Technical Document LA24020

Part 2 — Technical Requirements



NRCB USE ONLY	Application number	Legal la	nd description
■ Approval	LA24020	SE 5-	14-15 W4M
☐ Amendment			
APPLICATION DISCLOSURE			
This information is collected under the authority of the a provisions of the <i>Freedom of Information and Protection</i> written request that certain sections remain private.	n of Privacy Act. This information is	public unless the	NRCB grants a
Any construction prior to obtaining an NRCB permorosecution.	it is an offence and is subject to	o enforcement a	ction, including
, the applicant, or applicant's agent, have read and uno provided in this application is true to the best of my kno	derstand the statements above, and	d I acknowledge t	hat the information
March 10 2025			
March 10 2025 Date of signing Southwood Stock Far	Signature -	lan Hal	
Corporate name (if applicable)	Print name		
GENERAL INFORMATION REQUIREMENTS			
Proposed facilities: list all proposed confined feeding		ensions. Indicate	whether any of the
proposed facilities are additions to existing facilities. (attach additional pages if needed)	Dir	mensions (m)
Proposed facilities		(length,	width, and depth)
Add 20 Pens (Wes	143.84 m x 45.72 (North pens)	244.0m	x 45.72m X 198m
Expand clean water	storage	37m x	9/m
AO Comment: Clean water storage is not un the NRCB of proposed receiving pens and ha considered ancillary structures.			
Catch Basin 2		38.1 x 19	0.1 x 2.5 deep
Existing facilities: list ALL existing confined feeding	operation facilities and their dimer	nsions	
Existing facilities	Dimensio (length, width	ns (m)	NRCB USE ONLY
SEE NEXT Pac	ie.	6	
		-	
WASH USE ONLY			
NRCB USE ONLY	nder NDCD America LL 44000	2	
AO Comment: CFO is currently permitted u	naer NKCB Approval LA1903	3.	
AO Comment: The applicant notified me on (labeled as catch basin 2) within the area or		be adding a s	econd catch basin



Existing facilities continued	Dimensions (m) (length, width, and depth)	NRCB USE ONLY
Feed lot Pen 1	205m x 24m	Existing facilities confirmed
feed lot Pen 2	96 m x 45 m	
feed lot Pen 2 Feed lot Pen 3	43m x 80 m	
Feed lot Pen 4	40m x43 m	
feed lot Pen 5	35m × 37 m	
Feed lot Pen 5 6	2/3.4mx 6/m	
Feed lot Pens 7	243.8 x 57.3m	
Catch basin	76.2 m x 38.1 m x 4.9 m deep	
		N
		Ú.
	100	



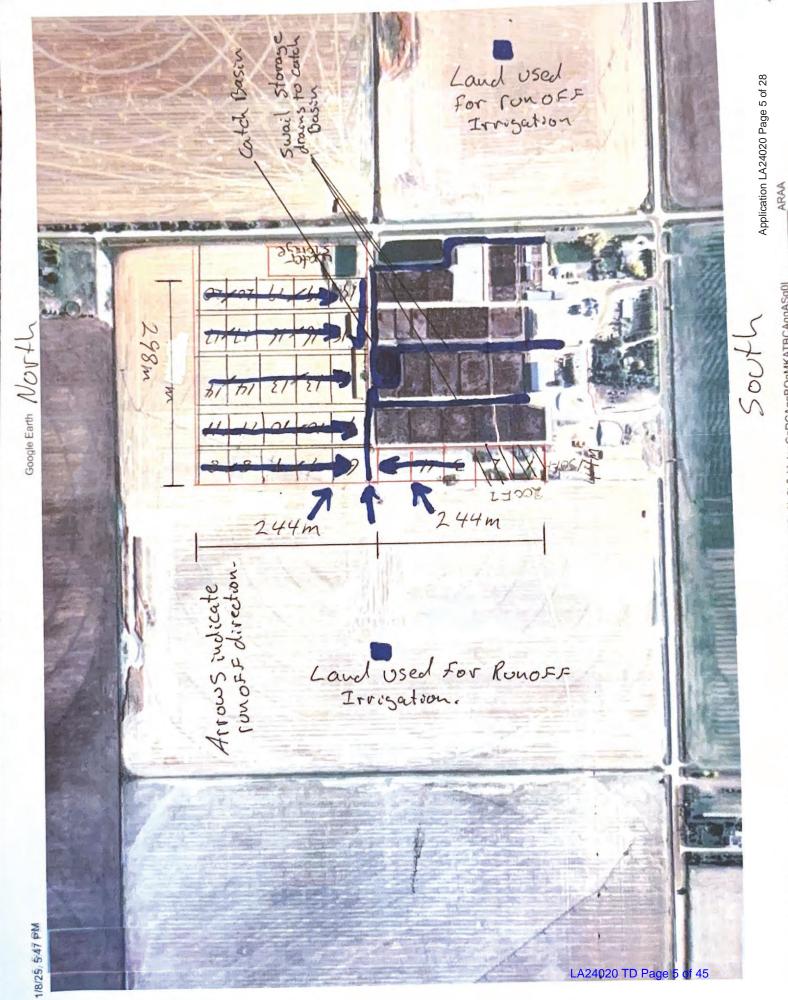
Application under the Agricultural Operation Practices Act for a confined feeding operation, manure collection area, and/or manure storage facility(ies)

Not Replacion	g old Facil	ity	
nstruction completion date for proposed facilit	ties		
estock numbers increase in your Part 2 application, iority for minimum distance separation (MDS).		must be submitted which ma	
estock numbers increase in your Part 2 application, iority for minimum distance separation (MDS). Livestock category and type			
Livestock category and type (Available in the Schedule 2 of the Part 2 Matters (Available in the Schedule 2 of the Part 2 Matters (Available in the Schedule 2 of the Part 2 Matters	a new Part 1 application r	Proposed increase or decrease in number	y result in a loss o
estock numbers increase in your Part 2 application, iority for minimum distance separation (MDS). Livestock category and type Available in the Schedule 2 of the Part 2 Matters Regulation) Livestock category and type	Permitted number Permitted livestock numbers	Proposed increase or decrease in number (if applicable) Proposed increase or decrease in number	Total
Livestock category and type (Available in the Schedule 2 of the Part 2 Matters Regulation) Livestock category and type (Available in the Schedule 2 of the Part 2 Matters Regulation)	Permitted number Permitted livestock numbers	Proposed increase or decrease in number (if applicable) Proposed increase or decrease in number (if applicable) Proposed increase or decrease in number (if applicable)	Total SOCO
Available in the Schedule 2 of the Part 2 Matters Regulation) Livestock category and type (Available in the Schedule 2 of the Part 2 Matters Regulation) Beefcool/Fivishers 900+/k	Permitted number Permitted livestock numbers	Proposed increase or decrease in number (if applicable) Proposed increase or decrease in number (if applicable) Proposed increase or decrease in number (if applicable)	Total Total

Last updated September 11, 2023

East Catch basin (existing) Feedlot pens Feedlot pens 6 South Google Earth NOF H 5 Feedlot pens Recieum Pens Bale Storage 244m 244m North pens West pens 1/8/25, 5:47 PM LA24020 TD Page 4 of 45

45am



ылыны 13906903-112.00610492,782,40956456a,1620,11994329d,35y,0h,0t,0r/data=CgRCAggBOgMKATBCAggASg0I



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

	I DO want my water licence	application coupled to my A	AOPA permit application.
Sigr	ned thisday of	, 20,	
			Signature of Applicant or Agent
OP.	TION 2: Processing the A	OPA permit and Water Ac	t licence separately
1.		e CFO will need a new water	licence from EPA under the Water Act for the on.
2.	I (we) request that the NRC CFO's application for a water	CB process the AOPA applica	tion independently of EPA's processing of th
	In making this request, I (v NRCB's decision will not be water licence under the Wa	ve) recognize that, if this AO considered by EPA as impro- ter Act.	PA application is granted by the NRCB, the ving or enhancing the CFO's eligibility for a
4.	I (we) acknowledge that an AOPA permit in the absence whether to grant the <i>Water</i>	e of a Water Act licence will g	populate the CFO with livestock pursuant to a not be relevant to EPA's consideration of
5.	the Water Act licence application of the Water Act.	cation is denied or if the oper This risk includes being requ	ration of the CFO is otherwise deemed to be in uired to depopulate the CFO and/or to cease
6.	AS RELEVANT: I (we) acknowledge and that, pursuant to the B	nowledge that the CFO is loc ow, Oldman and South Sask	kings" (as defined in the Water Act). Eated in the South Saskatchewan River Basin Eatchewan River Basin Water Allocation Order The new surface water allocations.
	Provide: Water licence app		
Sigr	ned this day of	, 20	Signature of Applicant or Agent
1.	development or activity pro	will not need a new licence posed in this AOPA application ber(s) or water conveyance	

WATER CONVEYANCE AGREEMENT

(Water under District's Water Licence)

THIS AGREEMENT is made in duplicate this 12 day of Murch AD 20 25

Between:

BOW RIVER IRRIGATION DISTRICT

of Box 140, Vauxhall, in the Province of Alberta

(hereinafter called the "DISTRICT") of

the First Part

and

SOUTHWOOD STOCK FARMS LTD.

Of Box 545, Vauxhall, in the Province of Alberta (hereinafter called the "APPLICANT") of the Second Part

WHEREAS the DISTRICT is empowered under Section 21 of the Irrigation Districts Act to grant and enter into agreements known as Water Conveyance Agreements, and

WHEREAS the DISTRICT has amended the purpose of use of a portion of water within DISTRICT Water License, Priority No. 1992-02-05-010, to purposes other than irrigation and domestic use, and

WHEREAS the APPLICANT has applied to the DISTRICT to enter into a water conveyance agreement to annually convey water to the lands described as:

SE-5-14-15-W4M

(hereinafter called the "PARCEL OF LAND"), which water is part of the amended portion of the DISTRICT'S Water License with Priority No. 1992-02-05-10.

NOW THEREFORE subject to the terms and conditions hereinafter expressed, the parties hereto agree as follows:

- 1. The DISTRICT will annually make available to the APPLICANT up to a maximum of 102 acre feet of water for the purpose of agricultural (feedlot) use to be conveyed through the irrigation works of the DISTRICT, not in a continuous flow, but as it shall be available, to a Point of Delivery off of D3 PIPELINE in the SE-5-14-15-W4M, for agricultural (feedlot) purposes only and which water is to be used exclusively on the PARCEL OF LAND.
- 2. The APPLICANT shall be responsible for all costs to supply, install and maintain the turnout from the irrigation works of the DISTRICT at the Point of Delivery as well as the APPLICANTS water diversion and distribution system, and to make any alterations or additions necessary to the irrigation works of the DISTRICT in order to take delivery of water. The turnout and any alterations to the DISTRICT'S works shall be designed and constructed according to the DISTRICT'S specifications and subject to the DISTRICT'S approval. The APPLICANT shall maintain the turnout to the continued satisfaction of the DISTRICT.
- 3. The APPLICANT hereby acknowledges and agrees that the water in the irrigation system of the DISTRICT may not be potable or may not be suitable for irrigation or other purposes, and the DISTRICT

WATER CONVEYANCE AGREEMENT (Water under District's Water Licence)

makes no representation, warranty or guarantee, express or implied that the water delivered under this agreement is potable or suitable for the APPLICANT's purposes and the APPLICANT agrees to accept the water delivered in the condition in which it may be found at the Point of Delivery from time to time and to provide such testing, treatment or filtering as the APPLICANT considers necessary.

- 4. The APPLICANT acknowledges that the irrigation system of the DISTRICT is an open ditch system subjecting the water therein to contamination from all manner of environmental, human and animal factors beyond the control of the DISTRICT and the DISTRICT does not regulate, control or monitor the quality of the water in its system.
- 5. The DISTRICT shall not be liable for any claim of loss, injury or damage whatsoever arising out of the failure or inability of the DISTRICT to supply water for the purposes covered by this agreement.
- 6. This agreement shall constitute a yearly term from the date noted above and shall continue in full force and effect from year to year with the APPLICANT having the option of termination of this agreement subject to notice of termination in writing by Registered Mail or in person at the addresses of service listed here below, and giving a minimum of 60 days' notice prior to the effective date of the termination.

BOW RIVER IRRIGATION DISTRICT P.O. Box 140, VAUXHALL, ALBERTA TOK 2K0

- The APPLICANT is solely responsible for all costs, approvals and authorizations to construct, operate and maintain his water diversion and distribution system.
- 8. The APPLICANT will indemnify and save harmless the DISTRICT from any and all injury and damage by reason of the seepage of water from the APPLICANT's conveyance, pumping and storage works and/or from rights of way and easements or titled lands.
- 9. All water diverted from the works of the DISTRICT by the APPLICANT shall be metered by the APPLICANT through an accurate water meter located at or near the Point of Delivery, installed and maintained in good working order at the cost of the APPLICANT, with unrestricted access to the meter by the DISTRICT, unless an alternate method of estimating volumes is agreed upon.
- 10. The APPLICANT shall record and forward to the DISTRICT at its address of service, a report of water diverted under this agreement on a per month basis with monthly reports to be received by the DISTRICT no later than the 15th of the following month, unless an alternate method of estimating volumes is agreed upon and the need for monthly reporting is waived by the DISTRICT.
- 11. The DISTRICT will invoice the APPLICANT on an annual basis and the APPLICANT shall annually pay to the DISTRICT a conveyance fee per acre foot as established by DISTRICT By-Laws for the entire volume of water agreed upon in Clause 1 of this agreement regardless of whether or not the actual annual diversion and use by the APPLICANT was less than the agreed upon amount.
- 12. In the event the APPLICANT, in any one twelve month period beginning November 1st of one year and ending October 31st of the following year, diverts or uses an amount of water exceeding the total volume of water agreed upon in Clause 1 of this agreement, the APPLICANT must pay double the conveyance fee as noted in Clause 11 of this agreement, for each acre foot of water diverted in excess of the agreed upon amount.

WATER CONVEYANCE AGREEMENT (Water under District's Water Licence)

- 13. In addition to the sums payable under Clause 11 and Clause 12 above, the APPLICANT also agrees to pay such amounts as may be imposed from time to time pursuant to Section 132 of the Irrigation Districts Act as "penalties on arrears", which shall apply to all sums payable which have not been paid by the APPLICANT within 30 days of billing.
- 14. In the event, in any twelve month period, beginning October 1st one year and ending September 30th of the following year, the DISTRICT determines that additional water over and above the agreed upon amount of water to be annually made available to the APPLICANT as noted in Clause 1of this agreement, is not available for the APPLICANT, the DISTRICT will notify the APPLICANT upon which time the APPLICANT is not allowed to withdraw more than the agreed upon amount.
- 15. Nothing in this agreement shall be construed as granting to or conferring upon the APPLICANT any proprietary right or interest in any works owned or operated by the DISTRICT.
- 16. In the event the APPLICANT sells or transfers the operations benefited by this agreement to another party and application is made to the DISTRICT to transfer this agreement to the new party, this agreement will be transferred to the new party subject to the stated purpose of use of water and location of use not changing.
- 17. Any change in the purpose of use of water or location of use is strictly prohibited.
- 18. a) Should the APPLICANT be in default of any of the covenants herein provided, the DISTRICT may, upon notice to the APPLICANT, reduce or terminate the delivery of water to the APPLICANT until such time as the APPLICANT has remedied his default.
 - b) The exercise by the DISTRICT of its rights under Clause 18. a) above, shall not be construed as a termination by the DISTRICT of this agreement.

THIS AGREEMENT is executed by the Parties as of the date shown on the first page of the Agreement.

BOW RIVER IRRIGATION DISTRICT:	APPLICANT:	



NRCB USE ONLY WATER WELL AND	SURFACE	WATER INFORMATION	ON	
Well IDs: 2861	76 (only used	to determine UGR)		
<u></u>				
Surface water related co	ncerns from dir	rectly affected parties or refe	erral agencies:	☑ YES ☐ NO
		ectly affected parties or refe	rral agencies:	☑ YES ☐ NO
Water wells 🔽 N/.				
<u> </u>		ance requirements applied:	YES NO Condition	required: YES NO
Surface water		_		
If applicable, exemption	for 30 m distar	nce requirements applied:	」YES □ NO Condition	required: YES NO
Water Well Exemption	Screening To	ool 🔽 N/A		
Water Well	ID I	Preliminary Screening	Secondary Screening	Facility
Water Wen		Score	Score	rasinty
	I			
Groundwater or surface	ce water relat	ed comments:		

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

NRCB Conservation Board

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:	Feedlot	Proposed 1:	West pens	
Proposed 2:	North pens	Proposed 3:	Catch Basin 2	

Facili	Facility and environmental risk		Faci	Facilities			NRCB USE ONLY
	information	Existing	Proposed 1	Proposed 2	Proposed 3	Meets requirements	Comments
nisiq bool 1 noi3sm1o1ni	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 × 1 × 1 × 1 × 1 × 1 × 1 × 1 × 1 × 1	⊠ ∨ 1 × 1 = E = E = E = E = E = E = E = E = E =	✓YES □ NO □ YES with exemption	Not in flood plain; confirmed during site visit
	How many springs are within 100 m of the manure storage facility or manure collection area?	NONE				✓ YES ☐ NO ☐ YES with exemption	Confirmed during site visit
rface wat	How many water wells are within 100 m of the manure storage facility or manure collection area?	NONE				✓ YES ☐ NO ☐ YES with exemption	None on site; confirmed 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)	600m	600 m	600 m	600m	YES NO YES with exemption	582 m to slough south-east of CFO
	What is the depth to the water table?		greate	greater than 3.5 m	3.5 m	YES NO TYES with exemption	10.5 m below grade in 2016 AMEC Foster Wheeler report
Dnuo12 m1o1ni	What is the depth to the groundwater resource/aquifer you draw water from?	19 m	19 m	19m 19m	19m	YES NO	19.51 m below grade in Water Well ID286176

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



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
West Pens	Low	Low	LA24020
North Pens	Low	Low	LA24020
Catch Basin 2	Low	Low	LA24020
			_

ERST for existing facilities

Facility	Groundwater score	Surface water score	File number
Feedlot Pens 7	Low	Low	LA19033
Feedlot Pens 6	Low	Low	LA16013
Feedlot Pens 5	Low	Low	LA16013
Feedlot Pens 4	Low	Low	LA16013
Feedlot Pens 3	Low	Low	LA16013
Feedlot Pens 2	Low	Low	LA16013
Feedlot Pens 1	Low	Low	LA16013
Catch Basin	Low	Low	LA16013

ERST related comments:

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



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

					NRCB USE ONLY	Υ.	
Neighbour name(s)	Legal land description	Distance (m)	Zoning (LUB) category	MDS category (1-4)	Distance (m)	Waiver attached (if required)	Meets
John Seamons	NE S-14-15 W4 345	345	RA	1	226	Yes	Yes
Harvey PEP NECK	806 HM SI-H-H 3S	806	RA	1	897	N/A	Yes
John Sensma	NE 32-13-15 WY 558	855	RA	1	492	Yes	Yes
Jason Van Hal	NW 32-13-15 W4 630	630	RA	1	628	N/A	Yes
Colin Guns	NW 4-14-15 W4 700	200	RA	1	631	N/A	Yes

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

				INKED	INCE USE ONET
Name of land owner(s)*	Legal land description	Usable area** (ha)	Soil zone ***	Usable area (ha)	Agreement attached (if required)
Southwood	SE 5-44-15 WY 100 AC	100 AC	Irrigated		Yes (see
	SE 32-13-15 W4 130AC	130Ac			following pages)
	NW 31-13-15 W4 160 AC	160 AC			
	5w9-14-15 W4 155AC	155 AC			
	NE 33-13-15 WY 155AC	155 AC	\rightarrow		
			Total	2,641 acres	

* 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)

AO Comment: See next page and attached manure spreading agreement for additional lands available for manure application.

AO Comment: All lands listed for manure application are irrigated.

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Southwood SE-22-13-15 W4 150 Acre SW-4-14-15 W4 80 Acre NE-32-13-15 W4 150 Acre

Manure Application Agreement

Field Number	Legal Description	Acres Available for Application
(Example: Field 6	W 1/2 of the NW 1/4 of Section 7, T 97 N, R 52 W, Hanson	County, SD 125.8)
	NW 34-14-16 W4	120
9	NE 33 - 14-16 WY	155
3	NW 33 14-16 WM	125
4	NE 32 14 - 16 WY	120
5	SE 32 - 14 - 16 WH	120
L	NE 29-14 -16 WH	172
Bell	NW 29-14-16 WH	172
Gerten	NE 20-13-15 WY	150
Podekop Home	SE 19.14.16 WH	132
20dekop Epp	SW 7-14-160 WH	130
	NW 5-1415 W4	144
	NE 5 - 14 15 WY	140
to spread manure on year to year unless c	the above referenced land for a period of 25 year(s) anceled 30 days prior to the anniversary date of the e made in writing to the above listed person.). This agreement will rene
and Owner (Printed	i): Tim vander Hoek	
(Signature		
Dat	e: Mar. 7/25	

Legal land location of residence(s): SUE 32 13 15 W4	
Legal land location of residence(s).	
Telephone number(s)1: Email address(es)1:	
Address(es) and Postal code(s): POBOX 612 Vauxhall, AB. TOK	21
¹ Please note that personal contact information is for NRCB use ONLY and not publicly released	_
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 LA 24020	
- ppircation number	
idence owner(s) on title	
John Jensma Bety Jensman	

Ap	plicant information		NRCB application	number: LA 2	4020
Ор	erator/operation name:	Southwood	1 STOCK Far	ms Ltd	
Ad	dress: <u>BOX 214</u>	Vacyha	U AB	Postal Code:	Tok 2ko
Le	gal land location of confin	ed feeding operation	1: SE-5-1	4-15	
abi api	ave requested the residence for DS) to their residence for ove. In making this reque plication and a copy of th paration (MDS) Waivers"	the Agricultural Ope st, I have provided to a Natural Resources	eration Practices Act he owner(s) with an a Conservation Boar	t (AOPA) permit app opportunity to revie d (NRCB) Fact She	olication identified w my permit et "Minimum Distance
•	The MDS requirement s have advised the owner this requirement to be w	(s) that section 3(6)	(a) of the Standards	and Administration	Regulation allows
•	That my proposed deve	lopment does not m	eet the required MD	S to the owner's res	sidence; and,
•	That this waiver applies manure production, leve increase the MDS would	of odour production	n, change to the site	increase in livestor plan or change to a	k capacity, annual a facility that would
Fo	llowing is a summary of t	ne proposed develop	oment:		
•	The current scope of my livestock, if any, is:	confined feeding of			ber, and category of
•	My application for a new type and/or capacity at	my CFO: / Finishers	900+165		g livestock category,
	Increase T	0 8000	BEEFFinis	hers	
•	The proposed new CFC manure storage volume Site Planis	and any other pertin	ent details, if any, a	CFO facilities, includ re (attach a site layo	ing manure storage, out plan if available):
	Addrug 20	pens/expo	ending water	erstorage	
I th	ne applicant understa sidence sign this doc	nd that the waive			d owners of the
	mail Anniinnat	200		te: <u>Fof/12</u>	19000
Pel	rmit Applicant:	oignature	Dat	te:	1 1015
Re	sidence owner(s) to init	ial:			

	ALL Names on land title: Johan Magaretha Siemens
ı	egal land location of residence(s): WE 5-14-15 W4
	Felephone number(s)1: Email address(es)1:
,	Address(es)1 and Postal code(s)1: PoBo+230 toK2K0
1	Please note that personal contact information is for NRCB use ONLY and not publicly released
18	am/we are the legal landowner(s) of a residence(s) located at the above noted legal land location/address:
0	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.
Ha	wing considered my/our rights, I/we hereby waive the MDS requirement to my/our residence, with respect to
Ar	plication number <u>LA 24020</u>
AL	plication number
	Signatures of all residence owner(s) on title
7	Tohan Siemens Margaretha Siemens Printed names of all residence owner(s) on title
	Fillited flatiles of all residence owner(s) of title
Da	te: March 19 2025

		informa				lication number: _		520
Ор	erator/o	peration	name:	Southwoo	d STOC	K Farms	LTD	
Ad	dress:	Box	214	Vauxhall	4B.	Pos	tal Code: <u>To</u>	t 2KO
Leg	gal land	location	of confi	ned feeding operation	n: SE	5-14-15		
I ha (MI abo app	ave req DS) to t ove. In plication	uested the heir resident the h	ne reside dence fo his requi copy of the	ence owner(s) named or the Agricultural Ope est, I have provided the ne Natural Resources " available on the NR	below to wa eration Pract he owner(s) Conservation	aive the required nices Act (AOPA) pwith an opportuniten Board (NRCB)	permit application by to review my perfect should be seen to the seen to be s	n identified permit nimum Distance
0	have a	advised t	he owne	set out in section 3 of er(s) that section 3(6)(waived by the owners	(a) of the Sta	indards and Admir	nistration Regul	ation allows
0	That n	ny propos	sed dev	elopment does not me	eet the requi	red MDS to the ov	vner's residence	e; and,
	manur	e produc	ction, lev	s only to this applicati el of odour production ld require a new waiv	n, change to	bed. An increase the site plan or ch	in livestock capa nange to a facilit	acity, annual y that would
Fol	llowing	is a sumi	mary of	the proposed develop	ment:			
•		urrent sco ock, if any	/, is:	sy confined feeding op			ype, number, an	d category of
•				w AOPA permit propo my CFO:	ses the follo	wing changes to t	he existing lives	tock category,
	Inc	creaso	2 10	8000 BEE	F Fini	shevs		
•	manur	e storage	e volume	o facility(ies), or change and any other pertin	ges to the ex ent details, it	tisting CFO facilitie f any, are (attach a	es, including ma a site layout pla	nure storage, n if available):
	Add	ing 2	o pe	ns/expandi	ns water	or Storage		
		icant un		and that the waiver ument.	r is not vali	d unless ALL r	egistered own	ners of the
Peri	mit App	licant:		Signature		Date: _ Ma	rch 19/	125
Res	sidence	owner(s	s) to init	1	(-	

Construction will start at point 628m from residence. A stake has been set to mark location.



AO Emment: Applicant is proposing to construct West pens 628 m from residence on NW 32-13-15 W4 to ensure the required minimum distance separation (MDS) of 626 m is met. The distance of 533 m illustrated is the distance from the ancillary structures (receiving pens and hay bale storage) to the North end of the yard (not the residence) on NW 32-13-15 W4.

Name Address Legal Land Location

MDS Spreadsheet based on 2006 AOPA Regulations

	eadsheet based on 2006 AOPA						
Category of Livestock	Type of Livestock	Factor A	Technology Factor	MU	LSU Factor	Number of Animals	LSU
Feedlot	Beef Cows/Finishers (900+ lbs)	0.700	0.700	0.910	0.4459	9.000	3,567.2
Animals	Beef Feeders (450 - 900 lbs)	0.700	0.700	0.500	0.2450	0,000	3,307.2
Allillais	Beef Feeder Calves (<550 lbs)	0.700	0.700	0.275	0.1348		
	Horses - PMU	0.650	0.700	1.000	0.4550		-
	Horses - Feeders > 750 lbs	0.650	0.700	1.000	0.4550		-
	Horses - Foals < 750 lbs	0.650	0.700	0.300	0.1365		-
	Mules	0.600	0.700	1.000	0.4200		-
	Donkeys	0.600	0.700	0.670	0.2814	-	-
	Bison	0.600	0.700	1.000	0.4200		-
	Other						-
Dairy (*count	Free Stall – Lactating Cows with all associated dries, heifers, and calves*	0.800	1.100	2.000	1.7600		-
lactating cows only)	Free Stall – Lactating Cows with Dry Cows only*	0.800	1.100	1.640	1.4432		-
	Free Stall - Lactating Cows only	0.800	1.100	1.400	1.2320		-
	Tie Stall - Lactating Cows only	0.800	1.000	1.400	1.1200		-
	Loose Housing – Lactating Cows only	0.800	1.000	1.400	1.1200		-
	Dry Cow	0.800	0.700	1.000	0.5600		-
	Replacements – Bred Heifers (Breeding to Calving)	0.800	0.700	0.875	0.4900		-
	Replacements - Growing Heifers (350 lbs to breeding)	0.800	0.700	0.525	0.2940		-
	Calves (< 350 lbs)	0.800	0.700	0.200	0.1120		-
	Other						-
Swine	Farrow to finish *	2.000	1.100	1.780	3.9160		-
Liquid	Farrow to wean *	2.000	1.100	0.670	1.4740		-
(*count	Farrow only *	2.000	1.100	0.530	1.1660		-
sows only)	Feeders/Boars	2.000	1.100	0.200	0.4400		-
	Growers/Roasters	2.000	1.100	0.118	0.2600		-
	Weaners	2.000	1.100	0.055	0.1210		-
0 :	Other				0.0100		-
Swine	Farrow to finish *	2.000	0.800	1.780	2.8480		-
Solid	Farrow to wean *	2.000	0.800	0.670	1.0720		
(*Count sows only)	Farrow only * Feeders/Boars	2.000	0.800	0.530	0.8480		
sows only)	Growers/Roasters	2.000		0.200 0.118	0.3200		
	Weaners	2.000	0.800	0.118	0.1888		
	Other	2.000	0.800	0.055	0.0660		
Poultry	Chicken - Breeders - Solid	1.000	0.700	0.010	0.0070		
1 Guilly	Chicken - Layers - Liquid (includes associated pullets)	2.000	1.100	0.008	0.0176		-
	Chicken - Layers - (Belt Cage)	2.000	0.700	0.008	0.0112		
	Chicken - Layers - (Deep Pit)	2.000	0.700	0.008	0.0112		
	Chicken - Pullets/Broilers	1.000	0.700	0.002	0.0014		-
	Turkey - Toms/Breeders	1.000	0.700	0.020	0.0140		
	Turkey - Hens (light)	1.000	0.700	0.013	0.0091		-
	Turkey - Broilers	1.000	0.700	0.010	0.0070		_
	Ducks	1.000	0.700	0.010	0.0070		-
	Geese	1.000	0.700	0.020	0.0140		-
	Other						
Sheep and	Sheep - Ewes/Rams	0.600	0.700	0.200	0.0840		-
Goats	Sheep - Ewes with lambs	0.600	0.700	0.250	0.1050		-
	Sheep - Lambs	0.600	0.700	0.050	0.0210		-
	Sheep - Feeders	0.600	0.700	0.100	0.0420		-
	Goats - Meat/Milk (per Ewe)	0.700		0.170	0.0833		-
	Goats - Nannies/Billies	0.700	0.700	0.140	0.0686		-
	Goats - Feeders	0.700	0.700	0.077	0.0377		-
Consid	Other	0.000	0.700	0.000	0.0500		-
Cervid	Elk	0.600	0.700	0.600	0.2520		
	Deer	0.600	0.700	0.200	0.0840		
	Other						
Wild Poor	Foodore	2 000					
Wild Boar	Feeders Sow (farrowing)	2.000	0.800	0.140 0.371	0.2240 0.5936	-	-

Total

3,567.2

For New Operations
Dispersion Factor

		Dista	ance
Category	Odour Objective	Feet	Metres
1	41.04	2,666	812
2	54.72	3,554	1,083
3	68.4	4,443	1,354
4	109.44	7,108	2,167

For Expanding Operations
Dispersion Factor
Expansion Factor

1 0.77

		Dista	ance
Category	Odour Objective	Feet	Metres
1	41.04	2,052	626
2	54.72	2,737	834
3	68.40	3,421	1,043
4	109.44	5,473	1,668

Southwood Stock Farm Ltd.

SE-5-14-15-W4

Name Address Legal Land Location

Landbase Requirements (hectares) based on 2006 AOPA requirements

Category of	Type of Livestock	Number of	Dark Brown	Grey	Black	Irrigated
Livestock		Animals	& Brown	Wooded	(ha)	(ha)
			(ha)	(ha)		
Feedlot	Cows/Finishers (900+ lbs)	8000.0	1000.0	832.0	624.0	496.0
Animals	Feeders (450 - 900 lbs)	0.0	0.0	0.0	0.0	0.0
	Feeder Calves (<550 lbs)	0.0	0.0	0.0	0.0	0.0
	Horses - PMU	0.0	0.0	0.0	0.0	0.0
	Horses - Feeders > 750 lbs	0.0	0.0	0.0	0.0	0.0
	Horses - Foals < 750 lbs	0.0	0.0	0.0	0.0	0.0
	Mules	0.0	0.0	0.0	0.0	0.0
	Donkeys	0.0	0.0	0.0	0.0	0.0
	Bison	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
Dairy (*count	Free Stall – Lactating Cows with all associated dries, heifers, and calves*	0.0	0.0	0.0	0.0	0.0
(*count lactating cows only)	Free Stall – Lactating Cows with Dry Cows only *	0.0	0.0	0.0	0.0	0.0
00110 011197	Free Stall – Lactating Cows only*	0.0	0.0	0.0	0.0	0.0
	Tie Stall – Lactating Cows only	0.0	0.0	0.0	0.0	0.0
	The class Educating Control only	0.0	0.0	0.0	0.0	0.0
	Loose Housing - Lactating Cows only		0.0	0.0	0.0	0.0
	Dry Cow (Solid manure)	0.0	0.0	0.0	0.0	0.0
	Dry Cow (Liquid manure)	0.0	0.0	0.0	0.0	0.0
	Replacements – Bred Heifers	0.0	0.0	0.0	0.0	0.0
	(Breeding to Calving) Replacements - Growing Heifers	0.0	0.0	0.0	0.0	0.0
	(350 lbs to breeding)	0.0	0.0	0.0	0.0	0.0
	Calves (< 350 lbs)	0.0	0.0	0.0	0.0	0.0
Swine	Farrow to finish *	0.0	0.0	0.0	0.0	0.0
Liquid	Farrow to wean *	0.0	0.0	0.0	0.0	0.0
(*count	Farrow only *	0.0	0.0	0.0	0.0	0.0
sows only)	Feeders/Boars	0.0	0.0	0.0	0.0	0.0
SOWS OTHY)	Growers/Roasters	0.0	0.0	0.0	0.0	0.0
	Weaners	0.0	0.0	0.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0
Swine	Farrow to finish *	0.0	0.0	0.0	0.0	0.0
Solid	Farrow to wean *	0.0	0.0	0.0	0.0	0.0
(*Count	Farrow only *	0.0	0.0	0.0	0.0	0.0
sows only)	Feeders/Boars	0.0	0.0	0.0	0.0	0.0
	Growers/Roasters	0.0	0.0	0.0	0.0	0.0
	Weaners	0.0	0.0	0.0	0.0	0.0
		0.0				
Poultry	Chicken - Breeders - Solid	0.0	0.0	0.0	0.0	0.0
	Chicken - Layers - Liquid (includes associated pullets)	0.0	0.0	0.0	0.0	0.0
	Chicken - Layers - (Belt Cage)	0.0	0.0	0.0	0.0	0.0
	Chicken - Layers - (Deep Pit)	0.0	0.0	0.0	0.0	0.0
	Chicken - Pullets/Broilers	0.0	0.0	0.0	0.0	0.0
	Turkey - Toms/Breeders	0.0	0.0	0.0	0.0	0.0
	Turkey - Hens (light) Turkey - Broilers	0.0	0.0	0.0	0.0	0.0
	Ducks	0.0	0.0	0.0		
	Geese	0.0	0.0	0.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0
Goats and	Sheep - Ewes/Rams	0.0	0.0	0.0	0.0	0.0
Sheep	Sheep - Ewes with lambs	0.0	0.0	0.0	0.0	0.0
опсор	Sheep - Lambs	0.0	0.0	0.0	0.0	0.0
	Sheep - Feeders	0.0	0.0	0.0	0.0	0.0
	Goats - Meat/Milk (per Ewe)	0.0	0.0	0.0	0.0	0.0
	Goats - Nannies/Billies	0.0	0.0	0.0	0.0	0.0
	Goats - Feeders	0.0	0.0	0.0	0.0	0.0
	Other	0.0			2.0	2.0
Cervid	Elk	0.0	0.0	0.0	0.0	0.0
	Deer	0.0	0.0	0.0	0.0	0.0
	Other	0.0	3.0	3.0	3.0	0.0
Wild Boar	Feeders	0.0	0.0	0.0	0.0	0.0
	Sow (farrowing)	0.0	0.0	0.0	0.0	0.0
	Other	0.0				
	Total Hectares		1,000	832.0	624.0	496.0
	Total Acres		2.471	2055.9	1541.9	1225.6



NRCB USE ONLY										
MINIMUM DISTANC	CE SEPARATIO	ON								
Methods used to determine	e distance (if appli	cable): _	Google	Earth						
Margin of error (if applicab	ole): Survey req	juired*								
Requirements (m): Catego	ory 1: 626	Cate	egory 2:	834	Cat	egory 3:	1,043	Cate	egory 4:	1,668
Technology factor:							☐ YES	☑ NO		
Expansion factor:							☑ YES	□ NO		
MDS related concerns from	n directly affected	parties or	referra	l agencies	s:		☐ YES	☑ NO		
*As MDS is very close included in the approv		hat did n	not prov	vide a wa	niver, a d	conditic	on requiri	ng a sur	vey has k	oeen
LAND BASE FOR MA	ANURE AND C	ОМРО	ST API	PLICAT	ION					
Land base required:	1,225.6 acres ((irrigated	d)							
Land base listed:	2,760 acres (ir	rigated)								
Area not suitable:	119 acres									
Available area	2,641 acres (ir	rigated)			Requiren	nent me	t: 🛭 YES	s 🗆 NO		
Land spreading agreement	ts required:	☑ YES	□ NO							
Manure management plan	:	☐ YES	☑ NO		If yes, p	olan is at	ttached:			
PLANS										
Submitted and attached co	onstruction plans:		☐ YES	☑ NO						
Submitted aerial photos:		+	YES	□ NO						
Submitted photos:			☐ YES	☑ NO						
GRANDFATHERING										
Already completed:		+	YES		□ N/A					
If already completed, see	LA16013									



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.	Feed	lot	Pens	(West Pens)	
	2.	North Per	ns			

Manure storage capacity NRCB USE ONLY Length (m) Width (m) Depth below ground level (m) Estimated storage capacity (m3) 488 143.84 45.72 1. 244 298 TOTAL CAPACITY

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

Surface water control systems

Describe the run-on and runoff control system

- all water/run OFF is directed into a catch basin.
- There are swails and the land naturally slopes to the basin.
 There are wide swails in place to add more storge temporarily is needed.
- a pump is installed in the basin to 2 center Pivols to irrigate the water on

Naturally occurring protective layer details Provide details (as required) Thickness of naturally See attached (Geo Review) occurring protective layer Soil texture Depth and type of soil tested Hydraulic conductivity (cm/s) Describe test standard used Hydraulic conductivity - naturally occurring 1.3 ×10-7 1.4 m insitu protective layer Additional information (attach copies of soil test reports) **NRCB USE ONLY** YES NO Requirements met: YES NO Condition required: YES NO Report attached:



	OMPOST, & COMPOSTING MATER protective layer (cont.)	TALS: Barns, feed	nots, & storage facilities -
Nine menth menure store	age volume requirements met:	☑ YES With STMS	□ NO
Mine month manure stora		YES WITH STIVIS	
Depth to water table:	10.5 m below grade	Requirements met:	☑ YES ☐ NO
Depth to uppermost grou	undwater resource: 19.51 m below grade	Requirements met:	☑ YES □ NO
ERST completed: see	ERST page for details		
Surface water control s	systems		
Requirements met: 🛭 Y	ES NO Details/comments:		
AO Comment: All ru	in-off is directed to catch basins.		
Naturally occurring pro	otective layer details		
Layer specification comm	nents (e.g. sand lenses; layering uniform or ir	regular; number and lo	cation of boreholes):
AO Comment: May 24 with a hydraulic condu	I, 2024, JLECS report shows an approximuctivity between 2.1 x 10 ⁻⁸ cm/s and 2.7	nately 3 m thick natur x 10 ⁻⁸ cm/s.	rally occurring protective layer



										basin
acii	ity description	on / nai	11e (a	s indicated on :	site plan)					
						2.				
						3.				
	rmination of									
				ou calculated th					tch basin	
~	DEE a	1400	COL	Map.	OOTH	reer	in K	ed.		
Cat	ch basin cap	acity								
				Total depth	Depth belo		SI	ope run:ris	se	NRCB USE ONLY
	Length (m)	Width	(m)	(m)	ground lev (m)	rel	Inside end walls	side walls	Outside walls	Calculated storage capacity (excl. 0.5 m freeboard) (m³)
1.	38.1	19.	/	2.5			3	3	3	
2.										
3.										
								TOTA	L CAPACITY	612 m ³
atu	rally occurri	ng prote	ective	layer details						
	ickness of nat				,	Pro	vide details (as require	a)	
U	layer	CLIVE		1.6	(m)					
Soil	texture			36			3	7 %		27 % (12)
			Dont	th and type of s	% sand	LI.	_		silt	
Hvd	raulic conduct	ivity -			son testeu		draulic condu			escribe test standard used ified falling head
natu	irally occurring ective layer		1.6	m clay loam		2.2	2 x 10 ⁻⁷ cm,	/s		
				requirements ca	n be found in		NRCB US	E ONLY		
ech	nical Guideline A	gdex U96-	101				-	Re	quirements n	
f soi	f soil info differs per facility include additional soils page.				e.				ndition requir	
. 50.					I	Da	port attached	VEC NO		



RUNOFF CONTROL CATCH BASIN NRCB USE ONLY	l: Naturally occurring	g protective layer (cont.)	
NRCB USE ONLY			
Catch basin calculator. Total volume @ free	board level: 612 m³ R	unoff capacity requirements met:	☑ YES ☐ NO
Calculation of the volume attached:	☑ YES ☐ NO		
Depth to water table: 10.5 m below (grade	Requirements met:	☑ YES ☐ NO
Depth to uppermost groundwater resource:	19.51 m below grade	Requirements met:	☑ YES ☐ NO
ERST completed: See ERST page for de	tails		
Protective layer specification comments (e.g.	g. sand lenses; layering unifo	orm or irregular; number and loca	tion of boreholes):
AO Comment: September 19, 2016, A occurring protective layer with a hydra	MEC Foster Wheeler repo aulic conductivity of 2.2 x	rt shows an approximately 8 m 10 ⁻⁷ cm/s.	n thick naturally
Leakage detection system required:	☐ YES ☑ NO	If yes, please explain.	

Catch Basin Storage Volume Calculator

O((-tal-Basin	
Construction Dimensions of Construction Dimension D	atch Basin	
Overall Dimensions of Catch Basi	in	Catch Basin
Total Length*₄	76.2 m	Dimensions 250 ft
Total Width*₄	38.1 m	125 ft
Total Depth* ₄	4.9 m	16 ft
Design Capacity Depth	4.40 m	14 ft
End Slope* ₄	3 run:rise	3 run:rise
Side Slope* ₄	3 run:rise	3 run:rise
Length of Bottom	46.8 m	154 ft
Width of Bottom	8.7 m	29 ft
Capacity @ top of Bank	7,405 m³	Capacity (@tob) 261,489 ft ³ 1,628,770 Imp. Gal.
Design Capacity of Catch Basin	(freeboard level)	Design Capacity (freeboard level)
Length (design capacity depth)	73.2 m	240 ft
Width (design capacity depth)	35.1 m	115 ft
Total Depth	<i>4.9</i> m	16 ft
Design Capacity Depth	4.40 m	14 ft
End Slope	3 run:rise	3 run:rise
Side Slope	3 run:rise	3 run:rise
Design Capacity (freeboard level)	6,037 m ³	213,200 ft ³
		1,327,987 lmp. Gal.
level)	2,569 m²	27,656 ft ²

CFO Name ₁	Southwood Stock Farm		
Land Location 4	SE 5-14-15 W4		

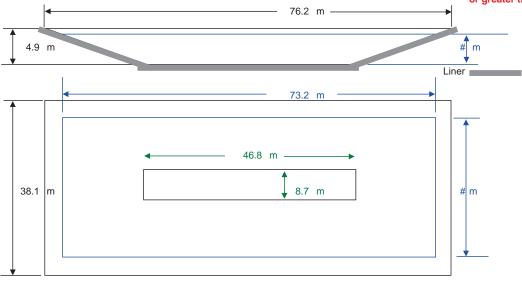
Pav	Paved Runoff Catchment Area(s)				
Area 2	Length (m)	Width (m)	Area (m ²)		
1			0.0		
2			0.0		
3			0.0		
4			0.0		
5			0.0		
	Total Area (m ²) 0				

Unpa	Unpaved Runoff Catchment Area(s)			
Area 2	Length (m)	Width (m)	Area (m²)	
6	144	46	6,576.4	
7	244	298	72,712.0	
8	57	244	13,969.7	
9	213	61	13,017.4	
10	205	24	4,920.0	
	Total Area (m ²) 111,196			

Rainfall (Select Town 3)			
Vauxhall 85			
AOPA Design Rainfall	85 mm		

Minimum Catchbasin St	torage Volume Required
5,671 m ³ **	200268.44 ft ³
	1247438.7 Imp. Gal.

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

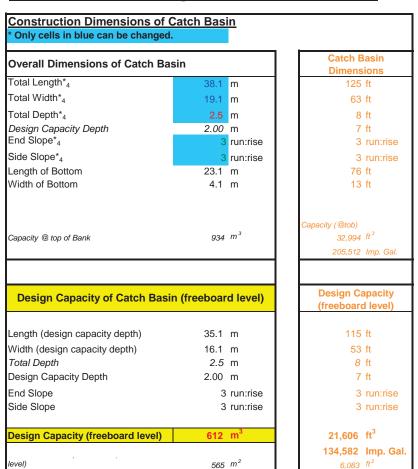


Lines in Black - Overall catch basin dimensions

Lines in Blue - Design capacity depth dimensions (excludes freeboard)

NTS - Not To Scale

Catch Basin Storage Volume Calculator



CFO Name ₁	Southwood Stock Farm
Land Locatio	n ₁ SE 5-14-15 W4

Paved Runoff Catchment Area(s)				
Area 2	Length (m)	Width (m)	Area (m²)	
1			0.0	
2			0.0	
3			0.0	
4			0.0	
5			0.0	
	Total Area (m²) 0			

<u>Unpa</u>	Unpaved Runoff Catchment Area(s)				
Area 2	Length (m)	Width (m)	Area (m²)		
6	96	45	4,320.0		
7	43	80	3,440.0		
8	40	43	1,720.0		
9	35	37	1,295.0		
10			0.0		
	Total Area (m ²) 10,775				

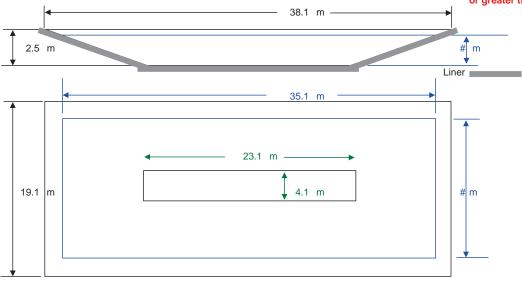
Rainfall (Select Town 3)			
Vauxhall 85			
AOPA Design Rainfall	85 mm		

Minimum Catchbasin Storage Volume Required

550 m³ ** 19406.292 ft³

120878.55 lmp. 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



NRCB USE ONLY	
RUNOFF CONTROL CATCH BASIN CAPACITY SUN	IMARY (if applicable)
Facility 1	
Name / description Catch Basin	Capacity 6,037 m ³
Facility 2	
Name / description Catch Basin 2	Capacity 612 m ³
Facility 3	
Name / description	Capacity
Facility 4	
Name / description	Capacity
TOTAL CAPACITY	6,649 m³
RUNOFF VOLUME FROM CONTRIBUTING AREAS	6,221 m³
MEETS AOPA RUNOFF CONTROL VOLUME REQUIREMENTS	☑yes □ no



NRCB USE ONLY										
ALL SIGNATURES I	YES []NO								
DATES OF APPROV	AL OFFICER SITE V	ISITS								
June 17, 2024										
CORRESPONDENCE	WITH MUNICIPAL	ITIES AN	ID REFERR	AL A	AGEN	CIES				
Date deeming letters sent	: April 9, 2025				-					
Municipality: MD of	Taber				-					
letter sent	response received	writter writter	n/email		verbal		no comments received			
Alberta Health Service	s:									
letter sent	response received	writter	n/email		verbal		no comments received			
Alberta Environment ar	nd Parks:									
☑ letter sent	response received	writter writter	n/email		verbal		no comments received			
Alberta Transportation	:									
letter sent	response received	writter	n/email		verbal		no comments received			
Alberta Regulatory Ser	vices: N/A									
letter sent	response received	☐ writter	n/email		verbal		no comments received			
Other: TC Energy (NC	GTL GP Ltd.)					□ N/A				
letter sent	response received	writter	n/email		verbal		no comments received			
Other: Bow River Irrig	ation District, Barrel Oil	Corporatio	<u>n</u>			□ N/A				
letter sent	response received	☐ writter	n/email		verbal		no comments received			



24 May 2024

J Lobbezoo Engineering & Consulting Services Ltd.

PO Box 96, Monarch, AB T0L1M0

JLECS File: P24014

Southwood Stock Farms Ltd. PO Box 214 Vauxhall, Alberta T0K2K0

Attention: Mr. Ryan Van Hal

Re: Geotechnical Review and Evaluation

NRCB Permitting of Proposed Pens

SE-05-014-15-W4M, near Vauxhall, 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 site soil conditions to support a permit application related to a series of proposed new pens to be located both north and west of the existing pens at SE-05-014-15-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, eleven boreholes were advanced at the site on April 26, 2024. The boreholes were advanced at the approximate locations denoted as SW1-24 to SW11-24 on Figure 1, attached.

The boreholes were advanced by a truck-mounted drill rig owned and operated by Chilako Drilling Services Ltd. and extended depths ranging between 3.0 m and 3.6 m below the existing grade. The boreholes were logged by Mr. Larry Delong of Chilako Drilling Services.

In general, the natural mineral soils encountered in the boreholes consisted of a layer of plastic lacustrine clay loam (to approximately 0.7 m depth) which was underlain by stiff medium plastic clay till to the termination depth of the eleven boreholes. No evidence of free groundwater or a groundwater resource (as defined by the AOPA) was identified within the 3.6 m investigation depth at the proposed development site.

Samples of soil collected from the screened zone of boreholes SW2-24 and SW9-24, as well as samples from the same depth at the other boreholes were subjected to grain size analyses, which was carried out by Down to Earth Laboratories in Lethbridge, Alberta. The results indicate a soil texture breakdown of:



Table 1: Soil Texture Analyses

Borehole/Depth	% Sand	% Silt	% Clay
SW1-24 / 1.5-3.0 m	37	34	29
SW2-24 / 1.5-3.0 m	36	37	27
SW3-24 / 1.5-3.0 m	36	36	28
SW4-24 / 1.5-3.0 m	35	35	30
SW5-24 / 1.5-3.0 m	36	36	28
SW6-24 / 1.5-3.0 m	34	38	28
SW7-24 / 1.5-3.0 m	36	33	31
SW8-24 / 1.5-3.0 m	35	34	30
SW9-24 / 1.5-3.0 m	36	34	30
SW10-24 / 1.5-3.0 m	37	32	31
SW11-24 / 1.5-3.0 m	38	32	30

To measure the *in situ* permeability of the subsurface soils, 50 mm diameter PVC monitoring wells were constructed in boreholes SW2-24 and SW9-24. Test well SW2-24 was screened from 1.55 m to 3.15 m depth while test well SW9-24 was screened from 2.0 m to 3.6 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 0.15 m was determined at SW2-24, and a 24-hour water drop of 0.22 m was determined at SW9-24.

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 2.1×10^{-8} cm/s at SW2-24, and an *in situ* hydraulic conductivity, k_s , of 2.7×10^{-8} cm/s at SW9-24.

Using the measured permeability of the clay stratum, the 1.6 m of clay screened at SW2-24 is estimated to represent the equivalent of approximately 76 m of naturally occurring materials having a hydraulic conductivity of 1 x 10^{-6} cm/s (the reference standard in AOPA). Similarly, the 1.6 m of clay screened at SW9-24 is estimated to represent the equivalent of approximately 59 m of naturally occurring materials having a hydraulic conductivity of 1 x 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).

Southwood Stock Farms Ltd.
Geotechnical Review & Evaluation, SE-05-014-15-W4M, near Vauxhall, Alberta 23 May 2024
Page 3



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 JLECS's opinion that the naturally occurring materials at the site satisfy the AOPA requirements for permitting the proposed new pens 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,

J Lobbezoo Engineering & Consulting Services Ltd.

John Lobbezoo, P.Eng.
Principal Geotechnical Engineer

Attachments

Figure 1 Borehole Locations
In Situ Permeability Test Calculations

Soil Profile and Parent Material Description, Chilako Drilling Services

PERMIT TO PRACTICE
J LOBBEZOO ENGINEERING &
CONSULTING SERVICES LTD.

RM SIGNATURE:

RM APEGA ID #: 1095

DATE: 23 May 2024

PERMIT NUMBER: P016456

The Association of Professional Engineers and Geoscientists of Alberta (APEGA)



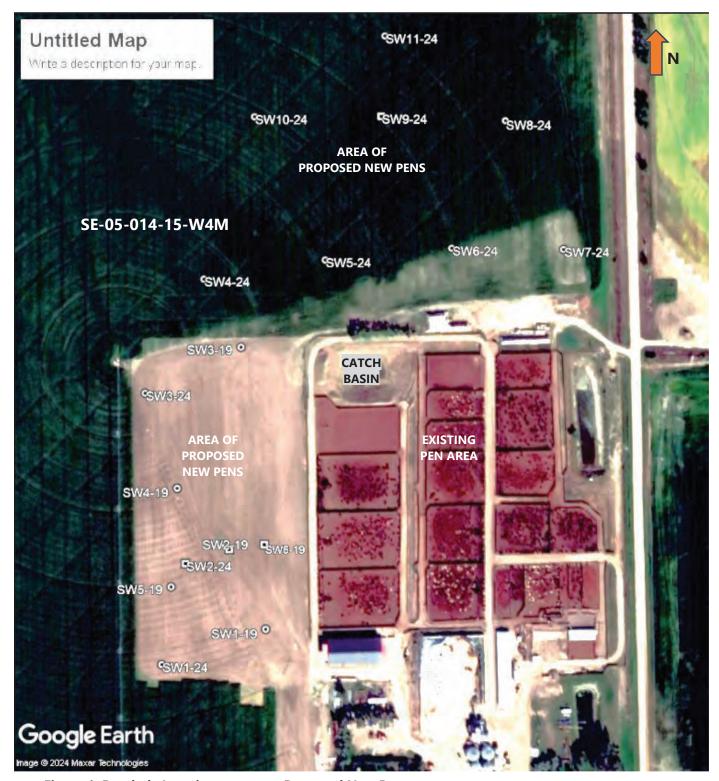


Figure 1: Borehole Locations

Proposed New Pens



SW2-24

In Situ Permeability Test

Modified Falling Head Permeability Equation

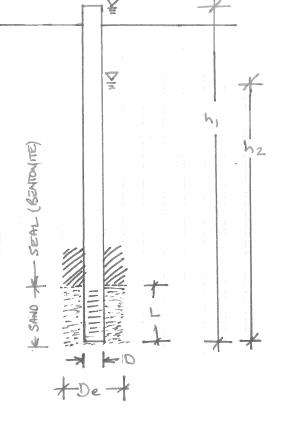
$$K_{s} = \frac{r^{2}}{2\ell\Delta t} \left[\frac{\sinh^{-1}\frac{\ell}{r_{e}}}{2} \ln \left[\frac{2H_{1} - \ell}{2H_{2} - \ell} \right] - \ln \left[\frac{2H_{1}H_{2} - \ell H_{2}}{2H_{1}H_{2} - \ell H_{1}} \right] \right]$$

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

SW2-24 - Southwood Stockfarms Ltd.

JLECS File: P24014

NPUT VARIABLES	Terms D De L h1 h2	0.1500 1.60 3.75 3.60	Definition diameter of standpipe (m) diameter of borehole (m) length of sand section (m) initial height of water above base of hole (m) final height of water above base of hole (m)
Ę	t	24.0	time of test (h)



 $k_s = 2.1E-08$ cm/sec



SW9-24

In Situ Permeability Test

Modified Falling Head Permeability Equation

$$K_{s} = \frac{r^{2}}{2\ell\Delta t} \left[\frac{\sinh^{-1}\frac{\ell}{r_{e}}}{2} \ln \left[\frac{2H_{1} - \ell}{2H_{2} - \ell} \right] - \ln \left[\frac{2H_{1}H_{2} - \ell H_{2}}{2H_{1}H_{2} - \ell H_{1}} \right] \right]$$

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

SW9-24 - Southwood Stock Farms Ltd.

JLECS File: P24014

10			
ES	Terms	Value	Definition
NPUT VARIABLE	D	0.0520	diameter of standpipe (m)
₹	De	0.1500	diameter of borehole (m)
AR	L	1.60	length of sand section (m)
_	h1	4.20	initial height of water above base of hole (m)
5	h2	3.98	final height of water above base of hole (m)
Σ	t	24.0	time of test (h)

The total (Sextopute)

The total of the service of

 $k_s = 2.7E-08$ cm/sec

CHILAKO DRILLING SERVICES LTD

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

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: SE5-14-15W4 Southwood Stock Farms Date: 26-Apr-24

Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
SW1-24	0427713	0-0.3	CL	M	Lac		
	5554345	0.3-1.0	SiCL	SM	Lac		
		1.0-3.0	CL	SM	Till	1.5-3.0	Stiff, med plastic, dark brown, oxidized
0)4/0 04	0.407705		01				
SW2-24	0427735	0-0.3	CL	M	Lac		
	5554425	0.3-1.0 1.0-3.15	CL-FSCL CL	D SM	Lac Till	1.5-3.0	Stiff, med plastic, brown, oxidized
		1.0-3.13	CL	Sivi	1 1111	1.5-3.0	50mm H.C. Well installed to 3.15m
							Screen: 3.15-1.65m
							Sand: 3.15-1.55m
							Bentonite: 1.55-0.0m
							Stickup: 0.6m
							Hole Diameter: 0.15m
SW3-24	0427706	0-0.15	CL-FSCL	М	Lac		
	5554560	0.15-1.0			Lac		
		1.0-1.5	CL	M	Till		V. Firm, med plastic, brown
		1.5-1.6	CL	VM	Till		Sand layers
		1.6-3.0	CL	M	Till	1.5-3.0	Stiff, med plastic, dark brown, oxidized
SW4-24	0427756	0-0.15	CL	M	Lac		
	5554650	0.15-0.8		M	Lac	4500	Sand lens @ 0.8m, brown
		0.8-3.0	CL	M	Till	1.5-3.0	Stiff, med plastic, dark brown, oxidized
SW5-24	0427852	0-0.15	CL	M	Lac		
0 V V O Z ¬	5554662	0.15-0.7		M	Lac		V. Firm, brown, sand lensing
	000 1002	0.7-3.0	CL	M	Till	1.5-3.0	Stiff, med plastic, brown
							, , , , , , , , , , , , , , , , , , , ,
SW6-24	0427954	0-0.15	CL	M	Lac		
	5554667	0.15-0.7		M	Lac		V. Firm, brown, some sand
		0.7-3.0	CL	M	Till	1.5-3.0	Stiff, med plastic, dark brown
0\4/7.04	0.4000.40	0.045	01	\ / B 4	1		
SW7-24	0428043 5554663	0-0.15 0.15-0.6	CL CL	VM M	Lac		Soft mad plantic brown
	5554665	0.6-3.0	CL	M	Lac Till	1.5-3.0	Soft, med plastic, brown Stiff, med plastic, brown
		0.0-3.0	CL	IVI	1 1111	1.5-5.0	Still, filed plastic, blown
SW8-24	0428000	0-0.15	CL	М	Lac		Topsoil
	5554767	0.15-0.4	CL	M	Lac		
		0.4-3.0	CL	M	Till	1.5-3.0	Stiff, med plastic, brown
SW9-24	0427900	0-0.15	CL	M	Lac		Topsoil
	5554775	0.15-0.6			Lac	4500	V. Firm, low-med plastic, brown
		0.6-3.6	CL	M	Till	1.5-3.0	Stiff, med plastic, brown 50mm H.C. Well installed to 3.6m
							Screen: 3.6-2.1m
							Sand: 3.6-2.0m
							Bentonite: 2.0-0.0m
							Stickup: 0.6m
							Hole Diameter: 0.15m
SW10-24	0427800	0-0.15	CL	М	Topsoil		
JVV 10-24	5554777	0.15-0.6			Lac		Stiff, low-med plastic, brown
	000 1111	0.6-3.0	CL CL	M	Till	1.5-3.0	Stiff, med plastic, brown
				'''		0.0	, p. sa. c., x. c
SW11-24	0427905	0-0.15	CL	M	Topsoil		
	5554839	0.15-0.7		M	Lac		V. Firm
		0.7-1.8	CL	M	Till		Stiff, med plastic, brown, sand lensing Stiff, med plastic, brown, 24020 ID Page 38 of 4
		1.8-3.0	CL	M	Till		Stiff, med plastic, brown Application LA24020 Page 28 of 2

September 19, 2016

Amec Foster Wheeler File: BX30404

Southwood Stock Farms Ltd. P.O. Box 214 Vauxhall, Alberta T0K 2K0

Attention: Mr. Ryan Van Hal

Re: Geotechnical Review and Evaluation

Proposed New Pens

SE-5-14-15-W4, near Vauxhall, Alberta

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

This letter encompasses the soil conditions associated with a series of proposed new pens along the west side of the existing feed lot (see Figure 1). In addition, boreholes were advanced adjacent to an existing catchbasin in order to assess the soil conditions associated with the catchbasin.

In order to demonstrate the suitability of the natural clay soils for consideration as a naturally occurring protective layer for the pens, a series of boreholes were advanced at the site on March 13, 2016, at the approximate locations illustrated on Figure 1. A second set of boreholes VH5-16 and VH6-16) were advanced on September 2, 2016 adjacent to the existing catchbasin. The boreholes were advanced by a truck-mounted drill rig owned and operated by Chilako Drilling Services, and extended to depths of about 3 m (pens) to 13.5 m (catchbasin) below existing grades. These boreholes were logged by Mr. Larry DeLong of Chilako Drilling Services Ltd (see attachments).

In general, the soils encountered within the current test holes generally included clay till soils to the termination depths of the boreholes. The clay till unit also include some sand lensing, with sandier conditions below about 11 m depth.

in order to demonstrate the permeability of the subsurface soils, 50 mm diameter PVC monitoring wells were constructed in boreholes VH3-16 and VH5-16. Borehole VH3-16 was screened from 1.4 m to 3.0 m depth while VH5-16 was screened from about 5.2 m to 6.8 m depth. Well saturation of the 50 mm diameter monitoring wells was carried out by filling the monitoring well to the top of the well for several consecutive days. After several days, the 24 hour water drop in the standpipe was about 1.3 m (VH3-16) and 2.6 m (VH5-16). During the testing, the well locations were protected, and care was taken to ensure that the column of water being monitored in the well was not frozen during the testing.

A second 25 mm was also installed at borehole VH2-16. Only nominal water accumulation was observed in the base of this borehole within a week of the drilling.

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

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amec foster

wheeler



In order to calculate the permeability of the screened portion of the clay stratum, a modified falling head test (as outlined in the USBR *Engineering Geology Field Manual Volume 2* [2001]) was used. The input variables and output data are outlined on the *In Situ Permeability Test* report, attached. As outlined on the report, the results of the *in situ* permeability testing indicate a hydraulic conductivity, k_s , in the order of <u>2.6 x 10⁻⁷ cm/s</u> at borehole VH3-16, and <u>2.2 x 10⁻⁷ cm/s</u> at borehole VH5-16

Using the measured permeability of the clay stratum, the 1.6 m portion of clay which has been screened at the boreholes has been estimated to represent an equivalent of about 6 m (VH3-16) and 7 m (VH5-16) of naturally occurring materials having a hydraulic conductivity of 1 x 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 catchbasins (minimum 5 m, Section 9.5-b).

Conclusion

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

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

Respectfully submitted,

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

John Loboezoo, P.Eng. Senior Geotechnical Engineer

APEGA Permit: P04546

Attachments:

Figure 1 - Borehole Location Plan

In Situ Permeability Test Calculations - VH3-16, VH5-16

Soil Profile and Parent Material Description, Chilako Drilling Services



Figure 1 - Borehole Location Plan Southwood Stock Farms Ltd. Sept. 2016

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Amec File: BX30404

VH3-16

In Situ Permeability Test



Modified Falling Head Permeability Equation

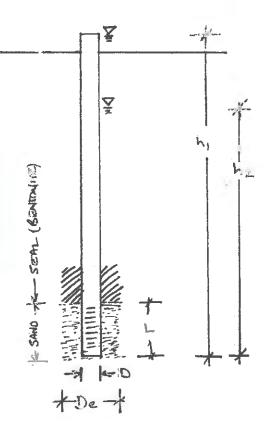
$$K_{s} = \frac{r^{2}}{2\ell \Delta t} \left[\frac{\sinh^{-1} \frac{\ell}{r_{s}}}{2} \ln \left[\frac{2H_{1} - \ell}{2H_{2} - \ell} \right] - \ln \left[\frac{2H_{1}H_{2} - \ell H_{2}}{2H_{1}H_{2} - \ell H_{1}} \right] \right]$$

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

VH3-16 - Southwood Stock Farms Ltd. Amec Foster Wheeler File: BX30404

IABLES	Terms D De	0.0520	Definition diameter of standpipe (m) diameter of borehole (m)
AA	L	1 60	length of sand section (m)
≥	h1		initial height of water above base of hole (m)
ΙŽ	h2		final height of water above base of hole (m)
Z	t	24 0	time of test (h)

Ks = 2.6E-07 cm/sec



VH5-16

In Situ Permeability Test



Modified Falling Head Permeability Equation

$$K_{s} = \frac{r^{2}}{2\ell\Delta t} \left[\frac{\sinh^{-1}\frac{\ell}{r_{e}}}{2} \ln \left[\frac{2H_{1}-\ell}{2H_{2}-\ell} \right] - \ln \left[\frac{2H_{1}H_{2}-\ell H_{2}}{2H_{1}H_{2}-\ell H_{1}} \right] \right]$$

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

VH5-16 - Southwood Stock Farms Ltd. Amec Foster Wheeler File: BX30404

INPUT VARIABLES	Terms D De L h1 h2	0 0520 0 1500 1 60 7 20 4 65	Definition diameter of standpipe (m) diameter of borehole (m) length of sand section (m) initial height of water above base of hole (m) final height of water above base of hole (m) time of test (h)
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the base of hole (m) base of hole (m)

Ks = 2.2E-07 cm/sec

CHILAKO DRILLING SERVICES LTD

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

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

	Site Location:	Van Ha	I <u>SE5-1</u>		Date: Mar 2016		
Hole #	Location	Depth	Texture	Moisture	Geological	Sample	Remarks
VH1-16	Center of south proposed pen	0-0.3 0.3-1.6 1.6-3.0	CL CL	SM M M	Till Till Till		Stiff, med plastic, brown Stiff, med plastic, brown, trace sand
VH2-16	Center of south-center proposed pen	0-0.3 0.3-2.0 2.0-3.0	CL CL	SM SM SM	Till Till Till		Stiff, med plastic, brown Stiff, med plastic, brown Stiff, med plastic, brown, trace sand 25mm WTW installed to 3.0m
VH3-16	Center of north-center proposed pen	0-0.4 0.4-2.4 2.4-3.0	CL CL	SM M M	Till Till Till		Some silt Stiff, med plastic, brown Stiff, med plastic, brown 50mm HC well installed to 3.0m Screen: 3.0-1.5m Sand: 3.0-1.4m Benonite: 1.4-0.0m Stickup: 0.6m Hole diameter: 0.15m
VH4-16	Center of north proposed pen	0-0.3 0.3-2.0 2.0-2.3 2.3-3.0	CL CL SCL CL	SM M VM M	Till Till Till Till		Stiff, med plastic, brown Firm, low plastic, sand lenses Stiff, med plastic, brown
		427869 5554550 427888 5554504 427887		Basin VH4-16 VH3-16		427922 5554581	
	ı	5554465 427887 5554429 427887 5554386	•	VH2-16		427914 5554366	

CHILAKO DRILLING SERVICES LTD

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

SOIL PROFILE AND PARENT MATERIAL DESCRIPTION

Site Location: SE5-14-15W4, Ryan Vanhal

Hole #	Location		_			Sample	Remarks
							Phase 1 including holes 1-4 drilled on an
							earlier date
							Existing catch basin is 5.1m deep
VH5-16	Southwest	0-0.3	CL	М	Till		
	corner of	0.3-0.6	CL	M	Till	'	Some silt
	catch basin		CL	M	Till		Stiff, med plastic, brown
		2.7-5.4	CL	M	Till		V. Firm, med plastic, brown
1		5.4-5.7	CL	VM	Till		Sat sand lenses
		5.7-7.7		M	Till		Stiff, med plastic, brown, oxidized
i .		7.7-9.0	CL-SCL		Till		V. Firm, low plastic, grayish brown
l		9.0-10.5		M	Till		Stiff, low-med plastic, dark brown, trace sand
		10.5-13.5	ŞL	Sat	Till		Free water @ 10.5m
							50mm H.C. well installed to 6.8m
						l	Screen: 6.8-5.3m
l .							Sand: 6.8-5.2m
l .							Bentonite: 5.2-1.5m
1							Stickup: 0.6m
							Hole diameter: 0.15m
VH6-16	Northwest corner of	0-1.0 1.0-6.0	SiCL	SM M	Till Till		Stiff, med plastic, brown
1	catch basin	6.0-8.4	CL	М	Till		Stiff, low plastic, trace sand, oxidized
		8.4-9.0		VM	Till		Sat sand lenses
i	1	9.0-11.0	С	М	Till		Stiff, med plastic, brown
ı		11.0-13.5		Sat	Till		Free Water @ 11.0m
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Date: 02-Sep-16