Technical Document RA25028

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	Application number	Legal land description
Approval 🔲 Registration 🔲 Authorization	RA25028	NW 3-43-26 W4M
Amendment		

APPLICATION DISCLOSURE

This information is collected under the authority of the *Agricultural Operation Practices Act* (AOPA), and is subject to the provisions of the *Freedom of Information and Protection of Privacy Act*. This information is public unless the NRCB grants a written request that certain sections remain private.

Any construction prior to obtaining an NRCB permit is an offence and is subject to enforcement action, including prosecution.

I, the applicant, or applicant's agent, have read and understand the statements above, and I acknowledge that the information provided in this application is true to the best of my knowledge.

Cor Haagsma	Cor Haagsma Digitally signed by Cor Haagsma Date: 2025.03.29 09:23:56 -06'00		
Date of signing	Signature		
March 28, 2025	Cor Haagsma		
Corporate name (if applicable)	Print name		

GENERAL INFORMATION REQUIREMENTS

Proposed facilities		Dimensions (m) (length, width, and depth)
East barn with centre manure pit.	Pit = 42.7 m x 3.5 m x 1.2 m deep	104.9 x 36.6
Connector between east and west ba	rn	7.3 x 6.1 x1.2m dee
		·

Existing facilities: list ALL existing confined feeding operation facilities and their dimensions					
Existing facilities	Dimensions (m) (length, width, and depth)	NRCB USE ONLY			
T- shaped dairy barn, including liquid manure pits	104.9 x 33.5 and 51.6 x 23.8	x 1.2 m deep (expanded in RA08021			
Young stock facility with concrete floor, including manure-	85 x 15.25				
Calfbarn	29.9 x 21.4 21.3 x 3	D			
NRCB USE ONLY Existing facilities confirmed					

NIPCE

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)

Existing facilities continued	Dimensions (m) (length, width, and depth)	NRCB USE ONLY
Solid manure storage building	42.7 x 15.25	States and States
Deep liquid manure storage facility (EMS; expanded in R	A12058) 100 x 75 x 5 deep	State All Ball
Solid Manure Storage (compacted clay liner)	33.5 x 48.8	2 Bill
AO note: footprint of the proposed barn will overlap with that of the solid manure storage pad		
		This second y
		The second
		(Wat Reported
		Mark Park
		Service States
		and the second
		A Contraction
		Charles Strength
	31	
		North Analysis



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

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

Construction completion date for proposed facilities

Additional information

Find attached the floor plan for the east barn.

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
_actating cows plus all associated dries, heif	400	225	625
(plus associated dries, heifers and replacer	nents)		· · · · · · · · · · · · · · · · · · ·
			· · · · · · · · · · · · · · · · · · ·
			2

Last updated September 11, 2023



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

DECLARATION AND ACKNOWLEDGMENT OF APPLICANT CONCERNING WATER ACT LICENCE

issued by Alberta Environment and Protected Areas (EPA) for a confined feeding operation (CFO) Date and sign one of the following four options

OPTION 1: Applying through the NRCB for both the AOPA permit and the Water Act licence

I DO want my water licence application coupled to my AOPA permit application.

Signed this _____day of ______, 20____.

Signature of Applicant or Agent

OPTION 2: Processing the AOPA permit and Water Act licence separately

- 1. I (we) acknowledge that the CFO will need a new water licence from EPA under the *Water Act* for the development or activity proposed in this AOPA application.
- 2. I (we) request that the NRCB process the AOPA application **independently of** EPA's processing of the CFO's application for a water licence.
- 3. In making this request, I (we) recognize that, if this AOPA application is granted by the NRCB, the NRCB's decision will not be considered by EPA as improving or enhancing the CFO's eligibility for a water licence under the *Water Act*.
- 4. I (we) acknowledge that any construction or actions to populate the CFO with livestock pursuant to an AOPA permit in the absence of a *Water Act* licence will **not** be relevant to EPA's consideration of whether to grant the *Water Act* licence application.
- 5. I (we) acknowledge that any such construction or livestock populating will be at the CFO's sole risk if the *Water Act* licence application is denied or if the operation of the CFO is otherwise deemed to be in violation of the *Water Act*. This risk includes being required to depopulate the CFO and/or to cease further construction, or to remove "works" or "undertakings" (as defined in the *Water Act*).
- 6. **AS RELEVANT:** I (we) acknowledge that the CFO is located in the South Saskatchewan River Basin and that, pursuant to the *Bow, Oldman and South Saskatchewan River Basin Water Allocation Order* [Alta. Reg. 171/2007], this basin is currently closed to new surface water allocations.
- 7. Provide: Water licence application number(s) 00349533-00-00

Signed this	28	day of March	. 20	25	Cor Haagsma	Digitally signed by Cor Haagsma Date: 2025.03.29 09:24:46 -06'00'	
orginea cino					Signa	ature 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 _____ day of ______, 20____.

Signature of Applicant or Agent

Last updated September 11, 2023



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

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).
- 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





NW3-43-26-W4 N Poly- C Formo Ud



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)

west barn

Existing:

Proposed 1: east barn

Prop	osed	2:			Propose	d 3:		
10-	Facility and environmental risk			Facilities			NRCB USE ONLY	
	acm	information	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 [] ≤ 1 m	YES INO YES with exemption	Not located in a floodplain
er		How many springs are within 100 m of the manure storage facility or manure collection area?	0	0			YES NO YES with exemption	None identified
Surface water	information	How many water wells are within 100 m of the manure storage facility or manure collection area?	2	2			YES NO	2 wells within 100 m of proposed construction
Sul	Ë	What is the shortest distance from the manure collection or storage facility to a surface water body? (e.g., lake, creek, slough, seasonal)	480	480			YES NO YES with exemption	Slough ~460 m east of CFO
water ation		What is the depth to the water table?	7	7			YES NO YES with exemption	>10 m from WW logs
Groundwater information		What is the depth to the groundwater resource/aquifer you draw water from?	82	82	-		YES INO YES with exemption	60.7 m in WW ID 277279

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

Attachment 3 and 4

Last updated September 11, 2023



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

roundwater related conce /ater wells N/A applicable, exemption fo urface water X N/A	rns from directly affected parties or ref ns from directly affected parties or refe 100 m distance requirements applied: 30 m distance requirements applied:	ferral agencies: : 🔄 YES 🗌 NO Condition	
roundwater related concernation of a second	ns from directly affected parties or refe 100 m distance requirements applied: 30 m distance requirements applied:	ferral agencies: : 🔄 YES 🗌 NO Condition	□ YES ☑ NO required: ☑ YES □ NO required: □ YES □ NO
roundwater related concernation of a second	ns from directly affected parties or refe 100 m distance requirements applied: 30 m distance requirements applied:	ferral agencies: : 🔄 YES 🗌 NO Condition	□ YES ☑ NO required: ☑ YES □ NO required: □ YES □ NO
/ater wells □ N/A applicable, exemption fo urface water ☑ N/A applicable, exemption fo /ater Well Exemption S Water Well ID 40151	100 m distance requirements applied: 30 m distance requirements applied:	: ☑ YES ☐ NO Condition	required: XES NO
applicable, exemption fo urface water IN/A applicable, exemption fo /ater Well Exemption S Water Well ID 40151	30 m distance requirements applied: [☐ YES ☐ NO Condition	required: 🗌 YES 🗌 NO
urface water in N/A applicable, exemption fo Vater Well Exemption S Water Well ID 40151	30 m distance requirements applied: [☐ YES ☐ NO Condition	required: 🗌 YES 🗌 NO
applicable, exemption fo /ater Well Exemption S Water Well ID 40151	_		·
Vater Well Exemption S Water Well ID 40151	_		·
Water Well ID 40151	reening Tool 🛛 N/A	Constant Constant	
Water Well ID 40151	reening Tool 🛛 N/A	Constant Constant	
40151			
	Preliminary Screening Score	Secondary Screening Score	Facility
277279	continue next section	exemption likely	East barn
	continue next section	exemption likely	East barn
roundwater or surface			

and will be carried forward into this approval.



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
East barn	low	low	RA25028

ERST for <u>existing</u> facilities

Facility	Groundwater score	Surface water score	File number
EMS	low	low	RA14020
Calf barn			
Covered solid manure storage			
Solid manure storage			
Dairy barn	\checkmark	\checkmark	\checkmark

ERST related comments:



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

		the second se	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	
Churchill	SW10-43-26-W4	395	CR*	2	395	N/A	Yes (see note	
Fenske	SW10-43-26-W4	461	CR	2	461	N/A	Yes (see note	
Anderson	SW10-43-26-W4	545	CR	2	545	N/A	Yes w expans	
Jones	NE4-34-26-W4	637	Ag	1	637	N/A	yes	
Vieemng	NW3-43-26-W4	626	Ag	1	626	N/A	yes	

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

	NRCB U	JSE ONLY			
Name of land owner(s)*	Legal land description	Usable area** (ha)	Soil zone ***	Usable area (ha)	Agreement attached (if required)
Poly-C Farms Ltd	N1/2 3-43-26-W4	100	Black		N/A for all
Poly-C Farms Ltd	SE10-43-26-W4	122	Black		
Poly-C Farms Ltd	W1/2 15-43-26-W4	90	Black		
Poly-C Farms Ltd	SW2-43-25-W4	54	Black		
Poly-C Farms Ltd	NE6-43-27-W4	51	Black		
*00	1		Total	632 (includir	ng additional

*CR = country residential

* 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)

-Churchill and Fenske property are built after Poly-C Farms established the current MDS.

-Surveyor report included to show determined distances to Anderson. (attachment 5 and 6)

-Additional land base for manure spreading; All owned by C&C Haagsma, N1/2 16-43-26-W4 120 ha, SE9-43-26-W4 58 ha and NW32-43-26-W4 37 ha. All of these have black soil zone.

Last updated September 11, 2023

AO note: The Anderson residence located on SW 10-43-26 W4 did not initially meet the MDS requirements for the proposed expansion. The most recent construction completed at the CFO was in 2016; therefore, the expansion factor has been applied to the MDS, resulting in the Anderson residence now meeting the MDS requirements (Schedule 1(6)(3) of the Standards and Administration Regulation) (see attached surveying report supplied by the applicant). The Churchill and Fenske residences were constructed after the current MDS which was established in 2008 (under Approval RA08021) and are therefore exempt from the MDS requirements for the proposed expansion (Section 3(8)(c) of the Standards and Administration Regulation).

lands listed below)



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

NRCB USE ONLY							
MINIMUM DISTANCE	E SEPARATI	ON					
Methods used to determine of Margin of error (if applicable		icable): _	Google	Earth			
Requirements (m): Category	/ 1:407	Ca	tegory 2:	543	Category 3:	679	Category 4: 1,086
Technology factor:						🗆 YES 🖾	NO
Expansion factor:						X YES	NO
MDS related concerns from o	directly affected	parties o	or referra	l agencie	s:	🗆 YES 🖾	NO
LAND BASE FOR MAN	580 ha 632 ha N/A 632 ha	COMPO	NO	PLICAT	TION Requirement met If yes, plan is at	_	I NO
PLANS							
Submitted and attached con	struction plans:		🖾 YES	□ no			
Submitted aerial photos:			🔀 YES	□ NO			
Submitted photos:			□ YES	🖾 NO			
GRANDFATHERING							
Already completed: If already completed, see	RA08021		YES	🗆 NO [□ N/A		



RCB Natural Resources Conservation Board

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

LIQUID MANURE COLLECTION AND/OR STORAGE: In-barn - Concrete liner (complete a copy of this section for EACH proposed in-barn liquid manure storage facility with a concrete liner)

Facility description / name (as indicated on site plan)

1. East barn liquid manure storage including connector. (pit)

- **2.** East barn (total dimensions)
- 3. Connecting alley

	Length (m)	Width (m)	Total depth (m)	Depth below ground level (m)	NRCB USE ONLY Calculated storage capacity (m ³)
	42.7	3.5	1.2	1.4	179.3 m ³
	2. 104.9	36.6			
13	7.3	6.1	1.2	1.2	53.4 m ³
-				TOTAL CAPACITY	232 7 m ³

	Concrete thickness		Method of sulp	phate protection		
	13 cm		Type 50 concrete			
Scrape alleys or unslatted portions of barn floors (if						
	Concrete strength		Concrete reinfo	orcement size and spacing		
applicable)	35 mpa at 56 days			on 40 cm spacing		
	Concrete thickness		Method of suin	phate protection		
	20 cm		Type 50 conc	•		
In-barn manure pit						
floors	Concrete strength		Concrete reinf	orcement size and spacing		
•	35 mpa at 56 days		15 mm on 30	cm spacing		
	Concrete thickness		Method of sulr	phate protection		
	20 cm		Type 50 conc			
In-barn manure pit walls	Concrete strength	Horizontal reinf	orcement size	Vertical reinforcement size and		
	35 mpa at 56 days and spacing		91 GOITIGHT 0166	spacing		
	15 mm rebar or spacing		on 15 cm 15 mm rebar on 30 cm s			

Last updated: 31 Mar 2020

Page ____ of ___

NRCB USE ONLY



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

IQUID MANURE COLLECTION AND/OR STORAGE:	In-barn - Concrete liner	(cont.)
Describe how the joints at the junction of the pit walls, pit floors and	any other joints will be sealed	
/olclay waterstop will be used at junctions and any other joints		
Denoting the second s		
Describe sealing practices for piping, etc. that penetrates the liner Volclay water stop will be used at junctions and any other joints		
	14	
N	RCB USE ONLY	and a state of the
Concrete requirements can be found in Technical Guideline Agdex 096-93 Guideline minimums: Solid manure (wet): 30MPa (C)		
Liquid manufe (Wet): Softe (C) Liquid manufe: 32MPa (C) Category A is required to be engineered	Requirements met Condition required	
Method of sulphate protection: Type 50 or Type 10 with fly ash or equivalent	Condition required	
Additional information		
See attachment 9 for Manure Pit Detail.		
		The second s
NRCB USE ONLY Liquid manure storage volume calculator attached: XYES INO		
Depth to water table:	Requirements met:	YES INO
Depth to uppermost groundwater resource: 60.7 m	Requirements met:	YES INO
ERST completed: X see ERST page for details		
Concrete liner requirements		
Leakage detection system required:	If yes, please explain why	
Applicant to provide proof that the concrete meets AOPA n	ninimum requirements.	
		Dans of
Last updated: 31 Mar 2020		Page of
NRCB USE	ONLY	



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

NRCB USE ONLY								
LIQUID MANURE STORAGE VOLUME CALCULATOR (if applicable)								
Facility 1 EMS								
Name / description	Capacity 22,255 m ³							
Facility 2 Main dairy barn pit								
Name / description	Capacity 1,473.7 m ³							
Facility 3 East barn pit								
Name / description	Capacity 179.3 m ³							
Facility 4 Connecting alley pit								
Name / description	Capacity 53.4 m ³							
тс	23,961.4 m ³							
REQUIRED 9 MONTH STOR	AGE CAPACITY 19,969 m ³							
MEETS THE REQUIREMENTS FOR A MINIMUM OF 9 MOI	NTHS STORAGE XYES INO							



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 APPROV	AL OFFICER SITE V	ISITS					
April 25, 2025							
			<u> </u>				
CORRESPONDENC	E WITH MUNICIPAL	ITIES AN	ND REFER	RAL A	AGENCIES	5	
Date deeming letters sen							
Municipality: Por	noka County				-		
🖾 letter sent	response received	🖾 writter	n/email		verbal		no comments received
Alberta Health Service	es: 🛛 N/A						
□ letter sent	□ response received	u writter	n/email		verbal		no comments received
Alberta Environment a	nd Parks: 🗌 N/A						
🖾 letter sent	It response received	🖾 writter	n/email		verbal		no comments received
Alberta Transportation	: 🗆 N/A						
🖾 letter sent	It response received	🖾 writter	n/email		verbal		no comments received
Alberta Regulatory Ser	rvices: 🗆 N/A						
🖾 letter sent	It response received	🖾 writter	n/email		verbal		no comments received
Other: Apex Utilities	Inc				🗆 N	()	
Other:							
🖾 letter sent	☐ response received	uritter writter	n/email		verbal		no comments received
Other:					🗆 N,	/A	
🗌 letter sent	□ response received	uritter	n/email		verbal		no comments received

Attachmend 5

BEMOCO LAND SURVEYING LTD. PROFESSIONAL LAND SURVEYORS

Our File: S-003-25

February 28th, 2025

Cor Haagsma Box 1, Site 3, RR#4 Ponoka, Alberta, T4J 1R4

> RE: N.W. ¼ Sec. 3, Twp 43, Rge 26, W4Mer And Lot 4, Block 1, Plan 052 2226 Proximity of Feeding Operations to Residence

Based upon our field measurements on January 14th, 2025 we have determined that the distance between the residence within Lot 4, Block 1, Plan 052 2226 and the closest barn corners within the N.W. ¼ Sec. 3, Twp 43, Rge 26, W4Mer is 545m (1788') and 594m (1949') respectively.

Enclosed is a sketch mark up of the survey measurements

Kind Regards



Kevin Vennard, A.L.S. Bemoco Land Surveying Ltd.

Attachment 6



RA25028 TD Page 17 of 22 Page 12 of 17 .1

Figure, Area plan Untitled project Slideshow File View Add Tools Help NW3-43-26-W4 Q Transactore G • + : 0 5% Churchil 395 ~ 2 88 Fenske 461 m 3 % Anderson 545 m 4 88 Jones 637 m 5 so vierning 626 m N 300 m Camera Google 100% Data attribution 4/29/2023

.



P.O. Box 4248 Ponoka, AB. T4J 1R6 Telephone: 403-783-8229 Facsimile: 403-783-5222

November 8, 2013

Hoch ment 8

NRCB #301 4920 51st Street Red Deer, AB T4N 6K8 Attention: Francisco Echegaray, P.Ag Approval Officer

Re: EMS Construction Inspection Authorization RA12058 NW 3-43-26-W4M Poly-C Farms Ltd.

Dear Francisco Echegaray,

In accordance with condition 1 of Authorization RA12058, Envirowest Engineering undertook an inspection and testing of the construction of the EMS located at NW1/4 3-43-26-W4M. Inspections and consultation with the construction contractor occurred during construction with final testing occurring on November 8, 2013. Some construction was yet to be completed at the time of inspection. The wall dividing the new portion of the EMS from the existing storage was yet to be removed and an additional lift was required on a portion of the floor.

The EMS was found to be 100 meters long and 75 meters wide. The overall depth is 5 meters. The above grade dykes were approximately 0.5 meters above grade. The topsoil was yet to be placed on the freeboard and dyke crest. The inside dyke wall slope is approximately 3:1. The storage capacity of the facility is in excess of the 9 months manure production required by the AOPA regulations.

A compacted clay liner was installed in the side walls and floor of the EMS. The liner depth was verified to be 1 meter thick. The liner material used was that tested as part of the original site assessment and the facility is located in the area proposed. Some of the liner material used was from the material excavated from the area. The remainder was from a borrow area to the east of the construction site. Other areas further east were investigated for potential liner material during construction of the facility. Material was located in the second borrow area however sufficient material was able to be removed from the original borrow site to complete the liner. Some mixing of liner material occurred during removal from the borrow area.

The recommended construction procedures were followed. There was some freezing of the liner material but compaction could still be achieved as the material was worked. Compaction was accomplished with a sheep foot roller. No groundwater was encountered during the construction of the EMS. The groundwater was more than 1 meter below the bottom of the EMS at the time of construction. Several wet sand pockets were encountered during construction of the liner. The pockets were removed and filled with compacted clay.

Compaction testing of the liner was undertaken for the EMS. Results of the testing are detailed below.

Test Location	Maximum Dry Density (kg/m ³)	Optimum Moisture (%)	Tested Density (kg/m ³)	Moisture Content (%)	% Compaction
North Wall Center	1760	19	2069.8	9.8	100+
South Wall Eastr	1760	19	1868.6	5.9	100+
Floor Northeast	1760	19	1978.9	6.9	100+

The liner compaction meets the specified requirements. The moisture content was less than optimal. This was likely due to some mixing of liner material and weather conditions.

With this testing and report, condition 1 of the authorization is considered to be complete. No further action is considered necessary at this time.

Yours truly

Shawna Low, P.Eng Envirowest Engineering Inc.

c.c: Poly-C Farms Ltd.



