

# Annual Report -2018

Water Licence: 3BM-CAM 1520

Hamlet of Cambridge Bay, NU

Water, sewage and waste test results 2018

Date: March 19, 2019

Submitted to: Nunavut Water Board

# Appendix: A

## **Water Test Results 2018**

**Water Licence: 3BM-CAM 1520**

**Hamlet of Cambridge Bay, NU**



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180808**

## **- FINAL REPORT -**

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**Prepared For:** Hamlet of Cambridge Bay

**Address:** P.O. Box 16  
Cambridge Bay, NU  
X0B 0C0

**Attn:** Wayne Weese

**Facsimile:** (867) 983-2186

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**Final report has been reviewed and approved by:**

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**Glen Hudy**  
**Quality Assurance Officer**

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**NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:** Sunday, September 09, 2018

**Print Date:** *Sunday, September 09, 2018*

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180808**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP-ST-2**

Taiga Sample ID: **001**

Client Project: Water Treatment Plant Storage Tank

Sample Type: WTP Storage Tank Residue

Received Date: 24-Aug-18

Sampling Date: 22-Aug-18

Sampling Time:

Location: WTP-ST2

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Trace Metals, Dissolved</u></b>						
Aluminum	2.1	0.6	µg/L	06-Sep-18	EPA200.8	
Antimony	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Arsenic	0.3	0.2	µg/L	06-Sep-18	EPA200.8	
Barium	19.8	0.1	µg/L	06-Sep-18	EPA200.8	
Beryllium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Bismuth	< 0.2	0.2	µg/L	06-Sep-18	EPA200.8	
Boron	26.3	0.9	µg/L	06-Sep-18	EPA200.8	
Cadmium	< 0.04	0.04	µg/L	06-Sep-18	EPA200.8	
Cesium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Chromium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Cobalt	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Copper	16.3	0.2	µg/L	06-Sep-18	EPA200.8	
Iron	25	5	ug/L	06-Sep-18	EPA200.8	
Lead	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	

ReportDate: Sunday, September 09, 2018

Print Date: *Sunday, September 09, 2018*

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180808**

**- CERTIFICATE OF ANALYSIS -**

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**Client Sample ID: WTP-ST-2**

**Taiga Sample ID: 001**

Lithium	2.1	0.2	µg/L	06-Sep-18	EPA200.8
Manganese	0.4	0.1	µg/L	06-Sep-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	06-Sep-18	EPA200.8
Molybdenum	0.4	0.1	µg/L	06-Sep-18	EPA200.8
Nickel	0.2	0.1	µg/L	06-Sep-18	EPA200.8
Rubidium	0.7	0.1	µg/L	06-Sep-18	EPA200.8
Selenium	< 0.3	0.3	µg/L	06-Sep-18	EPA200.8
Silver	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Strontium	27.9	0.1	µg/L	06-Sep-18	EPA200.8
Thallium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Tin	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Titanium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Uranium	0.2	0.1	µg/L	06-Sep-18	EPA200.8
Vanadium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Zinc	50.9	0.4	µg/L	06-Sep-18	EPA200.8

**ReportDate:** Sunday, September 09, 2018

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## Taiga Environmental Laboratory

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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

**180808**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID:

Taiga Sample ID: **002**

Client Project: Water Treatment Plant Storage Tank

Sample Type: Water

Received Date: 24-Aug-18

Sampling Date: 22-Aug-18

Sampling Time:

Location: WTP-ST2

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Trace Metals, Dissolved</u></b>						
Aluminum	1.7	0.6	µg/L	06-Sep-18	EPA200.8	
Antimony	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Arsenic	0.3	0.2	µg/L	06-Sep-18	EPA200.8	
Barium	19.8	0.1	µg/L	06-Sep-18	EPA200.8	
Beryllium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Bismuth	< 0.2	0.2	µg/L	06-Sep-18	EPA200.8	
Boron	25.0	0.9	µg/L	06-Sep-18	EPA200.8	
Cadmium	< 0.04	0.04	µg/L	06-Sep-18	EPA200.8	
Cesium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Chromium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Cobalt	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Copper	16.0	0.2	µg/L	06-Sep-18	EPA200.8	
Iron	12	5	ug/L	06-Sep-18	EPA200.8	
Lead	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Lithium	2.0	0.2	µg/L	06-Sep-18	EPA200.8	
Manganese	0.2	0.1	µg/L	06-Sep-18	EPA200.8	

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**Taiga Batch No.:**  
**180808**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID:**

**Taiga Sample ID: 002**

Mercury	< 0.01	0.01	µg/L	06-Sep-18	EPA200.8
Molybdenum	0.4	0.1	µg/L	06-Sep-18	EPA200.8
Nickel	0.1	0.1	µg/L	06-Sep-18	EPA200.8
Rubidium	0.6	0.1	µg/L	06-Sep-18	EPA200.8
Selenium	< 0.3	0.3	µg/L	06-Sep-18	EPA200.8
Silver	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Strontium	27.4	0.1	µg/L	06-Sep-18	EPA200.8
Thallium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Tin	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Titanium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Uranium	0.2	0.1	µg/L	06-Sep-18	EPA200.8
Vanadium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Zinc	45.0	0.4	µg/L	06-Sep-18	EPA200.8

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**Taiga Batch No.:**  
**180808**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID:** WTP ST-3

**Taiga Sample ID:** 003

**Client Project:**

**Sample Type:** WTP Storage Tank Surface Water

**Received Date:** 24-Aug-18

**Sampling Date:** 22-Aug-18

**Sampling Time:** 13:00

**Location:** WTP-ST3

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Trace Metals, Dissolved</u></b>						
Aluminum	2.0	0.6	µg/L	06-Sep-18	EPA200.8	
Antimony	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Arsenic	0.3	0.2	µg/L	06-Sep-18	EPA200.8	
Barium	18.5	0.1	µg/L	06-Sep-18	EPA200.8	
Beryllium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Bismuth	< 0.2	0.2	µg/L	06-Sep-18	EPA200.8	
Boron	24.9	0.9	µg/L	06-Sep-18	EPA200.8	
Cadmium	< 0.04	0.04	µg/L	06-Sep-18	EPA200.8	
Cesium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Chromium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Cobalt	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Copper	16.5	0.2	µg/L	06-Sep-18	EPA200.8	
Iron	13	5	ug/L	06-Sep-18	EPA200.8	
Lead	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8	
Lithium	1.9	0.2	µg/L	06-Sep-18	EPA200.8	
Manganese	0.2	0.1	µg/L	06-Sep-18	EPA200.8	

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**Taiga Batch No.:**  
**180808**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID: WTP ST-3**

**Taiga Sample ID: 003**

Mercury	< 0.01	0.01	µg/L	06-Sep-18	EPA200.8
Molybdenum	0.4	0.1	µg/L	06-Sep-18	EPA200.8
Nickel	0.2	0.1	µg/L	06-Sep-18	EPA200.8
Rubidium	0.6	0.1	µg/L	06-Sep-18	EPA200.8
Selenium	< 0.3	0.3	µg/L	06-Sep-18	EPA200.8
Silver	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Strontium	27.0	0.1	µg/L	06-Sep-18	EPA200.8
Thallium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Tin	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Titanium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Uranium	0.2	0.1	µg/L	06-Sep-18	EPA200.8
Vanadium	< 0.1	0.1	µg/L	06-Sep-18	EPA200.8
Zinc	63.0	0.4	µg/L	06-Sep-18	EPA200.8

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**Taiga Batch No.:**

**180808**

### - CERTIFICATE OF ANALYSIS -

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**Client Sample ID: WTP ST-3**

**Taiga Sample ID: 003**

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**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

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4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180830**

## **- FINAL REPORT -**

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**Prepared For:** Hamlet of Cambridge Bay

**Address:** P.O. Box 16  
Cambridge Bay, NU  
X0B 0C0

**Attn:** Wayne Weese

**Facsimile:** (867) 983-2186

---

**Final report has been reviewed and approved by:**

---

**Glen Hudy**  
**Quality Assurance Officer**

---

**NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
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  - USEPA
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**ReportDate:** Wednesday, September 19, 2018

**Print Date:** *Thursday, September 20, 2018*

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **IPH-01**

Taiga Sample ID: **001**

Client Project: Cambridge Bay Water System

Sample Type: Raw Water

Received Date: 29-Aug-18

Sampling Date: 28-Aug-18

Sampling Time: 9:30

Location: Raw Water, Water Treatment Plant

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Organic Carbon, Dissolved	5.2	0.5	mg/L	08-Sep-18	SM5310:B	
Organic Carbon, Total	5.3	0.5	mg/L	09-Sep-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	95.4	0.4	mg/L	29-Aug-18	SM2320:B	
Colour, Apparent	9	5	CU	29-Aug-18	SM2120:B	
Conductivity, Specific (@25C)	351	0.4	µS/cm	29-Aug-18	SM2510:B	
pH	8.24		pH units	29-Aug-18	SM4500-H:B	
Solids, Total Dissolved	196	10	mg/L	30-Aug-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	30-Aug-18	SM2540:D	
Turbidity	0.36	0.05	NTU	29-Aug-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	14.6	0.1	mg/L	29-Aug-18	SM4110:B	
Chloride	41.2	0.7	mg/L	29-Aug-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	29-Aug-18	SM4110:B	

ReportDate: Wednesday, September 19, 2018

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **IPH-01**

Taiga Sample ID: **001**

Hardness	77.5	0.7	mg/L	29-Aug-18	SM4110:B
Magnesium	10.0	0.1	mg/L	29-Aug-18	SM4110:B
Nitrate as Nitrogen	0.39	0.01	mg/L	29-Aug-18	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	29-Aug-18	SM4110:B
Potassium	2.8	0.1	mg/L	29-Aug-18	SM4110:B
Sodium	20.7	0.1	mg/L	29-Aug-18	SM4110:B
Sulphate	16	1	mg/L	29-Aug-18	SM4110:B

#### Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	29-Aug-18	SM9222:D
Coliforms, Total	< 1.0	1.0	MPN/100mL	29-Aug-18	SM9223:B

#### Subcontracted Organics

Cyanide, Total	< 0.0050	0.005	mg/L	01-Sep-18	APHA4500-CN
Phenols, Total	< 0.0010	0.001	mg/L	06-Sep-18	AB ENV.06537

#### Trace Metals, Total

Aluminum	1.3	0.6	µg/L	30-Aug-18	EPA200.8
Arsenic	0.3	0.2	µg/L	30-Aug-18	EPA200.8
Barium	27.5	0.1	µg/L	30-Aug-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	30-Aug-18	EPA200.8
Cobalt	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Iron	8	5	ug/L	30-Aug-18	EPA200.8
Lead	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Manganese	1.2	0.1	µg/L	30-Aug-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	30-Aug-18	EPA200.8
Nickel	0.1	0.1	µg/L	30-Aug-18	EPA200.8
Selenium	< 0.3	0.3	µg/L	30-Aug-18	EPA200.8

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180830**

**- CERTIFICATE OF ANALYSIS -**

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Client Sample ID: **IPH-01**

Taiga Sample ID: **001**

Silver	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Zinc	0.7	0.4	µg/L	30-Aug-18	EPA200.8

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **IPH-02**

Taiga Sample ID: **002**

Client Project: Cambridge Bay Water System

Sample Type: Pre-treated

Received Date: 29-Aug-18

Sampling Date: 28-Aug-18

Sampling Time: 9:30

Location: Raw Water, Water Treatment Plant

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Organic Carbon, Dissolved	5.2	0.5	mg/L	08-Sep-18	SM5310:B	
Organic Carbon, Total	5.6	0.5	mg/L	09-Sep-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	94.4	0.4	mg/L	29-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	349	0.4	µS/cm	29-Aug-18	SM2510:B	
pH	8.25		pH units	29-Aug-18	SM4500-H:B	
Solids, Total Dissolved	184	10	mg/L	30-Aug-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	30-Aug-18	SM2540:D	
Turbidity	0.49	0.05	NTU	29-Aug-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	14.8	0.1	mg/L	29-Aug-18	SM4110:B	
Chloride	41.4	0.7	mg/L	29-Aug-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	29-Aug-18	SM4110:B	
Hardness	74.0	0.7	mg/L	29-Aug-18	SM4110:B	
Magnesium	9.0	0.1	mg/L	29-Aug-18	SM4110:B	
Nitrate as Nitrogen	0.33	0.01	mg/L	29-Aug-18	SM4110:B	

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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **IPH-02**

Taiga Sample ID: **002**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	29-Aug-18	SM4110:B
Potassium	2.2	0.1	mg/L	29-Aug-18	SM4110:B
Sodium	20.8	0.1	mg/L	29-Aug-18	SM4110:B
Sulphate	16	1	mg/L	29-Aug-18	SM4110:B

#### Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	29-Aug-18	SM9222:D
Coliforms, Total	10.9	1.0	MPN/100mL	29-Aug-18	SM9223:B

#### Organics

Bromodichloromethane	< 0.005	0.005	mg/L	07-Sep-18	EPA8260B
Bromoform	< 0.005	0.005	mg/L	07-Sep-18	EPA8260B
Chloroform	< 0.005	0.005	mg/L	07-Sep-18	EPA8260B
Dibromochloromethane	< 0.005	0.005	mg/L	07-Sep-18	EPA8260B
Trihalomethanes, Total	< 0.005	0.005	mg/L	07-Sep-18	EPA8260B

#### Subcontracted Organics

Cyanide, Total	< 0.0050	0.005	mg/L	01-Sep-18	APHA4500-CN
Phenols, Total	< 0.0010	0.001	mg/L	06-Sep-18	AB ENV.06537

#### Trace Metals, Total

Aluminum	10.3	0.6	µg/L	30-Aug-18	EPA200.8
Arsenic	0.3	0.2	µg/L	30-Aug-18	EPA200.8
Barium	27.3	0.1	µg/L	30-Aug-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	30-Aug-18	EPA200.8
Cobalt	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Iron	18	5	ug/L	30-Aug-18	EPA200.8
Lead	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Manganese	1.8	0.1	µg/L	30-Aug-18	EPA200.8

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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180830**

**- CERTIFICATE OF ANALYSIS -**

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Client Sample ID: **IPH-02**

Taiga Sample ID: **002**

Mercury	< 0.01	0.01	µg/L	30-Aug-18	EPA200.8
Nickel	0.1	0.1	µg/L	30-Aug-18	EPA200.8
Selenium	< 0.3	0.3	µg/L	30-Aug-18	EPA200.8
Silver	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Zinc	2.6	0.4	µg/L	30-Aug-18	EPA200.8

ReportDate: Wednesday, September 19, 2018  
Print Date: *Thursday, September 20, 2018*

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **TWT-01**

Taiga Sample ID: **003**

Client Project: Cambridge Bay Water System

Sample Type: Treated Storage Tank

Received Date: 29-Aug-18

Sampling Date: 28-Aug-18

Sampling Time: 9:30

Location: Raw Water, Water Treatment Plant

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Organic Carbon, Dissolved	5.3	0.5	mg/L	08-Sep-18	SM5310:B	
Organic Carbon, Total	5.5	0.5	mg/L	09-Sep-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	95.6	0.4	mg/L	29-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	364	0.4	µS/cm	29-Aug-18	SM2510:B	
pH	8.23		pH units	29-Aug-18	SM4500-H:B	
Solids, Total Dissolved	188	10	mg/L	30-Aug-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	30-Aug-18	SM2540:D	
Turbidity	0.56	0.05	NTU	29-Aug-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	15.1	0.1	mg/L	29-Aug-18	SM4110:B	
Chloride	45.1	0.7	mg/L	29-Aug-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	29-Aug-18	SM4110:B	
Hardness	72.9	0.7	mg/L	29-Aug-18	SM4110:B	
Magnesium	8.6	0.1	mg/L	29-Aug-18	SM4110:B	
Nitrate as Nitrogen	0.06	0.01	mg/L	29-Aug-18	SM4110:B	

ReportDate: Wednesday, September 19, 2018

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **TWT-01**

Taiga Sample ID: **003**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	29-Aug-18	SM4110:B
Potassium	2.4	0.1	mg/L	29-Aug-18	SM4110:B
Sodium	25.9	0.1	mg/L	29-Aug-18	SM4110:B
Sulphate	15	1	mg/L	29-Aug-18	SM4110:B

#### Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	29-Aug-18	SM9222:D
Coliforms, Total	< 1.0	1.0	MPN/100mL	29-Aug-18	SM9223:B

#### Organics

Bromodichloromethane	0.024	0.005	mg/L	07-Sep-18	EPA8260B
Bromoform	< 0.005	0.005	mg/L	07-Sep-18	EPA8260B
Chloroform	0.035	0.005	mg/L	07-Sep-18	EPA8260B
Dibromochloromethane	0.014	0.005	mg/L	07-Sep-18	EPA8260B
Trihalomethanes, Total	0.075	0.005	mg/L	07-Sep-18	EPA8260B

#### Subcontracted Organics

Cyanide, Total	< 0.0050	0.005	mg/L	01-Sep-18	APHA4500-CN
Phenols, Total	< 0.0010	0.001	mg/L	06-Sep-18	AB ENV.06537

#### Trace Metals, Total

Aluminum	3.0	0.6	µg/L	30-Aug-18	EPA200.8
Arsenic	0.3	0.2	µg/L	30-Aug-18	EPA200.8
Barium	17.3	0.1	µg/L	30-Aug-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	30-Aug-18	EPA200.8
Cobalt	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Iron	41	5	ug/L	30-Aug-18	EPA200.8
Lead	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Manganese	24.2	0.1	µg/L	30-Aug-18	EPA200.8

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180830**

**- CERTIFICATE OF ANALYSIS -**

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Client Sample ID: **TWT-01**

Taiga Sample ID: **003**

Mercury	0.01	0.01	µg/L	30-Aug-18	EPA200.8
Nickel	0.2	0.1	µg/L	30-Aug-18	EPA200.8
Selenium	< 0.3	0.3	µg/L	30-Aug-18	EPA200.8
Silver	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Zinc	61.0	0.4	µg/L	30-Aug-18	EPA200.8

ReportDate: Wednesday, September 19, 2018

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **TWT-02**

Taiga Sample ID: **004**

Client Project: Cambridge Bay Water System

Sample Type: Truck Fill Arm

Received Date: 29-Aug-18

Sampling Date: 28-Aug-18

Sampling Time: 9:30

Location: Raw Water, Water Treatment Plant

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Organic Carbon, Dissolved	5.5	0.5	mg/L	08-Sep-18	SM5310:B	
Organic Carbon, Total	5.5	0.5	mg/L	09-Sep-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	95.6	0.4	mg/L	29-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	365	0.4	µS/cm	29-Aug-18	SM2510:B	
pH	8.27		pH units	29-Aug-18	SM4500-H:B	
Solids, Total Dissolved	194	10	mg/L	30-Aug-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	30-Aug-18	SM2540:D	
Turbidity	0.55	0.05	NTU	29-Aug-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	14.0	0.1	mg/L	29-Aug-18	SM4110:B	
Chloride	45.2	0.7	mg/L	29-Aug-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	29-Aug-18	SM4110:B	
Hardness	78.2	0.7	mg/L	29-Aug-18	SM4110:B	
Magnesium	10.5	0.1	mg/L	29-Aug-18	SM4110:B	
Nitrate as Nitrogen	0.07	0.01	mg/L	29-Aug-18	SM4110:B	

ReportDate: Wednesday, September 19, 2018

Print Date: **Thursday, September 20, 2018**

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **TWT-02**

Taiga Sample ID: **004**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	29-Aug-18	SM4110:B
Potassium	2.6	0.1	mg/L	29-Aug-18	SM4110:B
Sodium	27.0	0.1	mg/L	29-Aug-18	SM4110:B
Sulphate	15	1	mg/L	29-Aug-18	SM4110:B

#### Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	29-Aug-18	SM9222:D
Coliforms, Total	< 1.0	1.0	MPN/100mL	29-Aug-18	SM9223:B

#### Organics

Bromodichloromethane	0.024	0.005	mg/L	07-Sep-18	EPA8260B
Bromoform	< 0.005	0.005	mg/L	07-Sep-18	EPA8260B
Chloroform	0.035	0.005	mg/L	07-Sep-18	EPA8260B
Dibromochloromethane	0.014	0.005	mg/L	07-Sep-18	EPA8260B
Trihalomethanes, Total	0.074	0.005	mg/L	07-Sep-18	EPA8260B

#### Subcontracted Organics

Cyanide, Total	< 0.0050	0.005	mg/L	01-Sep-18	APHA4500-CN
Phenols, Total	< 0.0010	0.001	mg/L	06-Sep-18	AB ENV.06537

#### Trace Metals, Total

Aluminum	2.7	0.6	µg/L	30-Aug-18	EPA200.8
Arsenic	0.3	0.2	µg/L	30-Aug-18	EPA200.8
Barium	17.3	0.1	µg/L	30-Aug-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	30-Aug-18	EPA200.8
Cobalt	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Iron	37	5	ug/L	30-Aug-18	EPA200.8
Lead	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Manganese	25.7	0.1	µg/L	30-Aug-18	EPA200.8

ReportDate: Wednesday, September 19, 2018

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180830**

**- CERTIFICATE OF ANALYSIS -**

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**Client Sample ID: TWT-02**

**Taiga Sample ID: 004**

Mercury	0.01	0.01	µg/L	30-Aug-18	EPA200.8
Nickel	0.2	0.1	µg/L	30-Aug-18	EPA200.8
Selenium	< 0.3	0.3	µg/L	30-Aug-18	EPA200.8
Silver	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Zinc	59.2	0.4	µg/L	30-Aug-18	EPA200.8

**ReportDate:** Wednesday, September 19, 2018

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **PUB-01**

Taiga Sample ID: **005**

Client Project: Cambridge Bay Water System

Sample Type: Public Place

Received Date: 29-Aug-18

Sampling Date: 28-Aug-18

Sampling Time: 9:30

Location: Raw Water, Water Treatment Plant

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Organic Carbon, Dissolved	5.5	0.5	mg/L	08-Sep-18	SM5310:B	
Organic Carbon, Total	5.6	0.5	mg/L	09-Sep-18	SM5310:B	
Phosphorous, Total	0.007	0.002	mg/L	07-Sep-18	SM4500-P:D	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	96.5	0.4	mg/L	29-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	360	0.4	µS/cm	29-Aug-18	SM2510:B	
pH	8.09		pH units	29-Aug-18	SM4500-H:B	
Solids, Total Dissolved	202	10	mg/L	30-Aug-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	30-Aug-18	SM2540:D	
Turbidity	0.44	0.05	NTU	29-Aug-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	14.9	0.1	mg/L	29-Aug-18	SM4110:B	
Chloride	43.7	0.7	mg/L	29-Aug-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	29-Aug-18	SM4110:B	
Hardness	79.2	0.7	mg/L	29-Aug-18	SM4110:B	
Magnesium	10.2	0.1	mg/L	29-Aug-18	SM4110:B	

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180830**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **PUB-01**

Taiga Sample ID: **005**

Nitrate as Nitrogen	0.14	0.01	mg/L	29-Aug-18	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	29-Aug-18	SM4110:B
Potassium	2.9	0.1	mg/L	29-Aug-18	SM4110:B
Sodium	23.6	0.1	mg/L	29-Aug-18	SM4110:B
Sulphate	15	1	mg/L	29-Aug-18	SM4110:B

#### Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	29-Aug-18	SM9222:D
Coliforms, Total	< 1.0	1.0	MPN/100mL	29-Aug-18	SM9223:B

#### Organics

Bromodichloromethane	0.010	0.005	mg/L	07-Sep-18	EPA8260B
Bromoform	< 0.005	0.005	mg/L	07-Sep-18	EPA8260B
Chloroform	0.015	0.005	mg/L	07-Sep-18	EPA8260B
Dibromochloromethane	0.005	0.005	mg/L	07-Sep-18	EPA8260B
Trihalomethanes, Total	0.031	0.005	mg/L	07-Sep-18	EPA8260B

#### Subcontracted Organics

Cyanide, Total	< 0.0050	0.005	mg/L	01-Sep-18	APHA4500-CN
Phenols, Total	< 0.0010	0.001	mg/L	06-Sep-18	AB ENV.06537

#### Trace Metals, Total

Aluminum	5.8	0.6	µg/L	30-Aug-18	EPA200.8
Arsenic	0.2	0.2	µg/L	30-Aug-18	EPA200.8
Barium	25.8	0.1	µg/L	30-Aug-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	30-Aug-18	EPA200.8
Cobalt	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Iron	23	5	ug/L	30-Aug-18	EPA200.8
Lead	0.1	0.1	µg/L	30-Aug-18	EPA200.8

ReportDate: Wednesday, September 19, 2018

Print Date: *Thursday, September 20, 2018*

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180830**

**- CERTIFICATE OF ANALYSIS -**

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Client Sample ID: **PUB-01**

Taiga Sample ID: **005**

Manganese	2.5	0.1	µg/L	30-Aug-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	30-Aug-18	EPA200.8
Nickel	0.3	0.1	µg/L	30-Aug-18	EPA200.8
Selenium	0.3	0.3	µg/L	30-Aug-18	EPA200.8
Silver	< 0.1	0.1	µg/L	30-Aug-18	EPA200.8
Zinc	20.2	0.4	µg/L	30-Aug-18	EPA200.8

ReportDate: Wednesday, September 19, 2018

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180830**

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**- CERTIFICATE OF ANALYSIS -**

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**Client Sample ID: PUB-01**

**Taiga Sample ID: 005**

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**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** Wednesday, September 19, 2018

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# Appendix: B

## **Sewage Waste Test Results 2018**

**Water Licence: 3BM-CAM 1520**

**Hamlet of Cambridge Bay, NU**



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180512**

## **- FINAL REPORT -**

**Prepared For:** Hamlet of Cambridge Bay

**Address:** P.O. Box 16  
Cambridge Bay, NU  
X0B 0C0

**Attn:** Wayne Weese

**Facsimile:** (867) 983-2186

**Final report has been reviewed and approved by:**

**Glen Hudy**  
**Quality Assurance Officer**

### **NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:** Monday, July 23, 2018

**Print Date:** *Monday, July 23, 2018*

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **CAM-3**

Taiga Sample ID: **001**

Client Project: Cambridge Bay Sewage Waste

Sample Type: Sewage Water

Received Date: 06-Jul-18

Sampling Date: 05-Jul-18

Sampling Time: 10:30

Location: Sewage Lagoon, Wetland

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	30	2	mg/L	06-Jul-18	SM5210:B	
Chemical Oxygen Demand	97	50	mg/L	13-Jul-18	SM5220:D	
Organic Carbon, Total	35.7	0.5	mg/L	21-Jul-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	270	0.4	mg/L	06-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	907	0.4	µS/cm	06-Jul-18	SM2510:B	
pH	7.62		pH units	06-Jul-18	SM4500-H:B	
Solids, Total Suspended	26	3	mg/L	10-Jul-18	SM2540:D	
Turbidity	12.6	0.05	NTU	09-Jul-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	36.8	0.1	mg/L	07-Jul-18	SM4110:B	
Chloride	105	0.7	mg/L	07-Jul-18	SM4110:B	
Hardness	221	0.7	mg/L	07-Jul-18	SM4110:B	
Magnesium	31.3	0.1	mg/L	07-Jul-18	SM4110:B	

ReportDate: Monday, July 23, 2018

Print Date: **Monday, July 23, 2018**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-3**

Taiga Sample ID: **001**

Nitrate+Nitrite as Nitrogen	0.47	0.01	mg/L	07-Jul-18	SM4110:B
Potassium	35.9	0.1	mg/L	07-Jul-18	SM4110:B
Sodium	74.1	0.1	mg/L	07-Jul-18	SM4110:B
Sulphate	17	1	mg/L	07-Jul-18	SM4110:B

**Microbiology**

Coliforms, Fecal		1	CFU/100mL	SM9222:D	105
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**Organics**

Oil and Grease, visible	Non-visible			06-Jul-18	Visual Exam
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**Subcontracted Organics**

Phenols, Total	0.0049	0.001	mg/L	12-Jul-18	AB ENV.06537
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**Trace Metals, Total**

Aluminum	49.6	5	µg/L	13-Jul-18	EPA200.8
Arsenic	1.1	0.2	µg/L	13-Jul-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	13-Jul-18	EPA200.8
Chromium	0.3	0.1	µg/L	13-Jul-18	EPA200.8
Cobalt	0.4	0.1	µg/L	13-Jul-18	EPA200.8
Copper	41.6	0.2	µg/L	13-Jul-18	EPA200.8
Iron	648	5	µg/L	13-Jul-18	EPA200.8
Lead	0.3	0.1	µg/L	13-Jul-18	EPA200.8
Manganese	88.1	0.1	µg/L	13-Jul-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	13-Jul-18	EPA200.8
Nickel	1.8	0.1	µg/L	13-Jul-18	EPA200.8
Zinc	32.5	5	µg/L	13-Jul-18	EPA200.8

ReportDate: Monday, July 23, 2018

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **CAM-4**

Taiga Sample ID: **002**

Client Project: Cambridge Bay Sewage Waste

Sample Type: Solid Waste Effluent

Received Date: 06-Jul-18

Sampling Date: 05-Jul-18

Sampling Time: 10:30

Location: Sewage Lagoon, Wetland

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	21	2	mg/L	06-Jul-18	SM5210:B	
Chemical Oxygen Demand	131	50	mg/L	13-Jul-18	SM5220:D	
Organic Carbon, Total	54.0	0.5	mg/L	21-Jul-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	175	0.4	mg/L	06-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	2410	0.4	µS/cm	06-Jul-18	SM2510:B	
pH	7.53		pH units	06-Jul-18	SM4500-H:B	
Solids, Total Suspended	32	3	mg/L	10-Jul-18	SM2540:D	
Turbidity	74.8	0.05	NTU	09-Jul-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	336	0.1	mg/L	07-Jul-18	SM4110:B	
Chloride	158	0.7	mg/L	07-Jul-18	SM4110:B	
Hardness	1080	0.7	mg/L	07-Jul-18	SM4110:B	
Magnesium	58.8	0.1	mg/L	07-Jul-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.43	0.01	mg/L	07-Jul-18	SM4110:B	
Potassium	49.7	0.1	mg/L	07-Jul-18	SM4110:B	

ReportDate: Monday, July 23, 2018

Print Date: **Monday, July 23, 2018**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-4**

Taiga Sample ID: **002**

Sodium	115	0.1	mg/L	07-Jul-18	SM4110:B
Sulphate	960	1	mg/L	07-Jul-18	SM4110:B

**Microbiology**

Coliforms, Fecal		1	CFU/100mL		SM9222:D
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105

**Organics**

Oil and Grease, visible	Non-visible			06-Jul-18	Visual Exam
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**Subcontracted Organics**

Phenols, Total	0.0028	0.001	mg/L	12-Jul-18	AB ENV.06537
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**Trace Metals, Total**

Aluminum	64.7	5	µg/L	13-Jul-18	EPA200.8
Arsenic	3.8	0.2	µg/L	13-Jul-18	EPA200.8
Cadmium	0.2	0.1	µg/L	13-Jul-18	EPA200.8
Chromium	2.0	0.1	µg/L	13-Jul-18	EPA200.8
Cobalt	7.1	0.1	µg/L	13-Jul-18	EPA200.8
Copper	68.5	0.2	µg/L	13-Jul-18	EPA200.8
Iron	15900	5	µg/L	13-Jul-18	EPA200.8
Lead	7.4	0.1	µg/L	13-Jul-18	EPA200.8
Manganese	536	0.1	µg/L	13-Jul-18	EPA200.8
Mercury	0.02	0.01	µg/L	13-Jul-18	EPA200.8
Nickel	29.9	0.1	µg/L	13-Jul-18	EPA200.8
Zinc	178	5	µg/L	13-Jul-18	EPA200.8

ReportDate: Monday, July 23, 2018

Print Date: *Monday, July 23, 2018*

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-5**

Taiga Sample ID: **003**

Client Project: Cambridge Bay Sewage Waste

Sample Type: Wetland Water

Received Date: 06-Jul-18

Sampling Date: 05-Jul-18

Sampling Time: 10:30

Location: Sewage Lagoon, Wetland

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	37	2	mg/L	06-Jul-18	SM5210:B	
Chemical Oxygen Demand	126	100	mg/L	13-Jul-18	SM5220:D	
Organic Carbon, Total	65.9	0.5	mg/L	21-Jul-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	195	0.4	mg/L	06-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	846	0.4	µS/cm	06-Jul-18	SM2510:B	
pH	9.92		pH units	06-Jul-18	SM4500-H:B	
Solids, Total Suspended	64	3	mg/L	10-Jul-18	SM2540:D	
Turbidity	41.5	0.05	NTU	09-Jul-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	39.8	0.1	mg/L	07-Jul-18	SM4110:B	
Chloride	144	0.7	mg/L	07-Jul-18	SM4110:B	
Hardness	264	0.7	mg/L	07-Jul-18	SM4110:B	
Magnesium	40.0	0.1	mg/L	07-Jul-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.10	0.01	mg/L	07-Jul-18	SM4110:B	
Potassium	15.1	0.1	mg/L	07-Jul-18	SM4110:B	

ReportDate: Monday, July 23, 2018

Print Date: **Monday, July 23, 2018**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-5**

Taiga Sample ID: **003**

Sodium	90.4	0.1	mg/L	07-Jul-18	SM4110:B
Sulphate	32	1	mg/L	07-Jul-18	SM4110:B

**Microbiology**

Coliforms, Fecal		1	CFU/100mL		SM9222:D
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105

**Organics**

Oil and Grease, visible	Non-visible			06-Jul-18	Visual Exam
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**Subcontracted Organics**

Phenols, Total	0.0021	0.001	mg/L	12-Jul-18	AB ENV.06537
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**Trace Metals, Total**

Aluminum	69.8	5	µg/L	13-Jul-18	EPA200.8
Arsenic	2.3	0.2	µg/L	13-Jul-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	13-Jul-18	EPA200.8
Chromium	0.5	0.1	µg/L	13-Jul-18	EPA200.8
Cobalt	0.3	0.1	µg/L	13-Jul-18	EPA200.8
Copper	4.0	0.2	µg/L	13-Jul-18	EPA200.8
Iron	314	5	µg/L	13-Jul-18	EPA200.8
Lead	1.0	0.1	µg/L	13-Jul-18	EPA200.8
Manganese	27.9	0.1	µg/L	13-Jul-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	13-Jul-18	EPA200.8
Nickel	2.6	0.1	µg/L	13-Jul-18	EPA200.8
Zinc	22.9	5	µg/L	13-Jul-18	EPA200.8

ReportDate: Monday, July 23, 2018

Print Date: *Monday, July 23, 2018*

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **CAM-6**

Taiga Sample ID: **004**

Client Project: Cambridge Bay Sewage Waste

Sample Type: Final Discharge

Received Date: 06-Jul-18

Sampling Date: 05-Jul-18

Sampling Time: 10:30

Location: Sewage Lagoon, Wetland

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	13	2	mg/L	06-Jul-18	SM5210:B	
Chemical Oxygen Demand	128	100	mg/L	13-Jul-18	SM5220:D	
Organic Carbon, Total	36.0	0.5	mg/L	21-Jul-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	233	0.4	mg/L	06-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	747	0.4	µS/cm	06-Jul-18	SM2510:B	
pH	9.48		pH units	06-Jul-18	SM4500-H:B	
Solids, Total Suspended	12	3	mg/L	10-Jul-18	SM2540:D	
Turbidity	9.19	0.05	NTU	09-Jul-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	51.8	0.1	mg/L	07-Jul-18	SM4110:B	
Chloride	99.1	0.7	mg/L	07-Jul-18	SM4110:B	
Hardness	283	0.7	mg/L	07-Jul-18	SM4110:B	
Magnesium	37.4	0.1	mg/L	07-Jul-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.36	0.01	mg/L	07-Jul-18	SM4110:B	
Potassium	12.3	0.1	mg/L	07-Jul-18	SM4110:B	

ReportDate: Monday, July 23, 2018

Print Date: **Monday, July 23, 2018**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-6**

Taiga Sample ID: **004**

Sodium	56.6	0.1	mg/L	07-Jul-18	SM4110:B
Sulphate	26	1	mg/L	07-Jul-18	SM4110:B

**Microbiology**

Coliforms, Fecal		1	CFU/100mL		SM9222:D
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105

**Organics**

Oil and Grease, visible	Non-visible			06-Jul-18	Visual Exam
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**Subcontracted Organics**

Phenols, Total	< 0.0010	0.001	mg/L	12-Jul-18	AB ENV.06537
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**Trace Metals, Total**

Aluminum	15.1	5	µg/L	13-Jul-18	EPA200.8
Arsenic	2.5	0.2	µg/L	13-Jul-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	13-Jul-18	EPA200.8
Chromium	0.2	0.1	µg/L	13-Jul-18	EPA200.8
Cobalt	0.5	0.1	µg/L	13-Jul-18	EPA200.8
Copper	3.4	0.2	µg/L	13-Jul-18	EPA200.8
Iron	739	5	µg/L	13-Jul-18	EPA200.8
Lead	0.7	0.1	µg/L	13-Jul-18	EPA200.8
Manganese	48.2	0.1	µg/L	13-Jul-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	13-Jul-18	EPA200.8
Nickel	2.4	0.1	µg/L	13-Jul-18	EPA200.8
Zinc	24.2	5	µg/L	13-Jul-18	EPA200.8

ReportDate: Monday, July 23, 2018

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180512**

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**- CERTIFICATE OF ANALYSIS -**

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Client Sample ID: **CAM-6**

Taiga Sample ID: **004**

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**- DATA QUALIFIERS -**

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*Data Qualifier Descriptions:*

**105**     *Samples received past hold time; analysis not possible.*

**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** Monday, July 23, 2018

**Print Date:** *Monday, July 23, 2018*

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180609**

## **- FINAL REPORT -**

---

**Prepared For:** Hamlet of Cambridge Bay

**Address:** P.O. Box 16  
Cambridge Bay, NU  
X0B 0C0

**Attn:** Wayne Weese

**Facsimile:** (867) 983-2186

---

**Final report has been reviewed and approved by:**

---

**Glen Hudy**  
**Quality Assurance Officer**

---

**NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:** Friday, July 27, 2018

**Print Date:** *Monday, July 30, 2018*

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180609**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID:** **CAM-3**

**Taiga Sample ID:** **001**

**Client Project:** Cambridge Bay Sewage and Solid Waste  
**Sample Type:** Sewage Lagoon  
**Received Date:** 30-Dec-1899  
**Sampling Date:** 23-Jul-18  
**Sampling Time:** 9:50  
**Location:** CAM-3  
**Report Status:** **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Microbiology</b>						
Coliforms, Fecal	6400	100	CFU/100mL	24-Jul-18	SM9222:D	

**ReportDate:** Friday, July 27, 2018  
**Print Date:** *Monday, July 30, 2018*

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180609**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID:** **CAM-4**

**Taiga Sample ID:** **002**

**Client Project:** Cambridge Bay Sewage and Solid Waste

**Sample Type:** Solid Waste Run

**Received Date:** 30-Dec-1899

**Sampling Date:** 23-Jul-18

**Sampling Time:** 9:53

**Location:** CAM-4

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<b>Microbiology</b>						
Coliforms, Fecal	400	100	CFU/100mL	24-Jul-18	SM9222:D	

**ReportDate:** Friday, July 27, 2018

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180609**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID:** **CAM-5**

**Taiga Sample ID:** **003**

**Client Project:** Cambridge Bay Sewage and Solid Waste

**Sample Type:** Decanting Cell

**Received Date:** 30-Dec-1899

**Sampling Date:** 23-Jul-18

**Sampling Time:** 9:59

**Location:** CAM-5

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<b>Microbiology</b>						
Coliforms, Fecal	< 1	1	CFU/100mL	24-Jul-18	SM9222:D	

**ReportDate:** Friday, July 27, 2018

**Print Date:** *Monday, July 30, 2018*

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180609**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID:** **CAM-6**

**Taiga Sample ID:** **004**

**Client Project:** Cambridge Bay Sewage and Solid Waste

**Sample Type:** Final Discharge

**Received Date:** 30-Dec-1899

**Sampling Date:** 23-Jul-18

**Sampling Time:** 10:07

**Location:** CAM-6

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<b>Microbiology</b>						
Coliforms, Fecal	< 1	1	CFU/100mL	24-Jul-18	SM9222:D	

**ReportDate:** Friday, July 27, 2018

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180609**

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**- CERTIFICATE OF ANALYSIS -**

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**Client Sample ID:** **CAM-6**

**Taiga Sample ID:** **004**

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**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** Friday, July 27, 2018

**Print Date:** *Monday, July 30, 2018*

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180648**

## **- FINAL REPORT -**

---

**Prepared For:** Hamlet of Cambridge Bay

**Address:** P.O. Box 16  
Cambridge Bay, NU  
X0B 0C0

**Attn:** Wayne Weese

**Facsimile:** (867) 983-2186

---

**Final report has been reviewed and approved by:**

---

**Glen Hudy**  
**Quality Assurance Officer**

---

**NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:** Wednesday, August 15, 2018

**Print Date:** *Wednesday, August 15, 2018*

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180648**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **CAM-6**

Taiga Sample ID: **001**

Client Project: Sewage & Solid Waste

Sample Type: Final Discharge

Received Date: 31-Jul-18

Sampling Date: 30-Jul-18

Sampling Time: 9:20

Location: CAM-6

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	24	2	mg/L	31-Jul-18	SM5210:B	
Organic Carbon, Total	39.7	0.5	mg/L	09-Aug-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	240	0.4	mg/L	31-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	879	0.4	µS/cm	31-Jul-18	SM2510:B	
pH	9.36		pH units	31-Jul-18	SM4500-H:B	
Solids, Total Suspended	80	3	mg/L	03-Aug-18	SM2540:D	
<b><u>Major Ions</u></b>						
Calcium	39.1	0.1	mg/L	31-Jul-18	SM4110:B	
Chloride	132	0.7	mg/L	31-Jul-18	SM4110:B	
Hardness	209	0.7	mg/L	31-Jul-18	SM4110:B	
Magnesium	27.0	0.1	mg/L	31-Jul-18	SM4110:B	
Nitrate as Nitrogen	0.67	0.01	mg/L	31-Jul-18	SM4110:B	
Potassium	23.6	0.1	mg/L	31-Jul-18	SM4110:B	

ReportDate: Wednesday, August 15, 2018

Print Date: **Wednesday, August 15, 2018**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180648**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-6**

Taiga Sample ID: **001**

Sodium	83.9	0.1	mg/L	31-Jul-18	SM4110:B
Sulphate	24	1	mg/L	31-Jul-18	SM4110:B

**Microbiology**

Coliforms, Fecal	TNTC	1	CFU/100mL	31-Jul-18	SM9222:D
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**Organics**

Oil and Grease, visible	Non-visible			15-Aug-18	Visual Exam
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**Subcontracted Organics**

Phenols, Total	0.0038	0.001	mg/L	03-Aug-18	AB ENV.06537
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**Trace Metals, Total**

Aluminum	22.0	5	µg/L	13-Aug-18	EPA200.8
Arsenic	1.7	0.2	µg/L	13-Aug-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	13-Aug-18	EPA200.8
Chromium	0.2	0.1	µg/L	13-Aug-18	EPA200.8
Cobalt	0.5	0.1	µg/L	13-Aug-18	EPA200.8
Copper	12.6	0.2	µg/L	13-Aug-18	EPA200.8
Iron	301	5	µg/L	13-Aug-18	EPA200.8
Lead	0.2	0.1	µg/L	13-Aug-18	EPA200.8
Manganese	54.1	0.1	µg/L	13-Aug-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	13-Aug-18	EPA200.8
Nickel	2.5	0.1	µg/L	13-Aug-18	EPA200.8
Zinc	10.7	5	µg/L	13-Aug-18	EPA200.8

ReportDate: Wednesday, August 15, 2018

Print Date: *Wednesday, August 15, 2018*

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180648**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-5**

Taiga Sample ID: **002**

Client Project: Sewage & Solid Waste

Sample Type: Decanted Water

Received Date: 31-Jul-18

Sampling Date: 30-Jul-18

Sampling Time: 9:25

Location: CAM-5

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	23	2	mg/L	31-Jul-18	SM5210:B	
Organic Carbon, Total	51.8	0.5	mg/L	03-Aug-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	244	0.4	mg/L	31-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	878	0.4	µS/cm	31-Jul-18	SM2510:B	
pH	9.29		pH units	31-Jul-18	SM4500-H:B	
Solids, Total Suspended	78	3	mg/L	03-Aug-18	SM2540:D	
<b><u>Major Ions</u></b>						
Calcium	34.8	0.1	mg/L	31-Jul-18	SM4110:B	
Chloride	129	0.7	mg/L	31-Jul-18	SM4110:B	
Hardness	194	0.7	mg/L	31-Jul-18	SM4110:B	
Magnesium	25.9	0.1	mg/L	31-Jul-18	SM4110:B	
Nitrate as Nitrogen	0.69	0.01	mg/L	31-Jul-18	SM4110:B	
Potassium	24.0	0.1	mg/L	31-Jul-18	SM4110:B	
Sodium	83.4	0.1	mg/L	31-Jul-18	SM4110:B	
Sulphate	20	1	mg/L	31-Jul-18	SM4110:B	

ReportDate: Wednesday, August 15, 2018

Print Date: **Wednesday, August 15, 2018**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180648**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-5**

Taiga Sample ID: **002**

**Microbiology**

Coliforms, Fecal	2000	1	CFU/100mL	31-Jul-18	SM9222:D
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**Subcontracted Organics**

Phenols, Total	0.0020	0.001	mg/L	03-Aug-18	AB ENV.06537
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**Trace Metals, Total**

Aluminum	24.5	5	µg/L	13-Aug-18	EPA200.8
Arsenic	1.6	0.2	µg/L	13-Aug-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	13-Aug-18	EPA200.8
Chromium	0.2	0.1	µg/L	13-Aug-18	EPA200.8
Cobalt	0.4	0.1	µg/L	13-Aug-18	EPA200.8
Copper	13.6	0.2	µg/L	13-Aug-18	EPA200.8
Iron	291	5	µg/L	13-Aug-18	EPA200.8
Lead	0.2	0.1	µg/L	13-Aug-18	EPA200.8
Manganese	57.1	0.1	µg/L	13-Aug-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	13-Aug-18	EPA200.8
Nickel	2.3	0.1	µg/L	13-Aug-18	EPA200.8
Zinc	11.6	5	µg/L	13-Aug-18	EPA200.8

ReportDate: Wednesday, August 15, 2018

Print Date: **Wednesday, August 15, 2018**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180648**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **CAM-4**

Taiga Sample ID: **003**

Client Project: Sewage & Solid Waste

Sample Type: Solid Waste Runs

Received Date: 31-Jul-18

Sampling Date: 30-Jul-18

Sampling Time: 9:50

Location: CAM-4

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	2	2	mg/L	31-Jul-18	SM5210:B	
Organic Carbon, Total	64.6	0.5	mg/L	03-Aug-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	3670	0.4	mg/L	31-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	265	0.4	µS/cm	31-Jul-18	SM2510:B	
pH	7.95		pH units	31-Jul-18	SM4500-H:B	
Solids, Total Suspended	8	3	mg/L	03-Aug-18	SM2540:D	
<b><u>Major Ions</u></b>						
Calcium	421	0.1	mg/L	31-Jul-18	SM4110:B	
Chloride	315	0.7	mg/L	31-Jul-18	SM4110:B	
Hardness	1370	0.7	mg/L	31-Jul-18	SM4110:B	
Magnesium	76.3	0.1	mg/L	31-Jul-18	SM4110:B	
Nitrate as Nitrogen	1.35	0.01	mg/L	31-Jul-18	SM4110:B	
Potassium	99.7	0.1	mg/L	31-Jul-18	SM4110:B	
Sodium	218	0.1	mg/L	31-Jul-18	SM4110:B	
Sulphate	1440	1	mg/L	31-Jul-18	SM4110:B	

ReportDate: Wednesday, August 15, 2018

Print Date: **Wednesday, August 15, 2018**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180648**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-4**

Taiga Sample ID: **003**

**Microbiology**

Coliforms, Fecal	1,000	1	CFU/100mL	31-Jul-18	SM9222:D
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**Subcontracted Organics**

Phenols, Total	0.0018	0.001	mg/L	03-Aug-18	AB ENV.06537
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**Trace Metals, Total**

Aluminum	24.6	5	µg/L	13-Aug-18	EPA200.8
Arsenic	4.6	0.2	µg/L	13-Aug-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	13-Aug-18	EPA200.8
Chromium	1.6	0.1	µg/L	13-Aug-18	EPA200.8
Cobalt	3.6	0.1	µg/L	13-Aug-18	EPA200.8
Copper	29.7	0.2	µg/L	13-Aug-18	EPA200.8
Iron	5720	5	µg/L	13-Aug-18	EPA200.8
Lead	3.9	0.1	µg/L	13-Aug-18	EPA200.8
Manganese	324	0.1	µg/L	13-Aug-18	EPA200.8
Mercury	0.01	0.01	µg/L	13-Aug-18	EPA200.8
Nickel	29.8	0.1	µg/L	13-Aug-18	EPA200.8
Zinc	49.8	5	µg/L	13-Aug-18	EPA200.8

ReportDate: Wednesday, August 15, 2018

Print Date: **Wednesday, August 15, 2018**

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**

**180648**

### - CERTIFICATE OF ANALYSIS -

---

**Client Sample ID:** CAM-4

**Taiga Sample ID:** 003

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**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** Wednesday, August 15, 2018

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180799**

## **- PRELIMINARY REPORT -**

**Prepared For:** Hamlet of Cambridge Bay

**Address:** P.O. Box 16  
Cambridge Bay, NU  
X0B 0C0

**Attn:** Wayne Weese

**Facsimile:** (867) 983-2186

**Final report has been reviewed and approved by:**

**Judy Mah**  
**Client Service Officer**

### **NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:**

**Print Date:** *Thursday, September 06, 2018*

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## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180799**

### - CERTIFICATE OF ANALYSIS -

Client Sample ID: **CAM-3**

Taiga Sample ID: **001**

**Client Project:**

**Sample Type:** Water

**Received Date:** 24-Aug-18

**Sampling Date:** 23-Aug-18

**Sampling Time:** 9:33

**Location:**

**Report Status:** Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	24	2	mg/L	24-Aug-18	SM5210:B	
Organic Carbon, Total	63.2	0.5	mg/L	02-Sep-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	188	0.4	mg/L	24-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	827	0.4	µS/cm	24-Aug-18	SM2510:B	
pH	10.2		pH units	24-Aug-18	SM4500-H:B	
Solids, Total Suspended	100	3	mg/L	24-Aug-18	SM2540:D	
Turbidity	50.9	0.05	NTU	24-Aug-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	24.6	0.1	mg/L	26-Aug-18	SM4110:B	
Chloride	135	0.7	mg/L	26-Aug-18	SM4110:B	
Hardness	129	0.7	mg/L	26-Aug-18	SM4110:B	
Magnesium	16.5	0.1	mg/L	26-Aug-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	2.66	0.01	mg/L	26-Aug-18	SM4110:B	

**ReportDate:**

**Print Date:** *Thursday, September 06, 2018*

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180799**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID: CAM-3**

**Taiga Sample ID: 001**

Potassium	22.1	0.1	mg/L	26-Aug-18	SM4110:B
Sodium	96.2	0.1	mg/L	26-Aug-18	SM4110:B
Sulphate	21	1	mg/L	26-Aug-18	SM4110:B

**Microbiology**

Coliforms, Fecal	120	10	CFU/100mL	24-Aug-18	SM9222:D
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**Organics**

Oil and Grease, visible	Non-visible			24-Aug-18	Visual Exam
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**Subcontracted Inorganics**

Chemical Oxygen Demand	246	20	mg/L	31-Aug-18	APHA5220:D
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**Subcontracted Organics**

Phenols, Total		0.001	mg/L		AB ENV.06537
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**Trace Metals, Total**

Aluminum		5	µg/L		EPA200.8
Arsenic		0.2	µg/L		EPA200.8
Cadmium		0.04	µg/L		EPA200.8
Chromium		0.1	µg/L		EPA200.8
Cobalt		0.1	µg/L		EPA200.8
Copper		0.2	µg/L		EPA200.8
Iron		5	µg/L		EPA200.8
Lead		0.1	µg/L		EPA200.8
Mercury		0.01	µg/L		EPA200.8
Nickel		0.1	µg/L		EPA200.8
Zinc		5	µg/L		EPA200.8

**ReportDate:**

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**Print Date:** *Thursday, September 06, 2018*



Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180799**

## - CERTIFICATE OF ANALYSIS -

Client Sample ID: **CAM-5**

Taiga Sample ID: **002**

**Client Project:**

**Sample Type:** Water

**Received Date:** 24-Aug-18

**Sampling Date:** 23-Aug-18

**Sampling Time:** 9:50

**Location:**

**Report Status:** Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	24	2	mg/L	24-Aug-18	SM5210:B	
Organic Carbon, Total	65.2	0.5	mg/L	02-Sep-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	186	0.4	mg/L	24-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	815	0.4	µS/cm	24-Aug-18	SM2510:B	
pH	10.2		pH units	24-Aug-18	SM4500-H:B	
Solids, Total Suspended	100	3	mg/L	24-Aug-18	SM2540:D	
Turbidity	46.9	0.05	NTU	24-Aug-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	24.1	0.1	mg/L	26-Aug-18	SM4110:B	
Chloride	134	0.7	mg/L	26-Aug-18	SM4110:B	
Hardness	123	0.7	mg/L	26-Aug-18	SM4110:B	
Magnesium	15.2	0.1	mg/L	26-Aug-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	2.38	0.01	mg/L	26-Aug-18	SM4110:B	
Potassium	19.4	0.1	mg/L	26-Aug-18	SM4110:B	
Sodium	100.0	0.1	mg/L	26-Aug-18	SM4110:B	

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180799**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID: CAM-5**

**Taiga Sample ID: 002**

Sulphate	19	1	mg/L	26-Aug-18	SM4110:B
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**Microbiology**

Coliforms, Fecal	25	1	CFU/100mL	24-Aug-18	SM9222:D
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**Organics**

Oil and Grease, visible	Non-visible			24-Aug-18	Visual Exam
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**Subcontracted Inorganics**

Chemical Oxygen Demand	250	20	mg/L	31-Aug-18	APHA5220:D
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**Subcontracted Organics**

Phenols, Total		0.001	mg/L		AB ENV.06537
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**Trace Metals, Total**

Aluminum		5	µg/L		EPA200.8
Arsenic		0.2	µg/L		EPA200.8
Cadmium		0.04	µg/L		EPA200.8
Chromium		0.1	µg/L		EPA200.8
Cobalt		0.1	µg/L		EPA200.8
Copper		0.2	µg/L		EPA200.8
Iron		5	µg/L		EPA200.8
Lead		0.1	µg/L		EPA200.8
Mercury		0.01	µg/L		EPA200.8
Nickel		0.1	µg/L		EPA200.8
Zinc		5	µg/L		EPA200.8

**ReportDate:**

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**Print Date:** *Thursday, September 06, 2018*



Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**180799**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **CAM-6**

Taiga Sample ID: **003**

**Client Project:**

**Sample Type:** Water

**Received Date:** 24-Aug-18

**Sampling Date:** 23-Aug-18

**Sampling Time:** 9:45

**Location:**

**Report Status:** Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Inorganics - Nutrients</u></b>						
Biochemical Oxygen Demand	22	2	mg/L	24-Aug-18	SM5210:B	
Organic Carbon, Total	34.4	0.5	mg/L	02-Sep-18	SM5310:B	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	182	0.4	mg/L	24-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	821	0.4	µS/cm	24-Aug-18	SM2510:B	
pH	10.2		pH units	24-Aug-18	SM4500-H:B	
Solids, Total Suspended	94	3	mg/L	24-Aug-18	SM2540:D	
Turbidity	47.5	0.05	NTU	24-Aug-18	SM2130:B	
<b><u>Major Ions</u></b>						
Calcium	21.7	0.1	mg/L	26-Aug-18	SM4110:B	
Chloride	136	0.7	mg/L	26-Aug-18	SM4110:B	
Hardness	124	0.7	mg/L	26-Aug-18	SM4110:B	
Magnesium	16.9	0.1	mg/L	26-Aug-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	2.23	0.01	mg/L	26-Aug-18	SM4110:B	
Potassium	19.3	0.1	mg/L	26-Aug-18	SM4110:B	
Sodium	85.9	0.1	mg/L	26-Aug-18	SM4110:B	

**ReportDate:**

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**180799**

**- CERTIFICATE OF ANALYSIS -**

**Client Sample ID: CAM-6**

**Taiga Sample ID: 003**

Sulphate	20	1	mg/L	26-Aug-18	SM4110:B
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**Microbiology**

Coliforms, Fecal	7	1	CFU/100mL	24-Aug-18	SM9222:D
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**Organics**

Oil and Grease, visible	Non-visible			24-Aug-18	Visual Exam
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**Subcontracted Inorganics**

Chemical Oxygen Demand	233	20	mg/L	31-Aug-18	APHA5220:D
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**Subcontracted Organics**

Phenols, Total		0.001	mg/L		AB ENV.06537
----------------	--	-------	------	--	--------------

**Trace Metals, Total**

Aluminum		5	µg/L		EPA200.8
Arsenic		0.2	µg/L		EPA200.8
Cadmium		0.04	µg/L		EPA200.8
Chromium		0.1	µg/L		EPA200.8
Cobalt		0.1	µg/L		EPA200.8
Copper		0.2	µg/L		EPA200.8
Iron		5	µg/L		EPA200.8
Lead		0.1	µg/L		EPA200.8
Mercury		0.01	µg/L		EPA200.8
Nickel		0.1	µg/L		EPA200.8
Zinc		5	µg/L		EPA200.8

**ReportDate:**

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**Print Date:** *Thursday, September 06, 2018*



## Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**

**180799**

### - CERTIFICATE OF ANALYSIS -

---

**Client Sample ID:** CAM-6

**Taiga Sample ID:** 003

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**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:**

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# Appendix: C

**Pages from Licence 3BM CAM 1520**

**Water Licence: 3BM-CAM 1520**

**Hamlet of Cambridge Bay, NU**

## **PART B: GENERAL CONDITIONS**

1. The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than March 31 of the year following the calendar year being reported, containing the following information:
  - a. tabular summaries of all data generated under the “Monitoring Program”;
  - b. the monthly and annual quantities in cubic metres of fresh Water obtained at the Modified Water Supply Facility and/or for all purposes under the licence;
  - c. the monthly and annual quantities in cubic metres of all Waste discharged;
  - d. a summary of any open burning undertaken under Part D, Item 10, including quantity and details of the waste being burned, along with photographic evidence of site cleanup;
  - e. a summary of modifications and/or major maintenance work carried out on the Water Supply Facility and Waste Disposal Facilities, including all associated structure;
  - f. a list of unauthorized discharges and summary of follow-up action taken;
  - g. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
  - h. Any Addendum with updates or revisions for manuals and plans (including *Operations and Maintenance Manuals/Plans*) as required by changes in operation and/or technology;
  - i. a summary of any studies or reports requested by the Board that relate to the use of Water and Waste disposal or restoration, and a brief description of any future studies planned; and
  - j. any other details on Water or Waste deposit requested by the Board by November 1 of the year being reported;
2. The Licensee shall comply with the “Monitoring Program” described in this Licence, and any amendments to the “Monitoring Program” as may be made from time to time, pursuant to the conditions of this Licence.
3. The “Monitoring Program” and compliance dates specified in the Licence may be modified at the discretion of the Board in writing.
4. The Licensee shall notify the NWB of any changes in operating plans or conditions associated with this project at least thirty (30) days prior to any such change.
5. The Licensee shall install flow meters or other such devices, or implement other such methods as approved by the Board in writing, for the measuring of water volumes as required under Part H.
6. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted, cannot be undertaken without subsequent written Board approval and direction. The Board may alter or modify a Plan if necessary to achieve the legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.

7. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.
8. The Licensee shall review the Plans referred to in this Licence, as required by changes in operation and/or technology, and modify the Plan accordingly. Revisions to the Plans shall be submitted in the form of an Addendum to be included with the Annual Report.
9. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and condition imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.
10. The Licensee shall, within ninety (90) days following the first visit by the Inspector, following issuance of this Licence, post the necessary signs to identify the stations of the “Monitoring Program,” in the Official Languages of Nunavut.
11. The Licensee shall ensure a copy of this Licence is maintained at the Municipal Office at all times. Any communication with respect to this Licence and any notice provided to an Inspector, shall be made in writing to the attention of:
  - (a) **Manager of Licensing:**  
 Nunavut Water Board  
 P.O. Box 119  
 Gjoa Haven, NU X0B 1J0  
 Telephone: (867) 360-6338  
 Fax: (867) 360-6369  
 Email: [licensing@nwb-oen.ca](mailto:licensing@nwb-oen.ca)
  - (b) **Inspector Contact:**  
 Manager of Field Operations, AANDC  
 Nunavut District, Nunavut Region  
 P.O. Box 100  
 Iqaluit, NU X0A 0H0  
 Telephone: (867) 975-4295  
 Fax: (867) 979-6445
12. The Licensee shall submit one paper copy and one electronic copy of all reports, studies, and plans to the Board. Reports or studies submitted to the Board by the Licensee shall include a detailed executive summary in Inuktitut and Inuinnaqtun.
13. The Licensee shall ensure that all document(s) and correspondence submitted by the Licensee to the Board are received and acknowledged by the Manager of Licensing.
14. This Licence is not assignable except as provided in Section 44 of the Act.

**PART C: CONDITIONS APPLYING TO WATER USE**

1. The Licensee shall obtain all fresh water processed by the Modified Water Supply Facility and for all purposes under this Licence from Water Lake.
2. The annual quantity of Water used for all purposes shall not exceed eighty-six thousand two hundred (86,200) cubic metres, at a maximum daily withdrawal rate that shall not exceed two hundred and thirty-six (236) cubic metres.
3. The Licensee shall equip all water intake hoses with a screen of an appropriate mesh size to ensure that fish are not entrained and shall withdraw water at a rate such that fish do not become impinged on the screen.
4. The Licensee shall not remove any material from below the ordinary High Water Mark of any water body unless otherwise approved by the Board in writing.
5. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.
6. The Licensee shall implement sediment and erosion control measures, prior to and maintained during the operation to prevent entry of sediment into Water.
7. The Licensee shall submit to the Board for approval in writing, at least thirty (30) days prior to the use of Water in sufficient volume that the source water body may be drawn down, the following information: volume required, hydrological overview of the water body, details of impacts, and proposed mitigation measures.

**PART D: CONDITIONS APPLYING TO WASTE DISPOSAL**

1. The Licensee shall direct all Sewage generated by its undertaking to the Modified Sewage Disposal Facility included under the scope of this licence.
2. The Licensee shall direct Effluent from the Modified Solid Waste Disposal Facility to the Retention Sewage Lagoon as required.
3. The Licensee shall provide a minimum of ten (10) days' notice to an Inspector of the intent to discharge Effluent from the Modified Sewage Disposal Facility.
4. All Effluent discharged from the Modified Solid Waste Disposal Facility to the Retention Sewage Lagoon, shall be monitored for conditions under Part H, Item 5.
5. All Effluent discharged from the Modified Sewage Disposal Facility to the Sewage Wetland at Monitoring Program Station CAM-5 shall be measured for the parameters listed under this term and condition. Effluent at the outfall area at Monitoring Program Station CAM-6, shall not exceed the following Effluent quality limits:



Parameter	Maximum Concentration of Any Grab Sample
BOD <sub>5</sub>	100 mg/L
Total Suspended Solids	120 mg/L
Fecal Coliforms	1 x 10 <sup>6</sup> CFU/100mL
Oil and grease	No visible sheen
pH	between 6 and 9

6. The Licensee shall maintain at all times, a freeboard of at least 1.0 metre, or as recommended by a qualified Geotechnical Engineer and as approved by the Board in writing, for all dams, dykes or other structures intended to contain, withhold, divert or retain Water or Waste.
7. The Modified Sewage Disposal Facility shall be maintained and operated in such a manner as to prevent structural failure.
8. The Licensee shall manage all solid Waste generated by its undertaking and/or disposed of at the Modified Solid Waste Disposal Facility in accordance with acceptable standard and practices.
9. The Licensee shall not open burn plastics, wood treated with preservatives, electric wire, Styrofoam, asbestos or painted wood to prevent the deposition of waste materials of incomplete combustion and/or leachate from contaminated ash residual, from impacting any surrounding waters, unless otherwise approved by the Board in writing.
10. The Licensee shall provide a minimum of ten (10) days' notice to an Inspector, of the intent to open-burning municipal waste in accordance with the Government of Nunavut's *Environmental Guideline for the Burning and Incineration of Solid Waste* (Revised 2012), at the designated location at the Modified Solid Waste Disposal Facility, including the details of the types and quantity of waste to be burned, proposed dates, protocols to be followed, ultimate disposal of residual ash and the person responsible for the activity.
11. The Licensee shall segregate and store all hazardous materials and/or hazardous Waste within the Modified Solid Waste Disposal Facility in such a manner as to prevent the deposit of deleterious substances into any Water, until such a time that the materials have been removed for proper disposal at an approved facility.

**PART E: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION**

1. The Licensee shall submit to the Board for approval in writing, for construction design drawings stamped by a qualified Engineer, sixty (60) days prior to the

construction of any dams, dykes or structures intended to contain, withhold, divert or retain Water or Waste.

2. The Licensee may, without written approval from the Board, carry out modifications to the Water Supply Facility and Waste Disposal Facilities provided that such modifications are consistent with the terms of this Licence and the following requirements are met:
  - a. the Licensee has notified the Board in writing of such proposed modifications at least sixty (60) days prior to beginning the modifications;
  - b. these modifications do not place the Licensee in contravention of the Licence or the Act;
  - c. the Board has not, during the sixty (60) days following notification of the proposed modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
  - d. the Board has not rejected the proposed modifications.
3. Modifications for which all of the conditions referred to in Part E, Item 2, have not been met may be carried out only with written approval from the Board. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.
4. All activities shall be conducted in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake any corrective measures in the event of any impacts on surface drainage.
5. The Licensee shall implement and maintain sediment and erosion control measures prior to and during activities carried out under this Part, to prevent the release of sediment and minimize erosion.

#### **PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE**

1. The Board has approved the Plan entitled *Sewage Lagoon Operation and Maintenance Manual*, dated December 2013 that was submitted as additional information with the application.
2. The Board has approved the Plan entitled *Municipal Solid Waste Disposal Facility Operations and maintenance Manual* dated February 2014 that was submitted as additional information with the application.
3. The Board has approved the Plan entitled *Spill Contingency Plan* dated November 2013 that was submitted as additional information with the application.

4. The Plan referred to in Part F, Item 3 shall be updated within sixty (60) days of issuance of this Licence, and submitted to the Board for review, to include or address the following requirements:
  - a. NT-NU spill Report form;
  - b. Site map showing the location of spills, Water and Waste management facilities; and
  - c. Relevant material Safety Data Sheets (MSDS).
5. The Licensee shall submit to the Board for approval, within ninety (90) days of the issuance of this Licence, a stand-alone Modified Water Supply Facility Operation and Maintenance (O&M) Manual that addresses all components of the system and includes a schedule for recording daily Water use volumes requirements in Part H, Items 1 and 2.
6. The Licensee, shall, within ninety (90) days of issuance of this Licence, provide separately or include as part of the Modified Water Supply Facility Operation and Maintenance Manual required Part F, Item 5, as-built drawings for the Water Supply Facility that are signed and stamped by an Engineer, as required by Part E, Item 3.
7. The Licensee shall submit to the Board for approval in writing, at least sixty (60) days prior to conducting any desludging operations, a stand-alone Sewage Sludge Management Plan.
8. The Licensee shall review the Operations and Maintenance (O&M) Plans or Manuals referred to in Part F, Items 1, 2, 3, 5, and 7 as required by changes in operation and/or technology and modify accordingly. Revisions are to be submitted to the Board for approval in writing, in the form of an Addendum, to be included with the Annual Report required under Part B, Item 1.
9. The Licensee shall arrange for inspections to be conducted by an appropriate Engineer, at least once annually, of all structures or facilities designed to contain, withhold, divert or retain Water or Waste, during the summer months (July/August) and/or during periods of flow. An Engineer's report shall be submitted to the Board within sixty (60) days of the date of inspection, including a cover letter from the Licensee outlining an implementation plan to address each of the Engineer's recommendations.
10. An inspection of all engineered facilities shall be conducted, during the summer period (July/August), by a Geotechnical Engineer in accordance with the *Canadian Dam Safety Guidelines*, at least one (1) year prior to expiry of the Licence. The Geotechnical Engineer's report shall be submitted to the Board within sixty (60) days of the inspection, including a cover letter from the Licensee outlining an implementation plan to address each of the Engineer's recommendations.
11. The Licensee shall perform more frequent inspections of the engineered facilities at the request of an Inspector.

12. The Licensee shall, during the term of this Licence, undertake the following activities in addition to any other required action should an unauthorized discharge of waste occur or if such a discharge is foreseeable:
  - a. employ the appropriate contingency measures as approved under the Spill Contingency Plan for the Hamlet of Cambridge Bay;
  - b. report the incident immediately via the 24-Hour Spill Reporting Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
  - c. submit to the Inspector, a detailed report on each occurrence, not later than thirty (30) days after initially reporting the event, that provides the necessary information on the location (including the GPS coordinates), initial response action, remediation/clean-up, status of response (ongoing, complete), proposed disposal options for dealing with contaminated materials and preventative measures to be implemented.
13. The Licensee shall, in addition to Part F, Item 12, regardless of the quantity of releases of harmful substances, report to the NWT/NU Spill Line if the release is near or into a Water body.

**PART G: CONDITIONS APPLYING TO ABANDONMENT, RESTORATION AND CLOSURE**

1. The Licensee shall submit to the Board for approval an *Abandonment, Restoration and Closure Plan* at least six (6) months prior to abandoning any facilities or upon submission of the final design drawings for the construction of new facilities to replace existing ones. Where applicable, the Plan shall include information on the following:
  - a. water intake facility;
  - b. the water treatment and waste disposal sites and facilities;
  - c. petroleum and chemical storage areas;
  - d. any site affected by waste spills;
  - e. leachate prevention;
  - f. an implementation schedule;
  - g. maps delineating all disturbed areas, and site facilities;
  - h. consideration of altered drainage patterns;
  - i. type and source of cover materials;
  - j. future area use;
  - k. hazardous wastes; and
  - l. a proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment.
2. The Licensee shall provide to the Board for review, within ninety (90) days following the issuance of this Licence, a detailed report that includes but is not limited to the following, as requested by AANDC in its submission:
  - a. Confirmation on whether or not the scrap metal pile reference in the 2012 annual

report was relocated to the waste disposal facility's secondary areas or was buried in trenches;

- b. Designed drawing for any trenches used to burry scrap metals including cover design, type and size of material used as fill, degree of compaction, etc.;
- c. Details on any hazardous materials/substances removed from the scrap metal pile debris, if the material was relocated to the waste disposal facility;
- d. An assessment of whether or not the disposal area is subject to subsurface flow assuming that the waste was buried in trenches.

## **PART H: CONDITIONS APPLYING TO THE MONITORING PROGRAM**

1. The Licensee shall maintain Monitoring Program Stations at the following locations:

<b>Monitoring Program Station Identification</b>	<b>Description</b>	<b>Frequency</b>	<b>Status</b>
CAM-1	Raw water supply intake at Water Lake	Monthly, Annually	Active (Volume)
CAM-2	Runoff from the Modified Solid Waste Disposal Facility	N/A	Inactive (Quality)
CAM-3	Effluent or sampling point within the Modified Sewage Lagoon Facility	Based operational needs	(Quality)
CAM-4	Effluent from the eastern-most control pond in the Modified Solid Waste Disposal Facility being discharged to the Retention Sewage Lagoon	Prior to discharge	Active (Volume) (Quality)
CAM-5	Final Discharge Point for effluent from the Retention Sewage Lagoon to the Sewage Wetland	Once at the beginning of discharge; one during the middle of discharge, and once near end of discharge	Active (Volume) (Quality)
CAM-6	Outfall area for the Sewage Wetland	Monthly, During periods of observed flow	Active Volume (Quality)

2. The Licensee shall measure and record, in cubic metres, the monthly and annual quantities of water pumped at Monitoring Program Station CAM-1, for all purposes.
3. The Licensee shall measure and record the annual quantities of sewage solids or sludge removed from the Modified Sewage Disposal Facility.

4. The Licensee shall inspect weekly, during the period of May and October, at Monitoring Program Stations, CAM-4, CAM- 5, and CAM-6, for Effluent or water flow in order to fulfill the monitoring requirements of Part D, Item 5 and/or Part H, Item 1. A record of inspections shall be maintained and made available to an Inspector upon request.
5. The Licensee shall sample at Monitoring Program Stations CAM-4, CAM-5, and CAM-6, monthly during periods of observed flow. Samples shall be analyzed for the following parameters:

Biochemical Oxygen Demand (BOD <sub>5</sub> )	Fecal Coliforms
Total Suspended Solids	pH
Conductivity	Nitrate-Nitrite
Oil and Grease	
Magnesium	Calcium
Sodium	Potassium
Chloride	Sulphate
Total Hardness	Total Alkalinity
Ammonia Nitrogen	Total Zinc
Total Cadmium	Total Iron
Total Cobalt	Total Manganese
Total Chromium	Total Nickel
Total Copper	Total Lead
Total Aluminum	Total Arsenic
Total Mercury	Total Organic Carbon (TOC)*

6. The Licensee shall sample at Monitoring Program Stations CAM-5 and CAM-6, at least once prior to discharge, once during the middle of discharge and once near the completion of discharge event in order to verify compliance with relevant parameters under Part D, Item 5.
7. All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the current edition of *Standard Methods for the Examination of Water and Wastewater*, or by such other methods approved by the Board.
8. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.
9. The Board has accepted the Plan entitled Quality Assurance and Control Plan – Lagoon and Landfill, dated November 2013, as accompanied by an approval letter from an Analyst (AANDC), submitted as additional information with the application.
10. The Licensee shall annually review and revise as necessary the Quality Assurance and Quality Control Plan, in Part H, Item 9, and submit any updates to the Board for review along with the relevant approval letter from the accredited laboratory.
11. The Licensee shall measure and record the annual quantities of sewage solids

removed from the Modified Sewage Disposal Facility and Modified Sewage Disposal Facility.

12. Additional monitoring stations, sampling and analyses may be requested by an Inspector.
13. The Licensee shall include all of the data and information required by the “Monitoring Program” complete with an interpretation and discussion of the results, in the Licensee's Annual Report, as required *per* Part B, Item 1, or as requested by an Inspector.
14. Modifications to the Monitoring Program may be made only upon written approval from the NWB. Requests for changes to the Monitoring Program should be forwarded to the NWB in writing, and should include the justification and appropriate evidence to support the change.