

Technical Document LA25040

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

☒ Approval ☐ Registration ☐ Authorization
☐ Amendment

Application number

LA25040

Legal land description

SW 26-11-23 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.

05-16-2025.
Date of signing

Signature

Jonathan Vandenberg
Print name

Sunnyview Farms Ltd
Corporate name (if applicable)

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 2 corals Feedlot pens 1 & 2 | 150' x 140' 45.7 m x 42.7 m and 100' x 110' 30.5 m x 33.5 m |
| 2 3 corals Feedlot pens 3, 4, & 5 | 100' x 140' 30.5 m x 42.7 m each |
| 3 4 corals Feedlot pens 6, 7, 8, & 9 | 110' x 65' 33.5 m x 19.8 m each |
| 4 2 shelters | 80' x 30' 24.4 m x 9 m each |
| 5 catch basin | 35m x 20m x 3.33m deep as big as necessary |

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

| Existing facilities | Dimensions (m) (length, width, and depth) | NRCB USE ONLY |
|---------------------|--|---------------|
| None | | |

NRCB USE ONLY

No existing facilities. Application for a new CFO.

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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

[Handwritten X mark]

Construction completion date for proposed facilities *[Handwritten signature]*

Additional information

2 years for number 3^{and 5} (refer to numbers beside proposed facilities) Pens 6, 7, 8 & 9 and the catch basin

2 more years for the rest
Pens 1, 2, 3, 4, 5, and the two shelters

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 feeder calves | 0 | 180 | 180 |
| Beef feeders | 0 | 1120 | 1120 |
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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)

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.

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 agreement

pond agreement with CNID
Signed this 21 day of May, 2025.

Signature of Applicant or Agent

↑
North

Keho lake.

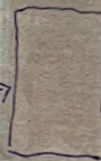
#1

1095 meters away.

#2

1620 meters away.

Proposed
area



SW 26-11-23
W4

↑
my residence



This is a pump jack, not residential development

twp 114

Range 22 32

quarter boundary.

North.
↑

SW 26-11-23

catch basin.

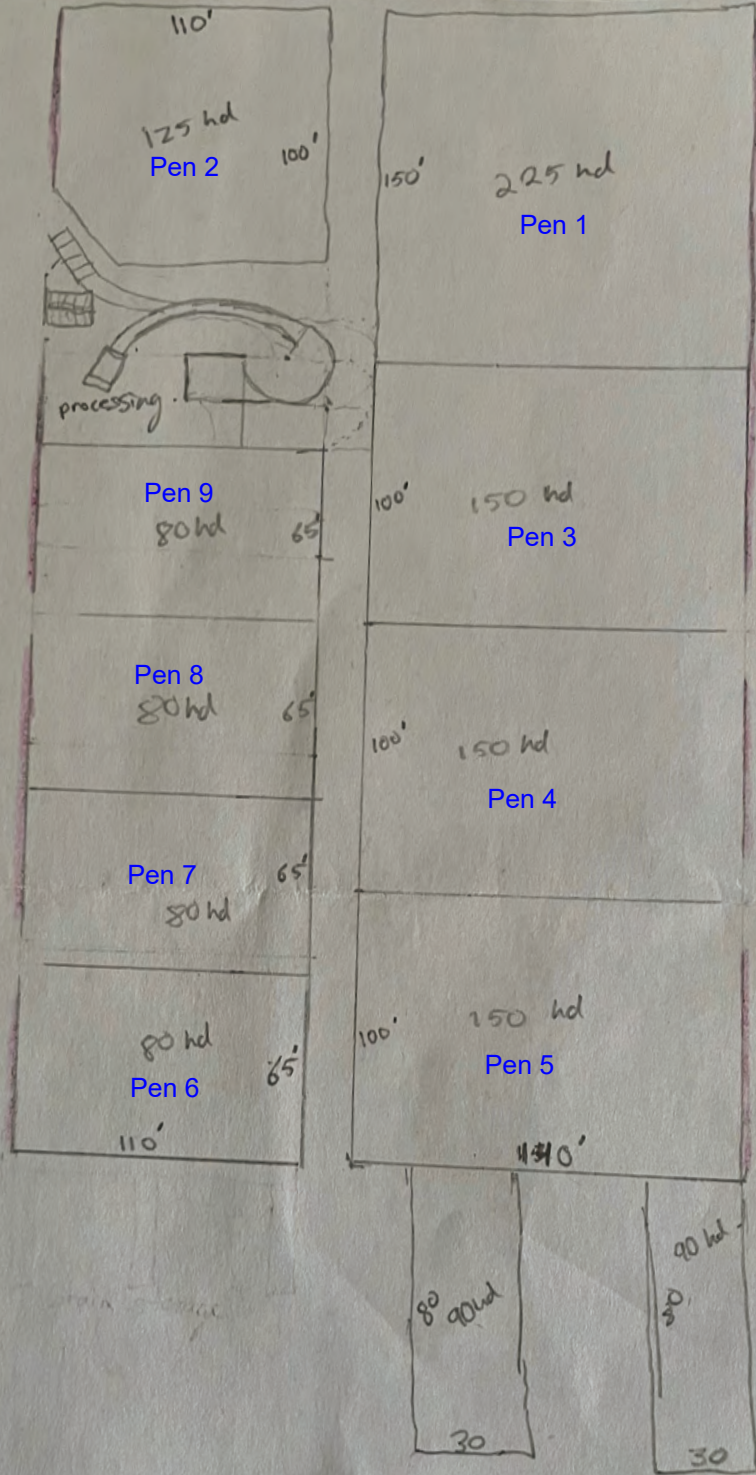
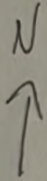
see attached for
more detail.

250'

range road 232



Gravel Road



Driveway

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: None - new CFO

Proposed 2: _____

Proposed 1: conalls + shelters + catchbasin

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? | <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 flood plain |
| | How many springs are within 100 m of the manure storage facility or manure collection area? | | 0 | | | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption | None observed during site visit |
| Surface water information | How many water wells are within 100 m of the manure storage facility or manure collection area? | | 0 | | | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES with exemption | No water wells registered to LLD or observed during site visit |
| | 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 | Keho Lake approx. 1200 m from proposed CFO |
| Groundwater information | 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 | Saturated soils encountered @ 5.8 m during soil investigation (see attached report) |
| | What is the depth to the groundwater resource/aquifer you draw water from? | | NA | | | <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)

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NRCB USE ONLY

ENVIRONMENTAL RISK SCREENING INFORMATION

ERST for **proposed** facilities

| Facility | Groundwater score | Surface water score | File number |
|------------------|-------------------|---------------------|-------------|
| Feedlot pens 1-9 | Low | Low | LA25040 |
| Catch basin | Low | Low | LA25040 |
| Shelters | Low | Low | LA25040 |
| | | | |
| | | | |
| | | | |

ERST for **existing** facilities

| Facility | Groundwater score | Surface water score | File number |
|----------|-------------------|---------------------|-------------|
| N/A | | | |
| | | | |
| | | | |
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ERST related comments:

Proposed CFO facilities that meet or exceed AOPA requirements are presumed to pose a low risk to surface water and groundwater

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NRCB USE ONLY

WATER WELL AND SURFACE WATER INFORMATION

Well IDs: None registered to LLD. 221823 used to determine 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 |
|---------------|-----------------------------|---------------------------|----------|
| | | | |
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Groundwater or surface water related comments:

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

| Neighbour name(s) | Legal land description | Distance (m) | NRCB USE ONLY | | | | |
|--|------------------------|--------------|-----------------------|--------------------|--------------|-------------------------------|-------------------|
| | | | Zoning (LUB) category | MDS category (1-4) | Distance (m) | Waiver attached (if required) | Meets regulations |
| ① | SW 35-11-23 W4M | 1095 | Rural Ag | 1 | 1,095 | NA | Yes |
| ② | NW 27-11-23 W4M | 1620 | Rural Ag | 1 | 1,620 | NA | Yes |
| Numbers correspond to residences indicated on map on pg 4 of this Technical Document | | | | | | | |
| | | | | | | | |
| | | | | | | | |

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

| Name of land owner(s)* | Legal land description | Usable area** (ha) | Soil zone *** | NRCB USE ONLY | |
|------------------------|------------------------|--------------------|---------------|------------------|----------------------------------|
| | | | | Usable area (ha) | Agreement attached (if required) |
| Sunnyview Farms Ltd. | SW 26-11-23 W4M | 155 acres | dark brown | 155 ac | |
| Variety Farms | NW 26-11-23 W4M | 135 acres | brown | 135 ac | Yes |
| | | | | | |
| | | | | | |
| Total | | | | 290 ac | |

* 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)

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NRCB USE ONLY

MINIMUM DISTANCE SEPARATION

Methods used to determine distance (if applicable): Aerial imagery

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

Requirements (m): Category 1: 329 Category 2: 438 Category 3: 548 Category 4: 876

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: 235 ac brown/dark brown

Land base listed: 290 ac

Area not suitable: already subtracted

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 ¹ | Acres suitable for manure spreading ² |
|---------------------|------------------------|--|
| NW 26-11-23 W4 | Brown | 135 |
| | | |
| | | |
| | | |
| | | |
| | | |

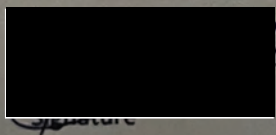
¹ Soil type choices: Dark brown and brown, Grey wooded, Black, Irrigated.

² 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

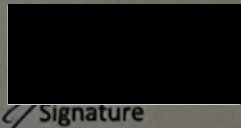


Jonathan Vandenberg
Print name

Sunnyview Farms.
Corporate name(if appl)

Manure Receiver – Landowner(s)³

May 22/25
Date of signing


Signature

ED NEELS
Print name

VARIETY FARMS INC
Corporate name(if appl)

Date of signing

Signature

Print name

Corporate name(if appl)

³ All registered owners of land, or authorized signing authorities must sign.

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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)

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)

Feedlot pens 1-9

Facility description / name (as indicated on site plan)

1. coralls & shelters
2. Shelters x 2

Manure storage capacity

| | Length (m) feet | Width (m) feet | Depth below ground level (m) | NRCB USE ONLY Estimated storage capacity (m ³) |
|----------------|-----------------|----------------|------------------------------|--|
| 1. | 450 137.2 m | 265 80.8 m | 0.00 | |
| 2. | 24.4 x 9 each | | | |
| TOTAL CAPACITY | | | | Feedlot pens are considered 9 months of manure 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 run off to the catch basin as they are under roof

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

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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:

Naturally occurring protective layer details

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

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)

RUNOFF CONTROL CATCH BASIN: Naturally occurring protective layer

(complete a copy of this section for EACH proposed runoff control catch basin with a naturally occurring protective layer)

Facility description / name (as indicated on site plan)

1. SW 26-11-23 W4. Catch basin
2. _____
3. _____

Determination of runoff area

Provide a plan and show how you calculated the area contributing to runoff for each catch basin

runoff area is: ~~265' x 450' = 119250 square feet~~
~~138 m x 83 m = 58415 m²~~
 X 85 mm (Picture Butte closest town) = 584,15 m³.

Catch basin capacity

| | Length (m) | Width (m) | Total depth (m) | Depth below ground level (m) | Slope run:rise | | | NRCB USE ONLY Calculated storage capacity (excl. 0.5 m freeboard) (m ³) |
|----------------|------------|-----------|-----------------|------------------------------|------------------|-------------------|---------------|--|
| | | | | | Inside end walls | Inside side walls | Outside walls | |
| 1. | 35 | 20 | 3.33 | 3.33 | 3-1 | 3-1 | 3-1 | 634 m ³ |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| TOTAL CAPACITY | | | | | | | | 634 m ³ |

see attached report.

Naturally occurring protective layer details

| | | | | |
|---|-------------------------------|-------------------------------|-----------------------------|--|
| Thickness of naturally occurring protective layer | _____ (m) | Provide details (as required) | | |
| 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 | |

Catch Basin - Design and management requirements can be found in Technical Guideline Agdex 096-101

If soil info differs per facility include additional soils page.

NRCB USE ONLY

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

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin

* Only cells in blue can be changed.

Overall Dimensions of Catch Basin

| | |
|----------------------------|------------|
| Total Length* ₄ | 35.0 m |
| Total Width* ₄ | 20.0 m |
| Total Depth* ₄ | 3.3 m |
| Design Capacity Depth | 2.83 m |
| End Slope* ₄ | 3 run:rise |
| Side Slope* ₄ | 3 run:rise |
| Length of Bottom | 15.0 m |
| Width of Bottom | 0.0 m |

Capacity @ top of Bank 944 m³

Design Capacity of Catch Basin (freeboard level)

| | |
|--------------------------------|------------|
| Length (design capacity depth) | 32.0 m |
| Width (design capacity depth) | 17.0 m |
| Total Depth | 3.3 m |
| Design Capacity Depth | 2.83 m |
| End Slope | 3 run:rise |
| Side Slope | 3 run:rise |

Design Capacity (freeboard level) 634 m³

level) 544 m²

Catch Basin Dimensions

| |
|------------|
| 115 ft |
| 66 ft |
| 11 ft |
| 9 ft |
| 3 run:rise |
| 3 run:rise |
| 3 run:rise |
| 49 ft |
| 0 ft |

Capacity (@top)

33,353 ft³

207,749 Imp. Gal.

Design Capacity (freeboard level)

| |
|------------|
| 105 ft |
| 56 ft |
| 11 ft |
| 9 ft |
| 3 run:rise |
| 3 run:rise |
| 3 run:rise |

22,396 ft³

139,503 Imp. Gal.

5,856 ft²

CFO Name ₁ Sunnyview Farms

Land Location ₁

Paved Runoff Catchment Area(s)

| Area ₂ | Length (m) | Width (m) | Area (m ²) |
|------------------------------|------------|-----------|------------------------|
| 1 | | | 0.0 |
| 2 | | | 0.0 |
| 3 | | | 0.0 |
| 4 | | | 0.0 |
| 5 | | | 0.0 |
| Total Area (m ²) | | | 0 |

Unpaved Runoff Catchment Area(s)

| Area ₂ | Length (m) | Width (m) | Area (m ²) |
|------------------------------|------------|-----------|------------------------|
| 6 | 137 | 81 | 11,069.6 |
| 7 | | | 0.0 |
| 8 | | | 0.0 |
| 9 | | | 0.0 |
| 10 | | | 0.0 |
| Total Area (m ²) | | | 11,070 |

Rainfall (Select Town ₃)

Picture Butte 85

AOPA Design Rainfall

85 mm

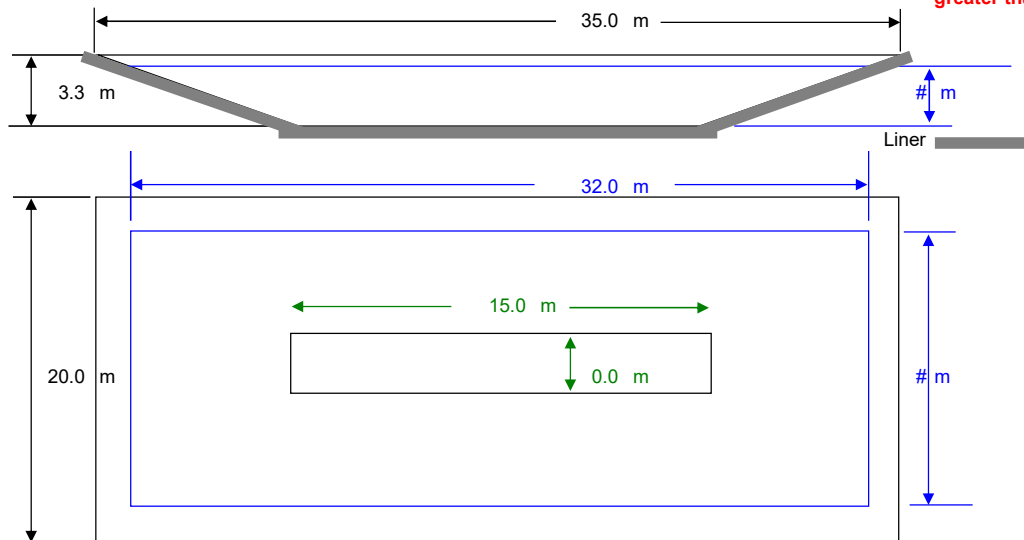
Minimum Catchbasin Storage Volume Required

565 m³ **

19936.88097 ft³

124183.5021 Imp. Gal.

** Design capacity of catch basin should be equal to, greater than, minimum storage volume required.



Lines in Black - Overall catch basin dimensions
Lines in Blue - Design capacity depth dimensions (excludes freeboard)

NTS - Not To Scale

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RUNOFF CONTROL CATCH BASIN: Naturally occurring protective layer (cont.)

NRCB USE ONLY

Catch basin calculator. Total volume @ freeboard level: 634 m3 Runoff capacity requirements met: ☒ YES ☐ NO

Calculation of the volume attached: ☒ YES ☐ 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

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

There are localized areas of sandy clay loam that will need to be excavated and repacked. The attached report states that the existing clay is suitable for the reconstruction of these areas.

Leakage detection system required: ☐ YES ☒ NO

If yes, please explain.

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NRCB USE ONLY

ALL SIGNATURES IN FILE

☒ YES ☐ NO

DATES OF APPROVAL OFFICER SITE VISITS

| | |
|--------------|--|
| July 9, 2025 | |
| | |
| | |

CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES

Date deeming letters sent: June 3, 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: FortisAlberta Ltd ☐ N/A

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

Other: Lethbridge North County Potable Water Coop Ltd., Little Bow Gas Coop Ltd. ☐ N/A

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



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 |
| <i>Average:</i> | 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 1.0×10^{-7} cm/s at JV1-25, and an *in situ* hydraulic conductivity (k_s) of 2.2×10^{-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 1×10^{-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 1×10^{-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

| | |
|--|-------------|
| PERMIT TO PRACTICE | |
| J LOBBEZOO ENGINEERING & CONSULTING SERVICES LTD. | |
| RM SIGNATURE: _____ | _____ |
| RM APEGA ID #: _____ | 110450 |
| DATE: _____ | 15 May 2025 |
| PERMIT NUMBER: P016456 | |
| 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

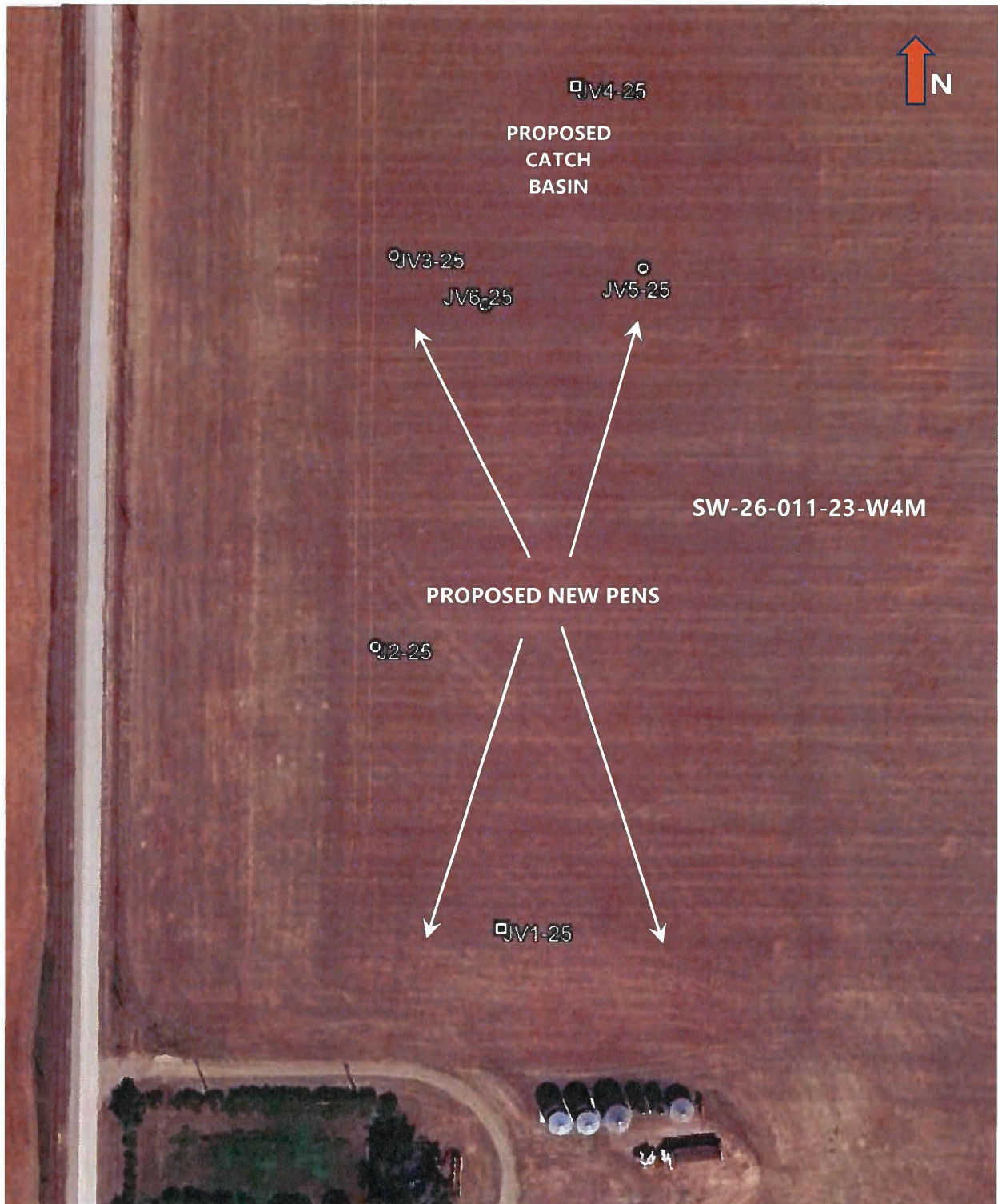


Figure 1: Site Layout & Borehole Locations

Image Credit: Google

JV1-25

In Situ Permeability Test

Modified Falling Head Permeability Equation

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

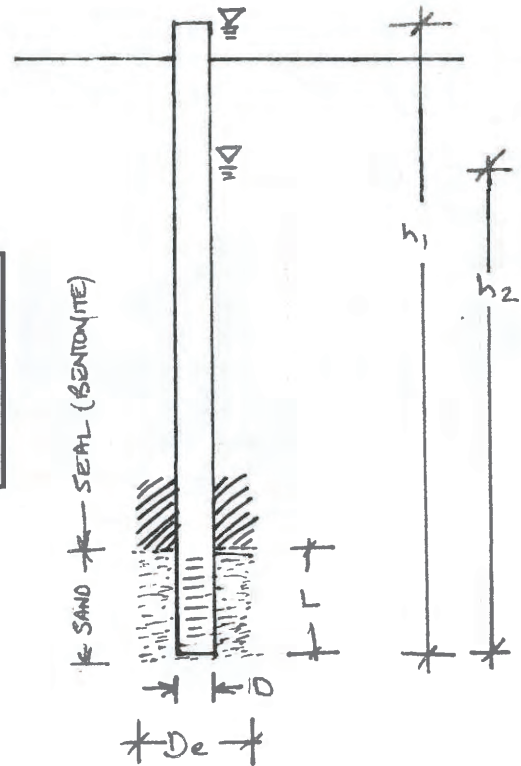
taken from USBR Engineering Geology Field Manual Volume 2 (2001)

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) |

$k_s = 1.0E-07 \text{ cm/sec}$



JV4-25

In Situ Permeability Test

Modified Falling Head Permeability Equation

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

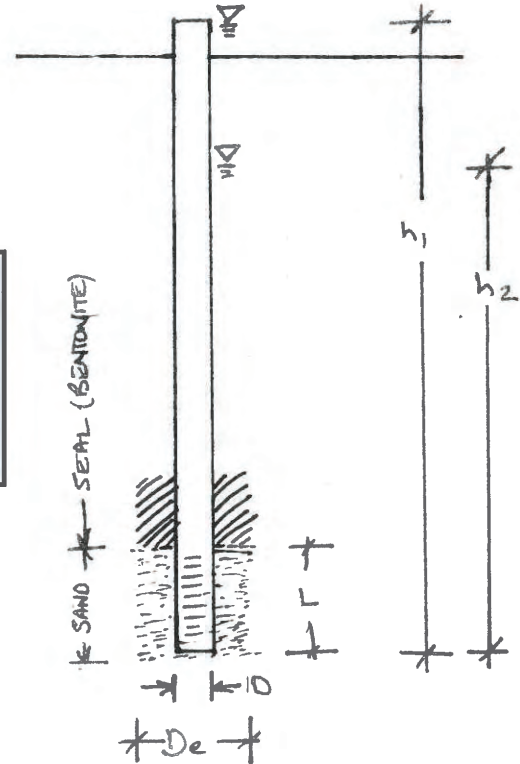
taken from USBR Engineering Geology Field Manual Volume 2 (2001)

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

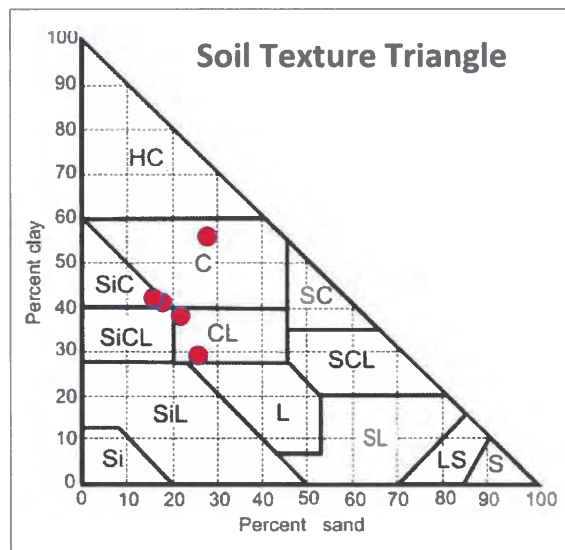
J. Lobbezoo Engineering +
Consulting Services
Box 96
Monarch, Alberta T0L 1M0

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 |
| | % | 44.8 | 15.8 | 40.8 | 41.8 | 39.8 |
| | % | 29.0 | 56.0 | 41.0 | 42.0 | 38.0 |
| Soil Texture | | Clay Loam | Clay | Silty Clay | Silty Clay | Clay Loam |





Down To Earth Labs Inc.

The Science of Higher Yields

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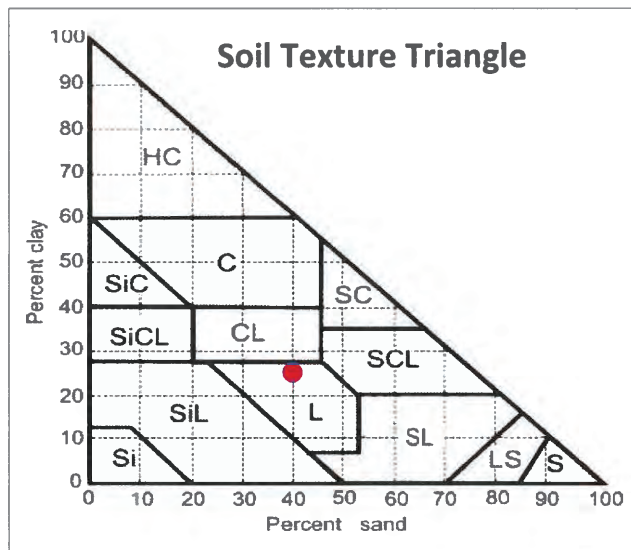
Project :
Sunnyview Farms

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 |
| JV7-25 | 0352803 5533713 | | | | | | Hole Diameter: 0.15m |
| | | 0-0.15 | CL | M | Topsoil | | |
| | | 0.15-0.6 | CL | 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 |
| JV8-25 | 0352803 5533713 | 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 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| JV9-25 | 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)