

From: Sonja Martin-Elson
To: [Manager Works and Services](#)
Cc: [Erica Janes](#); [Carl Lafferty](#); [Michael Rudkin](#)
Subject: RE: Fort Liard Decant
Date: Monday, September 10, 2018 3:27:15 PM

Hi Al,

I have found the updated annex in my emails and that is correct, I was working off of an older license. Please proceed sampling SNP 1478-6 and do not worry about SNP 1478-9.

[Mársi](#) | [Kinanaskomitin](#) | [Thank you](#) | [Merci](#) | [Hají](#) | [Quana](#) | [Qujannamiik](#) | [Quyainainni](#) | [Máhsí](#) | [Máhsí](#) | [Mahsi](#)

Sonja Martin-Elson
Water Resource Officer
Dehcho
Environment and Natural Resources
Government of the Northwest Territories

PO Box 240
9910-105 Avenue
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From: Manager Works and Services [<mailto:mws@fortliard.com>]
Sent: Monday, September 10, 2018 3:12 PM
To: Sonja Martin-Elson
Cc: Erica Janes; Carl Lafferty; Michael Rudkin
Subject: RE: Fort Liard Decant

Hello Sonja and thank you for the clearance to proceed.

One point to note is changes made to License Sampling and Analysis Requirements February 22, 2018 to SNP 1478-9. **Sampling and Analysis Requirements 2. d)** station number 1478-9 only needs to be sampled one week prior to discharge. Requirements to sample this SNP station post decant are no longer required.

We will begin the decant of Cell #2 shortly after 7:00 am tomorrow, September 10. Please let me know your directions for post decant testing samples of SNP Station 1478-9 as soon as possible. The planned decant is scheduled for 36 hours to free up enough space for continued operations until the work on Cell #3 has been completed. Samples from SNP 1478-6 will be taken at that time for testing.

Alan Harris
Manager Municipal Operations
Hamlet of Fort Liard
867 770 4104 ext. 103

mws@fortliard.com

Cell: 867 445 4000

From: Sonja Martin-Elson <Sonja_Martin-Elson@gov.nt.ca>

Sent: Monday, September 10, 2018 1:51 PM

To: Manager Works and Services <mws@fortliard.com>

Cc: Erica Janes (ejanes@mvlwb.com) <ejanes@mvlwb.com>; Carl Lafferty <Carl_Lafferty@gov.nt.ca>

Subject: Fort Liard Decant

Hi Al,

Thanks for the results from Cell #2 SNP 1478-5. The results look good! The undersigned inspector hereby authorizes the decant of Cell #2 in order to preserve infrastructure and for the general operation and maintenance activities to proceed. I hope the work in Cell #3 goes well. Please note the sampling requirements during decant as outlined in the SNP of your water licence, attached.

2. Sampling and Analysis Requirements

- a) Water at station number 1478-6 and 1478-9 shall be sampled one week prior to discharge and weekly during discharge. If the decant period is less than seven days, station numbers 1478-6 and 1478-9 shall be sampled on the first and last day of decant. Station numbers 1478-6 and 1478-9 shall be analysed for the following parameters:

pH	Ammonia-Nitrogen
Faecal Coliform	BOD ₅
Total Suspended Solids	Total Dissolved Solids
Conductivity	CBOD

Thanks,

Mársi | Kinanaskomitin | Thank you | Merci | Hǎi' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi

Sonja Martin-Elson

Water Resource Officer

Dehcho

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CERTIFICATE OF ANALYSIS

REPORTED TO Fort Liard, Hamlet of
174 Valley Main Street
Fort Liard, NT X0G 0A0

ATTENTION Alan Harris

PO NUMBER 5263

PROJECT Sewage Lagoon

PROJECT INFO Sewage Lagoon 3

WORK ORDER 8082954

**RECEIVED / TEMP
REPORTED** 2018-08-31 10:00 / 12°C
2018-09-10 10:55

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

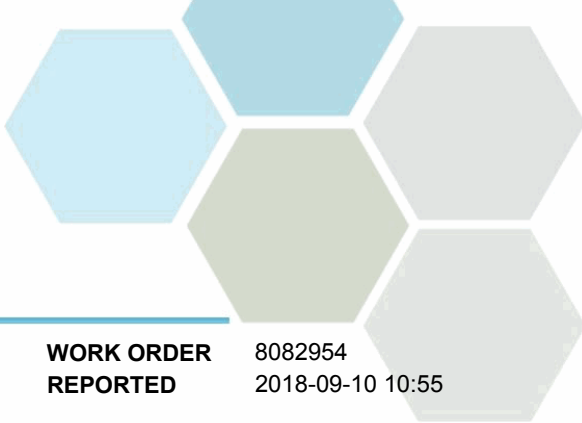
If you have any questions or concerns, please contact me at jshanko@caro.ca

Authorized By:

Jennifer Shanko, A.Sc.T.
Account Manager

1-888-311-8846 | www.caro.ca

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



TEST RESULTS

REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

WORK ORDER REPORTED 8082954
2018-09-10 10:55

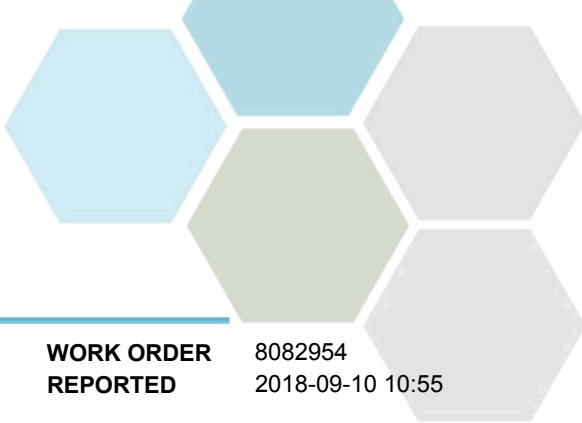
Analyte	Result	RL	Units	Analyzed	Qualifier
1478-5 (8082954-01) Matrix: Water Sampled: 2018-08-30 10:00					
General Parameters					
Ammonia, Total (as N)	44.3	0.050	mg/L	2018-09-04	
BOD, 5-day	18.4	2.0	mg/L	2018-09-05	
BOD, 5-day Carbonaceous	22.0	2.0	mg/L	2018-09-05	
Conductivity (EC)	1320	2.0	µS/cm	2018-09-07	
Oil & Grease, Total	< 2.0	2.0	mg/L	2018-09-04	
pH	7.72	0.10	pH units	2018-08-31	HT1
Solids, Total Dissolved	654	10	mg/L	2018-09-05	
Solids, Total Suspended	35.0	2.0	mg/L	2018-09-05	

Calculated Parameters

Hardness, Total (as CaCO3)	150	0.500	mg/L	N/A	
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Total Metals

Aluminum, total	0.0727	0.0050	mg/L	2018-09-06	
Antimony, total	0.00037	0.00020	mg/L	2018-09-06	
Arsenic, total	0.00213	0.00050	mg/L	2018-09-06	
Barium, total	0.0694	0.0050	mg/L	2018-09-06	
Beryllium, total	< 0.00010	0.00010	mg/L	2018-09-06	
Bismuth, total	0.00043	0.00010	mg/L	2018-09-06	
Boron, total	0.274	0.0050	mg/L	2018-09-06	
Cadmium, total	0.000015	0.000010	mg/L	2018-09-06	
Calcium, total	42.0	0.20	mg/L	2018-09-06	
Chromium, total	0.00067	0.00050	mg/L	2018-09-06	
Cobalt, total	0.00091	0.00010	mg/L	2018-09-06	
Copper, total	0.0165	0.00040	mg/L	2018-09-06	
Iron, total	0.708	0.010	mg/L	2018-09-06	
Lead, total	0.00026	0.00020	mg/L	2018-09-06	
Lithium, total	0.0137	0.00010	mg/L	2018-09-06	
Magnesium, total	10.8	0.010	mg/L	2018-09-06	
Manganese, total	0.191	0.00020	mg/L	2018-09-06	
Molybdenum, total	0.00070	0.00010	mg/L	2018-09-06	
Nickel, total	0.00396	0.00040	mg/L	2018-09-06	
Phosphorus, total	9.60	0.050	mg/L	2018-09-06	
Potassium, total	22.5	0.10	mg/L	2018-09-06	
Selenium, total	< 0.00050	0.00050	mg/L	2018-09-06	
Silicon, total	3.3	1.0	mg/L	2018-09-06	
Silver, total	< 0.000050	0.000050	mg/L	2018-09-06	
Sodium, total	139	0.10	mg/L	2018-09-06	
Strontium, total	0.108	0.0010	mg/L	2018-09-06	
Sulfur, total	8.1	3.0	mg/L	2018-09-06	
Tellurium, total	< 0.00050	0.00050	mg/L	2018-09-06	
Thallium, total	< 0.000020	0.000020	mg/L	2018-09-06	
Thorium, total	< 0.00010	0.00010	mg/L	2018-09-06	



TEST RESULTS

REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

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Analyte	Result	RL	Units	Analyzed	Qualifier
1478-5 (8082954-01) Matrix: Water Sampled: 2018-08-30 10:00, Continued					
<i>Total Metals, Continued</i>					
Tin, total	0.00067	0.00020	mg/L	2018-09-06	
Titanium, total	< 0.0050	0.0050	mg/L	2018-09-06	
Tungsten, total	< 0.0010	0.0010	mg/L	2018-09-06	
Uranium, total	0.000389	0.000020	mg/L	2018-09-06	
Vanadium, total	< 0.0010	0.0010	mg/L	2018-09-06	
Zinc, total	0.0129	0.0040	mg/L	2018-09-06	
Zirconium, total	0.00039	0.00010	mg/L	2018-09-06	

Microbiological Parameters

Coliforms, Fecal (Q-Tray)	1.0	1.0	MPN/100 mL	2018-09-03	
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1478-6 (8082954-02) | Matrix: Water | Sampled: 2018-08-30 10:00

General Parameters

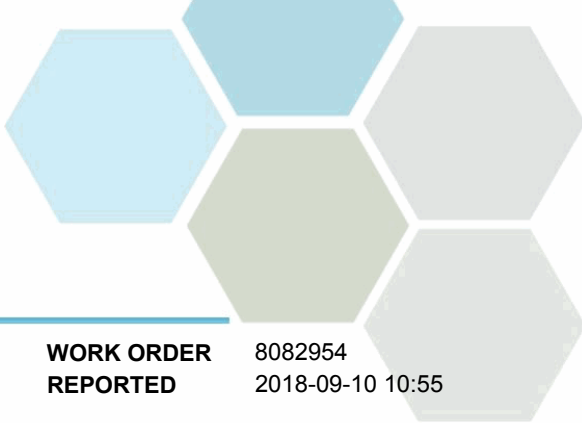
Ammonia, Total (as N)	11.8	0.050	mg/L	2018-09-04	
BOD, 5-day	2.4	2.0	mg/L	2018-09-05	
BOD, 5-day Carbonaceous	< 3.7	2.0	mg/L	2018-09-05	BOD2
Conductivity (EC)	900	2.0	µS/cm	2018-09-07	
Oil & Grease, Total	< 2.0	2.0	mg/L	2018-09-04	
pH	7.52	0.10	pH units	2018-08-31	HT1
Solids, Total Dissolved	620	10	mg/L	2018-09-05	
Solids, Total Suspended	2.0	2.0	mg/L	2018-09-05	

Calculated Parameters

Hardness, Total (as CaCO3)	362	0.500	mg/L	N/A	
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Total Metals

Aluminum, total	0.0795	0.0050	mg/L	2018-09-06	
Antimony, total	< 0.00020	0.00020	mg/L	2018-09-06	
Arsenic, total	0.00187	0.00050	mg/L	2018-09-06	
Barium, total	0.115	0.0050	mg/L	2018-09-06	
Beryllium, total	< 0.00010	0.00010	mg/L	2018-09-06	
Bismuth, total	< 0.00010	0.00010	mg/L	2018-09-06	
Boron, total	0.107	0.0050	mg/L	2018-09-06	
Cadmium, total	0.000016	0.000010	mg/L	2018-09-06	
Calcium, total	106	0.20	mg/L	2018-09-06	
Chromium, total	< 0.00050	0.00050	mg/L	2018-09-06	
Cobalt, total	0.00073	0.00010	mg/L	2018-09-06	
Copper, total	0.00093	0.00040	mg/L	2018-09-06	
Iron, total	2.30	0.010	mg/L	2018-09-06	
Lead, total	< 0.00020	0.00020	mg/L	2018-09-06	
Lithium, total	0.00744	0.00010	mg/L	2018-09-06	
Magnesium, total	23.5	0.010	mg/L	2018-09-06	



TEST RESULTS

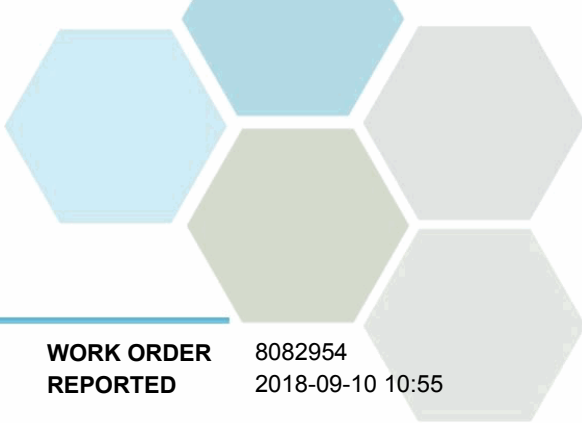
REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

WORK ORDER REPORTED 8082954
2018-09-10 10:55

Analyte	Result	RL	Units	Analyzed	Qualifier
1478-6 (8082954-02) Matrix: Water Sampled: 2018-08-30 10:00, Continued					
<i>Total Metals, Continued</i>					
Manganese, total	0.460	0.00020	mg/L	2018-09-06	
Molybdenum, total	0.00058	0.00010	mg/L	2018-09-06	
Nickel, total	0.00171	0.00040	mg/L	2018-09-06	
Phosphorus, total	1.28	0.050	mg/L	2018-09-06	
Potassium, total	8.84	0.10	mg/L	2018-09-06	
Selenium, total	< 0.00050	0.00050	mg/L	2018-09-06	
Silicon, total	7.5	1.0	mg/L	2018-09-06	
Silver, total	< 0.000050	0.000050	mg/L	2018-09-06	
Sodium, total	27.7	0.10	mg/L	2018-09-06	
Strontium, total	0.232	0.0010	mg/L	2018-09-06	
Sulfur, total	60.2	3.0	mg/L	2018-09-06	
Tellurium, total	< 0.00050	0.00050	mg/L	2018-09-06	
Thallium, total	< 0.000020	0.000020	mg/L	2018-09-06	
Thorium, total	< 0.00010	0.00010	mg/L	2018-09-06	
Tin, total	< 0.00020	0.00020	mg/L	2018-09-06	
Titanium, total	< 0.0050	0.0050	mg/L	2018-09-06	
Tungsten, total	< 0.0010	0.0010	mg/L	2018-09-06	
Uranium, total	0.000472	0.000020	mg/L	2018-09-06	
Vanadium, total	< 0.0010	0.0010	mg/L	2018-09-06	
Zinc, total	0.0054	0.0040	mg/L	2018-09-06	
Zirconium, total	0.00020	0.00010	mg/L	2018-09-06	
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	2.0	1.0	MPN/100 mL	2018-09-03	

Sample Qualifiers:

- BOD2 The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criterion of at least 2 mg/L.
- HT1 The sample was prepared and/or analyzed past the recommended holding time.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

WORK ORDER REPORTED 8082954
2018-09-10 10:55

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 D* (2011)	Ion Selective Electrode	Edmonton
Biochemical Oxygen Demand in Water	SM 5210 B (2011)	Dissolved Oxygen Meter	Edmonton
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2011)	Dissolved Oxygen Meter	Edmonton
Coliforms, Fecal in Water	SM 9223 B* (2004)	Most Probable Number / Enzyme Substrate Endo Agar	Edmonton
Conductivity in Water	SM 2510 B (2011)	Conductivity Meter	Edmonton
Hardness in Water	SM 2340 B* (2011)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Oil and Grease, Total in Water	EPA 1664A*	Liquid-Liquid Extraction with Hexane	Edmonton
pH in Water	SM 4500-H+ B (2011)	Electrometry	Edmonton
Solids, Total Dissolved in Water	SM 2540 C* (2011)	Gravimetry (Dried at 103-105C)	Edmonton
Solids, Total Suspended in Water	SM 2540 D* (2011)	Gravimetry (Dried at 103-105C)	Edmonton
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond

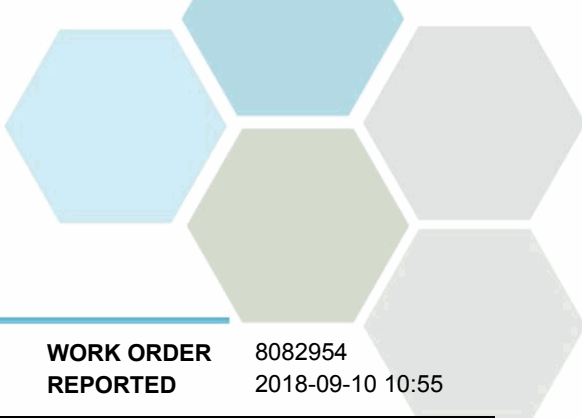
Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
pH units	pH < 7 = acidic, pH > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody 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.



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

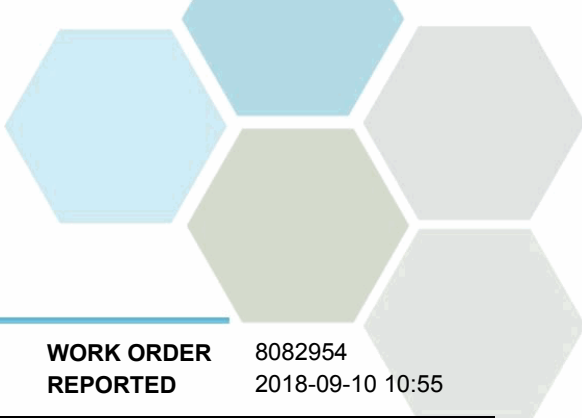
WORK ORDER REPORTED 8082954
2018-09-10 10:55

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):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS):** A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS):** A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

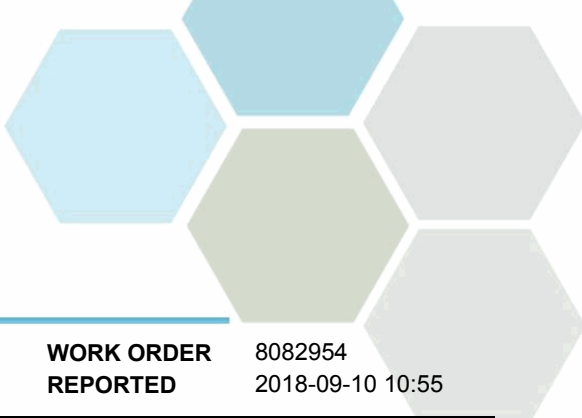
Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B8H2525									
Reference (B8H2525-SRM1)			Prepared: 2018-08-31, Analyzed: 2018-08-31						
pH	7.03	0.10 pH units	7.00		100	98-102			
General Parameters, Batch B8H2557									
Blank (B8H2557-BLK1)			Prepared: 2018-08-31, Analyzed: 2018-09-05						
BOD, 5-day	< 1.2	1.2 mg/L							
Blank (B8H2557-BLK2)			Prepared: 2018-08-31, Analyzed: 2018-09-05						
BOD, 5-day	< 1.2	1.2 mg/L							
LCS (B8H2557-BS1)			Prepared: 2018-08-31, Analyzed: 2018-09-05						
BOD, 5-day	< 61.6	61.6 mg/L	198			85-115			SPK1
General Parameters, Batch B8H2560									
Blank (B8H2560-BLK1)			Prepared: 2018-08-31, Analyzed: 2018-09-05						
BOD, 5-day Carbonaceous	< 1.2	1.2 mg/L							BOD6
Blank (B8H2560-BLK2)			Prepared: 2018-08-31, Analyzed: 2018-09-05						
BOD, 5-day Carbonaceous	< 1.2	1.2 mg/L							BOD6
LCS (B8H2560-BS1)			Prepared: 2018-08-31, Analyzed: 2018-09-05						
BOD, 5-day Carbonaceous	< 61.5	61.5 mg/L	198			85-115			SPK
General Parameters, Batch B8I0042									
Blank (B8I0042-BLK1)			Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Dissolved	< 10	10 mg/L							
Duplicate (B8I0042-DUP1)			Source: 8082954-02 Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Dissolved	610	10 mg/L	620				2	5	
Reference (B8I0042-SRM1)			Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Dissolved	266	10 mg/L	240			111		85-115	



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT	Fort Liard, Hamlet of Sewage Lagoon	WORK ORDER REPORTED	8082954 2018-09-10 10:55						
Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B810065									
Blank (B810065-BLK1)			Prepared: 2018-09-04, Analyzed: 2018-09-04						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B810065-BS1)			Prepared: 2018-09-04, Analyzed: 2018-09-04						
Ammonia, Total (as N)	0.211	0.050 mg/L	0.200		105	94-113			
General Parameters, Batch B810085									
Blank (B810085-BLK1)			Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Suspended	< 2.0	2.0 mg/L							
Blank (B810085-BLK2)			Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B810085-BS1)			Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Suspended	96.0	2.0 mg/L	100		96	94-105			
LCS (B810085-BS2)			Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Suspended	97.0	2.0 mg/L	100		97	94-105			
Reference (B810085-SRM1)			Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Suspended	266	2.0 mg/L	270		99	79-111			
Reference (B810085-SRM2)			Prepared: 2018-09-04, Analyzed: 2018-09-05						
Solids, Total Suspended	286	2.0 mg/L	270		106	79-111			
General Parameters, Batch B810094									
Blank (B810094-BLK1)			Prepared: 2018-09-04, Analyzed: 2018-09-04						
Oil & Grease, Total	< 2.0	2.0 mg/L							
LCS (B810094-BS1)			Prepared: 2018-09-04, Analyzed: 2018-09-04						
Oil & Grease, Total	37.2	2.0 mg/L	40.2		93	70-97			
LCS Dup (B810094-BSD1)			Prepared: 2018-09-04, Analyzed: 2018-09-04						
Oil & Grease, Total	36.0	2.0 mg/L	40.2		90	70-97	3	10	
General Parameters, Batch B810386									
Blank (B810386-BLK1)			Prepared: 2018-09-07, Analyzed: 2018-09-07						
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B810386-BLK2)			Prepared: 2018-09-07, Analyzed: 2018-09-07						
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B810386-BLK3)			Prepared: 2018-09-07, Analyzed: 2018-09-07						
Conductivity (EC)	< 2.0	2.0 µS/cm							
LCS (B810386-BS1)			Prepared: 2018-09-07, Analyzed: 2018-09-07						
Conductivity (EC)	1000	2.0 µS/cm	1000		100	95-105			
LCS (B810386-BS2)			Prepared: 2018-09-07, Analyzed: 2018-09-07						
Conductivity (EC)	1000	2.0 µS/cm	1000		100	95-105			
LCS (B810386-BS3)			Prepared: 2018-09-07, Analyzed: 2018-09-07						
Conductivity (EC)	1000	2.0 µS/cm	1000		100	95-105			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

WORK ORDER REPORTED 8082954
2018-09-10 10:55

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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Microbiological Parameters, Batch B8H2565

Blank (B8H2565-BLK1)

Prepared: 2018-08-31, Analyzed: 2018-09-03

Coliforms, Fecal (Q-Tray)	< 1.0	1.0 MPN/100 mL							
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Total Metals, Batch B8I0170

Blank (B8I0170-BLK1)

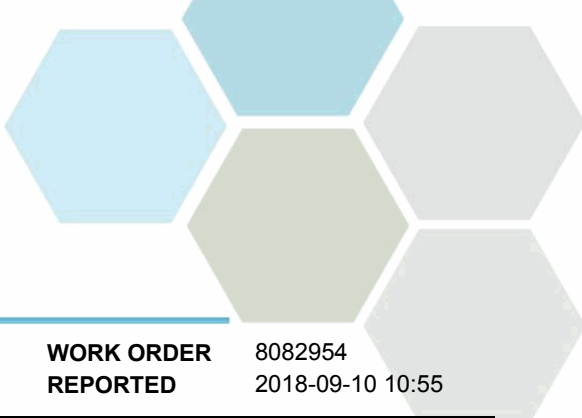
Prepared: 2018-09-05, Analyzed: 2018-09-06

Aluminum, total	< 0.0050	0.0050 mg/L							
Antimony, total	< 0.00020	0.00020 mg/L							
Arsenic, total	< 0.00050	0.00050 mg/L							
Barium, total	< 0.0050	0.0050 mg/L							
Beryllium, total	< 0.00010	0.00010 mg/L							
Bismuth, total	< 0.00010	0.00010 mg/L							
Boron, total	< 0.0050	0.0050 mg/L							
Cadmium, total	< 0.000010	0.000010 mg/L							
Calcium, total	< 0.20	0.20 mg/L							
Chromium, total	< 0.00050	0.00050 mg/L							
Cobalt, total	< 0.00010	0.00010 mg/L							
Copper, total	< 0.00040	0.00040 mg/L							
Iron, total	< 0.010	0.010 mg/L							
Lead, total	< 0.00020	0.00020 mg/L							
Lithium, total	< 0.00010	0.00010 mg/L							
Magnesium, total	< 0.010	0.010 mg/L							
Manganese, total	< 0.00020	0.00020 mg/L							
Molybdenum, total	< 0.00010	0.00010 mg/L							
Nickel, total	< 0.00040	0.00040 mg/L							
Phosphorus, total	< 0.050	0.050 mg/L							
Potassium, total	< 0.10	0.10 mg/L							
Selenium, total	< 0.00050	0.00050 mg/L							
Silicon, total	< 1.0	1.0 mg/L							
Silver, total	< 0.000050	0.000050 mg/L							
Sodium, total	< 0.10	0.10 mg/L							
Strontium, total	< 0.0010	0.0010 mg/L							
Sulfur, total	< 3.0	3.0 mg/L							
Tellurium, total	< 0.00050	0.00050 mg/L							
Thallium, total	< 0.000020	0.000020 mg/L							
Thorium, total	< 0.00010	0.00010 mg/L							
Tin, total	< 0.00020	0.00020 mg/L							
Titanium, total	< 0.0050	0.0050 mg/L							
Tungsten, total	< 0.0010	0.0010 mg/L							
Uranium, total	< 0.000020	0.000020 mg/L							
Vanadium, total	< 0.0010	0.0010 mg/L							
Zinc, total	< 0.0040	0.0040 mg/L							
Zirconium, total	< 0.00010	0.00010 mg/L							

LCS (B8I0170-BS1)

Prepared: 2018-09-05, Analyzed: 2018-09-06

Aluminum, total	0.0213	0.0050 mg/L	0.0200	107	80-120
Antimony, total	0.0230	0.00020 mg/L	0.0200	115	80-120
Arsenic, total	0.0213	0.00050 mg/L	0.0200	107	80-120
Barium, total	0.0218	0.0050 mg/L	0.0200	109	80-120
Beryllium, total	0.0199	0.00010 mg/L	0.0200	100	80-120
Bismuth, total	0.0211	0.00010 mg/L	0.0200	105	80-120
Boron, total	0.0191	0.0050 mg/L	0.0200	95	80-120
Cadmium, total	0.0205	0.000010 mg/L	0.0200	103	80-120
Calcium, total	2.25	0.20 mg/L	2.00	113	80-120
Chromium, total	0.0207	0.00050 mg/L	0.0200	103	80-120
Cobalt, total	0.0202	0.00010 mg/L	0.0200	101	80-120

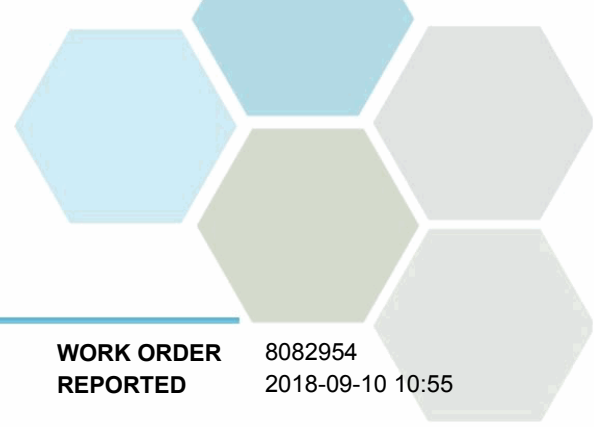


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Fort Liard, Hamlet of Sewage Lagoon

WORK ORDER REPORTED 8082954
2018-09-10 10:55

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B8I0170, Continued									
LCS (B8I0170-BS1), Continued					Prepared: 2018-09-05, Analyzed: 2018-09-06				
Copper, total	0.0212	0.00040 mg/L	0.0200		106	80-120			
Iron, total	1.93	0.010 mg/L	2.00		96	80-120			
Lead, total	0.0214	0.00020 mg/L	0.0200		107	80-120			
Lithium, total	0.0199	0.00010 mg/L	0.0200		99	80-120			
Magnesium, total	1.95	0.010 mg/L	2.00		97	80-120			
Manganese, total	0.0203	0.00020 mg/L	0.0200		101	80-120			
Molybdenum, total	0.0236	0.00010 mg/L	0.0200		118	80-120			
Nickel, total	0.0199	0.00040 mg/L	0.0200		100	80-120			
Phosphorus, total	1.92	0.050 mg/L	2.00		96	80-120			
Potassium, total	1.95	0.10 mg/L	2.00		98	80-120			
Selenium, total	0.0184	0.00050 mg/L	0.0200		92	80-120			
Silicon, total	2.2	1.0 mg/L	2.00		112	80-120			
Silver, total	0.0192	0.000050 mg/L	0.0200		96	80-120			
Sodium, total	1.88	0.10 mg/L	2.00		94	80-120			
Strontium, total	0.0209	0.0010 mg/L	0.0200		104	80-120			
Sulfur, total	4.5	3.0 mg/L	5.00		91	80-120			
Tellurium, total	0.0208	0.00050 mg/L	0.0200		104	80-120			
Thallium, total	0.0218	0.000020 mg/L	0.0200		109	80-120			
Thorium, total	0.0211	0.00010 mg/L	0.0200		106	80-120			
Tin, total	0.0203	0.00020 mg/L	0.0200		101	80-120			
Titanium, total	0.0230	0.0050 mg/L	0.0200		115	80-120			
Tungsten, total	0.0186	0.0010 mg/L	0.0200		93	80-120			
Uranium, total	0.0210	0.000020 mg/L	0.0200		105	80-120			
Vanadium, total	0.0198	0.0010 mg/L	0.0200		99	80-120			
Zinc, total	0.0215	0.0040 mg/L	0.0200		107	80-120			
Zirconium, total	0.0236	0.00010 mg/L	0.0200		118	80-120			
Reference (B8I0170-SRM1)					Prepared: 2018-09-05, Analyzed: 2018-09-06				
Aluminum, total	0.285	0.0050 mg/L	0.303		94	82-114			
Antimony, total	0.0548	0.00020 mg/L	0.0511		107	88-115			
Arsenic, total	0.126	0.00050 mg/L	0.118		107	88-111			
Barium, total	0.861	0.0050 mg/L	0.823		105	83-110			
Beryllium, total	0.0489	0.00010 mg/L	0.0496		99	80-119			
Boron, total	3.02	0.0050 mg/L	3.45		87	80-118			
Cadmium, total	0.0498	0.000010 mg/L	0.0495		101	90-110			
Calcium, total	11.5	0.20 mg/L	11.6		99	85-113			
Chromium, total	0.249	0.00050 mg/L	0.250		99	88-111			
Cobalt, total	0.0395	0.00010 mg/L	0.0377		105	90-114			
Copper, total	0.504	0.00040 mg/L	0.486		104	90-117			
Iron, total	0.479	0.010 mg/L	0.488		98	90-116			
Lead, total	0.211	0.00020 mg/L	0.204		104	90-110			
Lithium, total	0.385	0.00010 mg/L	0.403		96	79-118			
Magnesium, total	3.59	0.010 mg/L	3.79		95	88-116			
Manganese, total	0.107	0.00020 mg/L	0.109		98	88-108			
Molybdenum, total	0.208	0.00010 mg/L	0.198		105	88-110			
Nickel, total	0.246	0.00040 mg/L	0.249		99	90-112			
Phosphorus, total	0.211	0.050 mg/L	0.227		93	72-118			
Potassium, total	7.07	0.10 mg/L	7.21		98	87-116			
Selenium, total	0.116	0.00050 mg/L	0.121		96	90-122			
Sodium, total	7.00	0.10 mg/L	7.54		93	86-118			
Strontium, total	0.386	0.0010 mg/L	0.375		103	86-110			
Thallium, total	0.0875	0.000020 mg/L	0.0805		109	90-113			
Uranium, total	0.0310	0.000020 mg/L	0.0306		101	88-112			
Vanadium, total	0.386	0.0010 mg/L	0.386		100	87-110			
Zinc, total	2.52	0.0040 mg/L	2.49		101	90-113			



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WORK ORDER REPORTED 8082954
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QC Qualifiers:

BOD6 The BOD unseeded blank dissolved oxygen depletion exceeded 0.2 mg/L.
SPK The recovery of this analyte was outside of established control limits.
SPK1 The recovery of this analyte was outside of established control limits. The data was accepted based on performance of other batch QC.