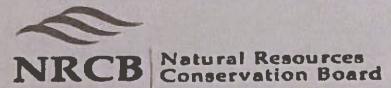


## Part 2 — Technical Requirements



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

<b>NRCB USE ONLY</b>	Application number <b>LA25064</b>	Legal land description <b>SW 26-11-23 W4M</b>
<input checked="" type="checkbox"/> Approval <input type="checkbox"/> Registration <input type="checkbox"/> Authorization <input type="checkbox"/> Amendment		

### 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.

08-07-2025  
 Date of signing  
Sunnyview Farms Ltd.  
 Corporate name (if applicable)

[Redacted Signature]  
 Signature  
Jonathan Vandenberg  
 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)
1 <del>catch basin</del> AO note: This catch basin was already permitted in Approval LA25040 and does not need to be included in this application	<del>35m x 20m x 3.33m</del>
2 4 shelters.	30' x 130' 39.6 m x 9.1 m each
3 6 corals Pens 1-6	80' x 96' 24.4 m x 29.3 m each
4 4 corals. Pens 7-10	136' x 96' 41.5 m x 29.3 m each

AO note: Approval LA25040 permitted nine feedlot pens and two shelters. This application seeks to construct an additional two shelters and an additional pen and to amend the dimensions of all permitted (but not constructed) pens and shelters

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

Existing facilities	Dimensions (m) (length, width, and depth)	NRCB USE ONLY

### NRCB USE ONLY

Permitted CFO, not yet constructed.



# 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

Natural Resources Conservation Service

Part 2 — Technical Requirements

Application under the Agricultural Operation Practices Act

DECLARATION issued by

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

Additional Information

2 years for number ~~1~~ 2, and 3, and  
Shelters 1-4 and pens 1-6  
4 years for number ~~4~~ 4 Pens 7-10

**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
No changes from part 1 application			
Beef calves	180	980	1,160
Beef feeders	1,120	-820	300
Beef finishers	0	300	300



## 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)



Natural Resources  
Conservation Board

### 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 16 day of May, 2025.

\_\_\_\_\_  
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 agreement

pond agreement with CNID

Signed this 21 day of May, 2025.

\_\_\_\_\_  
Signature of Applicant or Agent



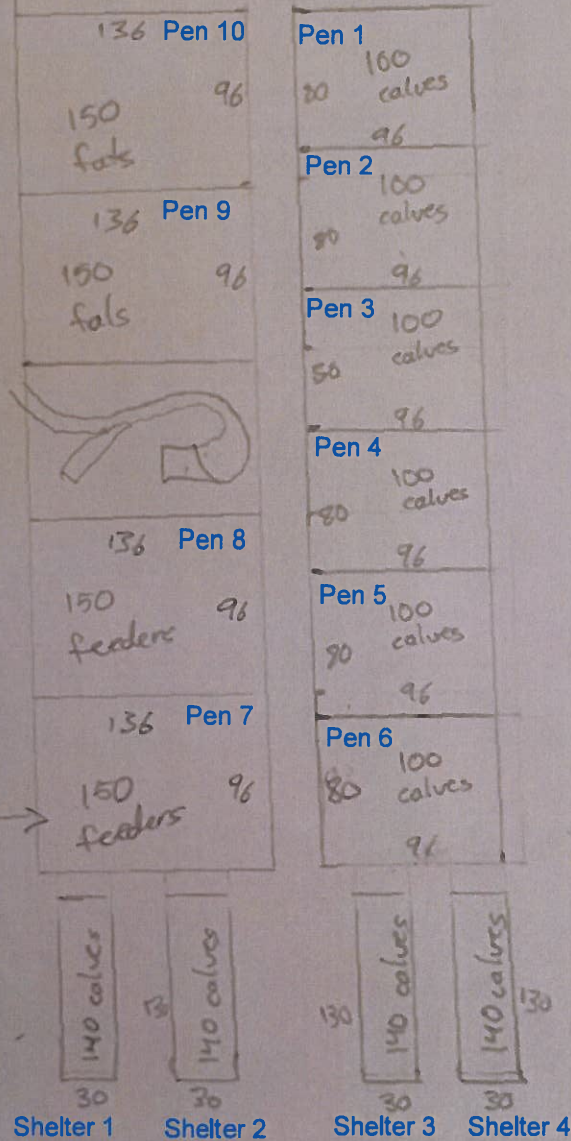
Catch basin permitted  
by Approval LA25040 -  
not yet constructed

All measurements in feet

Gravel Road 232



1160 calves  
300 feeders  
300 fats



AO note: Approval LA25040 permitted the new CFO 250' from Range Road 232. This application seeks to amend the location of the CFO 50' to the west to 200' from the road.









## 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)

### 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: Permitted CFO - not yet constructed

Proposed 2: \_\_\_\_\_

Proposed 1: Cornalls + skelters landfills

Proposed 3: \_\_\_\_\_

Facility and environmental risk information		Facilities				NRCB USE ONLY	
		Existing	Proposed 1	Proposed 2	Proposed 3	Meets requirements	Comments
Information	Flood plain	<input type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m	<input checked="" type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m	<input type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m	<input type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	Confirmed not in a known flood plain
	Surface water		<input type="checkbox"/> > 1 m <input type="checkbox"/> ≤ 1 m			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	None observed during site visit
Information	How many springs are within 100 m of the manure storage facility or manure collection area?					<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	No wells registered to LLD and none observed during site visit
	How many water wells are within 100 m of the manure storage facility or manure collection area?					<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	Keho Lake approx. 1 km to the NE
Information	What is the shortest distance from the manure collection or storage facility to a surface water body? (e.g., lake, creek, slough, seasonal)		1464 m			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	Saturated soils encountered @ 5.8 m during soil investigation (see attached report)
	What is the depth to the water table?		See attached.			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption	WW ID 221823 one mile to N. Water drawn from 11.58 m to 18.29 m

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



## 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

### ENVIRONMENTAL RISK SCREENING INFORMATION

#### ERST for proposed facilities

Facility	Groundwater score	Surface water score	File number
Pens 1-6	Low	Low	LA25064
Pens 7-10	Low	Low	LA25064
Shelters 1-4	Low	Low	LA25064

#### ERST for existing facilities

Facility	Groundwater score	Surface water score	File number
Catch basin (permitted, not yet constructed)	Low	Low	LA25040

#### 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: None registered to LLD. WW ID 221823 used for UGR only

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

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

September 24, 2025	

#### CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES

Date deeming letters sent: August 26, 2025

Municipality: Lethbridge 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: Little Bow Gas Co-op Ltd., Lethbridge North County Potable Water Co-op Ltd ☐ N/A

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

Other: \_\_\_\_\_ ☐ N/A

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



## Part 2 - Technical Requirements

Indicate on the Agricultural Operation Permit for a confined feeding operation, manure collection area, and/or manure storage facility (s).

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

Neighbour (s)	Land description	Distance (m)	Zoning category	NRCB category (1-4)	NRCB USE ONLY		
					Distance (m)	Whether adjacent (if required)	Reside adjacent (if required)
①	SW 35-11-23 W4M	895	Rural Ag	1	1,095	NA	Yes
②	NW 27-11-23 W4M	1,620	Rural Ag	1	1,620	NA	Yes

### LAND BASE FOR MANURE AND COMPOST APPLICATION (COMPOSTING) (if not used, please indicate the reason)

Name of land owner (s)	Land description (s)	Land base (ac)	Soil type	NRCB USE ONLY	
				Land base (ac)	Whether adjacent (if required)
Sunnyview Farms Ltd. <i>Sunnyview Farms Ltd.</i>	SW 26-11-23 W4M <i>2</i>	155 ac	<i>Dark brown</i>	155 ac	
Variety Farms	NW 26-11-23 W4M	135 ac	Brown	135 ac	Yes
Total:				290 ac	

If you are not the responsible landowner, you must indicate the name of the landowner and whether the adjacent land is residential.

As a condition of the permit, you must ensure that the land base for manure and compost application is sufficient to meet the requirements of the permit.

See Appendix 1 for more information on the requirements of the permit.

Additional information (including any additional information) is required.



## 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

#### MINIMUM DISTANCE SEPARATION

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

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

Requirements (m): Category 1: 353 Category 2: 471 Category 3: 588 Category 4: 941

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: 241 ac brown

Land base listed: 290 ac

Area not suitable: Already accounted for

Available area: 290 ac

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 \_\_\_\_\_



Manure Spreading Agreement

This agreement is between Sunnyview Farms Ltd, manure producer, and  
Variety Farms manure receiver.

Length of agreement: This agreement is valid for a time period of 10 years  
(minimum of one year)

Legal land location	Soil type <sup>1</sup>	Acres suitable for manure spreading <sup>2</sup>
NW 26-11-23 W4	Brown	135

<sup>1</sup> Soil type choices: Dark brown and brown, Grey wooded, Black, Irrigated.

<sup>2</sup> Land within required setbacks from water bodies, water wells, residences, etc. is not to be included.

Other comments:

Manure producer (Confined Feeding Operation) Legal Land Location SW 26-11-23 W4

05-22-2025  
Date of signing

[Redacted Signature]

Jonathan Vandenberg  
Print name

Sunnyview Farms.  
Corporate name(if appl)

Manure Receiver - Landowner(s)<sup>3</sup>

May 22/25  
Date of signing

[Redacted Signature]

ED NEELS  
Print name

VARIETY FARMS INC  
Corporate name(if appl)

Date of signing

Signature

Print name

Corporate name(if appl)

<sup>3</sup> All registered owners of land, or authorized signing authorities must sign.



## 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 -

#### Naturally occurring protective layer

(complete a copy of this section for EACH barn, feedlot, and storage facility for solid manure, composting materials, or compost with a naturally occurring protective layer for the liner)

Pens 1-10

Facility description / name (as indicated on site plan)

1. ~~coralls~~ ~~shelters~~
2. Shelters 1-4

#### Manure storage capacity

	Length (m) feet	Width (m) feet	Depth below ground level (m)	NRCB USE ONLY Estimated storage capacity (m³)
1.	<del>610</del> 480	<del>232</del> 232	<del>0.0</del> 0.0	
2.				
TOTAL CAPACITY				Feedlot pens are considered 9 months storage

☐ 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

The @proposed area will be well sloped towards the catch basin.

The shelters have a NOPL and will not contribute manure contaminated runoff to the catch basin as they are covered

#### Naturally occurring protective layer details

see attached report. Thickness of naturally occurring protective layer	Provide details (as required)		
	(m)		
Soil texture	% sand	% silt	% clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested	Hydraulic conductivity (cm/s)	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



## 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)

### **SOLID MANURE, COMPOST, & COMPOSTING MATERIALS: Barns, feedlots, & storage facilities - Naturally occurring protective layer (cont.)**

#### **NRCB USE ONLY**

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

Depth to water table: 5.8 mbgs Requirements met: ☒ YES ☐ NO

Depth to uppermost groundwater resource: 11.58 mbgs Requirements met: ☒ YES ☐ NO

ERST completed: ☒ see ERST page for details

#### **Surface water control systems**

Requirements met: ☒ YES ☐ NO Details/comments:

Shelters are under roof and a catch basin will collect manure contaminated runoff from the feedlot pens

#### **Naturally occurring protective layer details**

Layer specification comments (e.g. sand lenses; layering uniform or irregular; number and location of boreholes):





15 May 2025

**J Lobbezoo Engineering & Consulting Services Ltd.**  
PO Box 96, Monarch, AB T0L1M0

JLECS File: P25046

**Sunnyview Farms Ltd**  
PO Box 151  
Nobleford, AB T0L 1S0

Attention: Mr. Jonathan Vandenberg

**Re:               Geotechnical Review and Evaluation  
                  NRCB Permitting of Pens & Catch Basin  
                  SW-26-011-23-W4M, near Nobleford, Alberta**

As requested, J Lobbezoo Engineering & Consulting Services Ltd. (JLECS) 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 the site soil conditions to support a permit application related to a series of proposed pens and a proposed catch basin at the above captioned site (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 resource, six boreholes were advanced at the site on April 15, 2025. The boreholes were advanced at the approximate locations denoted as JV1-25 to JV6-25 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 of 3.4 m to 6.8 m below the existing grade. The boreholes were logged by Larry Delong of Chilako Drilling Services.

In general, the natural mineral soils encountered in the boreholes consisted of minor lacustrine clay and silty clay loam soils overlying stiff, medium plastic clay till, overlying mudstone/claystone below depths of 1.5 m to 4.6 m. In addition to the clay soils and mudstone, it is noted that localized occurrences of sandy clay loam were encountered in several of the boreholes. In just one borehole (JV5-25), groundwater seepage was encountered in the claystone layer at approximately 5.8 m depth. No groundwater resource (as defined by the AOPA) was encountered within the upper 5.8 m at this site.

Samples of soil collected from the screened zones of boreholes JV1-25 and JV4-25, as well as samples from similar depths at the other boreholes were all subjected to grain size analyses, which was carried out by Down to Earth Laboratories in Lethbridge, Alberta. The lab report is attached, for reference. The results indicate a soil texture breakdown of:



**Table 1: Soil Texture Analyses**

Borehole/Depth	% Sand	% Silt	% Clay
JV1-25 / 4.0 – 4.5 m	26	45	29
JV2-25 / 1.0 – 1.5 m	28	16	56
JV3-25 / 2.7 – 3.4m	18	41	41
JV4-25 / 5.6 – 6.5m	16	42	42
JV5-25 / 6.0 – 6.8m	22	40	38
JV6-25 / 5.5 – 6.0m	40	35	25
Average:	25	37	39

To measure the *in situ* permeability of the subsurface soils, 50 mm diameter PVC monitoring wells were constructed in boreholes JV1-25 (pen area) and JV4-25 (catch basin). Test well JV1-25 was screened from 2.7 m to 4.5 m depth while test well JV4-25 was screened from 3.3 m to 6.6 m depth. Well saturation of the 50 mm diameter monitoring wells was carried out by filling the monitoring wells to the top for several consecutive days. After several days of testing, a 24-hour water drop of 0.94 m was determined at JV1-25, and a 24-hour water drop of 0.50 m was determined at JV4-25.

To calculate the permeability of the screened portion of the clay 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 reports. The results of the permeability testing indicated an *in situ* hydraulic conductivity ( $k_s$ ) of  $1.0 \times 10^{-7}$  cm/s at JV1-25, and an *in situ* hydraulic conductivity ( $k_s$ ) of  $2.2 \times 10^{-8}$  cm/s at JV4-25.

Using the measured permeability of the clay at this site, the 1.8 m of clay and claystone screened at test hole JV1-25 is estimated to represent the equivalent of about 18 m of naturally occurring materials having a hydraulic conductivity of  $1 \times 10^{-6}$  cm/s (the reference standard in AOPA). At test hole JV-25, the 3.3 m of screened claystone is estimated to represent the equivalent of over 100 m of naturally occurring materials having a hydraulic conductivity of  $1 \times 10^{-6}$  cm/s. This represents natural material protection in excess of the minimum requirements outlined by the AOPA for catch basins (minimum 5 m, Section 9.5-b) and solid manure storage (minimum 2 m, Section 9.5-c).



### Conclusion

Based on the results of the current investigation, permeability testing, and our understanding of the site and development at the site, it is JLECS's opinion that the naturally occurring materials at the site satisfy the AOPA requirements for permitting the proposed pens and catch basin at this location.

Notwithstanding, it is noted that the localized occurrences of sandy clay loam soils were noted in the area of the proposed catch basin. Any exposed sandy loam soils in the catch basin excavation would require removal from the side slopes and/or base area at the time of construction, and reconstruction of these pockets using low permeable clay soils would be required. The existing clay, clay till, and mudstone/claystone soils encountered are all considered suitable for the side slope or base reconstruction.

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

Yours truly,

**J Lobbezoo Engineering & Consulting Services Ltd.**



John Lobbezoo, P.Eng.  
Principal Geotechnical Engineer

<b>PERMIT TO PRACTICE</b>	
<b>J LOBBEZOO ENGINEERING &amp; CONSULTING SERVICES LTD.</b>	
RM SIGNATURE:	<u>[Signature]</u>
RM APEGA ID #:	<u>110450</u>
DATE:	<u>15 May 2025</u>
<b>PERMIT NUMBER: P016456</b>	
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)	

### Attachments

- Figure 1 Borehole Locations
- In Situ Permeability Test Calculations
- Down to Earth Soil Texture Results
- Soil Profile and Parent Material Description, Chilako Drilling Services



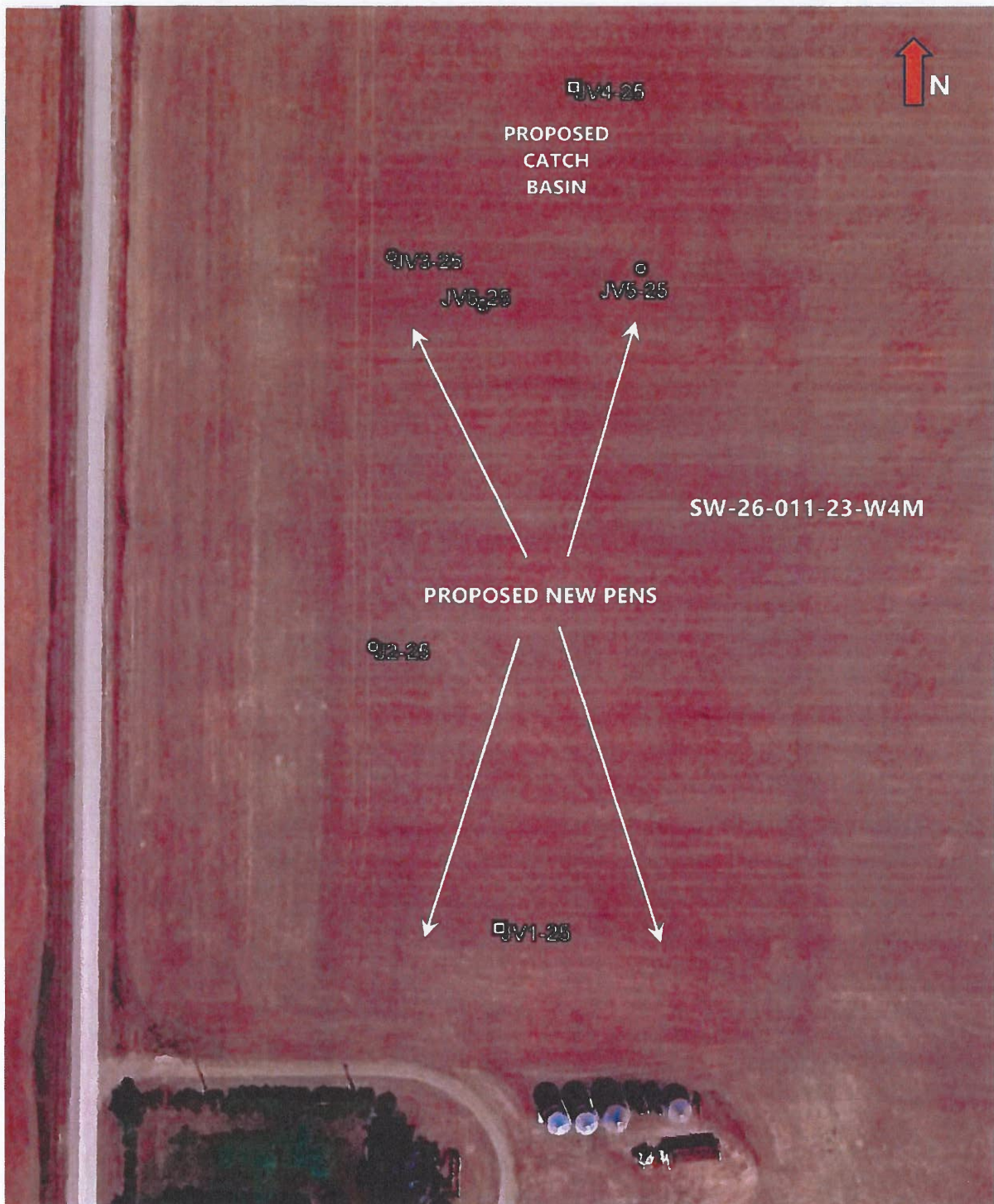


Figure 1: Site Layout & Borehole Locations

Image Credit: Google



JV1-25

## In Situ Permeability Test

Modified Falling Head Permeability Equation

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

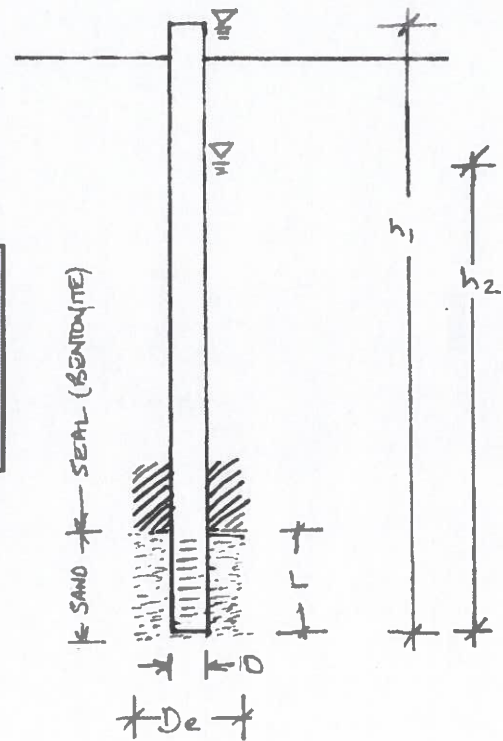
taken from USBR Engineering Geology Field Manual Volume 2 (2001)

JV1-25 - Sunnyview Farms Ltd.

JLECS File: P25046

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	4.80	initial height of water above base of hole (m)
	h2	3.86	final height of water above base of hole (m)
	t	24.0	time of test (h)

$k_s = 1.0E-07$  cm/sec





JV4-25

# In Situ Permeability Test

Modified Falling Head Permeability Equation

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

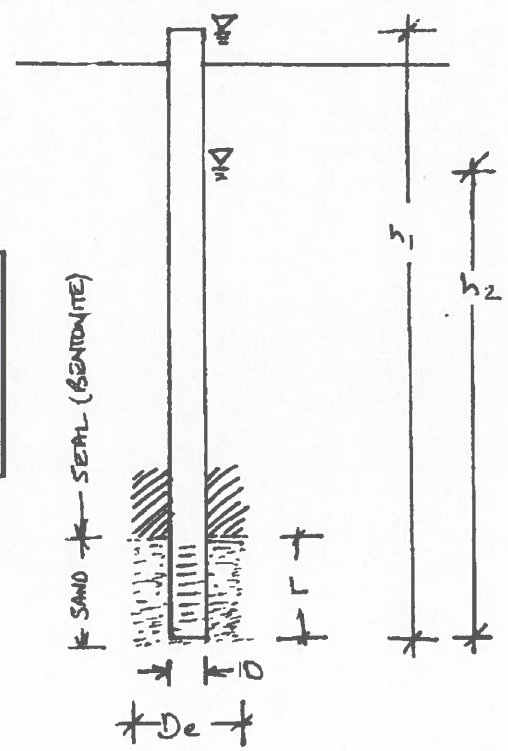
taken from USBR Engineering Geology Field Manual Volume 2 (2001)

JV4-25 - Sunnyview Farms Ltd.

JLECS File: P25046

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	3.30	length of sand section (m)
	h1	7.20	initial height of water above base of hole (m)
	h2	6.70	final height of water above base of hole (m)
	t	24.0	time of test (h)

$k_s = 2.2E-08$  cm/sec







# Down To Earth Labs Inc.

The Science of Higher Yields

J. Lobbezoo Engineering +  
Consulting Services  
Box 96  
Monarch, Alberta T0L 1M0

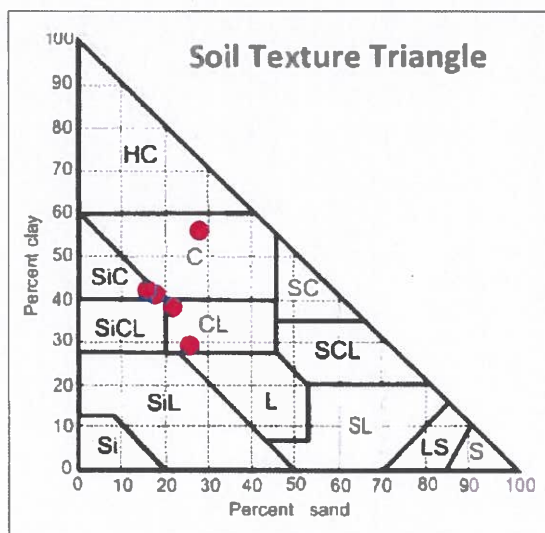
**Report #:** 205758  
**Report Date:** 2025-05-08  
**Received:** 2025-05-06  
**Completed:** 2025-05-08  
**Test Done:** ST

**Project :**  
Sunnyview Farms

**PO:**

3510 6th Ave North  
Lethbridge, AB T1H 5C3  
403-328-1133  
www.downtoearthlabs.com  
info@downtoearthlabs.com

Sample ID:	250506L001	250506L002	250506L003	250506L004	250506L005
Cust. Sample ID:	JV1-25	JV2-25	JV3-27	JV4-25	JV5-25
Analyte Units	4.0-4.5	1.0-1.5	2.7-3.4	5.6-6.5	6.0-6.8
Sand %	26.2	28.2	18.2	16.2	22.2
Silt %	44.8	15.8	40.8	41.8	39.8
Clay %	29.0	56.0	41.0	42.0	38.0
Soil Texture	-	Clay Loam	Clay	Silty Clay	Clay Loam







# Down To Earth Labs Inc.

The Science of Higher Yields

J. Lobbezoo Engineering +  
Consulting Services  
Box 96  
Monarch, Alberta T0L 1M0

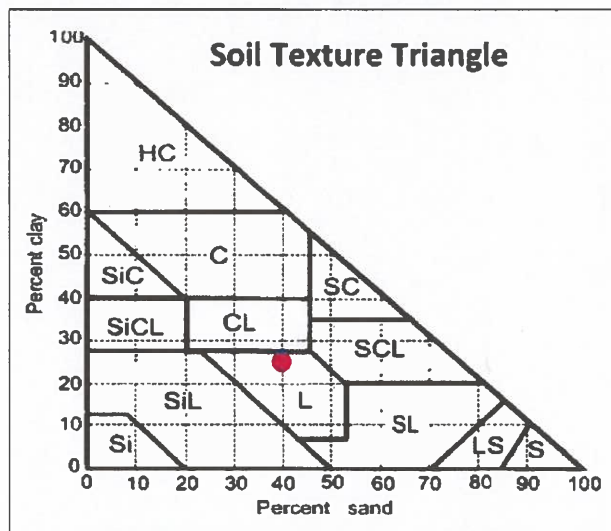
Report #: 205758  
Report Date: 2025-05-08  
Received: 2025-05-06  
Completed: 2025-05-08  
Test Done: ST

Project :  
Sunnyview Farms  
PO:

3510 6th Ave North  
Lethbridge, AB T1H 5C3  
403-328-1133  
www.downtoearthlabs.com  
info@downtoearthlabs.com

Sample ID: 250506L006  
Cust. Sample ID: JV6-25  
Analyte Units 5.5-6.0

Sand	%	40.2
Silt	%	34.8
Clay	%	25.0
Soil Texture	-	Loam



Raygan Boyce - Chemist



# CHILAKO DRILLING SERVICES LTD

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

## SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: SW26-11-23W4, Sunnyview Farms

Date: 15-Apr-25

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
JV1-25	0352768 5533561	0-0.15	CL	M	Lac		
		0.15-0.4	CL-SiCL	D	Lac		
		0.4-1.2	CL	D	Till	0.6-1.0	Stiff, med plastic, brown
		1.2-1.6	SL-FSC	SM	Till		Low plastic, olive brown
		1.6-3.0	CL	SM	Till	2.0-3.0	Stiff, med plastic, brown, sand lensing, mudstone inclusions
		3.0-3.7	Mudstone	SM	Bedrock		Soft, bedrock, olive brown
JV2-25	0352739 5533627	3.7-4.5	Claystone	SM	Bedrock	4.0-4.5	Soft, bedrock, yellow brown
							50mm H.C. Well installed to 4.5m BGS
							Screen: 4.5-3.0m
							Sand: 4.5-2.7m
							Bentonite: 2.7-0.0m
							Stickup: 0.3m
JV3-25	0352746 5533718						Hole Diameter: 0.15m
		0-0.15	CL	M	Lac		
		0.15-0.7	SiCL	M	Lac		
		0.7-1.5	CL	M	Till	0.7-1.5	Stiff, med plastic, brown
		1.5-2.8	FSL	VM	Till		
		2.8-4.0	CL	M	Till		Stiff, med plastic, brown
JV4-25	0352788 5533756 low area	4.0-4.5	Claystone	SM	Bedrock		Soft bedrock
		0-0.15	SiCL	M	Lac		
		0.15-0.3	SiCL	SM	Lac		
		0.3-2.7	CL	SM	Till		Stiff, med plastic, brown, sand streaks
		2.7-3.4	Claystone	SM	Bedrock	2.7-3.4	Soft bedrock, yellow brown
JV5-25	0352803 5533713	0-0.15	CL	M	Topsoil		
		0.15-0.4	SiCL	M-VM	Lac		
		0.4-1.2	CL	M-VM	Till		
		1.2-1.5	FSL	M-VM	Till		
		1.5-5.6	Claystone	D	Bedrock		Soft bedrock, yellow brown
		5.6-6.6	Mudstone	D	Bedrock	5.6-6.5	Soft bedrock, grey
JV6-25	0352767 5533706						Auger refusal @ 6.6m
							50mm H.C. Well installed to 6.6m
							Screen: 6.6-3.6m
							Sand: 6.6-3.3m
							Bentonite: 3.3-0.0m
							Stickup: 0.6m
JV6-25	0352767 5533706						Hole Diameter: 0.15m
		0-0.15	CL	M	Topsoil		
		0.15-0.6	SiCL	M	Lac		
		0.6-1.8	CL	M	Till		Stiff, med plastic, brown
		1.8-3.0	FSL-FSCL	VM	Till	2.0-3.0	Firm, low plastic, brown
		3.0-4.6	FSCL	M	Till		V. Firm, low plastic, brown
JV6-25	0352767 5533706	4.6-5.8	Claystone	M	Bedrock		Soft bedrock, yellow brown
		5.8-6.8	Claystone	D	Bedrock	6.0-6.6	Some sand, mixed with shale, sat @ 5.8m
							Free water
JV6-25	0352767 5533706	0-0.15	CL	M	Topsoil		
		0.15-1.0	SiCL	M	Lac		
		1.0-1.3	CL	M	Till		Stiff, med plastic, brown
		1.3-3.3	FSL-FSCL	VM	Till	2.0-3.0	
		3.3-6.0	Claystone	M	Bedrock	5.5-6.0	Soft bedrock, yellow brown
							Auger refusal @ 6.0m

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