Ken Regehr Farm June 2017 Action Plan Summary

June 15, 2017

Introduction

On June 8, 2016, Ken Regehr Holdings Ltd. of 4516 Hullcar Road, Armstrong BC was served with a Pollution Prevention Order (PPO) under the Environmental Management Act (File: 108432). The PPO referenced the lands identified by PID 011-227-486 other than the portion occupied by Purple Springs Nursery Inc., as well as other lands associated with the operation, and identified the specific substance of concern as nitrate from agricultural waste. As part of the PPO requirements, the operation was required to have an Environmental Impact Assessment (EIA) completed, to develop an Action Plan based on the results of the EIA and to submit a formal written summary on June 30, 2017 summarizing items completed from the Action Plan.

This report is the June 30, 2017 Summary and includes results of monitoring conducted to June 15, 2017 and upgrades and management changes arising out of the Action Plan completed as of June 15, 2017. This report follows the format of the K. Regehr Action Plan, and Action Item numbering in this report reflects that of the Action Plan.

1. Groundwater monitoring results

Action required: Monitor Project wells 7, 8, 13 and 17 three times per year in 2017 and 2018. Samples are to be analyzed for nitrate-N, nitrite-N, ammonia-N, TKN, total nitrogen and chloride.

Ken Regehr irrigation wells were sampled on March 30, 2017. Sampling was done by Marta Green, P.Geo., of Associated Environmental. Samples were placed in a cooler with ice packs and delivered to Caro Analytical in Kelowna BC for analysis the same day. Samples were analyzed for a suite of nitrogen parameters. Table 1 contains the results for the nitrogen parameters tested. Original lab data is attached as a separate pdf file with chain of custody and QC data included.

The wells will be tested again in June and October of 2017.

Table 1. March 30 2017 Nitrogen data for Ken Regehr Irrigation Wells (all data as mg/L)

Parameter	Project 7	Project 8	Project 13 (after 10 min run)	Project 13 (after 60 min run)	BC drinking water quality guideline
Nitrate (as N)	<0.010	<0.010	0.037	0.281	10
Nitrite (as N)	<0.010	<0.010	<0.010	0.068	1
Ammonia, total (as N)	0.042	0.146	<0.020	<0.020	No guideline
Organic N	0.073	0.137	0.119	0.114	No guideline
Total Kjeldahl N	0.12	0.28	0.12	0.11	No guideline
Total N	0.115	0.283	0.119	0.462	No guideline

2. Water sample from constructed wetland

Action required: Test the constructed wetland 3 times per year during 2017 and 2018 for the same list of parameters as per groundwater testing (nitrate-N, nitrite-N, ammonia-N, TKN, total nitrogen and chloride) and results compared to results from Project well 13. Samples should be collected from the downstream end of the wetland at least 1 metre from shore. Each sample should consist of at least five sub-samples collected from around the wetland.

Table 2 below contains the results of the first wetland water sample from May 1 2017. Sampling was done according to BC Field Sampling Guideline specifications. Sample was placed in a cooler on ice and delivered to Caro Analytical in Kelowna BC for analysis the same day. Samples were analyzed for the same suite of nitrogen parameters as groundwater samples. Lab data is attached as a separate pdf file with chain of custody and QC data attached. The nitrate-N level in the lagoon water was 0.171 mg/L which is below the BC drinking water quality guideline of 10 mg/L. The wetland will be sampled again at the end of June 2017.

Table 2. May 1 2017 Wetland Lagoon Water Sample Nitrogen Data (all data as mg/L)

Parameter	Wetland lagoon	BC drinking water quality guideline
Nitrate (as N)	0.171	10
Nitrite (as N)	<0.010	1
Ammonia, total (as N)	2.88	No guideline
Total Kjeldahl N	37.2	No guideline
Total N	37.3	No guideline

3. Annual maintenance on constructed wetland

Action required: Conduct annual maintenance on the constructed wetland including removal of excess sediment to maintain wetland capacity, and maintenance of berms. Annual maintenance on the constructed wetland will be completed in fall 2017 when water levels are low. This will include removal of excessive sediment and berm maintenance.

4. Re-planting of areas of wetland with native plants

Action required: Re-plant areas of the constructed wetland with native aquatic macrophytes. Replanting of areas of the wetland with native plants will occur in fall 2017 when water levels in the wetland are low. Cattails and bulrushes will be planted to enhance the function of the wetland.

5. Install staff gauge on constructed wetland/pond

Action required: Install a staff gauge on the wetland/pond system by June 1, 2017, and regular water level recording during snow-free months for 2017 and 2018.

The staff gauge was installed on May 31, 2017 and is now operational. Water levels will be recorded weekly during March, April, May, October and November, and monthly during the remaining snow-free

months. The first water level was recorded in June 2017 at 0.4 m above the established base level. Remaining 2017 levels will be reported in the next Summary.

6. Permeability study on feedlot

Action required: Conduct a permeability study on the base of the feedlot. The study was to establish permeability by collecting 7 soil samples for bulk density and texture analysis, and calculation of hydraulic conductivity using bulk density and texture data.

Field work for the permeability study on the feedlot was done on May 26, 2017 by Associated Environmental (AE) of Vernon BC. Ken Regehr Farm is currently awaiting the final report from AE. The report will be provided directly to the Ministry of Environment by AE.

7. 2017 Farm Book

Action required: Have a Farm Book or Nutrient Management Plan prepared for 2017 based on soil sampling results by a qualified person (defined as a CCA or QP in the Action Plan). The 2017 Plan was to be designed for a zero agronomic nitrogen balance on each field. It was to consider the results of the fall 2016 post-harvest soil nitrate study in developing 2017 manure application rates.

The 2017 Farm Book for all fields farmed by Ken Regehr Farm was written in spring 2017 by Doug Macfarlane, CCA, of Emerald Bay Ag Services, Vernon BC. It was developed for a zero nitrogen balance on each field and incorporates the results of the fall 2016 post-harvest soil testing conducted by the Ministry of Agriculture (AGRI). Manure application records and irrigation records are being kept by farm staff as required in the Action Plan.

8. Post-harvest soil testing of all fields over Hullcar aquifer 103

Action required: Collect post-harvest soil samples from all fields farmed by Ken Regehr in 2017 located over aquifer 103.

Post-harvest soil testing of all fields farmed by Ken Regehr Farm will be done in September or early October 2017 within two weeks of the final harvest on each field. Samples will be collected at 0-15, 15-30, 30-60 and 60-90 cm depths and analyzed for nitrate-N as well as other soil nutrients and quality parameters.

9. Participation in AGRI benchmark soil study

Action required: Participate in the AGRI benchmark soil study in 2017 if it is repeated.

Ken Regehr Farm will participate in the AGRI benchmark soil study in fall 2017 if it is continued. At the time of writing, no information was available about whether the study will be repeated in fall 2017.

10. Manure application rate reduction in Field 210

Action required: None. Field 210 was leased by Ken Regehr Farm in 2016. Ken Regehr Farm opted not to renew the lease on this field in 2017 and is therefore not farming this field in 2017.

11. Apply manure based on Farm Book recommendations

Action required: Manure applications in 2017 must be made based on the field and crop-specific recommendations contained in the 2017 Farm Book.

Table 3 shows the fields that were amended with feedlot manure up to June 13, 2017, the dates and the application rates. The application rate of manure slightly exceeded the prescribed application rate on three fields, 201 top back, 202 small field and 102 west. On fields 201 and 202, the prescribed manure application rate was 15 tons/acre and the actual application rate was 19.5 and 19.2 tons/acre respectively. This would have resulted in application of 15.6 lbs/acre more plant-available nitrogen than was prescribed. This amount of extra nitrogen would increase soil nitrate-N levels by 7.5 ppm in the top 15 cm of soil and is therefore not expected to result in significant residual nitrate-N in fall 2017. Field 102 was amended with 21.2 tons/acre while the prescribed application rate was 18 tons/acre. This would have resulted in 11 lbs/A more plant-available nitrogen than was prescribed, and is expected to increase soil nitrate-N levels by 5.5 ppm in the top 15 cm of soil. This also is not expected to significantly increase soil residual nitrate-N levels in fall 2017.

Table 3. 2017 manure application amounts and dates to June 13, 2017

Field ID	Field name	2017 Crop	Prescribed manure app'n rate	Actual manure app'n rate	Date of manure application
			Tons/acre	Tons/acre	
101	Home	Corn silage	18	10.6	April 24
102	West	Corn silage	18	21.2	April 15-19
103	Far west	Alfalfa	0	0	
104	West hill	Alfalfa	0	0	-
105	Bottom feedlot	Corn silage	18-20	10.9	April 18-19
201	Top back	Corn silage	15	19.5	April 5-11
202	Small field	Cereal silage	15	19.2	April 12 + 14
203	Road	Corn silage	18-20	20.8	April 14
204	Reserve trees	Corn silage	Same as 205	20.5	April 21-22
205	Reserve	Alfalfa	10 or 25 (depending on cropping)	0	-
206	Lenns	Corn silage	20	0	-
207	Reserve top	Corn silage	20-25	0	-
208	Dorothy's	Alfalfa	0	0	-

12. Test manure from feedlot in spring prior to manure application

Action required: Feedlot manure must be analyzed in spring 2017 prior to manure application, and results used in calculating manure application rates for 2017.

Manure from the feedlot was tested in spring 2017. The manure was tested for total and available nitrogen (ammonium-N and nitrate-N). Results of the manure test were used in calculating manure application rates on fields for 2017. The lab data is appended in a separate file.

13. Avoid use of inorganic nitrogen fertilizer unless insufficient manure available

Action required: Use of inorganic fertilizer to be avoided in 2017 and 2018 unless insufficient manure was available to meet crop needs or manure could not be applied to a field. If fertilizer N is used, it must be done based on a field sampling program and the recommendation of a qualified person.

No inorganic nitrogen fertilizer was used in spring 2017 and none is planned to be used on any of Ken Regehr's fields in 2017.

Prepared by:

Ruth McDougall, M.Sc., PAg.

Consulting Agrologist

June 15, 2017



CERTIFICATE OF ANALYSIS

REPORTED TO Purple Springs Nursery

4519 Hullcar Road **TEL** (250) 546-8156

Armstrong, BC V0E 1B4 FAX

ATTENTION Joe Klassen WORK ORDER 7031661

PO NUMBER RECEIVED / TEMP 2017-03-23 14:13 / 9°C

 PROJECT
 Analytical Testing
 REPORTED
 2017-06-13

 PROJECT INFO
 2016-8112
 COC NUMBER
 B 46976

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Work Order Comments:

This is a revised report. Refer to Appendix 3 for details

Authorized By: Sara Gulenchyn, B.Sc, P.Chem.
Client Service Coordinator

If you have any questions or concerns, please contact me at sgulenchyn@caro.ca

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ANALYSIS INFORMATION

REPORTED TOPurple Springs NurseryWORK ORDER7031661PROJECTAnalytical TestingREPORTED2017-06-13

Analysis Description	Method Reference	Technique	Location
Ammonia, Total in Water	APHA 4500-NH3 G*	Automated Colorimetry (Phenate)	Kelowna
Anions by IC in Water	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Nitrogen, Total Kjeldahl in Water	APHA 4500-Norg D*	Block Digestion and Flow Injection Analysis	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Method Reference Descriptions:

APHA Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health

Association/American Water Works Association/Water Environment Federation

Glossary of Terms:

MRL Method Reporting Limit

Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such

as dilutions, limited sample volume, high moisture, or interferences

mg/L Milligrams per litre



SAMPLE ANALYTICAL DATA

REPORTED TO Purple Springs Nursery **WORK ORDER** 7031661 **PROJECT Analytical Testing** 2017-06-13 **REPORTED** Analyte Result / MRL/ Units **Prepared Analyzed Notes** Recovery Limits Sample ID: Project 7 (7031661-01) [Water] Sampled: 2017-03-22 13:25 **Anions** Chloride N/A 20.0 0.10 mg/L 2017-03-25 < 0.010 Nitrate (as N) 0.010 mg/L N/A 2017-03-25 Nitrite (as N) < 0.010 0.010 mg/L N/A 2017-03-25 General Parameters Ammonia, Total (as N) 0.042 0.020 mg/L N/A 2017-03-26 Nitrogen, Total Kjeldahl 0.050 mg/L 2017-03-24 2017-03-27 0.115 Calculated Parameters Nitrate+Nitrite (as N) < 0.0100 0.0100 mg/L N/A N/A N/A N/A Nitrogen, Total 0.0500 mg/L 0.115 N/A N/A Nitrogen, Organic 0.0730 0.0500 mg/L Sample ID: Project 8 (7031661-02) [Water] Sampled: 2017-03-22 13:42 **Anions** Chloride 21.0 0.10 mg/L N/A 2017-03-25 Nitrate (as N) < 0.010 0.010 mg/L N/A 2017-03-25 < 0.010 Nitrite (as N) 0.010 mg/L N/A 2017-03-25 General Parameters 2017-03-26 Ammonia, Total (as N) 0.020 mg/L N/A 0.146 0.050 mg/L Nitrogen, Total Kjeldahl 2017-03-24 2017-03-27 0.283 Calculated Parameters < 0.0100 Nitrate+Nitrite (as N) 0.0100 mg/L N/A N/A Nitrogen, Total 0.0500 mg/L N/A N/A 0.283 Nitrogen, Organic 0.137 0.0500 mg/L N/A N/A Sample ID: Project 13-10 min (7031661-03) [Water] Sampled: 2017-03-22 14:04 **Anions** 0.10 mg/L Chloride N/A 2017-03-25 24.9 Nitrate (as N) 0.037 0.010 mg/L N/A 2017-03-25 Nitrite (as N) < 0.010 0.010 mg/L N/A 2017-03-25 General Parameters Ammonia, Total (as N) < 0.020 0.020 mg/L N/A 2017-03-26 0.050 mg/L 2017-03-24 2017-03-27 Nitrogen, Total Kjeldahl 0.119 Calculated Parameters Nitrate+Nitrite (as N) 0.0367 0.0100 mg/L N/A N/A Nitrogen, Total 0.156 0.0500 mg/L N/A N/A Nitrogen, Organic 0.119 0.0500 mg/L N/A N/A

0.10 mg/L

N/A

2017-03-25

Sample ID: Project 13-60 min (7031661-04) [Water] Sampled: 2017-03-22 15:04

24.3

Anions Chloride



SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT

Purple Springs Nursery Analytical Testing WORK ORDER REPORTED 7031661 2017-06-13

Analyte	Result / Recovery	MRL / Limits	Units	Prepared	Analyzed	Notes
Sample ID: Project 13-60 min	(7031661-04) [Water]	Sampled: 2017-03-22 15:04	, Continu	ed		
Anions, Continued						
Nitrate (as N)	0.281	0.010	mg/L	N/A	2017-03-25	
Nitrite (as N)	0.068	0.010	mg/L	N/A	2017-03-25	
General Parameters						
Ammonia, Total (as N)	< 0.020	0.020	mg/L	N/A	2017-03-26	
Nitrogen, Total Kjeldahl	0.114	0.050	mg/L	2017-03-24	2017-03-27	
Calculated Parameters						
Nitrate+Nitrite (as N)	0.348	0.0100	mg/L	N/A	N/A	
Nitrogen, Total	0.462	0.0500	mg/L	N/A	N/A	
Nitrogen, Organic	0.114	0.0500	mg/L	N/A	N/A	



APPENDIX 1: QUALITY CONTROL DATA

REPORTED TO PROJECT

Purple Springs Nursery Analytical Testing WORK ORDER REPORTED 7031661 2017-06-13

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- Method Blank (Blk): Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate
 that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory
 environment
- **Duplicate (Dup)**: Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- Blank Spike (BS): A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- Standard Reference Material (SRM): A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Anions, Batch B7C1529									
Blank (B7C1529-BLK1)			Prepared	d: 2017-03	-24, Analyz	zed: 2017	-03-24		
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Blank (B7C1529-BLK2)			Prepared	d: 2017-03	-25, Analyz	zed: 2017	-03-25		
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
LCS (B7C1529-BS1)			Prepared	d: 2017-03	-24, Analyz	zed: 2017	-03-24		
Chloride	15.9	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	4.08	0.010 mg/L	4.00		102	93-108			
Nitrite (as N)	1.96	0.010 mg/L	2.00		98	83-110			
LCS (B7C1529-BS2)			Prepared	d: 2017-03	-25, Analyz	zed: 2017	-03-25		
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.09	0.010 mg/L	4.00		102	93-108			
Nitrite (as N)	1.92	0.010 mg/L	2.00		96	83-110			
General Parameters, Batch B7C1563									
Blank (B7C1563-BLK1)			Prepared	d: 2017-03	-24, Analyz	zed: 2017	-03-27		
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							

0.050 mg/L

0.050 mg/L

0.050 mg/L

10.0

< 0.050

11.4

11 0

Prepared: 2017-03-24, Analyzed: 2017-03-27

Prepared: 2017-03-24, Analyzed: 2017-03-27

Prepared: 2017-03-24, Analyzed: 2017-03-27

114

110

84-121

84-121

Blank (B7C1563-BLK2)

Nitrogen, Total Kjeldahl

LCS (B7C1563-BS1)

Nitrogen, Total Kjeldahl

LCS (B7C1563-BS2)

Nitrogen, Total Kjeldahl



APPENDIX 1: QUALITY CONTROL DATA

REPORTED TO PROJECT

Purple Springs Nursery Analytical Testing WORK ORDER REPORTED 7031661 2017-06-13

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
General Parameters, Batch B7C1594									
Blank (B7C1594-BLK1)			Prepared	d: 2017-03-	-26, Analyz	zed: 2017	-03-26		
Ammonia, Total (as N)	< 0.005	0.020 mg/L							
Blank (B7C1594-BLK2)			Prepared	d: 2017-03-	-26, Analyz	zed: 2017	-03-26		
Ammonia, Total (as N)	< 0.005	0.020 mg/L							
Blank (B7C1594-BLK3)			Prepared	d: 2017-03-	-26, Analyz	zed: 2017	-03-26		
Ammonia, Total (as N)	< 0.005	0.020 mg/L							
LCS (B7C1594-BS1)			Prepared	d: 2017-03-	-26, Analyz	zed: 2017	-03-26		
Ammonia, Total (as N)	1.04	0.020 mg/L	1.00		104	86-111			
LCS (B7C1594-BS2)			Prepared	d: 2017-03-	-26, Analyz	zed: 2017	-03-26		
Ammonia, Total (as N)	0.992	0.020 mg/L	1.00		99	86-111			
LCS (B7C1594-BS3)			Prepared	d: 2017-03-	-26, Analyz	zed: 2017	-03-26		
Ammonia, Total (as N)	0.985	0.020 mg/L	1.00		98	86-111			
Duplicate (B7C1594-DUP2)	Sou	rce: 7031661-04	Prepared	d: 2017-03-	-26, Analyz	zed: 2017	-03-26		
Ammonia, Total (as N)	0.014	0.020 mg/L		< 0.020				15	
Matrix Spike (B7C1594-MS2)	Sou	rce: 7031661-04	Prepared	d: 2017-03-	-26, Analyz	zed: 2017	-03-26		
Ammonia, Total (as N)	0.266	0.020 mg/L	0.250	< 0.020	101	76-121			



APPENDIX 3: REVISION HISTORY

REPORTED TO PROJECT

Purple Springs Nursery Analytical Testing WORK ORDER REPORTED

7031661 2017-06-13

Sample ID	Changed	Change	Analysis	Analyte(s)
7031661-	2017-06-13	Contact Name	N/A	N/A





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CONTACT: Joe Klassen	CONTACT:	-		- Othe	r*						BC CSF	1	AB TIE	R1	CCME	OTI	HER*	
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CERTIFICATE OF ANALYSIS

REPORTED TO Purple Springs Nursery

> 4519 Hullcar Road (250) 546-8156 TEL

Armstrong, BC V0E 1B4 **FAX**

ATTENTION Rico **WORK ORDER** 7050048

PO NUMBER RECEIVED / TEMP 2017-05-01 14:05 / 13°C

2017-05-08 **PROJECT** Wetland Lagoon **REPORTED PROJECT INFO COC NUMBER** B48299

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Authorized By:

Sara Gulenchyn, B.Sc, P.Chem. Client Service Coordinator

If you have any questions or concerns, please contact me at sgulenchyn@caro.ca

Locations:

#110 4011 Viking Way Richmond, BC V6V 2K9 Tel: 604-279-1499

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17225 109 Avenue Edmonton, AB T5S 1H7 Tel: 780-489-9100

www.caro.ca



ANALYSIS INFORMATION

REPORTED TOPurple Springs NurseryWORK ORDER7050048PROJECTWetland LagoonREPORTED2017-05-08

Analysis Description	Method Reference	Technique	Location
Ammonia, Total in Water	APHA 4500-NH3 G*	Automated Colorimetry (Phenate)	Kelowna
Anions by IC in Water	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Nitrogen, Total Kjeldahl in Water	APHA 4500-Norg D*	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Method Reference Descriptions:

APHA Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health

Association/American Water Works Association/Water Environment Federation

Glossary of Terms:

MRL Method Reporting Limit

Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such

as dilutions, limited sample volume, high moisture, or interferences

mg/L Milligrams per litre

pH units pH < 7 = acidic, ph > 7 = basic



SAMPLE ANALYTICAL DATA

REPORTED TO Purple Springs Nursery **PROJECT** Wetland Lagoon

WORK ORDER REPORTED

7050048 2017-05-08

Analyte	Result / Recovery	MRL / Limits	Units	Prepared	Analyzed	Notes
Sample ID: Wetland Lagoon(7	050048-01) [Water] Sampled:	2017-05-01 12:40				
Anions						
Nitrate (as N)	0.171	0.010	mg/L	N/A	2017-05-02	
Nitrite (as N)	< 0.010	0.010	mg/L	N/A	2017-05-02	
General Parameters						
Ammonia, Total (as N)	2.88	0.020	mg/L	N/A	2017-05-04	
Nitrogen, Total Kjeldahl	37.2	0.050	mg/L	2017-05-04	2017-05-05	
рН	7.76	0.01	pH units	N/A	2017-05-04	HT2
Calculated Parameters						
Nitrate+Nitrite (as N)	0.171	0.0100	mg/L	N/A	N/A	
Nitrogen, Total	37.3	1.00	mg/L	N/A	N/A	

Sample / Analysis Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.



APPENDIX 1: QUALITY CONTROL DATA

REPORTED TO PROJECT

Purple Springs Nursery Wetland Lagoon

WORK ORDER REPORTED 7050048 2017-05-08

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- Method Blank (Blk): Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- **Duplicate (Dup)**: Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- Blank Spike (BS): A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- Standard Reference Material (SRM): A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Anions, Batch B7E0118									
Blank (B7E0118-BLK1)			Prepared	d: 2017-05	-03, Analyz	zed: 2017	-05-03		
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Blank (B7E0118-BLK2)			Prepared	d: 2017-05	-03, Analyz	zed: 2017	-05-03		
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
LCS (B7E0118-BS1)			Prepared	d: 2017-05	-03, Analyz	zed: 2017	-05-03		
Nitrate (as N)	4.00	0.010 mg/L	4.00		100	93-108			
Nitrite (as N)	1.86	0.010 mg/L	2.00		93	83-110			
LCS (B7E0118-BS2)			Prepared	d: 2017-05	-03, Analyz	zed: 2017	-05-03		
Nitrate (as N)	4.00	0.010 mg/L	4.00		100	93-108			
Nitrite (as N)	1.85	0.010 mg/L	2.00		93	83-110			
General Parameters, Batch B7E0137 Blank (B7E0137-BLK1) Ammonia, Total (as N)	< 0.020	0.020 mg/L	· · · · · · · · · · · · · · · · · · ·		-04, Analyz				
Blank (B7E0137-BLK2)			Prepared	J. 2017-05	-04, Analyz	zea. 2017	-05-04		
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
LCS (B7E0137-BS1)			Prepared	d: 2017-05	-04, Analyz	zed: 2017	-05-04		
Ammonia, Total (as N)	0.979	0.020 mg/L	1.00		98	86-111			
LCS (B7E0137-BS2)			Prepared	d: 2017-05	-05, Analyz	zed: 2017	-05-05		
Ammonia, Total (as N)	1.06	0.020 mg/L	1.00		106	86-111			

General Parameters, Batch B7E0275



APPENDIX 1: QUALITY CONTROL DATA

101

84-121

REPORTED TO PROJECT

Purple Springs Nursery Wetland Lagoon WORK ORDER REPORTED

7050048 2017-05-08

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
General Parameters, Batch B7E0275, Co	ntinued								
Reference (B7E0275-SRM1)			Prepared	d: 2017-05-	-04, Analyz	zed: 2017	-05-04		
рН	7.04	0.01 pH units	7.00		101	98-102			HT2
General Parameters, Batch B7E0341									
Blank (B7E0341-BLK1)			Prepared	d: 2017-05-	-04, Analyz	zed: 2017-	-05-05		
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B7E0341-BS1)			Prepared	d: 2017-05	-04, Analyz	zed: 2017	-05-05		

1.00

QC Qualifiers:

Nitrogen, Total Kjeldahl

HT2

The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

0.050 mg/L

1.01



ïking Way, Richmond, BC V6V 2K9 79-1499 Fax: (604) 279-1599

ighway 97N, Kelowna, BC V1X 5C3 35-9646 Fax: (250) 765-3893

venue NW, Edmonton, AB T5S 1H7 19-9100 Fax: (780) 489-9700

CHAIN	OF	CUST	ODY	RECORD	COC#	В	1

	CANC	DC COC, Re	V 20
48	299	PAGE	0

RELINQUISHED BY: Rico Thorses	DATE: May 1	RECEIVED BY:	10/2	PARE T	51
PROJECT:	TIME	PROJECT INFO:		TIME:	(0

COMPANY W. J. S. I	11.	lcou	DANK (2. 1	SAME AS	REPORT TO		We	110	Curc	1	La	900	on/			Link	DECI	i ii vi O						
COMPANY: Purple Springs , ADDRESS:	Navs	ADD	RESS:	arpie	Spr	iss prairie	1	RNAF outine ish: 1 l	OUN (5-7 Day*	Days)	Day*	QUES	Day*			nadian Drinkir	Drink	ing W	Ater Que	uality on Act	Guide / Reg.			Rep	gs on port?
CONTACT: Rico Thorsen		CON	TACT: Jo	e Klo	sser	V			Lab To	o Conf	irm. S	urchar	ae Ma	v Appl					ER1 [HER*	LW[
TEL/FAX:		TEL/											3		LYS					-			ar.	maj	211
EMAIL 1: thorsen 4 @ yaho EMAIL 2: EMAIL 3:	dat [THER* [· CG	EMAIL EMAIL PO#	2: <u>d</u>	פון די	nurs	eny.com	PHCF1			Non-Chlor.		ERBICID	SSOLVED HG	☐ inc. pH ☐				PC 🗆	☐ E.coli ☐			.2		Vittogen/	
** NEW ** If you would like to sign up for ClientConnect	MATR		SAMPI		-	OMMENTS:	I		F2-F	PH	OLS	AC	RDI	SALA	ALK TD				SMS		0	2.0			
CLIENT SAMPLE ID:	DRINKING WATER OTHER WATER		DATE	TIME	CHLORINATED FILTERED		BTEX ☐ VPH			PAH I L/HEPH PHENOLS Chlorinated	PCB ☐ GLYCOLS	PESTICIDES	METALS - WATER TOTAL METALS - WATER DISSOLVED	METALS - SOIL (SALM)	PHX EC ALK	1IQ	TOG T MOG	FECAL COLIFORMS	TOTAL COLIFORMS ASBESTOS	Nitrito	Witret	Amma	TXW	7074	НОГР
Wetland Lagoon			May	1240			1			II.					X					X	አ	×	*	*	
Supplies Needed:	60 Days	90		TIONS (Disc ger Date (Surc		days after Repo	ort ui	nless	other	rwise s	speci	fied):			PAYM CHEQUE CREDIT DEBIT CASH INVOICE			COO!	PLE RI LER 1 LER 2 LER 3	(°C): (°C): (°C):	3		ICE:	Y C	N X

REPORT NO. C17081-80003 ACCOUNT NO. 05219

A&L CANADA LABORATORIES INC.

2136 Jetstream Rd, London, ON, N5V 3P5 Tel (519) 457-2575 Fax: (519) 457-2664

TO: EMERALD BAY AG SERVICES 10 MARYS EMERALD BAY ROAD VERNON, BC V1H 2A7

ATTN: DOUG MACFARLANE

FOR: KEN REGHER FEEDYARDS



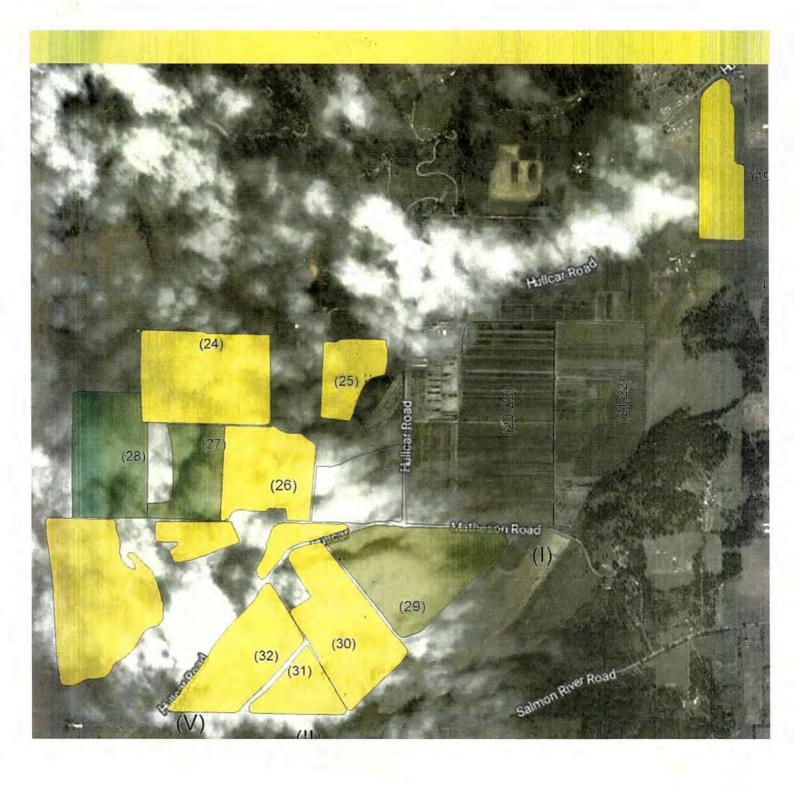
MANURE ANALYSIS

SAMPLE ID: FEEDLOT

DATE REPORTED: 2017-03-26 DATE PRINTED: 2017-03-29 DATE RECEIVED: 2017-03-22

PAGE:

Magnesium	Calcium	Carbon:Nitrogen Ratio (C:N)	Organic Matter *	Potash (K as K20) **	Potassium (Total)	Phosphate (P as P205) **	Phosphorus (Total)	NH4-N	Nitrogen (Total)	Dry Matter	PARAMETER	
0.1203 %	0.3292 %	19:1	17.2 %	0.2711 %	0.2259 %	0.3008 %	0.1308 %	413 ppm	0.495 %	21.8 %	ANALYSIS RESULT	
-2.4	6.6			5.4		6.0		0.8	9.9		POUNDS PER TON	
				4.9		2.4					ESTIMATED AVAILABILITY PER TON	DATE FRINTED: 2017-00-23



2017 Crop Plan Ken Regher Feedyard

REPORT NO. C17081-80003 **ACCOUNT NO. 05219**

A&L CANADA LABORATORIES INC.

2136 Jetstream Rd, London, ON, N5V 3P5 Tel (519) 457-2575 Fax: (519) 457-2664

FOR: KEN REGHER FEEDYARDS

10 MARYS EMERALD BAY ROAD TO: EMERALD BAY AG SERVICES VERNON, BC V1H 2A7 ATTN: DOUG MACFARLANE

DATE RECEIVED; 2017-03-22 DATE REPORTED: 2017-03-28 DATE PRINTED: 2017-03-29

MANURE ANALYSIS

SAMPLE ID: FEEDLOT LAB NUMBER: 818009

PARAMETER	ANALYSIS RESULT	POUNDS PER TON	ESTIMATED AVAILABILITY PER TON
Dry Matter	21.8 %		
Nitrogen (Total)	0.495 %	9.9	¥
NH4-N	413 ppm	0.8	
Phosphorus (Total)	0.1308 %		
Phosphate (P as P205) **	0.3008 %	0.9	2.4
Potassium (Total)	0.2259 %		
Potash (K as K20) **	0.2711 %	5.4	4.9
Organic Matter *	17.2 %		
Carbon:Nitrogen Ratio (C:N)	19:1		
Calcium	0.3292 %	9.9	
Magnesium	0.1203 %	2.4	

Acreage Report

Acreage Report

Client	Farm	Field r	Mapped Area (ac)	Tillable Area (ac)	Legal Area (ac)
Regher, Ken	Home				
	Home	101 Home Field	17.19	17.20	0.00
		102 West fld	51.19	51.20	0.00
		103 Far West	40.53	40.50	0.00
		104 West Hill	22.65	22.50	0.00
		105 Bottom Feedlot	33.23	33.00	0.00
		Total Hon		164.40	0.00
					5.30
	PS	Purple Springs East	64.09	64.00	0.00
		Purple Springs West	106.35	108.00	0.00
		Purple Springs Yellow	29.47	29.50	0.00
		Total F		199.50	0.00
	Rented	(Otal)	3 188.81	189.00	0.00
		201 Top Back	60.44	60.40	0.00
		202 Small Field	10.51	10.00	0.00
		203 Road	7.97	8.00	0.00
		205 Reserve	52.06	52.00	0.00
		206 Lens Field	44.24	44.20	0.00
		207 Top Rserve	36.47	38.50	0.00
		208 Dorthys	15.90	15.90	0.00
		209 Swaans	26.85	28.90	0.00
		Total Rent	ed 254.44	253.90	0.00
		Total Regher, Ke	en 619.15	617.80	0.00
		Tot	tal 619.15	617.80	0.00

Long term corn. High organic matter with 58 lb residual N in the top 6" and only 36 lb in the next 2 1/2 feet. All other soil levels are good to high with excessive phos. being the biggest challenge going forward.



2016	Corn Silage	2017	Corn silage	
------	-------------	------	-------------	--

	Pla	anned Events and Records	
Date	Event	Comments	Result
April	Manure	18 tons fresh feedlot manure	
		18x9.9= 178.2 lbs N	
		12 tons fresh feedlot manure	
AZRIL 24/17		10.6 T/AL.	
		10.6 T/AC. 12x9.9= 118.8 lbs N	
			-
	• • 1		

10 MARYS EMERALD BAY KUAD VERNON, BC V1H 2A7

4516 HULLCAR ROAD

Grower Code:05219043

Farm:FEEDLOT

05219-N1108

Field: 101 HOME

SOIL TEST REPORT

Report Date: 2016-10-18 Print Date: 2017-03-30

Attn:DOUG MACFARLANE 250-546-3847

Page:1

Put Depth Number Matter Bloarb Bray-P1 K ppm Mg ppm Ca ppm pH Butter	Sample			Lab	Organic	Phospho	Phosphorus - P ppm	Potassium	Magneslum	n Calclum		五	CEC	Perce	ent Base	Percent Base Saturations	lons
8 18236 9.8 152H 463H 630 VH 375 M 12 18237 3.9 85H 262H 467 VH 220 M 24 18238 1.5 48 M 96 G 311 VH 155 M 36 18239 1.0 23 M 42 M 256 H 170 L 8ulfur Nitrogen 2ine Manganese Iron Copper Boron Salte 58 VH 104 32 H 58	Number	Legal Land Desc				Bicarb	Bray-P1		Mg ppm	Ca ppm		Buffer	meq/100g	% X %	% MM %	% Ca % H	1 % NB
12 18237 3.9 85 H 262 H 467 VH 220 M 36 18238 1.5 48 M 96 G 311 VH 155 M 36 18239 1.0 23 M 42 M 256 H 170 L Introgen ppm s lbs/sc ppm NO3-M lbs/sc 2n ppm Manganese fron Copper Boron salts 43 H 77 8 L 14	K191A		9	18236		152 H	463 H	830 VH	375 M	3640 M	7.0		28.8	6.1 1	11.8 68	88.5 12.9	8.0 8
24 18238 1.5 48 M 96 G 311 VH 155 M 36 18239 1.0 23 M 42 M 256 H 170 L Sulfur Nitrogen Zine Manganese Iron Copper Boron Salte 58 VH 104 32 H 58 43 H 77 8 L 14 22 L 79 3 VL 11 34 M 122 3 VL 11	K191B		12	18237	3.9	H 98	262H	467 VH	220 M	2240 M	7.2		15.1	7.9 1	22 74	74.3 4.6	0.1
36 18239 1.0 23 M 42 M 256 H 170 L Sulfur Nitrate Zine Manganese Iron Copper Boron Saluble 58 VH 104 32 H 58 43 H 77 8 L 14 22 L 79 3 VL 11 34 M 122 3 VL 11	K1910		24	18238	1.5	48 M	996	311 VH	155 M	2030 H	7.7		12.3	6.5 10	0.5 82.4	4	0.8
Sulfur Nitrate Zine Manganese Iron Copper Boron Soluble ppm \$1bs/ac ppm NO3-N Ibs/ac Zn ppm Mn ppm Fe ppm Cu ppm B ppm ms/cm 58 VH 104 32 H 58 1.4 H 1.4 H 22 2 L 79 3 VL 11 34 N 122 3 VL 11	K191D		36	18239		23 M	42 M	258 H	1071	3820 VF	1.9		21.3	3.1 8	8.7 89.8	8.	0.5
58VH 104 32H 58 1.4H 145H 410 0.0G 43H 77 8L 14 54H 617 0.1G 22L 79 3VL 11 8M 479 0.0G 34M 122 3VL 11 0.0G	Sample Number	Sulfur ppm 8 lbs/ac	NITO NITO PPM NOS	ate gen N IDB/ac	Zing Zn ppm	m		755		Saturation , %P	Aluminum Al ppm	Saturatio %AI*	A KIMG ENR	Chloride C Cl ppm		Sodium Molybdenum Na ppm Mo ppm	Mo ppm
43H 77 8L 14 617 0.16 22L 79 3VL 11 8M 478 0.06 34M 122 3VL 11 0.06	K1913	58 VH 104	32 H	58				14H		145H	410	0.0 G	0.52 111		50 M	M	
22L 79 3VL 11 34M 122 3VL 11 3. 110 0.0 G	K191B	43 H 77	18 78	14						54 H	617	0.16	0.85 51		33 W	×	
122 3 11 110 0.06	KIGIC	221 79	3.41	:-						N 00	479	0.00	0.62 27		23 N	N	
	MIBID.	34 M 122	311	-						3	-	0.00	0.46 22		24		

Very High (*High) Feature Feature						9	GRAPHIC SUMMARY	SUMMAR	,					
P1	Very High (*High)									1.				Very High ("High)
P1* 5,P* N K Ng Cs S Zn Mn Fe Cu B	High (1900b)													(doop,) uBiH
P1* 5,P* N K Ng Cs S Zn Mn Fe Cu B	Medlum													Medium
P1+ %P+ N K Ng Ca S Zn Mn Fe Cu B	FOR												T	LOW
5,5° N K Mg Ca S Zn Mn Fe Cu	Wary Low													Very Low
		PH *	*d%	N	145	DW	3	67	17	Mn	æ	3	603	

SOIL FERTILITY GUIDELINES (Ibs/ac)

Sample Number	Pravious Crop	Intended Crop	Yield Goal	Lime	Z	P205	K20	BW	83	67	Zn	Mn	Fe	Cu	100
K191A	Corn Silage Wes	om Silage Western Com Silage Western 25 tons	25 tons	0.0	214	20	20	10	0	0					0.0

Crop yield is influenced by a number of factors in addition to soil fertility. No guarantee or warranty concerning crop performance is made by A & L.

Long term corn silage field just west of the feedlot. Good nitrogen remaining after the crop and medium levels at the deeper depths. Manure applications should be maintained to ensure any off season nitrogen leaching is minimized. The biggest challenge on this field is the elevated phosphorous levels and rotating into alfalfa in the near future would be recommended. Soil OM is excellent



2016	Corn Silage	2017	Corn Silage	-
2010	Join Shage		Join Ghage	

	P	lanned Events and Records	
Date	Event	Comments	Result
April	Manure	18 tons fresh feedlot manure	
		18x9.9= 178.2 Lbs N	
			-
		14x9.9= 138.6 Lbs N	
APRIL 15-19		14 tons of fresh feedlot manure	
		14 tons of fresh feedlot manure	
			-
			7

VERNON, BC V1H 2A7

Attn:DOUG MACFARLANE 250-546-3847

4516 HULLCAR ROAD

Grower Code:05219043 Farm:FEEDLOT

Field: 102 WEST FIELD

05219-N1116

Report Date: 2016-10-21 Print Date: 2017-03-30

SOIL TEST REPORT

Page:1

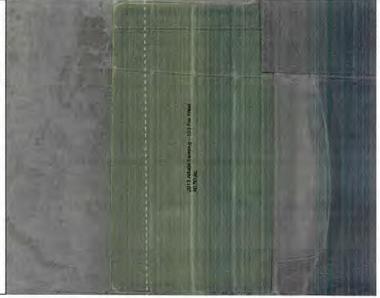
ample			Lab	Organic	Phospho	Phosphorus - P ppm	Potas	Potassium	Magnesium	Calcium		五	CEC	a.	ercent E	3388 Sat	Percent Base Saturations
umber	Legal Land Descor.	nepm	Number	Watter	Bicarb	Bray-P1	K ppm	md	Mg ppm	Ca ppm	Hd	Buffer	meq/100g	% K	% Mg	% Mg % Ca	%H %W
(201A		9	27566	7.2	101 H	304H	410	410 VH	300 M	3560 H	7.3		21.5	4.8	11.8	82.7	0.8
2018		12	27587	5.8	83 H	223 H	448 VH	1 H	240 M	2280 H	7.4		14.7	7.8	13.8	77.7	1.0
201C		24	27568	8.	38 M	₩ 9	372 VH	KH.	190 M	1690 H	7.9		11.1	8.8	14.3	76.1	1.2
(201D		38	27569	1.2	22 M	30F	252 H	I	1991	3550 VH	8.1		19.8	3.3	6.5	88.8	0.7
ample	Sulfur ppm S lbs/ac	Nifrate Nifrogen ppm NOS-N Ibs/ac	ate gen N ID8/ac	Zinc Zin ppm	Manganese Mn ppm	Fe ppm C	Copper Cu ppm	Boron B ppm	Soluble Safts ms/cm	Saturation Aluminum Saturation KMg ENR %P Alippm %Al* Ratio	Aluminum Ai ppm	Saturatio %Al*	on KING E		Chloride Cl ppm	Sodium Na ppm	Sodium Molybdenum Na ppm Mo ppm
201A	47H 85	19 M	34					0.9 M		24 H	127	0.0 G	0.42 85	35		48 M	e'r
2018	35 M 83	3	100							18H	534	0.06.	0.57	56		35 M	
2010	27 M 97	ZVL	-							121	638	0.00	0.80	30		3 15	
2000	101 101	40	22							77	37.	0.00	0.5	24		33 M	

					9	GRAPHICS	SUMMAR	≥-					
Jery High (*High)											1		Very High ("High
High (*GOOD!)													High (*GOOD)
Medum									11		76.5		Medium
割									1				LOW
Very Low									1				Very Low
	P1 +	+ d%	*	32	2	3	67	15	#	æ	3	63	

-
(lbs/ac
INES
SUIDEL
YGL
FERT
SOIL

mper	Previous Crop	Intended Crop	Yield Goal	Lime	×	P205	K20	BW	5	69	Zn	Mn	F.	Cu	00
DIA	Corn Silage Wes	Corn Silage Western Corn Silage Western 2	25 tons	0.0	228	20	20	15	0	0					0.0
K201A	Corn Silage Wes	Corn Silage Western Com Silage West Bld 25 tons	25 tons	0.0	228	55	150	15	0	0					0.0

Planted in 2013. Soil Phosphorous levels are getting better with potassium levels almost low enough to where manure will be needed again in the next year. This is the 5th year of the alfalfa stand and it is time to rotate back to corn next year.



2016	Alfalfa	2017	Alfalfa	

	Plan	ned Events and Records	
Date	Event	Comments	Result
	- 1		
- 1			
		3	

VERNON, BC V1H 2A7

Attn:DOUG MACFARLANE 250-546-3847

4516 HULLCAR ROAD

Grower Code: 05219043

Farm:FEEDLOT

Field: 103FAR WEST

05219-N1107

Page: 1

Report Date: 2016-10-18 Print Date: 2017-03-30

SOIL TEST REPORT

K ppm Mg ppm Cs ppm pH Butter meq/100g % K % Mg 166 M 250 M 2930 H 7.1 19.0 2.2 11.0 172 H 200 M 1950 M 7.1 13.1 3.4 12.7 179 H 150 M 1940 H 7.7 11.5 4.0 10.8 Copper Boron \$alts % P Al ppm %Al* R3 Cl Cu ppm B ppm mskm 22 H 481 0.0 G 0.20 75 L D M 22 H 682 0.1 G 0.27 40 ppm L D M 24 H 682 0.1 G 0.27 40 ppm 1 D M 24 H 682 0.0 G 0.27 40 ppm 1 V L 77 0.0 G 0.22 20	Legal Land Descpt. Depth Number Matter Bicarb Bray-P1 K ppm Mg ppm	Sample	-	4	Lab	Organic		Phosphorus - P ppm		Potaeslum	Magnesium	Calclum		H	CEC	۵.	ercent E	388 53	Percent Base Saturations	-
12 18245 2.8 55 G 128H 172 H 200M 1950 M 7.1 13.1 3.4 12.7	12 18244 6.2 95H 262H 166 M 250 M 12 18245 2.8 55 G 128H 172 H 200 M 24 18246 1.4 20L 37L 179 H 150 M 145 L 200 M 35 L 18247 0.8 95 H 137 L 100 M 35 SH 137 L 4 H 13	Number	Legal Land Descor.	unden		Matter		Bray		K ppm	Mg ppm			Buffer	meq/100g	% K	BW %	% C3	H %	% N/3
12 18245 2.8 55 G 128H 172 H 200 M 1950 M 7.1 13.1 3.4 12.7 2.4 18246 1.4 20 L 37 L 179 H 150 M 1940 H 7.7 11.5 4.0 10.9 3.6 18247 0.8 9 V	12 18245 2.8 55 G 128 H 172 H 200 M 24 18246 1.4 20 L 37 L 179 H 150 M 36 18247 0.8 9 VL 14 VL 100 M 145 L Nitrate Nitrogen Nitr	K211A		9	18244		H 98	2621		W 99	250 M	2930 H	7.1		18.0	2.2	11.0	77.2	8.8	0.7
24 18246 1.4 20 L 37 L 179 H 150 M 1940 H 7.7 11.5 4.0 10.9 36 18247 0.8 9 VL 14 VL 100 M 145 L 3720 VH 8.0 20.1 1.3 6.0 Nitrogen Zine Manganese Iron Copper Boron Soluble saturation Aluminum Saturation K/Mg ENR Clinide plan 1 1 1 M 20 1.0 pm 5 pm Al ppm %Al* Ratio Ppm 2 VL 4 20 1.0 M 35 22 H 481 0.0 G 0.27 40 1 0 M 35 4 486 0.0 G 0.37 26 1.0 L 1.0 L 4.0 L 0.0 G 0.22 20	24 18246 1.4 20 L 37 L 179 H 150 M 36 18247 0.8 9 VL 14 VL 100 M 145 L Nitrogen Zinc Manganese Iron Copper Boron Soluble Nitrogen Zn ppm Mn ppm Fe ppm Cu ppm Bppm niskm 11 M 20 1.0 M 35 1.0 M 1.0 M 1 VL 4 1 VL 4 1.0 M 1.0 M	K211B		12	18245	2.8	566	1281		72H	200 M	1950 M	7.1		13.1	3.4	12.7	74.2	8.9	0.8
Nitrate 21nc Manganese Iron Copper Boron Salta %P Alippin %Ali Ratio Ppin Ppin Nitrogen Iron Copper Boron Salta %P Alippin %Ali Ratio Ppin Ppin ILOM Salta WP Alippin Salta Mn ppin Fe ppin Cu ppin Bippin malcin Matter Matter Matter Matter Ppin ILOM Salta Matter ILOM Salta Matter ILOM Salta Matter ILOM Salta Matter Matter ILOM Salta ILOM Salta Matter ILOM Salta Matter ILOM Salta ILOM Sal	36 18247 D.8 9 VL 14 VL 100 M 145 L Niftate Zinc Manganese Iron Copper Boron Soluble Nitrogen Zn ppm Mn ppm Fe ppm Cu ppm Bppm 11 M 20 1.0 M 2 VL 4 1.0 M 1 VL 4	K211C		24	18246	1.4	201	371		79 H	150 M	1940 H	7.7		11.5	4.0	10.9	84.5		0.7
Niftrate Zinc Manganese Iron Copper Boron Soluble saturation Aluminum Saturation KMg ENR CI ppm NO3-N Ibelac Zn ppm Mn ppm Fe ppm Cu ppm B ppm Salts %P Al ppm %Al* Ratio CI 1 11 M 20 1.0 M 22 H 481 0.0 G 0.20 75 2 VL 4 24 H 682 0.1 G 0.27 40 1 0 M 35 3 VL 488 0.0 G 0.37 26 1 VL 4 1 VL 77 0.0 G 0.22 20	Nitrate Zinc Manganese fron Copper Boron Soluble Nitrogen Zn ppm An ppm Fe ppm Cu ppm B ppm nistcm 11 M 20 1.0 M 1.0 M 1.0 M 10 M 36 1.0 M 1.0 M	42110		36	18247	0.8	JV 8	141		M 00	145L	3720 VH			20.1	53	0.0	82.4		0.4
22H 481 0.0 G 0.20 75 24H 682 0.1 G 0.27 40 3.VL 486 0.0 G 0.37 26 1.VL 77 0.0 G 0.22 20	LOM	Sample	11 1 5 6	NITES NITES DPM NOS-1	ta yen v ibelac	Zine Zn ppm	Manganese Mn ppm		Copper Cu ppm	10000	12-0-0-2	Saturation A %P	luminum Al ppm	Saturath %Al*	on K/Mg El	400		Sodium Na ppm	Sodium Molybdenum Na ppm Mo ppm	THE THE
682 0.16 0.27 40 486 0.06 0.37 26 77 0.06 0.22 20		(211A	27L 48	MI	20					1.0 M		22.H	481	0.00	0.20	92		30 M		
0.0 G 0.37 26 0.0 G 0.22 20	C211C 25M 90 10M 38 8VL C211D 38H 137 1VL 4 1VL	(2118	41 VH 74	2VL	4							24 H	682	0.16		40		25 M		
0.22 20	(2110 38H 137 1VL 4	2110	25 M 90	10 M	33							344	488	0.06		93		18 1		
		2110	38.H 13T	7	4							3	11	0.06				107		

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SOIL FERTILITY GUIDELINES (Ibs/ac)

mper	Previous Crop	Intended Crop	Yleld Goal	Lime	Z	P205	K20	Mg	3	67	Zn	Min	£	己	œ
211A	Alfalfa	Alfalfa	8 tons	0.0	0	0	300	15	0	9					1.5

104

Planted to alfalfa in 2013. 2014 soil test shows good levels in all nutrients with lower level nitrogen depleted but still lots being released from the high organic matter applied over the corn years with feedlot manure.

Soil potassium levels staying well elevated so no nutrients should be required for the I4-5 year life of the stand.

Manage with 103.



Alfalfa	2017	Alfalfa	
	Alfalfa	Alfalfa 2017	Alfalfa 2017 Alfalfa

	Pla	nned Events and Records	
Date	Event	Comments	Result
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Number Legal Land Descpt. Deput Number Matter 1041A 6 53606 7.5								•					3	CHARLING SONG MINORS	The course	
	Indoo	Number	Matter	Bicarb	Bray-P1		K ppm	Mg ppm	Ca ppm		pH Buffer 1	meq/100g	%K %Mg %Ca	6 Mg 6	% Ca %	%H %Na
	9	53606	7.5	H98	237 H		313 VH	240 M	2510 M	7.1		17.0	4.7	11.7 7	73.7 8	8.9 0.9
8	12	53607	1.8	47 M	1146		303 VH	165 M	1570 H	7.4		10.1	1.7	13.6 7	17.4	-
10410	24	53608	12	36 M	81 M		264 VH	160 M	1350 H	7.5		8.9	9.7	15.0 7	75.9	
Sample Sulfur Number ppm S lbs/ac	Nitrate Nitrogen Dpm NO3-N Ibs/ac	te Jen V Ibs/ac	Zinc Zn ppm	Manganese Mn ppm	fron Fe ppm (Copper Cu ppm	Boron B ppm	Soluble Salts ms/cm	Saturation Aluminum Saturation KMg %P Al ppm %Al * Ratio	Aluminum Al ppm	Saturation %Al *	n K/Mg ENR Ratio	Chloride R Cl		Sodium Motybdenun Na ppm Mo ppm	olybdenu Mo ppm
1041A 40H 72	28 H	205	50 29.2 VH		102 VH 4.0 VH		0.6 M	190	63 H	482	0.00	0.40 88	RI.	19 M 3	34 M	
1041B 55 VH 99	16	16							9 M	636	0.16	0.57 30	((4)	36 H	
1041C 50 VH 180	71	25							156	269	0.16	0.51 24	No.	(4)	35 H	

				<u> </u>	GRAPHIC SUMMARY	SUMMAR	> -					
/ery High (*High)												Very High (*High
High ('GOOD)												(1000D) High (1000D)
Medium												Medium
Low		E O E										Low
Very Low												Very Low
¥	* d%	N	×	-	్ర	S	Zn	F	Fe	n)	60	

SOIL FERTILITY GUIDELINES (Ibs/ac)

lumber	Previous Crop	Intended Crop	Yield Goal	Lime Tons/Acre	Z	P205	K20	Mg	c	S	uZ	Min	Fe	Cu	В
041A	Com Silage Wes	om Silage Westem Alfalfa Seeding	4 tons	0.0	0	0	75	10	0	0	0.0	0	0	0	2.0

Crop yield is influenced by a number of factors in addition to soil fertility. No guarantee or warranty concerning crop performance is made by A & L.

Long term corn silage. 2016-100 pounds of available nitrogen remains after the corn crop with most in the top foot. Soil phos is good all the way down being low at the 1-2 foot level. Manure program is ample and could be reduced slightly.

2017– residual nitrogen is down to good. @75 pounds. Maintain existing manure program for 1 more year, other nutrients still very high and a rotation into alfalfa is recommended soon.



2016	Corn Silage	2017	Corn Silage
THE PLANE SHAPE OF THE PARTY OF			com onage

	Pla	anned Events and Records	
Date	Event	Comments	Result
April	Manure	18-20 ton feedlot manure for corn silage	
		20x9.9= 198 Lbs N	
		12x9.9= 118.8 Lbs N	
APRIL 2017		12 tons of fresh feedlot manual	ay .
		12 tons of fresh feedlot manu	é

VERNON, BC V1H 2A7

4516 HULLCAR ROAD

Grower Code:05219043

Farm:FEEDLOT

Field: 105 BOTTOM FEEDLOT

05219-N1108

Attn:DOUG MACFARLANE 250-548-3847

SOIL TEST REPORT

Page:1 Report Date: 2016-10-18 Print Date: 2017-03-30

### Number Matter Bicarb Bray 6 18249 6.2 1111H 342 12 18250 3.7 88 H 240 24 18251 1.5 44 M 86 36 18252 0.9 17 L 29 Nitrate Zinc Manganese Iron Nitrogen Zinc Manganese Iron 5 L 9 4 V L 14 5 L 18 6	Sample	1		Lab	Organic		Phosphorus - P ppm		Potassium	Magnesium	Calclum		五	CEC	Perc	Sent Bas	Percent Base Saturations	HIONB
8 18249 6.2 111H 342 12 18250 3.7 88 H 240 36 18251 1.5 44 M 86 36 18252 0.9 17L 29 36 18252 0.9 17L 29 36 Wiltrate Zinc Manganese Iron Mitrogen Zn ppm NOS-M libsisc Zn ppm Mn ppm Fe ppm 56 VH 101 12 M 22 35 M 63 5L 9 22L 79 4 VL 14 19 VL 68 5L 18 36 VL VERY LOW L - LOW M - MEDILIM H - HICH VH - VERY HIGH GOOD)	umber	Legal Land Deschi.	nahii nahii	Number	Matter		Bray-		К ррт	Mg ppm	Ca ppm	Hd II	Buffer	Buffer meq/100g	% X %	% Mg % Ca		% H % NB
12 18250 3.7 88 H 240 24 18251 1.5 44 M 86 36 18252 0.9 17 L 29 36 18252 0.9 17 L 29 36 18252 0.9 17 L 29 36 Witogen Alleries Print Manganese Iron Nitrogen Alleries Print Pri	221A		9	18249	6.2	HIII	342H		401 VH	305 M	3040 H	7.2		19.9	5.2	12.8 7	76.8 4	4.6 0.9
36 18251 1.5 44 M 86 36 18252 0.9 17 L 29 36 18262 0.9 17 L 29 36 Witrate Zine Manganese Iron 56 VH 101 12 M 22 35 M 63 5 L 9 22	2218		12	18250	3.7	H88	240 H		363 VH	230 M	2320 H	7.3		14.8	6.4	13.2 7	78.7	0.8
Sulfur Nitrate Zinc Manganese Iron	221C		24	18251	1.5	44 M	886		302 VH	210 M	1940 H	7.7		12.3	6.3	14.2 7	78.7	
Sulfur Nifrate Zine Manganese Iron Northogen Sibelac ppm NOS-K libelac Zn ppm Mn ppm Fe ppm 56 VH 101 12 M 22 35 M 63 5L 9 22 22	2210		36	18252	0.0	171	291	3	182 H	1801	3760 VH	H 8.0		20.9	2.2	7.2 9	90.2	0.5
56 VH 101 12 M 22 35 M 63 5L 9 22	imple imber	1.00	Nifrat Nifrog ppm NO3-N			on .		Copper Cu ppm	Boron 8 ppm	Soluble Safts majorn	Saturation %P	Aluminum Al ppm	Saturatio %AI*	Saturation Aluminum Saturation KMg ENR %P Alppm %Al* Ratio	Chloride R CI Ppm		Sodium Mc Na ppm	Sodium Molybdenun Na ppm Mo ppm
35 M 63 5L 9 22L 79 4 VL 14 19 VL 68 5L 18 VL • VERY LOW M • MEDIUM H • HIGH VH • VERY HIGH 6000) 6	221A	56 VH 101	12 M	22	ly ,				1.2 M		100 H	437	0.00	0.41 75	15	m	39 M	
22L 79 4VL 14 18 VL 68 5L 18 VL • VERY LOW IL • LOW IM • MEDILUM III • HIGH VH • VERY HIGH GOOD) GOOD	2218	35 M 63	16	-							19 H	604	0.0 G	0.48 49		67	30 M	
19 VL 68 5.L 18 IRY LOW L-LOW M-MEDIUM H-HIGH VH-VERY HIGH 6	221C	221 79	4.71	7							7.14	676	0.00	0.44 27		61	29 M	
RY LOW K MEDIUM H HIGH VH VERY HIGH G	01.77		To.	<u></u>							ment CV	38	0.00	0.31 21		64	147	
	. VI		W M+WE	THIM H				3 - 6000	W - MARC	SIMAL MIT	MODERATE	PHYTO-T	OMC, T-	G - GOOD, M - MARGINAL, MT - MODERATE PHYTO-TOXIC, T - PHYTO-TOXIC, ST - SEVERE PHYTO-TOXIC	XIC, ST	- SEVE	THE PHY	O-TOXIC
Very High ("High)							SS	APHIC	GRAPHIC SUMMARY	4RY	1-2)					- 1		
High ('G00D)	ery High (*Hi	lyb)															Very HI	Very High ("High
	High (*GOOL	a to										7 44	100				High	High (*G00D)
	Medium										9				raik)		墨	Medium

SOIL FERTILITY GUIDELINES (Ibs/ac)

3

Very Low

LOW

Very Low

3

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ample	Pravious Crop	Infended Crop	Yield Goal	Lime Tons/Acre	N	P205	K20	Mg	83	69	70	Min	Fe	2	60
221A	Corn Silage Wes	221A Corn Silage Western Corn Silage Western 25 tons	25 tons	0.0	245	20	20	0	0	0			, Y		0.0

Soil test shows excess nitrogen in the 6-24 inch layer. This is probably a result of being a non irrigated field and not being able to bring up nutrients from depth because of the soil drying out deeper.

Reduce the manure application to 15 tons from last years 20 tons.



TO SECOND STATE	325 3.721.735		ABA SARANAN	
2016	Corn Silage	2017	Corn Silage	

		Planned Events and Records	
Date	Event	Comments	Result
Spring		15 tons feedlot manure.	
		15x9.9= 148.5 Lbs N	
APRIL 5-11200	1	19.5 TAC.	
		19.5 T/AC. 12x9.9= 118.8 Lbs N	
		12 tons of fresh feedlot manure	
	P 4 7 1 4		

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Attn:DOUG MACFARLANE

250-546-3847

4516 HULLCAR ROAD

Farm: FEEDLOT Grower Code: 05219043

Field:201 TOP BACK

05219-N1175

Print Date: 2017-03-30 Report Date: 2016-11-11

SOIL TEST REPORT

Page: 1

SH % H% 0.8 Sodium Molybdenum . G • GOND, M • MARGINAL, MT • MODERATE PHYTO-TOXIC, T • PHYTO-TOXIC, ST • SEVERE PHYTO-TOXIC Mo ppm Percent Base Saturations 11.8 13.5 Na ppm 87.8 12.9 62.9 %K %Mg %Ca 34 16 20 M 30 H 10.9 5 Chloride 22₩ mod. 3 11.6 Saturation Aluminum Saturation KIMg ENR %P All ppm %Al* Ratio 4 8 2 mequedig 0.90 0.58 10.5 10.0 CEC 8.8 0.46 Buffer 8.0 8.9 품 8.3 8.8 苦 Al ppm 513 Calclum Ca ppm 1260 M 1190 M 1430 M 10000 21 H Magnesium mdd BW Soluble maken. 0.3 VL 155 M 115 M Salte 180 H B Inm Boron 0.4 Potassium 456 VH 452 VH 214 VH K PPIE Cu ppm Copper H.0. Bisy-P1 Phosphorus - P ppm 1136 421 Fe ppm 75 VH 100 M. YERYLOW L. LOW M. MEDIUM H. HIGH VH. WERY HIGH Wanganese Blearb Mn ppm 586 48 M 28 M 38 Zn ppm Organic 14.8 VH Matter 5.8 ZINC Number 58084 58085 58083 Dom NO3-N ID8/ac Lab 8 Nitrogen NITrate N Depth 45 VH 5 Ma. Legal Land Descot 3 ppm \$ lbs/sc Sultur 10 **Jumper** 2011B Number 2011A 20110 Sample 20118 ample 2011C

					9	GRAPHIC SUMMARY	SUMMAR	<u>۸</u>					
Very High (*High)													Very High ("High)
High (*GOOD)								1					High (*G00D)
Medium													Medium
Low													Low
Very Low													Very Low
	» ld	*d%	=	¥	BW	Ca	69	70	M	æ	8	60	

SOIL FERTILITY GUIDELINES (Ibs/ac)

iper inter	Previous Crop	Intended Crop	Yield Goal	Tons/Acre	×	P205	K20	Mg	Ca	6/9	77	Min	2	3	60
14	Corn Silage Weste	Corn Silage Western Corn Silage Western 20 tons	20 tons	0.0	85	20	15	5	0	10	0.0	0	0	0	0.3
2011A	Corn Silage Weste	Corn Silage Western Corn Western Bld	20 bu	0.0	0	25	35	3	0	10	0.0	0	0	0	0.5

Crop yield is influenced by a number of factors in addition to soil fertility. No guarantee or warranty concerning crop performance is made by A & L.

Manage with 201



			- 1 742 × 17 14 24 24 14 15 1
2016	Corn Silage	2017	Cereal Silage

Planned Events and Records					
Date	Event	Comments	Result		
Spring		15 tons feedlot manure.			
- 797		15x9.9= 148.5 Lbs N			
Aire 2017	havere	19.2 T/ac.	7-		
		19.2 T/ac. 12x9.9= 118.8 Lbs N			
		12 tons of fresh feedlot manure			
1					
3					



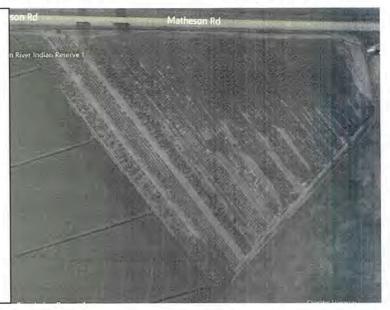
Manage with 105 corn field No samples have been taken



2016	Corn Silage	2017	Corn Silage	

		Planned Events and Records	
Date	Event	Comments	Result
	manure	18-20 ton Feedlot manure	
		20x9.9= 198 Lbs N	
APRIL 14/17	_	20.8 T/AC.	
		12x9.9= 118.8 Lbs N	
		12 tons of feedlot manure	
•			

This field was In corn silage for 2016 and is being blended in and managed with 205 Reseve Field in the future.



	- D27320	3 THE 22 25 A		
2015	Trees	2016	Corn Silage	

	PI	anned Events and Records	
Date	Event	Comments	Result
APAIL 21-22	17 MANURE	20.5 T/AL.	

Note: This field can stay in alfalfa for 1 more year but potassium levels are low enough to where the crop would respond from additional potassium. The farm overall does not need any additional potassium though.



2016	Alfalfa	2017	Alfalfa or Corn Silage?
2010	Allalla	2017	Allalla of Corn Shage:

		Planned Events and Records	
Date	Event	Comments	Result
Spring	Manure	25 ton feedlot manure for corn silage or	
- 1		10 ton manure on the old alfalfa stand.	<u> </u>
	Page 1		
		25x9.9=247.5 Lbs N	
		10x9.9=99 Lbs N	1
41			
		(18)x9.9= 178.2 Lbs N	
		10x9.9= 99 Lbs N	
		Put the above changed rates on	
 =3			

VERNON, BC V1H 2A7

Attn:DOUG MACFARLANE 250-548-3847

4516 HULLCAR ROAD

Grower Code: 05219043

05219-N1127

Farm:FEEDLOT

Field:205 RESERVE

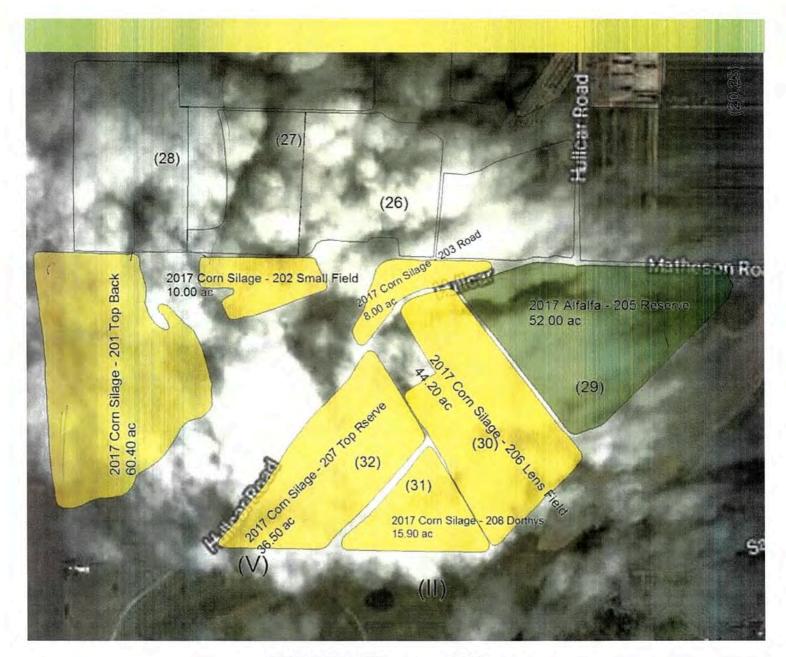
SOIL TEST REPORT

amula			l ab	Ornanie		Dhosnhorus - Danm		Dofassium	Wannagim	Calcium	-	H	CEC	ă	arcont F	Darrent Rasa Saturations	raffons
lumber	Legal Land Descpt.	ot Depth	-	Matter		Bray-P1		K ppm	Mg ppm		품	Buffer	meq/100g	*	% Mg	% C3	% H % NE
(231A		9	27513	4.8	506	110H		43 M	235 M	2400 H	7.1		15.9	2.3	12.3	75.8	8.0 0.8
2318		12	27514	3.1	29 M	48 M		26 M	245 M	2300 M	7.1		15.4	2.1	13.2	74.5	8.9
(2310		24	27515	1.3	11 VL	18 VI		26 M	190 H	1540 H	7.4		8.8	3.3	16.2	78.8	
(2310		36	27518	0.7	5 VL	BVL.		17 M	1801	3790 VH	4.6		21.0	1.4	7.2	80.4	
Sample	Sulfur ppm S lbs/ac	Nifrate Nifrogen ppm NOS-N lbs/ac		Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron 8 ppm	Soluble Safts ms/cm	Saturation Aluminum Saturation KIMg %P Al ppm %Al+ Ratio	Uuminum S	%Al *	n KIMg El	ENR Ch	Chloride Cl ppm	Sodium Molybdenur Na ppm Mo ppm	Мојурдепи Мо ppm
K231A	231 41	16 M	29				1	0.6 M		25 H	676	0.16	0.19 62	22		31 M	
K231B	42 H 78	3	11							99	717	0.16	0.16 4	43		43 H	
K231C	35 H 126	1.1	4							2 W.	901	0.16	0.20	4		47.74	
K2310	60 VH 216		4								173	0.06	0.19	-		I	

Very High ("High High (*GOOD) Very Low Medium LOW 3 æ = 77 GRAPHIC SUMMARY 3 Very High ("High) High ("GOOD) Very Low Medium Low

SOIL FERTILITY GUIDELINES (Ibs/ac)

mple	Previous Crop	Infended Crop	Yield Goal	Lime Tons/Acre	×	P205	K20	Mg	3	67	Zh	M	æ	3	a
231A	Alfalfa	Alfalfa	7 tons	0.0	0	0	405	10	0	9	4				2.0



2017 Crop Plan

Prepared by:
Emerald Bay Ag Services
Vernon, BC

10 Mary's Emerald bay Road
250.550.0545
EmeraldBayAg.com

Soil residuals are good except phosphorous levels elevated. Maintain manure program



2015	Corn Silage	2016	Corn Silage	

	201	6 Planned Events and Records	
Date	Event	Comments	Result
Spring	manure	20 ton feedlot manure	
-		20x9.9= 198 Lbs N	
		16x9.9= 158.4 Lbs N	
		16 tons of feedlot manure	, , , , , , , , , , , , , , , , , , , ,

Attn:DOUG MACFARLANE

250-546-3847

Field:206 LENS FIELD Farm:FEEDLOT Grower Code: 05219043

SOIL TEST REPORT

A				Ornania	Ohosanko	Ohosahonse . D Anm	Dofes	Dofoseliim	Magnashim	Calchini		王	CEC	Ped	rcent B	Percent Base Saturations	rations
Number	Legal Land Descot	pt Depth	Number	Matter	Bicarb	Bray-P1		Kppm	Mg ppm	Саррш	E	Buffer	100	% K	%K %Mg %Ca	% Ca %	% H % Ma
K241A		9	18232	8.8	H 98	238 H	414	414 VH	335 M	3310 H	7.2		21.8	4.8	12.9	78.7	4.6 0.8
K241B		12	18233	3.2	33 M	53 M	178 H	H	240 M	2270 H	7.4		14.0	32	14.3	81.3	
K241C		24	18234	1.5	141	21L	125 M	M	235 M	2600 H	7.8		15.4	2.1	12.7	84.2	100
K241D		38	18235	1.2	TWI	10 VL		103 M	200L	3910 VH	1.8		21.6	12	7.7	90.4	0.8
Sample	Suitur	Nifrate	ate Den	Zinc	Manganese		Copper	Boron	Soluble Salts	Saturation Aluminum Saturation KIMg ENR	Aluminum	Safuratio	on KIMB EN	1000	Chloride s	Sodium Molybdenun	Molybdent
Number	ppm \$ lbs/ac	mdd	N lbs/ac	mdd uz	Mn ppm	mdd ea		p bbu	ms/cm	Ne.	Hard In	TR	- 1	8	mdd	mdd as	
K241A	52 H 94	14 M	25					0.9 M		82 H	491	0.0 G		On on		42 M	
K241B	36 M 65	31/1	2							41	763	0.16	0.22 4	4		44 H	
K241C	291 104	11/1	4							2 VL	521	0.0 G	0.17 2	1		4 1 1	
K241D	281 104	17.1	ব							17/1	(23	0.0 G	0.16 24	A		38 M	

Very High ("High HIGH (1600D) Very Low Medlum LOW œ 3 E H 71 GRAPHIC SUMMARY 3 Mig * d% + lery High (*High) High (*GOOD) Medium WEITY LOW 西

SOIL FERTILITY GUIDELINES (Ibs/ac)

Sample	Previous Crop	Intended Crop	Yland Goal	Lime	2	P205 K20	K20	Mg	5	ers	Zn	Min	£	no Cn	83

Good soil residual nitrogen. Ample Phos and Potassium.



2040	0 0"		3/20 LA V2.10 LT TO	
2016	Corn Silage	2017	Corn Silage	

		Planned Events and Records	
Date	Event	Comments	Result
	Manure	20-25 ton feedlot manure	
		25x9.9= 247.5 Lbs N	
		17x9.9= 168.3 Lbs N	
		17 tons of fresh feedlot manure	
= 7			
3	-		
-1			

Attn:DOUG MACFARLANE

250-546-3847

Grower Court (80%)
Farm: FEEDLOT
Field: 207 & 208 RESERVE DORTHYS TO

SOIL TEST BEDODT

Page: 1

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Sample		7	4	130	Organic	Phospho	Phosphorus - P ppm	Potassium			Calcium	E	o	CEC	Perc	ent Ba	Percent Base Saturations	Tations
Humber	Legal Land Descol.	168cpr	IMen I	Number	Watter	Blearb	Bray-P1	K ppm	Mg ppm		Ca ppm	PH BE	pH Buffer meq/100g	7.7.7	%K %Mg %Ca	S BW		% H % Na
K251A			9	18240	5.8	54 H	163 H	374 VH	H 335 M	3010H	H	7.4	18	19.0	5.1 1	14.7 7	78.4	1
K251B			12	18241	2.7	456	93 H	208 H	270 M	2320 H	H	7.2	47	15.3	3.5	14.7 7	75.7	4.6 1.5
K251C			24	18242	15	22 L	311	129 M	220 H	H0771	H	7.5	-	11.2	3.0 1	18.4 7	79.1	-
K251D			38	18243	1.0	181	21L	127 M	2001	3620 VH		8.0	77	20.2	8 8.1	8.2 8	89.5	0.7
Sample	Sulfur ppm S Ibs/ac		Nifrate Nifrogen ppm NO3-N ibs/ac	ta jan v ibalac	Zinc Zn ppm	Мапралеве Мп. ppm	Fe ppm C	Copper Bo	Boron Salta B ppm salta B ppm ms/cm	1.30	Saturation Aluminum Saturation KMg ENR %P Al ppm %Al * Ratio	num Safi pm %	aturation K/ %Al ↑ Ra	K/Mg ENR Ratio	Chloride Cl ppm		Sodium N	sodium Molybdenur Vappm Moppm
K251A	351	63	11 14	20	١,			0.8	0.8 M	13 H	710		0.06 0.	0.35 72	-	*4	45 M	
(251B	39 M	70	4 VL	~						10	788		0.16 0.	0.24 39		C	54 H	
4251C	231	83	1/1	4						3 VI	L 636		0.0 6 0.	0.18 27		4	48 H	
42510	18 VL	99	141	শ						리	151		0.0 6 0.	0.20 22		60	34 M	

					9	RAPHIC !	GRAPHIC SUMMARY	5 —					
Very High (*High)													Very High (*Hight)
(doop.) util													High (*600D)
Medium										1			Medium
LOW			M										LOW
Very Low													Very Low
	P1.	* 47%	=	*	1	C3	60	W.	W	£	3	800	

SOIL FERTILITY GUIDELINES (lbs/ac)

Ca S Zn Mn Fe Cu B
Mg
K20
P205 K20
z
Lime
Yield Goal
Infended Crop
Previous Crop
Sample

Using 207 Reserve top soil test.

Manage with 207



2040	***		- 12020 020
2016	Alfalfa	2017	Alfalfa

	Pla	anned Events and Records	
Date	Event	Comments	Result
4			-1 -
			- 1
	:		

Attn:DOUG MACFARLANE

250-546-3847

Report Date: 2016-10-18 Print Date: 2017-03-30

Farm:FEEDLOT

GLOWER COUR. USZ 18U45

Field: 207 & 208 RESERVE DORTHYS TO

SOIL TEST REPORT

Page:1

Sample	Land Land De	-	Donath	Lab	Organic	Phosphol	Phosphorus - P ppm	Potasslum	Magnesium	n Calclum		E	SEC.	B.	reent B	Percent Base Saturations	Jraflons
humber	Legal Land Descht.	achr.	Inden	Number	Matter	Bicarb	Bray-Pi	К ррт	Mg ppm	Ca ppm	Hd I	Buffer	mediledg	X %	SW %	% Ca	8H % H%
(251A		1	8	18240	5.9	54 H	163 H	374 VH	335 M	3010 H	7.4		19.0	5.1	14.7	78.4	
(2518			12	18241	2.7	456	HE8	208 H	270 M	2320 H	7.2		15.3	3.5	14.7	75.7	4.6
C251C			75	18242	1.5	221	311	129 M	220 H	1770 H	7.5		11.2	3.0	16.4	78.1	
(2510			36	18243	1.0	18L	21L	127 M	200 L	3620 VH	1 8.0		20.2	1.6	87	89.5	0.7
Sample	Sulfur ppm S lbs/ac		Nifrate Nifrogen ppm NO3-N ibs/ac	en en libalac	Zinc Zn ppm	Мапдапеве Мп ррт	Fe ppm C	Copper Boron Cu ppm B ppm	Soluble Saffa m8/cm	Saturation Aluminum Saturation K/Mg ENR %P Al ppm %Al* Ratio	Aluminum Al ppm	Saturatio %Al+	n KIMG EN Ratio		Chloride con ppm	Sodium Molybdenum Na ppm Mo ppm	Molybdenur Mo ppm
251A	9 198	53	11 M	20				0.8 M		13 H	710	0.0 G	0.35 72			45 M	
2518	39 M 7	0	4.4	1						15H	788	0.16	0.24 36	CI.		H 75	
2510	23.1 8	m	11/1	4						3 VL	636	0.0 G	0.18 27			46 H	
2510	18 VL 6	9	M	4						77	151	0.0 G	0.20 22			N 76	

ery High (*High) ***						5	GRAPHIC SUMI	SUMMARY	2					0
P1* %P* N K Mg C3 S Zn Mn F6 Cu B S Soll FERTILITY GUIDELINES (Ibs/ac)	ery High (*High)					0 7							1	Very High ("High)
P11 %P1 N K Mg C3 \$ Zn Mn F6 Cu B S SOIL FERTILITY GUIDELINES (Ibsiac)	High (*600D)													High (*GOOD)
P11 3,P2 N K Mg C8 S Zn Mn F9 Cu B S SOIL FERTILITY GUIDELINES (Ibsiac)	Medium													Medium
P1* %P* N K Mg Cs S Zn Mn Fe Cu B S Solt FERTILITY GUIDELINES (Ibs/ac)	Low									\$ 22.01				TOW
%P* N K Mg Ca S Zn Mn Fe Cu SOIL FERTILITY GUIDELINES (fbs/ac)	Very Low													Very Low
SOIL FERTILITY GUIDELINES (Ibs/ac)		. H	* d%	=	¥	By	8	85	70	NA.	æ	3	air	
				7 7		SOIL FE	RTILITY GL	IIDELINES	(lbs/ac)					

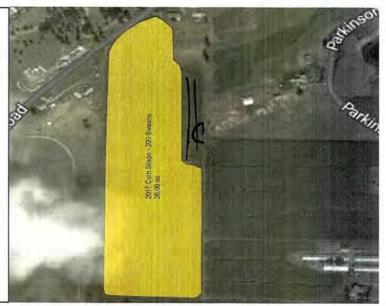
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	Tevlous Crop		
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	Sample Number	Ŀ	_

Crop yield is influenced by a number of factors in addition to soil fertility. No guarantee or warranty concerning crop performance is made by A & L.

2016-

Apply heavy manure for corn crop. 24-30 ton per acre.

2017— Good soil levels maintain manure build program for 2017



2016	Corn Sialge	2017	Corn Silage	
2070	Com Starge	2011	Corn Shage	

	- +	Planned Events and Records	
Date	Event	Comments	Result
	Manure	24-30 tons feedlot manure	
		30x9.9= 297 Lbs N	
		20x9.9= 198 Lbs N	
		20 tons of fresh feedlot manure	
- 01			
		4 0	

05219-N1118

Attn:DOUG MACFARLANE 250-546-3847

Farm: FEEDLOT

Field:209 SWAANS Grower Code: 05219043

Page: 1

Print Date: 2017-03-30 Report Date:2018-10-21

SOIL TEST REPORT

8H % H% 0.7 0.0 Sodium Molybdenum 9.0 Mo ppm Very High ("High High (*G00D) /ERE PHYTO-TOXII Medlum Percent Base Saturations LOW Na ppm %K %Mg %Ca 89.9 90.0 94.0 48 M 351 421 501 80 ₩ ₩ 8 8.4 Chloride Med 0 2.8 0.0 Saturation Aluminum Saturation KIMg ENR %P Allonn %All Ratio 0.13 26 0.17 41 0.12 22 8 meq.100n 0.32 29.0 30.2 38.3 23.7 8 900 0.06 0.0 G Buffer 0.0 G 苦 82 害 200 2 8 . G - GOOD, M - WARGINAL, MT - MODERATE PHYTIC 5430 VH 7200 VH 4160 VH 5230 VH Calclum Ca ppm M 5 M 3 14 Magneslum Mg ppm Soluble ma/cm 225 VI 63115 2951 290 L 250L GRAPHIC SUMMARY B ppm Boron 190 Potassium K ppm 257 H 187 M 128 M 831 Cu ppm Copper Bray-P1 Phosphorus - P ppm 20 C 37 M 231 131 Fe ppm 2 VH • VERY HIGH **Малдале**ве Bicarb MI DOM 386 25 M 15 M Organic Zn ppm Matter H.H.C. ZINC Number 27563 27565 27582 27584 Cap Cap opm NO3-N Ibs/ac 33 M - WEDIUM Nitrogen Nitrate Depth 2 8 2 8 10 9 Legal Land Descot 182 ppm \$ lbs/ac 112 Sulfur VERY LOW 45 M 787 301 311 ery High ("High High (GOOD) Medium LOW (161B 11810 1810 161A lumber 1818 1610 1610 181A Interest Sample

SOIL FERTILITY GUIDELINES (Ibs/ac)

Very Low

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BW.

* d%

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Very Low

ple per	Previous Crop	Intended Crop	Yield Goal	TonsiAcre	N	P205	K20	Mg	3	69	Zn	W	£	20	80
31A	Corn Silage Wes	Corn Silage Western Corn Silage Western 20 tons	20 tons	0.0	187	20	15	20	0	10					0.5
1181A	Corn Silage Wes	Corn Silage Western Corn Silage West Bld 20 tons	20 tons	0.0	187	20	125	20	0	10					0.5

This field will be removed from the book for next year. It is just in here to show ending soil test data.



2016	Corn Silage	2017	No Crop—No Lease

	Planne	d Events and Records	
Date	Event	Comments	Result
	= = 1		

05219-N1117

Attn:DOUG MACFARLANE

250-548-3847

Field:210WAYNES Grower Code: 05219043 Farm:FEEDLOT

SOIL TEST REPORT

Report Da	Report Date:2016-10-21 Print Date:2017-03-30	Print	Date:20	17-03-3	0		SO	TES	SOIL TEST REPORT	ORT						1		Page: 1	
Sample	Legal Land Descpt	secot	Depth	Lab	Organic Matter	Phospho	Phosphorus - P ppm Bicarb Bray-P1		Potassium K ppm	Magneslum Mg ppm	Calclum Ca ppm	동	pH Buffer	CEC meq/100g	* * *	% Mg	38e Sati	mattons % H %	8 % Na
K151A			9	27558	8.8	H 99	185H	1	292 VH	230 M	2790 H				4.1	10.4	75.6		1.0
K151B			12	27559	3.1	32 M	586	e Pe	158 M	280 M	2800 H	7.2		17.8	2.3	13.1	78.7	4.8	4.
KISIC			24	27560	4.1	27 M	46 M		119 M	255 M	2370 H	7.4		14.4	2.1	14.8	82.3		-
K151D			38	27561	9.0	24 M	36 M		89 M	230 M	2790 VH	8.0		16.2	4	11.8	1.98		8.0
Sample Number	Sulfur ppm S lbs/sc		Nifrate Nifrogen ppm NOS-N ibalac	fa en f ibalac	Zinc Zn ppm	Мапдалеве Мп ррт	Iron Fe ppm	Copper Cu ppm	Вогол В ррт	Soluble Salts ma/cm	Saturation Aluminum Saturation K/Mg ENR %P Al ppm %Al* Ratio	Numinum Al ppm	Saturati %AI	on K/Mg El Ratio		Chloride	Sodium Molybdenum Na ppm Mo ppm	Molybdenu Moppm	an mark
K151A	241 4	13	MOI	18					0.5L		41 H	583	0.16	0.39	93	n	42 M	1	
K151B	27.1 4	ca	16 14	28							MG	787	0.16		60		H 96		
K151C	20 VL 7	1.5	12 M	43							41	609	0.0 G	0.14	26		35 H		
K151D	11 VL 4	40	18	58							31	376	0.0 G	0.12	00		3111		
W 30	VI VERY LOW L	1 - LOW	I - LOW N - MEDILIM		W-HIGH W	WH - WER'Y H	9. HSH	• 6000	N - WAR	* G • GOOD, M • WARGINAL, MT • WODERATE PHYTO-TOXIC, T • PHYTO-TOXIC, ST • SEVERE PHYTO-TOXIC	AODERATE	PHYTO-T	CANC, T	PHYTO-TO	DXIC S	T - SEV	ERE PH	YT0-T0	XIC
							GR/	PHIC	GRAPHIC SUMMARY	ARY									
Very High (*High)	High																Very	Very High (*High	THE ST
(1000D) HBH	łao																Hig	High (*GOOD)	ô
Medium													1	45	H			Medium	
Low										9.5		F	Ì			I		Low	
Very Low										*		H		N.			7.	Very Low	
	PI +		*d%	*		540	Mg	C3	6/3	5	2		2	3		00			

SOIL FERTILITY GUIDELINES (Ibs/ac)

Number	Previous Crop Intended Crop		Yield Goal	LIMe Fons/Acre	Z	P205	K20	BW	3	69	77	W	£	3	m
151A	Corn Silage Western Corn Silage Western 20 tons	e Western	20 tons	0.0	131	20	15	15	0	10					0.5
CISIA	Corn Silage Western Com Silage West Bld 20 tons	e West Bld	20 tons	0.0	131	22	125	15	0	01					0.5