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	LA24035	SE 27-9-19 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.

August 12 2024
Date of signing

[redacted]
Signature

Tempest Red Angus
Corporate name (if applicable)

David Slingerland
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)
Conversion of C8 into handling pen	
C9 & C10 incorporated into one full row ofnew pen	560' x 18'
(Dimension of entire row: 170.6 m x 54.9 m)	

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

All facilities (list below) confirmed with dimensions

Last updated September 11, 2023

Existing facilities

Feedlot pens:

C1: 23 x 29 m

C2: 18 x 29 m

C3: 18 x 43 m

C4 & C5: 60 x 43 m each

C6: 60 x 34 m

C7: 51 x 34 m

C8: 35 x 24 m

C9: 35 x 43 m

C10: 35 x 30 m

Catch basin: 42 x 28 x 4 m deep


You are currently running an experimental version of Earth.
Learn more
Send feedback
new (expanded) pen area
Fresh water Dugout-7
C9
C10
Full row (total dimensions: 170.6 m x 54.9 m
C8
C4
C5
C6
handling pen
C7
C2
C3
C1
Gravel Road
Catch Basin
AO Note: Proposed road setbacks from catch basin are 38m
Gravel Road
Google Earth

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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

Construction completion date for proposed facilities December 2026

Additional information

AO comment: As indicated on page 1: The C8 pen will be converted into a handling pen

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**
Feeder Calves	2000	- 2000	0
Feeder Cattle	0	+ 2000	2000

Last updated September 11, 2023

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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 _____

Signed this 12 day of August, 2024. [redacted]

Applicant or Agent

Last updated September 11, 2023

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

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

_____

Signed this ____ day of _____, 20____. _____

Signature of Applicant or Agent

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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: Existing Corrals **Proposed 1:** Proposed Corrals

Proposed 2: New Catch Basin **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	confirmed Not in flood plain
Surface water information	How many springs are within 100 m of the manure storage facility or manure collection area?	N/A	N/A	N/A		☒ YES ☐ NO ☐ YES with exemption	None observed during site visit or EPA database
	How many water wells are within 100 m of the manure storage facility or manure collection area?	N/A	N/A	N/A		☒ YES ☐ NO ☐ YES with exemption	None observed during site visit or EPA database
	What is the shortest distance from the manure collection or storage facility to a surface water body? (e.g., lake, creek, slough, seasonal)	105m	50M	105m		☒ YES ☐ NO ☐ YES with exemption	confirmed
Groundwater information	What is the depth to the water table?					☒ YES ☐ NO ☐ YES with exemption	Below 9.2 m (Drilling report attached)
	What is the depth to the groundwater resource/aquifer you draw water from?	N/A	N/A	N/A		☒ YES ☐ NO ☐ YES with exemption	no water wells in area UGR not identified

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

Part 2 — Technical Requirements

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NRCB USE ONLY

ENVIRONMENTAL RISK SCREENING INFORMATION

ERST for **proposed** facilities

See Decision Summary LA24035 for comments

Facility	Groundwater score	Surface water score	File number

ERST for **existing** facilities

All facilities are presumed to pose a low risk to groundwater and surface water. See Decision Summary LA23034

Facility	Groundwater score	Surface water score	File number

ERST related comments:

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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)

NRCB USE ONLY

WATER WELL AND SURFACE WATER INFORMATION

Well IDs: No water well in area

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:

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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)

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**
Van Giessen Growers	NE 27-09-19	550M	RG	1	500 m		yes
Additional residences:							
F. Sera	NW 23-9-19	295 m	RG	1	295 m		yes w. waiver
acreage	SW 26-9-19	508 m	RG	1	508 m		yes
acreage	SW 26-9-19	581 m	GCR	2	581 m		yes

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)**
John Slingerland Farms	SW 27-09-19	55	irrigated	55 ha	
Tempest Red Angus	SE 27-9-19	43	irrigated	43 ha	
Giessen	NW 27-9-19	100 acres	irrigated	100 acres (40.47 ha)	
			Total	138.47 ha	

* 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)

Minimum Distance Separation (MDS) Waiver (declaration)

Applicant information NRCB application number: _____

Operator/operation name: David Slingerland / Tempest Red Angus

Address: Box 964 Coaldale Postal Code: T1M 1M8

Legal land location of confined feeding operation: SE 27-9-19 W4

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

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

Following is a summary of the proposed development:

- The current scope of my confined feeding operation (CFO), including the type, number, and category of livestock, if any, is:
  Currently feeding 1000 Beef backgrounder and feeders
- My application for a new AOPA permit proposes the following changes to the existing livestock category, type and/or capacity at my CFO:
  Propose to increase to 2000 beef backgrounds and feeders
- The proposed new CFO facility(ies), or changes to the existing CFO facilities, including manure storage, manure storage volume and any other pertinent details, if any, are (attach a site layout plan if available):

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

Permit Applicant: [redacted] Date: August 12 2024

Residence owner(s) to initial: F.S.

Minimum Distance Separation (MDS) Waiver (declaration)

Residence owner(s) information

ALL Names on land title: Frank Sera

Legal land location of residence(s): NW 23-79-19 W4

Telephone number(s)[1]: [redacted] Email address(es)[1]: _____

Address(es)[1] and Postal code(s)[1]: [redacted]

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

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

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

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

Application number _____.

X [redacted]
ner(s) on title

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

Date: August 12, 2024

NRCB Manure spreading agreement August 22,2024

Van Giessen Growers agrees to provide Tempest Red Angus with a minimum of 100 acres annually for the purpose of spreading dry feedlot manure. Manure is to be spread on the land location NW 27-9-19 W4 owned by van Giessen Growers:

Van Giessen

DocuSigned by:

[redacted]

E68F7743D51746A...

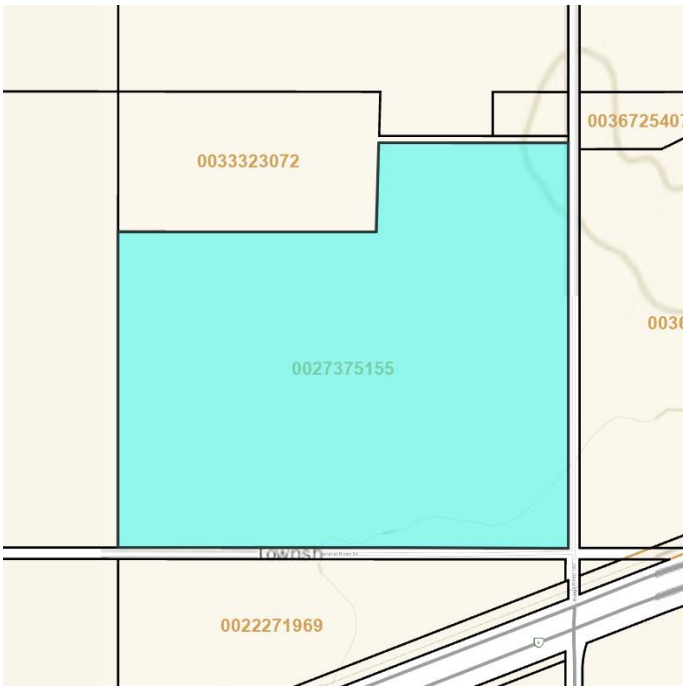
Peter Van Giessen

Tempest Red Angus

Transportation and Economic Corridors Permit

Request for Development Permit - On Private Property in Proximity of a Provincial Highway - Approved

Permit Number:	2024-0046247	**Highway(s):**	3, 512, 3X
Issued to (Permittee):	Dave Slingerland Coaldale Alberta T1M 1M8 [redacted]		
Legal Land Location:	QS-SE SEC-27 TWP-009 RGE-19 MER-4	**Municipality:**	Lethbridge County
Approved By:	Leah Olsen	**Issuing Office:**	Southern Region / Lethbridge
Issued Date:	October 9, 2024		
Description of Development:	Expansion of existing confined cattle feeding corrals 60 metres north of existing corrals.		



Transportation and Economic Corridors Permit No. **2024-0046247** is issued to the above named Permittee under authority of Section 14 of the *Highways Development and Protection Act* (the Act) authorizing the development(s) listed herein, and a further application is required for any changes or additions.

The approved site plan forms a part of this permit and any changes to the approved site plan will require an amendment or a new permit application.

This permit is subject to the following terms and conditions, which should be carefully reviewed:

1. This permit is subject to the provisions of Section 11-19 inclusive of the Highways Development and Protection Act (Chapter H-8.5 2004), amendments thereto, and Highways Development and Protection Regulation (Alberta Regulation 326/2009) and amendments thereto.

2. The applicant is aware that Highways 3 & 4 form an integral part of the National Highway System (NHS) and the North/South Trade Corridor (NSTC) of which the ultimate service classification is freeway. Given this, Transportation and Economic Corridors long-range freeway access management plans include a realignment of Highways 3 & 4 at this location.

   Transportation and Economic Corridors has endorsed the Highways 3 & 4 – Lethbridge and Area NHS & NSTC – Functional Planning Study – Final Report #R–970, which has identified alignment and right-of-way requirements for the future corridor. The document is available for review upon request. The timing of the realignment has yet to be determined however and to reiterate, at this juncture is considered to be long-range.

3. This permit is issued subject to any other municipal, provincial, or federal approvals that may be required. Issuance of a permit by Transportation and Economic Corridors does not guarantee the permittee will be able to obtain other required approvals and does not excuse violation of any regulation, bylaw, or Act that may affect the proposed development.

4. The Permittee consents to a person designated by Transportation and Economic Corridors to enter upon land during construction and again upon completion of construction for the purpose of inspection to ensure the terms and conditions of this permit are met.

5. All works authorized by this permit shall be constructed, altered, maintained or operated at the sole expense of the Permittee. The permittee expressly waives any right to claim damages or compensation (including injurious affection) for development, signs or other encumbrances that are placed in an area required for future widening of the highway right of way for highway improvement purposes

6. In consideration of the permit issued in respect to this development, the Permittee shall indemnify and hold harmless Transportation and Economic Corridors, its employees and agents from any and all claims, demands, actions and costs whatsoever that may arise, directly or indirectly from anything done or omitted to be done in the construction, maintenance, alteration or operation of the works authorized.

7. The Permittee shall conform to the approved site plan. Failure to conform to the approved site plan without an approved amendment may result in enforcement measures as laid out in the Act

8. The proposed development is to be set back from the highway right of way, as shown on the attached site plan. No encroachment within this setback distance is permitted without an amendment to this permit.

9. Any yard lights, area lighting or other lights that are considered distracting to the motoring public, or create a traffic hazard, are not permitted.

10. Transportation and Economic Corridors is under no obligation to reissue a permit if the development is not commenced before expiry of this permit

11. This permit approves only the development contained herein, and a further application is required for any changes or additions

12. No new direct highway access will be permitted. Access shall be via the local municipal road or existing access.

13. Pursuant to Section 11(2) of the Highways Development and Protection Regulation, a permit for a sign is not required for a business identification sign for this development provided that the sign is located no closer to the highway than the proposed building or is no more than 30m from either side of the building. If a proposed sign does not meet these requirements the landowner shall submit a separate sign application.

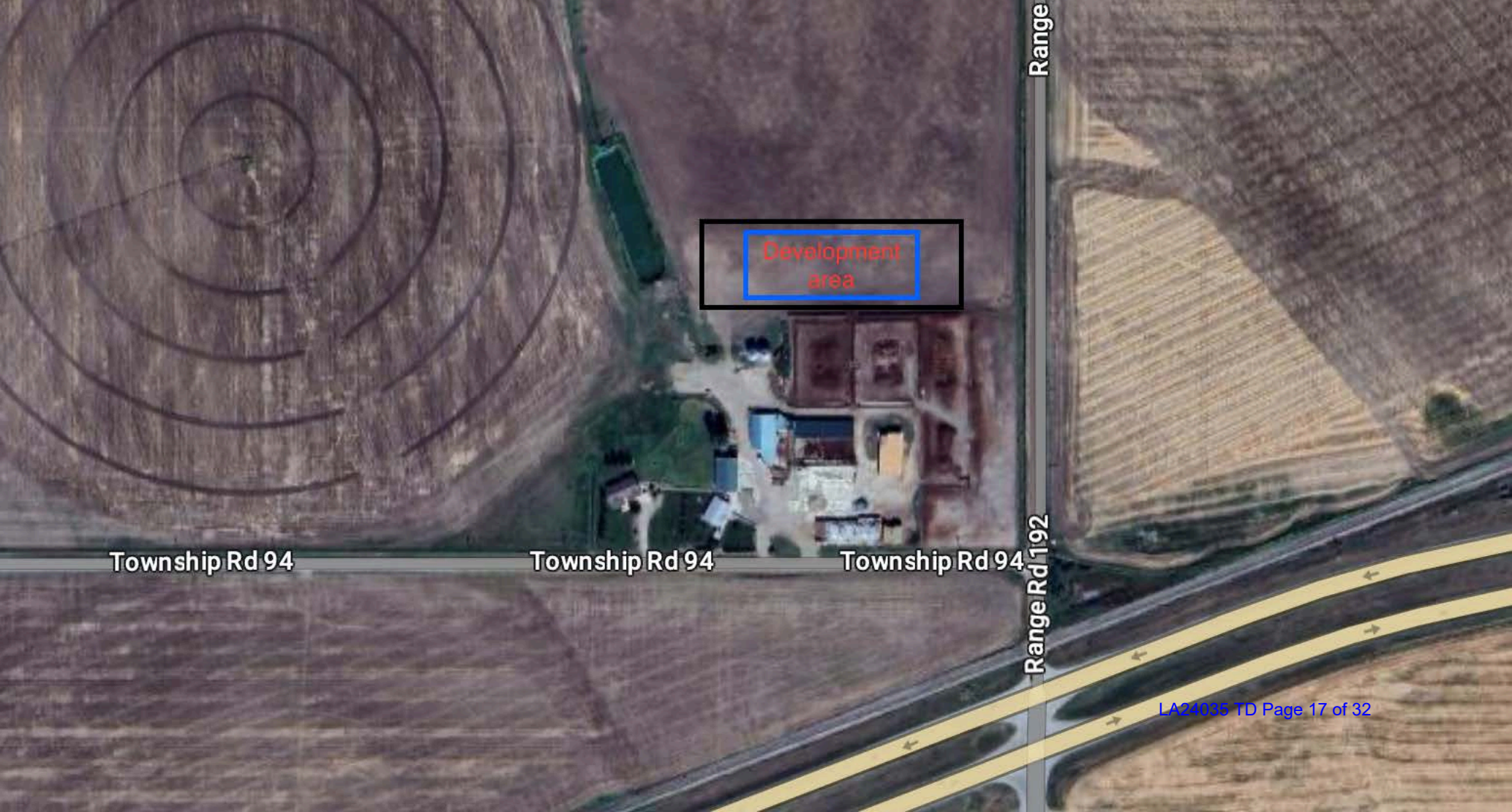
14. Transportation and Economic Corridors accepts no responsibility for the noise impacts or other impacts of highway traffic upon any development or occupants thereof.

Failure to comply with the terms and conditions of this permit is an offense pursuant to Section 35 of the Highways Development and Protection Regulation (the Regulation), and may result in enforcement or penalties as described in Section 55 of the Act and Section 35-36 of the Regulation.

This permit is valid for a period of **two years from the date of issuance**. If the works authorized by this permit have not commenced within this timeframe, the permit expires and the Permittee must submit a request for an extension, or reapply for a new permit, if they wish to proceed. Transportation and Economic Corridors is under no obligation to reissue a permit if the development is not commenced before expiry of this permit.

Please contact Transportation and Economic Corridors through RPATH application if you have any questions, updates, additions, or require additional information.

Issued by **Leah Olsen, Development and Planning Tech,** on **October 9, 2024** on behalf of the Minister of Transportation and Economic Corridors pursuant to *Ministerial Order 52/20 – Department of Transportation and Economic Corridors Delegation of Authority*


Development area
Township Rd 94
Township Rd 94
Township Rd 94
Range Rd 192
Range

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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: 394 m Category 2: 525 m Category 3: 656 m Category 4: 1050 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: 197 acres (80 ha) irrigated

Land base listed: 138 ha irrigated

Area not suitable: already subtracted

Available area 138 ha 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 New CFO - approved Approval LA23034

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

August 12, 2024	

CORRESPONDENCE WITH MUNICIPALITIES AND REFERRAL AGENCIES

Date deeming letters sent: September 3, 2024

Municipality: Lethbridge County

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

Alberta Health Services: NA

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

Alberta Environment and Parks: ☐ N/A

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

Alberta Transportation: ☐ N/A

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

Alberta Regulatory Services: ☒ N/A

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

Other: SMRID ☐ N/A

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

Other: Atco Gas ☐ N/A

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

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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)*

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

1. (560' x 180') long row
2. _____

Manure storage capacity

	Length (m)	Width (m)	Depth below ground level (m)	NRCB USE ONLY Estimated storage capacity (m^3)
1.	560' (170.6 m)	180' (54.9 m)	0	
2.				
			TOTAL CAPACITY	9 mth

☒ 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
Catch basin

Naturally occurring protective layer details

Thickness of naturally occurring protective layer	3.2 (m)	Provide details (as required)	
Soil texture	_____% sand	_____% silt	_____% clay
Hydraulic conductivity - naturally occurring protective layer	Depth and type of soil tested: 3.2/CL	Hydraulic conductivity (cm/s): 3.2E-07 cm/sec	Describe test standard used: Falling head

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

NRCB USE ONLY

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

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: below drilling depth (9.2 m) Requirements met: ☒ YES ☐ NO

Depth to uppermost groundwater resource: No wells in area Requirements met: ☒ YES ☐ NO

ERST completed: ☒ see ERST page for details

Surface water control systems

Requirements met: ☒ YES ☐ NO Details/comments:

Existing catch basin with sufficient volume (1575 m^3, required are 965 m^3)

Naturally occurring protective layer details

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

Fairly uniform layering of till materials (clay loam)

Catch Basin Storage Volume Calculator

Construction Dimensions of Catch Basin

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

Overall Dimensions of Catch Basin			Catch Basin Dimensions
Total Length*[4]	42.0	m	138 ft
Total Width*[4]	28.0	m	92 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	18.0	m	59 ft
Width of Bottom	4.0	m	13 ft
Capacity @ top of Bank	*2,112*	m^3	*Capacity (@tob) 74,585 ft^3 464,575 Imp. Gal.*

Design Capacity of Catch Basin (freeboard level)			Design Capacity (freeboard level)
Length (design capacity depth)	39.0	m	128 ft
Width (design capacity depth)	25.0	m	82 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)	**1,575**	m^3	55,621 ft^3
			346,451 Imp. Gal.
level)	*975*	m^2	*10,495* ft^2

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

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	171	55	9,365.9
7	123	62	7,626.0
8	57	34	1,938.0
9			0.0
10			0.0
		Total Area (m^2)	**18,930**

Rainfall (Select Town [3])

Coaldale 85

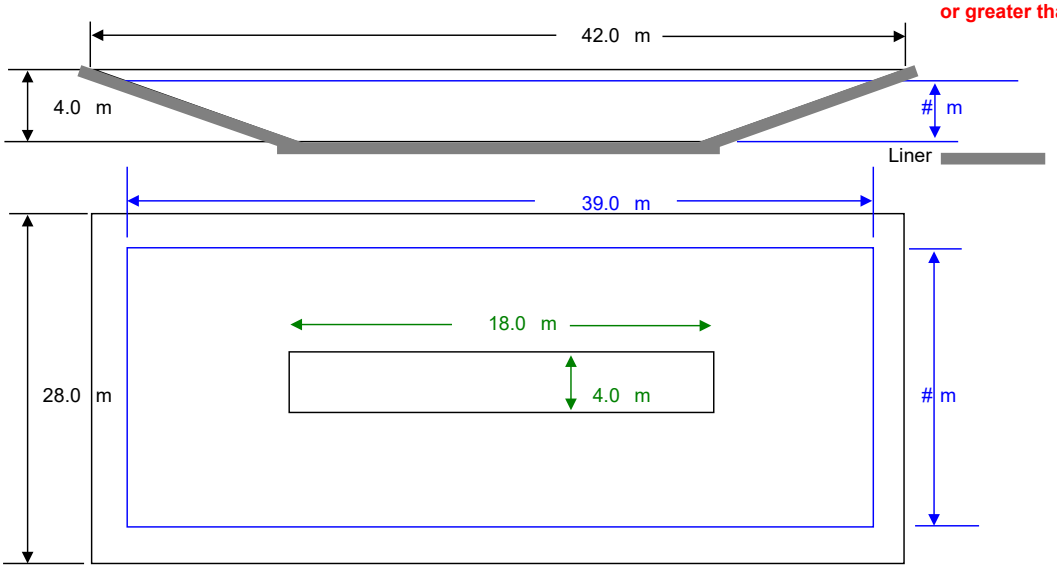
AOPA Design Rainfall 85 mm

Minimum Catchbasin Storage Volume Required

965 m^3 ** 34093.731 ft^3

212364.15 Imp. Gal.

**** Design capacity of catch basin should be equal to or 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

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

12 April 2023

WSP File: BX30746

Tempest Red Angus
P.O. Box 964
Coaldale, AB T1M 1M8

Attention: David Slingerland

Re: Geotechnical Review and Evaluation
NRCB Permitting of Existing/Proposed Pens & Catch Basin
SE-27-009-19-W4M, near Coaldale, 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 an area of both existing and proposed new cattle pens as well as a proposed catch basin, located near the southeast corner of SE-27-009-19-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, six (6) boreholes were advanced at the site on January 23, 2023. The boreholes were advanced at the approximate locations denoted as DS1-23 to DS6-23 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 3.0 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 a layer of lacustrine clay loam, which was generally underlain by stiff medium plastic clay till. Neither free groundwater, nor a groundwater resource (as defined by the AOPA) were encountered within the 9.2 m drilling depth at the site.

Samples of soil collected from the screened zone of boreholes DS2-23 and DS4-23 were 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
DS2-23 / 5.0-6.0m	28	37	35
DS4-23 / 1.5-3.0m	32	36	32

To measure the *in situ* permeability of the subsurface soils, 50 mm diameter PVC monitoring wells were constructed in boreholes DS2-23 and DS4-23. Test well DS2-23 (proposed catch basin) was screened from 5.8 m to 9.2 m depth, and test well DS4-23 (pen area) was screened from 1.65 m to 3.2 m depth. Well saturation of the 50 mm diameter monitoring wells was carried out by filling the monitoring well to the top for several consecutive days. After several days, the average 24-hour water drop at DS2-23 was 0.1 m and the average 24-hour water drop at DS4-23 was 1.68 m. During the testing, the wells were protected from freezing.

To calculate the permeability of the screened portion of the clay till strata at the test well locations, 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 indicate an *in situ* hydraulic conductivity, k_s, of 3.2×10^{-9} cm/s at DS2-23 and a hydraulic conductivity, k_s, of 3.2×10^{-7} cm/s at DS4-23.

Using the measured permeability of the clay stratum, the 3.2 m of clay screened at DS2-23 is estimated to represent the equivalent of over 100 m of naturally occurring materials having a hydraulic conductivity of 1×10^{-6} cm/s (the reference standard in AOPA). At DS4-23, the 1.55 m of clay that was screened is estimated to represent the equivalent of approximately 5 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 solid manure storage (minimum 2 m, Section 9.5-c) and for catch basins (minimum 5 m, Section 9.5-b).

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 existing/proposed pens and proposed catch basin 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

13 April 2023

John Lobbezoo, P.Eng.
Associate Engineer, Geotechnical
Lethbridge & Medicine Hat Area Lead

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: 13 April 2023
PERMIT NUMBER: P004546
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

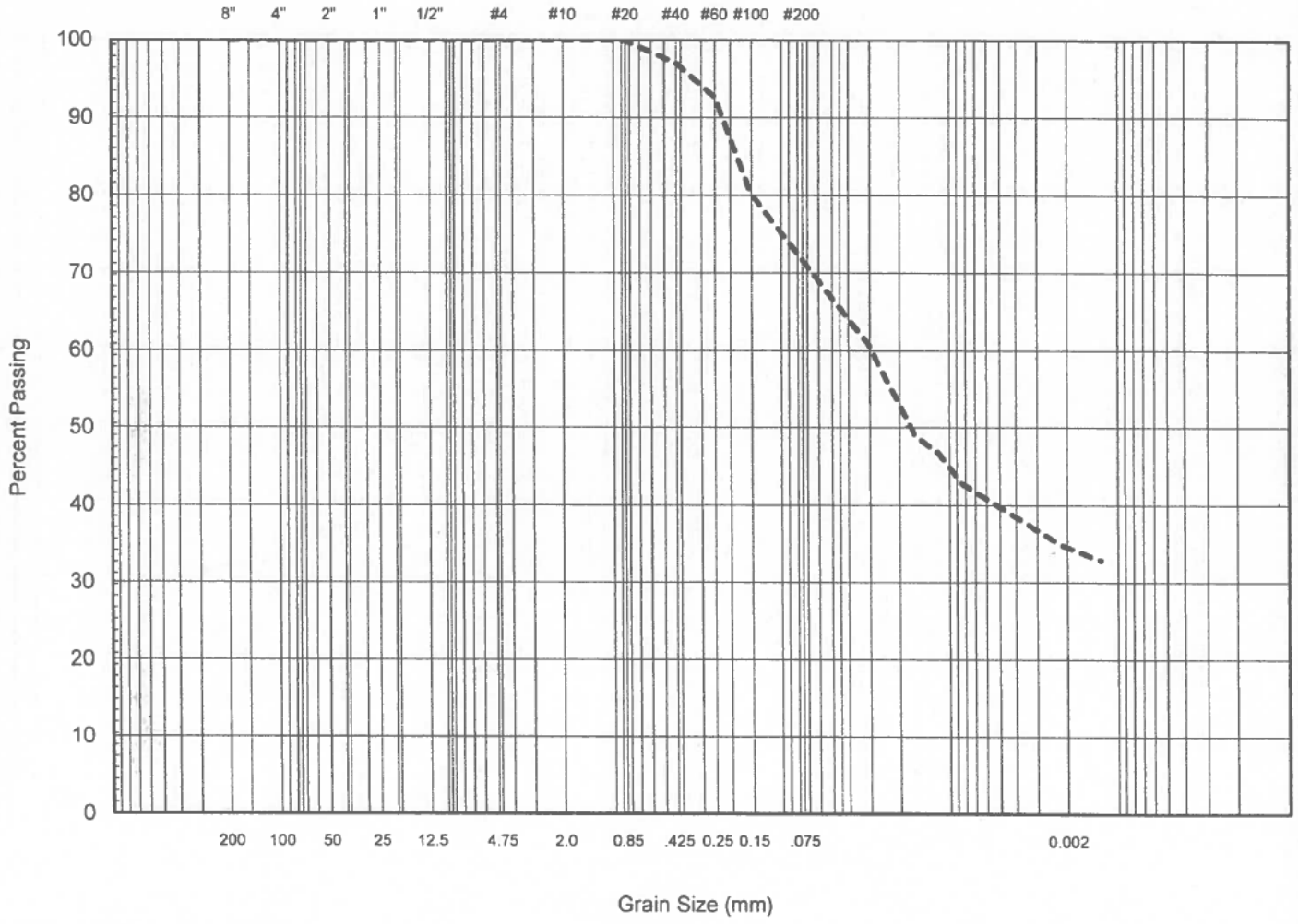
Attachments
- Figure 1 Borehole Locations
- In Situ Permeability Test Calculations
- Hydrometer Test
- Soil Profile and Parent Material Description, Chilako Drilling Services

igure 1
orehole Locations
empest Red Angus
/SP File: BX30746
.pril, 2023

HYDROMETER TEST

WSP E&I Canada Limited

COBBLES	GRAVEL		SAND			SILT	CLAY
	Coarse	Fine	C	M	F		



Remarks:

Summary

D10 =	#N/A	mm	**Gravel**	0	%
D30 =	#N/A	mm	**Sand**	28	%
D60 =	0.0294	mm	**Silt**	37	%
Cu =	#N/A		**Clay**	35	%
Cc =	#N/A				

Project No: BX30746
Hole No: DS2-23
Depth (m): 5.0-6.0

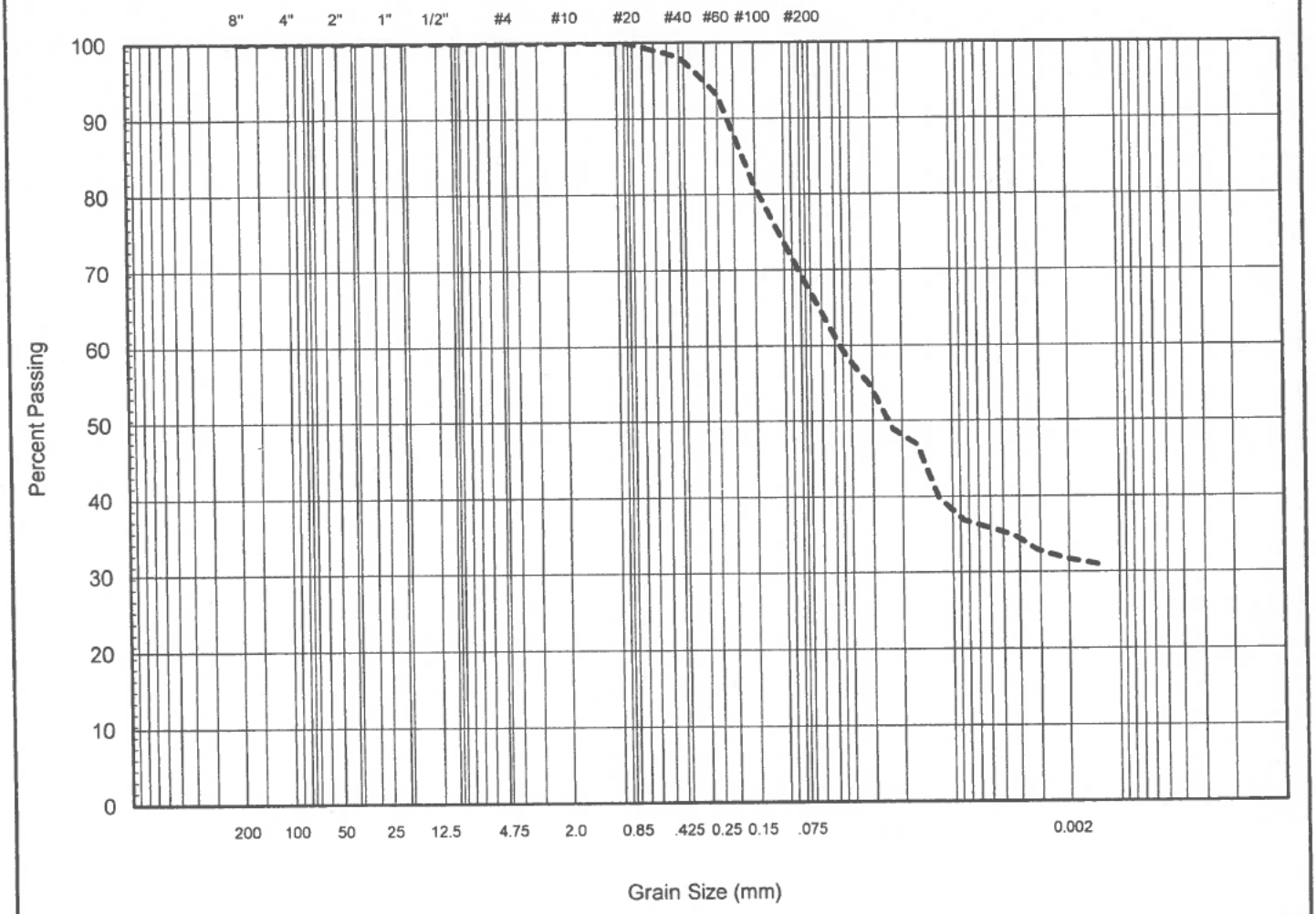
Client: D.Slingerland
Sample: --
Date: March 30, 2023

Tech: TMW

HYDROMETER TEST

WSP E&I Canada Limited

COBBLES	GRAVEL		SAND			SILT	CLAY
	Coarse	Fine	C	M	F		



Remarks:

Summary

D10 =	#N/A	mm	**Gravel**	0	%
D30 =	#N/A	mm	**Sand**	32	%
D60 =	0.0474	mm	**Silt**	36	%
Cu =	#N/A		**Clay**	32	%
Cc =	#N/A				

Project No: BX30746
Hole No: DS4-23
Depth (m): 1.5-3.0

Client: Tempest Red Angus
Sample: --
Date: March 30, 2023 **Tech:** TMW

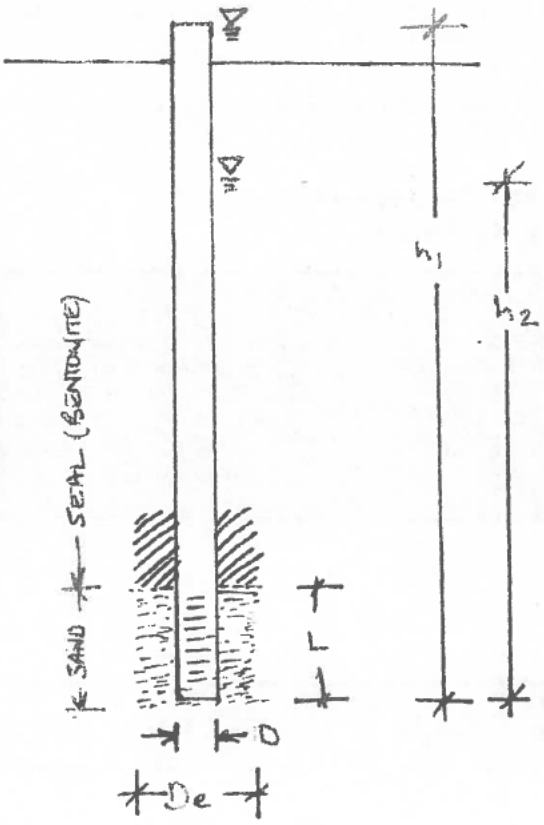
DS2-23

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)



DS2-23 - Tempest Red Angus

WSP File: BX30746

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	3.20	length of sand section (m)
	h1	9.60	initial height of water above base of hole (m)
	h2	9.50	final height of water above base of hole (m)
	t	24.0	time of test (h)

k_s = 3.2E-09 cm/sec

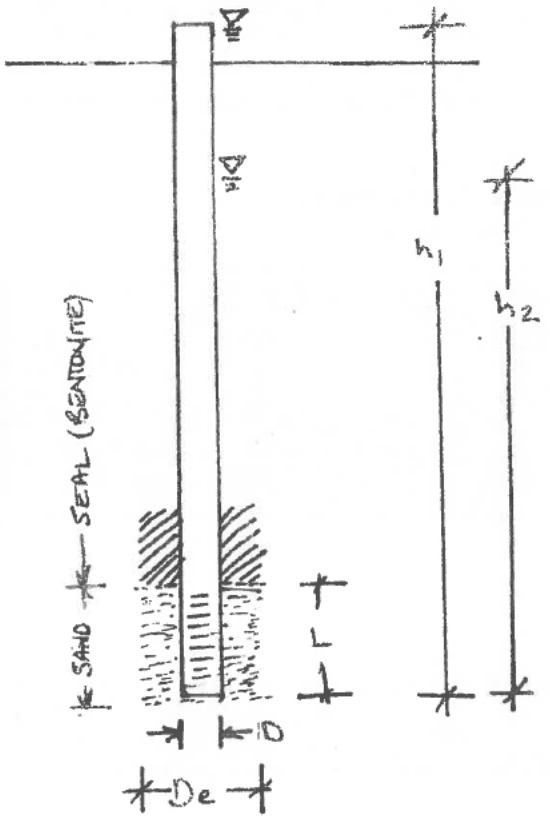
DS4-23

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)



DS4-23 - Tempest Red Angus

WSP File: BX30746

INPUT VARIABLES	Terms	Value	Definition
	D	0.0520	diameter of standpipe (m)
	De	0.1500	diameter of borehole (m)
	L	1.55	length of sand section (m)
	h1	3.80	initial height of water above base of hole (m)
	h2	2.12	final height of water above base of hole (m)
	t	24.0	time of test (h)

k_s =	3.2E-07 cm/sec

CHILAKO DRILLING SERVICES LTD

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

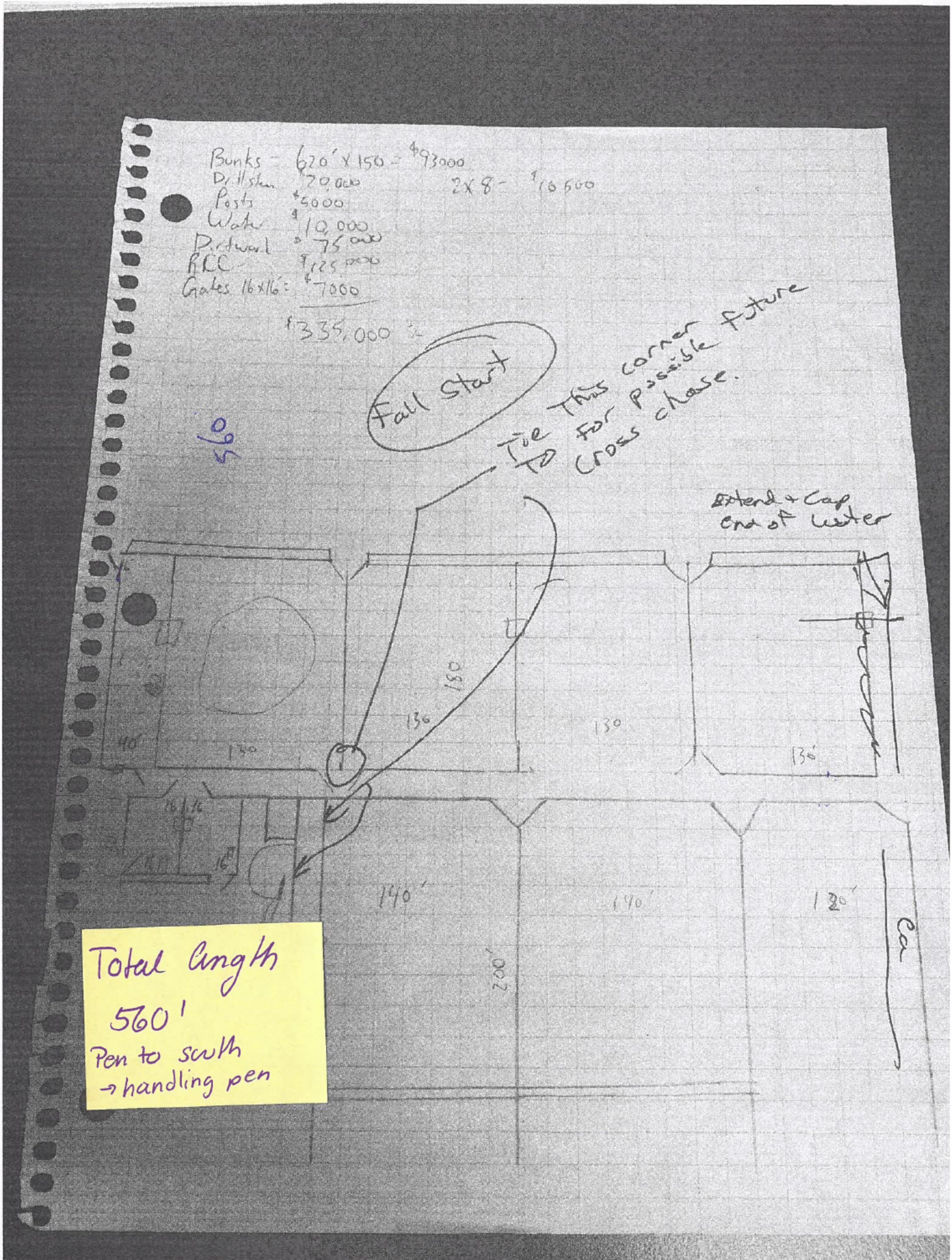
SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: SE27-9-19W4, Dave Slingerland Date: 23-Jan-23

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
DS1-23	0392772	0-0.5	CL	F	Lac		
	5512744	0.5-1.2	CL	VM	Lac		Soft, med plastic, brown
		1.2-3.1	CL	M	Till		Stiff, med plastic, brown
		3.1-6.4	CL	M	Till		Stiff, med plastic, yellow brown, iron staining
		6.4-9.2	CL	M	Till		Stiff, med plastic, brown
DS2-23	0392769	0-0.5	CL	F	Lac		
	5512779	0.5-1.0	CL	VM	Lac		Soft, med plastic, brown
		1.0-3.7	CL	M	Till		Stiff, med plastic, brown
		3.7-6.5	CL	M	Till	5.0-6.0	Stiff, med plastic, yellow brown, iron staining
		6.5-9.0	CL	M	Till		Stiff, med plastic, brown, a few sand streaks
							50mm H.C. Well installed to 9.0m
							Screen: 9.0-6.0m
							Sand: 9.0-5.8m
							Bentonite: 5.8-0.0m
							Stickup; 0.6m
							Hole Diameter: 0.15m
DS3-23	0392765	0-0.5	CL	F	Lac		
	5512833	0.5-1.1	CL	M	Lac		V. Firm, med plastic, brown
		1.1-1.7	CL	M	Till		Stiff, med plastic, brown
		1.7-4.6	CL-C	M	Till		Stiff, med plastic, brown
		4.6-9.2	CL-C	M	Till		Stiff, med plastic, yellow brown, iron staining
							25mm WTW installed to 9.2m
DS4-23	0392679	0-0.5	CL	F	Lac		
	5512836	0.5-1.2	CL-SiCL	VM	Lac		Soft, med plastic, olive brown-brown
		1.2-3.2	CL	M	Till		Stiff, med plastic, brown
							50mm H.C. Well installed to 3.2m
							Screen: 3.2-1.7m
							Sand: 3.2-1.65m
							Bentonite: 1.65-0.0m
							Stickup: 0.6m
							Hole Diameter: 0.15m
DS5-23	0392701	0-0.5	CL	F	Lac		
	5512891	0.5-1.2	CL-SiCL	M-VM	Lac		Soft, med plastic, olive brown
		1.2-3.0	1.2-3.0	M	Till		Stiff, med plastic, brown
DS6-23	0392907	0-0.5	CL	F	Fill		
	5512756	0.5-0.7	CL	M	Fill		
		0.7-1.2	CL	M	Lac		Firm, med plastic, olive brown
		1.2-3.0	CL	M	Till		Stiff, med plastic, brown

Legend:

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


Bunks - 620' x 150 = $93000
Drillstem $20,000
2x8 - $16,500
Posts $5000
Water $10,000
Dirtwork $75,000
RCC $125,000
Gates 16x16: $7000
$335,000
Fall Start
Tie this corner for possible future to cross chase.
Extend + Cap end of water
180
130
130
130
130
40
16
140'
140'
130'
200'
Total Length 560'
Pen to south → handling pen