# ANNUAL REPORT
# FOR THE HAMLET OF CHESTERFIELD INLET

**YEAR BEING REPORTED: 2019**

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. **3BM-CHE1523** issued to the **Hamlet of Chesterfield Inlet**.

i) - iii) tabular summaries of all data generated under the "Monitoring Program"; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are results for Monitoring Station CHE-1, as well as detailed chemical, physical and biological analysis required at CHE-2, CHE-3 and CHE-4.

| Month Reported | Quantity of Water Obtained from all Sources ($m^3$) | Quantity of Sewage Waste Discharged (Estimated, $m^3$) |
|---|---|---|
| **January** | 1,308.932 | Same |
| **February** | 1,246.186 | Same |
| **March** | 1,264.533 | Same |
| **April** | 1,272.629 | Same |
| **May** | 1,320.831 | Same |
| **June** | 1,209.030 | Same |
| **July** | 1,302.253 | Same |
| **August** | 1,346.033 | Same |
| **September** | 243.100 | Same |
| **October** | 1,488.299 | Same |
| **November** | 1,379.670 | Same |
| **December** | 1,377.839 | Same |
| **ANNUAL TOTAL** | | |

Note: No meter exists to measure the sewage discharge volume; therefore sewage discharge volume is considered equal volume to the water consumption volume.

iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

-

v. a list of unauthorized discharges and summary of follow-up action taken;
Spills:

| Spill | Occurrence Date | Location Description | Product Spilled | Quantity |
|---|---|---|---|---|
| spill-2019293 | 20-Jul-19 | in the water near chesterfield inlet | | Unknown Quantity |

vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

- No abandonment or restoration work was completed in 2019.
- A new water reservoir supply line is planned to be constructed in 2020.

vii. a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;

- none

viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

- none

ix. updates or revisions to the approved Operation and Maintenance Plans.

-none

**ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:**

- The Hamlet is working with the Water Compliance Working Group to implement the Solid Waste Workplan goals.

**FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:**

- The 3BM-CHE1523 CIRNAC Inspection report has not been received to date.

**Appendix A: CHE-4 Effluent Quality Limits – 1 page**
**Appendix B: Weekly Inspections at Sampling Locations – 1 page**
**Appendix C: Certificate of Analysis June 20, 2019 – 19 pages**
**Certificate of Analysis July 15, 2019 – 22 pages**
**Appendix D: Hazardous Materials Spill Database, Chesterfield Inlet 2019 – 1 page**
**Appendix E: Chesterfield Inlet 2019 Monitoring Results Summary – 3 pages**

# Appendix A

**2019 Chesterfield Inlet Monitoring Stations and Sampling Parameters Summary for Licence No. 3BM-CHE1523**
**Part D, Item 2; CHE-4 Effluent Quality Limits**

| Parameter | Maximum Concentration of any Grab Sample | CHE-4 | |
|---|---|---|---|
| | | 20-Jun-19 | 15-Jul-19 |
| $BOD_5$ | 80 mg/L | 3.2 | 14 |
| Total Suspended Solids | 100 mg/L | 4.5 | 38.9 |
| Fecal Coliforms | $1 \times 10^4$ CFU/100mL | N/A | N/A |
| Oil + Grease | no visible sheen | 5.0 | 5 |
| pH | between 6 and 9 | 7.10 | 7.31 |

## Appendix B

**No Weekly Inspections at Sampling Locations was received by CGS.**

# Appendix C

Hamlet of Chesterfield Inlet
ATTN: DON TANUYAK / ROY MULLINS
PO Box 10
Chesterfield Inlet NU X0C 0B0

Date Received: 17-JUL-19
Report Date: 29-JUL-19 14:12 (MT)
Version: FINAL

Client Phone: 867-898-9926

# Certificate of Analysis

## Lab Work Order #: L2311372

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2311372-1 CHE-4 | | | | | | | |
| Sampled By: CLIENT on 15-JUL-19 @ 09:10 | | | | | | | |
| Matrix: WATER | | | | | | | |
| **Nunavut WW Group 1** | | | | | | | |
| **Alkalinity, Bicarbonate** | | | | | | | |
| Bicarbonate (HCO3) | 134 | | 1.2 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Carbonate** | | | | | | | |
| Carbonate (CO3) | <0.60 | | 0.60 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Hydroxide** | | | | | | | |
| Hydroxide (OH) | <0.34 | | 0.34 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Total (as CaCO3)** | | | | | | | |
| Alkalinity, Total (as CaCO3) | 110 | | 1.0 | mg/L | | 17-JUL-19 | R4714446 |
| **Ammonia by colour** | | | | | | | |
| Ammonia, Total (as N) | 0.035 | | 0.010 | mg/L | | 19-JUL-19 | R4720134 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | |
| Biochemical Oxygen Demand | 14.0 | | 6.0 | mg/L | | 18-JUL-19 | R4723292 |
| **Carbonaceous BOD** | | | | | | | |
| BOD Carbonaceous | 10.0 | | 2.0 | mg/L | | 18-JUL-19 | R4723292 |
| **Chloride in Water by IC** | | | | | | | |
| Chloride (Cl) | 82.7 | | 0.50 | mg/L | | 17-JUL-19 | R4715712 |
| **Conductivity** | | | | | | | |
| Conductivity | 825 | | 1.0 | umhos/cm | | 17-JUL-19 | R4714446 |
| **Hardness Calculated** | | | | | | | |
| Hardness (as CaCO3) | 227 | HTC | 0.20 | mg/L | | 29-JUL-19 | |
| **Mercury Total** | | | | | | | |
| Mercury (Hg)-Total | <0.0000050 | | 0.0000050 | mg/L | 17-JUL-19 | 18-JUL-19 | R4719650 |
| **Nitrate in Water by IC** | | | | | | | |
| Nitrate (as N) | <0.020 | | 0.020 | mg/L | | 17-JUL-19 | R4715712 |
| **Nitrate+Nitrite** | | | | | | | |
| Nitrate and Nitrite as N | <0.070 | | 0.070 | mg/L | | 19-JUL-19 | |
| **Nitrite in Water by IC** | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 17-JUL-19 | R4715712 |
| **Oil & Grease - Gravimetric** | | | | | | | |
| Oil and Grease | <5.0 | | 5.0 | mg/L | | 22-JUL-19 | R4719713 |
| **Phenol (4AAP)** | | | | | | | |
| Phenols (4AAP) | 0.0014 | | 0.0010 | mg/L | | 19-JUL-19 | R4719699 |
| **Phosphorus, Total** | | | | | | | |
| Phosphorus (P)-Total | 0.195 | | 0.0030 | mg/L | | 19-JUL-19 | R4720388 |
| **Sulfate in Water by IC** | | | | | | | |
| Sulfate (SO4) | 193 | | 0.30 | mg/L | | 17-JUL-19 | R4715712 |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Aluminum (Al)-Total | 0.0099 | | 0.0030 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Arsenic (As)-Total | 0.00066 | | 0.00010 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Cadmium (Cd)-Total | 0.0000127 | | 0.0000050 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Calcium (Ca)-Total | 68.1 | | 0.050 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Chromium (Cr)-Total | 0.00056 | | 0.00010 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Cobalt (Co)-Total | 0.00059 | | 0.00010 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Copper (Cu)-Total | 0.00128 | | 0.00050 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Iron (Fe)-Total | 0.396 | | 0.010 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Lead (Pb)-Total | 0.000057 | | 0.000050 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Magnesium (Mg)-Total | 13.7 | | 0.0050 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Manganese (Mn)-Total | 0.0287 | | 0.00010 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Nickel (Ni)-Total | 0.00379 | | 0.00050 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Potassium (K)-Total | 13.1 | | 0.050 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| Sodium (Na)-Total | 79.3 | | 0.050 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2311372-1 CHE-4 | | | | | | | |
| Sampled By: CLIENT on 15-JUL-19 @ 09:10 | | | | | | | |
| Matrix: WATER | | | | | | | |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Zinc (Zn)-Total | 0.0118 | | 0.0030 | mg/L | 26-JUL-19 | 26-JUL-19 | R4728936 |
| **Total Organic Carbon by Combustion** | | | | | | | |
| Total Organic Carbon | 18.5 | | 0.50 | mg/L | | 22-JUL-19 | R4720568 |
| **Total Suspended Solids** | | | | | | | |
| Total Suspended Solids | 38.9 | HTD | 2.0 | mg/L | | 24-JUL-19 | R4724574 |
| **pH** | | | | | | | |
| pH | 7.58 | | 0.10 | pH units | | 17-JUL-19 | R4714446 |
| L2311372-2 CHE-2 | | | | | | | |
| Sampled By: CLIENT on 15-JUL-19 @ 09:21 | | | | | | | |
| Matrix: WATER | | | | | | | |
| **BTEX plus F1-F4** | | | | | | | |
| **BTX plus F1 by GCMS** | | | | | | | |
| Benzene | <0.00050 | | 0.00050 | mg/L | | 18-JUL-19 | R4714779 |
| Toluene | 0.0097 | | 0.0010 | mg/L | | 18-JUL-19 | R4714779 |
| Ethyl benzene | <0.00050 | | 0.00050 | mg/L | | 18-JUL-19 | R4714779 |
| o-Xylene | <0.00050 | | 0.00050 | mg/L | | 18-JUL-19 | R4714779 |
| m+p-Xylenes | <0.00040 | | 0.00040 | mg/L | | 18-JUL-19 | R4714779 |
| F1 (C6-C10) | 0.14 | | 0.10 | mg/L | | 18-JUL-19 | R4714779 |
| Surrogate: 4-Bromofluorobenzene (SS) | 92.0 | | 70-130 | % | | 18-JUL-19 | R4714779 |
| **CCME PHC F2-F4 in Water** | | | | | | | |
| F2 (C10-C16) | 2.33 | | 0.10 | mg/L | 18-JUL-19 | 20-JUL-19 | R4699009 |
| F3 (C16-C34) | 29.5 | | 0.25 | mg/L | 18-JUL-19 | 20-JUL-19 | R4699009 |
| F4 (C34-C50) | 7.16 | | 0.25 | mg/L | 18-JUL-19 | 20-JUL-19 | R4699009 |
| Surrogate: 2-Bromobenzotrifluoride | 119.0 | | 60-140 | % | 18-JUL-19 | 20-JUL-19 | R4699009 |
| **CCME Total Hydrocarbons** | | | | | | | |
| F1-BTEX | 0.13 | | 0.10 | mg/L | | 26-JUL-19 | |
| F2-Naphth | 2.33 | | 0.10 | mg/L | | 26-JUL-19 | |
| F3-PAH | 29.5 | | 0.25 | mg/L | | 26-JUL-19 | |
| Total Hydrocarbons (C6-C50) | 39.1 | | 0.38 | mg/L | | 26-JUL-19 | |
| **Sum of Xylene Isomer Concentrations** | | | | | | | |
| Xylenes (Total) | <0.00064 | | 0.00064 | mg/L | | 25-JUL-19 | |
| **Polyaromatic Hydrocarbons (PAHs)** | | | | | | | |
| 1-Methyl Naphthalene | 0.000129 | | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| 2-Methyl Naphthalene | 0.000125 | | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Acenaphthene | <0.000020 | | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Acenaphthylene | <0.000020 | | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Anthracene | <0.000010 | | 0.000010 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Acridine | <0.000020 | | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Benzo(a)anthracene | <0.000010 | | 0.000010 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Benzo(a)pyrene | <0.0000050 | | 0.0000050 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Benzo(b&j)fluoranthene | <0.000010 | | 0.000010 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Benzo(g,h,i)perylene | <0.000020 | | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Benzo(k)fluoranthene | <0.000010 | | 0.000010 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Chrysene | <0.000020 | | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Dibenzo(a,h)anthracene | <0.000020 | DLM | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Fluoranthene | <0.000020 | | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Fluorene | 0.000151 | EMPC | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Indeno(1,2,3-cd)pyrene | <0.000010 | | 0.000010 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Naphthalene | 0.000070 | EMPC | 0.000050 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Phenanthrene | <0.000050 | | 0.000050 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2311372-2 CHE-2 | | | | | | | |
| Sampled By: CLIENT on 15-JUL-19 @ 09:21 | | | | | | | |
| Matrix: WATER | | | | | | | |
| **Polyaromatic Hydrocarbons (PAHs)** | | | | | | | |
| Pyrene | <0.00002 | DLM | 0.000020 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Quinoline | <0.00010 | DLM | 0.00010 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| B(a)P Total Potency Equivalent | <0.000030 | | 0.000030 | mg/L | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Surrogate: Acenaphthene d10 | 100.4 | | 60-130 | % | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Surrogate: Acridine d9 | 108.9 | | 60-130 | % | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Surrogate: Chrysene d12 | 118.0 | | 60-130 | % | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Surrogate: Naphthalene d8 | 159.6 | SOL:MI | 50-130 | % | 18-JUL-19 | 23-JUL-19 | R4727407 |
| Surrogate: Phenanthrene d10 | 108.0 | | 60-130 | % | 18-JUL-19 | 23-JUL-19 | R4727407 |
| **Nunavut WW Group 1** | | | | | | | |
| **Alkalinity, Bicarbonate** | | | | | | | |
| Bicarbonate (HCO3) | 365 | | 1.2 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Carbonate** | | | | | | | |
| Carbonate (CO3) | <0.60 | | 0.60 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Hydroxide** | | | | | | | |
| Hydroxide (OH) | <0.34 | | 0.34 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Total (as CaCO3)** | | | | | | | |
| Alkalinity, Total (as CaCO3) | 300 | | 1.0 | mg/L | | 17-JUL-19 | R4714446 |
| **Ammonia by colour** | | | | | | | |
| Ammonia, Total (as N) | 64.3 | | 2.0 | mg/L | | 22-JUL-19 | R4721003 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | |
| Biochemical Oxygen Demand | 306 | | 50 | mg/L | | 18-JUL-19 | R4723292 |
| **Carbonaceous BOD** | | | | | | | |
| BOD Carbonaceous | 258 | | 50 | mg/L | | 18-JUL-19 | R4723292 |
| **Chloride in Water by IC** | | | | | | | |
| Chloride (Cl) | 71.4 | | 1.0 | mg/L | | 17-JUL-19 | R4715712 |
| **Conductivity** | | | | | | | |
| Conductivity | 879 | | 1.0 | umhos/cm | | 17-JUL-19 | R4714446 |
| **Hardness Calculated** | | | | | | | |
| Hardness (as CaCO3) | 60.9 | HTC | 0.20 | mg/L | | 26-JUL-19 | |
| **Mercury Total** | | | | | | | |
| Mercury (Hg)-Total | 0.0000120 | | 0.0000050 | mg/L | 17-JUL-19 | 18-JUL-19 | R4719650 |
| **Nitrate in Water by IC** | | | | | | | |
| Nitrate (as N) | <0.040 | DLM | 0.040 | mg/L | | 17-JUL-19 | R4715712 |
| **Nitrate+Nitrite** | | | | | | | |
| Nitrate and Nitrite as N | <0.070 | | 0.070 | mg/L | | 19-JUL-19 | |
| **Nitrite in Water by IC** | | | | | | | |
| Nitrite (as N) | <0.020 | DLM | 0.020 | mg/L | | 17-JUL-19 | R4715712 |
| **Oil & Grease - Gravimetric** | | | | | | | |
| Oil and Grease | 73.6 | | 5.0 | mg/L | | 22-JUL-19 | R4719713 |
| **Phenol (4AAP)** | | | | | | | |
| Phenols (4AAP) | 0.201 | DLM | 0.010 | mg/L | | 22-JUL-19 | R4719897 |
| **Phosphorus, Total** | | | | | | | |
| Phosphorus (P)-Total | 8.18 | | 0.030 | mg/L | | 19-JUL-19 | R4720388 |
| **Sulfate in Water by IC** | | | | | | | |
| Sulfate (SO4) | 17.8 | | 0.60 | mg/L | | 17-JUL-19 | R4715712 |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Aluminum (Al)-Total | 0.254 | | 0.0030 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Arsenic (As)-Total | 0.00076 | | 0.00010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Cadmium (Cd)-Total | 0.000135 | | 0.0000050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Calcium (Ca)-Total | 15.3 | | 0.050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Chromium (Cr)-Total | 0.00143 | | 0.00010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Cobalt (Co)-Total | 0.00067 | | 0.00010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2311372-2 CHE-2 | | | | | | | |
| Sampled By: CLIENT on 15-JUL-19 @ 09:21 | | | | | | | |
| Matrix: WATER | | | | | | | |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Copper (Cu)-Total | 0.122 | | 0.00050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Iron (Fe)-Total | 3.06 | | 0.010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Lead (Pb)-Total | 0.00174 | | 0.000050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Magnesium (Mg)-Total | 5.50 | | 0.0050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Manganese (Mn)-Total | 0.0479 | | 0.00010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Nickel (Ni)-Total | 0.00396 | | 0.00050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Potassium (K)-Total | 20.6 | | 0.050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Sodium (Na)-Total | 54.8 | | 0.050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Zinc (Zn)-Total | 0.163 | | 0.0030 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| **Total Organic Carbon by Combustion** | | | | | | | |
| Total Organic Carbon | 157 | | 5.0 | mg/L | | 23-JUL-19 | R4722928 |
| **Total Suspended Solids** | | | | | | | |
| Total Suspended Solids | 313 | HTD | 6.0 | mg/L | | 24-JUL-19 | R4724574 |
| **pH** | | | | | | | |
| pH | 7.73 | | 0.10 | pH units | | 17-JUL-19 | R4714446 |
| L2311372-3 CHE-3 | | | | | | | |
| Sampled By: CLIENT on 15-JUL-19 @ 09:15 | | | | | | | |
| Matrix: WATER | | | | | | | |
| **Nunavut WW Group 1** | | | | | | | |
| **Alkalinity, Bicarbonate** | | | | | | | |
| Bicarbonate (HCO3) | 173 | | 1.2 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Carbonate** | | | | | | | |
| Carbonate (CO3) | <0.60 | | 0.60 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Hydroxide** | | | | | | | |
| Hydroxide (OH) | <0.34 | | 0.34 | mg/L | | 18-JUL-19 | |
| **Alkalinity, Total (as CaCO3)** | | | | | | | |
| Alkalinity, Total (as CaCO3) | 142 | | 1.0 | mg/L | | 17-JUL-19 | R4714446 |
| **Ammonia by colour** | | | | | | | |
| Ammonia, Total (as N) | 17.6 | | 0.50 | mg/L | | 22-JUL-19 | R4721003 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | |
| Biochemical Oxygen Demand | 17.4 | | 6.0 | mg/L | | 18-JUL-19 | R4723292 |
| **Carbonaceous BOD** | | | | | | | |
| BOD Carbonaceous | 12.2 | | 2.0 | mg/L | | 18-JUL-19 | R4723292 |
| **Chloride in Water by IC** | | | | | | | |
| Chloride (Cl) | 34.6 | | 0.50 | mg/L | | 17-JUL-19 | R4715712 |
| **Conductivity** | | | | | | | |
| Conductivity | 434 | | 1.0 | umhos/cm | | 17-JUL-19 | R4714446 |
| **Hardness Calculated** | | | | | | | |
| Hardness (as CaCO3) | 74.6 | HTC | 0.20 | mg/L | | 26-JUL-19 | |
| **Mercury Total** | | | | | | | |
| Mercury (Hg)-Total | <0.0000050 | | 0.0000050 | mg/L | 17-JUL-19 | 18-JUL-19 | R4719650 |
| **Nitrate in Water by IC** | | | | | | | |
| Nitrate (as N) | 0.206 | | 0.020 | mg/L | | 17-JUL-19 | R4715712 |
| **Nitrate+Nitrite** | | | | | | | |
| Nitrate and Nitrite as N | 0.271 | | 0.070 | mg/L | | 19-JUL-19 | |
| **Nitrite in Water by IC** | | | | | | | |
| Nitrite (as N) | 0.066 | | 0.010 | mg/L | | 17-JUL-19 | R4715712 |
| **Oil & Grease - Gravimetric** | | | | | | | |
| Oil and Grease | <5.0 | | 5.0 | mg/L | | 22-JUL-19 | R4719713 |
| **Phenol (4AAP)** | | | | | | | |
| Phenols (4AAP) | 0.0012 | | 0.0010 | mg/L | | 22-JUL-19 | R4719897 |

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2311372-3 CHE-3 | | | | | | | |
| Sampled By: CLIENT on 15-JUL-19 @ 09:15 | | | | | | | |
| Matrix: WATER | | | | | | | |
| **Phosphorus, Total** | | | | | | | |
| Phosphorus (P)-Total | 3.38 | | 0.030 | mg/L | | 19-JUL-19 | R4720388 |
| **Sulfate in Water by IC** | | | | | | | |
| Sulfate (SO4) | 23.1 | | 0.30 | mg/L | | 17-JUL-19 | R4715712 |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Aluminum (Al)-Total | 0.0537 | | 0.0030 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Arsenic (As)-Total | 0.00093 | | 0.00010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Cadmium (Cd)-Total | 0.0000217 | | 0.0000050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Calcium (Ca)-Total | 22.5 | | 0.050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Chromium (Cr)-Total | 0.00072 | | 0.00010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Cobalt (Co)-Total | 0.00048 | | 0.00010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Copper (Cu)-Total | 0.0116 | | 0.00050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Iron (Fe)-Total | 2.16 | | 0.010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Lead (Pb)-Total | 0.000454 | | 0.000050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Magnesium (Mg)-Total | 4.49 | | 0.0050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Manganese (Mn)-Total | 0.119 | | 0.00010 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Nickel (Ni)-Total | 0.00333 | | 0.00050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Potassium (K)-Total | 10.7 | | 0.050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Sodium (Na)-Total | 29.6 | | 0.050 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| Zinc (Zn)-Total | 0.0161 | | 0.0030 | mg/L | 24-JUL-19 | 24-JUL-19 | R4726441 |
| **Total Organic Carbon by Combustion** | | | | | | | |
| Total Organic Carbon | 28.2 | | 0.50 | mg/L | | 22-JUL-19 | R4720568 |
| **Total Suspended Solids** | | | | | | | |
| Total Suspended Solids | 36.1 | HTD | 2.0 | mg/L | | 24-JUL-19 | R4724574 |
| **pH** | | | | | | | |
| pH | 7.87 | | 0.10 | pH units | | 17-JUL-19 | R4714446 |

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# Reference Information

**Sample Parameter Qualifier Key:**

| Qualifier | Description |
|---|---|
| B | Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable. |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| EMPC | Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification. |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| HTD | Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| SOL:MI | Surrogate recovery outside acceptable limits due to matrix interference |

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| ALK-CO3CO3-CALC-WP | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| ALK-HCO3HCO3-CALC-WP | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| ALK-OHOH-CALC-WP | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| ALK-TITR-WP | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| BOD-CBOD-WP | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| BOD-WP | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| BTEXS+F1-HSMS-WP | Water | BTX plus F1 by GCMS | EPA 8260C / EPA 5021A |

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

| | | | |
|---|---|---|---|
| C-TOC-HTC-WP | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

| | | | |
|---|---|---|---|
| CL-IC-N-WP | Water | Chloride in Water by IC | EPA 300.1 (mod) |

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| EC-WP | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

| | | | |
|---|---|---|---|
| F1-F4-CALC-WP | Water | CCME Total Hydrocarbons | CCME CWS-PHC, Pub #1310, Dec 2001-L |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

| | | | |
|---|---|---|---|
| F2-F4-FID-WP | Water | CCME PHC F2-F4 in Water | EPA 3511 |

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

| | | | |
|---|---|---|---|
| HARDNESS-CALC-WP | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

| | | | |
|---|---|---|---|
| HG-T-CVAA-WP | Water | Mercury Total | EPA 1631E (mod) |

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

| | | | |
|---|---|---|---|
| MET-T-CCMS-WP | Water | Total Metals in Water by CRC ICPMS | EPA 200.2/6020B (mod.) |

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

| | | | |
|---|---|---|---|
| NH3-COL-WP | Water | Ammonia by colour | APHA 4500 NH3 F |

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| NO2+NO3-CALC-WP | Water | Nitrate+Nitrite | CALCULATION |
| NO2-IC-N-WP | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| NO3-IC-N-WP | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| OG-GRAV-WP | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

| | | | |
|---|---|---|---|
| P-T-COL-WP | Water | Phosphorus, Total | APHA 4500 P PHOSPHORUS-L |

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

| | | | |
|---|---|---|---|
| PAH,PANH-WP | Water | Polyaromatic Hydrocarbons (PAHs) | EPA 3511/8270D (mod) |

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

| | | | |
|---|---|---|---|
| PH-WP | Water | pH | APHA 4500H |

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

| | | | |
|---|---|---|---|
| PHENOLS-4AAP-WT | Water | Phenol (4AAP) | EPA 9066 |

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

| | | | |
|---|---|---|---|
| SO4-IC-N-WP | Water | Sulfate in Water by IC | EPA 300.1 (mod) |

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| SOLIDS-TOTSUS-WP | Water | Total Suspended Solids | APHA 2540 D (modified) |
| Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | | | |
| XYLENES-SUM-CALC-WP | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |
| Total xylenes represents the sum of o-xylene and m&p-xylene. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

# Quality Control Report



Client: Hamlet of Chesterfield Inlet
PO Box 10
Chesterfield Inlet NU X0C 0B0
Contact: DON TANUYAK / ROY MULLINS

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R4714446** | | | | | | | | |
| **WG3108701-24 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 103.5 | | % | | 85-115 | 17-JUL-19 |
| **WG3108701-21 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 17-JUL-19 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R4723292** | | | | | | | | |
| **WG3108416-2 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 105.2 | | % | | 85-115 | 18-JUL-19 |
| **WG3108416-1 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 18-JUL-19 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R4723292** | | | | | | | | |
| **WG3108416-2 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 108.7 | | % | | 85-115 | 18-JUL-19 |
| **WG3108416-1 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 18-JUL-19 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R4714779** | | | | | | | | |
| **WG3107943-14 LCS** | | | | | | | | |
| Benzene | | | 96.4 | | % | | 70-130 | 18-JUL-19 |
| Toluene | | | 98.2 | | % | | 70-130 | 18-JUL-19 |
| Ethyl benzene | | | 102.0 | | % | | 70-130 | 18-JUL-19 |
| o-Xylene | | | 99.4 | | % | | 70-130 | 18-JUL-19 |
| m+p-Xylenes | | | 98.7 | | % | | 70-130 | 18-JUL-19 |
| **WG3107943-15 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 107.3 | | % | | 70-130 | 18-JUL-19 |
| **WG3107943-13 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 18-JUL-19 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 18-JUL-19 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 18-JUL-19 |
| o-Xylene | | | <0.00030 | | mg/L | | 0.0003 | 18-JUL-19 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 18-JUL-19 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 18-JUL-19 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 88.0 | | % | | 70-130 | 18-JUL-19 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R4720568** | | | | | | | | |
| **WG3112527-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 102.0 | | % | | 80-120 | 22-JUL-19 |
| **WG3112527-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 22-JUL-19 |
| **Batch R4722928** | | | | | | | | |
| **WG3113747-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 101.9 | | % | | 80-120 | 23-JUL-19 |
| **WG3113747-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 23-JUL-19 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4715712** | | | | | | | | |
| **WG3107633-10 LCS** | | | | | | | | |
| Chloride (Cl) | | | 100.5 | | % | | 90-110 | 17-JUL-19 |
| **WG3107633-9 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 17-JUL-19 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R4714446** | | | | | | | | |
| **WG3108701-23 LCS** | | | | | | | | |
| Conductivity | | | 99.3 | | % | | 90-110 | 17-JUL-19 |
| **WG3108701-21 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 17-JUL-19 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R4699009** | | | | | | | | |
| **WG3107507-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 107.2 | | % | | 70-130 | 20-JUL-19 |
| F3 (C16-C34) | | | 103.0 | | % | | 70-130 | 20-JUL-19 |
| F4 (C34-C50) | | | 97.0 | | % | | 70-130 | 20-JUL-19 |
| **WG3107507-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 20-JUL-19 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 20-JUL-19 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 20-JUL-19 |
| Surrogate: 2-Bromobenzotrifluoride | | | 88.4 | | % | | 60-140 | 20-JUL-19 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R4719650** | | | | | | | | |
| **WG3111497-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 91.0 | | % | | 80-120 | 18-JUL-19 |
| **WG3111497-1 MB** | | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R4719650** | | | | | | | | |
| **WG3111497-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005C | | mg/L | | 0.000005 | 18-JUL-19 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R4726441** | | | | | | | | |
| **WG3114234-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 101.0 | | % | | 80-120 | 24-JUL-19 |
| Arsenic (As)-Total | | | 98.3 | | % | | 80-120 | 24-JUL-19 |
| Cadmium (Cd)-Total | | | 99.3 | | % | | 80-120 | 24-JUL-19 |
| Calcium (Ca)-Total | | | 99.2 | | % | | 80-120 | 24-JUL-19 |
| Chromium (Cr)-Total | | | 96.9 | | % | | 80-120 | 24-JUL-19 |
| Cobalt (Co)-Total | | | 96.8 | | % | | 80-120 | 24-JUL-19 |
| Copper (Cu)-Total | | | 97.8 | | % | | 80-120 | 24-JUL-19 |
| Iron (Fe)-Total | | | 93.4 | | % | | 80-120 | 24-JUL-19 |
| Lead (Pb)-Total | | | 101.6 | | % | | 80-120 | 24-JUL-19 |
| Magnesium (Mg)-Total | | | 107.4 | | % | | 80-120 | 24-JUL-19 |
| Manganese (Mn)-Total | | | 99.7 | | % | | 80-120 | 24-JUL-19 |
| Nickel (Ni)-Total | | | 96.6 | | % | | 80-120 | 24-JUL-19 |
| Potassium (K)-Total | | | 95.7 | | % | | 80-120 | 24-JUL-19 |
| Sodium (Na)-Total | | | 98.8 | | % | | 80-120 | 24-JUL-19 |
| Zinc (Zn)-Total | | | 102.4 | | % | | 80-120 | 24-JUL-19 |
| **WG3114234-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | 0.0036 | B | mg/L | | 0.003 | 24-JUL-19 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 24-JUL-19 |
| Cadmium (Cd)-Total | | | <0.000005C | | mg/L | | 0.000005 | 24-JUL-19 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 24-JUL-19 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 24-JUL-19 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 24-JUL-19 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 24-JUL-19 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 24-JUL-19 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 24-JUL-19 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 24-JUL-19 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 24-JUL-19 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 24-JUL-19 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 24-JUL-19 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 24-JUL-19 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R4726441** | | | | | | | | |
| **WG3114234-1 MB** | | | | | | | | |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 24-JUL-19 |
| **Batch R4728936** | | | | | | | | |
| **WG3116311-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 103.8 | | % | | 80-120 | 26-JUL-19 |
| Arsenic (As)-Total | | | 102.7 | | % | | 80-120 | 26-JUL-19 |
| Cadmium (Cd)-Total | | | 102.6 | | % | | 80-120 | 26-JUL-19 |
| Calcium (Ca)-Total | | | 103.2 | | % | | 80-120 | 26-JUL-19 |
| Chromium (Cr)-Total | | | 102.1 | | % | | 80-120 | 26-JUL-19 |
| Cobalt (Co)-Total | | | 102.1 | | % | | 80-120 | 26-JUL-19 |
| Copper (Cu)-Total | | | 104.3 | | % | | 80-120 | 26-JUL-19 |
| Iron (Fe)-Total | | | 85.4 | | % | | 80-120 | 26-JUL-19 |
| Lead (Pb)-Total | | | 102.2 | | % | | 80-120 | 26-JUL-19 |
| Magnesium (Mg)-Total | | | 111.4 | | % | | 80-120 | 26-JUL-19 |
| Manganese (Mn)-Total | | | 102.6 | | % | | 80-120 | 26-JUL-19 |
| Nickel (Ni)-Total | | | 101.9 | | % | | 80-120 | 26-JUL-19 |
| Potassium (K)-Total | | | 101.6 | | % | | 80-120 | 26-JUL-19 |
| Sodium (Na)-Total | | | 106.3 | | % | | 80-120 | 26-JUL-19 |
| Zinc (Zn)-Total | | | 102.2 | | % | | 80-120 | 26-JUL-19 |
| **WG3116311-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 26-JUL-19 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 26-JUL-19 |
| Cadmium (Cd)-Total | | | <0.000005C | | mg/L | | 0.000005 | 26-JUL-19 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 26-JUL-19 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 26-JUL-19 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 26-JUL-19 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 26-JUL-19 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 26-JUL-19 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 26-JUL-19 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 26-JUL-19 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 26-JUL-19 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 26-JUL-19 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 26-JUL-19 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 26-JUL-19 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 26-JUL-19 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R4720134** | | | | | | | | |
| **WG3111982-10 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 99.3 | | % | | 85-115 | 19-JUL-19 |
| **WG3111982-9 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 19-JUL-19 |
| **Batch R4721003** | | | | | | | | |
| **WG3113131-2 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 101.1 | | % | | 85-115 | 22-JUL-19 |
| **WG3113131-1 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 22-JUL-19 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4715712** | | | | | | | | |
| **WG3107633-10 LCS** | | | | | | | | |
| Nitrite (as N) | | | 105.2 | | % | | 90-110 | 17-JUL-19 |
| **WG3107633-9 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 17-JUL-19 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4715712** | | | | | | | | |
| **WG3107633-10 LCS** | | | | | | | | |
| Nitrate (as N) | | | 100.6 | | % | | 90-110 | 17-JUL-19 |
| **WG3107633-9 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 17-JUL-19 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R4719713** | | | | | | | | |
| **WG3109150-2 LCS** | | | | | | | | |
| Oil and Grease | | | 95.3 | | % | | 70-130 | 22-JUL-19 |
| **WG3109150-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 22-JUL-19 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R4720388** | | | | | | | | |
| **WG3109036-2 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 98.1 | | % | | 80-120 | 19-JUL-19 |
| **WG3109036-6 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 98.7 | | % | | 80-120 | 19-JUL-19 |
| **WG3109036-1 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 19-JUL-19 |
| **WG3109036-5 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 19-JUL-19 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH,PANH-WP** | **Water** | | | | | | | |
| **Batch R4727407** | | | | | | | | |
| **WG3110438-2 LCS** | | | | | | | | |
| 1-Methyl Naphthalene | | | 99.0 | | % | | 60-130 | 22-JUL-19 |
| 2-Methyl Naphthalene | | | 91.2 | | % | | 60-130 | 22-JUL-19 |
| Acenaphthene | | | 99.9 | | % | | 60-130 | 22-JUL-19 |
| Acenaphthylene | | | 86.7 | | % | | 60-130 | 22-JUL-19 |
| Anthracene | | | 90.5 | | % | | 60-130 | 22-JUL-19 |
| Acridine | | | 97.6 | | % | | 60-130 | 22-JUL-19 |
| Benzo(a)anthracene | | | 87.5 | | % | | 60-130 | 22-JUL-19 |
| Benzo(a)pyrene | | | 100.5 | | % | | 60-130 | 22-JUL-19 |
| Benzo(b&j)fluoranthene | | | 80.0 | | % | | 60-130 | 22-JUL-19 |
| Benzo(g,h,i)perylene | | | 100.8 | | % | | 60-130 | 22-JUL-19 |
| Benzo(k)fluoranthene | | | 93.3 | | % | | 60-130 | 22-JUL-19 |
| Chrysene | | | 100.6 | | % | | 60-130 | 22-JUL-19 |
| Dibenzo(a,h)anthracene | | | 99.9 | | % | | 60-130 | 22-JUL-19 |
| Fluoranthene | | | 96.9 | | % | | 60-130 | 22-JUL-19 |
| Fluorene | | | 101.1 | | % | | 60-130 | 22-JUL-19 |
| Indeno(1,2,3-cd)pyrene | | | 94.8 | | % | | 60-130 | 22-JUL-19 |
| Naphthalene | | | 104.3 | | % | | 50-130 | 22-JUL-19 |
| Phenanthrene | | | 105.6 | | % | | 60-130 | 22-JUL-19 |
| Pyrene | | | 94.9 | | % | | 60-130 | 22-JUL-19 |
| Quinoline | | | 103.6 | | % | | 60-130 | 22-JUL-19 |
| **WG3110438-1 MB** | | | | | | | | |
| 1-Methyl Naphthalene | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| 2-Methyl Naphthalene | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 22-JUL-19 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 22-JUL-19 |
| Benzo(a)pyrene | | | <0.000005( | | mg/L | | 0.000005 | 22-JUL-19 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 22-JUL-19 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 22-JUL-19 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Dibenzo(a,h)anthracene | | | <0.000005( | | mg/L | | 0.000005 | 22-JUL-19 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH,PANH-WP** | **Water** | | | | | | | |
| **Batch R4727407** | | | | | | | | |
| **WG3110438-1 MB** | | | | | | | | |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 22-JUL-19 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 22-JUL-19 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 22-JUL-19 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 22-JUL-19 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 22-JUL-19 |
| Surrogate: Acenaphthene d10 | | | 83.4 | | % | | 60-130 | 22-JUL-19 |
| Surrogate: Acridine d9 | | | 81.7 | | % | | 60-130 | 22-JUL-19 |
| Surrogate: Chrysene d12 | | | 98.4 | | % | | 60-130 | 22-JUL-19 |
| Surrogate: Naphthalene d8 | | | 82.9 | | % | | 50-130 | 22-JUL-19 |
| Surrogate: Phenanthrene d10 | | | 83.0 | | % | | 60-130 | 22-JUL-19 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R4714446** | | | | | | | | |
| **WG3108701-22 LCS** | | | | | | | | |
| pH | | | 7.37 | | pH units | | 7.3-7.5 | 17-JUL-19 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R4719699** | | | | | | | | |
| **WG3109768-6 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 106.4 | | % | | 85-115 | 19-JUL-19 |
| **WG3109768-5 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 19-JUL-19 |
| **Batch R4719897** | | | | | | | | |
| **WG3111545-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 97.3 | | % | | 85-115 | 22-JUL-19 |
| **WG3111545-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 22-JUL-19 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4715712** | | | | | | | | |
| **WG3107633-10 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 101.3 | | % | | 90-110 | 17-JUL-19 |
| **WG3107633-9 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 17-JUL-19 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R4724574** | | | | | | | | |
| **WG3113656-6 LCS** | | | | | | | | |
| Total Suspended Solids | | | 104.0 | | % | | 85-115 | 24-JUL-19 |
| **WG3113656-5 MB** | | | | | | | | |
| Total Suspended Solids | | | <2.0 | | mg/L | | 2 | 24-JUL-19 |

**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| B | Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable. |

# Quality Control Report



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| Total Suspended Solids | | | | | | | |
| | 1 | 15-JUL-19 09:10 | 24-JUL-19 08:00 | 7 | 9 | days | EHT |
| | 2 | 15-JUL-19 09:21 | 24-JUL-19 08:00 | 7 | 9 | days | EHT |
| | 3 | 15-JUL-19 09:15 | 24-JUL-19 08:00 | 7 | 9 | days | EHT |
| pH | | | | | | | |
| | 1 | 15-JUL-19 09:10 | 17-JUL-19 12:00 | 0.25 | 51 | hours | EHTR-FM |
| | 2 | 15-JUL-19 09:21 | 17-JUL-19 12:00 | 0.25 | 51 | hours | EHTR-FM |
| | 3 | 15-JUL-19 09:15 | 17-JUL-19 12:00 | 0.25 | 51 | hours | EHTR-FM |
| **Aggregate Organics** | | | | | | | |
| Biochemical Oxygen Demand (BOD) | | | | | | | |
| | 1 | 15-JUL-19 09:10 | 18-JUL-19 07:00 | 48 | 70 | hours | EHTR |
| | 2 | 15-JUL-19 09:21 | 18-JUL-19 07:00 | 48 | 70 | hours | EHTR |
| | 3 | 15-JUL-19 09:15 | 18-JUL-19 07:00 | 48 | 70 | hours | EHTR |
| Carbonaceous BOD | | | | | | | |
| | 1 | 15-JUL-19 09:10 | 18-JUL-19 07:00 | 48 | 70 | hours | EHTR |
| | 2 | 15-JUL-19 09:21 | 18-JUL-19 07:00 | 48 | 70 | hours | EHTR |
| | 3 | 15-JUL-19 09:15 | 18-JUL-19 07:00 | 48 | 70 | hours | EHTR |

**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. |
| EHTL: | Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry. |
| EHT: | Exceeded ALS recommended hold time prior to analysis. |
| Rec. HT: | ALS recommended hold time (see units). |

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2311372 were received on 17-JUL-19 10:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

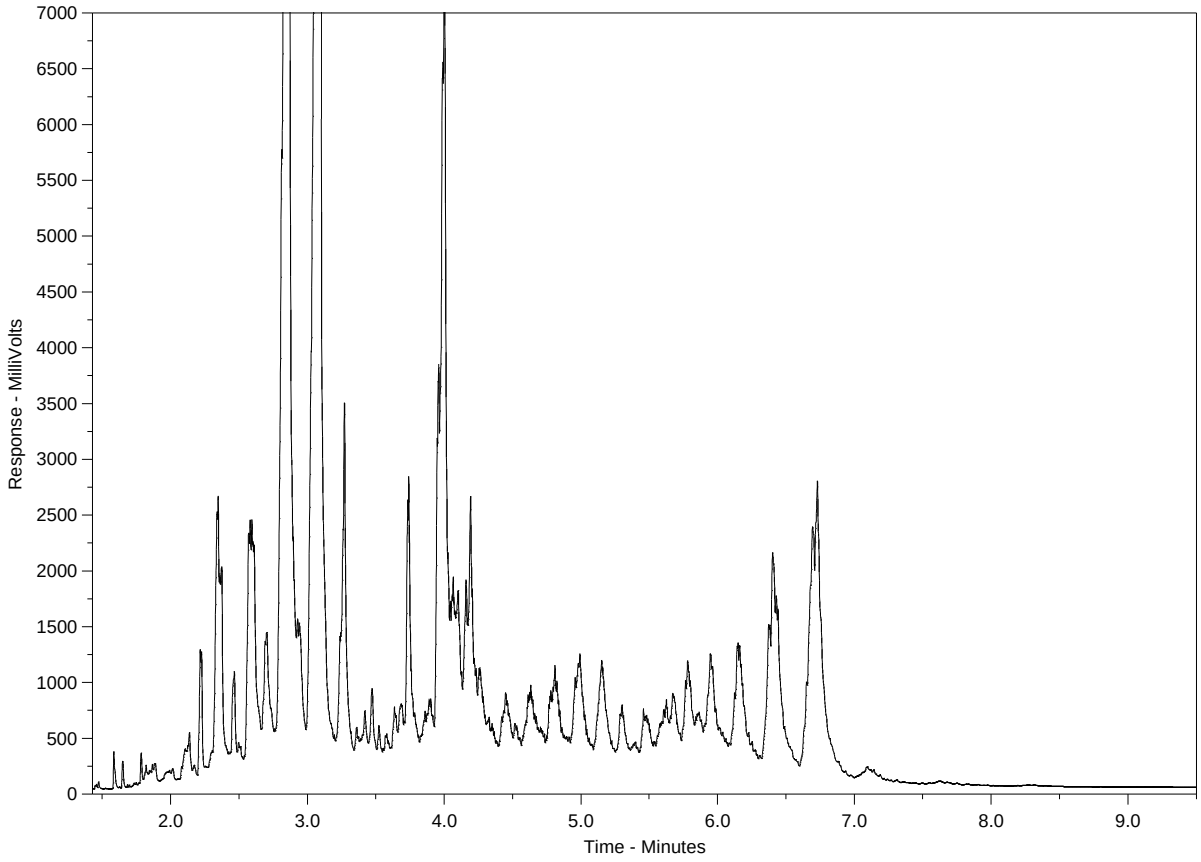
---

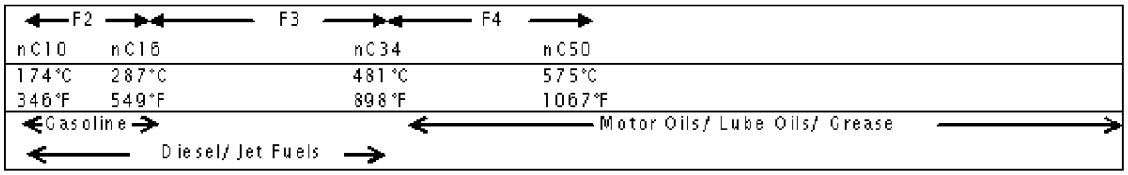
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2311372-2
Client Sample ID: CHE-2




The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

# Chain of Custody (COC) / Analytic Request Form

L2311372-COFC

Canada Toll Free: 1 800 668 9878

COC Number: 17 - 747874

Page of

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | Hamlet of Chesterfield Inlet |
| Contact: | |
| Phone: | 867-858-4926 |
| | Company address below will appear on the final report |
| Street: | Box 10 |
| City/Province: | Chesterfield Inlet, NU |
| Postal Code: | X0C-0B0 |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | PDF EXCEL EDD (DIGITAL) |
| Quality Control (QC) Report with Report | YES NO |
| Compare Results to Criteria on Report - provide details below if box checked | |
| Select Distribution: | EMAIL MAIL FAX |
| Email 1 or Fax | Foreman.chesterfield-inlet@ |
| Email 2 | |
| Email 3 | |

| Invoice To | | |
|---|---|---|
| | Same as Report To | YES NO |
| | Copy of Invoice with Report | YES NO |
| Company: | | |
| Contact: | | |

| Invoice Distribution | |
|---|---|
| Select Invoice Distribution: | EMAIL MAIL FAX |
| Email 1 or Fax | |
| Email 2 | |

| Project Information | |
|---|---|
| ALS Account # / Quote #: | |
| Job #: | |
| PO / AFE: | |
| LSD: | |
| ALS Lab Work Order # (lab use only): | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO#: |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |
| ALS Contact: | Sampler: Don Mimnagh |

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] 3 day [P3-25%] 2 day [P2-50%]

EMERGENCY: 1 Business day [E - 100%] Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

NUMBER OF CONTAINERS

SAMPLES ON HOLD

SUSPECTED HAZARD (see Special Instructions)

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type |
|---|---|---|---|---|
| | CHE-4 | July 15/19 | 9:10 | |
| | CHE-2 | " | 9:21 | |
| | CHE-3 | " | 9:15 | |

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen SIF Observations Yes No

Ice Packs Ice Cubes Custody seal intact Yes No

Cooling Initiated

| INITIAL COOLER TEMPERATURES °C | | | FINAL COOLER TEMPERATURES °C | | |
|---|---|---|---|---|---|
| | | 11.9 C | | | |

| SHIPMENT RELEASE (client use) | | |
|---|---|---|
| Released by: | Date: | Time: |

| INITIAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|
| Received by: | Date: JUL 17 2019 | Time: 1035 |

| FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|
| Received by: | Date: JUL 17 2019 | Time: 1035 |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental

www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2311372-COFC

COC Number: 17 - 747874

Page of

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | Hamlet of Chesterfield Inlet |
| Contact: | |
| Phone: | 867-858-5926 |
| | Company address below will appear on the final report |
| Street: | Box 10 |
| City/Province: | Chesterfield Inlet, NU |
| Postal Code: | X0C-0B0 |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | PDF EXCEL EDD (DIGITAL) |
| Quality Control (QC) Report with Report | YES NO |
| Compare Results to Criteria on Report - provide details below if box checked | |
| Select Distribution: | EMAIL MAIL FAX |
| Email 1 or Fax | foreman.chesterfield-inlet@ |
| Email 2 | |
| Email 3 | |

| Invoice To | | |
|---|---|---|
| | Same as Report To | YES NO |
| | Copy of Invoice with Report | YES NO |
| Company: | | |
| Contact: | | |

| Invoice Distribution | |
|---|---|
| Select Invoice Distribution: | EMAIL MAIL FAX |
| Email 1 or Fax | |
| Email 2 | |

| Project Information | |
|---|---|
| ALS Account # / Quote # | |
| Job #: | |
| PO / AFE: | |
| LSD: | |

| Oil and Gas Required Fields (client use) | |
|---|---|
| AFE/Cost Center: | PO# |
| Major/Minor Code: | Routing Code: |
| Requisitioner: | |
| Location: | |

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler: Don Mumford

**Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] 3 day [P3-25%] 2 day [P2-50%]

EMERGENCY: 1 Business day [E - 100%] Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

NUMBER OF CONTAINERS

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

SAMPLES ON HOLD

SUSPECTED HAZARD (see Special Instructions)

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type |
|---|---|---|---|---|
| | CHE-4 | July 15/19 | 9:10 | |
| | CHE-2 | " | 9:21 | |
| | CHE-3 | " | 9:15 | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen SIF Observations Yes No

Ice Packs Ice Cubes Custody seal intact Yes No

Cooling Initiated

| INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C |
|---|---|
| 11.6 C | |

| SHIPMENT RELEASE (client use) | | |
|---|---|---|
| Released by: | Date: | Time: |

| INITIAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|
| Received by: | Date: JUL 17 2019 | Time: 1035 |

| FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|
| Received by: | Date: JUL 17 2019 | Time: 1035 |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Hamlet of Chesterfield Inlet
ATTN: DON TANUYAK / ROY MULLINS
PO Box 10
Chesterfield Inlet NU X0C 0B0

Date Received: 22-JUN-19
Report Date: 10-JUL-19 17:12 (MT)
Version: FINAL

Client Phone: 867-898-9926

# Certificate of Analysis

## Lab Work Order #: L2297043

Project P.O. #: NOT SUBMITTED
Job Reference: CHESTERFIELD INLET
C of C Numbers:
Legal Site Desc:

Craig Riddell, B.Sc.Ag
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID | L2297043-1 | L2297043-2 | L2297043-3 | | |
|---|---|---|---|---|---|---|
| | Description | WASTE | WASTE | WASTE | | |
| | Sampled Date | 20-JUN-19 | 20-JUN-19 | 20-JUN-19 | | |
| | Sampled Time | | | | | |
| | Client ID | CHE-4 | CHE-2 | CHE-3A | | |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Physical Tests** | Conductivity (umhos/cm) | 287 | 480 | 303 | | |
| | Hardness (as CaCO3) (mg/L) | 59.2 HTC | 40.8 HTC | 44.9 HTC | | |
| | pH (pH units) | 7.44 | 7.13 | 7.08 | | |
| | Total Suspended Solids (mg/L) | 4.5 HTD | 65.2 HTD | 22.3 HTD | | |
| **Anions and Nutrients** | Alkalinity, Total (as CaCO3) (mg/L) | 75.4 | 158 | 94.2 | | |
| | Ammonia, Total (as N) (mg/L) | 2.29 | 27.7 | 15.2 | | |
| | Bicarbonate (HCO3) (mg/L) | 92.0 | 193 | 115 | | |
| | Carbonate (CO3) (mg/L) | <0.60 | <0.60 | <0.60 | | |
| | Chloride (Cl) (mg/L) | 34.8 | 36.9 | 23.5 | | |
| | Hydroxide (OH) (mg/L) | <0.34 | <0.34 | <0.34 | | |
| | Nitrate and Nitrite as N (mg/L) | <0.070 | <0.070 | <0.070 | | |
| | Nitrate (as N) (mg/L) | 0.045 | <0.020 | <0.020 | | |
| | Nitrite (as N) (mg/L) | <0.010 | <0.010 | <0.010 | | |
| | Phosphorus (P)-Total (mg/L) | 0.275 | 4.81 | 3.23 | | |
| | Sulfate (SO4) (mg/L) | 19.0 | 8.13 | 13.9 | | |
| **Organic / Inorganic Carbon** | Total Organic Carbon (mg/L) | 14.7 | 103 | 26.6 | | |
| **Total Metals** | Aluminum (Al)-Total (mg/L) | 0.0236 | 0.275 | 0.0511 | | |
| | Antimony (Sb)-Total (mg/L) | 0.00035 | 0.00051 | 0.00040 | | |
| | Arsenic (As)-Total (mg/L) | 0.00052 | 0.00090 | 0.00064 | | |
| | Barium (Ba)-Total (mg/L) | 0.00544 | 0.00732 | 0.00591 | | |
| | Beryllium (Be)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | | |
| | Bismuth (Bi)-Total (mg/L) | 0.000058 | 0.000861 | 0.000437 | | |
| | Boron (B)-Total (mg/L) | 0.121 | 0.071 | 0.069 | | |
| | Cadmium (Cd)-Total (mg/L) | 0.0000673 | 0.000219 | 0.0000559 | | |
| | Calcium (Ca)-Total (mg/L) | 15.4 | 11.0 | 13.1 | | |
| | Cesium (Cs)-Total (mg/L) | 0.000025 | 0.000085 | 0.000052 | | |
| | Chromium (Cr)-Total (mg/L) | 0.00072 | 0.00126 | 0.00055 | | |
| | Cobalt (Co)-Total (mg/L) | 0.00153 | 0.00062 | 0.00038 | | |
| | Copper (Cu)-Total (mg/L) | 0.00640 | 0.0794 | 0.0236 | | |
| | Iron (Fe)-Total (mg/L) | 0.286 | 1.73 | 2.43 | | |
| | Lead (Pb)-Total (mg/L) | 0.000376 | 0.00250 | 0.000888 | | |
| | Lithium (Li)-Total (mg/L) | 0.0023 | 0.0025 | 0.0017 | | |
| | Magnesium (Mg)-Total (mg/L) | 5.04 | 3.22 | 2.94 | | |
| | Manganese (Mn)-Total (mg/L) | 0.0478 | 0.0417 | 0.0820 | | |
| | Mercury (Hg)-Total (mg/L) | 0.0000070 | 0.0000340 | 0.0000100 | | |
| | Molybdenum (Mo)-Total (mg/L) | 0.000502 | 0.00155 | 0.000759 | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample ID | L2297043-1 | L2297043-2 | L2297043-3 | | |
|---|---|---|---|---|---|
| Description | WASTE | WASTE | WASTE | | |
| Sampled Date | 20-JUN-19 | 20-JUN-19 | 20-JUN-19 | | |
| Sampled Time | | | | | |
| Client ID | CHE-4 | CHE-2 | CHE-3A | | |
| **Grouping** / **Analyte** | | | | | |
| **WATER** | | | | | |
| **Total Metals** | | | | | |
| Nickel (Ni)-Total (mg/L) | 0.00301 | 0.00301 | 0.00188 | | |
| Phosphorus (P)-Total (mg/L) | 0.276 | 4.46 | 3.45 | | |
| Potassium (K)-Total (mg/L) | 9.40 | 11.7 | 8.26 | | |
| Rubidium (Rb)-Total (mg/L) | 0.00737 | 0.0149 | 0.0100 | | |
| Selenium (Se)-Total (mg/L) | 0.000131 | 0.000615 | 0.000186 | | |
| Silicon (Si)-Total (mg/L) | 1.14 | 1.13 | 0.73 | | |
| Silver (Ag)-Total (mg/L) | 0.000035 | 0.000153 | 0.000076 | | |
| Sodium (Na)-Total (mg/L) | 28.0 | 23.7 | 16.2 | | |
| Strontium (Sr)-Total (mg/L) | 0.0768 | 0.0490 | 0.0893 | | |
| Sulfur (S)-Total (mg/L) | 7.06 | 4.11 | 5.11 | | |
| Tellurium (Te)-Total (mg/L) | <0.00020 | <0.00020 | <0.00020 | | |
| Thallium (Tl)-Total (mg/L) | <0.000010 | 0.000016 | <0.000010 | | |
| Thorium (Th)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | | |
| Tin (Sn)-Total (mg/L) | 0.00013 | 0.00082 | 0.00064 | | |
| Titanium (Ti)-Total (mg/L) | 0.00061 | 0.0132 | 0.00349 | | |
| Tungsten (W)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | | |
| Uranium (U)-Total (mg/L) | 0.000357 | 0.000818 | 0.00108 | | |
| Vanadium (V)-Total (mg/L) | <0.00050 | 0.00106 | 0.00052 | | |
| Zinc (Zn)-Total (mg/L) | 0.0162 | 0.0905 | 0.0471 | | |
| Zirconium (Zr)-Total (mg/L) | <0.00020 | 0.00065 | 0.00050 | | |
| **Aggregate Organics** | | | | | |
| Biochemical Oxygen Demand (mg/L) | 3.2 | 117 | 20.3 | | |
| BOD Carbonaceous (mg/L) | <2.0 | 111 | 16.5 | | |
| Oil and Grease (mg/L) | <5.0 | 31.8 DLM | <5.0 | | |
| Phenols (4AAP) (mg/L) | 0.0011 | 0.0694 | 0.0390 | | |
| **Volatile Organic Compounds** | | | | | |
| Benzene (mg/L) | | | <0.00050 | | |
| Ethyl benzene (mg/L) | | | <0.00050 | | |
| Toluene (mg/L) | | | 0.0036 | | |
| o-Xylene (mg/L) | | | <0.00050 | | |
| m+p-Xylenes (mg/L) | | | <0.00040 | | |
| Xylenes (Total) (mg/L) | | | <0.00064 | | |
| F1 (C6-C10) (mg/L) | | | <0.10 | | |
| F1-BTEX (mg/L) | | | <0.10 | | |
| Total Hydrocarbons (C6-C50) (mg/L) | | | 2.01 | | |
| Surrogate: 4-Bromofluorobenzene (SS) (%) | | | 107.0 | | |
| **Hydrocarbons** | | | | | |
| F2 (C10-C16) (mg/L) | | | 0.19 | | |
| F3 (C16-C34) (mg/L) | | | 1.49 | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID | L2297043-1 | L2297043-2 | L2297043-3 | | |
|---|---|---|---|---|---|---|
| | Description | WASTE | WASTE | WASTE | | |
| | Sampled Date | 20-JUN-19 | 20-JUN-19 | 20-JUN-19 | | |
| | Sampled Time | | | | | |
| | Client ID | CHE-4 | CHE-2 | CHE-3A | | |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Hydrocarbons** | F4 (C34-C50) (mg/L) | | | 0.33 | | |
| | Surrogate: 2-Bromobenzotrifluoride (%) | | | 83.4 | | |
| **Polycyclic Aromatic Hydrocarbons** | Acenaphthene (mg/L) | <0.000020 | <0.000020 | | | |
| | Acenaphthylene (mg/L) | <0.000020 | <0.000020 | | | |
| | Acridine (mg/L) | <0.000020 | 0.000047 | | | |
| | Anthracene (mg/L) | <0.000010 | <0.000010 | | | |
| | Benzo(a)anthracene (mg/L) | <0.000010 | <0.000010 | | | |
| | Benzo(a)pyrene (mg/L) | <0.0000050 | <0.0000050 | | | |
| | Benzo(b&j)fluoranthene (mg/L) | <0.000010 | <0.000010 | | | |
| | Benzo(g,h,i)perylene (mg/L) | <0.000020 | <0.000020 | | | |
| | Benzo(k)fluoranthene (mg/L) | <0.000010 | <0.000010 | | | |
| | Chrysene (mg/L) | <0.000020 | <0.000020 | | | |
| | Dibenzo(a,h)anthracene (mg/L) | <0.0000050 | 0.0000111 EMPC | | | |
| | Fluoranthene (mg/L) | <0.000020 | <0.000020 | | | |
| | Fluorene (mg/L) | <0.000020 | 0.000028 EMPC | | | |
| | Indeno(1,2,3-cd)pyrene (mg/L) | <0.000010 | <0.000010 | | | |
| | 1-Methyl Naphthalene (mg/L) | <0.000020 | 0.000024 | | | |
| | 2-Methyl Naphthalene (mg/L) | <0.000020 | <0.000020 | | | |
| | Naphthalene (mg/L) | <0.000050 | <0.000050 | | | |
| | Phenanthrene (mg/L) | <0.000050 | <0.000050 | | | |
| | Pyrene (mg/L) | <0.000010 | <0.000010 | | | |
| | Quinoline (mg/L) | <0.000020 | <0.000020 | | | |
| | Surrogate: Acenaphthene d10 (%) | 82.9 | 91.4 | | | |
| | Surrogate: Acridine d9 (%) | 119.4 | 94.5 | | | |
| | Surrogate: Chrysene d12 (%) | 86.7 | 109.0 | | | |
| | Surrogate: Naphthalene d8 (%) | 85.1 | 116.3 | | | |
| | Surrogate: Phenanthrene d10 (%) | 88.6 | 104.3 | | | |
| | B(a)P Total Potency Equivalent (mg/L) | <0.000030 | <0.000030 | | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# Reference Information

**QC Samples with Qualifiers & Comments:**

| QC Type Description | Parameter | Qualifier | Applies to Sample Number(s) |
|---|---|---|---|
| Matrix Spike | Aluminum (Al)-Total | MS-B | L2297043-1, -2, -3 |
| Matrix Spike | Barium (Ba)-Total | MS-B | L2297043-1, -2, -3 |
| Matrix Spike | Calcium (Ca)-Total | MS-B | L2297043-1, -2, -3 |
| Matrix Spike | Magnesium (Mg)-Total | MS-B | L2297043-1, -2, -3 |
| Matrix Spike | Manganese (Mn)-Total | MS-B | L2297043-1, -2, -3 |
| Matrix Spike | Potassium (K)-Total | MS-B | L2297043-1, -2, -3 |
| Matrix Spike | Sodium (Na)-Total | MS-B | L2297043-1, -2, -3 |
| Matrix Spike | Strontium (Sr)-Total | MS-B | L2297043-1, -2, -3 |
| Matrix Spike | Sulfur (S)-Total | MS-B | L2297043-1, -2, -3 |

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| EMPC | Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification. |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| HTD | Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **ALK-CO3CO3-CALC-WP** | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| **ALK-HCO3HCO3-CALC-WP** | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| **ALK-OHOH-CALC-WP** | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| **ALK-TITR-WP** | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| **BOD-CBOD-WP** | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| **BOD-WP** | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| **BTEXS+F1-HSMS-WP** | Water | BTX plus F1 by GCMS | EPA 8260C / EPA 5021A |

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

| | | | |
|---|---|---|---|
| **C-TOC-HTC-WP** | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

| | | | |
|---|---|---|---|
| **CL-IC-N-WP** | Water | Chloride in Water by IC | EPA 300.1 (mod) |

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| **EC-WP** | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

# Reference Information

**F1-F4-CALC-WP** Water CCME Total Hydrocarbons CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

**F2-F4-FID-WP** Water CCME PHC F2-F4 in Water EPA 3511

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

**HARDNESS-CALC-WP** Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-T-CVAA-WP** Water Mercury Total EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**MET-T-CCMS-WP** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-COL-WP** Water Ammonia by colour APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

**NO2+NO3-CALC-WP** Water Nitrate+Nitrite CALCULATION

**NO2-IC-N-WP** Water Nitrite in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-IC-N-WP** Water Nitrate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OG-GRAV-WP** Water Oil & Grease - Gravimetric EPA 1664 (modified)

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

**P-T-COL-WP** Water Phosphorus, Total APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

**PAH,PANH-WP** Water Polyaromatic Hydrocarbons (PAHs) EPA 3511/8270D (mod)

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

**PH-WP** Water pH APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

# Reference Information

| | | | |
|---|---|---|---|
| **PHENOLS-4AAP-WT** | Water | Phenol (4AAP) | EPA 9066 |

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

| | | | |
|---|---|---|---|
| **SO4-IC-N-WP** | Water | Sulfate in Water by IC | EPA 300.1 (mod) |

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

| | | | |
|---|---|---|---|
| **SOLIDS-TOTSUS-WP** | Water | Total Suspended Solids | APHA 2540 D (modified) |

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WP** | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |

Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |

**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour 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.*
*mg/kg - milligrams per kilogram based on dry weight of sample.*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
*mg/L - milligrams per litre.*
*< - Less than.*
*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

# Quality Control Report

Workorder: L2297043 Report Date: 11-JUL-19 

Client: Hamlet of Chesterfield Inlet
PO Box 10
Chesterfield Inlet NU X0C 0B0
Contact: DON TANUYAK / ROY MULLINS

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R4692372** | | | | | | | | |
| **WG3094030-19 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 103.8 | | % | | 85-115 | 28-JUN-19 |
| **WG3094030-16 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 28-JUN-19 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R4691436** | | | | | | | | |
| **WG3085242-2 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 105.7 | | % | | 85-115 | 22-JUN-19 |
| **WG3085242-1 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 22-JUN-19 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R4691436** | | | | | | | | |
| **WG3085242-2 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 103.5 | | % | | 85-115 | 22-JUN-19 |
| **WG3085242-1 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 22-JUN-19 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R4695793** | | | | | | | | |
| **WG3092989-2 LCS** | | | | | | | | |
| Benzene | | | 90.1 | | % | | 70-130 | 29-JUN-19 |
| Toluene | | | 93.4 | | % | | 70-130 | 29-JUN-19 |
| Ethyl benzene | | | 100.9 | | % | | 70-130 | 29-JUN-19 |
| o-Xylene | | | 103.6 | | % | | 70-130 | 29-JUN-19 |
| m+p-Xylenes | | | 104.6 | | % | | 70-130 | 29-JUN-19 |
| **WG3092989-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 70.1 | | % | | 70-130 | 29-JUN-19 |
| **WG3092989-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 29-JUN-19 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 29-JUN-19 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 29-JUN-19 |
| o-Xylene | | | <0.00030 | | mg/L | | 0.0003 | 29-JUN-19 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 29-JUN-19 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 29-JUN-19 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 94.0 | | % | | 70-130 | 29-JUN-19 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R4696200** | | | | | | | | |
| **WG3098093-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 103.4 | | % | | 80-120 | 05-JUL-19 |
| **WG3098093-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 05-JUL-19 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4688975** | | | | | | | | |
| **WG3085512-6 LCS** | | | | | | | | |
| Chloride (Cl) | | | 105.0 | | % | | 90-110 | 22-JUN-19 |
| **WG3085512-5 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 22-JUN-19 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R4692372** | | | | | | | | |
| **WG3094030-18 LCS** | | | | | | | | |
| Conductivity | | | 99.4 | | % | | 90-110 | 28-JUN-19 |
| **WG3094030-16 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 28-JUN-19 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R4699009** | | | | | | | | |
| **WG3092259-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 103.7 | | % | | 70-130 | 07-JUL-19 |
| F3 (C16-C34) | | | 106.3 | | % | | 70-130 | 07-JUL-19 |
| F4 (C34-C50) | | | 115.0 | | % | | 70-130 | 07-JUL-19 |
| **WG3092259-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 07-JUL-19 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 07-JUL-19 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 07-JUL-19 |
| Surrogate: 2-Bromobenzotrifluoride | | | 88.0 | | % | | 60-140 | 07-JUL-19 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R4694968** | | | | | | | | |
| **WG3097150-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 95.0 | | % | | 80-120 | 05-JUL-19 |
| **WG3097150-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005C | | mg/L | | 0.000005 | 05-JUL-19 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R4694301** | | | | | | | | |
| **WG3094084-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 102.8 | | % | | 80-120 | 03-JUL-19 |
| Antimony (Sb)-Total | | | 103.5 | | % | | 80-120 | 03-JUL-19 |
| Arsenic (As)-Total | | | 99.6 | | % | | 80-120 | 03-JUL-19 |
| Barium (Ba)-Total | | | 99.9 | | % | | 80-120 | 03-JUL-19 |
| Beryllium (Be)-Total | | | 102.4 | | % | | 80-120 | 03-JUL-19 |
| Bismuth (Bi)-Total | | | 98.1 | | % | | 80-120 | 03-JUL-19 |
| Boron (B)-Total | | | 106.7 | | % | | 80-120 | 03-JUL-19 |
| Cadmium (Cd)-Total | | | 101.1 | | % | | 80-120 | 03-JUL-19 |
| Calcium (Ca)-Total | | | 97.8 | | % | | 80-120 | 03-JUL-19 |
| Cesium (Cs)-Total | | | 103.5 | | % | | 80-120 | 03-JUL-19 |
| Chromium (Cr)-Total | | | 100.3 | | % | | 80-120 | 03-JUL-19 |
| Cobalt (Co)-Total | | | 99.9 | | % | | 80-120 | 03-JUL-19 |
| Copper (Cu)-Total | | | 99.96 | | % | | 80-120 | 03-JUL-19 |
| Iron (Fe)-Total | | | 98.1 | | % | | 80-120 | 03-JUL-19 |
| Lead (Pb)-Total | | | 100.2 | | % | | 80-120 | 03-JUL-19 |
| Lithium (Li)-Total | | | 104.1 | | % | | 80-120 | 03-JUL-19 |
| Magnesium (Mg)-Total | | | 106.4 | | % | | 80-120 | 03-JUL-19 |
| Manganese (Mn)-Total | | | 98.7 | | % | | 80-120 | 03-JUL-19 |
| Molybdenum (Mo)-Total | | | 105.4 | | % | | 80-120 | 03-JUL-19 |
| Nickel (Ni)-Total | | | 98.5 | | % | | 80-120 | 03-JUL-19 |
| Potassium (K)-Total | | | 100.2 | | % | | 80-120 | 03-JUL-19 |
| Phosphorus (P)-Total | | | 104.1 | | % | | 80-120 | 03-JUL-19 |
| Rubidium (Rb)-Total | | | 99.5 | | % | | 80-120 | 03-JUL-19 |
| Selenium (Se)-Total | | | 101.6 | | % | | 80-120 | 03-JUL-19 |
| Silicon (Si)-Total | | | 103.6 | | % | | 80-120 | 03-JUL-19 |
| Silver (Ag)-Total | | | 101.8 | | % | | 80-120 | 03-JUL-19 |
| Sodium (Na)-Total | | | 99.0 | | % | | 80-120 | 03-JUL-19 |
| Strontium (Sr)-Total | | | 107.6 | | % | | 80-120 | 03-JUL-19 |
| Sulfur (S)-Total | | | 87.7 | | % | | 80-120 | 03-JUL-19 |
| Tellurium (Te)-Total | | | 98.8 | | % | | 80-120 | 03-JUL-19 |
| Thallium (Tl)-Total | | | 98.9 | | % | | 80-120 | 03-JUL-19 |
| Thorium (Th)-Total | | | 102.0 | | % | | 80-120 | 03-JUL-19 |
| Tin (Sn)-Total | | | 101.1 | | % | | 80-120 | 03-JUL-19 |
| Titanium (Ti)-Total | | | 99.2 | | % | | 80-120 | 03-JUL-19 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R4694301** | | | | | | | | |
| **WG3094084-2 LCS** | | | | | | | | |
| Tungsten (W)-Total | | | 97.9 | | % | | 80-120 | 03-JUL-19 |
| Uranium (U)-Total | | | 107.9 | | % | | 80-120 | 03-JUL-19 |
| Vanadium (V)-Total | | | 100.3 | | % | | 80-120 | 03-JUL-19 |
| Zinc (Zn)-Total | | | 99.0 | | % | | 80-120 | 03-JUL-19 |
| Zirconium (Zr)-Total | | | 102.8 | | % | | 80-120 | 03-JUL-19 |
| **WG3094084-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 03-JUL-19 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Beryllium (Be)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 03-JUL-19 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 03-JUL-19 |
| Cadmium (Cd)-Total | | | <0.0000050 | | mg/L | | 0.000005 | 03-JUL-19 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 03-JUL-19 |
| Cesium (Cs)-Total | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 03-JUL-19 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 03-JUL-19 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 03-JUL-19 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 03-JUL-19 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 03-JUL-19 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 03-JUL-19 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 03-JUL-19 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 03-JUL-19 |
| Phosphorus (P)-Total | | | <0.030 | | mg/L | | 0.03 | 03-JUL-19 |
| Rubidium (Rb)-Total | | | <0.00020 | | mg/L | | 0.0002 | 03-JUL-19 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 03-JUL-19 |
| Silicon (Si)-Total | | | <0.10 | | mg/L | | 0.1 | 03-JUL-19 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 03-JUL-19 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 03-JUL-19 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R4694301** | | | | | | | | |
| **WG3094084-1 MB** | | | | | | | | |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 03-JUL-19 |
| Tellurium (Te)-Total | | | <0.00020 | | mg/L | | 0.0002 | 03-JUL-19 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Thorium (Th)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 03-JUL-19 |
| Tungsten (W)-Total | | | <0.00010 | | mg/L | | 0.0001 | 03-JUL-19 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 03-JUL-19 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 03-JUL-19 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 03-JUL-19 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R4689962** | | | | | | | | |
| **WG3090992-2 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 107.5 | | % | | 85-115 | 28-JUN-19 |
| **WG3090992-1 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 28-JUN-19 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4688975** | | | | | | | | |
| **WG3085512-6 LCS** | | | | | | | | |
| Nitrite (as N) | | | 102.3 | | % | | 90-110 | 22-JUN-19 |
| **WG3085512-5 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 22-JUN-19 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4688975** | | | | | | | | |
| **WG3085512-6 LCS** | | | | | | | | |
| Nitrate (as N) | | | 99.0 | | % | | 90-110 | 22-JUN-19 |
| **WG3085512-5 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 22-JUN-19 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R4693005** | | | | | | | | |
| **WG3093527-2 LCS** | | | | | | | | |
| Oil and Grease | | | 93.3 | | % | | 70-130 | 03-JUL-19 |
| **WG3093527-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 03-JUL-19 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R4692451** | | | | | | | | |
| **WG3092355-3 DUP** | | **L2297043-1** | | | | | | |
| Phosphorus (P)-Total | | 0.275 | 0.273 | | mg/L | 0.5 | 20 | 02-JUL-19 |
| **WG3092355-2 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 98.6 | | % | | 80-120 | 02-JUL-19 |
| **WG3092355-1 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 02-JUL-19 |
| **PAH,PANH-WP** | **Water** | | | | | | | |
| **Batch R4693589** | | | | | | | | |
| **WG3094695-2 LCS** | | | | | | | | |
| 1-Methyl Naphthalene | | | 97.1 | | % | | 60-130 | 03-JUL-19 |
| 2-Methyl Naphthalene | | | 89.4 | | % | | 60-130 | 03-JUL-19 |
| Acenaphthene | | | 96.4 | | % | | 60-130 | 03-JUL-19 |
| Acenaphthylene | | | 83.3 | | % | | 60-130 | 03-JUL-19 |
| Anthracene | | | 86.3 | | % | | 60-130 | 03-JUL-19 |
| Acridine | | | 99.0 | | % | | 60-130 | 03-JUL-19 |
| Benzo(a)anthracene | | | 91.5 | | % | | 60-130 | 03-JUL-19 |
| Benzo(a)pyrene | | | 88.8 | | % | | 60-130 | 03-JUL-19 |
| Benzo(b&j)fluoranthene | | | 89.4 | | % | | 60-130 | 03-JUL-19 |
| Benzo(g,h,i)perylene | | | 89.8 | | % | | 60-130 | 03-JUL-19 |
| Benzo(k)fluoranthene | | | 93.0 | | % | | 60-130 | 03-JUL-19 |
| Chrysene | | | 92.5 | | % | | 60-130 | 03-JUL-19 |
| Dibenzo(a,h)anthracene | | | 109.9 | | % | | 60-130 | 03-JUL-19 |
| Fluoranthene | | | 99.4 | | % | | 60-130 | 03-JUL-19 |
| Fluorene | | | 96.9 | | % | | 60-130 | 03-JUL-19 |
| Indeno(1,2,3-cd)pyrene | | | 85.7 | | % | | 60-130 | 03-JUL-19 |
| Naphthalene | | | 101.9 | | % | | 50-130 | 03-JUL-19 |
| Phenanthrene | | | 112.6 | | % | | 60-130 | 03-JUL-19 |
| Pyrene | | | 99.1 | | % | | 60-130 | 03-JUL-19 |
| Quinoline | | | 105.4 | | % | | 60-130 | 03-JUL-19 |
| **WG3094695-1 MB** | | | | | | | | |
| 1-Methyl Naphthalene | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| 2-Methyl Naphthalene | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH,PANH-WP** | **Water** | | | | | | | |
| **Batch R4693589** | | | | | | | | |
| **WG3094695-1 MB** | | | | | | | | |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Benzo(a)pyrene | | | <0.000005C | | mg/L | | 0.000005 | 03-JUL-19 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| Dibenzo(a,h)anthracene | | | <0.000005C | | mg/L | | 0.000005 | 03-JUL-19 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 03-JUL-19 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 03-JUL-19 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 03-JUL-19 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 03-JUL-19 |
| Surrogate: Acenaphthene d10 | | | 84.0 | | % | | 60-130 | 03-JUL-19 |
| Surrogate: Acridine d9 | | | 82.4 | | % | | 60-130 | 03-JUL-19 |
| Surrogate: Chrysene d12 | | | 107.2 | | % | | 60-130 | 03-JUL-19 |
| Surrogate: Naphthalene d8 | | | 86.4 | | % | | 50-130 | 03-JUL-19 |
| Surrogate: Phenanthrene d10 | | | 87.1 | | % | | 60-130 | 03-JUL-19 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R4692372** | | | | | | | | |
| **WG3094030-17 LCS** | | | | | | | | |
| pH | | | 7.32 | | pH units | | 7.3-7.5 | 28-JUN-19 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R4690317** | | | | | | | | |
| **WG3091117-6 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 98.4 | | % | | 85-115 | 28-JUN-19 |
| **WG3091117-5 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 28-JUN-19 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4688975** | | | | | | | | |
| **WG3085512-6 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 106.0 | | % | | 90-110 | 22-JUN-19 |
| **WG3085512-5 MB** | | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R4688975** | | | | | | | | |
| **WG3085512-5 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 22-JUN-19 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R4694354** | | | | | | | | |
| **WG3094183-6 LCS** | | | | | | | | |
| Total Suspended Solids | | | 101.8 | | % | | 85-115 | 03-JUL-19 |
| **WG3094183-5 MB** | | | | | | | | |
| Total Suspended Solids | | | <2.0 | | mg/L | | 2 | 03-JUL-19 |

**Legend:**

| | |
|---|---|
| Limit | ALS Control Limit (Data Quality Objectives) |
| DUP | Duplicate |
| RPD | Relative Percent Difference |
| N/A | Not Available |
| LCS | Laboratory Control Sample |
| SRM | Standard Reference Material |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| ADE | Average Desorption Efficiency |
| MB | Method Blank |
| IRM | Internal Reference Material |
| CRM | Certified Reference Material |
| CCV | Continuing Calibration Verification |
| CVS | Calibration Verification Standard |
| LCSD | Laboratory Control Sample Duplicate |

# Quality Control Report



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| Total Suspended Solids | | | | | | | |
| | 1 | 20-JUN-19 | 03-JUL-19 10:00 | 7 | 13 | days | EHT |
| | 2 | 20-JUN-19 | 03-JUL-19 10:00 | 7 | 13 | days | EHT |
| | 3 | 20-JUN-19 | 03-JUL-19 10:00 | 7 | 13 | days | EHT |
| pH | | | | | | | |
| | 1 | 20-JUN-19 | 28-JUN-19 12:00 | 0.25 | 192 | hours | EHTR-FM |
| | 2 | 20-JUN-19 | 28-JUN-19 12:00 | 0.25 | 192 | hours | EHTR-FM |
| | 3 | 20-JUN-19 | 28-JUN-19 12:00 | 0.25 | 192 | hours | EHTR-FM |

**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. |
| EHTL: | Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry. |
| EHT: | Exceeded ALS recommended hold time prior to analysis. |
| Rec. HT: | ALS recommended hold time (see units). |

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2297043 were received on 22-JUN-19 00:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

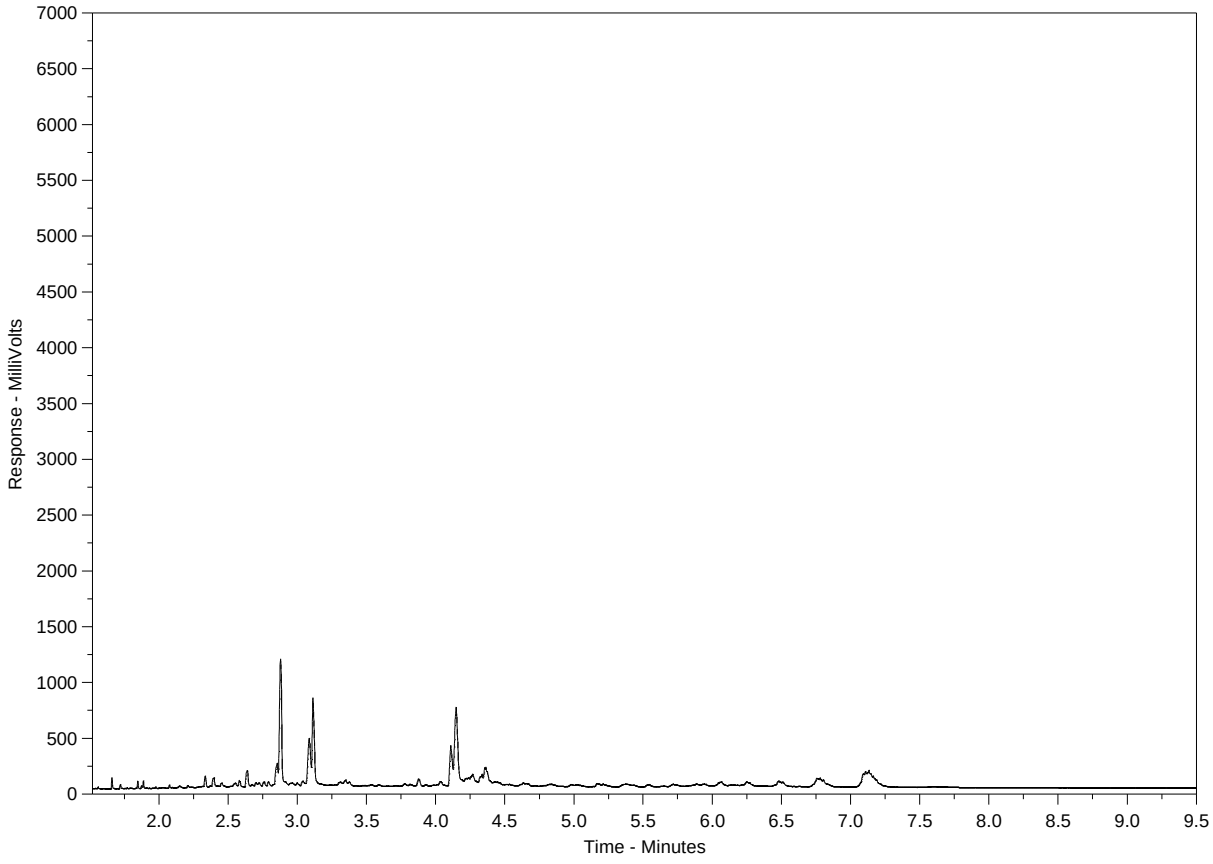
---

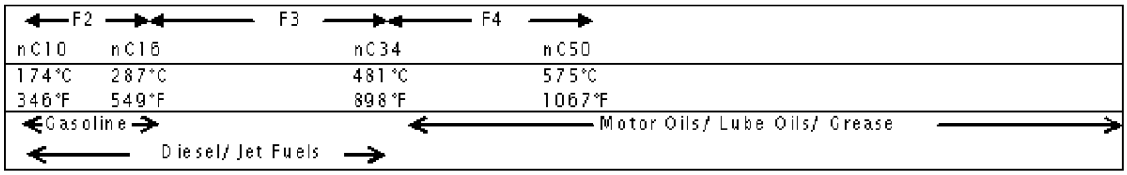
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2297043-3
Client Sample ID: CHE-3A




The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2297043-COFC

COC Number: 17 - 747872

Page of

| Report To | Contact and company name below will appear on the final report |
|---|---|
| Company: | Hamlet of Chesterfield Inlet |
| Contact: | |
| Phone: | 867-898-9926 |
| | Company address below will appear on the final report |
| Street: | Box 10 |
| City/Province: | Chesterfield Inlet N.U. |
| Postal Code: | X0C-0G0 |
| Invoice To | Same as Report To ☐ YES ☐ NO |
| | Copy of Invoice with Report ☐ YES ☐ NO |
| Company: | |
| Contact: | |

| Report Format / Distribution | |
|---|---|
| Select Report Format: | ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL) |
| Quality Control (QC) Report with Report | ☐ YES ☐ NO |
| ☐ Compare Results to Criteria on Report - provide details below if box checked | |
| Select Distribution: | ☐ EMAIL ☐ MAIL ☐ FAX |
| Email 1 or Fax | foreman@chesterfield-inlet.ca |
| Email 2 | |
| Email 3 | |

| Invoice Distribution | |
|---|---|
| Select Invoice Distribution: | ☐ EMAIL ☐ MAIL ☐ FAX |
| Email 1 or Fax | |
| Email 2 | |

| Project Information | | Oil and Gas Required Fields (client use) | |
|---|---|---|---|
| ALS Account # / Quote #: | | AFE/Cost Center: | PO# |
| Job #: | | Major/Minor Code: | Routing Code: |
| PO / AFE: | | Requisitioner: | |
| LSD: | | Location: | |
| ALS Lab Work Order # (lab use only): | | ALS Contact: | Sampler: Don Mumford |

**Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)**

Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days):
- 4 day [P4-20%] ☐
- 3 day [P3-25%] ☐
- 2 day [P2-50%] ☐

EMERGENCY:
- 1 Business day [E - 100%] ☐
- Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

NUMBER OF CONTAINERS

SAMPLES ON HOLD

SUSPECTED HAZARD (see Special Instructions)

| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type |
|---|---|---|---|---|
| | CHE-4 | June 21/19 | 15:45 | |
| | CHE-2 | | 16:45 | |
| | CHE-3a | | 17:45 | |

**Drinking Water (DW) Samples[1] (client use)**

Are samples taken from a Regulated DW System?

☐ YES ☐ NO

Are samples for human consumption/ use?

☐ YES ☐ NO

**Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)**

**SAMPLE CONDITION AS RECEIVED (lab use only)**

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

| INITIAL COOLER TEMPERATURES °C | | | | FINAL COOLER TEMPERATURES °C | | | |
|---|---|---|---|---|---|---|---|
| | | | | | 12C | | |

| SHIPMENT RELEASE (client use) | | | INITIAL SHIPMENT RECEPTION (lab use only) | | | FINAL SHIPMENT RECEPTION (lab use only) | | |
|---|---|---|---|---|---|---|---|---|
| Released by: | Date: | Time: | Received by: | Date: | Time: | Received by: LHD | Date: 22JUN19 | Time: |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

# Appendix D

# Spills

Occurance Date

Start date

Jan | 1 | 2019

End date

Dec | 31 | 2019

Spill Region

- Any -

Spill Location

--Chesterfield Inlet

Spill Location Description

Report Number

Items per page

100

Go | Reset


| Spill | Occurance Date | Spill Region | Location | Location Description | Product Spilled | Quantity | Measurement | Spill Cause | Lead Agency |
|---|---|---|---|---|---|---|---|---|---|
| spill-2019293 | July 20, 2019 | | Chesterfield Inlet, Community, Nunavut | in the water near chesterfield inlet | | Unknown Quantity | | | CCG/TCMSS - Canadian Coast Guard/Transport Canada, Marine Safety and Security |

Displaying 1 - 1 of 1

CSV

# Appendix E

# Spills

Occurance Date

Start date

Jan | 1 | 2019

End date

Dec | 31 | 2019

Spill Region

- Any -

Spill Location

--Chesterfield Inlet

Spill Location Description

Report Number

Items per page

100

Go | Reset


| Spill | Occurance Date | Spill Region | Location | Location Description | Product Spilled | Quantity | Measurement | Spill Cause | Lead Agency |
|---|---|---|---|---|---|---|---|---|---|
| spill-2019293 | July 20, 2019 | | Chesterfield Inlet, Community, Nunavut | in the water near chesterfield inlet | | Unknown Quantity | | | CCG/TCMSS - Canadian Coast Guard/Transport Canada, Marine Safety and Security |

Displaying 1 - 1 of 1

CSV

**CHE-2**

| | | 2015 | | | 2016 | | 2017 | | | 2018 | | | | 2019 | | Statistics | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **22-Jun-15** | **29-Jul-15** | **18-Aug-15** | **11-Aug-16** | **09-Sep-16** | **13-Jun-17** | **31-Jul-17** | **16-Aug-17** | **20-Jun-18** | **31-Jul-18** | **17-Aug-18** | **11-Sep-18** | **20-Jun-19** | **15-Jul-19** | **Min** | **Max** | **Average** |
| **Alkalinity** | | | | | | | | | | | | | | | | | | |
| Bicarbonate (HCO3) | mg/L | 413 | 269 | 352 | 104 | 176 | 92.6 | 312 | 128 | 108 | N/A | N/A | 245 | 193 | 365 | 92.6 | 413 | 229.80 |
| Carbonate (CO3) | mg/L | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | N/A | N/A | 0.60 | 0.60 | 0.60 | 0.6 | 0.6 | 0.60 |
| Hydroxide (OH) | mg/L | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | N/A | N/A | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| Total (as CaCO3) | mg/L | 339 | 221 | 289 | 85.4 | 144 | 75.9 | 256 | 105 | 88.9 | N/A | N/A | 201 | 158 | 300 | 75.9 | 339 | 188.60 |
| **Ammonia by Colour** | | | | | | | | | | | | | | | | | | |
| Total (as N) | mg/L | 61.7 | 0.077 | 0.099 | 4.53 | 6.87 | 7.9 | 49.3 | 0.021 | 13.3 | N/A | N/A | 23.6 | 27.7 | 64.3 | 0.021 | 64.3 | 21.62 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | | | | | | | | | | | | |
| Biochemical Oxygen Demand | mg/L | 257 | 2.0 | 2.0 | 8.7 | 360 | 9.6 | 229 | 2.0 | 17.8 | N/A | N/A | 36.6 | 3.2 | 306 | 2 | 360 | 102.83 |
| **Carbonaceous BOD** | | | | | | | | | | | | | | | | | | |
| BOD Carbonaceous | mg/L | 231 | 2.0 | 2.0 | 6.5 | 340 | 8.6 | 224 | 2.0 | 11.0 | N/A | N/A | 20.2 | 111 | 258 | 2 | 340 | 101.36 |
| **Chloride in Water by IC** | | | | | | | | | | | | | | | | | | |
| Chloride (Cl) | mg/L | 70.1 | 288 | 355 | 31.0 | 42.2 | 22.5 | 68.0 | 74.5 | 33.4 | N/A | N/A | 62.7 | 36.9 | 71.4 | 22.5 | 355 | 96.31 |
| **Conductivity** | | | | | | | | | | | | | | | | | | |
| Conductivity | umhos/cm | 946 | 1770 | 2260 | 392 | 560 | 267 | 775 | 515 | 456 | N/A | N/A | 623 | 480 | 879 | 267 | 2260 | 826.92 |
| **Fecal Coliforms** | | | | | | | | | | | | | | | | | | |
| Fecal Coliforms | MPN/100mL | 110000 | 4 | 4 | 930 | 240 | 190 | 24200 | 10 | 2010 | N/A | N/A | 8660 | | | 4 | 110000 | 14624.80 |
| **Hardness Calculated** | | | | | | | | | | | | | | | | | | |
| Hardness (as CaCO3) | mg/L | 56.5 | 360 | 524 | 111 | 194 | 50.0 | 60.8 | 169 | 117 | N/A | N/A | 99.2 | 40.8 | 60.9 | 40.8 | 524 | 153.60 |
| **Mercury Total** | | | | | | | | | | | | | | | | | | |
| Mercury (Hg) | mg/L | 0.00020 | 0.000020 | 0.000020 | 0.000020 | 0.00040 | 0.0000052 | 0.000050 | 0.0000050 | 0.0000056 | N/A | N/A | 0.000005 | 0.0000340 | 0.0000120 | 0.000005 | 0.0004 | 0.000065 |
| **Nitrate in Water by IC** | | | | | | | | | | | | | | | | | | |
| Nitrate (as N) | mg/L | 0.020 | 0.040 | 0.040 | 0.316 | 0.020 | 0.020 | 0.020 | 0.020 | 0.233 | N/A | N/A | 0.594 | 0.020 | 0.040 | 0.02 | 0.594 | 0.12 |
| **Nitrate + Nitrite** | | | | | | | | | | | | | | | | | | |
| Nitrate and Nitrite as N | mg/L | 0.070 | 0.070 | 0.070 | 0.348 | 0.070 | 0.070 | 0.070 | 0.070 | 0.248 | N/A | N/A | 0.664 | 0.070 | 0.070 | 0.07 | 0.664 | 0.16 |
| **Nitrite in Water by IC** | | | | | | | | | | | | | | | | | | |
| Nitrite (as N) | mg/L | 0.010 | 0.020 | 0.020 | 0.032 | 0.011 | 0.010 | 0.010 | 0.010 | 0.015 | N/A | N/A | 0.069 | 0.010 | 0.020 | 0.01 | 0.069 | 0.02 |
| **Oil & Grease - Gravimetric** | | | | | | | | | | | | | | | | | | |
| Oil and Grease | mg/L | 52.4 | 2.0 | 2.0 | 5.0 | 8.6 | 10.8 | 51.7 | 5.0 | 5 | N/A | N/A | 5 | 31.8 | 73.6 | 2 | 73.6 | 21.08 |
| **Phenol** | | | | | | | | | | | | | | | | | | |
| Phenols | mg/L | 0.158 | 0.0033 | 0.0010 | 0.0017 | 0.0030 | 0.0135 | 0.190 | 0.0010 | 0.0058 | N/A | N/A | 0.001 | 0.0694 | 0.201 | 0.001 | 0.201 | 0.05 |
| **Phosphorus, Total** | | | | | | | | | | | | | | | | | | |
| Phosphorus (P) | mg/L | 12.1 | 0.084 | 0.076 | 1.93 | 50.8 | 2.66 | 8.72 | 0.021 | 1.70 | N/A | N/A | 2.65 | 4.46 | 8.18 | 0.021 | 50.8 | 7.78 |
| **Sulfate in Water by IC** | | | | | | | | | | | | | | | | | | |
| Sulfate (SO4) | mg/L | 12.9 | 255 | 419 | 55.2 | 73.8 | 14.4 | 9.76 | 54.9 | 85.5 | N/A | N/A | 14.4 | 8.13 | 17.8 | 8.13 | 419 | 85.07 |
| **Total Metals by ICP-MS** | | | | | | | | | | | | | | | | | | |
| Aluminium (Al) | mg/L | 0.249 | 0.0256 | 0.0163 | 0.154 | 1.71 | 0.0545 | 0.5060 | 0.0121 | 0.0228 | N/A | N/A | 0.0355 | 0.275 | 0.254 | 0.0121 | 1.71 | 0.28 |
| Arsenic (As) | mg/L | 0.00064 | 0.00078 | 0.00107 | 0.00080 | 0.0037 | 0.00062 | 0.00091 | 0.00033 | 0.00091 | N/A | N/A | 0.00091 | 0.00090 | 0.00076 | 0.00033 | 0.0037 | 0.0010 |
| Cadmium (Cd) | mg/L | 0.000194 | 0.000023 | 0.000010 | 0.000073 | 0.00073 | 0.000035 | 0.000243 | 0.0000142 | 0.0000212 | N/A | N/A | 0.0000079 | 0.000219 | 0.000135 | 7.9E-06 | 0.00073 | 0.0001 |
| Calcium (Ca) | mg/L | 14.4 | 107 | 151 | 36.6 | 62.1 | 15.5 | 15.7 | 46.1 | 37.8 | N/A | N/A | 29.4 | 11 | 15.3 | 11 | 151 | 45.16 |
| Chromium (Cr) | mg/L | 0.0013 | 0.0010 | 0.0010 | 0.0010 | 0.010 | 0.0010 | 0.00158 | 0.00027 | 0.00024 | N/A | N/A | 0.00041 | 0.00126 | 0.00143 | 0.00024 | 0.01 | 0.0017 |
| Cobalt (Co) | mg/L | 0.00060 | 0.00070 | 0.00089 | 0.00051 | 0.0039 | 0.00035 | 0.00107 | 0.00017 | 0.00047 | N/A | N/A | 0.00042 | 0.00062 | 0.00067 | 0.00017 | 0.0039 | 0.0009 |
| Copper (Cu) | mg/L | 0.150 | 0.00338 | 0.00142 | 0.00960 | 0.0580 | 0.00687 | 0.101 | 0.00076 | 0.00488 | N/A | N/A | 0.00393 | 0.0794 | 0.122 | 0.00076 | 0.15 | 0.05 |
| Iron (Fe) | mg/L | 0.90 | 0.34 | 0.43 | 6.15 | 26.9 | 2.35 | 4.43 | 1.00 | 2.39 | N/A | N/A | 1.37 | 1.73 | 3.06 | 0.34 | 26.9 | 4.25 |
| Lead (Pb) | mg/L | 0.00339 | 0.000172 | 0.000156 | 0.00192 | 0.0165 | 0.000387 | 0.00430 | 0.000050 | 0.000196 | N/A | N/A | 0.000184 | 0.00250 | 0.00174 | 0.00005 | 0.0165 | 0.0026 |
| Magnesium (Mg) | mg/L | 5.01 | 22.4 | 35.8 | 4.74 | 9.54 | 2.74 | 5.27 | 13.1 | 5.53 | N/A | N/A | 6.29 | 3.22 | 5.5 | 2.74 | 35.8 | 9.93 |
| Manganese (Mn) | mg/L | 0.0483 | 0.0369 | 0.0673 | 0.0839 | 0.301 | 0.118 | 0.0622 | 0.0203 | 0.200 | N/A | N/A | 0.129 | 0.0417 | 0.0479 | 0.0203 | 0.301 | 0.096 |
| Nickel (Ni) | mg/L | 0.0038 | 0.0056 | 0.0064 | 0.0028 | 0.020 | 0.0020 | 0.00552 | 0.00185 | 0.00204 | N/A | N/A | 0.00335 | 0.00301 | 0.00396 | 0.00185 | 0.02 | 0.005 |
| Potassium (K) | mg/L | 24.4 | 38.9 | 65.2 | 3.84 | 13.7 | 7.50 | 18.7 | 8.19 | 12.5 | N/A | N/A | 14.7 | 11.7 | 20.6 | 3.84 | 65.2 | 19.99 |
| Sodium (Na) | mg/L | 53.4 | 164 | 262 | 26.7 | 38.0 | 14.1 | 50.4 | 59.3 | 25.4 | N/A | N/A | 50.9 | 23.7 | 54.8 | 14.1 | 262 | 68.56 |
| Zinc (Zn) | mg/L | 0.166 | 0.0134 | 0.0061 | 0.0342 | 0.251 | 0.0119 | 0.202 | 0.0030 | 0.0102 | N/A | N/A | 0.0063 | 0.0905 | 0.163 | 0.003 | 0.251 | 0.08 |
| **Total Organic Carbon by Combustion** | | | | | | | | | | | | | | | | | | |
| Total Organic Carbon | mg/L | 160 | 21.7 | 25.7 | 14.1 | 252 | 11.9 | 126 | 8.24 | 24.6 | N/A | N/A | 29.5 | 103 | 157 | 8.24 | 252 | 77.81 |
| **Total Suspended Solids** | | | | | | | | | | | | | | | | | | |
| Total Suspended Solids | mg/L | 132 | <5.0 | 5.0 | 255 | 507 | 18.0 | 113 | 15.0 | 30.5 | N/A | N/A | 52.9 | 65.2 | 313 | 5 | 507 | 136.96 |
| **pH** | | | | | | | | | | | | | | | | | | |
| pH | pH Units | 6.93 | 7.70 | 7.18 | 6.90 | 7.53 | 7.08 | 7.22 | 7.27 | 7.06 | N/A | N/A | 7.62 | 7.13 | 7.73 | 6.9 | 7.73 | 7.28 |
| Benzene | mg/L | / | 0.00050 | 0.00050 | 0.00050 | 0.00050 | / | 0.00050 | / | N/A | N/A | N/A | N/A | | 0.00050 | 0.00050 | 0.00050 | 0.00050 |
| Toluene | mg/L | / | 0.0010 | 0.0010 | 0.0010 | 0.00010 | / | 0.0027 | / | N/A | N/A | N/A | N/A | | 0.0097 | 0.0001 | 0.0097 | 0.0026 |
| Ethyl Benzene | mg/L | / | 0.00050 | 0.00050 | 0.00050 | 0.00050 | / | 0.00050 | / | N/A | N/A | N/A | N/A | | 0.00050 | 0.00050 | 0.00050 | 0.00050 |
| o-Xylene | mg/L | / | 0.00050 | 0.00050 | 0.00050 | 0.00050 | / | 0.00050 | / | N/A | N/A | N/A | N/A | | 0.00050 | 0.00050 | 0.00050 | 0.00050 |
| F1 (C6-C10) | mg/L | / | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | / | N/A | N/A | N/A | N/A | | 0.14 | 0.1 | 0.14 | 0.11 |
| F2 (C10-C16) | mg/L | / | 0.25 | 0.25 | 0.10 | 0.12 | 0.10 | 1.74 | / | N/A | N/A | N/A | N/A | | 2.33 | 0.1 | 2.33 | 0.70 |
| F3 (C16-C34) | mg/L | / | 0.32 | 0.25 | 0.28 | 2.23 | 0.53 | 27.1 | / | N/A | N/A | N/A | N/A | | 29.5 | 0.25 | 29.5 | 8.60 |
| F4 (C34-C50) | mg/L | / | 0.25 | 0.37 | 0.25 | 0.88 | 0.25 | 8.94 | / | N/A | N/A | N/A | N/A | | 7.16 | 0.25 | 8.94 | 2.59 |
| Total Hydrocarbons (C6-C50) | mg/L | / | 0.44 | 0.44 | 0.38 | 3.22 | 0.53 | 37.8 | / | N/A | N/A | N/A | N/A | | 39.1 | 0.38 | 39.1 | 11.70 |

**Chesterfield Inlet**
**CHE-3A**

| | | 2016 | 2017 | | | 2018 | | | | 2019 | | Statistics | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **09-Sep-16** | **13-Jun-17** | **31-Jul-17** | **16-Aug-17** | **20-Jun-18** | **31-Jul-18** | **17-Aug-18** | **11-Sep-18** | **20-Jun-19** | **15-Jul-19** | **Min** | **Max** | **Average** |
| **Alkalinity** | | | | | | | | | | | | | | |
| Bicarbonate (HCO3) | mg/L | 439 | 32.9 | 143 | 315 | 226 | 217 | 213 | 419 | 115 | 173 | 32.9 | 439 | 229.29 |
| Carbonate (CO3) | mg/L | 0.60 | 0.60 | 0.60 | 0.60 | <0.60 | <0.60 | <0.60 | <0.60 | 0.60 | 0.6 | 0.6 | 0.6 | 0.6 |
| Hydroxide (OH) | mg/L | 0.34 | 0.34 | 0.34 | 0.34 | <0.34 | <0.34 | <0.34 | <0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |
| Total (as CaCO3) | mg/L | 360 | 27.0 | 117 | 259 | 185 | 178 | 175 | 343 | 94.2 | 142 | 27 | 360 | 188.02 |
| **Ammonia by Colour** | | | | | | | | | | | | | | |
| Total (as N) | mg/L | 75.4 | 3.69 | 0.034 | 43.3 | 39.6 | 19.6 | 21.6 | 77.9 | 15.2 | 17.6 | 0.034 | 77.9 | 31.39 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | | | | | | | | |
| Biochemical Oxygen Demand | mg/L | 83 | 4.4 | 29.1 | 133 | 198 | 116 | 58 | 354 | 20.3 | 17.4 | 4.4 | 354 | 90.58 |
| **Carbonaceous BOD** | | | | | | | | | | | | | | |
| BOD Carbonaceous | mg/L | 40 | 3.4 | 12.4 | 124 | 215 | 32.1 | 30.5 | 372 | 16.5 | 12.2 | 3.4 | 372 | 71.46 |
| **Chloride in Water by IC** | | | | | | | | | | | | | | |
| Chloride (Cl) | mg/L | 60.4 | 10.8 | 45.4 | 77.6 | 43.8 | 66.3 | 48.5 | 76.5 | 23.5 | 34.6 | 10.8 | 77.6 | 49.29 |
| **Conductivity** | | | | | | | | | | | | | | |
| Conductivity | umhos/cm | 1000 | 98.7 | 421 | 786 | 557 | 583 | 531 | 1010 | 303 | 434 | 98.7 | 1010 | 574.08 |
| **Fecal Coliforms** | | | | | | | | | | | | | | |
| Fecal Coliforms | MPN/100mL | 110000 | 24200 | 3450 | 24200 | >24200 | 8660 | >24200 | 10100 | | | 3450 | 110000 | 30102 |
| **Hardness Calculated** | | | | | | | | | | | | | | |
| Hardness (as CaCO3) | mg/L | 53.6 | 16.1 | 86.5 | 98.6 | 39.6 | 86 | 94.4 | 57 | 44.9 | 74.6 | 16.1 | 98.6 | 67.97 |
| **Mercury Total** | | | | | | | | | | | | | | |
| Mercury (Hg) | mg/L | 0.00020 | 0.0000088 | 0.0000250 | 0.000050 | 0.0000195 | <0.000025 | <0.000025 | 0.00007 | 0.0000100 | 0.000005 | 0.000005 | 0.0002 | 0.0001 |
| **Nitrate in Water by IC** | | | | | | | | | | | | | | |
| Nitrate (as N) | mg/L | 0.040 | 0.021 | 0.606 | 0.020 | <0.020 | 0.162 | 0.086 | <0.040 | 0.020 | 0.206 | 0.02 | 0.606 | 0.15 |
| **Nitrate + Nitrite** | | | | | | | | | | | | | | |
| Nitrate and Nitrite as N | mg/L | 0.070 | 0.070 | 0.709 | 0.070 | <0.070 | 0.22 | 0.171 | <0.070 | 0.070 | 0.271 | 0.07 | 0.709 | 0.21 |
| **Nitrite in Water by IC** | | | | | | | | | | | | | | |
| Nitrite (as N) | mg/L | 0.020 | 0.010 | 0.103 | 0.010 | <0.010 | 0.058 | 0.085 | <0.020 | 0.010 | 0.066 | 0.01 | 0.103 | 0.05 |
| **Oil & Grease - Gravimetric** | | | | | | | | | | | | | | |
| Oil and Grease | mg/L | 56.4 | 5.0 | 5.0 | 44.9 | 42.7 | <5.0 | <5.0 | 55.2 | 5.0 | 5 | 5 | 56.4 | 25.21 |
| **Phenol** | | | | | | | | | | | | | | |
| Phenols | mg/L | 0.226 | 0.0066 | 0.0010 | 0.213 | 0.114 | <0.0010 | 0.0023 | 0.161 | 0.0390 | 0.0012 | 0.001 | 0.226 | 0.08 |
| **Phosphorus, Total** | | | | | | | | | | | | | | |
| Phosphorus (P) | mg/L | 12.8 | 0.491 | 1.84 | 8.56 | 6.51 | 5.4 | 3.9 | 11.2 | 3.45 | 3.38 | 0.491 | 12.8 | 5.67 |
| **Sulfate in Water by IC** | | | | | | | | | | | | | | |
| Sulfate (SO4) | mg/L | 19.0 | 1.86 | 27.4 | 12.2 | 8.85 | 11.8 | 15.6 | 11.3 | 5.11 | 23.1 | 1.86 | 27.4 | 14.15 |
| **Total Metals by ICP-MS** | | | | | | | | | | | | | | |
| Aluminium (Al) | mg/L | 0.497 | 0.500 | 0.0348 | 0.558 | 0.489 | 0.101 | 0.0981 | 0.336 | 0.0511 | 0.0537 | 0.0348 | 0.558 | 0.2477 |
| Arsenic (As) | mg/L | 0.00085 | 0.00028 | 0.00087 | 0.00120 | 0.00058 | 0.0011 | 0.00093 | 0.00074 | 0.00064 | 0.00093 | 0.00028 | 0.0012 | 0.0008 |
| Cadmium (Cd) | mg/L | 0.000196 | 0.000031 | 0.0000233 | 0.000198 | 0.000183 | 0.000028 | 0.0000293 | 0.00026 | 0.0000559 | 0.0000217 | 0.0000217 | 0.00026 | 0.0001 |
| Calcium (Ca) | mg/L | 13.0 | 4.11 | 26.5 | 26.5 | 9.53 | 24.8 | 28.8 | 14.4 | 13.1 | 22.5 | 4.11 | 28.8 | 19.30 |
| Chromium (Cr) | mg/L | 0.0015 | 0.0010 | 0.00034 | 0.00198 | 0.00172 | 0.00162 | 0.00059 | 0.00146 | 0.00055 | 0.00072 | 0.00034 | 0.00198 | 0.0011 |
| Cobalt (Co) | mg/L | 0.00070 | 0.00070 | 0.00046 | 0.00122 | 0.00058 | 0.00082 | 0.00071 | 0.00058 | 0.00038 | 0.00048 | 0.00038 | 0.00122 | 0.0007 |
| Copper (Cu) | mg/L | 0.158 | 0.00821 | 0.00741 | 0.0933 | 0.134 | 0.0183 | 0.0183 | 0.119 | 0.0236 | 0.0116 | 0.00741 | 0.158 | 0.0509 |
| Iron (Fe) | mg/L | 1.07 | 0.500 | 1.46 | 16.1 | 1.31 | 2.48 | 3.37 | 2.79 | 2.43 | 2.16 | 0.5 | 16.1 | 3.60 |
| Lead (Pb) | mg/L | 0.00230 | 0.000889 | 0.000416 | 0.00305 | 0.00247 | 0.00068 | 0.000836 | 0.00208 | 0.000888 | 0.000454 | 0.000416 | 0.00305 | 0.0013 |
| Magnesium (Mg) | mg/L | 5.13 | 1.41 | 4.96 | 7.85 | 3.83 | 5.81 | 5.46 | 5.14 | 2.94 | 4.49 | 1.41 | 7.85 | 4.80 |
| Manganese (Mn) | mg/L | 0.0534 | 0.0289 | 0.112 | 0.124 | 0.0456 | 0.203 | 0.199 | 0.0502 | 0.0820 | 0.119 | 0.0289 | 0.203 | 0.1079 |
| Nickel (Ni) | mg/L | 0.0040 | 0.0020 | 0.00358 | 0.00681 | 0.00281 | 0.00652 | 0.00446 | 0.0036 | 0.00188 | 0.00333 | 0.00188 | 0.00681 | 0.0040 |
| Potassium (K) | mg/L | 26.3 | 2.62 | 9.54 | 21.2 | 15.5 | 20.5 | 14.4 | 26.1 | 8.26 | 10.7 | 2.62 | 26.3 | 15.51 |
| Sodium (Na) | mg/L | 50.5 | 6.60 | 36.8 | 64.3 | 35.5 | 53.8 | 42.9 | 60.6 | 16.2 | 29.6 | 6.6 | 64.3 | 40.14 |
| Zinc (Zn) | mg/L | 0.207 | 0.0106 | 0.0152 | 0.163 | 0.172 | 0.0306 | 0.0335 | 0.206 | 0.0471 | 0.0161 | 0.0106 | 0.207 | 0.0810 |
| **Total Organic Carbon by Combustion** | | | | | | | | | | | | | | |
| Total Organic Carbon | mg/L | 178 | 3.86 | 25.8 | 133 | 149 | 71.9 | 33.2 | 139 | 26.6 | 28.2 | 3.86 | 178 | 71.06 |
| **Total Suspended Solids** | | | | | | | | | | | | | | |
| Total Suspended Solids | mg/L | 115 | 23.0 | 56 | 120 | 88.4 | 224 | 110 | 133 | 22.3 | 36.1 | 22.3 | 224 | 93.27 |
| **pH** | | | | | | | | | | | | | | |
| pH | pH Units | 7.92 | 7.03 | 7.49 | 7.11 | 7.06 | 7.6 | 7.58 | 7.17 | 7.08 | 7.87 | 7.03 | 7.92 | 7.43 |
| Benzene | mg/L | | | | | | | | | 0.00050 | | | | |
| Toluene | mg/L | | | | | | | | | 0.0036 | | | | |
| Ethyl Benzene | mg/L | | | | | | | | | 0.00050 | | | | |
| o-Xylene | mg/L | | | | | | | | | 0.00050 | | | | |
| F1 (C6-C10) | mg/L | | | | | | | | | 0.10 | | | | |
| F2 (C10-C16) | mg/L | | | | | | | | | 0.19 | | | | |
| F3 (C16-C34) | mg/L | | | | | | | | | 1.49 | | | | |
| F4 (C34-C50) | mg/L | | | | | | | | | 0.33 | | | | |
| Total Hydrocarbons (C6-C50) | mg/L | | | | | | | | | 2.01 | | | | |

**Chesterfield Inlet**
**CHE-4**

| | | 2014 | | 2015 | | | 2016 | | | 2017 | | 2018 | | | | 2019 | | Statistics | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **24-Jul-14** | **19-Aug-14** | **22-Jun-15** | **29-Jul-15** | **18-Aug-15** | **06-Jul-16** | **11-Aug-16** | **09-Sep-16** | **31-Jul-17** | **16-Aug-17** | **June 20, 2018** | **31-Jul-18** | **17-Aug-18** | **11-Sep-18** | **20-Jun-19** | **15-Jul-19** | **Min** | **Max** | **Average** |
| **Alkalinity** | | | | | | | | | | | | | | | | | | | | |
| Bicarbonate (HCO3) | mg/L | 61 | 375 | 33.4 | 69.4 | 74.7 | 73.0 | 96.1 | 109 | 111 | 333 | 83.4 | 96.4 | 60.4 | 210 | 92 | 134 | 33.4 | 375 | 133.56 |
| Carbonate (CO3) | mg/L | 12 | 12 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.6 | 12 | 2.12 |
| Hydroxide (OH) | mg/L | 6.8 | 6.8 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 6.8 | 1.2 |
| Total (as CaCO3) | mg/L | 50 | 307 | 27.4 | 56.9 | 61.2 | 59.8 | 78.8 | 89.3 | 90.8 | 273 | 68.4 | 79 | 49.5 | 172 | 75.4 | 110 | 27.4 | 307 | 103.0 |
| **Ammonia by Colour** | | | | | | | | | | | | | | | | | | | | |
| Total (as N) | mg/L | 0.026 | 66.7 | 0.053 | 0.117 | 0.010 | 0.036 | 0.022 | 0.010 | 0.011 | 48.2 | 2.33 | 0.071 | 0.01 | 17.1 | 2.29 | 0.035 | 0.01 | 66.7 | 8.979 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | | | | | | | | | | | | | | |
| Biochemical Oxygen Demand | mg/L | 6.0 | 336 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 530 | 6.2 | 3.1 | 2 | 34.6 | 3.2 | 14 | 2 | 530 | 62.9 |
| **Carbonaceous BOD** | | | | | | | | | | | | | | | | | | | | |
| BOD Carbonaceous | mg/L | 6.0 | 310 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.0 | 450 | 3.0 | 2 | 2 | 19.6 | 2 | 10 | 2 | 450 | 51.2 |
| **Chloride in Water by IC** | | | | | | | | | | | | | | | | | | | | |
| Chloride (Cl) | mg/L | 45.2 | 70.0 | 17.3 | 29.3 | 35.6 | 41.9 | 57.9 | 55.8 | 72.8 | 74.0 | 29.5 | 71.3 | 50.2 | 63.5 | 34.8 | 82.7 | 17.3 | 82.7 | 53.5 |
| **Conductivity** | | | | | | | | | | | | | | | | | | | | |
| Conductivity | umhos/cm | 278 | 988 | 130 | 225 | 259 | 277 | 469 | 458 | 533 | 791 | 325 | 426 | 306 | 583 | 287 | 825 | 130 | 988 | 456 |
| **Fecal Coliforms** | | | | | | | | | | | | | | | | | | | | |
| Fecal Coliforms | MPN/100mL | 7 | 110000 | 4 | 3 | 3 | 3 | 4 | 3 | 10 | 24200 | 100 | 10 | 10 | 4350 | | | 3 | 110000 | 10662 |
| **Hardness Calculated** | | | | | | | | | | | | | | | | | | | | |
| Hardness (as CaCO3) | mg/L | 46.8 | 44.2 | 24.1 | 47.9 | 61.8 | 56.7 | 119 | 114 | 149 | 95.4 | 87.5 | 85.9 | 65.3 | 105 | 59.2 | 227 | 24.1 | 227 | 86.8 |
| **Mercury Total** | | | | | | | | | | | | | | | | | | | | |
| Mercury (Hg) | mg/L | 0.000020 | 0.00020 | 0.000020 | 0.000020 | 0.00020 | 0.000020 | 0.000020 | 0.000020 | 0.0000050 | 0.0000250 | 0.0000050 | 0.000005 | 0.000005 | 0.000005 | 0.0000070 | 0.0000050 | 0.000005 | 0.000200 | 0.000038 |
| **Nitrate in Water by IC** | | | | | | | | | | | | | | | | | | | | |
| Nitrate (as N) | mg/L | 0.050 | 0.050 | 0.566 | 0.020 | 0.020 | 0.089 | 0.020 | 0.020 | 0.020 | 0.040 | 0.302 | 0.02 | 0.02 | 0.691 | 0.045 | 0.020 | 0.020 | 0.691 | 0.113 |
| **Nitrate + Nitrite** | | | | | | | | | | | | | | | | | | | | |
| Nitrate and Nitrite as N | mg/L | 0.071 | 0.071 | 0.579 | 0.070 | 0.070 | 0.089 | 0.070 | 0.070 | 0.070 | 0.070 | 0.320 | 0.07 | 0.07 | 0.72 | 0.070 | 0.070 | 0.07 | 0.72 | 0.149 |
| **Nitrite in Water by IC** | | | | | | | | | | | | | | | | | | | | |
| Nitrite (as N) | mg/L | 0.050 | 0.050 | 0.012 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.020 | 0.018 | 0.01 | 0.01 | 0.029 | 0.010 | 0.010 | 0.010 | 0.050 | 0.017 |
| **Oil & Grease - Gravimetric** | | | | | | | | | | | | | | | | | | | | |
| Oil and Grease | mg/L | 2.0 | 65.6 | 2.0 | 2.0 | 2.0 | 5.0 | 5.0 | 5.0 | 5.0 | 106 | 5.0 | 5 | 5 | 5 | 5 | 5 | 2.0 | 106.0 | 15.0 |
| **Phenol** | | | | | | | | | | | | | | | | | | | | |
| Phenols | mg/L | 0.0010 | 0.125 | 0.0010 | 0.0017 | 0.0010 | 0.0010 | 0.0017 | 0.0018 | 0.0010 | 0.107 | 0.0010 | 0.001 | 0.001 | 0.001 | 0.0011 | 0.0014 | 0.0010 | 0.1250 | 0.0165 |
| **Phosphorus, Total** | | | | | | | | | | | | | | | | | | | | |
| Phosphorus (P) | mg/L | 0.026 | 10.8 | 0.040 | 0.012 | 0.017 | 0.044 | 0.022 | 0.012 | 0.019 | 6.28 | 0.358 | 0.0583 | 0.0032 | 1.7 | 0.275 | 0.195 | 0.0032 | 10.8 | 1.3002 |
| **Sulfate in Water by IC** | | | | | | | | | | | | | | | | | | | | |
| Sulfate (SO4) | mg/L | 13.3 | 15.9 | 6.08 | 9.63 | 18.0 | 9.51 | 57.2 | 50.2 | 69.6 | 5.68 | 50.3 | 24.2 | 19.6 | 20.2 | 19 | 193 | 5.68 | 193 | 35.4066667 |
| **Total Metals by ICP-MS** | | | | | | | | | | | | | | | | | | | | |
| Aluminium (Al) | mg/L | 0.0329 | 0.821 | 0.0250 | 0.0338 | 0.0607 | 0.0229 | 0.0092 | 0.0101 | 0.0067 | 0.389 | 0.0075 | 0.0383 | 0.036 | 0.0225 | 0.0236 | 0.0099 | 0.0067 | 0.821 | 0.10277333 |
| Arsenic (As) | mg/L | 0.00042 | 0.00080 | 0.00028 | 0.00043 | 0.00038 | 0.00040 | 0.00025 | 0.00023 | 0.00024 | 0.00127 | 0.00074 | 0.00056 | 0.00033 | 0.00078 | 0.00052 | 0.000066 | 0.000066 | 0.00127 | 0.00046373 |
| Cadmium (Cd) | mg/L | 0.000010 | 0.000317 | 0.000016 | 0.000011 | 0.000013 | 0.000021 | 0.000020 | 0.000014 | 0.0000271 | 0.000150 | 0.0000322 | 0.0000103 | 0.0000097 | 0.0000064 | 0.0000673 | 0.0000127 | 6.4E-06 | 0.000317 | 0.000047 |
| Calcium (Ca) | mg/L | 12.2 | 10.4 | 6.33 | 12.9 | 16.7 | 15.3 | 34.4 | 30.9 | 42.8 | 25.5 | 26.1 | 23.3 | 17.1 | 32.3 | 15.4 | 68.1 | 6.33 | 68.1 | 24.242 |
| Chromium (Cr) | mg/L | 0.0010 | 0.0029 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.00024 | 0.00169 | 0.00026 | 0.00092 | 0.00036 | 0.00039 | 0.00072 | 0.00056 | 0.00024 | 0.0029 | 0.00098533 |
| Cobalt (Co) | mg/L | 0.00020 | 0.00137 | 0.00020 | 0.00032 | 0.00032 | 0.00044 | 0.00034 | 0.00027 | 0.00024 | 0.00118 | 0.00299 | 0.0003 | 0.00022 | 0.0004 | 0.00153 | 0.00059 | 0.0002 | 0.00153 | 0.000528 |
| Copper (Cu) | mg/L | 0.00722 | 0.142 | 0.00741 | 0.00659 | 0.00583 | 0.00679 | 0.00142 | 0.00131 | 0.00135 | 0.0656 | 0.00318 | 0.00295 | 0.00683 | 0.00965 | 0.00640 | 0.00128 | 0.00128 | 0.142 | 0.01817533 |
| Iron (Fe) | mg/L | 0.12 | 1.45 | 0.10 | 0.11 | 0.28 | 0.076 | 0.277 | 0.059 | 0.106 | 9.38 | 0.932 | 0.375 | 0.124 | 1.28 | 0.286 | 0.396 | 0.059 | 9.38 | 0.96126667 |
| Lead (Pb) | mg/L | 0.000090 | 0.00807 | 0.000090 | 0.000090 | 0.000152 | 0.000090 | 0.000090 | 0.000090 | 0.000102 | 0.00231 | 0.000135 | 0.000138 | 0.000102 | 0.000602 | 0.000376 | 0.00057 | 0.00009 | 0.00807 | 0.00086413 |
| Magnesium (Mg) | mg/L | 3.95 | 4.46 | 2.03 | 3.82 | 4.90 | 4.48 | 8.09 | 8.89 | 10.2 | 7.73 | 5.43 | 6.7 | 5.47 | 6.02 | 5.04 | 13.7 | 2.03 | 13.7 | 6.36533333 |
| Manganese (Mn) | mg/L | 0.00284 | 0.0554 | 0.00030 | 0.00259 | 0.00305 | 0.00126 | 0.00200 | 0.00867 | 0.00138 | 0.198 | 0.405 | 0.00506 | 0.00308 | 0.0928 | 0.0478 | 0.0287 | 0.0003 | 0.198 | 0.0302 |
| Nickel (Ni) | mg/L | 0.0030 | 0.0055 | 0.0021 | 0.0034 | 0.0032 | 0.0042 | 0.0027 | 0.0021 | 0.00236 | 0.00648 | 0.00239 | 0.0037 | 0.00315 | 0.00306 | 0.00301 | 0.00379 | 0.0021 | 0.00648 | 0.00345 |
| Potassium (K) | mg/L | 3.04 | 21.9 | 4.95 | 1.84 | 3.23 | 5.31 | 4.54 | 6.98 | 5.90 | 20.7 | 10.3 | 4.3 | 2.7 | 13.7 | 9.4 | 13.1 | 1.84 | 21.9 | 8.106 |
| Sodium (Na) | mg/L | 32.3 | 51.0 | 15.1 | 26.8 | 31.2 | 32.9 | 47.7 | 41.6 | 48.1 | 62.7 | 25.3 | 52.3 | 38.2 | 49.5 | 28 | 79.3 | 15.1 | 79.3 | 42.4 |
| Zinc (Zn) | mg/L | 0.0023 | 0.241 | 0.0020 | 0.0020 | 0.0026 | 0.0068 | 0.0028 | 0.0032 | 0.0030 | 0.102 | 0.0117 | 0.003 | 0.0126 | 0.0101 | 0.0162 | 0.0118 | 0.002 | 0.241 | 0.0281 |
| **Total Organic Carbon by Combustion** | | | | | | | | | | | | | | | | | | | | |
| Total Organic Carbon | mg/L | 13.5 | 165 | 8.7 | 12.2 | 9.9 | 12.9 | 9.96 | 10.7 | 8.38 | 145 | 13.7 | 9.53 | 7.93 | 22.3 | 14.7 | 18.5 | 7.93 | 165 | 31.28 |
| **Total Suspended Solids** | | | | | | | | | | | | | | | | | | | | |
| Total Suspended Solids | mg/L | 5.0 | 146 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 6.0 | 167 | 5.3 | 3.5 | 2 | 45.7 | 4.5 | 38.9 | 2 | 167 | 29.9066667 |
| **pH** | | | | | | | | | | | | | | | | | | | | |
| pH | pH Units | 7.73 | 7.34 | 7.21 | 7.41 | 7.36 | 7.73 | 7.42 | 8.03 | 7.56 | 7.18 | 7.10 | 7.31 | 7.45 | 7.4 | 7.44 | 7.58 | 7.18 | 8.03 | 7.48 |
| Benzene | mg/L | / | / | / | / | / | 0.0005 | / | / | / | / | | | | | | | 0.0005 | 0.0005 | 0.0005 |
| Toluene | mg/L | / | / | / | / | / | 0.001 | / | / | / | / | | | | | | | 0.001 | 0.001 | 0.001 |
| Ethyl Benzene | mg/L | / | / | / | / | / | 0.0005 | / | / | / | / | | | | | | | 0.0005 | 0.0005 | 0.0005 |
| o-Xylene | mg/L | / | / | / | / | / | 0.0005 | / | / | / | / | | | | | | | 0.0005 | 0.0005 | 0.0005 |
| F1 (C6-C10) | mg/L | / | / | / | / | / | 0.1 | / | / | / | / | | | | | | | 0.1 | 0.1 | 0.1 |
| F2 (C10-C16) | mg/L | / | / | / | / | / | 0.1 | / | / | / | / | | | | | | | 0.1 | 0.1 | 0.1 |
| F3 (C16-C34) | mg/L | / | / | / | / | / | 0.25 | / | / | / | / | | | | | | | 0.25 | 0.25 | 0.25 |
| F4 (C34-C50) | mg/L | / | / | / | / | / | 0.25 | / | / | / | / | | | | | | | 0.25 | 0.25 | 0.25 |
| Total Hydrocarbons (C6-C50) | mg/L | / | / | / | / | / | 0.38 | / | / | / | / | | | | | | | 0.38 | 0.38 | 0.38 |