

## Environment Testing

Client: Raytheon Canada Limited Ottawa  
400 Cooper St.  
Ottawa, ON  
K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 002160-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1970816  
Date Submitted: 2022-01-28  
Date Reported: 2022-01-29  
Project: Sewage (Site: CAM-M WO: 991007 )  
COC #: 885571

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana  
Dzelletovic  
*Dragana Dzelletovic* 2022.01.29  
20:36:17  
-05'00'  
APPROVAL: \_\_\_\_\_  
Dragana Dzelletovic-Andric, Microbiology Team Lead

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**Environment Testing**

Client: Raytheon Canada Limited Ottawa  
 400 Cooper St.  
 Ottawa, ON  
 K2P 2H8

Attention: Ms. Alaina Leslie  
 PO#: 002160-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1970816  
 Date Submitted: 2022-01-28  
 Date Reported: 2022-01-29  
 Project: Sewage (Site: CAM-M WO: 991007 )  
 COC #: 885571

Group	Analyte	MRL	Units	Guideline			
Microbiology	Faecal Coliforms	0	ct/100mL	MAC 10000	1	0	0

Lab I.D.	1607860	1607861	1607862
Sample Matrix	Sewage	Sewage	Sewage
Sample Type			
Sampling Date	2022-01-24	2022-01-24	2022-01-24
Sample I.D.	CAM-M Cyclelet A	CAM-M Cyclelet B	CAM-M Cyclelet C

**Guideline = Nunavut Water Board -Sewage**

Results relate only to the parameters tested on the samples submitted.

**\* = Guideline Exceedence**

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

**Analytical Method: AMBCOLM1**  
 additional QA/QC information available on request.

**Environment Testing**

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K2P 2H8

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Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1970816  
Date Submitted: 2022-01-28  
Date Reported: 2022-01-29  
Project: Sewage (Site: CAM-M WO: 991007 \_\_\_\_)  
COC #: 885571

**Sample Comment Summary**

Sample ID: 1607860 CAM-M Cyclelet A Deviation from standard protocol. All bacteria analysis on report is past hold time.

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**Guideline = Nunavut Water Board -Sewage**

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**Analytical Method: AMBCOLM1**  
additional QA/QC information available on request.**\* = Guideline Exceedence**

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**Environment Testing**

Client: Raytheon Canada Limited Ottawa  
400 Cooper St.  
Ottawa, ON  
K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1970812  
Date Submitted: 2022-01-28  
Date Reported: 2022-02-04  
Project: Sewage (Site: CAM-M WO: 991007 \_\_\_\_)  
COC #: 885571

Page 1 of 3

**Dear Alaina Leslie:**

**Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).**

Report Comments:

Charlie  
Long Qu  
2022.02.0  
  
4

APPROVAL:

Long Qu, Organics Supervisor

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 400 Cooper St.  
 Ottawa, ON

 K2P 2H8  
 Ms. Alaina Leslie  
 00887-OT

**Attention:** PO#:  
**Invoice to:** Raytheon Canada Limited Ottawa

 Report Number:  
 1970812  
 Date Submitted:  
 2022-01-28  
 Date Reported:  
 2022-02-04  
 Project:  
 Sewage (Site: CAM-M WO: 991007 )  
 COC #:  
 885571

Group	Analyte	MRL	Units	Guideline
General Chemistry	BOD5	1	mg/L	MAC 120
	pH	1.00		6-9
	Total Suspended Solids	2	mg/L	MAC 180
Oil and Grease	Oil & Grease - Mineral	1	mg/L	<2
	Oil & Grease - Non-mineral	1	mg/L	5
	Oil & Grease - Total	1	mg/L	2
	Visible Sheen	P/A	Absent	7
				A

Lab I.D. 1607853 Sewage	Sample Matrix	Sample Type	Sampling Date	CAM-M Cyclelet
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**Environment Testing**
**Client:** Raytheon Canada Limited Ottawa

 400 Cooper St.  
 Ottawa, ON

K2P 2H8

**Attention:** Ms. Alaina Leslie  
**PO#:** 00887-OT

**Invoice to:** Raytheon Canada Limited Ottawa

Report Number: 1970812  
 Date Submitted: 2022-01-28  
 Date Reported: 2022-02-04  
 Project: Sewage (Site: CAM-M WO: 991007 )  
 COC #: 885571

**QC Summary**

Analyte		Blank	QC % Rec	QC Limits
Run No	416288	Analysis/Extraction Date	2022-02-02	Analyst Z S
Method	SM 5210B			
BOD5		<1 mg/L	93	75-125
Run No	416293	Analysis/Extraction Date	2022-02-01	Analyst SKH
Method	C SM2540			
Total Suspended Solids		<2 mg/L	98	90-110
Run No	416379	Analysis/Extraction Date	2022-01-31	Analyst AsA
Method	SM2320,2510,4500H/F			
pH			100	90-110
Run No	416597	Analysis/Extraction Date	2022-02-04	Analyst R G
Method	SM 5520B/F			
Oil & Grease - Mineral		<1 mg/L	70	60-120
Oil & Grease - Non-mineral		<1 mg/L		60-120
Oil & Grease - Total		<1 mg/L	95	60-120
Run No	416658	Analysis/Extraction Date	2022-02-04	Analyst R G
Method	SHEEN			
Visible Sheen		0 P/A		

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400 Cooper St.  
Ottawa, ON  
K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1971611  
Date Submitted: 2022-02-11  
Date Reported: 2022-02-18  
Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
COC #: 886124

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Sarah

Horner

*Sarah Horner* 2022.02.1  
8 15:33:23  
-05'00'

APPROVAL:

Sarah Horner, Inorganics Technician

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 400 Cooper St.  
 Ottawa, ON

K2P 2H8

 Ms. Alaina Leslie  
 00887-OT

**Invoice to:** Raytheon Canada Limited Ottawa

 Report Number: 1971611  
 Date Submitted: 2022-02-11  
 Date Reported: 2022-02-18  
 Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
 COC #: 886124

Group	Analyte	MRL	Units	Guideline
General Chemistry	BOD5	1	mg/L	MAC 120
	pH	1.00		6-9
	Total Suspended Solids	2	mg/L	MAC 180
Oil and Grease	Oil & Grease - Mineral	1	mg/L	<1
	Oil & Grease - Non-mineral	1	mg/L	<1
	Oil & Grease - Total	1	mg/L	<1
	Visible Sheen	P/A	Absent	A

Lab I.D. 1609952 Sewage	Sample Matrix 2022-02-07 CAM-M Cyclelet
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**Guideline = Nunavut Water Board -Sewage**
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Ottawa, ON

K2P 2H8

**Attention:** Ms. Alaina Leslie  
**PO#:** 00887-OT

**Invoice to:** Raytheon Canada Limited Ottawa

Report Number: 1971611  
Date Submitted: 2022-02-11  
Date Reported: 2022-02-18  
Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
COC #: 886124

### QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 417099	Analysis/Extraction Date 2022-02-14	Analyst AsA	
Method SM2320/2510/4500H/F			
pH		102	90-110
Run No 417169	Analysis/Extraction Date 2022-02-16	Analyst AaN	
Method C SM2540			
Total Suspended Solids	<2 mg/L	99	90-110
Run No 417171	Analysis/Extraction Date 2022-02-16	Analyst AET	
Method SM 5210B			
BOD5	<1 mg/L	81	75-125
Run No 417292	Analysis/Extraction Date 2022-02-17	Analyst R G	
Method SM 5520B/F			
Oil & Grease - Mineral	<1 mg/L	100	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	100	60-120
Run No 417337	Analysis/Extraction Date 2022-02-18	Analyst R G	
Method SHEEN			
Visible Sheen			

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400 Cooper St.  
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K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1971594  
Date Submitted: 2022-02-11  
Date Reported: 2022-02-13  
Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
COC #: 886124

Page 1 of 3

Dear Alaina Leslie:

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Report Comments:

Dragana  
Dzelletovic  
*Dragana Dzelletovic* 2022-02-13  
01:20:27  
-05'00'  
APPROVAL: \_\_\_\_\_  
Dragana Dzelletovic-Andric, Microbiology Team Lead

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## Certificate of Analysis

### Environment Testing

Client: Raytheon Canada Limited Ottawa

400 Cooper St.  
Ottawa, ON

K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1971594  
Date Submitted: 2022-02-11  
Date Reported: 2022-02-13  
Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
COC #: 886124

Group	Analyte	MRL	Units	Guideline	
Microbiology	Faecal Coliforms	0	ct/100mL	MAC 10000	1

  

Lab I.D.	1609931	1609932	1609933
Sample Matrix	WW	WW	WW
Sample Type	2022-02-07	2022-02-07	2022-02-07
Sampling Date	CAM-M Cyclelet - A	CAM-M Cyclelet - B	CAM-M Cyclelet - C
Sample I.D.			

**Guideline** = Nunavut Water Board -Sewage

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Analytical Method: AMBCOLM1  
additional QA/QC information available on request.

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**Environment Testing**

Client: Raytheon Canada Limited Ottawa  
400 Cooper St.  
Ottawa, ON

Attention: K2P 2H8  
Ms. Alaina Leslie  
PO#: 00887-OT  
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1971594  
Date Submitted: 2022-02-11  
Date Reported: 2022-02-13  
Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
COC #: 886124

**Sample Comment Summary**

Sample ID: 1609931 CAM-M Cyclelet - A Deviation from standard protocol. All bacteria samples on report are past hold time.

**Guideline = Nunavut Water Board -Sewage**

Results relate only to the parameters tested on the samples submitted.  
**Analytical Method: AMBCOLM1**  
additional QA/QC information available on request.

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Client: Raytheon Canada Limited Ottawa  
400 Cooper St.  
Ottawa, ON  
K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Report Number: 1972997  
Date Submitted: 2022-03-09  
Date Reported: 2022-03-16  
Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
COC #: 206778

Yasna  
  
Hassanabadi

2022.03.16  
1641:26 -04'00'

APPROVAL:

Yasna Hassanabadi, Organics Technician

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**Client:** Raytheon Canada Limited Ottawa

 400 Cooper St.  
 Ottawa, ON

K2P 2H8

 Ms. Alaina Leslie  
 00887-OT

**Attention:** PO#:  
**Invoice to:** Raytheon Canada Limited Ottawa

 Report Number: 1972997  
 Date Submitted: 2022-03-09  
 Date Reported: 2022-03-16  
 Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
 COC #: 206778

Group	Analyte	MRL	Units	Guideline
General Chemistry	BOD5	1	mg/L	MAC 120
	pH	1.00		6-9
	Total Suspended Solids	2	mg/L	MAC 180
Oil and Grease	Oil & Grease - Mineral	1	mg/L	<2
	Oil & Grease - Non-mineral	1	mg/L	<1
	Oil & Grease - Total	1	mg/L	<1
	Visible Sheen	P/A	Absent	A

Lab I.D. 1613644 Sewage	Sample Matrix 2022-03-05 ML Cyclelet
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**Environment Testing**
**Client:** Raytheon Canada Limited Ottawa

 400 Cooper St.  
 Ottawa, ON

K2P 2H8

**Attention:** Ms. Alaina Leslie  
**PO#:** 00887-OT

**Invoice to:** Raytheon Canada Limited Ottawa

 Report Number: 1972997  
 Date Submitted: 2022-03-09  
 Date Reported: 2022-03-16  
 Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
 COC #: 206778

**QC Summary**

Analyte		Blank	QC % Rec	QC Limits
Run No	418390	Analysis/Extraction Date	2022-03-14	Analyst SKH
Method	C SM2540			
Total Suspended Solids		<2 mg/L	101	90-110
Run No	418410	Analysis/Extraction Date	2022-03-16	Analyst Z S
Method	SM 5210B			
BOD5		<1 mg/L	91	75-125
Run No	418559	Analysis/Extraction Date	2022-03-15	Analyst AsA
Method	SM2320,2510,4500H/F			
pH			98	90-110
Run No	418643	Analysis/Extraction Date	2022-03-16	Analyst R G
Method	SHEEN			
Visible Sheen		0 P/A		
Run No	418644	Analysis/Extraction Date	2022-03-16	Analyst R G
Method	SM 5520B/F			
Oil & Grease - Mineral		<1 mg/L	90	60-120
Oil & Grease - Non-mineral		<1 mg/L		60-120
Oil & Grease - Total		<1 mg/L	95	60-120

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400 Cooper St.  
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K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 002160-OT

Invoice to: Raytheon Canada Limited Ottawa

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Jason Kennedy  
  
2022.03.11  
10:59:02  
-05'00'

APPROVAL:

Jason Kennedy, Project Manager

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 400 Cooper St.  
 Ottawa, ON  
 K2P 2H8

Attention: Ms. Alaina Leslie  
 PO#:  
 002160-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1973009  
 Date Submitted: 2022-03-09  
 Date Reported: 2022-03-11  
 Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
 COC #: 206778

Group	Analyte	MRL	Units	Guideline			
Microbiology	Faecal Coliforms	0	ct/100mL	MAC 10000	1	0	1

Lab I.D.	1613683	1613684	1613685
Sample Matrix	WW	WW	WW
Sample Type	2022-03-05	2022-03-05	2022-03-05
Sampling Date	ML Cyclelet - A	ML Cyclelet - B	ML Cyclelet - C
Sample I.D.			

**Guideline = Nunavut Water Board -Sewage**

\* = Guideline Exceedence

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**Analytical Method: AMBCOLM1**  
 additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

**Environment Testing**

Client: Raytheon Canada Limited Ottawa  
400 Cooper St.  
Ottawa, ON

Attention: K2P 2H8  
PO#:  
Invoice to: Ms. Alaina Leslie  
002160-OT  
Raytheon Canada Limited Ottawa

Report Number: 1973009  
Date Submitted: 2022-03-09  
Date Reported: 2022-03-11  
Project: Sewage (Site: CAM-M WO: \_\_\_\_\_)  
COC #: 206778

**Sample Comment Summary**

Sample ID: 1613683 ML Cyclelet - A Deviation from standard protocol. All samples on report are past hold time.

**Guideline = Nunavut Water Board -Sewage**

Results relate only to the parameters tested on the samples submitted.  
**Analytical Method: AMBCOLM1**  
additional QA/QC information available on request.

\* = Guideline Exceedence

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Raytheon Canada Limited Ottawa  
400 Cooper St.  
Ottawa, ON  
K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1976746  
Date Submitted: 2022-05-06  
Date Reported: 2022-05-12  
Project: Sewage (Site: FOX-M WO: 983491)  
COC #: 890297

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Emma-

Dawn

Ferguson

2022.05.12

15:15:44

-04'00'

APPROVAL:

Emma-Dawn Ferguson, Chemist

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: <http://www.cala.ca/scopes/2602.pdf>.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes only). Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

**Environment Testing**
**Client:** Raytheon Canada Limited Ottawa

400 Cooper St.

Ottawa, ON

K2P 2H8

**Attention:** Ms. Alaina Leslie  
**PO#:** 00887-OT

**Invoice to:** Raytheon Canada Limited Ottawa

Report Number: 1976746  
 Date Submitted: 2022-05-06  
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 Project: Sewage (Site: FOX-M WO: 983491)  
 COC #: 890297

Group	Analyte	MRL	Units	Guideline
General Chemistry	BOD5	1	mg/L	MAC 120
	pH	1.00		6-9
	Total Suspended Solids	2	mg/L	MAC 180
Oil and Grease	Oil & Grease - Mineral	1	mg/L	<2
	Oil & Grease - Non-mineral	1	mg/L	<1
	Oil & Grease - Total	1	mg/L	1
	Visible Sheen	P/A	Absent	A

Lab I.D. 1624215 Sewage	Sample Matrix Sample Type	Sampling Date 2022-05-02	CAM-M Cycle Let
-------------------------------	------------------------------	-----------------------------	-----------------

**Guideline = Nunavut Water Board -Sewage**
**\* = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.  
 Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

**Environment Testing**

Client: Raytheon Canada Limited Ottawa  
400 Cooper St.  
Ottawa, ON  
K2P 2H8

Attention: Ms. Alaina Leslie  
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1976746  
Date Submitted: 2022-05-06  
Date Reported: 2022-05-12  
Project: Sewage (Site: FOX-M WO: 983491)  
COC #: 890297

**QC Summary**

Analyte		Blank	QC % Rec	QC Limits
Run No	421606	Analysis/Extraction Date	2022-05-10	Analyst SKH
Method	C SM2540			
Total Suspended Solids		<2 mg/L	98	90-110
Run No	421636	Analysis/Extraction Date	2022-05-09	Analyst AsA
Method	SM2320,2510,4500H/F			
pH			99	90-110
Run No	421707	Analysis/Extraction Date	2022-05-11	Analyst FM
Method	SM 5520B/F			
Oil & Grease - Mineral		<1 mg/L	100	60-120
Oil & Grease - Non-mineral		<1 mg/L		60-120
Oil & Grease - Total		<1 mg/L	110	60-120
Run No	421708	Analysis/Extraction Date	2022-05-11	Analyst FM
Method	SHEEN			
Visible Sheen				
Run No	421726	Analysis/Extraction Date	2022-05-11	Analyst CK
Method	SM 5510B			
BOD5		<1 mg/L	77	75-125

**Guideline = Nunavut Water Board -Sewage**
**\* = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.  
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



## CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: EO2208177	Page	: 1 of 3
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 360 Alberts St Suite 1830 Ottawa ON Canada	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 27-Sep-2022 16:30
PO	: ----	Date Analysis Commenced	: 28-Sep-2022
C-O-C number	: ----	Issue Date	: 07-Oct-2022 16:31
Sampler	: ----		
Site	: ----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Cynthia Bauer	Organic Supervisor	Organics, Calgary, Alberta
Daniel Nguyen	Lab Assistant	Inorganics, Edmonton, Alberta
Jessica Maitland	Lab Assistant	Inorganics, Edmonton, Alberta
Michelle Schroder	Lab Assistant	Inorganics, Edmonton, Alberta
Rosalie Van Deelen	Laboratory Assistant	Organics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

## No Breaches Found

### General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

<u>Unit</u>	<u>Description</u>
CFU/100mL	colony forming units per 100 mL
mg/L	milligrams per litre
pH units	pH units

>: greater than.

<: less than.

Red shading is applied where the result is greater than the Guideline Upper Limit or the result is lower than the Guideline Lower Limit.

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

## ***Analytical Results Evaluation***

Matrix:	Client sample ID	---	---	---	---	---	---	---
	Sampling date/time	---	---	---	---	---	---	---
	Sub-Matrix	---	---	---	---	---	---	---
Analyte	CAS Number	Unit	---	---	---	---	---	---

Please refer to the General Comments section for an explanation of any qualifiers detected.

pH	---	pH units						
solids, total suspended [TSS]	---	mg/L						
coliforms, thermotolerant [fecal]	---	CFU/100mL						
biochemical oxygen demand [BOD]	---	mg/L						
oil & grease (gravimetric)	---	mg/L						
oil & grease, animal/vegetable (gravimetric)	---	mg/L						
oil & grease, mineral (gravimetric)	---	mg/L						



## CERTIFICATE OF ANALYSIS

Work Order	: <b>EO2208177</b>	Page	: 1 of 3
Client	: <b>NASITTUQ CORPORATION</b>	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 360 Alberts St Suite 1830 Ottawa ON Canada	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 27-Sep-2022 16:30
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- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

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<i>Signatures</i>	<i>Position</i>	<i>Laboratory Department</i>
Cynthia Bauer	Organic Supervisor	Organics, Calgary, Alberta
Daniel Nguyen	Lab Assistant	Inorganics, Edmonton, Alberta
Jessica Maitland	Lab Assistant	Inorganics, Edmonton, Alberta
Michelle Schroder	Lab Assistant	Inorganics, Edmonton, Alberta
Rosalie Van Deelen	Laboratory Assistant	Organics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
CFU/100mL	colony forming units per 100 mL
mg/L	milligrams per litre
pH units	pH units

>: greater than.

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Analytical Results

EO2208177-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: ML-Cycle-let Gen Chem and O&G

Client sampling date / time: 21-Sep-2022 14:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC Lot
<b>Physical Tests</b>								
pH	---	7.63	0.10	pH units	E108	28-Sep-2022	04-Oct-2022	670539
solids, total suspended [TSS]	---	<3.0	3.0	mg/L	E160	-	28-Sep-2022	670621
<b>Aggregate Organics</b>								
biochemical oxygen demand [BOD]	---	<2.0	2.0	mg/L	E550	-	28-Sep-2022	670075
oil & grease (gravimetric)	---	<5.0	5.0	mg/L	E567	07-Oct-2022	07-Oct-2022	686323
oil & grease, animal/vegetable (gravimetric)	---	<5.0	5	mg/L	EC567A.SG	-	07-Oct-2022	-
oil & grease, mineral (gravimetric)	---	<5.0	5.0	mg/L	E567SG	07-Oct-2022	07-Oct-2022	686324

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

EO2208177-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: ML-Cycle-let Faecal A

Client sampling date / time: 21-Sep-2022 14:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC Lot
<b>Microbiological Tests</b>								
coliforms, thermotolerant [fecal]	---	20	1	CFU/100mL	E012.FC	-	28-Sep-2022	672915

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

EO2208177-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: ML-Cycle-let Faecal B

Client sampling date / time: 21-Sep-2022 14:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC Lot
<b>Microbiological Tests</b>								
coliforms, thermotolerant [fecal]	---	33	1	CFU/100mL	E012.FC	-	28-Sep-2022	672915

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

EO2208177-004

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: ML-Cycle-let Faecal C

Client sampling date / time: 21-Sep-2022 14:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC Lot
<b>Microbiological Tests</b>								
coliforms, thermotolerant [fecal]	---	38	1	CFU/100mL	E012.FC	-	28-Sep-2022	672915

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL REPORT

Work Order	<b>EO2208177</b>	Page	1 of 4
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 360 Alberts St Suite 1830 Ottawa ON Canada	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 27-Sep-2022 16:30
PO	: ----	Date Analysis Commenced	: 28-Sep-2022
C-O-C number	: ----	Issue Date	: 07-Oct-2022 16:31
Sampler	: ----		
Site	: ----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Cynthia Bauer	Organic Supervisor	Calgary Organics, Calgary, Alberta
Daniel Nguyen	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Jessica Maitland	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Michelle Schroder	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Rosalie Van Deelen	Laboratory Assistant	Calgary Organics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

### Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO = Data Quality Objective.
- LOR = Limit of Reporting (detection limit).
- RPD = Relative Percent Difference
- # = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "—" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water		Laboratory Duplicate (DUP) Report										
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
<b>Physical Tests (QC Lot: 670539)</b>												
EO2208166-017	Anonymous	pH	---	E108	0.10	pH units	8.40	8.38	0.238%	3%	---	
<b>Physical Tests (QC Lot: 670621)</b>												
EO2208023-001	Anonymous	solids, total suspended [TSS]	---	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	---	
<b>Physical Tests (QC Lot: 675825)</b>												
EO2208304-058	Anonymous	pH	---	E108	0.10	pH units	7.99	8.01	0.250%	3%	---	
<b>Microbiological Tests (QC Lot: 672915)</b>												
EO2208177-004	ML-Cycle-let Faecal C	coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	38	31	20.3%	65%	---	

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 670621)</b>						
solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Microbiological Tests (QCLot: 672915)</b>						
coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 670075)</b>						
biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---
<b>Aggregate Organics (QCLot: 686323)</b>						
oil & grease (gravimetric)	---	E567	5	mg/L	<5.0	---
<b>Aggregate Organics (QCLot: 686324)</b>						
oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	<5.0	---

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
<b>Physical Tests (QCLot: 670539)</b>									
pH	---	E108	---	pH units	6 pH units	102	97.0	103	---
<b>Physical Tests (QCLot: 670621)</b>									
solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	104	85.0	115	---
<b>Physical Tests (QCLot: 675825)</b>									
pH	---	E108	---	pH units	6 pH units	100	97.0	103	---
<b>Aggregate Organics (QCLot: 670075)</b>									
biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	115	85.0	115	---
<b>Aggregate Organics (QCLot: 686323)</b>									
oil & grease (gravimetric)	---	E567	5	mg/L	100 mg/L	84.0	70.0	130	---
<b>Aggregate Organics (QCLot: 686324)</b>									
oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	50 mg/L	73.8	70.0	130	---



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	<b>EO2208177</b>	Page	: 1 of 6
Client	<b>NASITTUQ CORPORATION</b>	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 360 Alberts St Suite 1830 Ottawa ON Canada	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 27-Sep-2022 16:30
PO	: ----	Issue Date	: 07-Oct-2022 16:32
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### **Workorder Comments**

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

RIGHT SOLUTIONS | RIGHT PARTNER

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Water											Evaluation: ✕ = Holding time exceedance ; ✓ = Within Holding Time		
Analyte Group	Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis					
				Preparation Date	Holding Times		Eval	Analysis Date	Holding Times	Eval	Rec	Actual	Rec
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>													
HDPE [BOD HT-48h] ML-Cycle-let Gen Chem and O&G		E550	21-Sep-2022	---	---	---		28-Sep-2022	48 hrs	165 hrs	✗		EHTR
<b>Aggregate Organics : Mineral Oil &amp; Grease by Gravimetry</b>													
Compliant container ML-Cycle-let Gen Chem and O&G		E567SG	21-Sep-2022	07-Oct-2022	28 days	16 days	✓	07-Oct-2022	40 days	0 days	✓		
<b>Aggregate Organics : Oil &amp; Grease by Gravimetry</b>													
Compliant container ML-Cycle-let Gen Chem and O&G		E567	21-Sep-2022	07-Oct-2022	28 days	16 days	✓	07-Oct-2022	40 days	0 days	✓		
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>													
Sterile HDPE (Sodium thiosulphate) ML-Cycle-let Faecal A		E012.FC	21-Sep-2022	---	---	---		28-Sep-2022	30 hrs	169 hrs	✗		EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>													
Sterile HDPE (Sodium thiosulphate) ML-Cycle-let Faecal B		E012.FC	21-Sep-2022	---	---	---		28-Sep-2022	30 hrs	169 hrs	✗		EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>													
Sterile HDPE (Sodium thiosulphate) ML-Cycle-let Faecal C		E012.FC	21-Sep-2022	---	---	---		28-Sep-2022	30 hrs	169 hrs	✗		EHTR
<b>Physical Tests : pH by Meter</b>													
HDPE [BOD HT-48h] ML-Cycle-let Gen Chem and O&G		E108	21-Sep-2022	28-Sep-2022	41 hrs	3 hrs	✗	30-Sep-2022	-165.53 hrs	41 hrs	✗		EHTR-FM

Matrix: Water Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis		
			Preparation Date	Holding Times Rec	Eval	Analysis Date	Holding Times Rec	Eval
<b>Physical Tests : TSS by Gravimetry</b>								
HDPE [BOD HT-48h] ML-Cycle-Jet Gen Chem and O&G	E160	21-Sep-2022	---	---	---	28-Sep-2022	7 days	7 days ✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Water

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Analytical Methods	Method	QC Lot #	Count		Frequency (%)		Evaluation
				QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>								
Biochemical Oxygen Demand - 5 day		E550	670075	0	16	0.0	5.0	✗
pH by Meter		E108	675825	2	39	5.1	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)		E012.FC	672915	1	20	5.0	5.0	✓
TSS by Gravimetry		E160	670621	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>								
Biochemical Oxygen Demand - 5 day		E550	670075	1	16	6.2	5.0	✓
Mineral Oil & Grease by Gravimetry		E567SG	686324	1	1	100.0	5.0	✓
Oil & Grease by Gravimetry		E567	686323	1	1	100.0	5.0	✓
pH by Meter		E108	675825	2	39	5.1	5.0	✓
TSS by Gravimetry		E160	670621	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>								
Biochemical Oxygen Demand - 5 day		E550	670075	1	16	6.2	5.0	✓
Mineral Oil & Grease by Gravimetry		E567SG	686324	1	1	100.0	5.0	✓
Oil & Grease by Gravimetry		E567	686323	1	1	100.0	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)		E012.FC	672915	1	20	5.0	5.0	✓
TSS by Gravimetry		E160	670621	1	20	5.0	5.0	✓

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
Thermotolerant (Fecal) Coliform (MF-mFC)		E012.FC	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
pH by Meter		E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry		E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Biochemical Oxygen Demand - 5 day		E550	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Oil & Grease by Gravimetry		E567	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry		E567SG	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
Animal & Vegetable Oil & Grease by Gravimetry		EC567A.SG	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
Preparation Methods					
Oil & Grease Extraction for Gravimetry		EP567	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
		Calgary - Environmental			



## Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here

COC Number: 14 -

10

Canada Toll Free: 1 800 668 9878

11

## CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: EO2210337	Page	: 1 of 3
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 275 Slater Street Suite 1600 Ottawa ON Canada K1P 5H9	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 23-Nov-2022 15:15
PO	: ----	Date Analysis Commenced	: 24-Nov-2022
C-O-C number	: ----	Issue Date	: 30-Nov-2022 12:27
Sampler	: KB		
Site	: ----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<u>Signatories</u>	<u>Position</u>	<u>Laboratory Department</u>
Cynthia Bauer	Organic Supervisor	Organics, Calgary, Alberta
Jessica Maitland	Lab Assistant	Inorganics, Edmonton, Alberta
Marsha Calero	Laboratory Assistant	Organics, Calgary, Alberta
Michelle Schroder	Lab Assistant	Inorganics, Edmonton, Alberta
Rosalie Van Deelen	Laboratory Assistant	Organics, Calgary, Alberta
Sobhithe Pillay		Inorganics, Edmonton, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

## No Breaches Found

### General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	Description
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
pH units	pH units

>: greater than.

<: less than.

Red shading is applied where the result is greater than the Guideline Upper Limit or the result is lower than the Guideline Lower Limit.

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

### Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.

## Analytical Results Evaluation

Matrix:

Analyte	CAS Number	Unit	Client sample ID	---	---	---	---	---	---	---	---
			Sampling date/time	---	---	---	---	---	---	---	---
			Sub-Matrix	---	---	---	---	---	---	---	---
		-									

Please refer to the General Comments section for an explanation of any qualifiers detected.

pH	---	pH units									
solids, total suspended [TSS]	---	mg/L									
coliforms, thermotolerant [fecal]	---	CFU/100mL									
biochemical oxygen demand [BOD]	---	mg/L									
oil & grease (gravimetric)	---	mg/L									
oil & grease, animal/vegetable (gravimetric)	---	mg/L									
oil & grease, mineral (gravimetric)	---	mg/L									

## CERTIFICATE OF ANALYSIS

Work Order	: EO2210337	Page	: 1 of 4
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 275 Slater Street Suite 1600 Ottawa ON Canada K1P 5H9	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 23-Nov-2022 15:15
PO	: ---	Date Analysis Commenced	: 24-Nov-2022
C-O-C number	: ---	Issue Date	: 30-Nov-2022 12:27
Sampler	: KB		
Site	: ---		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Cynthia Bauer	Organic Supervisor	Organics, Calgary, Alberta
Jessica Maitland	Lab Assistant	Inorganics, Edmonton, Alberta
Marsha Calero	Laboratory Assistant	Organics, Calgary, Alberta
Michelle Schroder	Lab Assistant	Inorganics, Edmonton, Alberta
Rosalie Van Deelen	Laboratory Assistant	Organics, Calgary, Alberta
Sobhitthan Pillay		Inorganics, Edmonton, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

Unit	Description
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
pH units	pH units

>: greater than.

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.

## Analytical Results

EO2210337-001

Sub-Matrix: Water  
 (Matrix: Water)

Client sample ID: CAM-MAIN-CYCLE-LET GEN CHEM AND O&G

Client sampling date / time: 17-Nov-2022 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC Lot
<b>Physical Tests</b>								
pH	---	7.15	0.10	pH units	E108	24-Nov-2022	24-Nov-2022	755819
solids, total suspended [TSS]	---	10.8 <small>RRV</small>	3.0	mg/L	E160	-	30-Nov-2022	761430
<b>Aggregate Organics</b>								
biochemical oxygen demand [BOD]	---	<2.0	2.0	mg/L	E550	-	24-Nov-2022	755990
oil & grease (gravimetric)	---	<5.0	5.0	mg/L	E567	24-Nov-2022	24-Nov-2022	755630
oil & grease, animal/vegetable (gravimetric)	---	<5.0	5	mg/L	EC567A.SG	-	25-Nov-2022	-
oil & grease, mineral (gravimetric)	---	<5.0	5.0	mg/L	E567SG	24-Nov-2022	25-Nov-2022	755631

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

EO2210337-002

Sub-Matrix: Water  
 (Matrix: Water)

Client sample ID: CAM-MAIN-CYCLE-LET FAECAL A

Client sampling date / time: 17-Nov-2022 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC Lot
<b>Microbiological Tests</b>								
coliforms, thermotolerant [fecal]	---	86	1	CFU/100mL	E012.FC	-	24-Nov-2022	758004

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

EO2210337-003

Sub-Matrix: Water  
 (Matrix: Water)

Client sample ID: CAM-MAIN-CYCLE-LET FAECAL B

Client sampling date / time: 17-Nov-2022 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC Lot
<b>Microbiological Tests</b>								
coliforms, thermotolerant [fecal]	---	209	1	CFU/100mL	E012.FC	-	24-Nov-2022	758004

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

EO2210337-004

Sub-Matrix: Water  
 (Matrix: Water)

Client sample ID: CAM-MAIN-CYCLE-LET FAECAL C

Client sampling date / time: 17-Nov-2022 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC Lot
<b>Microbiological Tests</b>								
coliforms, thermotolerant [fecal]	---	52	1	CFU/100mL	E012.FC	-	24-Nov-2022	758004

Please refer to the General Comments section for an explanation of any qualifiers detected.

Page : 4 of 4  
Work Order : EO2210337  
Client : NASITTUQ CORPORATION  
Project : NWS Sewage

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## QUALITY CONTROL REPORT

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Work Order	: EO2210337	Page	: 1 of 4
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 275 Slater Street Suite 1600 Ottawa ON Canada K1P 5H9	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: -----	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 23-Nov-2022 15:15
PO	: -----	Date Analysis Commenced	: 24-Nov-2022
C-O-C number	: -----	Issue Date	: 30-Nov-2022 12:27
Sampler	: KB 613 223 0629		
Site	: -----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Cynthia Bauer	Organic Supervisor	Calgary Organics, Calgary, Alberta
Jessica Maitland	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Marsha Calero	Laboratory Assistant	Calgary Organics, Calgary, Alberta
Michelle Schroder	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Rosalie Van Deelen	Laboratory Assistant	Calgary Organics, Calgary, Alberta
Sobhithan Pillay		Edmonton Inorganics, Edmonton, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

### Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "—" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water		Laboratory Duplicate (DUP) Report										
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
<b>Physical Tests (QC Lot: 755819)</b>												
EO221032-012	Anonymous	pH	---	E108	0.10	pH units	7.37	7.42	0.676%	3%	---	
<b>Physical Tests (QC Lot: 761430)</b>												
EO2210337-001	CAM-MAIN-CYCLE-LET GEN CHEM AND O&G	solids, total suspended [TSS]	---	E160	3.0	mg/L	10.8	9.0	1.8	Diff <2x LOR	---	
<b>Microbiological Tests (QC Lot: 758004)</b>												
CG2216370-002	Anonymous	coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	<1	0	Diff <2x LOR	---	

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QC Lot: 761430)</b>						
solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Microbiological Tests (QC Lot: 758004)</b>						
coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QC Lot: 755630)</b>						
oil & grease (gravimetric)	---	E567	5	mg/L	<5.0	---
<b>Aggregate Organics (QC Lot: 755631)</b>						
oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	<5.0	---
<b>Aggregate Organics (QC Lot: 755990)</b>						
biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
<b>Physical Tests (QC Lot: 755819)</b>									
pH	---	E108	---	pH units	6 pH units	99.7	97.0	103	---
<b>Physical Tests (QC Lot: 761430)</b>									
solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	98.4	85.0	115	---
<b>Aggregate Organics (QC Lot: 755630)</b>									
oil & grease (gravimetric)	---	E567	5	mg/L	100 mg/L	88.2	70.0	130	---
<b>Aggregate Organics (QC Lot: 755631)</b>									
oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	50 mg/L	71.7	70.0	130	---
<b>Aggregate Organics (QC Lot: 755990)</b>									
biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	99.7	85.0	115	---

Page : 4 of 4  
Work Order : EO2210337  
Client : NASITTUQ CORPORATION  
Project : NWS Sewage

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## QUALITY CONTROL INTERPRETIVE REPORT

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Work Order	: EO2210337	Page	: 1 of 6
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 275 Slater Street Suite 1600 Ottawa ON Canada K1P 5H9	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 23-Nov-2022 15:15
PO	: ----	Issue Date	: 30-Nov-2022 12:27
C-O-C number	: ----		
Sampler	: KB		
Site	: ----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

---

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

---

### Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

---

### Summary of Outliers

#### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

#### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

#### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

## ***Outliers : Frequency of Quality Control Samples***

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Water											Evaluation: ✕ = Holding time exceedance ; ✓ = Within Holding Time		
Analyte Group	Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			Eval		
				Preparation Date	Holding Times		Eval	Analysis Date	Holding Times				
Aggregate Organics : Biochemical Oxygen Demand - 5 day													
HDPE [BOD HT 3d] CAM-MAIN-CYCLE-LET GEN CHEM AND O&G		E550	17-Nov-2022	---	---	---		24-Nov-2022	3 days	7 days	✗ EHTR		
Aggregate Organics : Mineral Oil & Grease by Gravimetry													
Amber glass (hydrochloric acid) CAM-MAIN-CYCLE-LET GEN CHEM AND O&G		E567SG	17-Nov-2022	24-Nov-2022	28 days	7 days	✓	25-Nov-2022	40 days	1 days	✓		
Aggregate Organics : Oil & Grease by Gravimetry													
Amber glass (hydrochloric acid) CAM-MAIN-CYCLE-LET GEN CHEM AND O&G		E567	17-Nov-2022	24-Nov-2022	28 days	7 days	✓	24-Nov-2022	40 days	0 days	✓		
Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)													
Sterile HDPE (Sodium thiosulphate) CAM-MAIN-CYCLE-LET FAECAL A		E012.FC	17-Nov-2022	---	---	---		24-Nov-2022	30 hrs	166 hrs	✗ EHTR		
Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)													
Sterile HDPE (Sodium thiosulphate) CAM-MAIN-CYCLE-LET FAECAL B		E012.FC	17-Nov-2022	---	---	---		24-Nov-2022	30 hrs	166 hrs	✗ EHTR		
Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)													
Sterile HDPE (Sodium thiosulphate) CAM-MAIN-CYCLE-LET FAECAL C		E012.FC	17-Nov-2022	---	---	---		24-Nov-2022	30 hrs	166 hrs	✗ EHTR		
Physical Tests : pH by Meter													
HDPE CAM-MAIN-CYCLE-LET GEN CHEM AND O&G		E108	17-Nov-2022	24-Nov-2022	---	---		24-Nov-2022	0.25 hrs	3.25 hrs	✗ EHTR-FM		

Matrix: Water Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis		
			Preparation Date	Holding Times Rec	Eval	Analysis Date	Holding Times Rec	Eval
<b>Physical Tests : TSS by Gravimetry</b>								
HDPE CAM-MAIN-CYCLE-LET GEN CHEM AND O&G	E160	17-Nov-2022	---	---	---	29-Nov-2022	7 days	12 days

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Water

Evaluation: **x** = QC frequency outside specification; **✓** = QC frequency within specification.

Quality Control Sample Type	Analytical Methods	Method	QC Lot #	Count		Frequency (%)		
				QC	Regular	Actual	Expected	Evaluation
<b>Laboratory Duplicates (DUP)</b>								
Biochemical Oxygen Demand - 5 day		E550	755990	0	13	0.0	5.0	<b>x</b>
pH by Meter		E108	755819	1	20	5.0	5.0	<b>✓</b>
Thermotolerant (Fecal) Coliform (MF-mFC)		E012.FC	758004	1	20	5.0	5.0	<b>✓</b>
TSS by Gravimetry		E160	761430	1	20	5.0	5.0	<b>✓</b>
<b>Laboratory Control Samples (LCS)</b>								
Biochemical Oxygen Demand - 5 day		E550	755990	1	13	7.6	5.0	<b>✓</b>
Mineral Oil & Grease by Gravimetry		E567SG	755631	1	1	100.0	5.0	<b>✓</b>
Oil & Grease by Gravimetry		E567	755630	1	4	25.0	5.0	<b>✓</b>
pH by Meter		E108	755819	1	20	5.0	5.0	<b>✓</b>
TSS by Gravimetry		E160	761430	1	20	5.0	5.0	<b>✓</b>
<b>Method Blanks (MB)</b>								
Biochemical Oxygen Demand - 5 day		E550	755990	1	13	7.6	5.0	<b>✓</b>
Mineral Oil & Grease by Gravimetry		E567SG	755631	1	1	100.0	5.0	<b>✓</b>
Oil & Grease by Gravimetry		E567	755630	1	4	25.0	5.0	<b>✓</b>
Thermotolerant (Fecal) Coliform (MF-mFC)		E012.FC	758004	1	20	5.0	5.0	<b>✓</b>
TSS by Gravimetry		E160	761430	1	20	5.0	5.0	<b>✓</b>

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
Thermotolerant (Fecal) Coliform (MF-mFC)		E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
pH by Meter		E108 Edmonton - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry		E160 Edmonton - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Biochemical Oxygen Demand - 5 day		E550 Edmonton - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Oil & Grease by Gravimetry		E567 Calgary - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry		E567SG Calgary - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
Animal & Vegetable Oil & Grease by Gravimetry		EC567A.SG Calgary - Environmental	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
Preparation Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
Oil & Grease Extraction for Gravimetry		EP567 Calgary - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.



## CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: EO2210828	Page	: 1 of 3
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 275 Slater Street Suite 1600 Ottawa ON Canada K1P 5H9	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 09-Dec-2022 12:05
PO	: ----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: ----	Issue Date	: 16-Dec-2022 11:44
Sampler	: KB		
Site	: ----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<u>Signatories</u>	<u>Position</u>	<u>Laboratory Department</u>
Cynthia Bauer	Organic Supervisor	Organics, Calgary, Alberta
Muzammil Ali	Lab Analyst	Inorganics, Edmonton, Alberta
Nguyen Tran	Laboratory Analyst	Organics, Calgary, Alberta
Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Rosalie Van Deelen	Laboratory Assistant	Organics, Calgary, Alberta
Samantha Mayor	Lab Assistant	Inorganics, Edmonton, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

## No Breaches Found

### General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	Description
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
pH units	pH units

>: greater than.

<: less than.

Red shading is applied where the result is greater than the Guideline Upper Limit or the result is lower than the Guideline Lower Limit.

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

## Analytical Results Evaluation

Matrix:

Analyte	CAS Number	Unit	Client sample ID						
			Sampling date/time		Sub-Matrix		Matrix		
			---	---	---	---	---	---	---
		-							

Please refer to the General Comments section for an explanation of any qualifiers detected.

pH	---	pH units							
solids, total suspended [TSS]	---	mg/L							
coliforms, thermotolerant [fecal]	---	CFU/100mL							
biochemical oxygen demand [BOD]	---	mg/L							
oil & grease (gravimetric)	---	mg/L							
oil & grease, animal/vegetable (gravimetric)	---	mg/L							
oil & grease, mineral (gravimetric)	---	mg/L							

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## QUALITY CONTROL REPORT

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Work Order	<b>EO2210828</b>	Page	: 1 of 4
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 275 Slater Street Suite 1600 Ottawa ON Canada K1P 5H9	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: -----	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 09-Dec-2022 12:05
PO	: -----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: -----	Issue Date	: 16-Dec-2022 11:44
Sampler	: KB 613 223 0629		
Site	: -----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Cynthia Bauer	Organic Supervisor	Calgary Organics, Calgary, Alberta
Muzammil Ali	Lab Analyst	Edmonton Inorganics, Edmonton, Alberta
Nguyen Tran	Laboratory Analyst	Calgary Organics, Calgary, Alberta
Ping Yeung	Team Leader - Inorganics	Edmonton Inorganics, Edmonton, Alberta
Rosalie Van Deelen	Laboratory Assistant	Calgary Organics, Calgary, Alberta
Samantha Mayor	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

### Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "—" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water		Laboratory Duplicate (DUP) Report										
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
<b>Physical Tests (QC Lot: 774627)</b>												
EO2210837-008	Anonymous	pH	---	E108	0.10	pH units	8.51	8.52	0.117%	3%	---	
<b>Physical Tests (QC Lot: 776723)</b>												
EO2210650-001	Anonymous	solids, total suspended [TSS]	---	E160	3.0	mg/L	31.0	32.8	5.64%	20%	---	
<b>Microbiological Tests (QC Lot: 775268)</b>												
EO2210828-002	ML MAIN - Cycle-let Gen Fecal A	coliforms, thermotolerant [fecal]	---	E012.FC	2	CFU/100mL	2	2	0	Diff <2x LOR	---	
<b>Aggregate Organics (QC Lot: 774549)</b>												
FC2202967-002	Anonymous	biochemical oxygen demand [BOD]	---	E550	2.0	mg/L	101	97.8	3.3%	30%	---	

## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 776723)</b>						
solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Microbiological Tests (QCLot: 775268)</b>						
coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 774549)</b>						
biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---
<b>Aggregate Organics (QCLot: 779469)</b>						
oil & grease (gravimetric)	---	E567	5	mg/L	<5.0	---
<b>Aggregate Organics (QCLot: 779470)</b>						
oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	<5.0	---

## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
<b>Physical Tests (QCLot: 774627)</b>									
pH	---	E108	---	pH units	6 pH units	100	97.0	103	---
<b>Physical Tests (QCLot: 776723)</b>									
solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	92.9	85.0	115	---
<b>Aggregate Organics (QCLot: 774549)</b>									
biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	89.3	85.0	115	---
<b>Aggregate Organics (QCLot: 779469)</b>									
oil & grease (gravimetric)	---	E567	5	mg/L	100 mg/L	119	70.0	130	---
<b>Aggregate Organics (QCLot: 779470)</b>									
oil & grease, mineral (gravimetric)	---	E567SG	5	mg/L	50 mg/L	75.3	70.0	130	---

Page : 4 of 4  
Work Order : EO2210828  
Client : NASITTUQ CORPORATION  
Project : NWS Sewage

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## QUALITY CONTROL INTERPRETIVE REPORT

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Work Order	: EO2210828	Page	: 1 of 6
Client	: NASITTUQ CORPORATION	Laboratory	: Edmonton - Environmental
Contact	: Alaina Leslie	Account Manager	: Dana Brown
Address	: 275 Slater Street Suite 1600 Ottawa ON Canada K1P 5H9	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 613 223 0629	Telephone	: 7804136472
Project	: NWS Sewage	Date Samples Received	: 09-Dec-2022 12:05
PO	: ----	Issue Date	: 16-Dec-2022 11:44
C-O-C number	: ----		
Sampler	: KB		
Site	: ----		
Quote number	: Q89801		
No. of samples received	: 4		
No. of samples analysed	: 4		

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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

---

### Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

---

### Summary of Outliers

#### Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

#### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

#### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

## ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Water											Evaluation: ✕ = Holding time exceedance ; ✓ = Within Holding Time		
Analyte Group	Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis					
				Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	Rec	Actual
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>													
HDPE [BOD HT 3d] ML MAIN - Cycle-let Gen Chem and O&G		E550	05-Dec-2022	---	---	---		10-Dec-2022	3 days	5 days	✖ EHTR		
<b>Aggregate Organics : Mineral Oil &amp; Grease by Gravimetry</b>													
Amber glass (hydrochloric acid) ML MAIN - Cycle-let Gen Chem and O&G		E567SG	05-Dec-2022	15-Dec-2022	28 days	10 days	✓	15-Dec-2022	40 days	0 days	✓		
<b>Aggregate Organics : Oil &amp; Grease by Gravimetry</b>													
Amber glass (hydrochloric acid) ML MAIN - Cycle-let Gen Chem and O&G		E567	05-Dec-2022	15-Dec-2022	28 days	10 days	✓	15-Dec-2022	40 days	0 days	✓		
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>													
Sterile HDPE (Sodium thiosulphate) ML MAIN - Cycle-let Gen Fecal A		E012.FC	05-Dec-2022	---	---	---		10-Dec-2022	30 hrs	121 hrs	✖ EHTR		
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>													
Sterile HDPE (Sodium thiosulphate) ML MAIN - Cycle-let Gen Fecal B		E012.FC	05-Dec-2022	---	---	---		10-Dec-2022	30 hrs	121 hrs	✖ EHTR		
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>													
Sterile HDPE (Sodium thiosulphate) ML MAIN - Cycle-let Gen Fecal C		E012.FC	05-Dec-2022	---	---	---		10-Dec-2022	30 hrs	121 hrs	✖ EHTR		
<b>Physical Tests : pH by Meter</b>													
HDPE ML MAIN - Cycle-let Gen Chem and O&G		E108	05-Dec-2022	10-Dec-2022	---	---		10-Dec-2022	0.25 hrs	2.25 hrs	✖ EHTR-FM		

Matrix: Water Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis		
			Preparation Date	Holding Times	Eval	Analysis Date	Holding Times	Eval
Physical Tests : TSS by Gravimetry								
HDPE ML MAIN - Cycle-let Gen Chem and O&G	E160	05-Dec-2022	---	---	---	14-Dec-2022	7 days	9 days
								✗ EHT

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Water

Evaluation: **x** = QC frequency outside specification; **✓** = QC frequency within specification.

Quality Control Sample Type	Analytical Methods	Method	QC Lot #	Count		Frequency (%)		
				QC	Regular	Actual	Expected	Evaluation
<b>Laboratory Duplicates (DUP)</b>								
Biochemical Oxygen Demand - 5 day		E550	774549	1	11	9.0	5.0	✓
pH by Meter		E108	774627	1	12	8.3	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)		E012.FC	775268	1	12	8.3	5.0	✓
TSS by Gravimetry		E160	776723	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>								
Biochemical Oxygen Demand - 5 day		E550	774549	1	11	9.0	5.0	✓
Mineral Oil & Grease by Gravimetry		E567SG	779470	1	1	100.0	5.0	✓
Oil & Grease by Gravimetry		E567	779469	1	8	12.5	5.0	✓
pH by Meter		E108	774627	1	12	8.3	5.0	✓
TSS by Gravimetry		E160	776723	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>								
Biochemical Oxygen Demand - 5 day		E550	774549	1	11	9.0	5.0	✓
Mineral Oil & Grease by Gravimetry		E567SG	779470	1	1	100.0	5.0	✓
Oil & Grease by Gravimetry		E567	779469	1	8	12.5	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)		E012.FC	775268	1	12	8.3	5.0	✓
TSS by Gravimetry		E160	776723	1	20	5.0	5.0	✓

## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods				
	Method / Lab	Matrix	Method Reference	Method Descriptions
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
pH by Meter	E108 Edmonton - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Edmonton - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Biochemical Oxygen Demand - 5 day	E550 Edmonton - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Oil & Grease by Gravimetry	E567 Calgary - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry	E567SG Calgary - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG Calgary - Environmental	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)
Preparation Methods				
	Method / Lab	Matrix	Method Reference	Method Descriptions
Oil & Grease Extraction for Gravimetry	EP567 Calgary - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.



## Chain of Custody (COC) / Analytical Request Form

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