

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

YEAR BEING REPORTED: 2018

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 (m³)	Quantity of Sewage Waste Discharged (Estimated, m³)
January	1,190.295	Same
February	1,193.471	Same
March	1,186.610	Same
April	1,220.089	Same
May	1,194.410	Same
June	1,131.612	Same
July	1,276.295	Same
August	1,388.447	Same
September	1,291.895	Same
October	1,357.867	Same
November	1,347.366	Same
December	970.221	Same
ANNUAL TOTAL	14,748.578	14,748.578

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

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

- 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;

-
- Flow meter installed at the freshwater intake at Puiqsuk Lake.
 - The settling pond was desludged and waste moved into an area within the Solid Waste Disposal Facility.
 - Segregation continues to improve within the Solid Waste Disposal Facility.

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

Spill No.	Date	Site Description	Commodity	Quantity
		NO SPILLS REPORTED		

- 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 and restoration work was completed in 2018.

- 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

ANNUAL REPORT FOR THE HAMLET OF CHESTERFIELD INLET

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 INAC Inspection took place on August 17th, 2018. A copy of the inspection report can be found in Appendix I.

Appendix A: CHE-4 Effluent Quality Limits – 1 page

Appendix B: Weekly Inspections at Monitoring Program Stations – 1 page

Appendix C: Certificate of Analysis June 20, 2018 – 20 pages

Appendix D: Certificate of Analysis July 31, 2018 – 18 pages

Appendix E: Certificate of Analysis August 17, 2018 – 13 pages

Appendix F: Certificate of Analysis September 11, 2018 – 24 pages

Appendix G: Hazardous Materials Spill Database, Chesterfield Inlet 2018 – 1 page

Appendix H: Chesterfield Inlet 2018 Monitoring Results Summary – 4 pages

Appendix I: INAC Inspection Report - 2 pages

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix A

2018 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-18	31-Jul-18	17-Aug-18	11-Sep-18
BOD ₅	80 mg/L	6.2	3.1	<2.0	34.6
Total Suspended Solids	100 mg/L	5.3	3.5	<2.0	45.7
Fecal Coliforms	1 x 10 ⁴ CFU/100mL	100	<10	<10	4350
Oil + Grease	no visible sheen	<5.0	<5.0	<5.0	<5.0
pH	between 6 and 9	7.10	7.31	7.45	7.4

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix B

Nunavut Water Board Licence No. 3BM-CHE1523

Chesterfield Inlet, NU

Part H, Item 4: Weekly Inspections at Monitoring Program Stations, May to August

Week	Starting Date	CHE-2			CHE-3			CHE-3a			CHE-4			Checked By
		Water Present (check)			Water Present (check)			Water Present (check)			Water Present (check)			
		Yes	No	Frozen	Yes	No	Frozen	Yes	No	Frozen	Yes	No	Frozen	
1	30-Apr-18			✓			✓			✓			✓	POV
2	07-May-18			✓			✓			✓			✓	
3	14-May-18			✓			✓			✓			✓	
4	21-May-18			✓			✓			✓			✓	
5	28-May-18			✓			✓			✓			✓	
6	04-Jun-18													
7	11-Jun-18													
8	18-Jun-18													
9	25-Jun-18													
10	02-Jul-18													
11	09-Jul-18													
12	16-Jul-18													
13	23-Jul-18													
14	30-Jul-18													
15	06-Aug-18													
16	13-Aug-18													
17	20-Aug-18													
18	27-Aug-18													

Monitoring Program Station Locations:

CHE-2: Runoff from Solid Waste Disposal Facilities

CHE-3: Effluent from Sewage Holding Cell 1

CHE-3a: Effluent from Sewage Holding Cell 2

CHE-4: Final Discharge Point for Effluent from the wetland treatment area prior to Finger Bay

* Fax Sheets Weekly to Connor Faulkner at CGS- Rankin Inlet. Fax: (867) 645-8143

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix C



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

Date Received: 21-JUN-18
Report Date: 16-JUL-18 11:28 (MT)
Version: FINAL

Client Phone: 867-898-9926

Certificate of Analysis

Lab Work Order #: L2116629
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.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2116629-1 CHE 4							
Sampled By: CLIENT on 20-JUN-18 @ 09:00							
Matrix: WATER							
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Acenaphthene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Acenaphthylene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Anthracene	<0.000010		0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Acridine	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(a)anthracene	<0.000020	DLM	0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(a)pyrene	<0.000010	DLM	0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Chrysene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	25-JUN-18	29-JUN-18	R4098266
Fluoranthene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Fluorene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Naphthalene	<0.000050		0.000050	mg/L	25-JUN-18	29-JUN-18	R4098266
Phenanthrene	<0.000050		0.000050	mg/L	25-JUN-18	29-JUN-18	R4098266
Pyrene	<0.000010		0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Quinoline	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	25-JUN-18	29-JUN-18	R4098266
Surrogate: Acenaphthene d10	103.8		40-130	%	25-JUN-18	29-JUN-18	R4098266
Surrogate: Acridine d9	111.3		40-130	%	25-JUN-18	29-JUN-18	R4098266
Surrogate: Chrysene d12	113.6		40-130	%	25-JUN-18	29-JUN-18	R4098266
Surrogate: Naphthalene d8	103.4		40-130	%	25-JUN-18	29-JUN-18	R4098266
Surrogate: Phenanthrene d10	113.4		40-130	%	25-JUN-18	29-JUN-18	R4098266
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	83.4		1.2	mg/L		25-JUN-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		25-JUN-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		25-JUN-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	68.4		1.0	mg/L		22-JUN-18	R4096165
Ammonia by colour							
Ammonia, Total (as N)	2.33		0.10	mg/L		26-JUN-18	R4098191
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	6.2		2.0	mg/L		22-JUN-18	R4103167
Carbonaceous BOD							
BOD Carbonaceous	3.0		2.0	mg/L		22-JUN-18	R4103167
Chloride in Water by IC							
Chloride (Cl)	29.5		0.50	mg/L		22-JUN-18	R4098085
Conductivity							
Conductivity	325		1.0	umhos/cm		22-JUN-18	R4096165
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	100		10	MPN/100mL		21-JUN-18	R4095211
Hardness Calculated							
Hardness (as CaCO3)	87.5	HTC	0.20	mg/L		27-JUN-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	25-JUN-18	26-JUN-18	R4098463

* 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
L2116629-1 CHE 4 Sampled By: CLIENT on 20-JUN-18 @ 09:00 Matrix: WATER							
Nitrate in Water by IC							
Nitrate (as N)	0.302		0.020	mg/L		22-JUN-18	R4098085
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.320		0.070	mg/L		27-JUN-18	
Nitrite in Water by IC							
Nitrite (as N)	0.018		0.010	mg/L		22-JUN-18	R4098085
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		02-JUL-18	R4110322
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		27-JUN-18	R4101052
Phosphorus, Total							
Phosphorus (P)-Total	0.358		0.0010	mg/L		29-JUN-18	R4108927
Sulfate in Water by IC							
Sulfate (SO4)	50.3		0.30	mg/L		22-JUN-18	R4098085
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0075		0.0030	mg/L	26-JUN-18	26-JUN-18	R4097970
Arsenic (As)-Total	0.00074		0.00010	mg/L	26-JUN-18	26-JUN-18	R4097970
Cadmium (Cd)-Total	0.0000322		0.0000050	mg/L	26-JUN-18	26-JUN-18	R4097970
Calcium (Ca)-Total	26.1		0.050	mg/L	26-JUN-18	26-JUN-18	R4097970
Chromium (Cr)-Total	0.00026		0.00010	mg/L	26-JUN-18	26-JUN-18	R4097970
Cobalt (Co)-Total	0.00299		0.00010	mg/L	26-JUN-18	26-JUN-18	R4097970
Copper (Cu)-Total	0.00318		0.00050	mg/L	26-JUN-18	26-JUN-18	R4097970
Iron (Fe)-Total	0.932		0.010	mg/L	26-JUN-18	26-JUN-18	R4097970
Lead (Pb)-Total	0.000135		0.000050	mg/L	26-JUN-18	26-JUN-18	R4097970
Magnesium (Mg)-Total	5.43		0.0050	mg/L	26-JUN-18	26-JUN-18	R4097970
Manganese (Mn)-Total	0.405		0.00010	mg/L	26-JUN-18	26-JUN-18	R4097970
Nickel (Ni)-Total	0.00239		0.00050	mg/L	26-JUN-18	26-JUN-18	R4097970
Potassium (K)-Total	10.3		0.050	mg/L	26-JUN-18	26-JUN-18	R4097970
Sodium (Na)-Total	25.3		0.050	mg/L	26-JUN-18	26-JUN-18	R4097970
Zinc (Zn)-Total	0.0117		0.0030	mg/L	26-JUN-18	26-JUN-18	R4097970
Total Organic Carbon by Combustion							
Total Organic Carbon	13.7		0.50	mg/L		12-JUL-18	R4124272
Total Suspended Solids							
Total Suspended Solids	5.3		2.0	mg/L		27-JUN-18	R4100099
pH							
pH	7.10		0.10	pH units		22-JUN-18	R4096165
L2116629-2 CHE 2 Sampled By: CLIENT on 20-JUN-18 @ 09:00 Matrix: WATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	108		1.2	mg/L		25-JUN-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		25-JUN-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		25-JUN-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	88.9		1.0	mg/L		22-JUN-18	R4096165
Ammonia by colour							
Ammonia, Total (as N)	13.3		2.0	mg/L		27-JUN-18	R4099627
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	17.8		6.0	mg/L		22-JUN-18	R4103167

* 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
L2116629-2 CHE 2 Sampled By: CLIENT on 20-JUN-18 @ 09:00 Matrix: WATER							
Carbonaceous BOD BOD Carbonaceous	11.0		6.0	mg/L		22-JUN-18	R4103167
Chloride in Water by IC Chloride (Cl)	33.4		0.50	mg/L		22-JUN-18	R4098085
Conductivity Conductivity	456		1.0	umhos/cm		22-JUN-18	R4096165
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	2010		10	MPN/100mL		21-JUN-18	R4095211
Hardness Calculated Hardness (as CaCO3)	117	HTC	0.20	mg/L		27-JUN-18	
Mercury Total Mercury (Hg)-Total	0.0000056		0.0000050	mg/L	25-JUN-18	26-JUN-18	R4098463
Nitrate in Water by IC Nitrate (as N)	0.233		0.020	mg/L		22-JUN-18	R4098085
Nitrate+Nitrite Nitrate and Nitrite as N	0.248		0.070	mg/L		27-JUN-18	
Nitrite in Water by IC Nitrite (as N)	0.015		0.010	mg/L		22-JUN-18	R4098085
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		02-JUL-18	R4110322
Phenol (4AAP) Phenols (4AAP)	0.0058		0.0010	mg/L		27-JUN-18	R4101052
Phosphorus, Total Phosphorus (P)-Total	1.70		0.0020	mg/L		29-JUN-18	R4108927
Sulfate in Water by IC Sulfate (SO4)	85.5		0.30	mg/L		22-JUN-18	R4098085
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0228		0.0030	mg/L	26-JUN-18	26-JUN-18	R4097970
Arsenic (As)-Total	0.00091		0.00010	mg/L	26-JUN-18	26-JUN-18	R4097970
Cadmium (Cd)-Total	0.0000212		0.0000050	mg/L	26-JUN-18	26-JUN-18	R4097970
Calcium (Ca)-Total	37.8		0.050	mg/L	26-JUN-18	26-JUN-18	R4097970
Chromium (Cr)-Total	0.00024		0.00010	mg/L	26-JUN-18	26-JUN-18	R4097970
Cobalt (Co)-Total	0.00047		0.00010	mg/L	26-JUN-18	26-JUN-18	R4097970
Copper (Cu)-Total	0.00488		0.00050	mg/L	26-JUN-18	26-JUN-18	R4097970
Iron (Fe)-Total	2.39		0.010	mg/L	26-JUN-18	26-JUN-18	R4097970
Lead (Pb)-Total	0.000196		0.000050	mg/L	26-JUN-18	26-JUN-18	R4097970
Magnesium (Mg)-Total	5.53		0.0050	mg/L	26-JUN-18	26-JUN-18	R4097970
Manganese (Mn)-Total	0.200		0.00010	mg/L	26-JUN-18	26-JUN-18	R4097970
Nickel (Ni)-Total	0.00204		0.00050	mg/L	26-JUN-18	26-JUN-18	R4097970
Potassium (K)-Total	12.5		0.050	mg/L	26-JUN-18	26-JUN-18	R4097970
Sodium (Na)-Total	25.4		0.050	mg/L	26-JUN-18	26-JUN-18	R4097970
Zinc (Zn)-Total	0.0102		0.0030	mg/L	26-JUN-18	26-JUN-18	R4097970
Total Organic Carbon by Combustion Total Organic Carbon	24.6		0.50	mg/L		12-JUL-18	R4124272
Total Suspended Solids Total Suspended Solids	30.5		2.0	mg/L		27-JUN-18	R4100099
pH pH	7.06		0.10	pH units		22-JUN-18	R4096165
L2116629-3 CHE 3A Sampled By: CLIENT on 20-JUN-18 @ 09:00 Matrix: WATER							
Nunavut WW Group 1							

* 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
L2116629-3 CHE 3A							
Sampled By: CLIENT on 20-JUN-18 @ 09:00							
Matrix: WATER							
Alkalinity, Bicarbonate							
Bicarbonate (HCO ₃)	226		1.2	mg/L		25-JUN-18	
Alkalinity, Carbonate							
Carbonate (CO ₃)	<0.60		0.60	mg/L		25-JUN-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		25-JUN-18	
Alkalinity, Total (as CaCO₃)							
Alkalinity, Total (as CaCO ₃)	185		1.0	mg/L		22-JUN-18	R4096165
Ammonia by colour							
Ammonia, Total (as N)	39.6		1.0	mg/L		26-JUN-18	R4098191
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	198		50	mg/L		22-JUN-18	R4103167
Carbonaceous BOD							
BOD Carbonaceous	215		50	mg/L		22-JUN-18	R4103167
Chloride in Water by IC							
Chloride (Cl)	43.8		0.50	mg/L		22-JUN-18	R4098085
Conductivity							
Conductivity	557		1.0	umhos/cm		22-JUN-18	R4096165
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200		10	MPN/100mL		21-JUN-18	R4095211
Hardness Calculated							
Hardness (as CaCO ₃)	39.6	HTC	0.20	mg/L		28-JUN-18	
Mercury Total							
Mercury (Hg)-Total	0.0000195		0.0000050	mg/L	25-JUN-18	26-JUN-18	R4098463
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		22-JUN-18	R4098085
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		27-JUN-18	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		22-JUN-18	R4098085
Oil & Grease - Gravimetric							
Oil and Grease	42.7		5.0	mg/L		02-JUL-18	R4110322
Phenol (4AAP)							
Phenols (4AAP)	0.114	DLHC	0.010	mg/L		28-JUN-18	R4104576
Phosphorus, Total							
Phosphorus (P)-Total	6.51		0.010	mg/L		29-JUN-18	R4108927
Sulfate in Water by IC							
Sulfate (SO ₄)	8.85		0.30	mg/L		22-JUN-18	R4098085
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.489		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959
Arsenic (As)-Total	0.00058		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cadmium (Cd)-Total	0.000183		0.0000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Calcium (Ca)-Total	9.53		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Chromium (Cr)-Total	0.00172		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cobalt (Co)-Total	0.00058		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Copper (Cu)-Total	0.134		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Iron (Fe)-Total	1.31		0.010	mg/L	27-JUN-18	27-JUN-18	R4098959
Lead (Pb)-Total	0.00247		0.000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Magnesium (Mg)-Total	3.83		0.0050	mg/L	27-JUN-18	27-JUN-18	R4098959
Manganese (Mn)-Total	0.0456		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Nickel (Ni)-Total	0.00281		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Potassium (K)-Total	15.5		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Sodium (Na)-Total	35.5		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959

* 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
L2116629-3 CHE 3A Sampled By: CLIENT on 20-JUN-18 @ 09:00 Matrix: WATER Total Metals in Water by CRC ICPMS Zinc (Zn)-Total Total Organic Carbon by Combustion Total Organic Carbon Total Suspended Solids Total Suspended Solids pH pH	0.172 149 88.4 7.06		0.0030 5.0 2.0 0.10	mg/L mg/L mg/L pH units	27-JUN-18	27-JUN-18 13-JUL-18 27-JUN-18 22-JUN-18	R4098959 R4126236 R4100099 R4096165

* 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.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
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.			
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.			
FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 – 0.2°C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.			
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-CVAF-WP	Water	Mercury Total	EPA245.7 V2.0
Mercury in filtered and unfiltered waters is oxidized with Bromine monochloride and analyzed by cold-vapour atomic fluorescence spectrometry.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (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-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.			
PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS
Water is spiked with a surrogate spike mix and extracted using solvent extraction techniques. Analysis is performed by GC/MS in the selected ion monitoring (SIM) mode.			
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)
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 aqueous matrices is determined gravimetrically after drying the residue at 103 105°C.			

** 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:

Reference Information

Test Method References:

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

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 ww - 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

Workorder: L2116629

Report Date: 16-JUL-18

Page 1 of 10

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP								
Water								
Batch	R4096165							
WG2805835-10	DUP	L2116629-3						
Alkalinity, Total (as CaCO ₃)		185	184		mg/L	0.8	20	22-JUN-18
WG2805835-9	LCS							
Alkalinity, Total (as CaCO ₃)			101.3		%		85-115	22-JUN-18
WG2805835-6	MB							
Alkalinity, Total (as CaCO ₃)			<1.0		mg/L		1	22-JUN-18
BOD-CBOD-WP								
Water								
Batch	R4103167							
WG2804209-2	LCS							
BOD Carbonaceous			99.1		%		85-115	22-JUN-18
WG2804209-1	MB							
BOD Carbonaceous			<2.0		mg/L		2	22-JUN-18
BOD-WP								
Water								
Batch	R4103167							
WG2804209-2	LCS							
Biochemical Oxygen Demand			103.5		%		85-115	22-JUN-18
WG2804209-1	MB							
Biochemical Oxygen Demand			<2.0		mg/L		2	22-JUN-18
C-TOC-HTC-WP								
Water								
Batch	R4124272							
WG2821607-6	LCS							
Total Organic Carbon			101.2		%		80-120	12-JUL-18
WG2821607-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	12-JUL-18
Batch	R4126236							
WG2823305-2	LCS							
Total Organic Carbon			98.1		%		80-120	13-JUL-18
WG2823305-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	13-JUL-18
CL-IC-N-WP								
Water								
Batch	R4098085							
WG2804570-7	DUP	L2116629-1						
Chloride (Cl)		29.5	29.5		mg/L	0.1	20	22-JUN-18
WG2804570-2	LCS							
Chloride (Cl)			101.5		%		90-110	22-JUN-18
WG2804570-6	LCS							
Chloride (Cl)			101.7		%		90-110	22-JUN-18
WG2804570-1								

Quality Control Report

Workorder: L2116629

Report Date: 16-JUL-18

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WP		Water						
Batch	R4098085							
WG2804570-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	22-JUN-18
WG2804570-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	22-JUN-18
WG2804570-8 MS		L2116629-1						
Chloride (Cl)			102.5		%		75-125	22-JUN-18
EC-WP		Water						
Batch	R4096165							
WG2805835-10 DUP		L2116629-3						
Conductivity		557	555		umhos/cm	0.4	10	22-JUN-18
WG2805835-8 LCS								
Conductivity			97.1		%		90-110	22-JUN-18
WG2805835-6 MB								
Conductivity			<1.0		umhos/cm		1	22-JUN-18
FC10-QT97-WP		Water						
Batch	R4095211							
WG2803829-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	21-JUN-18
HG-T-CVAF-WP		Water						
Batch	R4098463							
WG2808392-2 LCS								
Mercury (Hg)-Total			99.1		%		80-120	26-JUN-18
WG2808392-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	26-JUN-18
MET-T-CCMS-WP		Water						
Batch	R4097970							
WG2806886-2 LCS								
Aluminum (Al)-Total			100.3		%		80-120	26-JUN-18
Arsenic (As)-Total			104.3		%		80-120	26-JUN-18
Cadmium (Cd)-Total			103.0		%		80-120	26-JUN-18
Calcium (Ca)-Total			100.4		%		80-120	26-JUN-18
Chromium (Cr)-Total			99.1		%		80-120	26-JUN-18
Cobalt (Co)-Total			100.0		%		80-120	26-JUN-18
Copper (Cu)-Total			99.8		%		80-120	26-JUN-18
Iron (Fe)-Total			99.9		%		80-120	26-JUN-18
Lead (Pb)-Total			103.6		%		80-120	26-JUN-18

Quality Control Report

Workorder: L2116629

Report Date: 16-JUL-18

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R4097970							
WG2806886-2	LCS							
Magnesium (Mg)-Total			102.4		%		80-120	26-JUN-18
Manganese (Mn)-Total			102.4		%		80-120	26-JUN-18
Nickel (Ni)-Total			101.1		%		80-120	26-JUN-18
Potassium (K)-Total			101.7		%		80-120	26-JUN-18
Sodium (Na)-Total			101.9		%		80-120	26-JUN-18
Zinc (Zn)-Total			95.7		%		80-120	26-JUN-18
WG2806886-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-JUN-18
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-JUN-18
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	26-JUN-18
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-JUN-18
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-JUN-18
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-JUN-18
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-JUN-18
Iron (Fe)-Total			<0.010		mg/L		0.01	26-JUN-18
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-JUN-18
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-JUN-18
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-JUN-18
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-JUN-18
Potassium (K)-Total			<0.050		mg/L		0.05	26-JUN-18
Sodium (Na)-Total			<0.050		mg/L		0.05	26-JUN-18
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-JUN-18
Batch	R4098959							
WG2808443-2	LCS							
Aluminum (Al)-Total			98.0		%		80-120	27-JUN-18
Arsenic (As)-Total			102.3		%		80-120	27-JUN-18
Cadmium (Cd)-Total			102.6		%		80-120	27-JUN-18
Calcium (Ca)-Total			97.5		%		80-120	27-JUN-18
Chromium (Cr)-Total			101.8		%		80-120	27-JUN-18
Cobalt (Co)-Total			101.7		%		80-120	27-JUN-18
Copper (Cu)-Total			102.5		%		80-120	27-JUN-18
Iron (Fe)-Total			101.0		%		80-120	27-JUN-18
Lead (Pb)-Total			107.5		%		80-120	27-JUN-18
Magnesium (Mg)-Total			102.6		%		80-120	27-JUN-18
Manganese (Mn)-Total			100.1		%		80-120	27-JUN-18



Workorder: L2116629

Page 4 of 10

NO2-IC-N-WP Water

Quality Control Report

Workorder: L2116629

Report Date: 16-JUL-18

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-N-WP		Water						
Batch	R4098085							
WG2804570-7	DUP	L2116629-1						
Nitrite (as N)		0.018	0.018		mg/L	0.8	20	22-JUN-18
WG2804570-2	LCS							
Nitrite (as N)			102.2		%		90-110	22-JUN-18
WG2804570-6	LCS							
Nitrite (as N)			102.3		%		90-110	22-JUN-18
WG2804570-1	MB							
Nitrite (as N)			<0.010		mg/L		0.01	22-JUN-18
WG2804570-5	MB							
Nitrite (as N)			<0.010		mg/L		0.01	22-JUN-18
WG2804570-8	MS	L2116629-1						
Nitrite (as N)			100.7		%		75-125	22-JUN-18
NO3-IC-N-WP		Water						
Batch	R4098085							
WG2804570-7	DUP	L2116629-1						
Nitrate (as N)		0.302	0.303		mg/L	0.5	20	22-JUN-18
WG2804570-2	LCS							
Nitrate (as N)			102.1		%		90-110	22-JUN-18
WG2804570-6	LCS							
Nitrate (as N)			101.9		%		90-110	22-JUN-18
WG2804570-1	MB							
Nitrate (as N)			<0.020		mg/L		0.02	22-JUN-18
WG2804570-5	MB							
Nitrate (as N)			<0.020		mg/L		0.02	22-JUN-18
WG2804570-8	MS	L2116629-1						
Nitrate (as N)			103.1		%		75-125	22-JUN-18
OG-GRAV-WP		Water						
Batch	R4110322							
WG2810844-2	LCS							
Oil and Grease			91.8		%		70-130	02-JUL-18
WG2810844-1	MB							
Oil and Grease			<5.0		mg/L		5	02-JUL-18
P-T-L-COL-WP		Water						
Batch	R4108927							
WG2810407-6	LCS							
Phosphorus (P)-Total			98.5		%		80-120	29-JUN-18
WG2810407-5	MB							
Phosphorus (P)-Total			0.0011	B	mg/L		0.001	29-JUN-18

Quality Control Report

Workorder: L2116629

Report Date: 16-JUL-18

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Water						
Batch	R4098266							
WG2806983-2	LCS							
1-Methyl Naphthalene			126.3		%		60-130	26-JUN-18
2-Methyl Naphthalene			115.4		%		60-130	26-JUN-18
Acenaphthene			120.4		%		60-130	26-JUN-18
Acenaphthylene			112.3		%		60-130	26-JUN-18
Anthracene			111.6		%		60-130	26-JUN-18
Acridine			107.8		%		60-130	26-JUN-18
Benzo(a)anthracene			110.7		%		60-130	26-JUN-18
Benzo(a)pyrene			99.5		%		60-130	26-JUN-18
Benzo(b&j)fluoranthene			100.8		%		60-130	26-JUN-18
Benzo(g,h,i)perylene			108.3		%		60-130	26-JUN-18
Benzo(k)fluoranthene			117.8		%		60-130	26-JUN-18
Chrysene			117.8		%		60-130	26-JUN-18
Dibenzo(a,h)anthracene			125.4		%		60-130	26-JUN-18
Fluoranthene			120.5		%		60-130	26-JUN-18
Fluorene			117.7		%		60-130	26-JUN-18
Indeno(1,2,3-cd)pyrene			103.7		%		60-130	26-JUN-18
Naphthalene			122.1		%		50-130	26-JUN-18
Phenanthrene			121.8		%		60-130	26-JUN-18
Pyrene			120.8		%		60-130	26-JUN-18
Quinoline			121.0		%		60-130	26-JUN-18
WG2806983-1	MB							
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	26-JUN-18
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	26-JUN-18
Acenaphthene			<0.000020		mg/L		0.00002	26-JUN-18
Acenaphthylene			<0.000020		mg/L		0.00002	26-JUN-18
Anthracene			<0.000010		mg/L		0.00001	26-JUN-18
Acridine			<0.000020		mg/L		0.00002	26-JUN-18
Benzo(a)anthracene			<0.000010		mg/L		0.00001	26-JUN-18
Benzo(a)pyrene			<0.000005C		mg/L		0.000005	26-JUN-18
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	26-JUN-18
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	26-JUN-18
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	26-JUN-18
Chrysene			<0.000020		mg/L		0.00002	26-JUN-18
Dibenzo(a,h)anthracene			<0.000005C		mg/L		0.000005	26-JUN-18

Quality Control Report

Workorder: L2116629

Report Date: 16-JUL-18

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Water						
Batch	R4098266							
WG2806983-1 MB								
Fluoranthene			<0.000020		mg/L		0.00002	26-JUN-18
Fluorene			<0.000020		mg/L		0.00002	26-JUN-18
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	26-JUN-18
Naphthalene			<0.000050		mg/L		0.00005	26-JUN-18
Phenanthrene			<0.000050		mg/L		0.00005	26-JUN-18
Pyrene			<0.000010		mg/L		0.00001	26-JUN-18
Quinoline			<0.000020		mg/L		0.00002	26-JUN-18
Surrogate: Acenaphthene d10			81.1		%		40-130	26-JUN-18
Surrogate: Acridine d9			77.2		%		40-130	26-JUN-18
Surrogate: Chrysene d12			87.9		%		40-130	26-JUN-18
Surrogate: Naphthalene d8			81.6		%		40-130	26-JUN-18
Surrogate: Phenanthrene d10			82.2		%		40-130	26-JUN-18
PH-WP		Water						
Batch	R4096165							
WG2805835-10 DUP		L2116629-3						
pH		7.06	7.08	J	pH units	0.02	0.2	22-JUN-18
WG2805835-7 LCS								
pH			7.42		pH units		7.3-7.5	22-JUN-18
PHENOLS-4AAP-WT		Water						
Batch	R4101052							
WG2808702-11 DUP		L2116629-1						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JUN-18
WG2808702-10 LCS								
Phenols (4AAP)			97.7		%		85-115	27-JUN-18
WG2808702-6 LCS								
Phenols (4AAP)			98.1		%		85-115	27-JUN-18
WG2808702-5 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	27-JUN-18
WG2808702-9 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	27-JUN-18
WG2808702-12 MS		L2116629-1						
Phenols (4AAP)			98.0		%		75-125	27-JUN-18
Batch	R4104576							
WG2809864-2 LCS								
Phenols (4AAP)			101.0		%		85-115	28-JUN-18
WG2809864-1 MB								

Quality Control Report

Workorder: L2116629

Report Date: 16-JUL-18

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT								
Batch R4104576								
WG2809864-1 MB								
Phenols (4AAP)	Water		<0.0010		mg/L		0.001	28-JUN-18
SO4-IC-N-WP								
Batch R4098085								
WG2804570-7 DUP		L2116629-1						
Sulfate (SO4)		50.3	50.4		mg/L	0.2	20	22-JUN-18
WG2804570-2 LCS								
Sulfate (SO4)			102.7		%		90-110	22-JUN-18
WG2804570-6 LCS								
Sulfate (SO4)			102.7		%		90-110	22-JUN-18
WG2804570-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUN-18
WG2804570-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUN-18
WG2804570-8 MS		L2116629-1						
Sulfate (SO4)			101.0		%		75-125	22-JUN-18
SOLIDS-TOTSUS-WP								
Batch R4100099								
WG2807508-6 LCS								
Total Suspended Solids	Water		91.4		%		85-115	27-JUN-18
WG2807508-5 MB								
Total Suspended Solids			<2.0		mg/L		2	27-JUN-18

Quality Control Report

Workorder: L2116629

Report Date: 16-JUL-18

Page 9 of 10

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.
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2116629

Report Date: 16-JUL-18

Page 10 of 10

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH	1	20-JUN-18 09:00	22-JUN-18 12:00	0.25	51	hours	EHTR-FM
	2	20-JUN-18 09:00	22-JUN-18 12:00	0.25	51	hours	EHTR-FM
	3	20-JUN-18 09:00	22-JUN-18 12:00	0.25	51	hours	EHTR-FM
Bacteriological Tests							
Fecal coliforms, 1:10 dilution by QT97	1	20-JUN-18 09:00	21-JUN-18 18:25	30	33	hours	EHTL
	2	20-JUN-18 09:00	21-JUN-18 18:25	30	33	hours	EHTL
	3	20-JUN-18 09:00	21-JUN-18 18:25	30	33	hours	EHTL

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 L2116629 were received on 21-JUN-18 12:50.

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.



L2116629-COFC

Report To <u>Hemlet of Chesterfield T-14</u>			L2116629-COFC			Service Request: (Rush subject to availability - Contact ALS to confirm TAT)											
Company: <u>B or 10</u>						Regular (Standard Turnaround Times - Business Days)											
Contact:						Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT											
Address: <u>Chesterfield T-14 N.U.</u>			Email 1: <u>fore hemlet @ gmail . com</u>			Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT											
<u>Y126-0580</u>			Email 2:			Same Day or Weekend Emergency - Contact ALS to confirm TAT											
Phone: <u>962-898-9926</u> Fax:						Analysis Request											
Invoice To Same as Report ? (circle) Yes or No (if No, provide details)			Client / Project Information			(Indicate Filtered or Preserved, F/P)											
Copy of Invoice with Report? (circle) Yes or No			Job #:														
			PO / AFE:														
			LSD:														
			Quote #:														
			ALS Contact:														
			Sampler:														
Lab Work Order # (lab use only)																	

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix D



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

Date Received: 02-AUG-18
Report Date: 09-OCT-18 15:24 (MT)
Version: FINAL

Client Phone: 867-898-9926

Certificate of Analysis

Lab Work Order #: L2140454
Project P.O. #: NOT SUBMITTED
Job Reference: CHESTERFIELD INLET - WW
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.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2140454-1	CHE-4							
Sampled By:	CLIENT on 31-JUL-18 @ 13:58							
Matrix:	SOFT							
Nunavut WW Group 1								
Alkalinity, Bicarbonate								
Bicarbonate (HCO3)		96.4		1.2	mg/L		07-AUG-18	
Alkalinity, Carbonate								
Carbonate (CO3)		<0.60		0.60	mg/L		07-AUG-18	
Alkalinity, Hydroxide								
Hydroxide (OH)		<0.34		0.34	mg/L		07-AUG-18	
Alkalinity, Total (as CaCO3)								
Alkalinity, Total (as CaCO3)		79.0		1.0	mg/L		03-AUG-18	R4159770
Ammonia by colour								
Ammonia, Total (as N)		0.071		0.010	mg/L		08-AUG-18	R4161955
Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand		3.1		2.0	mg/L		03-AUG-18	R4161957
Carbonaceous BOD								
BOD Carbonaceous		<2.0		2.0	mg/L		03-AUG-18	R4161957
Chloride in Water by IC								
Chloride (Cl)		71.3		0.50	mg/L		03-AUG-18	R4160847
Conductivity								
Conductivity		426		1.0	umhos/cm		03-AUG-18	R4159770
Fecal coliforms, 1:10 dilution by QT97								
Fecal Coliforms		<10		10	MPN/100mL		02-AUG-18	R4157968
Hardness Calculated								
Hardness (as CaCO3)		85.9	HTC	0.20	mg/L		10-AUG-18	
Mercury Total								
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L	07-AUG-18	08-AUG-18	R4161347
Nitrate in Water by IC								
Nitrate (as N)		<0.020		0.020	mg/L		03-AUG-18	R4160847
Nitrate+Nitrite								
Nitrate and Nitrite as N		<0.070		0.070	mg/L		08-AUG-18	
Nitrite in Water by IC								
Nitrite (as N)		<0.010		0.010	mg/L		03-AUG-18	R4160847
Oil & Grease - Gravimetric								
Oil and Grease		<5.0		5.0	mg/L		07-AUG-18	R4160837
Phenol (4AAP)								
Phenols (4AAP)		<0.0010		0.0010	mg/L		07-AUG-18	R4161179
Phosphorus, Total								
Phosphorus (P)-Total		0.0583		0.0010	mg/L		07-AUG-18	R4160161
Sulfate in Water by IC								
Sulfate (SO4)		24.2		0.30	mg/L		03-AUG-18	R4160847
Total Metals in Water by CRC ICPMS								
Aluminum (Al)-Total		0.0383		0.0030	mg/L	07-AUG-18	07-AUG-18	R4161391
Arsenic (As)-Total		0.00056		0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Cadmium (Cd)-Total		0.0000103		0.0000050	mg/L	07-AUG-18	07-AUG-18	R4161391
Calcium (Ca)-Total		23.3		0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Chromium (Cr)-Total		0.00092		0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Cobalt (Co)-Total		0.00030		0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Copper (Cu)-Total		0.00295		0.00050	mg/L	07-AUG-18	07-AUG-18	R4161391
Iron (Fe)-Total		0.375		0.010	mg/L	07-AUG-18	07-AUG-18	R4161391
Lead (Pb)-Total		0.000138		0.000050	mg/L	07-AUG-18	07-AUG-18	R4161391
Magnesium (Mg)-Total		6.70		0.0050	mg/L	07-AUG-18	07-AUG-18	R4161391
Manganese (Mn)-Total		0.00506		0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Nickel (Ni)-Total		0.00370		0.00050	mg/L	07-AUG-18	07-AUG-18	R4161391

* 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
L2140454-1	CHE-4							
Sampled By: CLIENT on 31-JUL-18 @ 13:58								
Matrix: SOFT								
Total Metals in Water by CRC ICPMS								
Potassium (K)-Total		4.30		0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Sodium (Na)-Total		52.3		0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Zinc (Zn)-Total		<0.0030		0.0030	mg/L	07-AUG-18	07-AUG-18	R4161391
Total Organic Carbon by Combustion								
Total Organic Carbon		9.53		0.50	mg/L		17-AUG-18	R4178039
Total Suspended Solids								
Total Suspended Solids		3.5		2.0	mg/L		03-AUG-18	R4160196
pH								
pH		7.31		0.10	pH units		03-AUG-18	R4159770
L2140454-2	CHE-3							
Sampled By: CLIENT on 31-JUL-18 @ 11:10								
Matrix: SOFT								
Polyaromatic Hydrocarbons (PAHs)								
1-Methyl Naphthalene		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
2-Methyl Naphthalene		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
Acenaphthene		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
Acenaphthylene		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
Anthracene		<0.000030	DLM	0.000030	mg/L	03-AUG-18	08-AUG-18	R4166934
Acridine		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(a)anthracene		<0.000030	DLM	0.000030	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(a)pyrene		<0.000015	DLM	0.000015	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(b&j)fluoranthene		<0.000030	DLM	0.000030	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(g,h,i)perylene		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(k)fluoranthene		<0.000030	DLM	0.000030	mg/L	03-AUG-18	08-AUG-18	R4166934
Chrysene		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
Dibenzo(a,h)anthracene		<0.000015	DLM	0.000015	mg/L	03-AUG-18	08-AUG-18	R4166934
Fluoranthene		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
Fluorene		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
Indeno(1,2,3-cd)pyrene		<0.000030	DLM	0.000030	mg/L	03-AUG-18	08-AUG-18	R4166934
Naphthalene		<0.00015	DLM	0.00015	mg/L	03-AUG-18	08-AUG-18	R4166934
Phenanthrene		<0.00015	DLM	0.00015	mg/L	03-AUG-18	08-AUG-18	R4166934
Pyrene		<0.000030	DLM	0.000030	mg/L	03-AUG-18	08-AUG-18	R4166934
Quinoline		<0.000060	DLM	0.000060	mg/L	03-AUG-18	08-AUG-18	R4166934
B(a)P Total Potency Equivalent		<0.000030		0.000030	mg/L	03-AUG-18	08-AUG-18	R4166934
Surrogate: Acenaphthene d10		122.9		40-130	%	03-AUG-18	08-AUG-18	R4166934
Surrogate: Acridine d9		125.0		40-130	%	03-AUG-18	08-AUG-18	R4166934
Surrogate: Chrysene d12		137.4	SOL:MI	40-130	%	03-AUG-18	08-AUG-18	R4166934
Surrogate: Naphthalene d8		112.7		40-130	%	03-AUG-18	08-AUG-18	R4166934
Surrogate: Phenanthrene d10		132.8	SOL:MI	40-130	%	03-AUG-18	08-AUG-18	R4166934
Nunavut WW Group 1								
Alkalinity, Bicarbonate								
Bicarbonate (HCO3)		215		1.2	mg/L		07-AUG-18	
Alkalinity, Carbonate								
Carbonate (CO3)		<0.60		0.60	mg/L		07-AUG-18	
Alkalinity, Hydroxide								
Hydroxide (OH)		<0.34		0.34	mg/L		07-AUG-18	
Alkalinity, Total (as CaCO3)								
Alkalinity, Total (as CaCO3)		176		1.0	mg/L		03-AUG-18	R4159770
Ammonia by colour								
Ammonia, Total (as N)		20.0		2.0	mg/L		09-AUG-18	R4161955

* 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
L2140454-2 CHE-3 Sampled By: CLIENT on 31-JUL-18 @ 11:10 Matrix: SOFT							
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	100		20	mg/L		03-AUG-18	R4161957
Carbonaceous BOD BOD Carbonaceous	32.0	BODP	6.0	mg/L		03-AUG-18	R4161957
Chloride in Water by IC Chloride (Cl)	67.1		0.50	mg/L		03-AUG-18	R4160847
Conductivity Conductivity	587		1.0	umhos/cm		03-AUG-18	R4159770
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	>24200		10	MPN/100mL		02-AUG-18	R4157968
Hardness Calculated Hardness (as CaCO3)	78.9	HTC	0.20	mg/L		10-AUG-18	
Mercury Total Mercury (Hg)-Total	<0.000025	DLM	0.000025	mg/L	07-AUG-18	08-AUG-18	R4161347
Nitrate in Water by IC Nitrate (as N)	0.141		0.020	mg/L		03-AUG-18	R4160847
Nitrate+Nitrite Nitrate and Nitrite as N	0.182		0.070	mg/L		08-AUG-18	
Nitrite in Water by IC Nitrite (as N)	0.041		0.010	mg/L		03-AUG-18	R4160847
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		07-AUG-18	R4160837
Phenol (4AAP) Phenols (4AAP)	<0.0010		0.0010	mg/L		07-AUG-18	R4161179
Phosphorus, Total Phosphorus (P)-Total	5.60		0.010	mg/L		07-AUG-18	R4160161
Sulfate in Water by IC Sulfate (SO4)	12.1		0.30	mg/L		03-AUG-18	R4160847
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0957		0.0030	mg/L	07-AUG-18	07-AUG-18	R4161391
Arsenic (As)-Total	0.00111		0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Cadmium (Cd)-Total	0.0000208		0.0000050	mg/L	07-AUG-18	07-AUG-18	R4161391
Calcium (Ca)-Total	22.3		0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Chromium (Cr)-Total	0.00083		0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Cobalt (Co)-Total	0.00079		0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Copper (Cu)-Total	0.0177		0.00050	mg/L	07-AUG-18	07-AUG-18	R4161391
Iron (Fe)-Total	2.86		0.010	mg/L	07-AUG-18	07-AUG-18	R4161391
Lead (Pb)-Total	0.000526		0.000050	mg/L	07-AUG-18	07-AUG-18	R4161391
Magnesium (Mg)-Total	5.62		0.0050	mg/L	07-AUG-18	07-AUG-18	R4161391
Manganese (Mn)-Total	0.198		0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Nickel (Ni)-Total	0.00583		0.00050	mg/L	07-AUG-18	07-AUG-18	R4161391
Potassium (K)-Total	19.9		0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Sodium (Na)-Total	51.0		0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Zinc (Zn)-Total	0.0244		0.0030	mg/L	07-AUG-18	07-AUG-18	R4161391
Total Organic Carbon by Combustion Total Organic Carbon	51.1		5.0	mg/L		17-AUG-18	R4178039
Total Suspended Solids Total Suspended Solids	250		6.0	mg/L		03-AUG-18	R4160196
pH pH	7.52		0.10	pH units		03-AUG-18	R4159770
L2140454-3 CHE-3A Sampled By: CLIENT on 31-JUL-18 @ 10:50 Matrix: SOFT							

* 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
L2140454-3 CHE-3A Sampled By: CLIENT on 31-JUL-18 @ 10:50 Matrix: SOFT							
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
2-Methyl Naphthalene	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
Acenaphthene	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
Acenaphthylene	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
Anthracene	<0.000020	DLM	0.000020	mg/L	03-AUG-18	08-AUG-18	R4166934
Acridine	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(a)anthracene	<0.000020	DLM	0.000020	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(a)pyrene	<0.000015	DLM	0.000015	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(b&j)fluoranthene	<0.000020	DLM	0.000020	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(g,h,i)perylene	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
Benzo(k)fluoranthene	<0.000020	DLM	0.000020	mg/L	03-AUG-18	08-AUG-18	R4166934
Chrysene	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
Dibenzo(a,h)anthracene	<0.000015	DLM	0.000015	mg/L	03-AUG-18	08-AUG-18	R4166934
Fluoranthene	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
Fluorene	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
Indeno(1,2,3-cd)pyrene	<0.000020	DLM	0.000020	mg/L	03-AUG-18	08-AUG-18	R4166934
Naphthalene	<0.00010	DLM	0.00010	mg/L	03-AUG-18	08-AUG-18	R4166934
Phenanthrene	<0.00010	DLM	0.00010	mg/L	03-AUG-18	08-AUG-18	R4166934
Pyrene	<0.000020	DLM	0.000020	mg/L	03-AUG-18	08-AUG-18	R4166934
Quinoline	<0.000040	DLM	0.000040	mg/L	03-AUG-18	08-AUG-18	R4166934
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	03-AUG-18	08-AUG-18	R4166934
Surrogate: Acenaphthene d10	95.7		40-130	%	03-AUG-18	08-AUG-18	R4166934
Surrogate: Acridine d9	95.9		40-130	%	03-AUG-18	08-AUG-18	R4166934
Surrogate: Chrysene d12	110.1		40-130	%	03-AUG-18	08-AUG-18	R4166934
Surrogate: Naphthalene d8	85.4		40-130	%	03-AUG-18	08-AUG-18	R4166934
Surrogate: Phenanthrene d10	102.7		40-130	%	03-AUG-18	08-AUG-18	R4166934
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	217		1.2	mg/L		07-AUG-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		07-AUG-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		07-AUG-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	178		1.0	mg/L		03-AUG-18	R4159770
Ammonia by colour							
Ammonia, Total (as N)	19.6		2.0	mg/L		09-AUG-18	R4161955
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	116		20	mg/L		03-AUG-18	R4161957
Carbonaceous BOD							
BOD Carbonaceous	32.1		6.0	mg/L		03-AUG-18	R4161957
Chloride in Water by IC							
Chloride (Cl)	66.3		0.50	mg/L		03-AUG-18	R4160847
Conductivity							
Conductivity	583		1.0	umhos/cm		03-AUG-18	R4159770
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	8660		10	MPN/100mL		02-AUG-18	R4157968
Hardness Calculated							
Hardness (as CaCO3)	86.0	HTC	0.20	mg/L		10-AUG-18	
Mercury Total							
Mercury (Hg)-Total	<0.000025	DLM	0.000025	mg/L	07-AUG-18	08-AUG-18	R4161347

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

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2140454-3	CHE-3A							
Sampled By:	CLIENT on 31-JUL-18 @ 10:50							
Matrix:	SOFT							
Nitrate in Water by IC								
Nitrate (as N)	0.162			0.020	mg/L		03-AUG-18	R4160847
Nitrate+Nitrite								
Nitrate and Nitrite as N	0.220			0.070	mg/L		08-AUG-18	
Nitrite in Water by IC								
Nitrite (as N)	0.058			0.010	mg/L		03-AUG-18	R4160847
Oil & Grease - Gravimetric								
Oil and Grease	<5.0			5.0	mg/L		07-AUG-18	R4160837
Phenol (4AAP)								
Phenols (4AAP)	<0.0010			0.0010	mg/L		07-AUG-18	R4161179
Phosphorus, Total								
Phosphorus (P)-Total	5.40			0.010	mg/L		07-AUG-18	R4160161
Sulfate in Water by IC								
Sulfate (SO4)	11.8			0.30	mg/L		03-AUG-18	R4160847
Total Metals in Water by CRC ICPMS								
Aluminum (Al)-Total	0.101			0.0030	mg/L	07-AUG-18	07-AUG-18	R4161391
Arsenic (As)-Total	0.00110			0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Cadmium (Cd)-Total	0.0000280			0.0000050	mg/L	07-AUG-18	07-AUG-18	R4161391
Calcium (Ca)-Total	24.8			0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Chromium (Cr)-Total	0.00162			0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Cobalt (Co)-Total	0.00082			0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Copper (Cu)-Total	0.0183			0.00050	mg/L	07-AUG-18	07-AUG-18	R4161391
Iron (Fe)-Total	2.48			0.010	mg/L	07-AUG-18	07-AUG-18	R4161391
Lead (Pb)-Total	0.000680			0.000050	mg/L	07-AUG-18	07-AUG-18	R4161391
Magnesium (Mg)-Total	5.81			0.0050	mg/L	07-AUG-18	07-AUG-18	R4161391
Manganese (Mn)-Total	0.203			0.00010	mg/L	07-AUG-18	07-AUG-18	R4161391
Nickel (Ni)-Total	0.00652			0.00050	mg/L	07-AUG-18	07-AUG-18	R4161391
Potassium (K)-Total	20.5			0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Sodium (Na)-Total	53.8			0.050	mg/L	07-AUG-18	07-AUG-18	R4161391
Zinc (Zn)-Total	0.0306			0.0030	mg/L	07-AUG-18	07-AUG-18	R4161391
Total Organic Carbon by Combustion								
Total Organic Carbon	71.9			5.0	mg/L		17-AUG-18	R4178039
Total Suspended Solids								
Total Suspended Solids	224			6.0	mg/L		03-AUG-18	R4160196
pH								
pH	7.60			0.10	pH units		03-AUG-18	R4159770

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
BODP	BOD dilution results differed by more than 30% RPD. Precision of reported BOD result may be less than usual.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
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 CO ₃ 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 HCO ₃ ⁻ /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 CaCO ₃)	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 HCO ₃ ⁻ and H ₂ CO ₃ 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.			
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 CO ₂ 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.			
FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 – 0.2°C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.			
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 CaCO ₃ 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 200.2/6020A (mod.)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.			
PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS
Water is spiked with a surrogate spike mix and extracted using solvent extraction techniques. Analysis is performed by GC/MS in the selected ion monitoring (SIM) mode.			
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)
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 aqueous matrices is determined gravimetrically after drying the residue at 103 105°C.			

** 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:	

Reference Information

Test Method References:

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

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 wwwt - 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

Workorder: L2140454

Report Date: 09-OCT-18

Page 1 of 8

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP		Water						
Batch	R4159770							
WG2841589-9	LCS							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	03-AUG-18
WG2841589-6	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-AUG-18
BOD-CBOD-WP		Water						
Batch	R4161957							
WG2840630-2	LCS							
BOD Carbonaceous			93.8		%		85-115	03-AUG-18
WG2840630-1	MB							
BOD Carbonaceous			<2.0		mg/L		2	03-AUG-18
BOD-WP		Water						
Batch	R4161957							
WG2840630-2	LCS							
Biochemical Oxygen Demand			98.5		%		85-115	03-AUG-18
WG2840630-1	MB							
Biochemical Oxygen Demand			<2.0		mg/L		2	03-AUG-18
C-TOC-HTC-WP		Water						
Batch	R4178039							
WG2854099-10	LCS							
Total Organic Carbon			99.1		%		80-120	17-AUG-18
WG2854099-9	MB							
Total Organic Carbon			<0.50		mg/L		0.5	17-AUG-18
CL-IC-N-WP		Water						
Batch	R4160847							
WG2840802-7	DUP	L2140454-1						
Chloride (Cl)			71.3		mg/L	0.0	20	03-AUG-18
WG2840802-6	LCS							
Chloride (Cl)			104.4		%		90-110	03-AUG-18
WG2840802-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	03-AUG-18
WG2840802-8	MS	L2140454-1						
Chloride (Cl)			102.2		%		75-125	03-AUG-18
EC-WP		Water						
Batch	R4159770							
WG2841589-8	LCS							
Conductivity			99.7		%		90-110	03-AUG-18
WG2841589-6	MB							

Quality Control Report

Workorder: L2140454

Report Date: 09-OCT-18

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP								
Water								
Batch R4159770								
WG2841589-6 MB								
Conductivity			<1.0		umhos/cm		1	03-AUG-18
FC10-QT97-WP								
Water								
Batch R4157968								
WG2840239-2 DUP		L2140454-1						
Fecal Coliforms		<10	<10	RPD-NA	MPN/100mL	N/A	65	02-AUG-18
WG2840239-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	02-AUG-18
HG-T-CVAA-WP								
Water								
Batch R4161347								
WG2844181-2 LCS								
Mercury (Hg)-Total			102.0		%		80-120	08-AUG-18
WG2844181-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	08-AUG-18
MET-T-CCMS-WP								
Water								
Batch R4161391								
WG2842586-2 LCS								
Aluminum (Al)-Total			104.6		%		80-120	07-AUG-18
Arsenic (As)-Total			101.1		%		80-120	07-AUG-18
Cadmium (Cd)-Total			101.7		%		80-120	07-AUG-18
Calcium (Ca)-Total			108.7		%		80-120	07-AUG-18
Chromium (Cr)-Total			102.0		%		80-120	07-AUG-18
Cobalt (Co)-Total			101.0		%		80-120	07-AUG-18
Copper (Cu)-Total			102.4		%		80-120	07-AUG-18
Iron (Fe)-Total			102.0		%		80-120	07-AUG-18
Lead (Pb)-Total			103.5		%		80-120	07-AUG-18
Magnesium (Mg)-Total			104.4		%		80-120	07-AUG-18
Manganese (Mn)-Total			101.2		%		80-120	07-AUG-18
Nickel (Ni)-Total			101.1		%		80-120	07-AUG-18
Potassium (K)-Total			103.0		%		80-120	07-AUG-18
Sodium (Na)-Total			103.1		%		80-120	07-AUG-18
Zinc (Zn)-Total			100.0		%		80-120	07-AUG-18
WG2842586-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-AUG-18
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-AUG-18



Workorder: L2140454

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP		Water						
Batch	R4161391							
WG2842586-1	MB							
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	07-AUG-18
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-AUG-18
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-AUG-18
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-AUG-18
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-AUG-18
Iron (Fe)-Total			<0.010		mg/L		0.01	07-AUG-18
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-AUG-18
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-AUG-18
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-AUG-18
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-AUG-18
Potassium (K)-Total			<0.050		mg/L		0.05	07-AUG-18
Sodium (Na)-Total			<0.050		mg/L		0.05	07-AUG-18
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-AUG-18
NH3-COL-WP		Water						
Batch	R4161955							
WG2844903-2	LCS							
Ammonia, Total (as N)			97.8		%		85-115	08-AUG-18
WG2844903-1	MB							
Ammonia, Total (as N)			<0.010		mg/L		0.01	08-AUG-18
NO2-IC-N-WP		Water						
Batch	R4160847							
WG2840802-7	DUP	L2140454-1						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-AUG-18
WG2840802-6	LCS							
Nitrite (as N)			102.2		%		90-110	03-AUG-18
WG2840802-5	MB							
Nitrite (as N)			<0.010		mg/L		0.01	03-AUG-18
WG2840802-8	MS	L2140454-1						
Nitrite (as N)			99.4		%		75-125	03-AUG-18
NO3-IC-N-WP		Water						
Batch	R4160847							
WG2840802-7	DUP	L2140454-1						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	03-AUG-18
WG2840802-6	LCS							
Nitrate (as N)			103.0		%		90-110	03-AUG-18
WG2840802-5	MB							

Quality Control Report

Workorder: L2140454

Report Date: 09-OCT-18

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-WP	Water							
Batch R4160847								
WG2840802-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	03-AUG-18
WG2840802-8 MS		L2140454-1						
Nitrate (as N)			99.0		%		75-125	03-AUG-18
OG-GRAV-WP	Water							
Batch R4160837								
WG2841225-2 LCS								
Oil and Grease			92.2		%		70-130	07-AUG-18
WG2841225-1 MB								
Oil and Grease			<5.0		mg/L		5	07-AUG-18
P-T-L-COL-WP	Water							
Batch R4160161								
WG2842215-14 LCS								
Phosphorus (P)-Total			98.3		%		80-120	07-AUG-18
WG2842215-13 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	07-AUG-18
PAH,PANH-WP	Water							
Batch R4166934								
WG2841257-2 LCS								
1-Methyl Naphthalene			104.9		%		60-130	07-AUG-18
2-Methyl Naphthalene			97.4		%		60-130	07-AUG-18
Acenaphthene			98.9		%		60-130	07-AUG-18
Acenaphthylene			95.3		%		60-130	07-AUG-18
Anthracene			90.6		%		60-130	07-AUG-18
Acridine			89.0		%		60-130	07-AUG-18
Benzo(a)anthracene			104.2		%		60-130	07-AUG-18
Benzo(a)pyrene			84.4		%		60-130	07-AUG-18
Benzo(b&j)fluoranthene			71.4		%		60-130	07-AUG-18
Benzo(g,h,i)perylene			98.0		%		60-130	07-AUG-18
Benzo(k)fluoranthene			86.0		%		60-130	07-AUG-18
Chrysene			109.8		%		60-130	07-AUG-18
Dibenzo(a,h)anthracene			88.3		%		60-130	07-AUG-18
Fluoranthene			100.1		%		60-130	07-AUG-18
Fluorene			101.2		%		60-130	07-AUG-18
Indeno(1,2,3-cd)pyrene			91.8		%		60-130	07-AUG-18
Naphthalene			102.8		%		50-130	07-AUG-18



Workorder: L2140454

Page 5 of 8

PHENOLS-4AAP-WT Water

Quality Control Report

Workorder: L2140454

Report Date: 09-OCT-18

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT								
Batch R4161179								
WG2842755-10	LCS							
Phenols (4AAP)			95.6		%		85-115	07-AUG-18
WG2842755-9	MB							
Phenols (4AAP)			<0.0010		mg/L		0.001	07-AUG-18
SO4-IC-N-WP								
Batch R4160847								
WG2840802-7	DUP	L2140454-1						
Sulfate (SO4)		24.2	24.3		mg/L	0.3	20	03-AUG-18
WG2840802-6	LCS							
Sulfate (SO4)			104.5		%		90-110	03-AUG-18
WG2840802-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	03-AUG-18
WG2840802-8	MS	L2140454-1						
Sulfate (SO4)			101.4		%		75-125	03-AUG-18
SOLIDS-TOTSUS-WP								
Batch R4160196								
WG2840571-10	LCS							
Total Suspended Solids			101.2		%		85-115	03-AUG-18
WG2840571-9	MB							
Total Suspended Solids			<2.0		mg/L		2	03-AUG-18

Quality Control Report

Workorder: L2140454

Report Date: 09-OCT-18

Page 7 of 8

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
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2140454

Report Date: 09-OCT-18

Page 8 of 8

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	31-JUL-18 13:58	03-AUG-18 12:00	0.25	70	hours	EHTR-FM
	2	31-JUL-18 11:10	03-AUG-18 12:00	0.25	73	hours	EHTR-FM
	3	31-JUL-18 10:50	03-AUG-18 12:00	0.25	73	hours	EHTR-FM
Bacteriological Tests							
Fecal coliforms, 1:10 dilution by QT97							
	1	31-JUL-18 13:58	02-AUG-18 17:35	30	52	hours	EHTR
	2	31-JUL-18 11:10	02-AUG-18 17:35	30	54	hours	EHTR
	3	31-JUL-18 10:50	02-AUG-18 17:35	30	55	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demand (BOD)							
	1	31-JUL-18 13:58	03-AUG-18 07:00	48	65	hours	EHTL
	2	31-JUL-18 11:10	03-AUG-18 07:00	48	68	hours	EHTR
	3	31-JUL-18 10:50	03-AUG-18 07:00	48	68	hours	EHTR
Carbonaceous BOD							
	1	31-JUL-18 13:58	03-AUG-18 07:00	48	65	hours	EHTL
	2	31-JUL-18 11:10	03-AUG-18 07:00	48	68	hours	EHTR
	3	31-JUL-18 10:50	03-AUG-18 07:00	48	68	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 L2140454 were received on 02-AUG-18 12:45.

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.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com



L2140454-COFC

COC Number: 15 - L2140454

Page of

Report To Contact and company name below will appear on the final report		Report Format / Distribution		Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply	
Company:	Hamlet of Chesterfield Inlet	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	PRIORITY	EMERGENCY
Contact:	130x 10	Quality Control (QC) Report with Report	☐ YES ☐ NO	4 day [P4]	☐
Phone:	867-898-9926	☐ Compare Results to Criteria on Report - provide details below if box checked		3 day [P3]	☐
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	2 day [P2]	☐
Street:		Email 1 or Fax	For Hamlet@gnic.com	Date and Time Required for all E&P TATs: dd-mm-yy hh:mm	
City/Province:	Chesterfield Inlet NW	Email 2		For tests that can not be performed according to the service level selected, you will be contacted.	
Postal Code:	X0C-0B0	Email 3		Analysis Request	
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX		
Company:		Email 1 or Fax			
Contact:		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:		
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	
CHE-4		July 31, 18	1:58	S.K.	
CHE-2		July 31, 18	11:10	S.K.	
CHE-3		July 31, 18	11:10	S.K.	
CHE-3A		July 31, 18	10:50	S.K.	
Drinking Water (DW) Samples ¹ (client use)		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)	
Are samples taken from a Regulated DW System?				Frozen ☐ SIF Observations Yes ☐ No ☐	
☐ YES ☐ NO				Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐	
Are samples for human drinking water use?				Cooling Initiated ☐	
☐ YES ☐ NO				INITIAL COOLER TEMPERATURES °C: FINAL COOLER TEMPERATURES °C: 12.8	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by:	Date:	Time:	Received by:	Date:	Time:
				Aug 21, 18	12:45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

OCTOBER 2015 FRONT

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix E



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

Date Received: 18-AUG-18
Report Date: 09-OCT-18 15:24 (MT)
Version: FINAL

Client Phone: 867-898-9926

Certificate of Analysis

Lab Work Order #: L2149510
Project P.O. #: NOT SUBMITTED
Job Reference: CHESTERFIELD INLET
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.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2149510-1	CHE-3A							
Sampled By:	CLIENT on 17-AUG-18 @ 10:30							
Matrix:	WATER							
Nunavut WW Group 1								
Alkalinity, Bicarbonate								
Bicarbonate (HCO3)		213		1.2	mg/L		21-AUG-18	
Alkalinity, Carbonate								
Carbonate (CO3)		<0.60		0.60	mg/L		21-AUG-18	
Alkalinity, Hydroxide								
Hydroxide (OH)		<0.34		0.34	mg/L		21-AUG-18	
Alkalinity, Total (as CaCO3)								
Alkalinity, Total (as CaCO3)		175		1.0	mg/L		20-AUG-18	R4179184
Ammonia by colour								
Ammonia, Total (as N)		21.6		1.0	mg/L		21-AUG-18	R4180235
Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand		58		20	mg/L		18-AUG-18	R4182361
Carbonaceous BOD								
BOD Carbonaceous		30.5		6.0	mg/L		20-AUG-18	R4183907
Chloride in Water by IC								
Chloride (Cl)		48.5		0.50	mg/L		18-AUG-18	R4182744
Conductivity								
Conductivity		531		1.0	umhos/cm		20-AUG-18	R4179184
Fecal coliforms, 1:10 dilution by QT97								
Fecal Coliforms		>24200		10	MPN/100mL		18-AUG-18	R4177330
Hardness Calculated								
Hardness (as CaCO3)		94.4	HTC	0.20	mg/L		29-AUG-18	
Mercury Total								
Mercury (Hg)-Total		<0.000025	DLM	0.000025	mg/L	21-AUG-18	22-AUG-18	R4181094
Nitrate in Water by IC								
Nitrate (as N)		0.086		0.020	mg/L		18-AUG-18	R4182744
Nitrate+Nitrite								
Nitrate and Nitrite as N		0.171		0.070	mg/L		27-AUG-18	
Nitrite in Water by IC								
Nitrite (as N)		0.085		0.010	mg/L		18-AUG-18	R4182744
Oil & Grease - Gravimetric								
Oil and Grease		<5.0		5.0	mg/L		28-AUG-18	R4188291
Phenol (4AAP)								
Phenols (4AAP)		0.0023		0.0010	mg/L		23-AUG-18	R4182489
Phosphorus, Total								
Phosphorus (P)-Total		3.90		0.010	mg/L		27-AUG-18	R4186767
Sulfate in Water by IC								
Sulfate (SO4)		15.6		0.30	mg/L		18-AUG-18	R4182744
Total Metals in Water by CRC ICPMS								
Aluminum (Al)-Total		0.0981		0.0030	mg/L	28-AUG-18	28-AUG-18	R4190190
Arsenic (As)-Total		0.00093		0.00010	mg/L	28-AUG-18	28-AUG-18	R4190190
Cadmium (Cd)-Total		0.0000293		0.0000050	mg/L	28-AUG-18	28-AUG-18	R4190190
Calcium (Ca)-Total		28.8		0.050	mg/L	28-AUG-18	28-AUG-18	R4190190
Chromium (Cr)-Total		0.00059		0.00010	mg/L	28-AUG-18	28-AUG-18	R4190190
Cobalt (Co)-Total		0.00071		0.00010	mg/L	28-AUG-18	28-AUG-18	R4190190
Copper (Cu)-Total		0.0183		0.00050	mg/L	28-AUG-18	28-AUG-18	R4190190
Iron (Fe)-Total		3.37		0.010	mg/L	28-AUG-18	28-AUG-18	R4190190
Lead (Pb)-Total		0.000836		0.000050	mg/L	28-AUG-18	28-AUG-18	R4190190
Magnesium (Mg)-Total		5.46		0.0050	mg/L	28-AUG-18	28-AUG-18	R4190190
Manganese (Mn)-Total		0.199		0.00010	mg/L	28-AUG-18	28-AUG-18	R4190190
Nickel (Ni)-Total		0.00446		0.00050	mg/L	28-AUG-18	28-AUG-18	R4190190

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

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2149510-1	CHE-3A							
Sampled By:	CLIENT on 17-AUG-18 @ 10:30							
Matrix:	WATER							
Total Metals in Water by CRC ICPMS								
Potassium (K)-Total		14.4		0.050	mg/L	28-AUG-18	28-AUG-18	R4190190
Sodium (Na)-Total		42.9		0.050	mg/L	28-AUG-18	28-AUG-18	R4190190
Zinc (Zn)-Total		0.0335		0.0030	mg/L	28-AUG-18	28-AUG-18	R4190190
Total Organic Carbon by Combustion								
Total Organic Carbon		33.2		0.50	mg/L		24-AUG-18	R4183948
Total Suspended Solids								
Total Suspended Solids		110		3.3	mg/L		23-AUG-18	R4182366
pH								
pH		7.58		0.10	pH units		20-AUG-18	R4179184
L2149510-2	CHE-4							
Sampled By:	CLIENT on 17-AUG-18 @ 10:15							
Matrix:	WATER							
Nunavut WW Group 1								
Alkalinity, Bicarbonate								
Bicarbonate (HCO3)		60.4		1.2	mg/L		21-AUG-18	
Alkalinity, Carbonate								
Carbonate (CO3)		<0.60		0.60	mg/L		21-AUG-18	
Alkalinity, Hydroxide								
Hydroxide (OH)		<0.34		0.34	mg/L		21-AUG-18	
Alkalinity, Total (as CaCO3)								
Alkalinity, Total (as CaCO3)		49.5		1.0	mg/L		20-AUG-18	R4179184
Ammonia by colour								
Ammonia, Total (as N)		<0.010		0.010	mg/L		21-AUG-18	R4180235
Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand		<2.0		2.0	mg/L		18-AUG-18	R4182361
Carbonaceous BOD								
BOD Carbonaceous		<2.0		2.0	mg/L		20-AUG-18	R4183907
Chloride in Water by IC								
Chloride (Cl)		50.2		0.50	mg/L		18-AUG-18	R4182744
Conductivity								
Conductivity		306		1.0	umhos/cm		20-AUG-18	R4179184
Fecal coliforms, 1:10 dilution by QT97								
Fecal Coliforms		<10		10	MPN/100mL		18-AUG-18	R4177330
Hardness Calculated								
Hardness (as CaCO3)		65.3	HTC	0.20	mg/L		29-AUG-18	
Mercury Total								
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L	21-AUG-18	22-AUG-18	R4181094
Nitrate in Water by IC								
Nitrate (as N)		<0.020		0.020	mg/L		18-AUG-18	R4182744
Nitrate+Nitrite								
Nitrate and Nitrite as N		<0.070		0.070	mg/L		27-AUG-18	
Nitrite in Water by IC								
Nitrite (as N)		<0.010		0.010	mg/L		18-AUG-18	R4182744
Oil & Grease - Gravimetric								
Oil and Grease		<5.0		5.0	mg/L		28-AUG-18	R4188291
Phenol (4AAP)								
Phenols (4AAP)		<0.0010		0.0010	mg/L		23-AUG-18	R4182489
Phosphorus, Total								
Phosphorus (P)-Total		0.0032		0.0010	mg/L		27-AUG-18	R4186767
Sulfate in Water by IC								
Sulfate (SO4)		19.6		0.30	mg/L		18-AUG-18	R4182744

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

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2149510-2	CHE-4							
Sampled By:	CLIENT on 17-AUG-18 @ 10:15							
Matrix:	WATER							
Total Metals in Water by CRC ICPMS								
Aluminum (Al)-Total	0.0360			0.0030	mg/L	28-AUG-18	28-AUG-18	R4190190
Arsenic (As)-Total	0.00033			0.00010	mg/L	28-AUG-18	28-AUG-18	R4190190
Cadmium (Cd)-Total	0.0000097			0.0000050	mg/L	28-AUG-18	28-AUG-18	R4190190
Calcium (Ca)-Total	17.1			0.050	mg/L	28-AUG-18	28-AUG-18	R4190190
Chromium (Cr)-Total	0.00036			0.00010	mg/L	28-AUG-18	28-AUG-18	R4190190
Cobalt (Co)-Total	0.00022			0.00010	mg/L	28-AUG-18	28-AUG-18	R4190190
Copper (Cu)-Total	0.00683			0.00050	mg/L	28-AUG-18	28-AUG-18	R4190190
Iron (Fe)-Total	0.124			0.010	mg/L	28-AUG-18	28-AUG-18	R4190190
Lead (Pb)-Total	0.000102			0.000050	mg/L	28-AUG-18	28-AUG-18	R4190190
Magnesium (Mg)-Total	5.47			0.0050	mg/L	28-AUG-18	28-AUG-18	R4190190
Manganese (Mn)-Total	0.00308			0.00010	mg/L	28-AUG-18	28-AUG-18	R4190190
Nickel (Ni)-Total	0.00315			0.00050	mg/L	28-AUG-18	28-AUG-18	R4190190
Potassium (K)-Total	2.70			0.050	mg/L	28-AUG-18	28-AUG-18	R4190190
Sodium (Na)-Total	38.2			0.050	mg/L	28-AUG-18	28-AUG-18	R4190190
Zinc (Zn)-Total	0.0126			0.0030	mg/L	28-AUG-18	28-AUG-18	R4190190
Total Organic Carbon by Combustion								
Total Organic Carbon	7.93			0.50	mg/L		24-AUG-18	R4183948
Total Suspended Solids								
Total Suspended Solids	<2.0			2.0	mg/L		23-AUG-18	R4182366
pH								
pH	7.45			0.10	pH units		20-AUG-18	R4179184

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
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.			
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.			
FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 – 0.2°C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.			
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 200.2/6020A (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.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.			
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)
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 aqueous matrices is determined gravimetrically after drying the residue at 103 105°C.			

** 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

Workorder: L2149510

Report Date: 09-OCT-18

Page 2 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP		Water						
Batch	R4177330							
WG2854204-1	MB							
Fecal Coliforms			<1		MPN/100mL		1	18-AUG-18
HG-T-CVAA-WP		Water						
Batch	R4181094							
WG2857686-2	LCS							
Mercury (Hg)-Total			102.0		%		80-120	22-AUG-18
WG2857686-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	22-AUG-18
MET-T-CCMS-WP		Water						
Batch	R4190190							
WG2861509-2	LCS							
Aluminum (Al)-Total			102.7		%		80-120	28-AUG-18
Arsenic (As)-Total			101.2		%		80-120	28-AUG-18
Cadmium (Cd)-Total			102.0		%		80-120	28-AUG-18
Calcium (Ca)-Total			104.5		%		80-120	28-AUG-18
Chromium (Cr)-Total			102.1		%		80-120	28-AUG-18
Cobalt (Co)-Total			102.9		%		80-120	28-AUG-18
Copper (Cu)-Total			104.2		%		80-120	28-AUG-18
Iron (Fe)-Total			97.3		%		80-120	28-AUG-18
Lead (Pb)-Total			100.7		%		80-120	28-AUG-18
Magnesium (Mg)-Total			101.0		%		80-120	28-AUG-18
Manganese (Mn)-Total			99.0		%		80-120	28-AUG-18
Nickel (Ni)-Total			102.5		%		80-120	28-AUG-18
Potassium (K)-Total			99.3		%		80-120	28-AUG-18
Sodium (Na)-Total			103.4		%		80-120	28-AUG-18
Zinc (Zn)-Total			105.8		%		80-120	28-AUG-18
WG2861509-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-AUG-18
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-AUG-18
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	28-AUG-18
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-AUG-18
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-AUG-18
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-AUG-18
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-AUG-18
Iron (Fe)-Total			<0.010		mg/L		0.01	28-AUG-18

Quality Control Report

Workorder: L2149510

Report Date: 09-OCT-18

Page 3 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4190190								
WG2861509-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-AUG-18
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-AUG-18
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-AUG-18
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-AUG-18
Potassium (K)-Total			<0.050		mg/L		0.05	28-AUG-18
Sodium (Na)-Total			<0.050		mg/L		0.05	28-AUG-18
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-AUG-18
NH3-COL-WP	Water							
Batch R4180235								
WG2856448-14 LCS								
Ammonia, Total (as N)			99.8		%		85-115	21-AUG-18
WG2856448-13 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	21-AUG-18
NO2-IC-N-WP	Water							
Batch R4182744								
WG2853399-14 LCS								
Nitrite (as N)			102.6		%		90-110	18-AUG-18
WG2853399-13 MB								
Nitrite (as N)			<0.010		mg/L		0.01	18-AUG-18
NO3-IC-N-WP	Water							
Batch R4182744								
WG2853399-14 LCS								
Nitrate (as N)			98.0		%		90-110	18-AUG-18
WG2853399-13 MB								
Nitrate (as N)			<0.020		mg/L		0.02	18-AUG-18
OG-GRAV-WP	Water							
Batch R4188291								
WG2859418-2 LCS								
Oil and Grease			97.0		%		70-130	28-AUG-18
WG2859418-1 MB								
Oil and Grease			<5.0		mg/L		5	28-AUG-18
P-T-L-COL-WP	Water							
Batch R4186767								
WG2860487-6 LCS								
Phosphorus (P)-Total			92.2		%		80-120	27-AUG-18
WG2860487-5 MB								

Quality Control Report

Workorder: L2149510

Report Date: 09-OCT-18

Page 4 of 6

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-WP	Water							
Batch R4186767								
WG2860487-5 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	27-AUG-18
WG2860487-8 MS		L2149510-2						
Phosphorus (P)-Total			104.6		%		70-130	27-AUG-18
PH-WP	Water							
Batch R4179184								
WG2855373-22 LCS								
pH			7.45		pH units		7.3-7.5	20-AUG-18
PHENOLS-4AAP-WT	Water							
Batch R4182489								
WG2857911-6 LCS								
Phenols (4AAP)			92.2		%		85-115	23-AUG-18
WG2857911-5 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	23-AUG-18
SO4-IC-N-WP	Water							
Batch R4182744								
WG2853399-14 LCS								
Sulfate (SO4)			99.0		%		90-110	18-AUG-18
WG2853399-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	18-AUG-18
SOLIDS-TOTSUS-WP	Water							
Batch R4182366								
WG2857435-19 DUP		L2149510-2						
Total Suspended Solids		<2.0	<2.0	RPD-NA	mg/L	N/A	20	23-AUG-18
WG2857435-14 LCS								
Total Suspended Solids			96.2		%		85-115	23-AUG-18
WG2857435-18 LCS								
Total Suspended Solids			96.6		%		85-115	23-AUG-18
WG2857435-13 MB								
Total Suspended Solids			<2.0		mg/L		2	23-AUG-18
WG2857435-17 MB								
Total Suspended Solids			<2.0		mg/L		2	23-AUG-18

Quality Control Report

Workorder: L2149510

Report Date: 09-OCT-18

Page 5 of 6

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
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2149510

Report Date: 09-OCT-18

Page 6 of 6

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH	1	17-AUG-18 10:30	20-AUG-18 12:00	0.25	73	hours	EHTR-FM
	2	17-AUG-18 10:15	20-AUG-18 12:00	0.25	74	hours	EHTR-FM
Aggregate Organics							
Carbonaceous BOD	1	17-AUG-18 10:30	20-AUG-18 07:00	48	68	hours	EHT
	2	17-AUG-18 10:15	20-AUG-18 07:00	48	69	hours	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
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 L2149510 were received on 18-AUG-18 09:35.

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.



ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2149510-COFC

COC Number: 15- 571777

Page 1 of 1

21

Report To Contact and company name below will appear on the final report Company: <u>Hamlet of Chesterfield Inlet</u> Contact: <u>Roy Mullins</u> Phone: <u>867-898-9961</u> Company address below will appear on the final report Street: <u>PO Box 10</u> City/Province: <u>Chesterfield Inlet</u> Postal Code: <u>XOC 0B0</u> Invoice To: Same as Report To ☒ YES ☐ NO Copy of Invoice with Report ☒ YES ☐ NO Company: Contact:			Report For 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: <u>Sao-hamlet@ginig.com</u> Email 2: <u>cbeardsall@gov.nv.ca</u> Email 3: <u>cfaulkner@gov.nv.ca</u> Invoice Distribution Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX Email 1 or Fax: Email 2:			Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply. Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply 4 day [P4] ☐ 1 Business day [E1] ☐ 3 day [P3] ☐ Same Day, Weekend or Statutory holiday [E0] ☐ 2 day [P2] ☐ Date and Time Required for all E&P TATs: dd-mm-yy hh:mm For tests that can not be performed according to the service level selected, you will be contacted.																												
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:			Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th></th> <th>BOD</th> <th>Routine</th> <th>Total Nutrients</th> <th>Phenols</th> <th>Total Metals</th> <th>Oil + Grease x2</th> <th>Bacteria</th> <th>Total Mercury</th> <th>BTEX, FI x3</th> <th>F2-F4 x2</th> <th>PAH x2</th> <th>Number of Containers</th> </tr> <tr> <td>✓</td> <td>✓</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td>P</td> <td></td> </tr> </table>				BOD	Routine	Total Nutrients	Phenols	Total Metals	Oil + Grease x2	Bacteria	Total Mercury	BTEX, FI x3	F2-F4 x2	PAH x2	Number of Containers	✓	✓	P	P	P	P	P	P	P	P	P	P	
	BOD	Routine	Total Nutrients	Phenols	Total Metals	Oil + Grease x2	Bacteria	Total Mercury	BTEX, FI x3	F2-F4 x2	PAH x2	Number of Containers																						
✓	✓	P	P	P	P	P	P	P	P	P	P																							
ALS Lab Work Order # (lab use only): ALS Sample # (lab use only): Sample Identification and/or Coordinates (This description will appear on the report) Date (dd-mm-yy): Time (hh:mm): Sample Type:			ALS Contact: Sampler:			CHE-2 CHE-3 CHE-3A CHE-4 No water Not in use 17/08/18 10:30 17/08/18 10:15																												
Drinking Water (DW) Samples¹ (client use) Are samples taken from a Regulated DW System? ☐ YES ☒ NO Are samples for human drinking water use? ☐ YES ☒ NO			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) <u>Nunavut - WW - GRP1 - WP</u> <u>BTEX - FI, F2-F4, PAH</u>			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: <u>15.0C</u> FINAL COOLER TEMPERATURES °C:																												
SHIPMENT RELEASE (client use) Released by: Date: Time:			INITIAL SHIPMENT RECEPTION (lab use only) Received by: <u>SA</u> Date: <u>18 Aug 18</u> Time: <u>9:35</u>			FINAL SHIPMENT RECEPTION (lab use only) Received by: Date: Time:																												

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix F



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

Date Received: 14-SEP-18
Report Date: 09-OCT-18 15:51 (MT)
Version: FINAL

Client Phone: 867-898-9926

Certificate of Analysis

Lab Work Order #: L2164781

Project P.O. #: NOT SUBMITTED

Job Reference: CHESTERIFEILD INLET , NU - WASTEWATER

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.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2164781-1 CHE-4 Sampled By: CLIENT on 11-SEP-18 @ 13:29 Matrix: wastewater							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	210		1.2	mg/L		18-SEP-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		18-SEP-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		18-SEP-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	172		1.0	mg/L		17-SEP-18	R4218976
Ammonia by colour							
Ammonia, Total (as N)	17.1		1.0	mg/L		19-SEP-18	R4227509
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	34.6		6.0	mg/L		15-SEP-18	R4231853
Carbonaceous BOD							
BOD Carbonaceous	19.6		6.0	mg/L		15-SEP-18	R4231853
Chloride in Water by IC							
Chloride (Cl)	63.5		0.50	mg/L		16-SEP-18	R4219127
Conductivity							
Conductivity	583		1.0	umhos/cm		17-SEP-18	R4218976
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	4350	PEHR	10	MPN/100mL		14-SEP-18	R4217359
Hardness Calculated							
Hardness (as CaCO3)	105	HTC	0.20	mg/L		26-SEP-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	17-SEP-18	20-SEP-18	R4230678
Nitrate in Water by IC							
Nitrate (as N)	0.691	HTD	0.020	mg/L		16-SEP-18	R4219127
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.720		0.070	mg/L		24-SEP-18	
Nitrite in Water by IC							
Nitrite (as N)	0.029	HTD	0.010	mg/L		16-SEP-18	R4219127
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		21-SEP-18	R4230576
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		19-SEP-18	R4227828
Phosphorus, Total							
Phosphorus (P)-Total	1.70		0.0020	mg/L		21-SEP-18	R4234869
Sulfate in Water by IC							
Sulfate (SO4)	20.2		0.30	mg/L		16-SEP-18	R4219127
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0225		0.0030	mg/L	22-SEP-18	24-SEP-18	R4243412
Arsenic (As)-Total	0.00078		0.00010	mg/L	22-SEP-18	24-SEP-18	R4243412
Cadmium (Cd)-Total	0.0000064		0.0000050	mg/L	22-SEP-18	24-SEP-18	R4243412
Calcium (Ca)-Total	32.3		0.050	mg/L	22-SEP-18	24-SEP-18	R4243412
Chromium (Cr)-Total	0.00039		0.00010	mg/L	22-SEP-18	24-SEP-18	R4243412
Cobalt (Co)-Total	0.00040		0.00010	mg/L	22-SEP-18	24-SEP-18	R4243412
Copper (Cu)-Total	0.00965		0.00050	mg/L	22-SEP-18	24-SEP-18	R4243412
Iron (Fe)-Total	1.28		0.010	mg/L	22-SEP-18	24-SEP-18	R4243412
Lead (Pb)-Total	0.000602		0.000050	mg/L	22-SEP-18	24-SEP-18	R4243412
Magnesium (Mg)-Total	6.02		0.0050	mg/L	22-SEP-18	24-SEP-18	R4243412
Manganese (Mn)-Total	0.0928		0.00010	mg/L	22-SEP-18	24-SEP-18	R4243412
Nickel (Ni)-Total	0.00306		0.00050	mg/L	22-SEP-18	24-SEP-18	R4243412

* 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
L2164781-1	CHE-4							
Sampled By: CLIENT on 11-SEP-18 @ 13:29								
Matrix: wastewater								
Total Metals in Water by CRC ICPMS								
Potassium (K)-Total		13.7		0.050	mg/L	22-SEP-18	24-SEP-18	R4243412
Sodium (Na)-Total		49.5		0.050	mg/L	22-SEP-18	24-SEP-18	R4243412
Zinc (Zn)-Total		0.0101		0.0030	mg/L	22-SEP-18	24-SEP-18	R4243412
Total Organic Carbon by Combustion								
Total Organic Carbon		22.3		0.50	mg/L		19-SEP-18	R4227709
Total Suspended Solids								
Total Suspended Solids		45.7		2.0	mg/L		17-SEP-18	R4218281
pH								
pH		7.40		0.10	pH units		17-SEP-18	R4218976
L2164781-2	CHE-2							
Sampled By: CLIENT on 11-SEP-18 @ 13:59								
Matrix: wastewater								
Miscellaneous Parameters								
Xylenes (Total)		<0.00050		0.00050	mg/L		30-SEP-18	
Total THMs		0.0036		0.0010	mg/L		30-SEP-18	
VOC plus F1 by GCMS								
Acetone		0.070		0.020	mg/L		26-SEP-18	R4251424
Benzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Bromobenzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Bromochloromethane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Bromodichloromethane		0.00099		0.00050	mg/L		26-SEP-18	R4251424
Bromoform		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Bromomethane		<0.0010		0.0010	mg/L		26-SEP-18	R4251424
n-Butylbenzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
sec-Butylbenzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
tert-Butylbenzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Carbon disulfide		0.00083		0.00050	mg/L		26-SEP-18	R4251424
Carbon Tetrachloride		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Chlorobenzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Chloroethane		<0.0010		0.0010	mg/L		26-SEP-18	R4251424
Chloroform		0.00189		0.00050	mg/L		26-SEP-18	R4251424
Chloromethane		<0.0010		0.0010	mg/L		26-SEP-18	R4251424
2-Chlorotoluene		<0.020		0.020	mg/L		26-SEP-18	R4251424
4-Chlorotoluene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Dibromochloromethane		0.00076		0.00050	mg/L		26-SEP-18	R4251424
1,2-Dibromo-3-chloropropane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,2-Dibromoethane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Dibromomethane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,2-Dichlorobenzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,3-Dichlorobenzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,4-Dichlorobenzene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Dichlorodifluoromethane		<0.0010		0.0010	mg/L		26-SEP-18	R4251424
1,1-dichloroethane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,2-Dichloroethane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,1-dichloroethene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
cis-1,2-Dichloroethene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
trans-1,2-Dichloroethene		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Dichloromethane		<0.0050	DLCI	0.0050	mg/L		26-SEP-18	R4251424
1,2-Dichloropropane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,3-Dichloropropane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424
2,2-Dichloropropane		<0.00050		0.00050	mg/L		26-SEP-18	R4251424

* 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
L2164781-2 CHE-2							
Sampled By: CLIENT on 11-SEP-18 @ 13:59							
Matrix: wastewater							
VOC plus F1 by GCMS							
1,1-Dichloropropene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
cis-1,3-Dichloropropene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
trans-1,3-Dichloropropene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Ethylbenzene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
F1	0.21		0.10	mg/L		26-SEP-18	R4251424
Hexachlorobutadiene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Hexane	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
2-Hexanone (Methyl butyl ketone)	<0.020		0.020	mg/L		26-SEP-18	R4251424
Isopropylbenzene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
4-Isopropyltoluene	<0.0010		0.0010	mg/L		26-SEP-18	R4251424
MEK	0.037		0.020	mg/L		26-SEP-18	R4251424
MIBK	<0.020		0.020	mg/L		26-SEP-18	R4251424
MTBE	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Styrene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,1,1,2-Tetrachloroethane	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,1,2,2-Tetrachloroethane	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Tetrachloroethene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Toluene	0.153		0.00050	mg/L		26-SEP-18	R4251424
1,2,3-Trichlorobenzene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,2,4-Trichlorobenzene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,1,1-Trichloroethane	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,1,2-Trichloroethane	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Trichloroethene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Trichlorofluoromethane	<0.0010		0.0010	mg/L		26-SEP-18	R4251424
1,2,3-Trichloropropane	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,2,4-Trimethylbenzene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
1,3,5-Trimethylbenzene	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
Vinyl Chloride	<0.00050		0.00050	mg/L		26-SEP-18	R4251424
M+P-Xylenes	<0.00040		0.00040	mg/L		26-SEP-18	R4251424
o-Xylene	<0.00030		0.00030	mg/L		26-SEP-18	R4251424
Surrogate: 4-Bromofluorobenzene (SS)	87.0		70-130	%		26-SEP-18	R4251424
Surrogate: 1,4-Difluorobenzene (SS)	97.4		70-130	%		26-SEP-18	R4251424
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000044		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
2-Methyl Naphthalene	0.000057		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Acenaphthene	<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Acenaphthylene	<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Anthracene	<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Acridine	<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(a)anthracene	0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(a)pyrene	0.000593		0.0000050	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Chrysene	<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Dibenzo(a,h)anthracene	0.0000850		0.0000050	mg/L	18-SEP-18	19-SEP-18	R4223949
Fluoranthene	<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Fluorene	0.000052		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Naphthalene	<0.000050		0.000050	mg/L	18-SEP-18	19-SEP-18	R4223949
Phenanthrene	<0.000050		0.000050	mg/L	18-SEP-18	19-SEP-18	R4223949

* 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
L2164781-2 CHE-2							
Sampled By: CLIENT on 11-SEP-18 @ 13:59							
Matrix: wastewater							
Polyaromatic Hydrocarbons (PAHs)							
Pyrene	0.000022		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Quinoline	<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
B(a)P Total Potency Equivalent	0.000681		0.000030	mg/L	18-SEP-18	19-SEP-18	R4223949
Surrogate: Acenaphthene d10	101.5		40-130	%	18-SEP-18	19-SEP-18	R4223949
Surrogate: Acridine d9	105.0		40-130	%	18-SEP-18	19-SEP-18	R4223949
Surrogate: Chrysene d12	123.5		40-130	%	18-SEP-18	19-SEP-18	R4223949
Surrogate: Naphthalene d8	142.8		40-130	%	18-SEP-18	19-SEP-18	R4223949
Surrogate: Phenanthrene d10	110.4		40-130	%	18-SEP-18	19-SEP-18	R4223949
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	245		1.2	mg/L		18-SEP-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		18-SEP-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		18-SEP-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	201		1.0	mg/L		17-SEP-18	R4218976
Ammonia by colour							
Ammonia, Total (as N)	23.6		1.0	mg/L		19-SEP-18	R4227509
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	36.6		6.0	mg/L		15-SEP-18	R4231853
Carbonaceous BOD							
BOD Carbonaceous	20.2		6.0	mg/L		15-SEP-18	R4231853
Chloride in Water by IC							
Chloride (Cl)	62.7		0.50	mg/L		16-SEP-18	R4219127
Conductivity							
Conductivity	623		1.0	umhos/cm		17-SEP-18	R4218976
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	8660	PEHR	10	MPN/100mL		14-SEP-18	R4217359
Hardness Calculated							
Hardness (as CaCO3)	99.2	HTC	0.20	mg/L		26-SEP-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	17-SEP-18	20-SEP-18	R4230678
Nitrate in Water by IC							
Nitrate (as N)	0.594	HTD	0.020	mg/L		16-SEP-18	R4219127
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.664		0.070	mg/L		24-SEP-18	
Nitrite in Water by IC							
Nitrite (as N)	0.069	HTD	0.010	mg/L		16-SEP-18	R4219127
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		21-SEP-18	R4230576
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		19-SEP-18	R4227828
Phosphorus, Total							
Phosphorus (P)-Total	2.65		0.010	mg/L		21-SEP-18	R4234869
Sulfate in Water by IC							
Sulfate (SO4)	14.4		0.30	mg/L		16-SEP-18	R4219127
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0355		0.0030	mg/L	22-SEP-18	24-SEP-18	R4243412
Arsenic (As)-Total	0.00091		0.00010	mg/L	22-SEP-18	24-SEP-18	R4243412
Cadmium (Cd)-Total	0.0000079		0.0000050	mg/L	22-SEP-18	24-SEP-18	R4243412
Calcium (Ca)-Total	29.4		0.050	mg/L	22-SEP-18	24-SEP-18	R4243412

* 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
L2164781-2 CHE-2								
Sampled By: CLIENT on 11-SEP-18 @ 13:59								
Matrix: wastewater								
Total Metals in Water by CRC ICPMS								
Chromium (Cr)-Total		0.00041		0.00010	mg/L	22-SEP-18	24-SEP-18	R4243412
Cobalt (Co)-Total		0.00042		0.00010	mg/L	22-SEP-18	24-SEP-18	R4243412
Copper (Cu)-Total		0.00393		0.00050	mg/L	22-SEP-18	24-SEP-18	R4243412
Iron (Fe)-Total		1.37		0.010	mg/L	22-SEP-18	24-SEP-18	R4243412
Lead (Pb)-Total		0.000184		0.000050	mg/L	22-SEP-18	24-SEP-18	R4243412
Magnesium (Mg)-Total		6.29		0.0050	mg/L	22-SEP-18	24-SEP-18	R4243412
Manganese (Mn)-Total		0.129		0.00010	mg/L	22-SEP-18	24-SEP-18	R4243412
Nickel (Ni)-Total		0.00335		0.00050	mg/L	22-SEP-18	24-SEP-18	R4243412
Potassium (K)-Total		14.7		0.050	mg/L	22-SEP-18	24-SEP-18	R4243412
Sodium (Na)-Total		50.9		0.050	mg/L	22-SEP-18	24-SEP-18	R4243412
Zinc (Zn)-Total		0.0063		0.0030	mg/L	22-SEP-18	24-SEP-18	R4243412
Total Organic Carbon by Combustion								
Total Organic Carbon		29.5		0.50	mg/L		19-SEP-18	R4227709
Total Suspended Solids								
Total Suspended Solids		52.9		2.0	mg/L		17-SEP-18	R4218281
pH								
pH		7.62		0.10	pH units		17-SEP-18	R4218976
L2164781-3 CHE-3A								
Sampled By: CLIENT on 11-SEP-18 @ 14:30								
Matrix: wastewater								
Polyaromatic Hydrocarbons (PAHs)								
1-Methyl Naphthalene		0.000036		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
2-Methyl Naphthalene		0.000048		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Acenaphthene		<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Acenaphthylene		<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Anthracene		<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Acridine		<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(a)anthracene		<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(a)pyrene		0.000634		0.0000050	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(b&j)fluoranthene		<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(g,h,i)perylene		0.000037		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Benzo(k)fluoranthene		<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Chrysene		<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Dibenzo(a,h)anthracene		0.000109	EMPC	0.0000050	mg/L	18-SEP-18	19-SEP-18	R4223949
Fluoranthene		<0.000020		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Fluorene		0.000051	EMPC	0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
Indeno(1,2,3-cd)pyrene		<0.000010		0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Naphthalene		<0.000050		0.000050	mg/L	18-SEP-18	19-SEP-18	R4223949
Phenanthrene		<0.000050		0.000050	mg/L	18-SEP-18	19-SEP-18	R4223949
Pyrene		0.000016	EMPC	0.000010	mg/L	18-SEP-18	19-SEP-18	R4223949
Quinoline		0.000058		0.000020	mg/L	18-SEP-18	19-SEP-18	R4223949
B(a)P Total Potency Equivalent		0.000745		0.000030	mg/L	18-SEP-18	19-SEP-18	R4223949
Surrogate: Acenaphthene d10		80.4		40-130	%	18-SEP-18	19-SEP-18	R4223949
Surrogate: Acridine d9		85.9		40-130	%	18-SEP-18	19-SEP-18	R4223949
Surrogate: Chrysene d12		92.5		40-130	%	18-SEP-18	19-SEP-18	R4223949
Surrogate: Naphthalene d8		105.6		40-130	%	18-SEP-18	19-SEP-18	R42

* 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
L2164781-3 CHE-3A							
Sampled By: CLIENT on 11-SEP-18 @ 14:30							
Matrix: wastewater							
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		18-SEP-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		18-SEP-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	343		1.0	mg/L		17-SEP-18	R4218976
Ammonia by colour							
Ammonia, Total (as N)	77.9		2.0	mg/L		19-SEP-18	R4227509
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	354		50	mg/L		15-SEP-18	R4231853
Carbonaceous BOD							
BOD Carbonaceous	372		50	mg/L		15-SEP-18	R4231853
Chloride in Water by IC							
Chloride (Cl)	76.5		1.0	mg/L		16-SEP-18	R4219127
Conductivity							
Conductivity	1010		1.0	umhos/cm		17-SEP-18	R4218976
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	10100	PEHR	10	MPN/100mL		14-SEP-18	R4217359
Hardness Calculated							
Hardness (as CaCO3)	57.0	HTC	0.63	mg/L		26-SEP-18	
Mercury Total							
Mercury (Hg)-Total	0.000070		0.000050	mg/L	17-SEP-18	20-SEP-18	R4230678
Nitrate in Water by IC							
Nitrate (as N)	<0.040	HTD	0.040	mg/L		16-SEP-18	R4219127
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		24-SEP-18	
Nitrite in Water by IC							
Nitrite (as N)	<0.020	HTD	0.020	mg/L		16-SEP-18	R4219127
Oil & Grease - Gravimetric							
Oil and Grease	55.2		5.0	mg/L		21-SEP-18	R4230576
Phenol (4AAP)							
Phenols (4AAP)	0.161	DLM	0.010	mg/L		20-SEP-18	R4231128
Phosphorus, Total							
Phosphorus (P)-Total	11.2		0.050	mg/L		21-SEP-18	R4234869
Sulfate in Water by IC							
Sulfate (SO4)	11.3		0.60	mg/L		16-SEP-18	R4219127
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.336		0.015	mg/L	22-SEP-18	24-SEP-18	R4243412
Arsenic (As)-Total	0.00074		0.00050	mg/L	22-SEP-18	24-SEP-18	R4243412
Cadmium (Cd)-Total	0.000260		0.000025	mg/L	22-SEP-18	24-SEP-18	R4243412
Calcium (Ca)-Total	14.4		0.25	mg/L	22-SEP-18	24-SEP-18	R4243412
Chromium (Cr)-Total	0.00146		0.00050	mg/L	22-SEP-18	24-SEP-18	R4243412
Cobalt (Co)-Total	0.00058		0.00050	mg/L	22-SEP-18	24-SEP-18	R4243412
Copper (Cu)-Total	0.119		0.0025	mg/L	22-SEP-18	24-SEP-18	R4243412
Iron (Fe)-Total	2.79		0.050	mg/L	22-SEP-18	24-SEP-18	R4243412
Lead (Pb)-Total	0.00208		0.00025	mg/L	22-SEP-18	24-SEP-18	R4243412
Magnesium (Mg)-Total	5.14		0.025	mg/L	22-SEP-18	24-SEP-18	R4243412
Manganese (Mn)-Total	0.0502		0.00050	mg/L	22-SEP-18	24-SEP-18	R4243412
Nickel (Ni)-Total	0.0036		0.0025	mg/L	22-SEP-18	24-SEP-18	R4243412
Potassium (K)-Total	26.1		0.25	mg/L	22-SEP-18	24-SEP-18	R4243412
Sodium (Na)-Total	60.6		0.25	mg/L	22-SEP-18	24-SEP-18	R4243412
Zinc (Zn)-Total	0.206		0.015	mg/L	22-SEP-18	24-SEP-18	R4243412
Total Organic Carbon by Combustion							

* 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
L2164781-3	CHE-3A							
Sampled By: CLIENT on 11-SEP-18 @ 14:30								
Matrix: wastewater								
Total Organic Carbon by Combustion								
Total Organic Carbon		139		5.0	mg/L		19-SEP-18	R4227709
Total Suspended Solids								
Total Suspended Solids		133		3.3	mg/L		17-SEP-18	R4218281
pH								
pH		7.17		0.10	pH units		17-SEP-18	R4218976

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
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.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
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.			
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.			
FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 – 0.2°C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.			
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)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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 200.2/6020A (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-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.			
PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS
Water is spiked with a surrogate spike mix and extracted using solvent extraction techniques. Analysis is performed by GC/MS in the selected ion monitoring (SIM) mode.			
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)
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 aqueous matrices is determined gravimetrically after drying the residue at 103 105°C.			
THM-SUM-CALC-WP	Water	Total Trihalomethanes (THMs)	CALCULATION
Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.			
VOC+F1-HSMS-WP	Water	VOC plus F1 by GCMS	EPA 8260C / EPA 5021A
In this method samples are analyzed using a headspace autosampler interfaced to a dual column gas chromatograph with MS and Flame Ionization detectors.			
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:

Reference Information

Test Method References:

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

Workorder: L2164781

Report Date: 09-OCT-18

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP		Water						
Batch	R4217359							
WG2877167-1	MB							
Fecal Coliforms			<1		MPN/100mL		1	14-SEP-18
HG-T-CVAA-WP		Water						
Batch	R4230678							
WG2882368-2	LCS							
Mercury (Hg)-Total			99.0		%		80-120	20-SEP-18
WG2882368-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	20-SEP-18
MET-T-CCMS-WP		Water						
Batch	R4243412							
WG2884838-2	LCS							
Aluminum (Al)-Total			101.9		%		80-120	24-SEP-18
Arsenic (As)-Total			101.2		%		80-120	24-SEP-18
Cadmium (Cd)-Total			101.0		%		80-120	24-SEP-18
Calcium (Ca)-Total			99.6		%		80-120	24-SEP-18
Chromium (Cr)-Total			100.3		%		80-120	24-SEP-18
Cobalt (Co)-Total			100.3		%		80-120	24-SEP-18
Copper (Cu)-Total			101.9		%		80-120	24-SEP-18
Iron (Fe)-Total			99.5		%		80-120	24-SEP-18
Lead (Pb)-Total			99.4		%		80-120	24-SEP-18
Magnesium (Mg)-Total			109.5		%		80-120	24-SEP-18
Manganese (Mn)-Total			100.8		%		80-120	24-SEP-18
Nickel (Ni)-Total			101.1		%		80-120	24-SEP-18
Potassium (K)-Total			99.6		%		80-120	24-SEP-18
Sodium (Na)-Total			104.3		%		80-120	24-SEP-18
Zinc (Zn)-Total			101.4		%		80-120	24-SEP-18
WG2884838-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-SEP-18
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-SEP-18
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	24-SEP-18
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-SEP-18
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	24-SEP-18
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-SEP-18
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-SEP-18
Iron (Fe)-Total			<0.010		mg/L		0.01	24-SEP-18

Quality Control Report

Workorder: L2164781

Report Date: 09-OCT-18

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4243412								
WG2884838-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-SEP-18
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-SEP-18
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-SEP-18
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-SEP-18
Potassium (K)-Total			<0.050		mg/L		0.05	24-SEP-18
Sodium (Na)-Total			<0.050		mg/L		0.05	24-SEP-18
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-SEP-18
NH3-COL-WP	Water							
Batch R4227509								
WG2881731-6 LCS								
Ammonia, Total (as N)			99.0		%		85-115	19-SEP-18
WG2881731-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	19-SEP-18
NO2-IC-N-WP	Water							
Batch R4219127								
WG2877690-6 LCS								
Nitrite (as N)			103.0		%		90-110	16-SEP-18
WG2877690-5 MB								
Nitrite (as N)			<0.010		mg/L		0.01	16-SEP-18
NO3-IC-N-WP	Water							
Batch R4219127								
WG2877690-6 LCS								
Nitrate (as N)			99.6		%		90-110	16-SEP-18
WG2877690-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	16-SEP-18
OG-GRAV-WP	Water							
Batch R4230576								
WG2878820-2 LCS								
Oil and Grease			94.9		%		70-130	21-SEP-18
WG2878820-1 MB								
Oil and Grease			<5.0		mg/L		5	21-SEP-18
P-T-L-COL-WP	Water							
Batch R4234869								
WG2882291-6 LCS								
Phosphorus (P)-Total			102.8		%		80-120	21-SEP-18
WG2882291-5 MB								

Quality Control Report

Workorder: L2164781

Report Date: 09-OCT-18

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-WP		Water						
Batch R4234869								
WG2882291-5 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	21-SEP-18
PAH,PANH-WP		Water						
Batch R4223949								
WG2880071-2 LCS								
1-Methyl Naphthalene			126.3		%		60-130	18-SEP-18
2-Methyl Naphthalene			121.5		%		60-130	18-SEP-18
Acenaphthene			109.4		%		60-130	18-SEP-18
Acenaphthylene			105.3		%		60-130	18-SEP-18
Anthracene			128.0		%		60-130	18-SEP-18
Acridine			123.7		%		60-130	18-SEP-18
Benzo(a)anthracene			127.6		%		60-130	18-SEP-18
Benzo(a)pyrene			115.7		%		60-130	18-SEP-18
Benzo(b&j)fluoranthene			126.8		%		60-130	18-SEP-18
Benzo(g,h,i)perylene			119.8		%		60-130	18-SEP-18
Benzo(k)fluoranthene			117.9		%		60-130	18-SEP-18
Chrysene			128.2		%		60-130	18-SEP-18
Dibenzo(a,h)anthracene			125.9		%		60-130	18-SEP-18
Fluoranthene			119.2		%		60-130	18-SEP-18
Fluorene			115.6		%		60-130	18-SEP-18
Indeno(1,2,3-cd)pyrene			124.1		%		60-130	18-SEP-18
Naphthalene			126.6		%		50-130	18-SEP-18
Phenanthrene			128.5		%		60-130	18-SEP-18
Pyrene			125.4		%		60-130	18-SEP-18
Quinoline			100.8		%		60-130	18-SEP-18
WG2880071-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	19-SEP-18
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	19-SEP-18
Acenaphthene			<0.000020		mg/L		0.00002	19-SEP-18
Acenaphthylene			<0.000020		mg/L		0.00002	19-SEP-18
Anthracene			<0.000010		mg/L		0.00001	19-SEP-18
Acridine			<0.000020		mg/L		0.00002	19-SEP-18
Benzo(a)anthracene			<0.000010		mg/L		0.00001	19-SEP-18
Benzo(a)pyrene			<0.000005C		mg/L		0.000005	19-SEP-18
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	19-SEP-18



Workorder: L2164781

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP		Water						
Batch	R4223949							
WG2880071-1 MB								
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	19-SEP-18
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	19-SEP-18
Chrysene			<0.000020		mg/L		0.00002	19-SEP-18
Dibenzo(a,h)anthracene			<0.000005C		mg/L		0.000005	19-SEP-18
Fluoranthene			<0.000020		mg/L		0.00002	19-SEP-18
Fluorene			<0.000020		mg/L		0.00002	19-SEP-18
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	19-SEP-18
Naphthalene			<0.000050		mg/L		0.00005	19-SEP-18
Phenanthrene			<0.000050		mg/L		0.00005	19-SEP-18
Pyrene			<0.000010		mg/L		0.00001	19-SEP-18
Quinoline			<0.000020		mg/L		0.00002	19-SEP-18
Surrogate: Acenaphthene d10			91.3		%		40-130	19-SEP-18
Surrogate: Acridine d9			99.1		%		40-130	19-SEP-18
Surrogate: Chrysene d12			108.3		%		40-130	19-SEP-18
Surrogate: Naphthalene d8			94.5		%		40-130	19-SEP-18
Surrogate: Phenanthrene d10			99.0		%		40-130	19-SEP-18
PH-WP		Water						
Batch	R4218976							
WG2879576-2 LCS								
pH			7.37		pH units		7.3-7.5	17-SEP-18
PHENOLS-4AAP-WT		Water						
Batch	R4227828							
WG2881011-2 LCS								
Phenols (4AAP)			114.6		%		85-115	19-SEP-18
WG2881011-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	19-SEP-18
Batch	R4231128							
WG2882315-18 LCS								
Phenols (4AAP)			100.1		%		85-115	20-SEP-18
WG2882315-17 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	20-SEP-18
SO4-IC-N-WP		Water						

Quality Control Report

Workorder: L2164781

Report Date: 09-OCT-18

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP		Water						
Batch	R4219127							
WG2877690-6	LCS							
Sulfate (SO4)			100.8		%		90-110	16-SEP-18
WG2877690-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	16-SEP-18
SOLIDS-TOTSUS-WP		Water						
Batch	R4218281							
WG2878206-6	LCS							
Total Suspended Solids			95.9		%		85-115	17-SEP-18
WG2878206-5	MB							
Total Suspended Solids			<2.0		mg/L		2	17-SEP-18
VOC+F1-HSMS-WP		Water						
Batch	R4251424							
WG2886549-2	LCS							
Acetone			116.4		%		70-130	24-SEP-18
Benzene			97.3		%		70-130	24-SEP-18
Bromobenzene			106.4		%		70-130	24-SEP-18
Bromochloromethane			102.8		%		70-130	24-SEP-18
Bromodichloromethane			104.4		%		70-130	24-SEP-18
Bromoform			115.5		%		70-130	24-SEP-18
Bromomethane			104.3		%		60-140	24-SEP-18
n-Butylbenzene			114.3		%		70-130	24-SEP-18
sec-Butylbenzene			125.9		%		70-130	24-SEP-18
tert-Butylbenzene			107.0		%		70-130	24-SEP-18
Carbon disulfide			83.8		%		70-130	24-SEP-18
Carbon Tetrachloride			96.8		%		70-130	24-SEP-18
Chlorobenzene			98.6		%		70-130	24-SEP-18
Chloroethane			109.9		%		60-140	24-SEP-18
Chloroform			102.7		%		70-130	24-SEP-18
Chloromethane			94.7		%		60-140	24-SEP-18
2-Chlorotoluene			104.8		%		70-130	24-SEP-18
4-Chlorotoluene			103.9		%		70-130	24-SEP-18
Dibromochloromethane			105.6		%		70-130	24-SEP-18
1,2-Dibromo-3-chloropropane			98.6		%		70-130	24-SEP-18
1,2-Dibromoethane			101.4		%		70-130	24-SEP-18
Dibromomethane			105.8		%		70-130	24-SEP-18
1,2-Dichlorobenzene			104.1		%		70-130	24-SEP-18

Quality Control Report

Workorder: L2164781

Report Date: 09-OCT-18

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4251424							
WG2886549-2	LCS							
1,3-Dichlorobenzene			96.9		%		70-130	24-SEP-18
1,4-Dichlorobenzene			98.0		%		70-130	24-SEP-18
Dichlorodifluoromethane			87.8		%		60-140	24-SEP-18
1,1-dichloroethane			102.6		%		70-130	24-SEP-18
1,2-Dichloroethane			105.7		%		70-130	24-SEP-18
1,1-dichloroethene			97.8		%		70-130	24-SEP-18
cis-1,2-Dichloroethene			101.2		%		70-130	24-SEP-18
trans-1,2-Dichloroethene			95.7		%		70-130	24-SEP-18
Dichloromethane			115.2		%		70-130	24-SEP-18
1,2-Dichloropropane			101.9		%		70-130	24-SEP-18
1,3-Dichloropropane			102.7		%		70-130	24-SEP-18
2,2-Dichloropropane			92.7		%		70-130	24-SEP-18
1,1-Dichloropropene			96.9		%		70-130	24-SEP-18
cis-1,3-Dichloropropene			94.7		%		70-130	24-SEP-18
trans-1,3-Dichloropropene			94.4		%		70-130	24-SEP-18
Ethylbenzene			111.6		%		70-130	24-SEP-18
Hexachlorobutadiene			90.2		%		70-130	24-SEP-18
Hexane			96.5		%		70-130	24-SEP-18
2-Hexanone (Methyl butyl ketone)			121.0		%		70-130	24-SEP-18
Isopropylbenzene			98.2		%		70-130	24-SEP-18
4-Isopropyltoluene			104.8		%		70-130	24-SEP-18
MEK			116.4		%		70-130	24-SEP-18
MIBK			113.9		%		70-130	24-SEP-18
MTBE			105.0		%		70-130	24-SEP-18
Styrene			96.1		%		70-130	24-SEP-18
1,1,1,2-Tetrachloroethane			108.9		%		70-130	24-SEP-18
1,1,2,2-Tetrachloroethane			122.5		%		70-130	24-SEP-18
Tetrachloroethene			93.9		%		70-130	24-SEP-18
Toluene			96.8		%		70-130	24-SEP-18
1,2,3-Trichlorobenzene			90.8		%		70-130	24-SEP-18
1,2,4-Trichlorobenzene			86.5		%		70-130	24-SEP-18
1,1,1-Trichloroethane			100.8		%		70-130	24-SEP-18
1,1,2-Trichloroethane			107.0		%		70-130	24-SEP-18
Trichloroethene			99.6		%		70-130	24-SEP-18

Quality Control Report

Workorder: L2164781

Report Date: 09-OCT-18

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4251424							
WG2886549-2	LCS							
Trichlorofluoromethane			102.2		%		60-140	24-SEP-18
1,2,3-Trichloropropane			120.0		%		70-130	24-SEP-18
1,2,4-Trimethylbenzene			104.9		%		70-130	24-SEP-18
1,3,5-Trimethylbenzene			104.0		%		70-130	24-SEP-18
Vinyl Chloride			91.2		%		60-140	24-SEP-18
M+P-Xylenes			97.6		%		70-130	24-SEP-18
o-Xylene			98.5		%		70-130	24-SEP-18
WG2886549-3	LCS							
F1			109.7		%		70-130	24-SEP-18
WG2886549-1	MB							
Acetone			<0.020		mg/L		0.02	25-SEP-18
Benzene			<0.00050		mg/L		0.0005	25-SEP-18
Bromobenzene			<0.00050		mg/L		0.0005	25-SEP-18
Bromochloromethane			<0.00050		mg/L		0.0005	25-SEP-18
Bromodichloromethane			<0.00050		mg/L		0.0005	25-SEP-18
Bromoform			<0.00050		mg/L		0.0005	25-SEP-18
Bromomethane			<0.0010		mg/L		0.001	25-SEP-18
n-Butylbenzene			<0.00050		mg/L		0.0005	25-SEP-18
sec-Butylbenzene			<0.00050		mg/L		0.0005	25-SEP-18
tert-Butylbenzene			<0.00050		mg/L		0.0005	25-SEP-18
Carbon disulfide			<0.00050		mg/L		0.0005	25-SEP-18
Carbon Tetrachloride			<0.00050		mg/L		0.0005	25-SEP-18
Chlorobenzene			<0.00050		mg/L		0.0005	25-SEP-18
Chloroethane			<0.0010		mg/L		0.001	25-SEP-18
Chloroform			<0.00050		mg/L		0.0005	25-SEP-18
Chloromethane			<0.0010		mg/L		0.001	25-SEP-18
2-Chlorotoluene			<0.020		mg/L		0.02	25-SEP-18
4-Chlorotoluene			<0.00050		mg/L		0.0005	25-SEP-18
Dibromochloromethane			<0.00050		mg/L		0.0005	25-SEP-18
1,2-Dibromo-3-chloropropane			<0.00050		mg/L		0.0005	25-SEP-18
1,2-Dibromoethane			<0.00050		mg/L		0.0005	25-SEP-18
Dibromomethane			<0.00050		mg/L		0.0005	25-SEP-18
1,2-Dichlorobenzene			<0.00050		mg/L		0.0005	25-SEP-18
1,3-Dichlorobenzene			<0.00050		mg/L		0.0005	25-SEP-18
1,4-Dichlorobenzene			<0.00050		mg/L		0.0005	25-SEP-18

Quality Control Report

Workorder: L2164781

Report Date: 09-OCT-18

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4251424							
WG2886549-1 MB								
Dichlorodifluoromethane			<0.0010		mg/L		0.001	25-SEP-18
1,1-dichloroethane			<0.00050		mg/L		0.0005	25-SEP-18
1,2-Dichloroethane			<0.00050		mg/L		0.0005	25-SEP-18
1,1-dichloroethene			<0.00050		mg/L		0.0005	25-SEP-18
cis-1,2-Dichloroethene			<0.00050		mg/L		0.0005	25-SEP-18
trans-1,2-Dichloroethene			<0.00050		mg/L		0.0005	25-SEP-18
Dichloromethane			<0.00050		mg/L		0.0005	25-SEP-18
1,2-Dichloropropane			<0.00050		mg/L		0.0005	25-SEP-18
1,3-Dichloropropane			<0.00050		mg/L		0.0005	25-SEP-18
2,2-Dichloropropane			<0.00050		mg/L		0.0005	25-SEP-18
1,1-Dichloropropene			<0.00050		mg/L		0.0005	25-SEP-18
cis-1,3-Dichloropropene			<0.00050		mg/L		0.0005	25-SEP-18
trans-1,3-Dichloropropene			<0.00050		mg/L		0.0005	25-SEP-18
Ethylbenzene			<0.00050		mg/L		0.0005	25-SEP-18
F1			<0.10		mg/L		0.1	25-SEP-18
Hexachlorobutadiene			<0.00050		mg/L		0.0005	25-SEP-18
Hexane			<0.00050		mg/L		0.0005	25-SEP-18
2-Hexanone (Methyl butyl ketone)			<0.020		mg/L		0.02	25-SEP-18
Isopropylbenzene			<0.00050		mg/L		0.0005	25-SEP-18
4-Isopropyltoluene			<0.0010		mg/L		0.001	25-SEP-18
MEK			<0.020		mg/L		0.02	25-SEP-18
MIBK			<0.020		mg/L		0.02	25-SEP-18
MTBE			<0.00050		mg/L		0.0005	25-SEP-18
Styrene			<0.00050		mg/L		0.0005	25-SEP-18
1,1,1,2-Tetrachloroethane			<0.00050		mg/L		0.0005	25-SEP-18
1,1,2,2-Tetrachloroethane			<0.00050		mg/L		0.0005	25-SEP-18
Tetrachloroethene			<0.00050		mg/L		0.0005	25-SEP-18
Toluene			<0.00050		mg/L		0.0005	25-SEP-18
1,2,3-Trichlorobenzene			<0.00050		mg/L		0.0005	25-SEP-18
1,2,4-Trichlorobenzene			<0.00050		mg/L		0.0005	25-SEP-18
1,1,1-Trichloroethane			<0.00050		mg/L		0.0005	25-SEP-18
1,1,2-Trichloroethane			<0.00050		mg/L		0.0005	25-SEP-18
Trichloroethene			<0.00050		mg/L		0.0005	25-SEP-18
Trichlorofluoromethane			<0.0010		mg/L		0.001	25-SEP-18

Quality Control Report

Workorder: L2164781

Report Date: 09-OCT-18

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC+F1-HSMS-WP		Water						
Batch	R4251424							
WG2886549-1	MB							
1,2,3-Trichloropropane			<0.00050		mg/L		0.0005	25-SEP-18
1,2,4-Trimethylbenzene			<0.00050		mg/L		0.0005	25-SEP-18
1,3,5-Trimethylbenzene			<0.00050		mg/L		0.0005	25-SEP-18
Vinyl Chloride			<0.00050		mg/L		0.0005	25-SEP-18
M+P-Xylenes			<0.00040		mg/L		0.0004	25-SEP-18
o-Xylene			<0.00030		mg/L		0.0003	25-SEP-18
Surrogate: 4-Bromofluorobenzene (SS)			89.7		%		70-130	25-SEP-18
Surrogate: 1,4-Difluorobenzene (SS)			98.7		%		70-130	25-SEP-18

Quality Control Report

Workorder: L2164781

Report Date: 09-OCT-18

Page 11 of 12

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

Workorder: L2164781

Report Date: 09-OCT-18

Page 12 of 12

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	11-SEP-18 13:29	17-SEP-18 12:00	0.25	143	hours	EHTR-FM
	2	11-SEP-18 13:59	17-SEP-18 12:00	0.25	142	hours	EHTR-FM
	3	11-SEP-18 14:30	17-SEP-18 12:00	0.25	142	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC							
	1	11-SEP-18 13:29	16-SEP-18 12:30	3	5	days	EHTL
	2	11-SEP-18 13:59	16-SEP-18 12:30	3	5	days	EHTL
	3	11-SEP-18 14:30	16-SEP-18 12:30	3	5	days	EHTL
Nitrite in Water by IC							
	1	11-SEP-18 13:29	16-SEP-18 12:30	3	5	days	EHTL
	2	11-SEP-18 13:59	16-SEP-18 12:30	3	5	days	EHTL
	3	11-SEP-18 14:30	16-SEP-18 12:30	3	5	days	EHTL
Bacteriological Tests							
Fecal coliforms, 1:10 dilution by QT97							
	1	11-SEP-18 13:29	14-SEP-18 18:55	30	78	hours	EHTR
	2	11-SEP-18 13:59	14-SEP-18 18:55	30	77	hours	EHTR
	3	11-SEP-18 14:30	14-SEP-18 18:55	30	76	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demand (BOD)							
	1	11-SEP-18 13:29	15-SEP-18 07:00	48	90	hours	EHTR
	2	11-SEP-18 13:59	15-SEP-18 07:00	48	89	hours	EHTR
	3	11-SEP-18 14:30	15-SEP-18 07:00	48	89	hours	EHTR
Carbonaceous BOD							
	1	11-SEP-18 13:29	15-SEP-18 07:00	48	90	hours	EHTR
	2	11-SEP-18 13:59	15-SEP-18 07:00	48	89	hours	EHTR
	3	11-SEP-18 14:30	15-SEP-18 07:00	48	89	hours	EHTR
Volatile Organic Compounds							
VOC plus F1 by GCMS							
	2	11-SEP-18 13:59	26-SEP-18 12:27	14	15	days	EHT

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.
 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 L2164781 were received on 14-SEP-18 12:25.

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.



ALS Environmental

www.alsglobal.com

Chain of Custody (COC) Request

Canada Toll Free: 1-800-361-2222



L2164781-COFC

COC Number: 17 - 6796661

Page 1 of 1

L2164781

Report To: Contact and company name below will appear on the final report

Company: Health of Chesterfield Twp

Contact: Bob 10

Phone: 513-851-9926

Company address below will appear on the final report

Street: Chesterfield Twp

City/Province: Chatham-Kent ON

Postal Code: N6C 2G3

Invoice To: Same as Report To

Copy of Invoice with Report: ☐ YES ☐ NO

Company: Health of Chesterfield Twp

Contact: Bob 10

Project Information

ALS Account # / Quote #:

Job #:

PO / AFE:

LSD:

ALS Lab Work Order # (lab use only):

Sample Identification and/or Coordinates (This description will appear on the report)

ALS Sample # (lab use only)

Date (dd-mm-yy)

Time (hh:mm)

Sample Type

Drinking Water (DW) Samples (client use)

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

Are samples taken from a Regulated DW System?

Are samples for human consumption/ use?

SHIPPING RELEASE (client use)

Date:

Time:

Received by:

INITIAL SHIPMENT RECEPTION (lab use only)

Date:

Time:

Received by:

FINAL SHIPMENT RECEPTION (lab use only)

Date:

Time:

Received by:

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGALLY. By the use of this form the user acknowledges and agrees with the terms and conditions as specified on the back page of the white - report copy.

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

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

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

Analysis Request

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

4 day [P4-20%] ☐ 1 Business day [E-100%]

3 day [P3-25%] ☐ Same Day, Weekend or Statutory holiday [E2-200%]

2 day [P2-50%] ☐ (Laboratory opening fees may apply)

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

4 day [P4-20%] ☐ 1 Business day [E-100%]

3 day [P3-25%] ☐ Same Day, Weekend or Statutory holiday [E2-200%]

2 day [P2-50%] ☐ (Laboratory opening fees may apply)

Date and Time Required for all E&P TATs:

dd-mm-yy hh:mm

Analysis Request

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

SAMPLES ON HOLD

Sample is hazardous (please provide further details)

NUMBER OF CONTAINERS

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ Ice Packs ☐ Ice Cubes ☐ Cooling Initiated ☐ SIF Observations Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐

INITIAL COOLER TEMPERATURES °C

FINAL COOLER TEMPERATURES °C

11.2

11.2

11.2

11.2

11.2

11.2

11.2

11.2

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix G

Spills

Occurance Date			Spill Region	
Start date			- Any -	
Jan	1	2018		
End date				
Dec	31	2018		
Spill Location		Spill Location Description		
--Chesterfield Inlet				
Report Number		Items per page		
		100		
				Go Reset

No matching spills

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix H

CHE-2			2018				Statistics		
Parameter	Unit	DL	20-Jun-18	31-Jul-18	17-Aug-18	11-Sep-18	Min	Max	Average
Alkalinity									
Bicarbonate (HCO3)	mg/L	1.2	108	N/A	N/A	245	92.6	413	230.83
Carbonate (CO3)	mg/L	0.60	<0.60	N/A	N/A	<0.60	0.6	0.6	0.60
Hydroxide (OH)	mg/L	0.34	<0.34	N/A	N/A	<0.34	0.34	0.34	0.34
Total (as CaCO3)	mg/L	1.0	88.9	N/A	N/A	201	75.9	339	189.41
Ammonia by Colour									
Total (as N)	mg/L	0.20	13.3	N/A	N/A	23.6	0.021	61.7	16.31
Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	mg/L	6.0	17.8	N/A	N/A	36.6	2	360	108.79
Carbonaceous BOD									
BOD Carbonaceous	mg/L	6.0	11.0	N/A	N/A	20.2	2	340	102.01
Chloride in Water by IC									
Chloride (Cl)	mg/L	10	33.4	N/A	N/A	62.7	22.5	355	118.91
Conductivity									
Conductivity	umhos/cm	1.0	456	N/A	N/A	623	267	2260	935.63
Fecal Coliforms									
Fecal Coliforms	MPN/100mL	3	2010	N/A	N/A	8660	4	110000	16947.25
Hardness Calculated									
Hardness (as CaCO3)	mg/L	0.30	117	N/A	N/A	99.2	50	524	190.66
Mercury Total									
Mercury (Hg)	mg/L	0.00020	0.0000056	N/A	N/A	<0.0000050	0.000005	0.0004	0.000090
Nitrate in Water by IC									
Nitrate (as N)	mg/L	0.40	0.233	N/A	N/A	0.594	0.02	0.316	0.06
Nitrate + Nitrite									
Nitrate and Nitrite as N	mg/L	0.45	0.248	N/A	N/A	0.664	0.07	0.348	0.10
Nitrite in Water by IC									
Nitrite (as N)	mg/L	0.20	0.015	N/A	N/A	0.069	0.01	0.032	0.02
Oil & Grease - Gravimetric									
Oil and Grease	mg/L	5.0	<5.0	N/A	N/A	<5.0	2	52.4	17.19
Phenol									
Phenols	mg/L	0.0010	0.0058	N/A	N/A	<0.0010	0.001	0.19	0.05
Phosphorus, Total									
Phosphorus (P)	mg/L	0.010	1.70	N/A	N/A	2.65	0.021	50.8	9.55
Sulfate in Water by IC									
Sulfate (SO4)	mg/L	6.0	85.5	N/A	N/A	14.4	9.76	419	111.87
Total Metals by ICP-MS									
Aluminium (Al)	mg/L	0.0050	0.0228	N/A	N/A	0.0355	0.0121	1.71	0.34
Arsenic (As)	mg/L	0.00020	0.00091	N/A	N/A	0.00091	0.00033	0.0037	0.0011
Cadmium (Cd)	mg/L	0.000010	0.0000212	N/A	N/A	0.0000079	0.00001	0.00073	0.0002
Calcium (Ca)	mg/L	0.10	37.8	N/A	N/A	29.4	14.4	151	56.05
Chromium (Cr)	mg/L	0.0010	0.00024	N/A	N/A	0.00041	0.00027	0.01	0.0021
Cobalt (Co)	mg/L	0.00020	0.00047	N/A	N/A	0.00042	0.00017	0.0039	0.0010
Copper (Cu)	mg/L	0.00020	0.00488	N/A	N/A	0.00393	0.00076	0.15	0.04
Iron (Fe)	mg/L	0.010	2.39	N/A	N/A	1.37	0.34	26.9	5.31
Lead (Pb)	mg/L	0.000090	0.000196	N/A	N/A	0.000184	0.00005	0.0165	0.0034
Magnesium (Mg)	mg/L	0.010	5.53	N/A	N/A	6.29	2.74	35.8	12.33
Manganese (Mn)	mg/L	0.00030	0.200	N/A	N/A	0.129	0.0203	0.301	0.092
Nickel (Ni)	mg/L	0.0020	0.00204	N/A	N/A	0.00335	0.00185	0.02	0.006
Potassium (K)	mg/L	0.020	12.5	N/A	N/A	14.7	3.84	65.2	22.55
Sodium (Na)	mg/L	0.030	25.4	N/A	N/A	50.9	14.1	262	83.49
Zinc (Zn)	mg/L	0.0020	0.0102	N/A	N/A	0.0063	0.003	0.251	0.09
Total Organic Carbon by Combustion									
Total Organic Carbon	mg/L	0.50	24.6	N/A	N/A	29.5	8.24	252	77.46
Total Suspended Solids									
Total Suspended Solids	mg/L	13	30.5	N/A	N/A	52.9	5	507	149.29
pH									
pH	pH Units	0.10	7.06	N/A	N/A	7.62	6.9	7.7	7.23
Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
Toluene	mg/L	0.0010	N/A	N/A	N/A	N/A	0.0001	0.0027	0.0012
Ethyl Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
o-Xylene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
F1 (C6-C10)	mg/L	0.10	N/A	N/A	N/A	N/A	0.1	0.1	0.10
F2 (C10-C16)	mg/L	0.25	N/A	N/A	N/A	N/A	0.1	1.74	0.43
F3 (C16-C34)	mg/L	0.25	N/A	N/A	N/A	N/A	0.25	27.1	5.12
F4 (C34-C50)	mg/L	0.25	N/A	N/A	N/A	N/A	0.25	8.94	1.82
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	N/A	N/A	N/A	0.38	37.8	7.14

Chesterfield Inlet CHE-3			2018				Statistics		
Parameter	Unit	DL	20-Jun-18	31-Jul-18	17-Aug-18	11-Sep-18	Min	Max	Average
Alkalinity									
Bicarbonate (HCO3)	mg/L	1.2	N/A	215	N/A	N/A	28.4	457	283.40
Carbonate (CO3)	mg/L	0.60	N/A	<0.60	N/A	N/A	0.6	12	2.67
Hydroxide (OH)	mg/L	0.34	N/A	<0.34	N/A	N/A	0.34	6.8	1.51
Total (as CaCO3)	mg/L	1.0	N/A	176	N/A	N/A	23.3	375	232.36
Ammonia by Colour									
Total (as N)	mg/L	0.20	N/A	20	N/A	N/A	0.01	88	42.30
Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	mg/L	6.0	N/A	100	N/A	N/A	2	306	135.43
Carbonaceous BOD									
BOD Carbonaceous	mg/L	6.0	N/A	32	N/A	N/A	2.3	302	130.82
Chloride in Water by IC									
Chloride (Cl)	mg/L	10	N/A	67.1	N/A	N/A	8.44	107	63.08
Conductivity									
Conductivity	umhos/cm	1.0	N/A	587	N/A	N/A	83.2	1450	839.38
Fecal Coliforms									
Fecal Coliforms	MPN/100mL	3	N/A	>24200	N/A	N/A	3	110000	60207.82
Hardness Calculated									
Hardness (as CaCO3)	mg/L	0.30	N/A	78.9	N/A	N/A	17.7	674	127.17
Mercury Total									
Mercury (Hg)	mg/L	0.00020	N/A	<0.000025	N/A	N/A	0.000005	0.0004	0.0002
Nitrate in Water by IC									
Nitrate (as N)	mg/L	0.40	N/A	0.141	N/A	N/A	0.02	0.333	0.08
Nitrate + Nitrite									
Nitrate and Nitrite as N	mg/L	0.45	N/A	0.182	N/A	N/A	0.07	0.366	0.12
Nitrite in Water by IC									
Nitrite (as N)	mg/L	0.20	N/A	0.041	N/A	N/A	0.01	0.05	0.02
Oil & Grease - Gravimetric									
Oil and Grease	mg/L	5.0	N/A	<5.0	N/A	N/A	2	473	71.12
Phenol									
Phenols	mg/L	0.0010	N/A	<0.0010	N/A	N/A	0.001	0.329	0.06
Phosphorus, Total									
Phosphorus (P)	mg/L	0.010	N/A	5.6	N/A	N/A	0.012	13.2	6.89
Sulfate in Water by IC									
Sulfate (SO4)	mg/L	6.0	N/A	12.1	N/A	N/A	3.28	543	78.44
Total Metals by ICP-MS									
Aluminium (Al)	mg/L	0.0050	N/A	0.0957	N/A	N/A	0.015	1	0.40
Arsenic (As)	mg/L	0.00020	N/A	0.00111	N/A	N/A	0.00024	0.00109	0.0008
Cadmium (Cd)	mg/L	0.000010	N/A	0.0000208	N/A	N/A	0.000005	0.000452	0.0002
Calcium (Ca)	mg/L	0.10	N/A	22.3	N/A	N/A	5.19	237	39.67
Chromium (Cr)	mg/L	0.0010	N/A	0.00083	N/A	N/A	0.00029	0.0028	0.0014
Cobalt (Co)	mg/L	0.00020	N/A	0.00079	N/A	N/A	0.0002	0.00096	0.00064
Copper (Cu)	mg/L	0.00020	N/A	0.0177	N/A	N/A	0.00134	0.221	0.09
Iron (Fe)	mg/L	0.010	N/A	2.86	N/A	N/A	0.1	1.75	0.91
Lead (Pb)	mg/L	0.000090	N/A	0.00526	N/A	N/A	0.000073	0.0206	0.0034
Magnesium (Mg)	mg/L	0.010	N/A	5.62	N/A	N/A	1.15	20.2	6.83
Manganese (Mn)	mg/L	0.00030	N/A	0.198	N/A	N/A	0.0021	0.171	0.065
Nickel (Ni)	mg/L	0.0020	N/A	0.00583	N/A	N/A	0.002	0.0053	0.0039
Potassium (K)	mg/L	0.020	N/A	19.9	N/A	N/A	2.68	33.1	20.06
Sodium (Na)	mg/L	0.030	N/A	51	N/A	N/A	4.85	90.9	51.74
Zinc (Zn)	mg/L	0.0020	N/A	0.0244	N/A	N/A	0.002	0.304	0.14
Total Organic Carbon by Combustion									
Total Organic Carbon	mg/L	0.50	N/A	51.1	N/A	N/A	5.6	212	96.00
Total Suspended Solids									
Total Suspended Solids	mg/L	13	N/A	250	N/A	N/A	5	440	108.91
pH									
pH	pH Units	0.10	N/A	7.52	N/A	N/A	6.91	7.94	7.47
Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
Toluene	mg/L	0.0010	N/A	N/A	N/A	N/A	0.0141	0.0141	0.01
Ethyl Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
o-Xylene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
F1 (C6-C10)	mg/L	0.10	N/A	N/A	N/A	N/A	0.1	0.1	0.10
F2 (C10-C16)	mg/L	0.25	N/A	N/A	N/A	N/A	0.1	0.1	0.10
F3 (C16-C34)	mg/L	0.25	N/A	N/A	N/A	N/A	0.25	0.25	0.25
F4 (C34-C50)	mg/L	0.25	N/A	N/A	N/A	N/A	0.25	0.25	0.25
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	N/A	N/A	N/A	0.38	0.38	0.38

Chesterfield Inlet CHE-3A			2018				Statistics		
Parameter	Unit	DL	20-Jun-18	31-Jul-18	17-Aug-18	11-Sep-18	Min	Max	Average
Alkalinity									
Bicarbonate (HCO3)	mg/L	1.2	226	217	213	419	32.9	439	232.475
Carbonate (CO3)	mg/L	0.60	<0.60	<0.60	<0.60	<0.60	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
Total (as CaCO3)	mg/L	1.0	185	178	175	343	27	360	190.75
Ammonia by Colour									
Total (as N)	mg/L	0.20	39.6	19.6	21.6	77.9	0.034	75.4	30.606
Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	mg/L	6.0	198	116	58	354	4.4	133	62.375
Carbonaceous BOD									
BOD Carbonaceous	mg/L	6.0	215	32.1	30.5	372	3.4	124	44.95
Chloride in Water by IC									
Chloride (Cl)	mg/L	10	43.8	66.3	48.5	76.5	10.8	77.6	48.55
Conductivity									
Conductivity	umhos/cm	1.0	557	583	531	1010	98.7	1000	576.425
Fecal Coliforms									
Fecal Coliforms	MPN/100mL	3	>24200	8660	>24200	10100	3450	110000	40462.5
Hardness Calculated									
Hardness (as CaCO3)	mg/L	0.30	39.6	86	94.4	57	16.1	98.6	63.7
Mercury Total									
Mercury (Hg)	mg/L	0.00020	0.0000195	<0.000025	<0.000025	0.00007	0.0000088	0.0002	0.00007095
Nitrate in Water by IC									
Nitrate (as N)	mg/L	0.40	<0.020	0.162	0.086	<0.040	0.02	0.606	0.17175
Nitrate + Nitrite									
Nitrate and Nitrite as N	mg/L	0.45	<0.070	0.22	0.171	<0.070	0.07	0.709	0.22975
Nitrite in Water by IC									
Nitrite (as N)	mg/L	0.20	<0.010	0.058	0.085	<0.020	0.01	0.103	0.03575
Oil & Grease - Gravimetric									
Oil and Grease	mg/L	5.0	42.7	<5.0	<5.0	55.2	5	56.4	27.825
Phenol									
Phenols	mg/L	0.0010	0.114	<0.0010	0.0023	0.161	0.001	0.226	0.11165
Phosphorus, Total									
Phosphorus (P)	mg/L	0.010	6.51	5.4	3.9	11.2	0.491	12.8	5.92275
Sulfate in Water by IC									
Sulfate (SO4)	mg/L	6.0	8.85	11.8	15.6	11.3	1.86	27.4	15.115
Total Metals by ICP-MS									
Aluminium (Al)	mg/L	0.0050	0.489	0.101	0.0981	0.336	0.0348	0.558	0.39745
Arsenic (As)	mg/L	0.00020	0.00058	0.0011	0.00093	0.00074	0.00028	0.0012	0.0008
Cadmium (Cd)	mg/L	0.000010	0.000183	0.000028	0.0000293	0.00026	0.0000233	0.000198	0.000112075
Calcium (Ca)	mg/L	0.10	9.53	24.8	28.8	14.4	4.11	26.5	17.5275
Chromium (Cr)	mg/L	0.0010	0.00172	0.00162	0.00059	0.00146	0.00034	0.00198	0.001205
Cobalt (Co)	mg/L	0.00020	0.00058	0.00082	0.00071	0.00058	0.00046	0.00122	0.00077
Copper (Cu)	mg/L	0.00020	0.134	0.0183	0.0183	0.119	0.00741	0.158	0.06673
Iron (Fe)	mg/L	0.010	1.31	2.48	3.37	2.79	0.5	16.1	4.7825
Lead (Pb)	mg/L	0.000090	0.00247	0.00068	0.000836	0.00208	0.000416	0.00305	0.00166375
Magnesium (Mg)	mg/L	0.010	3.83	5.81	5.46	5.14	1.41	7.85	4.8375
Manganese (Mn)	mg/L	0.00030	0.0456	0.203	0.199	0.0502	0.0289	0.124	0.079575
Nickel (Ni)	mg/L	0.0020	0.00281	0.00652	0.00446	0.0036	0.002	0.00681	0.0040975
Potassium (K)	mg/L	0.020	15.5	20.5	14.4	26.1	2.62	26.3	14.915
Sodium (Na)	mg/L	0.030	35.5	53.8	42.9	60.6	6.6	64.3	39.55
Zinc (Zn)	mg/L	0.0020	0.172	0.0306	0.0335	0.206	0.0106	0.207	0.09895
Total Organic Carbon by Combustion									
Total Organic Carbon	mg/L	0.50	149	71.9	33.2	139	3.86	178	85.165
Total Suspended Solids									
Total Suspended Solids	mg/L	13	88.4	224	110	133	23	120	78.5
pH									
pH	pH Units	0.10	7.06	7.6	7.58	7.17	7.03	7.92	7.3875
Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A	0	0	0
Toluene	mg/L	0.0010	N/A	N/A	N/A	N/A	0	0	0
Ethyl Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A	0	0	0
o-Xylene	mg/L	0.00050	N/A	N/A	N/A	N/A	0	0	0
F1 (C6-C10)	mg/L	0.10	N/A	N/A	N/A	N/A	0	0	0
F2 (C10-C16)	mg/L	0.25	N/A	N/A	N/A	N/A	0	0	0
F3 (C16-C34)	mg/L	0.25	N/A	N/A	N/A	N/A	0	0	0
F4 (C34-C50)	mg/L	0.25	N/A	N/A	N/A	N/A	0	0	0
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	N/A	N/A	N/A	0	0	0

Chesterfield Inlet CHE-4			2018				Statistics		
Parameter	Unit	DL	June-20-18	31-Jul-18	17-Aug-18	11-Sep-18	Min	Max	Average
Alkalinity									
Bicarbonate (HCO3)	mg/L	1.2	83.4	96.4	60.4	210	33.4	375	133.56
Carbonate (CO3)	mg/L	0.60	<0.60	<0.60	<0.60	<0.60	0.6	12	2.88
Hydroxide (OH)	mg/L	0.34	<0.34	<0.34	<0.34	<0.34	0.34	6.8	1.632
Total (as CaCO3)	mg/L	1.0	68.4	79	49.5	172	27.4	307	109.42
Ammonia by Colour									
Total (as N)	mg/L	0.20	2.33	0.071	<0.010	17.1	0.01	66.7	11.5185
Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	mg/L	6.0	6.2	3.1	<2.0	34.6	2	530	88.6
Carbonaceous BOD									
BOD Carbonaceous	mg/L	6.0	3.0	<2.0	<2.0	19.6	2	450	78.05
Chloride in Water by IC									
Chloride (Cl)	mg/L	10	29.5	71.3	50.2	63.5	17.3	74	49.98
Conductivity									
Conductivity	umhos/cm	1.0	325	426	306	583	130	988	440.8
Fecal Coliforms									
Fecal Coliforms	MPN/100mL	3	100	<10	<10	4350	3	110000	13423.7
Hardness Calculated									
Hardness (as CaCO3)	mg/L	0.30	87.5	85.9	65.3	105	24.1	149	75.89
Mercury Total									
Mercury (Hg)	mg/L	0.00020	<0.0000050	<0.000005	<0.0000050	<0.0000050	0.000005	0.0002	0.000055
Nitrate in Water by IC									
Nitrate (as N)	mg/L	0.40	0.302	<0.020	<0.020	0.691	0.02	0.566	0.0895
Nitrate + Nitrite									
Nitrate and Nitrite as N	mg/L	0.45	0.320	<0.070	<0.070	0.72	0.07	0.579	0.123
Nitrite in Water by IC									
Nitrite (as N)	mg/L	0.20	0.018	<0.010	<0.010	0.029	0.01	0.05	0.0192
Oil & Grease - Gravimetric									
Oil and Grease	mg/L	5.0	<5.0	<5.0	<5.0	<5.0	2	106	19.96
Phenol									
Phenols	mg/L	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.001	0.125	0.02422
Phosphorus, Total									
Phosphorus (P)	mg/L	0.010	0.358	0.0583	0.0032	1.7	0.012	10.8	1.7272
Sulfate in Water by IC									
Sulfate (SO4)	mg/L	6.0	50.3	24.2	19.6	20.2	5.68	69.6	25.51
Total Metals by ICP-MS									
Aluminium (Al)	mg/L	0.0050	0.0075	0.0383	0.036	0.0225	0.0067	0.821	0.14113
Arsenic (As)	mg/L	0.00020	0.00074	0.00056	0.00033	0.00078	0.00023	0.00127	0.00047
Cadmium (Cd)	mg/L	0.000010	0.0000322	0.0000103	0.0000097	0.0000064	0.00001	0.000317	0.00005991
Calcium (Ca)	mg/L	0.10	26.1	23.3	17.1	32.3	6.33	42.8	20.743
Chromium (Cr)	mg/L	0.0010	0.00026	0.00092	0.00036	0.00039	0.00024	0.0029	0.001183
Cobalt (Co)	mg/L	0.00020	0.00299	0.0003	0.00022	0.0004	0.0002	0.00137	0.000488
Copper (Cu)	mg/L	0.00020	0.00318	0.00295	0.00683	0.00965	0.00131	0.142	0.024552
Iron (Fe)	mg/L	0.010	0.932	0.375	0.124	1.28	0.059	9.38	1.1958
Lead (Pb)	mg/L	0.000090	0.000135	0.000138	0.000102	0.000602	0.00009	0.00807	0.0011174
Magnesium (Mg)	mg/L	0.010	5.43	6.7	5.47	6.02	2.03	10.2	5.855
Manganese (Mn)	mg/L	0.00030	0.405	0.00506	0.00308	0.0928	0.0003	0.198	0.027549
Nickel (Ni)	mg/L	0.0020	0.00239	0.0037	0.00315	0.00306	0.0021	0.00648	0.003504
Potassium (K)	mg/L	0.020	10.3	4.3	2.7	13.7	1.84	21.9	7.839
Sodium (Na)	mg/L	0.030	25.3	52.3	38.2	49.5	15.1	62.7	38.94
Zinc (Zn)	mg/L	0.0020	0.0117	<0.0030	0.0126	0.0101	0.002	0.241	0.03677
Total Organic Carbon by Combustion									
Total Organic Carbon	mg/L	0.50	13.7	9.53	7.93	22.3	8.38	165	39.624
Total Suspended Solids									
Total Suspended Solids	mg/L	13	5.3	3.5	<2.0	45.7	5	167	35.4
pH									
pH	pH Units	0.10	7.10	7.31	7.45	7.4	7.18	8.03	7.497
Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
Toluene	mg/L	0.0010	N/A	N/A	N/A	N/A	0.001	0.001	0.001
Ethyl Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
o-Xylene	mg/L	0.00050	N/A	N/A	N/A	N/A	0.0005	0.0005	0.0005
F1 (C6-C10)	mg/L	0.10	N/A	N/A	N/A	N/A	0.1	0.1	0.1
F2 (C10-C16)	mg/L	0.25	N/A	N/A	N/A	N/A	0.1	0.1	0.1
F3 (C16-C34)	mg/L	0.25	N/A	N/A	N/A	N/A	0.25	0.25	0.25
F4 (C34-C50)	mg/L	0.25	N/A	N/A	N/A	N/A	0.25	0.25	0.25
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	N/A	N/A	N/A	0.38	0.38	0.38

**ANNUAL REPORT
FOR THE HAMLET OF CHESTERFIELD INLET**

Appendix I



WATER LICENCE INSPECTION FORM

☒ Original

☐ Follow-Up Report

Licensee	Licensee Representative
Hamlet of Chesterfield Inlet	Roy Mullins
Licence No. / Expiry	Representative's Title
3BM-CHE1523/ May 14 th , 2023	Senior Administrative Officer
Land / Other Authorizations	Land / Other Authorizations
--	--
Date of Inspection	Inspector
August 17 th 2018	Atuat Shouldice
Activities Inspected	
☐ Camp☐ Drilling☐ Mining☐ Construction☐ Reclamation☐ Fuel Storage ☐ Roads/Hauling☒ Other: Waste Disposal and Water Treatment Facility☒ Other: Landfarm	

Conditions: **A- Acceptable** **U-Unacceptable** **C-Concern** **NI-Not Inspected** **NA- Not applicable**

PART:	Item No.*	Condition	Observation No.*
A: SCOPE, DEFINITIONS AND ENFORCEMENT	--	--	--
B: GENERAL CONDITIONS	1,5,6	A,C,A	1,2,3
C: CONDITIONS APPLYING TO WATER USE	1,2,5	A,A,A	4,5,6
D: CONDITIONS APPLYING TO WASTE DISPOSAL	4,4,7	A,A,A	7,8,9
E: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION	--	--	--
F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE	--	--	--
G: CONDITIONS APPLYING TO ABANDONMENT AND RECLAMATION	--	--	--
H: CONDITIONS APPLYING TO MONITORING PROGRAM	1	A	10

**The item number corresponds with specific conditions within the licence and the observation number corresponds with specific comments provided below.*

Samples taken by Inspector:	Location(s): CHE-4, Final Discharge for Effluent for the wet land treatment area prior to the Finger Bay.
☒ Yes ☐ No	

SECTION 1 ☒ Comments (s._1_) ☐ Non-Compliance with Act or Licence (s.__) ☐ Action Required (s.__)

BACKGROUND

The Hamlet of Chesterfield Inlet is in the Kivalliq Region of Nunavut, located approximately 101 km Northeast of Rankin Inlet.

Inspector's Statement

On August 17th, 2018, a water licence inspection was conducted of water licence no. 3BM-CHE1523, issued to the Hamlet of Chesterfield Inlet. Roy Mullins, Senior Administrative Officer assisted with the inspection.

Observation

1. The Annual report is available for review on the Nunavut Water Board's FTP website.

2. A flow meter has been installed at the fresh water intake, Puiqsuk Lake. The flow was broken at the time of inspection.

3. Appropriate signage is observed at the monitoring stations, as required by PART B item 6.

4. Water is drawn from Puiqsuk Lake using a conveyance line to the water reservoir.

5. The conveyance line from Puiqsuk Lake to the water reservoir is in need of repair; there are a number of holes in the line which causes water lose from the source to the reservoir. New pipe is to arrive on this season's barge.

6. The fresh water intake is equip with a screen.

7. The Sewage Disposal Facility ('SDF') has two sewage truck drop-off locations. The Hamlet predominately uses the new drop off location but, on an emergency basis, has had to use the old location because of back spray during bad weather events.

8. Sludge was removed from the settling pond of the SDF this year. The sludge was disposed of in an area designated for sludge in the Solid Waste Disposal Facility ('SWDF').

9. The Hamlet is segregating waste in the SWDF. Hazardous waste (e.g.: batteries and waste oil) is being placed into seacan with the intention to ship south for treatment. The Hamlet is currently looking for funding to complete this activity.

10. Samples have been collected by the inspector at monitoring station no. CHE-4. This is the final discharge point for effluent from the SDF. The inspector noted compliance with the quality limits prescribed in PART D item 4.



SECTION 2	☐ Comments	☒ Non-Compliance with Act or Licence	☐ Action Required
Concerns related to Water Licence no. 3BM-CHE1523;			
<i>PART B Item 5: Failure to maintain a flow meter for measuring water volumes as required under Part H Item 1.</i>			
— The licensee shall install a flow meter at the water intake before the period of the next inspection.			
— The licensee is required to maintain a flow meter at the water intake in accordance with the conditions of this licence and s.11 of the <i>Nunavut Waters and Nunavut Surface Rights Tribunal Act</i>.			
SECTION 3	☐ Comments	☐ Non-Compliance with Act or Licence	☒ Action Required
The Hamlet has made great changes to the management of the Solid Waste Disposal Facility in 2018. The Hamlet is reminded that fresh water must be metered from the source to ensure that all water use is correctly recorded.			
The Inspector was satisfied with the work completed this year at the Solid Waste Disposal Facility.			

Licensee or Representative	Inspector's Name
Roy Mullins	Atuat Shouldice
Signature	Signature
	Sent Electronically
Date	Date
	February 12th, 2018

CC:

Licensing Department, NWB
Justin Hack, Manager of Field Operations, CIRNAC
Megan Lusty, Municipal Works, CGS