From: [redacted]
To: Laura Friend
Subject: Fwd: NRCB permit LA10054N annual water well samplings
Date: Thursday, April 8, 2021 8:11:24 AM
Attachments: 2021+WWM+Review+Report+LA10054N+07+Apr+21.pdf

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]:

From: Arie and Willemiek Muilwijk <[redacted]
Date: April 7, 2021 at 5:35:35 PM MDT
To: "[redacted]>
Subject: Fwd: NRCB permit LA10054N annual water well samplings

Hi Cody, attached are the water results from the past 9-10 years. This should paint a pretty good picture of the water quality staying good over the last while.
Thanks
Arie

Sent from my Samsung Galaxy smartphone.

-------- Original message --------
From: Karl Ivarson <Karl.Ivarson@nrcb.ca>
Date: 2021-04-07 5:10 PM (GMT-07:00)
To: Arie and Willemiek Muilwijk <[redacted]>
Cc: Karl Ivarson <Karl.Ivarson@nrcb.ca>, Kevin Seward <Kevin.Seward@nrcb.ca>
Subject: NRCB permit LA10054N annual water well samplings

Hi Arie.

Thank you for your phone call today requesting the annual water well sampling results that we have on your file. I have attached the 2021 Water Well Monitoring Review Report for your CFO facility. The report is titled for "Foothills Pork Producers Ltd. LA10054N" as it reflects the name of the original site owner to whom the permit,

LA10054N and the annual water well sampling condition, was issued to. More to the point, this report contains the water well sampling results for your operation from 2011, (no results for 2012) through to 2021. Please review this document and let me know if it meets your needs. If the original water well sampling results are required this may take a little longer to get together but I am more than happy to provide them if need be.
Regards,

Karl Ivarson, B. Sc.
Inspector, NRCB,
Email: karl.ivarson@nrcb.ca
Cell (403) 331-8952

NATURAL RESOURCES CONSERVATION BOARD

2021 Water Well Monitoring Review Report for Foothills Pork Producers Ltd.

LA10054N

07 April 2021

MI

1.0 Introduction

Foothills Pork Producers Ltd, located at NE 10-009-27 W4M (the Site), has annual water well monitoring requirements as part of approval LA10054N. The monitoring statement requires annual monitoring of the water well located at the confined feeding operation and outlines parameters to be tested for. Water well results are compared to Guidelines for Canadian Drinking Water Quality (GCDWQ; Health Canada 2020) and to previous year's results for potential manure constituent parameters.

2.0 Monitoring Data

2.1 Previous Water Well Monitoring Results

Previous water well monitoring results were available to review for one water well at the Site from 2011 and 2013 through 2020 (Table 1). Parameter concentrations have consistently met GCDWQ Maximum Acceptable Concentration values for most analyzed parameters and have remained relatively constant. The total coliforms exceeded the GCDWQ Maximum Acceptable Concentration value in 2013.

2.2 Current Water Well Monitoring Results

One water well was sampled for the 2021 monitoring period at the Site. The samples were identified as Kitchen tap and Water Sample and were collected on March 9, 2021 (chemical) and March 22, 2021 (chemical), respectively. The groundwater samples were analyzed for chemical and microbiological parameters (Table 1) and reported on by the Alberta Centre for Toxicology and Element, respectively (Appendix 1). The locations of sample collection and collection procedures are not known.

The laboratory results from 2021 indicated that analyzed parameters met GCDWQ Maximum Acceptable Concentration values.

Table 1. Water well monitoring results. Concentrations of tested parameters that do not meet GCDWQ are **bolded** (NOTE: not all reported parameters are presented here).

Parameter (mg/L; unless noted)	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2011**	**GCDWQ**
pH (unitless)	8.2	8.27	8.5	8.2	8.3	8.0	8.4	8.4	7.7	8.2	7-10.5**
EC (µS/cm)	414	450	418	440	420	423	410	408	410	427	---
TDS (calculated)	234	221	233	245	234	240	233	232	201	232	500**
Calcium	58	89	58	58	55	58	55	53	51	56	---
Iron	<0.01	BDL	0.02	0	0	0	0.02	0.01	---	---	0.3**
Magnesium	19	18	19	18	17	18	17	17	16	17	---
Potassium	1.0	2.4	1.0	1.1	1.0	1.0	1.0	1.0	0.8	1.1	---
Sodium	12	32	11	11	10	11	10	10	5	11	200**
Bicarbonate	217	201	207	245	231	232	223	217	---	230	---
Chloride	1.5	2.1	1.6	1.6	1.6	1.5	1.7	2.0	1.8	1.3	250**
Fluoride	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	**---**	1.5*
Nitrate-N	<0.23	0.21[1]	<0.23	0	0	0	0	<0.01	<0.01	0.09	10*
Nitrite-N	<0.03	---	<0.03	0	0	0	0	<0.05	---	<0.05	1*
Sulfate	36	14	36	34	36	37	---	37	12	33	500**
T. Coliform (per 100mL)	<1	Abs.	---	Abs.	Abs.	Abs.	Abs.	Abs.	**3.1**	<1	0 *
E. coli (per 100mL)	<1	Abs.	---	Abs.	Abs.	Abs.	Abs.	Abs.	<1	<1	0*

*denotes Maximum Acceptable Concentration

**denotes Aesthetic Objective

[1]Nitrate, not Nitrate-N, was analyzed and reported in 2020

3.0 Summary and Discussion

The water well sampling results for 2021 indicated that the GCDWQ Maximum Acceptable Concentration values have been met for analyzed parameters at the water well at the Site.

Common indicators of manure impacts on groundwater (e.g., chloride, nitrate-N, and E. coli) were reported as being present at relatively low concentrations and have remained consistent in comparison with previous water well monitoring results. Based on 2021 water well analytical data, it does not appear that this groundwater resource has been potentially impacted by manure constituents.

4.0 References

Health Canada. 2020. Guidelines for Canadian Drinking Water Quality – Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

Appendix 1. 2021 Laboratory Results submitted to NRCB

ACFT
Alberta Centre For Toxicology
Advancing Public Health through Excellence in Toxicology

University of Calgary
HM-B19, 3330 Hospital Drive NW
Calgary, Alberta T2N 4N1

REPORT TO:
AHS - South Zone (1)
Ft. Macleod Public & Community Health Services
Box 520, Provincial Building
744 - 26 Street S.
Fort Macleod AB T0L 0Z0

PRIVATE DRINKING WATER FROM:
Arie Muilwijk
Box 1628
Fort Macleod AB T0L 0Z0
(403) 308-2449

REQN: T248194
LCTN: NE-10-9-27-W4 (49.7238084, -113.5783934 Calculated)
SITE: Kitchen tap

SOURCE: Well (90 ft)
COLL. BY: Arie Muilwijk
NOTES: Routine

ROUTINE CHEMICAL ANALYSIS	Units	Result	Guideline	Comment	LOQ	Method
Bicarbonate	mg/L	217			NA	Titration
Calcium	mg/L	57.9			0.10	ICP/MS
Carbonate	mg/L	0			NA	Titration
Chloride	mg/L	1.5	≤ 250 AO		1.00	IC
Fluoride	mg/L	0.19	1.5 MAC		0.1	IC
Hydroxide	mg/L	0			NA	Titration
Iron	mg/L	ND	≤ 0.3 AO		0.01	ICP/MS
Magnesium	mg/L	19.0			0.10	ICP/MS
Nitrate (N)	mg/L	ND	10 MAC		0.23	IC
Nitrite (N)	mg/L	ND	1 MAC		0.03	IC
Potassium	mg/L	1.0			0.10	ICP/MS
Sodium	mg/L	11.5	≤ 200 AO		1.00	ICP/MS
Sulfate	mg/L	35.7	≤ 500 AO		1.00	IC
Total Alkalinity ($CaCO_3$)	mg/L	178			NA	Titration
Total Dissolved Solids (Calc)	mg/L	234	≤ 500 AO		NA	Calculated
Total Hardness ($CaCO_3$) (Calc)	mg/L	223			NA	Calculated
pH		8.2	7.0 - 10.5		NA	pH Meter
Conductivity	µS/cm	414			NA	Conductivity
Anion Sum	mEq/L	4.4			NA	Calculated
Cation Sum	mEq/L	5.0			NA	Calculated
Ion Balance (Cation/Anion)	%	114			NA	Calculated
Ion Balance (% Difference)	%	6.6			NA	Calculated

Results reported relate only to the sample as received and tested by the laboratory. Values less than LOQ are reported as ND.
pH holding time (15 min) was not met.
Nitrite/Nitrate holding time (72 hours) and/or storage conditions (≤ 6°C) were not met. If recollection is required, Public Health Inspector should contact ACFT for instructions.

Collected: Mar 09, 2021 11:56 AM
Received: Mar 18, 2021
Batch: B004162
Certified: Mar 31, 2021 01:15:32 PM
Reported: Mar 31, 2021 01:19:41 PM

LOQ = Limit of Quantitation
NA = Not Applicable
ND = Not Detected
AO = Aesthetic Objective
MAC = Maximum Acceptable Concentration
Guideline = Canadian Drinking Water

Certified By: Elham Zeini Jahromi
For: David W. Kinniburgh, PhD, FCACB
Director, Alberta Centre For Toxicology

Elham Zeinijahromi

Element
Bay #5, 2712-37 Avenue N.E.
Calgary, Alberta
T1Y 5L3, Canada

T: +1 (403) 291-2022
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E: info.Calgary@element.com
W: www.element.com

Analytical Report

Bill To: Down to Earth Labs Inc.
3510 - 6 Avenue N.
Lethbridge, AB, Canada
T1H 5C3
Attn: Justin Quinton
Sampled By:
Company:

Project ID: Arie Muilwijk
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1481605**
Control Number:
Date Received: Mar 23, 2021
Date Reported: Mar 24, 2021
Report Number: 2606055

Reference Number	1481605-1
Sample Date	Mar 22, 2021
Sample Time	NA
Sample Location	
Sample Description	Water Sample / 210322N007
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0			1
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0			1

Approved by:

Mike Yohemas, BSc
General Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.