = water well
× = above ground irrigation pipe *
* the above ground irrigation pipe will be abandoned prior to the construction of the proposed dairy barn. See DS and AP LA24003
Facilities labeled red are existing pre 2002. Yellow facilities are proposed.
Slurry Tank
Hay Shed
Swine Farrow to Finish Barns
Duck, Goose and Turkey Barn
Layer Barn
Pullet Barn
W
Dairy Barn (to be decommissioned)
Pen Area 3
Shelter (W) Pen Area
Range Rd 215
Shelter (E) Pen Area
Pen Area 1
Pen Area 2
Catch Basin
Google Earth
Image © 2023 Airbus
N
500 m

Name	NewDale Colony
Address	
Legal Land Location	NE 6-20-21 W4M

MDS Spreadsheet based on 2006 AOPA Regulations

Category of Livestock	Type of Livestock	Factor A	Technology Factor	MU	LSU Factor	Number of Animals	LSU
Feedlot Animals	Beef Cows/Finishers (900+ lbs)	0.700	0.700	0.910	0.4459	200	89.2
	Beef Feeders (450 - 900 lbs)	0.700	0.700	0.500	0.2450		-
	Beef Feeder Calves (<550 lbs)	0.700	0.700	0.275	0.1348		-
	Horses - PMU	0.650	0.700	1.000	0.4550		-
	Horses - Feeders > 750 lbs	0.650	0.700	1.000	0.4550		-
	Horses - Foals < 750 lbs	0.650	0.700	0.300	0.1365		-
	Mules	0.600	0.700	1.000	0.4200		-
	Donkeys	0.600	0.700	0.670	0.2814	-	-
	Bison	0.600	0.700	1.000	0.4200		-
	Other						-
Dairy (*count lactating cows only)	Free Stall – Lactating Cows with all associated dries, heifers, and calves*	0.800	1.100	2.000	1.7600	150	264.0
	Free Stall – Lactating Cows with Dry Cows only*	0.800	1.100	1.640	1.4432		-
	Free Stall – Lactating Cows only	0.800	1.100	1.400	1.2320		-
	Tie Stall – Lactating Cows only	0.800	1.000	1.400	1.1200		-
	Loose Housing – Lactating Cows only	0.800	1.000	1.400	1.1200		-
	Dry Cow	0.800	0.700	1.000	0.5600		-
	Replacements – Bred Heifers (Breeding to Calving)	0.800	0.700	0.875	0.4900		-
	Replacements - Growing Heifers (350 lbs to breeding)	0.800	0.700	0.525	0.2940		-
	Calves (< 350 lbs)	0.800	0.700	0.200	0.1120		-
	Other						-
Swine Liquid (*count sows only)	Farrow to finish *	2.000	1.100	1.780	3.9160	300	1,174.8
	Farrow to wean *	2.000	1.100	0.670	1.4740		-
	Farrow only *	2.000	1.100	0.530	1.1660		-
	Feeders/Boars	2.000	1.100	0.200	0.4400		-
	Growers/Roasters	2.000	1.100	0.118	0.2600		-
	Weaners	2.000	1.100	0.055	0.1210		-
	Other						-
Swine Solid (*Count sows only)	Farrow to finish *	2.000	0.800	1.780	2.8480		-
	Farrow to wean *	2.000	0.800	0.670	1.0720		-
	Farrow only *	2.000	0.800	0.530	0.8480		-
	Feeders/Boars	2.000	0.800	0.200	0.3200		-
	Growers/Roasters	2.000	0.800	0.118	0.1888		-
	Weaners	2.000	0.800	0.055	0.0880		-
	Other						-
Poultry	Chicken - Breeders - Solid	1.000	0.700	0.010	0.0070		-
	Chicken - Layers - Liquid (includes associated pullets)	2.000	1.100	0.008	0.0176	10,000	176.0
	Chicken - Layers - (Belt Cage)	2.000	0.700	0.008	0.0112		-
	Chicken - Layers - (Deep Pit)	2.000	0.700	0.008	0.0112		-
	Chicken - Pullets/Broilers	1.000	0.700	0.002	0.0014		-
	Turkey - Toms/Breeders	1.000	0.700	0.020	0.0140	500	7.0
	Turkey - Hens (light)	1.000	0.700	0.013	0.0091		-
	Turkey - Broilers	1.000	0.700	0.010	0.0070		-
	Ducks	1.000	0.700	0.010	0.0070	1,500	10.5
	Geese	1.000	0.700	0.020	0.0140	500	7.0
	Other						-
Sheep and Goats	Sheep - Ewes/Rams	0.600	0.700	0.200	0.0840		-
	Sheep - Ewes with lambs	0.600	0.700	0.250	0.1050		-
	Sheep - Lambs	0.600	0.700	0.050	0.0210		-
	Sheep - Feeders	0.600	0.700	0.100	0.0420		-
	Goats - Meat/Milk (per Ewe)	0.700	0.700	0.170	0.0833		-
	Goats - Nannies/Billies	0.700	0.700	0.140	0.0686		-
	Goats - Feeders	0.700	0.700	0.077	0.0377		-
	Other						-
Cervid	Elk	0.600	0.700	0.600	0.2520		-
	Deer	0.600	0.700	0.200	0.0840		-
	Other						-
Wild Boar	Feeders	2.000	0.800	0.140	0.2240	-	-
	Sow (farrowing)	2.000	0.800	0.371	0.5936		-
	Other						-
					Total		1,728.5

For New Operations

Dispersion Factor: 1

Category	Odour Objective	Distance Feet	Distance Metres
1	41.04	2,046	624
2	54.72	2,728	832
3	68.4	3,410	1,039
4	109.44	5,456	1,663

For Expanding Operations

Dispersion Factor: 1

Expansion Factor: 0.77

Category	Odour Objective	Distance Feet	Distance Metres
1	41.04	1,576	480
2	54.72	2,101	640
3	68.40	2,626	800
4	109.44	4,201	1,281

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NRCB USE ONLY

MINIMUM DISTANCE SEPARATION

Methods used to determine distance (if applicable): Google Earth

Margin of error (if applicable): +/- 2 m

Requirements (m): Category 1: 624 m Category 2: 832 m Category 3: 1,039 m Category 4: 1,663 m

Technology factor: ☐ YES ☒ NO

Expansion factor: ☐ YES ☒ NO

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

LAND BASE FOR MANURE AND COMPOST APPLICATION

Land base required: 645.7 ac irrigated

Land base listed: 2,080 ac irrigated

Area not suitable: _____

Available area _____ 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 _____

Formal grandfathering not completed, CFO has a deemed permit. See Part 1 b. of LA24003 DS

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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: Existing Dairy Barn **Proposed 1:** New Dairy Barn

Proposed 2: EMS **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 within floodplain
Surface water information	How many springs are within 100 m of the manure storage facility or manure collection area?	0	0	0		☒ YES ☐ NO ☐ YES with exemption	No springs observed
	How many water wells are within 100 m of the manure storage facility or manure collection area?	0	0	0		☒ YES ☐ NO ☐ YES with exemption	WW 233750 only WW on site*
	What is the shortest distance from the manure collection or storage facility to a surface water body? (e.g., lake, creek, slough, seasonal)	205 m	110 m	130 m		☒ YES ☐ NO ☐ YES with exemption	Canal over 100 m north of proposed facilities **
Groundwater information	What is the depth to the water table?		70 m	> 9.2 m		☒ YES ☐ NO ☐ YES with exemption	WW233750 static water well level @ 11.28 m. WSP report BX10626 = >9.2 m
	What is the depth to the groundwater resource/aquifer you draw water from?	70 m	70 m	70 m		☒ YES ☐ NO ☐ YES with exemption	WW 233750 shows water bearing gravel @ 19.81

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

See attached WSP report - drilling for EMS showed the depth of water table is below 9.2 m - was not encountered.
* AB water well database shows 6 water wells on 6-20-21 W4M, 5 of which to be within the CFO footprint. Values for water table and aquifer were taken from WW 233750 for a conservative approach.

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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**
Arvid Thompson	SW 4-20-21 W4M	3,822 m	RG	1	>3,000 m		Y
Andy Dixon	SE 2-20-22 W4M	3,160 m	RG	1	> 3,000 m		Y
Kyle Lakd	SW 3-20-21 W4M	2,370 m	RG	1	>2,000 m		Y
Gord Thompson	NW 36-19-22 W4M	3,250 m	RG	1	> 3,000 m		Y

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)**
NDC	5-20-21-W4	520 ac	dr	470 ac	
NDC	6-20-21-W4	520 ac	dr	370 ac	
NDC	7-20-21-W4	520 ac	irrigated	520 ac	
NDC	18-20-21-W4	520 ac	irrigated	485 ac	
			All soil zones irrigated		
			Total	1,845 ac	

NDC = Newdale Colony

* 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)

Name NewDale Colony
Address 0
Legal Land
Location NE 6-20-21 W4M

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)
Feedlot Animals	Cows/Finishers (900+ lbs)	200.0	25.0	20.8	15.6	12.4
	Feeders (450 - 900 lbs)	0.0	0.0	0.0	0.0	0.0
	Feeder Calves (<550 lbs)	0.0	0.0	0.0	0.0	0.0
	Horses - PMU	0.0	0.0	0.0	0.0	0.0
	Horses - Feeders > 750 lbs	0.0	0.0	0.0	0.0	0.0
	Horses - Foals < 750 lbs	0.0	0.0	0.0	0.0	0.0
	Mules	0.0	0.0	0.0	0.0	0.0
	Donkeys	0.0	0.0	0.0	0.0	0.0
	Bison	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Dairy (*count lactating cows only)	Free Stall – Lactating Cows with all associated dries, heifers, and calves*	150.0	222.8	185.6	139.2	111.3
	Free Stall – Lactating Cows with Dry Cows only *	0.0	0.0	0.0	0.0	0.0
	Free Stall – Lactating Cows only*	0.0	0.0	0.0	0.0	0.0
	Tie Stall – Lactating Cows only	0.0	0.0	0.0	0.0	0.0
	Loose Housing – Lactating Cows only	0.0	0.0	0.0	0.0	0.0
	Dry Cow (Solid manure)	0.0	0.0	0.0	0.0	0.0
	Dry Cow (Liquid manure)	0.0	0.0	0.0	0.0	0.0
	Replacements – Bred Heifers (Breeding to Calving)	0.0	0.0	0.0	0.0	0.0
	Replacements - Growing Heifers (350 lbs to breeding)	0.0	0.0	0.0	0.0	0.0
	Calves (< 350 lbs)	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Swine Liquid (*count sows only)	Farrow to finish *	300.0	200.5	167.1	125.3	100.3
	Farrow to wean *	0.0	0.0	0.0	0.0	0.0
	Farrow only *	0.0	0.0	0.0	0.0	0.0
	Feeders/Boars	0.0	0.0	0.0	0.0	0.0
	Growers/Roasters	0.0	0.0	0.0	0.0	0.0
	Weaners	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Swine Solid (*Count sows only)	Farrow to finish *	0.0	0.0	0.0	0.0	0.0
	Farrow to wean *	0.0	0.0	0.0	0.0	0.0
	Farrow only *	0.0	0.0	0.0	0.0	0.0
	Feeders/Boars	0.0	0.0	0.0	0.0	0.0
	Growers/Roasters	0.0	0.0	0.0	0.0	0.0
	Weaners	0.0	0.0	0.0	0.0	0.0
		0.0				
Poultry	Chicken - Breeders - Solid	0.0	0.0	0.0	0.0	0.0
	Chicken - Layers - Liquid (includes associated pullets)	10000.0	66.0	55.0	41.0	33.0
	Chicken - Layers - (Belt Cage)	0.0	0.0	0.0	0.0	0.0
	Chicken - Layers - (Deep Pit)	0.0	0.0	0.0	0.0	0.0
	Chicken - Pullets/Broilers	0.0	0.0	0.0	0.0	0.0
	Turkey - Toms/Breeders	500.0	4.8	4.0	3.0	2.4
	Turkey - Hens (light)	0.0	0.0	0.0	0.0	0.0
	Turkey - Broilers	0.0	0.0	0.0	0.0	0.0
	Ducks	1500.0	2.4	2.0	1.5	1.2
	Geese	500.0	1.6	1.4	1.0	0.8
	Other	0.0				
Goats and Sheep	Sheep - Ewes/Rams	0.0	0.0	0.0	0.0	0.0
	Sheep - Ewes with lambs	0.0	0.0	0.0	0.0	0.0
	Sheep - Lambs	0.0	0.0	0.0	0.0	0.0
	Sheep - Feeders	0.0	0.0	0.0	0.0	0.0
	Goats - Meat/Milk (per Ewe)	0.0	0.0	0.0	0.0	0.0
	Goats - Nannies/Billies	0.0	0.0	0.0	0.0	0.0
	Goats - Feeders	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Cervid	Elk	0.0	0.0	0.0	0.0	0.0
	Deer	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Wild Boar	Feeders	0.0	0.0	0.0	0.0	0.0
	Sow (farrowing)	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
	Total Hectares		523	435.7	326.6	261.3
	Total Acres		1,292	1076.6	807.0	645.7

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: #233750 (new well), #233753 (chemistry), #233752 (chemistry),#233754 (chemistry), #233755 (new well), #233751 (new well)

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:

Applicant stated that all wells are abandoned other than the active well located as depicted in the site plan.

NRCB USE ONLY

ENVIRONMENTAL RISK SCREENING INFORMATION

ERST for **proposed** facilities

New CFO facility which meets AOPA technical requirements, therefore presumed low risk to surface water and ground water

Facility	Groundwater score	Surface water score	File number

ERST for **existing** facilities

Facility	Groundwater score	Surface water score	File number
See the following page for ERST of exisitng facilities			

ERST related comments:

Highest risk, existing facilities scored (see Part 8 of Decision Summary LA24003)

Facility	Ground Water Score	Surface Water Score
Slurry Tank	Low	Low
Hog Barns (Swine Farrow to Finish)	Low	Low
Layer Barn	Low	Low
Pullet Barn	Low	Low
Pen Area 1	Low	Low
Pen Area 2	Low	Low
Pen Area 3	Low	Low
Shelter (E) Pen Area	Low	Low
Shelter (W) Pen Area	Low	Low
Catch Basin	Low	Low
Dairy Barn (existing)	Low	Low
Duck, Goose, and Turkey Barn	Low	Low

Existing slurry tank capacity

Liquid Manure Storage Tank Volume Calculator

Construction Dimensions of Liquid Manure Storage

*** Only cells in blue can be changed.**

Overall Dimensions of Liquid Manure Storage Tank			Liquid MS Tank Dimensions
Internal Diameter*[4]	30.8	m	101 ft
Maximum Depth*4	7.7	m	25 ft
Design Capacity Depth	*7.40*	m	24 ft
Total Capacity @ top of Tank	*5,739*	m^3	*Total Capacity @ tot 202,680 ft^3 1,262,463 Imp. Gal.*
Design Capacity of Liquid Manure Storage (freeboard level)			**Design Capacity (freeboard level)**
Design Capacity (freeboard level)	**5,516**	m^3	**194,784 ft^3 1,213,276 Imp. Gal.**
Surface Area of Liquid Manure	*745*	m^2	*8,023 ft^2*

CFO Name [1]	(Enter CFO Name Here)
Land Location [1]	1-1-4-W5

Type(s) of Livestock [2]	Number of Livestock	Annual Manure Production (m^3/hd)
Free Stall: Lactating Cow Only		36.0
Sows: Farrow to Finish	300	24.0
N/A	0	0.0
N/A	0	0.0
		Total manure Production (m^3/yr)

Minimum 9 Month Liquid Manure Storage Volume Required		
5,400	m^3 **	**190,699 ft^3 1,187,833 Imp. Gal.**

Instructions

1. Enter CFO name and legal land location. (Section-Township-Range-Meridian)
2. Select type(s) of Livestock to automatically upload annual liquid manure production data.
3. Enter number of livestock for each type of livestock
4. Adjust dimensions of liquid manure storage tank to ensure that minimum 9 month liquid manure storage volume requirement is met or exceeded.

Applicant had existing slurry tank, needed additional storage as it only had enough liquid manure storage for the swine operation.

Proposed EMS for dairy barn

Liquid Manure Storage Volume Calculator

Construction Dimensions of Liquid Manure Storage

* Only cells in blue can be changed.

Overall Dimensions of Liquid Manure Storage			Liquid MS Dimensions
Total Length*[4]	85.0	m	279 ft
Total Width*[4]	50.0	m	164 ft
Total Depth*[4]	4.0	m	13 ft
Design Capacity Depth	*3.50*	m	11 ft
End Slope*[4]	3	run:rise	3 run:rise
Side Slope*[4]	3	run:rise	3 run:rise
Length of Bottom	61.0	m	200 ft
Width of Bottom	26.0	m	85 ft
Total Capacity @ top of Bank	*11,288*	m^3	*Total Capacity (@tob)* *398,632* ft^3 *2,483,012 Imp. Gal.*

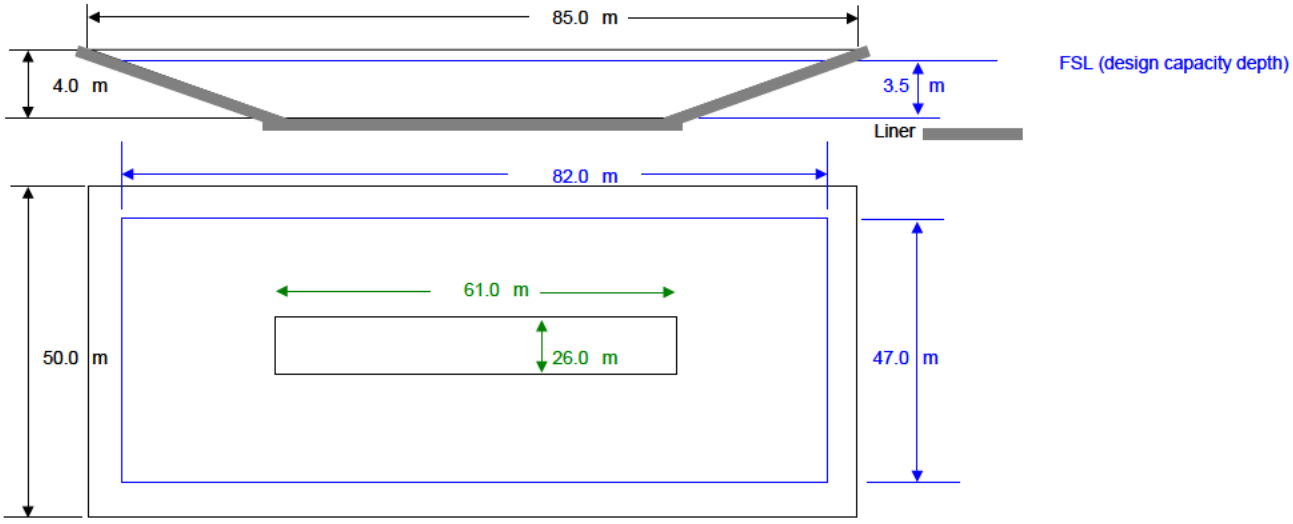
Design Capacity of Liquid Manure Storage (freeboard level)			Design Capacity (freeboard level)
Length (design capacity depth)	82.0	m	269 ft
Width (design capacity depth)	47.0	m	154 ft
Total Depth	*4.0*	m	*13* ft
Design Capacity Depth	3.50	m	11 ft
End Slope	3	run:rise	3 run:rise
Side Slope	3	run:rise	3 run:rise
Design Capacity (freeboard level)	**9,263**	m^3	327,111 ft^3
			2,037,519 Imp. Gal.
level)	*3,854*	m^2	*41,484* ft^2

CFO Name [1]	(Enter CFO Name Here)
Land Location [1]	1-1-4-W5

Type(s) of Livestock [2]	Number of Livestock	Annual Manure Production (m^3/hd)
Free Stall: Lactating Cow Only	150	36.0
Sows: Farrow to Finish		24.0
N/A	0	0.0
N/A	0	0.0
		Total manure Production (m^3/yr)

Minimum 9 Month Liquid Manure Storage Volume Required			
4,050	m^3 **	143,024	ft^3
		890,875	Imp. Gal.

** Design capacity of liquid manure storage should be equal to, or greater than, minimum 9 month liquid manure storage volume required.



Lines in Black - Overall liquid manure storage dimensions
Lines in Blue - Design capacity depth dimensions (excludes freeboard)

NTS - Not To Scale

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 **(lagoon)**
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.	85	50	4	4	3to1	3to1	3to1	9,263 m^3	Y
2.									
							TOTAL CAPACITY	9,263 m^3	

Surface water control systems

Describe the run-on and runoff control system

Berm bum around it berm will be put around the lagoon (EMS)

Slope on it

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	3.1 (m)	Provide details (as required) See attach report	
Soil texture	1 % sand	34 % silt	65 % clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested 9.2	Hydraulic conductivity (cm/s) 5.6×10^{-8}	Describe test standard used

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

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO

Condition required: ☒ YES ☐ NO

Report attached: ☒ YES ☐ NO

Last updated February 26, 2021

NRCB USE ONLY

Liquid manure storage volume calculator attached: ☒ YES ☐ NO

Depth to water table: > 9.2 m _____ Requirements met: ☒ YES ☐ NO

Depth to uppermost groundwater resource: 19.81 m _____ Requirements met: ☒ YES ☐ NO

Comments: (water bearing gravel WW 233750)

ERST completed: ☒ see ERST page for details

Surface water control systems

Requirements met: ☒ YES ☐ NO

Details/comments: Berm around EMS, constructed so the structure (pipe) through which the EMS is filled is located within the bottom 1/4 of the EMS.

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):

Fairly consistent clay throughout testing, no water (free or saturated layers) observed within drilling depth of 9.2 meters.

Leakage detection system required: ☐ YES ☒ NO

If yes, please explain why.

30 January 2024

WSP File: BX10626

3102 – 12 Avenue South
Lethbridge, Alberta T1H 5V1
T: +1 403 327-7474
www.wsp.com

Hutterian Brethren Church of New Dale
RR1
Milo, Alberta T0L 1L0

Attention: Joseph Decker, Manager

Re: Geotechnical Review and Evaluation
NRCB Permitting of Proposed Manure Storage Lagoon
NW-05-020-21-W4M, near Milo, Alberta

As requested, WSP E&I Canada Limited (WSP) 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 describes site soil conditions to support a permit application related to proposed liquid manure storage lagoon to be located in the northwest corner area of NW-05-020-21-W4M (refer to Figure 1, attached).

In order to demonstrate the suitability of the naturally existing soils for consideration as a naturally occurring protective layer to the groundwater, four boreholes were advanced at the site on January 9, 2024. The boreholes were advanced at the approximate locations denoted as ND1-24 to ND4-24 on Figure 1, attached.

The boreholes were advanced by a truck-mounted drill rig owned and operated by Chilako Drilling Services and extended to depths ranging between 9.0 m and 9.2 m below existing grades. The boreholes were logged by Larry Delong of Chilako Drilling Services.

In general, the natural mineral soils encountered within the boreholes comprised of lacustrine deposits of clay and silty clay to the termination depth of all the boreholes. Neither free groundwater nor a groundwater resource (as defined by the AOPA) were identified within the 9.2 m drilling depth at the site.

A sample of soil collected from the screened zone of both boreholes ND1-24 and ND3-24 was subjected to laboratory grain size (i.e., hydrometer) analyses. The results (attached) indicate a textural breakdown of approximately:

Table 1: Soil Textural Analyses

Borehole/Depth	% Sand	% Silt	% Clay
ND1-24 / 6.5-8.5m	1	34	65
ND3-24 / 6.6-8.5m	1	53	46

To measure the *in situ* permeability of the subsurface soils, a 50 mm diameter PVC monitoring well was constructed in borehole ND1-24. The test well was screened from 5.8 m to 8.9 m depth. Well saturation of the 50 mm diameter monitoring well was carried out by filling the monitoring well to the top for several consecutive days. After the first day, the water dropped down by 1.51 m below ground level. During the following three days, the average 24-hour water drop at borehole ND1-24 was estimated to be

approximately 0.15 m, through it was difficult to assess due to the cold weather. Accordingly, for the purposes of the current assessment, a 24 hr water drop of 1.51 m was used.

To calculate the permeability of the screened portion of the clay till strata at the test well location, 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 attached In Situ Permeability Test report. The results of the permeability testing indicate an *in situ* hydraulic conductivity, k_s, of 5.6×10^{-8} cm/s at ND1-24.

Using the measured permeability of the clay stratum, the 3.1 m of clay screened at ND1-24 is estimated to represent the equivalent of approximately 55 m of naturally occurring materials having a hydraulic conductivity of 1×10^{-6} cm/s (the reference standard in AOPA). This represents natural material protection in excess of the minimum requirements outlined by the AOPA for liquid manure storage (minimum 10 m, Section 9.5-a).

Conclusion

Based on the results of the current investigation, permeability testing, and our understanding of the site and proposed development at the site, it is WSP's opinion that the naturally occurring materials at the site satisfy the AOPA requirements for permitting the proposed liquid manure storage lagoon at this location.

We trust that this report satisfies your present requirements. Should you have any questions, please contact the undersigned at your convenience.

Yours truly,

WSP E&I Canada Limited

PROFESSIONAL ENGINEER ALBERTA JOHN P. LOBBEZOO ID 110450

30 Jan 2024

John Lobbezoo, P.Eng.
Principal Geotechnical Engineer

Reviewed by:
Kevin Spencer, P.Eng., M.Eng.
Sr. Associate, Geotechnical Engineer

PERMIT TO PRACTICE
WSP E&I CANADA LIMITED
RM SIGNATURE:
RM APEGA ID #: 110450
DATE: 30 Jan 2024
PERMIT NUMBER: P004546
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Attachments
- Figure 1 Borehole Locations
- In Situ Permeability Test Calculations
- Hydrometer Tests
- Soil Profile and Parent Material Description, Chilako Drilling Services


Untitled Map
Write a description for your map.
Range Rd 215
Range Rd 2
ND2-24
ND3-24
ND1-24
ND4-24
NW-05-020-21-W4M
Legend
Feature 1
ND1-24
Google Earth
Image © 2023 Airbus
N
100 m

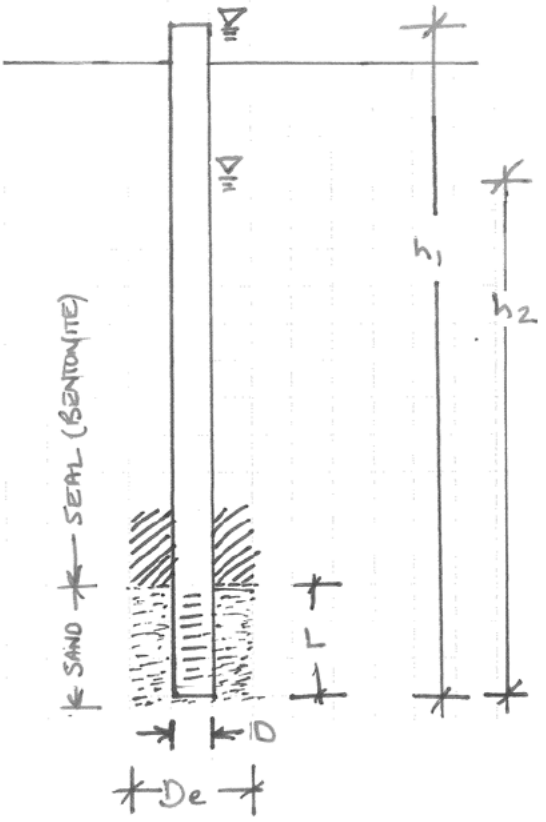
ND1-24

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)



ND1-24 - New Dale Colony

WSP File: BX10626

INPUT VARIABLES

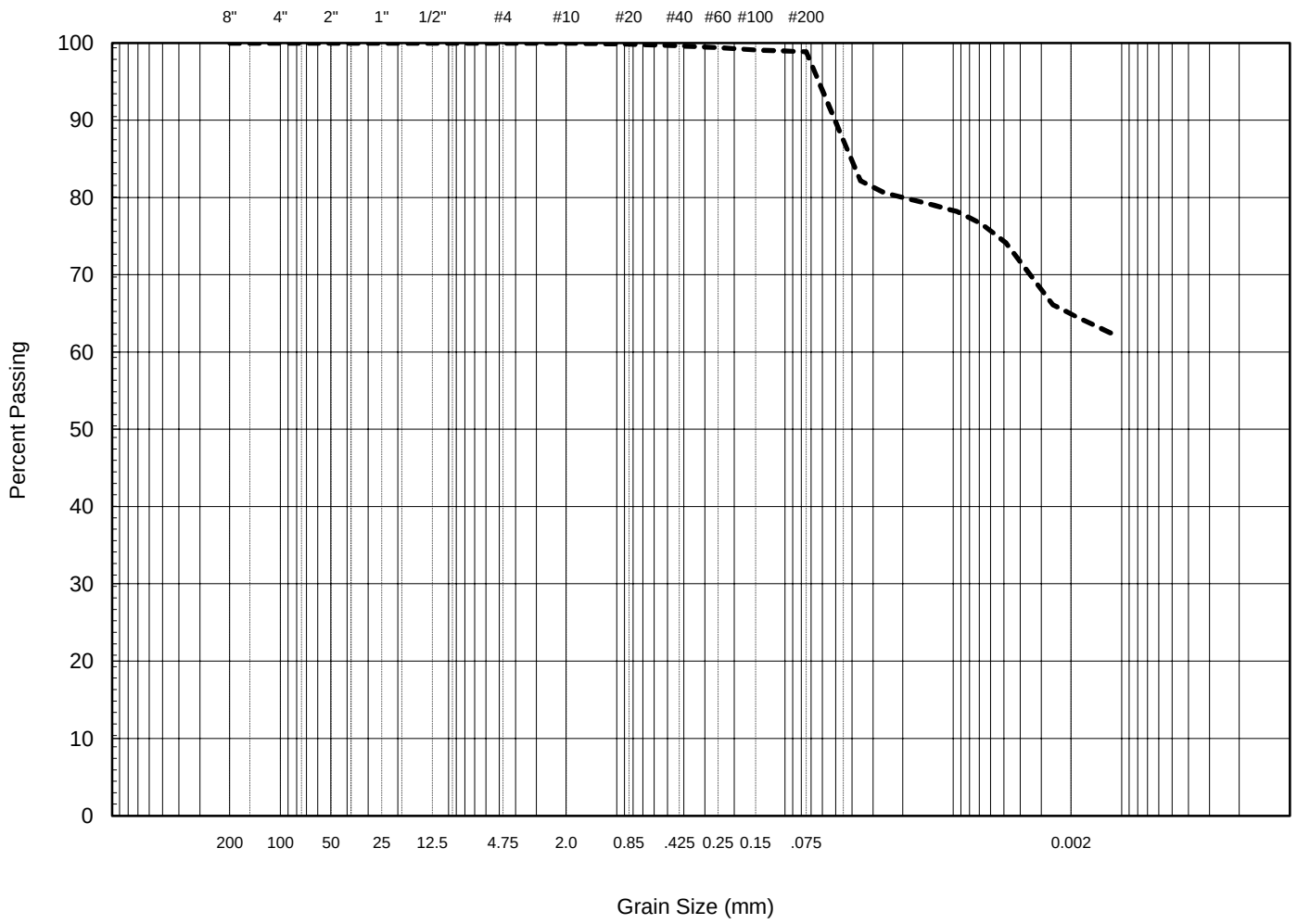
Terms	Value	Definition
D	0.0520	diameter of standpipe (m)
De	0.1500	diameter of borehole (m)
L	3.10	length of sand section (m)
h1	9.20	initial height of water above base of hole (m)
h2	7.69	final height of water above base of hole (m)
t	24.0	time of test (h)

k_s = 5.6E-08 cm/sec

HYDROMETER TEST

Wood Environment & Infrastructure Solutions

COBBLES	GRAVEL		SAND			SILT	CLAY
	Coarse	Fine	C	M	F		



Remarks: Please Place Comments Here - Delete If not needed

Summary

D10 =	#N/A	mm	**Gravel**	0	**%**
D30 =	#N/A	mm	**Sand**	1	**%**
D60 =	#N/A	mm	**Silt**	34	**%**
Cu =	#N/A		**Clay**	65	**%**
Cc =	#N/A				

Project No: BX10626.100
Hole No: ND1-24
Depth (m): 6.5 m - 8.5 m

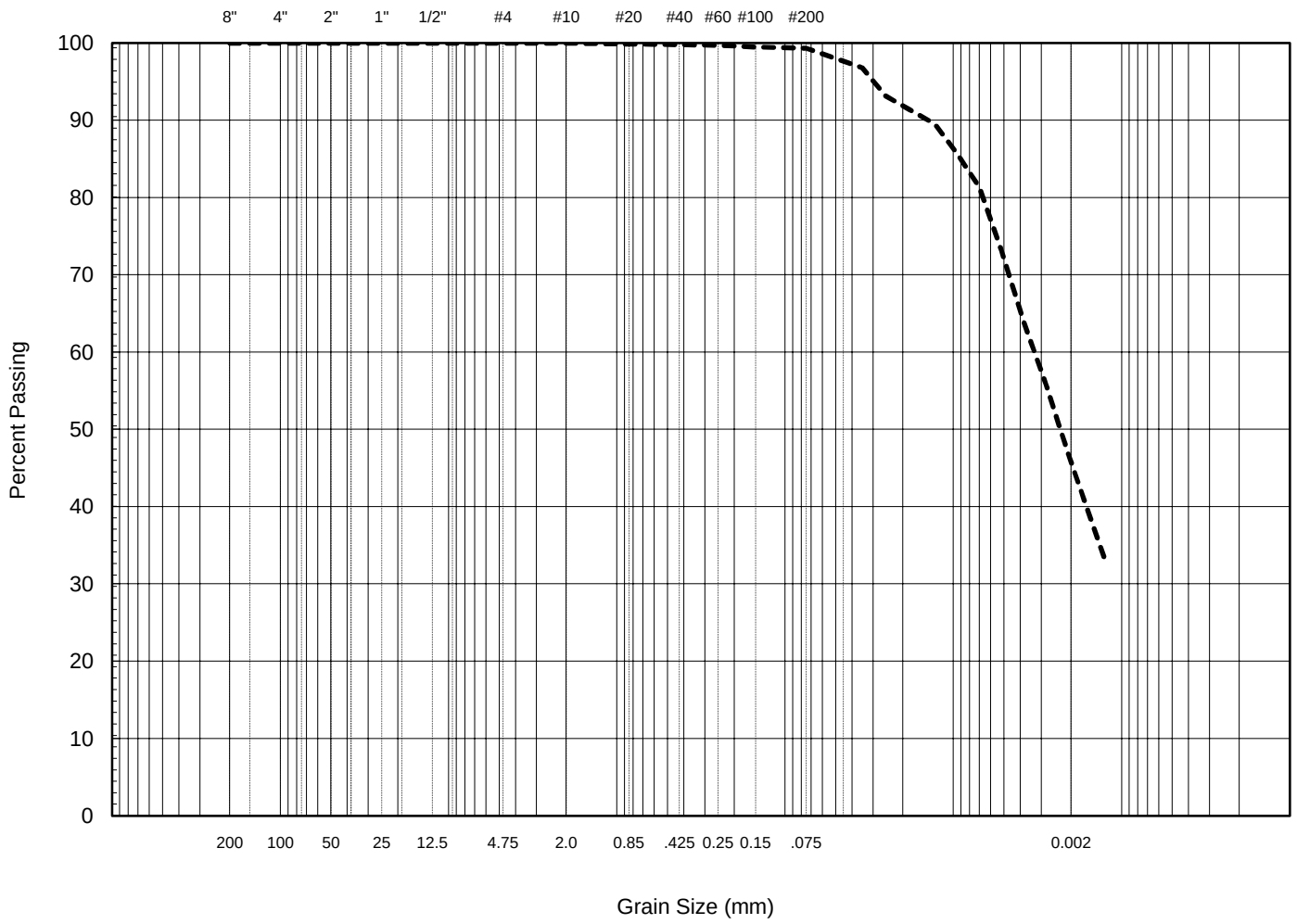
Client: Client
Sample: Sample #
Date: January 29, 2024

Tech: EC

HYDROMETER TEST

Wood Environment & Infrastructure Solutions

COBBLES	GRAVEL		SAND			SILT	CLAY
	Coarse	Fine	C	M	F		



Remarks: Please Place Comments Here - Delete If not needed

Summary

D10 =	#N/A	mm	**Gravel**	0	**%**
D30 =	#N/A	mm	**Sand**	1	**%**
D60 =	0.0033	mm	**Silt**	53	**%**
Cu =	#N/A		**Clay**	46	**%**
Cc =	#N/A				

Project No: BX10626.100
Hole No: ND3-24
Depth (m): 6.6 m - 8.5 m

Client: Client
Sample: Sample #
Date: January 29, 2024

Tech: EC

CHILAKO DRILLING SERVICES LTD

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

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: NW5-20-21W4, New Dale Colony Date: 09-Jan-24

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
ND1-24	0366545	0-0.15	CL	F	Topsoil		
	5615206	0.15-1.4	C	M	Lac		Stiff, med-high plastic, dark brown, varved
		1.4-1.6	SiCL	M	Lac		V. firm, med plastic, olive brown
		1.6-3.8	SiCL-SiC	M	Lac		Stiff, med-high plastic, olive brown, varved
		3.8-5.7	SiC	M	Lac		Stiff, med-high plastic, grayish brown, varved, oxidized
		5.7-9.2	SiC-C	M	Lac	6.5-8.5	Stiff, med-high plastic, gray
							50mm H.C. well installed to 8.9m BGS
							Screen: 8.9-5.9m
							Sand: 8.9-5.8m
							Bentonite: 5.8-0.0m
							Stickup: 0.3m
							Hole Diameter: 0.15m
ND2-24	0366545	0-0.15	SiCL	F	Topsoil		
	5615245	0.15-0.7	SiCL	D	Lac		
		0.7-1.5	SiC	M	Lac		
		1.5-1.9	SiCL	M	Lac		V. firm, med plastic, yellow brown
		1.9-8.0	SiC-C	M	Lac	6.5-8.0	Stiff, med-high plastic, yellow brown, varved
		8.0-9.0	SiC-C	M	Lac		Stiff, med-high plastic, gray
ND3-24	0366607	0-0.15	SiCL	F	Topsoil		
	5612245	0.15-0.8	SiCL	M	Lac		
		0.8-1.5	SiC	M	Lac		Stiff, med-high plastic, dark brown
		1.5-2.2	SiCL	M	Lac	1.5-2.2	V. firm, med plastic, yellow brown, silt lensing
		2.2-3.4	SiC	M	Lac		Stiff, high plastic, yellow brown
		3.4-6.6	SiC-C	M	Lac		Stiff, high plastic, light gray
		6.6-9.2	SiC-C	M	Lac	6.6-8.5	Stiff, high plastic, gray
ND4-24	0366612	0-0.15	SiCL	F	Topsoil		
	5615200	0.15-0.7	SiCL	D	Lac	0.3-0.7	
		0.7-3.0	C	M	Lac		Stiff, med-high plastic, dark brown
		3.0-3.3	SiCL	M	Lac		Silt + VF sand lensing
		3.3-4.6	SiC	M	Lac		Stiff, med plastic, yellow brown, varved
		4.6-6.4	C	M	Lac		Stiff, med-high plastic, brown
		6.4-9.2	SiC-C	M	Lac	6.5-8.5	Stiff, med-high plastic, brown

Legend:
- L — Loam
- C — Clay
- S — Sand
- Gr. — Gravel
- Si — Silt
- F — Fine (sand)
- VF — Very Fine (sand)

NRCB USE ONLY

LIQUID MANURE STORAGE VOLUME CALCULATOR (if applicable)

Facility 1			
Name / description	Existing Slurry Tank	Capacity	5,516 m^3
Facility 2			
Name / description	Proposed EMS	Capacity	9,263 m^3
Facility 3			
Name / description	Proposed Dairy Barn Pit	Capacity	78.3 m^3
Facility 4			
Name / description		Capacity	
		TOTAL CAPACITY	14,857.3 m^3
		REQUIRED 9 MONTH STORAGE CAPACITY	4,050 m^3 (dairy) + 5,400 m^3 (hogs) = 9,450 m^3
		MEETS THE REQUIREMENTS FOR A MINIMUM OF 9 MONTHS STORAGE	☒ YES ☐ NO

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. Dairy Barn Pit
2. _____
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.	15 ft (4.6 m)	15 ft (4.6 m)	12 ft (3.7 m)	12 ft	78.3 m^3
2.					
3.					
				TOTAL CAPACITY	78.3 m^3

Concrete liner details

Scrape alleys or unslatted portions of barn floors (if applicable)	Concrete thickness 4 inches	Method of sulphate protection Type 50 or greater	
	Concrete strength 32 mpa	Concrete reinforcement size and spacing 12 x 12 10 mm rebar	
In-barn manure pit floors	Concrete thickness 8 or 10 inches	Method of sulphate protection Type 50 or greater	
	Concrete strength 32 mpa	Concrete reinforcement size and spacing 12 x 12 10 mm rebar	
In-barn manure pit walls	Concrete thickness 8 or 10 inches	Method of sulphate protection Type 50 or greater	
	Concrete strength 32 mpa	Horizontal reinforcement size and spacing 12 x 12 10 mm rebar	Vertical reinforcement size and spacing 12 x 12 10 mm rebar

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

Water stop system

Describe sealing practices for piping, etc. that penetrates the liner

Sikaflex or equivalent

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: > 9.2 m Requirements met: ☒ YES ☐ NO

Depth to uppermost groundwater resource: 19.81 m (water bearing gravel WW report 233750) 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

Applicant proposing pits to be 12 ft deep. According to Agdex 096-93, the size of these pits, if constructed to the proposed dimensions, will be Category A (complex storage) and are therefore required to be engineered.

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)

SOLID MANURE, COMPOST, & COMPOSTING MATERIALS: Barns, feedlots, & storage facilities - Concrete liner

*(complete a copy of this section for **EACH** barn, feedlot, and storage facility for solid manure, composting materials, or compost with a concrete liner)*

Facility description / name *(as indicated on site plan)* **1.** Dairy Barn A:Close up pack, B: Bull Pens (4), C: Sort Pack

2. Calf Barn

Manure storage capacity

	Length (m)	Width (m)	Depth below grade to the bottom of the liner (m)	**NRCB USE ONLY** Estimated storage capacity (m^3)
1.	A: 29', 10" (9.1 m) B:20',10" (6.35 m) C: 1110 sqft (103.12m2)	95', 4" (29 m) 12' (3.66m)		9 months with STMS
2.	69', 4" (21 m)	123', 10' (37.7 m)		9 months with STMS
			TOTAL CAPACITY	

☑ I plan to use a short-term solid manure storage (STMS) as part of my manure storage and handling plan for this CFO. The AOPA requirements for STMS are set out in the NRCB Short-Term Solid Manure Storage Requirements Fact Sheet.

Surface water control systems

Describe the run-on and runoff control system

Barn will all be under roof

Liner protection

Describe how the physical integrity of the liner will be maintained

Repair as needed

NRCB USE ONLY

Requirements met: ☒ YES ☐ NO

SOLID MANURE, COMPOST, & COMPOSTING MATERIALS: Barns, feedlots, & storage facilities - Concrete liner (cont.)

Concrete liner details

Concrete thickness 6 or 8 inches	Method of sulphate protection: Type 50 or greater
Concrete strength 32 mpa	Concrete reinforcement size and spacing 12 x 12 10 mm rebar

Concrete requirements can be found in Technical Guideline Agdex 096-93
Guideline minimums:
Solid manure: 25MPa (D)
Solid manure (wet): 30MPa (C)
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
Report attached: ☐ YES ☒ NO

Additional information *(attach as required)*

NRCB USE ONLY

Nine month manure storage volume requirements met ☐ YES ☒ YES With STMS ☐ NO

Depth to water table: > 9.2 m Requirements met: ☒ YES ☐ NO

Depth to Uppermost groundwater resource: 19.81 m Requirements met: ☒ YES ☐ NO

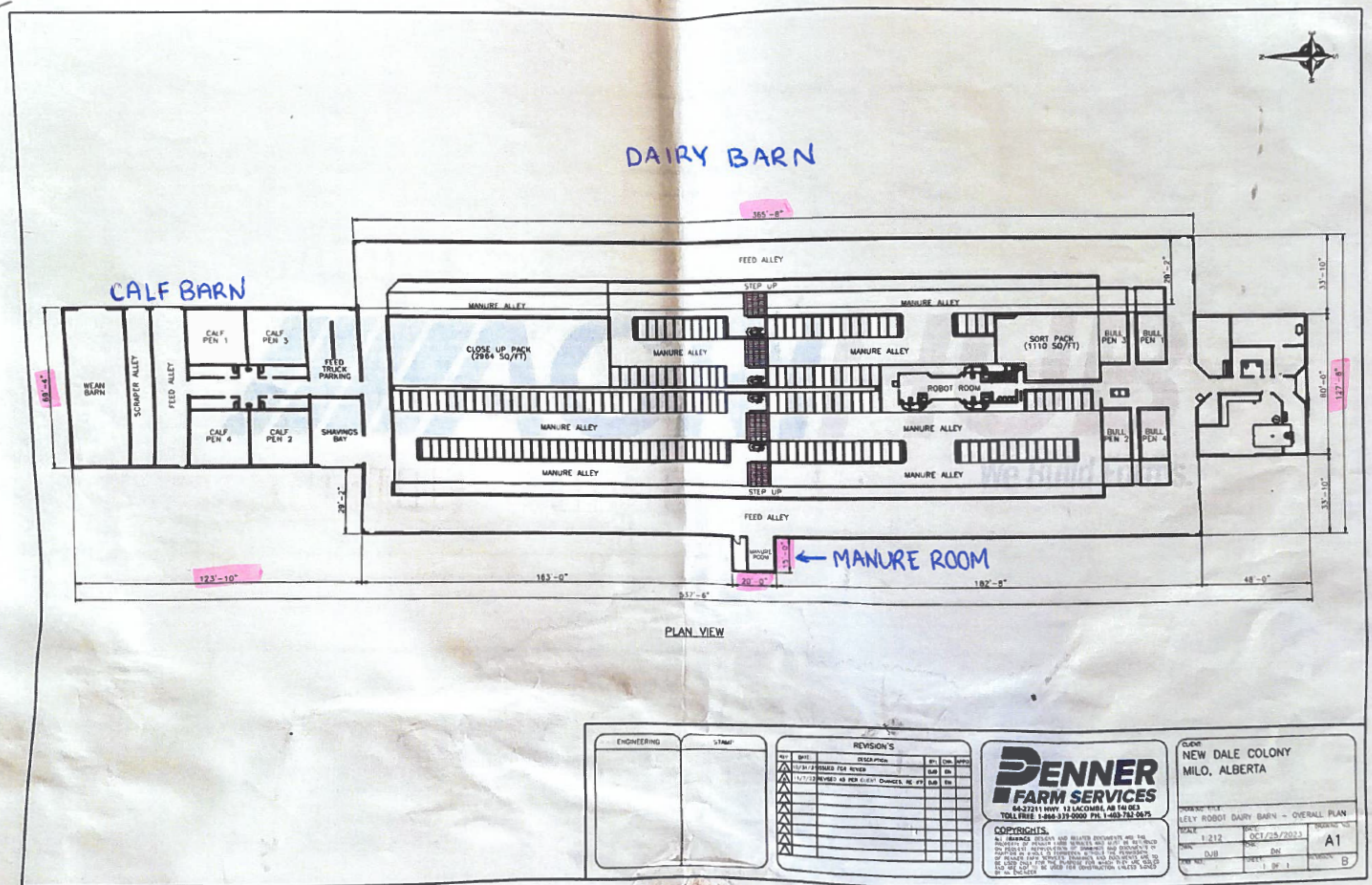
ERST completed: ☒ see ERST page for details

Surface water control systems

Requirements met: ☒ YES ☐ NO Details/comments:

Concrete liner details

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


DAIRY BARN
CALF BARN
365'-8"
FEED ALLEY
STEP UP
MANURE ALLEY
CLOSE UP PACK (2864 SQ/FT)
MANURE ALLEY
MANURE ALLEY
SORT PACK (1110 SQ/FT)
BULL PEN 3
BULL PEN 1
ROBOT ROOM
MANURE ALLEY
MANURE ALLEY
BULL PEN 2
BULL PEN 4
MANURE ALLEY
MANURE ALLEY
STEP UP
FEED ALLEY
WEAN BARN
SCRAPER ALLEY
FEED ALLEY
CALF PEN 1
CALF PEN 3
CALF PEN 4
CALF PEN 2
FEED TRUCK PARKING
SHAVINGS BAY
MANURE ROOM
MANURE ROOM
60'-4"
29'-2"
29'-2"
33'-10"
60'-0"
127'-8"
33'-10"
123'-10"
163'-0"
20'-0"
182'-5"
48'-0"
557'-6"
PLAN VIEW
ENGINEERING
STAMP
REVISION'S
DENNER FARM SERVICES
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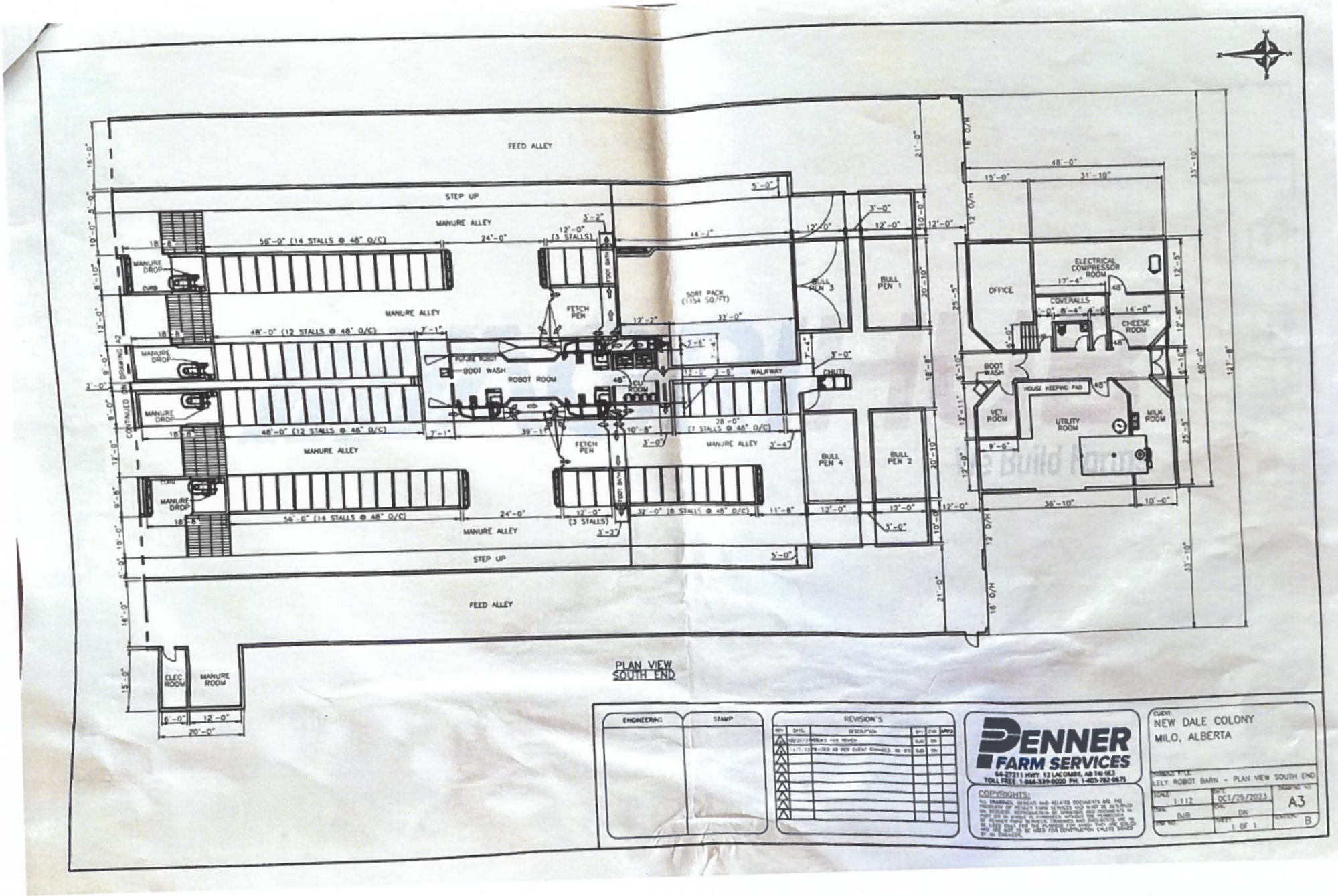
NEW DALE COLONY
MILO, ALBERTA
LELY ROBOT DAIRY BARN - OVERALL PLAN
1:212
OCT/25/2023
A1
DJB
DN
1 OF 1
B


FEED ALLEY
STEP UP
MANURE ALLEY
56'-0" (14 STALLS @ 48" O/C)
24'-0"
12'-0" (3 STALLS)
MANURE DROP
48'-0" (12 STALLS @ 48" O/C)
7'-1"
FETCH PEN
FOOT BATH
SORT PACK (1154 SQ/FT)
32'-0"
BULL PEN 3
BULL PEN 1
BULL PEN 4
BULL PEN 2
FUTURE ROBOT
BOOT WASH
ROBOT ROOM
CU ROOM
WALKWAY
CHUTE
28'-0" (7 STALLS @ 48" O/C)
32'-0" (8 STALLS @ 48" O/C)
OFFICE
ELECTRICAL COMPRESSOR ROOM
COVERALLS
CHEESE ROOM
BOOT WASH
HOUSE KEEPING PAD
VET ROOM
UTILITY ROOM
MILK ROOM
CONTINUED ON DRAWING A2
CLEC ROOM
MANURE ROOM
PLAN VIEW SOUTH END
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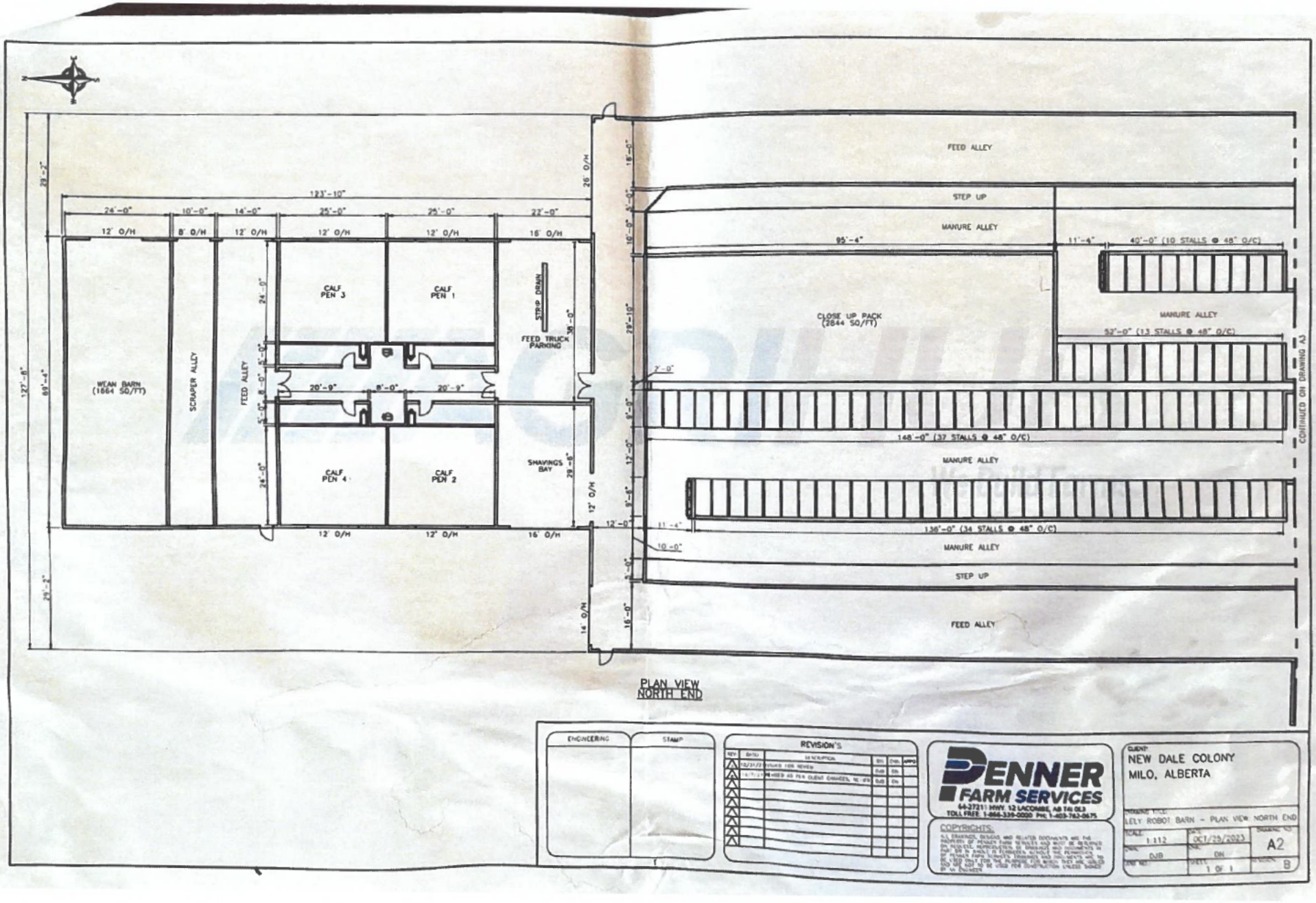
LELY ROBOT BARN - PLAN VIEW SOUTH END
SCALE 1:112
DATE OCT/25/2023
DRAWING NO. A3
DRN. DJB
DES. DN
SHEET 1 OF 1
REVISION B



PLAN VIEW
NORTH END

ENGINEERING | STAMP

REVISION'S

NO	DATE	DESCRIPTION	BY	CHK	APPD
1	10/31/23	ISSUED FOR REVIEW	DJB	DN	
2	11/1/23	REVISED AS PER CLIENT CHANGES, 10' OFF	DJB	DN	

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CLIENT: NEW DALE COLONY
MILO, ALBERTA

DRAWING TITLE: LELY ROBOT BARN - PLAN VIEW NORTH END

SCALE	DATE	DRAWING NO
1:112	OCT/25/2023	A2
DWN: DJB	CHK: DN	
JOB NO:	SHEET: 1 OF 1	REVISION: B