ANNUAL REPORT
FOR GN-CGS RANKIN INLET

YEAR BEING REPORTED: 2014

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence No. **3AM-GRA1015** issued to **Government of Nunavut, Department of Community and Government Services (GN-CGS)**.

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 GRA-1 and GRA-3, as well as detailed chemical, physical and biological analysis required at GRA-2, GRA-6 and GRA-7.

Month Reported	Quantity of Water Obtained from all Sources (m^3)	Quantity of Sewage Waste Discharged (Estimated, m^3)
January	47,490	47,490
February	48,934	48,934
March	52,011	52,011
April	50,597	50,597
May	53,819	53,819
June	46,539	46,539
July	42,553	42,553
August	41,839	41,839
September	42,664	42,664
October	51,456	51,456
November	51,257	51,257
December	50,997	50,997
ANNUAL TOTAL	**580,156**	**580,156**

Note: The sewage discharge volume is considered equal to the volume of water consumption since no metering system exists at the Sewage Treatment Plant.

Solids separated from the sewage effluent at the Sewage Treatment Facility are contained in bags and transported to a designated area of the Rankin Inlet Solid Waste Site. Approximately 1 m^3 of solids are removed weekly. As per Part H, Item 5 of the Licence, below is a summary of solids remove from Sewage Treatment Facility at Monitoring Station Number GRA-4.

Month Reported	Solids Removed from the Sewage Treatment Facility (m^3)
January	4
February	4
March	4
April	4
May	4
June	4
July	4
August	4
September	4
October	4
November	4
December	4
ANNUAL TOTAL	**48**

As per Part H, Item 6 of the Licence, below are water elevations at Nipissar Lake done by surveying the lake at Monitoring Station Number GRA-5. Water volume of Nipissar Lake is estimated from water elevation, using *Nipissar Lake Statistics* from the Geological Survey of Canada, October 2009 which estimated a lake volume of 2,860,000 m^3.

Date	Nipissar Lake Elevation below Reference Point (m)	Estimated Volume of Nipissar Lake (m^3)
June 4, 2014	2.3178	2,908,160
June 11, 2014	2.3654	2,871,840
July 17, 2014	2.3940	2,844,600
July 21, 2014	2.4130	2,826,440
August 5, 2014	2.4638	2,781,040
August 14, 2014	2.4733	2,771,960
August 29, 2014	2.4892	2,753,800

Note: Reference Point is the red box at the back of the Nipissar Lake Pumphouse

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;

- Advanced Subsea Services was contracted by CGS to perform an inspection of the intake pipes and screens in September 2014. During the inspection, the aerator used to prevent ice from forming over the intakes during winter was found floating, and was reattached to the intake pipe. The intake screens were found covered with weeds and algae growth, and were cleaned with a wire brush.
- Advanced Subsea Services was contracted by CGS to perform an inspection of the Williamson Lake Water Tank with a ROV September 2014. The inspection revealed that the raw water tank required cleaning and minor repair work. Over four days in October 2014, a diver used a suction pump to remove sediment and small organisms from the raw water tank. The sediment was captured and disposed of at the Rankin Inlet Solid Waste Site. The inlet pipe within the tank was damaged, and was repaired with a new 90-degree elbow. The top of the inlet diffuser with secured to the tank wall bracket.
- Phase 2 of the Sewage Treatment Plant Upgrade Works was carried out in 2014. The NWB was notified of the work on March 20, 2014 by Kudlik Construction. Phase 2 work included an exterior bypass at Nuvuk Lift Station and upgrades to the Water Treatment Plant building.

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

Spills:

- 2014128, 2014-09-08, 12-12 Igloo Street, P50 Heating Oil, 1000 L
- 2014174, 2014-05-20, Illagiktut Center, Apartment building, P50, 200 L
- 2014180, 2014-05-27, Rankin Inlet Unit 426, Heating Diesel Fuel, 800 L
- 2014199, 2014-06-04, 33 Plex, Adjacent to Healing Facility, P-50, 30 L
- 2014204, 2014-05-05, Rankin Inlet, Heating diesel Fuel, 325 L
- 2014232, 2014-06-24, Rankin Inlet, Heating Fuel Diesel, 0 L
- 2014275, 2014-07-29, IBSL Leasing LTD Duplex, P-50, 200 L
- 2014308, 2014-08-22, Kivalliq Hall, Propylene Glycol, 0 L
- 2014354, 2014-10-01, Rankin Inlet, Diesel, 800 L
- 2014404, 2014-11-07, 163 Mivvik Ave, Furnace Fuel, 60 L
- 2014445, 2014-12-11, Rankin Inlet, Fuel Oil, 75 L

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 2014 and none is anticipated for 2015.

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;

- The *Seasonal Replenishment of Nipissar Lake, Rankin Inlet, Nunavut – Environmental Screening Report* was prepared by Stantec, May 2014 and submitted to the NWB and NIRB May 9, 2014.
- A Renewal Application was submitted to the NWB March 9, 2015.
- A Short Term Renewal Application (180 days) was submitted to the NWB March 26, 2015.
- The *Water Pumping Adaptive Management Plan* will be submitted to the NWB by May 15, 2015.

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

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- Signage for the Monitoring Program Stations will be ordered over the winter for installation summer 2015. Pictures of the signage at Monitoring Program Stations will be included in the 2015 Annual Report.

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

- *Addendum to Operations and Maintenance Plan for the Water Supply Facility, Char River, Rankin Inlet, Nunavut* was prepared by Stantec, May 2014. This plan was approved by the NWB as per Part F, Item 1 of Amendment No. 1.
- The *Spill Contingency Plan for Water Supply and Sewage Treatment Facilities Rankin Inlet, Nunavut* was prepared by Stantec, May 2014. This plan was approved by the NWB

as per Part F, Item 2 of Amendment No. 1.
- The *Sewage Treatment Facility Operation and Maintenance (O&M) Plan* and *Environmental Monitoring Program and Quality Assurance/Quality Control Plan* are currently being reviewed. Updated versions will be submitted by April 17, 2015.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- No Quarterly Reports were submitted in 2014. Quarterly Reports will be submitted to the NWB as per Part B, Item 2 of the Licence in 2015 and onwards. The 2015 First Quarter Report will be submitted to the NWB by April 17, 2015. Subsequent reports will be submitted within 45 days following each quarter.
- GRA-3 (effluent discharge from the Sewage Treatment Facility) was not sampled quarterly in 2014. Quarterly sampling required under the Monitoring Program will be completed in 2015 and onwards.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- No AANDC Inspection took place in 2014.
- The GN-CGS Rankin Inlet Plan for Compliance was submitted to the NWB on March 9, 2015.

List of Appendixes

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Appendix A: Hazardous Materials Spill Database, Rankin Inlet 2014

Hazardous Materials Spill Database

Environment Division of ENR
Scotia 6, 5102-50th Avenue; Yellowknife, NT X1A 3S8
Phone: (867) 873-7654 Fax: (867) 873-0221

Sorted By: SpillNo for the year(s): 2014

Spill No.	Date	Ter	Region	Location	Site Description	Commodity	Quantity	Source	Agency
2014128	2014-09-08	NU	KEE	Rankin Inlet	12-12 Igloo Street	P50 heating oil	1000 L	ST<	GN
2014174	2014-05-20	NU	KEE	Rankin Inlet	LIAgiktut Center, Apartment building, Rankin Inlet	P-50	200 L	ST<	GN
2014180	2014-05-27	NU	KEE	Rankin Inlet	Rankin Inlet Unit 426	Heating Diesel Fuel	800 L	ST<	GN
2014199	2014-06-04	NU	KEE	Rankin Inlet	33 Plex Rankin Inlet. Adjacent to Healing Facility	P-50	30 L	ST<	GN
2014204	2014-06-05	NU	KEE	Rankin Inlet	Rankin Inlet	Heating diesel Fuel	325 L	PL	GN
2014232	2014-06-23	NU	KIT	Rankin Inlet	Rankin Inlet	Heating Fuel Diesel	0 L	ST<	GN
2014275	2014-07-29	NU	KEE	Rankin Inlet	IBSL Leasing LTD. Duplex	P-50	200 L	ST<	GN
2014281	2014-07-29	NU	KEE	Rankin Inlet	IBSL Leasing LTD.- Duplex FILE CLOSED	P-50	200 L	ST<	GN
2014308	2014-08-22	NU	KEE	Rankin Inlet	Kivalliq Hall	Propylene Glycol	0 L	PL	GN
2014354	2014-10-01	NU	KEE	Rankin Inlet	Rankin Inlet	Diesel	800 L	ST<	GN
2014404	2014-11-07	NU	KEE	Rankin Inlet	163 Mivvik Ave	Furnace Fuel	60 L	ST<	GN
2014445	2014-12-11	NU	KEE	Rankin Inlet	Rankin Inlet	Fuel Oil	75 L	PL	EPS

Total Spills on this Report: 12

This report contains information regarding spills that were reported to the NWT 24-Hour Spill Line. The absence of information on any particular location in no way guarantees that contamination has not occurred at that location.

LEGEND

Region:
BAF - Baffin
DEH - Deh Cho
INU - Inuvik
KEE - Keewatin
KIT - Kitikmeot
NSL - North Slave
SAH - Sahtu
SSL - South Slave

Source:
AIR - Aircraft
DRUM - Drum or Barrel
MV - Marine Vessel
NS - Natural Seepage
OTH - Other Transportation
PL - Pipe or Line
RT - Rail Train
SL - Sewage Lagoon
ST< - Storage Tank <4000 litres
ST> - Storage Tank >4000 litres
TP - Tailings Pond
TRU - Truck
UK - Unkown
WELL - Wet Wells, Flaring
Boom

Agency:
CCG - Canadian Coast Guard
EP - Environment Canada
GN - Government of Nunavut
GNWT - Government of Northwest Territories
ILA - Inuvialiut Land Administration
INAC - Indian and Northern Affairs Canada
NEB - National Energy Board

Appendix B: Summary of Water Chemistry Analysis

Summary of Water Chemistry Analysis

Parameters	Units	Detection Limit	24-Jun-14		07-Oct-14		Guidelines for Canadian Drinking Water Quality
			Nipissar Lake	Char River	Char River	Lower Landing Lake	
Miscellaneous Parameters							
Ammonia, Total (as N)	mg/L	0.010	<0.010	<0.010	<0.010	0.037	None required
Biochemical Oxygen Demand	mg/L	6.0			<6.0	<6.0	
Phosphorus (P)-Total	mg/L	0.010	0.02	0.013	<0.010	<0.010	
Total Kjeldahl Nitrogen	mg/L	0.20			0.27	0.27	
Fecal Coliforms	MPN/100mL	3	<3	<3	<3	<3	
Total Suspended Solids	mg/L	5	8	<5.0			
Alkalinity							
Alkalinity, Total (as CaCO3)	mg/L	20	41	20	25	23	
Bicarbonate (HCO3)	mg/L	24	50	25	30	28	
Carbonate (CO3)	mg/L	12	<12	<12	<12	<12	
Hydroxide (OH)	mg/L	6.8	<6.8	<6.8	<6.8	<6.8	
Chloride by Ion Chromatography							
Chloride	mg/L	0.50	30.5	15.7	22.4	24.2	AO: ≤ 250 mg/L
Conductivity							
Conductivity	umhos/cm	20	210	104	150	151	
Hardness Calculated							
Hardness (as CaCO3)	mg/L	0.30	54.9	24.3	35.7	32.1	None required
Nitrate as N by Ion Chromatography							
Nitrate-N	mg/L	0.05	<0.050	<0.050	<0.050	<0.050	
Nitrate+Nitrite							
Nitrate and Nitrite as N	mg/L	0.071	<0.071	<0.071	<0.071	<0.071	10 mg/L as nitrate-nitrogen
Nitrite as N by Ion Chromatography							
Nitrite-N	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	
Sulfate by Ion Chromatography							
Sulfate	mg/L	0.50	11	4.75	8.99	7.89	AO: ≤ 500 mg/L
TDS Calculated							
TDS (Calculated)	mg/L	5.0	105	50.3	73.8	73.8	AO: < 500 mg/L
Total Metals by ICP-MS							
Aluminum (Al)-Total	mg/L	0.02	0.075	<0.020	<0.020	0.020	OG: <0.1 mg/L (conventional); <0.2 mg/L (other treatment types)
Antimony (Sb)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	MAC: 0.006 mg/L
Arsenic (As)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	MAC: 0.010 mg/L
Barium (Ba)-Total	mg/L	0.0005	0.01444	0.0102	0.0149	0.0134	MAC: 1.0 mg/L
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	
Bismuth (Bi)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	
Boron (B)-Total	mg/L	0.03	0.037	<0.030	<0.030	<0.030	MAC: 5 mg/L
Cadmuim (Cd)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	MAC: 0.005 mg/L
Calcium (Ca)-Total	mg/L	0.2	16.6	7.3	10.2	8.62	None required
Cesium (Cs)- Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	
Chromium (Cr)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	MAC: 0.05 mg/L
Cobalt (Co)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	
Copper (Cu)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	AO: ≤ 1.0 mg/L
Iron (Fe)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	AO: ≤ 0.3 mg/L
Lead (Pb)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	MAC: 0.010 mg/L
Lithium (Li)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	

Magnesium (Mg)-Total	mg/L	0.05	3.24	1.47	2.49	2.58	None required
Manganese (Mn)-Total	mg/L	0.001	0.006	0.0043	0.0054	0.0039	AO: ≤ 0.05 mg/L
Molybdenum (Mo)-Total	mg/L	0.0005	0.00067	<0.00050	<0.00050	0.00055	
Nickel (Ni)- Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	
Phosphorus (P)-Total	mg/L	0.5	<0.50	<0.50	<0.50	<0.50	
Potassium (K)-Total	mg/L	0.1	1.86	1.03	1.60	1.59	
Rubidium (Rb)-Total	mg/L	0.0005	0.00164	0.00144	0.00203	0.00195	
Selenium (Se)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	MAC: 0.01 mg/L
Silicon (Si)-Total	mg/L	0.3	<0.30	<0.30	<0.30	<0.30	
Silver(Ag)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	None required
Sodium(Na)-Total	mg/L	0.05	16.6	7.98	13.4	15.2	AO: ≤ 200 mg/L
Strontium(Sr)-Total	mg/L	0.0005	0.0826	0.0426	0.0547	0.0514	
Tellurium(Te)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	
Thallium(Tl)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	
Thorium(Th)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	
Tin(Sn)-Total	mg/L	0.0006	<0.00060	<0.00060	<0.00060	<0.00060	
Titanium(Ti)-Total	mg/L	0.001	0.0029	<0.0010	<0.0010	<0.0010	
Tungsten(W)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	
Uranium(U)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	MAC: 0.02 mg/L
Vanadium(V)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	
Zinc(Zn)-Total	mg/L	0.02	<0.020	<0.020	<0.020	<0.020	AO: ≤ 5.0 mg/L
Zirconium(Zr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	
pH							
pH	pH Units	0.1	7.77	7.46	7.63	7.62	6.5-8.5

MAC - Maximum acceptable concentrations (health based)
AO - Aesthetic objectives (based on aesthetic considerations)
OG - Operational guidance values (based on operational considerations)

Appendix C: Summary of Hydrocarbon Contamination Analysis

Summary of Hydrocarbon Contamination Analysis

Parameters	Units	Detection Limit	07-Oct-14			Guidelines for Canadian Drinking Water Quality
			Nipissar Lake	Char River	Lower Landing Lake	
BTX plus F1 by GCMS						
Benzene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	MAC: 0.005 mg/L
Toluene	mg/L	0.0010	<0.0010	<0.0010	<0.0010	AO: ≤ 0.024 mg/L [1]
Ethylbenzene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	AO: ≤ 0.0024 mg/L [2]
o-Xylene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	
m+p-Xylenes	mg/L	0.00050	<0.00050	<0.00050	<0.00050	
F1 (C6-C10)	mg/L	0.10	<0.10	<0.10	<0.10	
CCME Total Hydrocarbons						
F1-BTEX	mg/L	0.10	<0.10	<0.10	<0.10	
F2-Naphth	mg/L	0.25	<0.25	<0.25	<0.25	
F3-PAH	mg/L	0.25	<.025	<.025	<.025	
Total Hydrocarbons (C6-C50)	mg/L	0.44	<0.44	<0.44	<0.44	
F2-F4 PHC Method						
F2 (C10-C16)	mg/L	0.25	<0.25	<0.25	<0.25	
F3 (C16-C34)	mg/L	0.25	<0.25	<0.25	<0.25	
F4 (C34-C50)	mg/L	0.25	<0.25	<0.25	<0.25	
Sum of Xylene Isomer Concentrations						
Xylenes (Total)	mg/L	0.0015	<0.0015	<0.0015	<0.0015	AO: ≤ 0.3 mg/L [3]
Polyaromatic Hydrocarbons (PAHs)						
1-Methyl Napthalene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
2-Methyl Naphthalene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Acenaphthene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Acenaphthylene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Anthracene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Acridine	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Benzo(a)anthracene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Benzo(a)pyrene	mg/L	0.0000050	<0.0000050	<0.0000050	<0.0000050	MAC: 0.00001 mg/L
Benzo(b&j)fluoranthene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Benzo(g,h,i)perylene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Benzo(k)fluoranthene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Chrysene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Dibenzo(a,h)anthracene	mg/L	0.0000050	<0.0000050	<0.0000050	<0.0000050	
Fluoranthene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Fluorene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Indeno(1,2,3-cd)pyrene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Naphthalene	mg/L	0.000050	0.000061	<0.000050	<0.000050	
Phenanthrene	mg/L	0.000050	<0.000050	<0.000050	<0.000050	
Pyrene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Quinoline	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
B(a)P Total Potency Equivalent	mg/L	0.000030	<0.000030	<0.000030	<0.000030	

MAC - Maximum acceptable concentrations (health based)
AO - Aesthetic objectives (based on aesthetic considerations)
OG - Operational guidance values (based on operational considerations)

[1] AO based on odour

[2] AO based on odour; levels above the AO would render drinking water unpalatable

[3] AO based on taste and odour; levels above the AO would render water unpalatable

Appendix D: Certificate of Analysis, June 24, 2014 and October 7, 2014

Nunavut - Community & Government Services
- Rankin Inlet
ATTN: MEGAN LUSTY
PO BOX 490
BAG 002
Rankin Inlet NU X0C 0G0

Date Received: 25-JUN-14
Report Date: 04-JUL-14 09:28 (MT)
Version: FINAL

Client Phone: 867-645-8176

Certificate of Analysis

Lab Work Order #: L1476895

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

Barb Bayer
General Manager, Winnipeg

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1476895-1 NIPISSOR LAKE							
Sampled By: MEGAN LUSTY on 24-JUN-14 @ 10:45							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.010		0.010	mg/L		30-JUN-14	R2876966
Fecal Coliforms	<3		3	MPN/100mL		02-JUL-14	R2878375
Phosphorus (P)-Total	0.020		0.010	mg/L		02-JUL-14	R2877002
Total Suspended Solids	8.0		5.0	mg/L		27-JUN-14	R2875948
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	41		20	mg/L		30-JUN-14	R2876471
Bicarbonate (HCO3)	50		24	mg/L		30-JUN-14	R2876471
Carbonate (CO3)	<12		12	mg/L		30-JUN-14	R2876471
Hydroxide (OH)	<6.8		6.8	mg/L		30-JUN-14	R2876471
Chloride by Ion Chromatography							
Chloride	30.5		0.50	mg/L		26-JUN-14	R2875938
Conductivity							
Conductivity	210		20	umhos/cm		30-JUN-14	R2876471
Hardness Calculated							
Hardness (as CaCO3)	54.9		0.30	mg/L		02-JUL-14	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		26-JUN-14	R2875938
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		30-JUN-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		26-JUN-14	R2875938
Sulfate by Ion Chromatography							
Sulfate	11.0		0.50	mg/L		26-JUN-14	R2875938
TDS calculated							
TDS (Calculated)	105		5.0	mg/L		02-JUL-14	
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.075		0.020	mg/L	30-JUN-14	30-JUN-14	R2876428
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Arsenic (As)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Barium (Ba)-Total	0.0144		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Boron (B)-Total	0.037		0.030	mg/L	30-JUN-14	30-JUN-14	R2876428
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	30-JUN-14	30-JUN-14	R2876428
Calcium (Ca)-Total	16.6		0.20	mg/L	30-JUN-14	30-JUN-14	R2876428
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Cobalt (Co)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Copper (Cu)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Iron (Fe)-Total	<0.10		0.10	mg/L	30-JUN-14	30-JUN-14	R2876428
Lead (Pb)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Lithium (Li)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Magnesium (Mg)-Total	3.24		0.050	mg/L	30-JUN-14	30-JUN-14	R2876428
Manganese (Mn)-Total	0.0060		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Molybdenum (Mo)-Total	0.00067		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Phosphorus (P)-Total	<0.50		0.50	mg/L	30-JUN-14	30-JUN-14	R2876428
Potassium (K)-Total	1.86		0.10	mg/L	30-JUN-14	30-JUN-14	R2876428
Rubidium (Rb)-Total	0.00164		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Selenium (Se)-Total	<0.0050		0.0050	mg/L	30-JUN-14	30-JUN-14	R2876428
Silicon (Si)-Total	<0.30		0.30	mg/L	30-JUN-14	30-JUN-14	R2876428

* 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
L1476895-1 NIPISSOR LAKE							
Sampled By: MEGAN LUSTY on 24-JUN-14 @ 10:45							
Matrix: WATER							
Total Metals by ICP-MS							
Silver (Ag)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Sodium (Na)-Total	16.6		0.050	mg/L	30-JUN-14	30-JUN-14	R2876428
Strontium (Sr)-Total	0.0826		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	30-JUN-14	30-JUN-14	R2876428
Thorium (Th)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Tin (Sn)-Total	<0.00060		0.00060	mg/L	30-JUN-14	30-JUN-14	R2876428
Titanium (Ti)-Total	0.0029		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Tungsten (W)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Uranium (U)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Vanadium (V)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Zinc (Zn)-Total	<0.020		0.020	mg/L	30-JUN-14	30-JUN-14	R2876428
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
pH							
pH	7.77		0.10	pH units		30-JUN-14	R2876471
L1476895-2 CHAR RIVER							
Sampled By: MEGAN LUSTY on 24-JUN-14 @ 10:15							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.010		0.010	mg/L		30-JUN-14	R2876966
Fecal Coliforms	<3		3	MPN/100mL		02-JUL-14	R2878375
Phosphorus (P)-Total	0.013		0.010	mg/L		02-JUL-14	R2877002
Total Suspended Solids	<5.0		5.0	mg/L		27-JUN-14	R2875948
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	20		20	mg/L		30-JUN-14	R2876471
Bicarbonate (HCO3)	25		24	mg/L		30-JUN-14	R2876471
Carbonate (CO3)	<12		12	mg/L		30-JUN-14	R2876471
Hydroxide (OH)	<6.8		6.8	mg/L		30-JUN-14	R2876471
Chloride by Ion Chromatography							
Chloride	15.7		0.50	mg/L		26-JUN-14	R2875938
Conductivity							
Conductivity	104		20	umhos/cm		30-JUN-14	R2876471
Hardness Calculated							
Hardness (as CaCO3)	24.3		0.30	mg/L		02-JUL-14	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		26-JUN-14	R2875938
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		30-JUN-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		26-JUN-14	R2875938
Sulfate by Ion Chromatography							
Sulfate	4.75		0.50	mg/L		26-JUN-14	R2875938
TDS calculated							
TDS (Calculated)	50.3		5.0	mg/L		02-JUL-14	
Total Metals by ICP-MS							
Aluminum (Al)-Total	<0.020		0.020	mg/L	30-JUN-14	30-JUN-14	R2876428
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Arsenic (As)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Barium (Ba)-Total	0.0102		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428

* 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
L1476895-2 CHAR RIVER							
Sampled By: MEGAN LUSTY on 24-JUN-14 @ 10:15							
Matrix: WATER							
Total Metals by ICP-MS							
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Boron (B)-Total	<0.030		0.030	mg/L	30-JUN-14	30-JUN-14	R2876428
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	30-JUN-14	30-JUN-14	R2876428
Calcium (Ca)-Total	7.30		0.20	mg/L	30-JUN-14	30-JUN-14	R2876428
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Cobalt (Co)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Copper (Cu)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Iron (Fe)-Total	<0.10		0.10	mg/L	30-JUN-14	30-JUN-14	R2876428
Lead (Pb)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Lithium (Li)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Magnesium (Mg)-Total	1.47		0.050	mg/L	30-JUN-14	30-JUN-14	R2876428
Manganese (Mn)-Total	0.0043		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Molybdenum (Mo)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Phosphorus (P)-Total	<0.50		0.50	mg/L	30-JUN-14	30-JUN-14	R2876428
Potassium (K)-Total	1.03		0.10	mg/L	30-JUN-14	30-JUN-14	R2876428
Rubidium (Rb)-Total	0.00144		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Selenium (Se)-Total	<0.0050		0.0050	mg/L	30-JUN-14	30-JUN-14	R2876428
Silicon (Si)-Total	<0.30		0.30	mg/L	30-JUN-14	30-JUN-14	R2876428
Silver (Ag)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Sodium (Na)-Total	7.98		0.050	mg/L	30-JUN-14	30-JUN-14	R2876428
Strontium (Sr)-Total	0.0426		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	30-JUN-14	30-JUN-14	R2876428
Thorium (Th)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Tin (Sn)-Total	<0.00060		0.00060	mg/L	30-JUN-14	30-JUN-14	R2876428
Titanium (Ti)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
Tungsten (W)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Uranium (U)-Total	<0.00050		0.00050	mg/L	30-JUN-14	30-JUN-14	R2876428
Vanadium (V)-Total	<0.0020		0.0020	mg/L	30-JUN-14	30-JUN-14	R2876428
Zinc (Zn)-Total	<0.020		0.020	mg/L	30-JUN-14	30-JUN-14	R2876428
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	30-JUN-14	30-JUN-14	R2876428
pH							
pH	7.46		0.10	pH units		30-JUN-14	R2876471

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-WP	Water	Alkalinity	APHA 2320B
Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.			
CL-IC-WP	Water	Chloride by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
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.			
ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
FC-MPN-WP	Water	Fecal Coliform	APHA 9221E
The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.			
IONBALANCE-CALC-WP	Water	Ion Balance Calculation	APHA 1030E
MET-T-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-T
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
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-WP	Water	Nitrite as N by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
NO3-IC-WP	Water	Nitrate as N by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus 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.			
SO4-IC-WP	Water	Sulfate by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.			

** 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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

L1476895-COFC

10-026474

Page 1 of 1

Report To		Service Requested: (Rush subject to availability)
Company: GN-CGS	Standard: ✓ Other (specify):	✓ Regular (Standard Turnaround Times))
Contact: Megan Lusty	Select: PDF ✓ Excel ✓ Digital Fax	Priority, Date Req'd: _____ (Surcharges apply)
Address: P.O. Box 490, Rankin Inlet, NU X0C 0G0	Email 1: mlusty@gov.nu.ca	Emergency (1 Business Day) - 100% Surcharge
	Email 2:	For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone: Fax:		

Invoice To	Client / Project Information
Same as Report ? (circle) Yes or No (if No, provide details)	
Copy of Invoice with Report? (circle) Yes or No	Job #:
Company:	PO / AFE:
Contact:	LSD:
Address:	
Phone: Fax:	Quote #:

Lab Work Order # (lab use only)	ALS Contact:	Sampler: Megan Lusty

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Routine	Nutrients	Fecal Coliforms	BOD	TSS	Number of Containers
1	Nipissor Lake	24-06-14	10:15 AM	Water	✓	✓	✓	✓	✓	4
2	Char River	24-06-14	10:15 AM	Water	✓	✓	✓	✓	✓	4

Analysis Request (Indicate Filtered or Preserved, F/P)

Special Instructions / Regulations / Hazardous Details

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.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Megan Lusty	June 24/14	11:00 AM	LD	June 25/14	2:40	17.5°C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

Nunavut - Community & Government Services
- Rankin Inlet
ATTN: MEGAN LUSTY
BAG 002
BOX 490
Rankin Inlet NU X0C 0G0

Date Received: 07-OCT-14
Report Date: 14-OCT-14 15:12 (MT)
Version: FINAL

Client Phone: 867-645-8176

Certificate of Analysis

Lab Work Order #: L1529266

Project P.O. #: NOT SUBMITTED
Job Reference: 3AM - GRA1015
C of C Numbers:
Legal Site Desc:

Barb Bayer
General Manager, Winnipeg

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1529266-1 LOWER LANDING LAKE							
Sampled By: MEGAN LUSTY on 07-OCT-14 @ 09:50							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
Toluene	<0.0010		0.0010	mg/L		08-OCT-14	R2976408
Ethyl benzene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
o-Xylene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
m+p-Xylenes	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
F1 (C6-C10)	<0.10		0.10	mg/L		08-OCT-14	R2976408
Surrogate: 4-Bromofluorobenzene (SS)	100.7		70-130	%		08-OCT-14	R2976408
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		09-OCT-14	
F2-Naphth	<0.25		0.25	mg/L		09-OCT-14	
F3-PAH	<0.25		0.25	mg/L		09-OCT-14	
Total Hydrocarbons (C6-C50)	<0.44		0.44	mg/L		09-OCT-14	
F2-F4 PHC method							
F2 (C10-C16)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
F3 (C16-C34)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
F4 (C34-C50)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
Surrogate: 2-Bromobenzotrifluoride	113.8		60-140	%	08-OCT-14	08-OCT-14	R2978314
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.0015		0.0015	mg/L		09-OCT-14	
Miscellaneous Parameters							
Ammonia, Total (as N)	0.037		0.010	mg/L		09-OCT-14	R2978517
Biochemical Oxygen Demand	<6.0		6.0	mg/L		08-OCT-14	R2983575
Fecal Coliforms	<3		3	MPN/100mL		11-OCT-14	R2984771
Phosphorus (P)-Total	<0.010		0.010	mg/L		09-OCT-14	R2978911
Total Kjeldahl Nitrogen	0.27		0.20	mg/L	08-OCT-14	09-OCT-14	R2979096
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Acenaphthene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Acenaphthylene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Anthracene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Acridine	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(a)anthracene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Chrysene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Fluoranthene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Fluorene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Naphthalene	<0.000050		0.000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Phenanthrene	<0.000050		0.000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Pyrene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Quinoline	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	08-OCT-14	09-OCT-14	R2978719
Surrogate: Acenaphthene d10	90.5		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Acridine d9	93.9		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Chrysene d12	77.9		40-130	%	08-OCT-14	09-OCT-14	R2978719

* 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
L1529266-1 LOWER LANDING LAKE							
Sampled By: MEGAN LUSTY on 07-OCT-14 @ 09:50							
Matrix: WATER							
Polyaromatic Hydrocarbons (PAHs)							
Surrogate: Naphthalene d8	90.0		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Phenanthrene d10	89.8		40-130	%	08-OCT-14	09-OCT-14	R2978719
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	23		20	mg/L		08-OCT-14	R2978494
Bicarbonate (HCO3)	28		24	mg/L		08-OCT-14	R2978494
Carbonate (CO3)	<12		12	mg/L		08-OCT-14	R2978494
Hydroxide (OH)	<6.8		6.8	mg/L		08-OCT-14	R2978494
Chloride by Ion Chromatography							
Chloride	24.2		0.50	mg/L		08-OCT-14	R2978909
Conductivity							
Conductivity	151		20	umhos/cm		08-OCT-14	R2978494
Hardness Calculated							
Hardness (as CaCO3)	32.1		0.30	mg/L		09-OCT-14	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		08-OCT-14	R2978909
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		09-OCT-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		08-OCT-14	R2978909
Sulfate by Ion Chromatography							
Sulfate	7.89		0.50	mg/L		08-OCT-14	R2978909
TDS calculated							
TDS (Calculated)	73.8		5.0	mg/L		09-OCT-14	
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.020		0.020	mg/L	08-OCT-14	08-OCT-14	R2978241
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Arsenic (As)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Barium (Ba)-Total	0.0134		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Boron (B)-Total	<0.030		0.030	mg/L	08-OCT-14	08-OCT-14	R2978241
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	08-OCT-14	08-OCT-14	R2978241
Calcium (Ca)-Total	8.62		0.20	mg/L	08-OCT-14	08-OCT-14	R2978241
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Cobalt (Co)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Copper (Cu)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Iron (Fe)-Total	<0.10		0.10	mg/L	08-OCT-14	08-OCT-14	R2978241
Lead (Pb)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Lithium (Li)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Magnesium (Mg)-Total	2.58		0.050	mg/L	08-OCT-14	08-OCT-14	R2978241
Manganese (Mn)-Total	0.0039		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Molybdenum (Mo)-Total	0.00055		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Phosphorus (P)-Total	<0.50		0.50	mg/L	08-OCT-14	08-OCT-14	R2978241
Potassium (K)-Total	1.59		0.10	mg/L	08-OCT-14	08-OCT-14	R2978241
Rubidium (Rb)-Total	0.00195		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Selenium (Se)-Total	<0.0050		0.0050	mg/L	08-OCT-14	08-OCT-14	R2978241
Silicon (Si)-Total	<0.30		0.30	mg/L	08-OCT-14	08-OCT-14	R2978241
Silver (Ag)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Sodium (Na)-Total	15.2		0.050	mg/L	08-OCT-14	08-OCT-14	R2978241

* 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
L1529266-1 LOWER LANDING LAKE							
Sampled By: MEGAN LUSTY on 07-OCT-14 @ 09:50							
Matrix: WATER							
Total Metals by ICP-MS							
Strontium (Sr)-Total	0.0514		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	08-OCT-14	08-OCT-14	R2978241
Thorium (Th)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Tin (Sn)-Total	<0.00060		0.00060	mg/L	08-OCT-14	08-OCT-14	R2978241
Titanium (Ti)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Tungsten (W)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Uranium (U)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Vanadium (V)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Zinc (Zn)-Total	<0.020		0.020	mg/L	08-OCT-14	08-OCT-14	R2978241
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
pH							
pH	7.62		0.10	pH units		08-OCT-14	R2978494
L1529266-2 NIPISSAR LAKE							
Sampled By: MEGAN LUSTY on 07-OCT-14 @ 10:25							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
Toluene	<0.0010		0.0010	mg/L		08-OCT-14	R2976408
Ethyl benzene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
o-Xylene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
m+p-Xylenes	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
F1 (C6-C10)	<0.10		0.10	mg/L		08-OCT-14	R2976408
Surrogate: 4-Bromofluorobenzene (SS)	102.3		70-130	%		08-OCT-14	R2976408
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		09-OCT-14	
F2-Naphth	<0.25		0.25	mg/L		09-OCT-14	
F3-PAH	<0.25		0.25	mg/L		09-OCT-14	
Total Hydrocarbons (C6-C50)	<0.44		0.44	mg/L		09-OCT-14	
F2-F4 PHC method							
F2 (C10-C16)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
F3 (C16-C34)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
F4 (C34-C50)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
Surrogate: 2-Bromobenzotrifluoride	93.4		60-140	%	08-OCT-14	08-OCT-14	R2978314
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.0015		0.0015	mg/L		09-OCT-14	
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Acenaphthene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Acenaphthylene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Anthracene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Acridine	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(a)anthracene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Chrysene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719

* 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
L1529266-2 NIPISSAR LAKE							
Sampled By: MEGAN LUSTY on 07-OCT-14 @ 10:25							
Matrix: WATER							
Polyaromatic Hydrocarbons (PAHs)							
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Fluoranthene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Fluorene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Naphthalene	0.000061		0.000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Phenanthrene	<0.000050		0.000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Pyrene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Quinoline	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	08-OCT-14	09-OCT-14	R2978719
Surrogate: Acenaphthene d10	89.9		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Acridine d9	99.0		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Chrysene d12	82.4		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Naphthalene d8	88.5		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Phenanthrene d10	93.4		40-130	%	08-OCT-14	09-OCT-14	R2978719
L1529266-3 CHAR RIVER							
Sampled By: MEGAN LUSTY on 07-OCT-14 @ 10:10							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
Toluene	<0.0010		0.0010	mg/L		08-OCT-14	R2976408
Ethyl benzene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
o-Xylene	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
m+p-Xylenes	<0.00050		0.00050	mg/L		08-OCT-14	R2976408
F1 (C6-C10)	<0.10		0.10	mg/L		08-OCT-14	R2976408
Surrogate: 4-Bromofluorobenzene (SS)	103.6		70-130	%		08-OCT-14	R2976408
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		09-OCT-14	
F2-Naphth	<0.25		0.25	mg/L		09-OCT-14	
F3-PAH	<0.25		0.25	mg/L		09-OCT-14	
Total Hydrocarbons (C6-C50)	<0.44		0.44	mg/L		09-OCT-14	
F2-F4 PHC method							
F2 (C10-C16)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
F3 (C16-C34)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
F4 (C34-C50)	<0.25		0.25	mg/L	08-OCT-14	08-OCT-14	R2978314
Surrogate: 2-Bromobenzotrifluoride	95.4		60-140	%	08-OCT-14	08-OCT-14	R2978314
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.0015		0.0015	mg/L		09-OCT-14	
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.010		0.010	mg/L		09-OCT-14	R2978517
Biochemical Oxygen Demand	<6.0		6.0	mg/L		08-OCT-14	R2983575
Fecal Coliforms	<3		3	MPN/100mL		11-OCT-14	R2984771
Phosphorus (P)-Total	<0.010		0.010	mg/L		09-OCT-14	R2978911
Total Kjeldahl Nitrogen	0.27		0.20	mg/L	08-OCT-14	09-OCT-14	R2979096
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Acenaphthene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Acenaphthylene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Anthracene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Acridine	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719

* 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
L1529266-3 CHAR RIVER							
Sampled By: MEGAN LUSTY on 07-OCT-14 @ 10:10							
Matrix: WATER							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(a)anthracene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Chrysene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Fluoranthene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Fluorene	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Naphthalene	<0.000050		0.000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Phenanthrene	<0.000050		0.000050	mg/L	08-OCT-14	09-OCT-14	R2978719
Pyrene	<0.000010		0.000010	mg/L	08-OCT-14	09-OCT-14	R2978719
Quinoline	<0.000020		0.000020	mg/L	08-OCT-14	09-OCT-14	R2978719
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	08-OCT-14	09-OCT-14	R2978719
Surrogate: Acenaphthene d10	82.7		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Acridine d9	90.8		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Chrysene d12	74.1		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Naphthalene d8	82.5		40-130	%	08-OCT-14	09-OCT-14	R2978719
Surrogate: Phenanthrene d10	85.6		40-130	%	08-OCT-14	09-OCT-14	R2978719
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	25		20	mg/L		08-OCT-14	R2978494
Bicarbonate (HCO3)	30		24	mg/L		08-OCT-14	R2978494
Carbonate (CO3)	<12		12	mg/L		08-OCT-14	R2978494
Hydroxide (OH)	<6.8		6.8	mg/L		08-OCT-14	R2978494
Chloride by Ion Chromatography							
Chloride	22.4		0.50	mg/L		08-OCT-14	R2978909
Conductivity							
Conductivity	150		20	umhos/cm		08-OCT-14	R2978494
Hardness Calculated							
Hardness (as CaCO3)	35.7		0.30	mg/L		09-OCT-14	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		08-OCT-14	R2978909
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		09-OCT-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		08-OCT-14	R2978909
Sulfate by Ion Chromatography							
Sulfate	8.99		0.50	mg/L		08-OCT-14	R2978909
TDS calculated							
TDS (Calculated)	73.8		5.0	mg/L		09-OCT-14	
Total Metals by ICP-MS							
Aluminum (Al)-Total	<0.020		0.020	mg/L	08-OCT-14	08-OCT-14	R2978241
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Arsenic (As)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Barium (Ba)-Total	0.0149		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Boron (B)-Total	<0.030		0.030	mg/L	08-OCT-14	08-OCT-14	R2978241
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	08-OCT-14	08-OCT-14	R2978241
Calcium (Ca)-Total	10.2		0.20	mg/L	08-OCT-14	08-OCT-14	R2978241

* 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
L1529266-3 CHAR RIVER							
Sampled By: MEGAN LUSTY on 07-OCT-14 @ 10:10							
Matrix: WATER							
Total Metals by ICP-MS							
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Cobalt (Co)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Copper (Cu)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Iron (Fe)-Total	<0.10		0.10	mg/L	08-OCT-14	08-OCT-14	R2978241
Lead (Pb)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Lithium (Li)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Magnesium (Mg)-Total	2.49		0.050	mg/L	08-OCT-14	08-OCT-14	R2978241
Manganese (Mn)-Total	0.0054		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Molybdenum (Mo)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Phosphorus (P)-Total	<0.50		0.50	mg/L	08-OCT-14	08-OCT-14	R2978241
Potassium (K)-Total	1.60		0.10	mg/L	08-OCT-14	08-OCT-14	R2978241
Rubidium (Rb)-Total	0.00203		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Selenium (Se)-Total	<0.0050		0.0050	mg/L	08-OCT-14	08-OCT-14	R2978241
Silicon (Si)-Total	<0.30		0.30	mg/L	08-OCT-14	08-OCT-14	R2978241
Silver (Ag)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Sodium (Na)-Total	13.4		0.050	mg/L	08-OCT-14	08-OCT-14	R2978241
Strontium (Sr)-Total	0.0547		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	08-OCT-14	08-OCT-14	R2978241
Thorium (Th)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Tin (Sn)-Total	<0.00060		0.00060	mg/L	08-OCT-14	08-OCT-14	R2978241
Titanium (Ti)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
Tungsten (W)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Uranium (U)-Total	<0.00050		0.00050	mg/L	08-OCT-14	08-OCT-14	R2978241
Vanadium (V)-Total	<0.0020		0.0020	mg/L	08-OCT-14	08-OCT-14	R2978241
Zinc (Zn)-Total	<0.020		0.020	mg/L	08-OCT-14	08-OCT-14	R2978241
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	08-OCT-14	08-OCT-14	R2978241
pH							
pH	7.63		0.10	pH units		08-OCT-14	R2978494

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-WP	Water	Alkalinity	APHA 2320B

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

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

The sample is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at the beginning and end of incubation provides a measure of biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis. Surface waters have a DL of 1 mg/L. Effluents are diluted according to their history and will have a sample DL of 6 mg/L or greater, depending on the dilutions used.

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

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

CL-IC-WP	Water	Chloride by Ion Chromatography	EPA 300.1 (Modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

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.

ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC DEC-2000 - PUB# 1310-L

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

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

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

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

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

F2-F4-FID-WP	Water	F2-F4 PHC method	CWS (CCME)

Petroleum Hydrocarbons (F2-F4) in Water Method is adapted from US EPA Method 3511: Organic Compounds in Water by Micro-extraction" (Nov 2002) with instrumental analysis as per the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method" (CCMS, Dec 2000) Water samples (in their entirety) are extracted using hexane prior to capillary column gas chromatography with flame ionization detection (GC/FID).

FC-MPN-WP	Water	Fecal Coliform	APHA 9221E

The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.

IONBALANCE-CALC-WP	Water	Ion Balance Calculation	APHA 1030E
MET-T-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-T

This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	Quickchem method 10-107-06-2-E Lachat
Samples are digested with a sulphuric acid solution, cooled, diluted with water, and analyzed for ammonia. Total Kjeldahl nitrogen is the sum of free-ammonia and organic nitrogen compounds which are converted to ammonium sulphate through this digestion process. Analysis is performed by Flow Injection Analysis (FIA). The pH of the digested sample is raised to a known, basic pH by neutralization with a concentrated buffer solution. This neutralization converts the ammonium cation to ammonia. The ammonia produced is heated with saliclyate and hypochlorite to produce blue colour which is proportional to the ammonia concentration.			
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-WP	Water	Nitrite as N by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
NO3-IC-WP	Water	Nitrate as N by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus 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.			
SO4-IC-WP	Water	Sulfate by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance 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:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

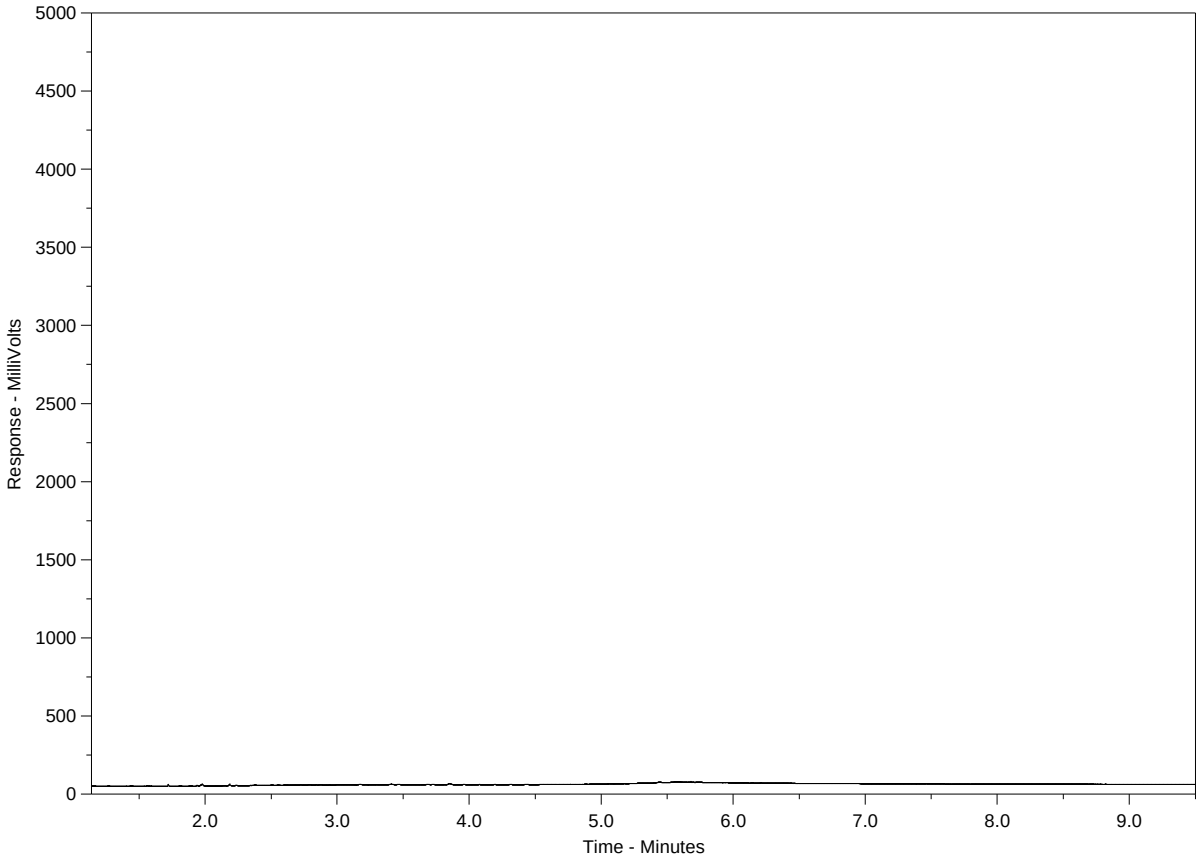
GLOSSARY OF REPORT TERMS

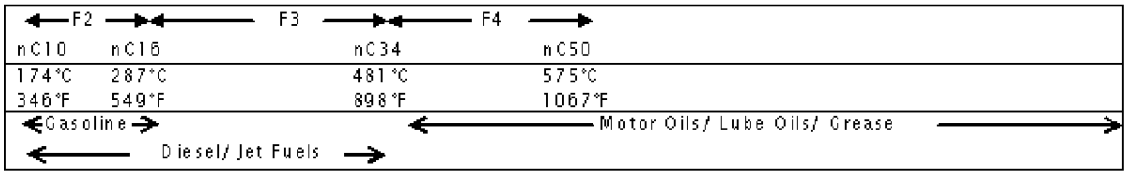
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg 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.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1529266-1
Client Sample ID: LOWER LANDING LAKE





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

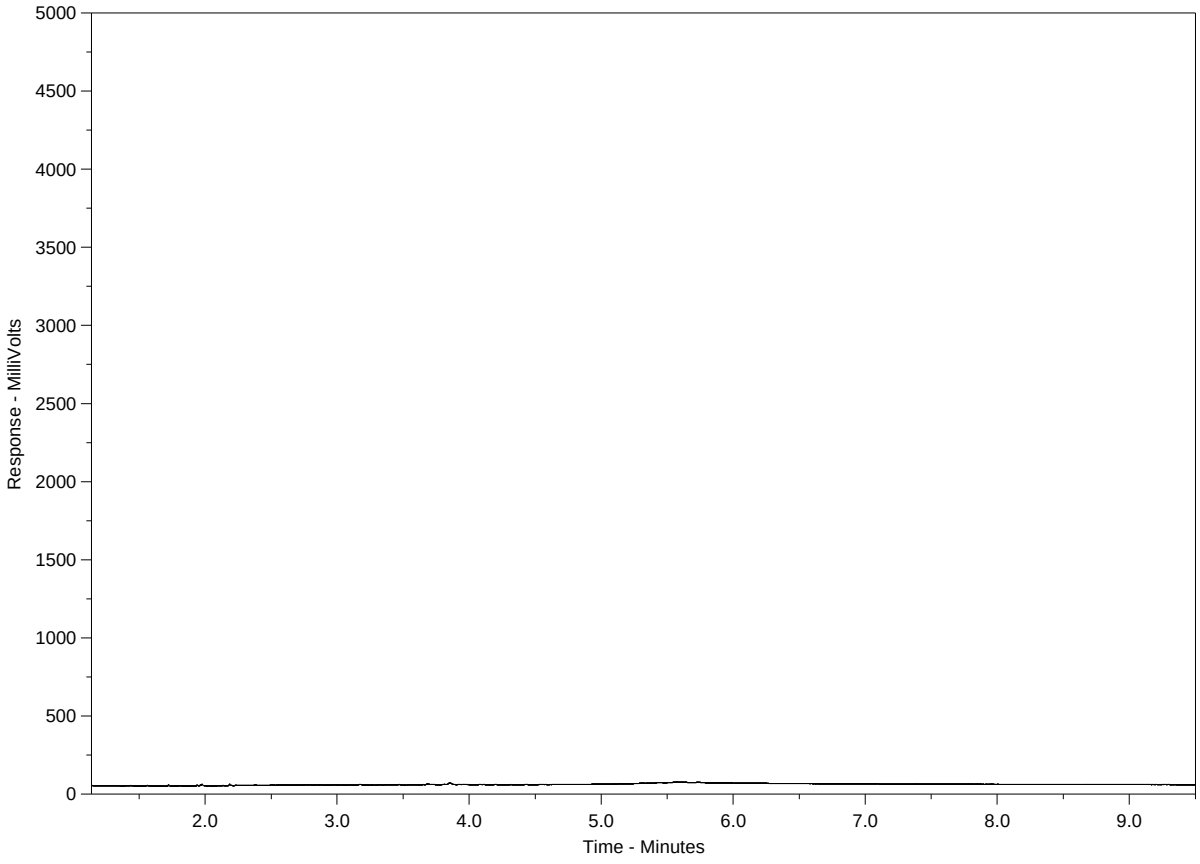
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

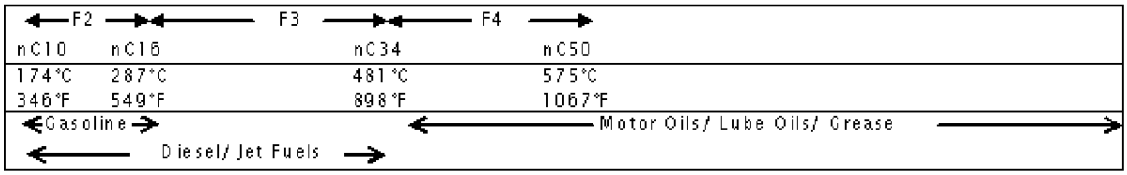
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1529266-2
Client Sample ID: NIPISSAR LAKE





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

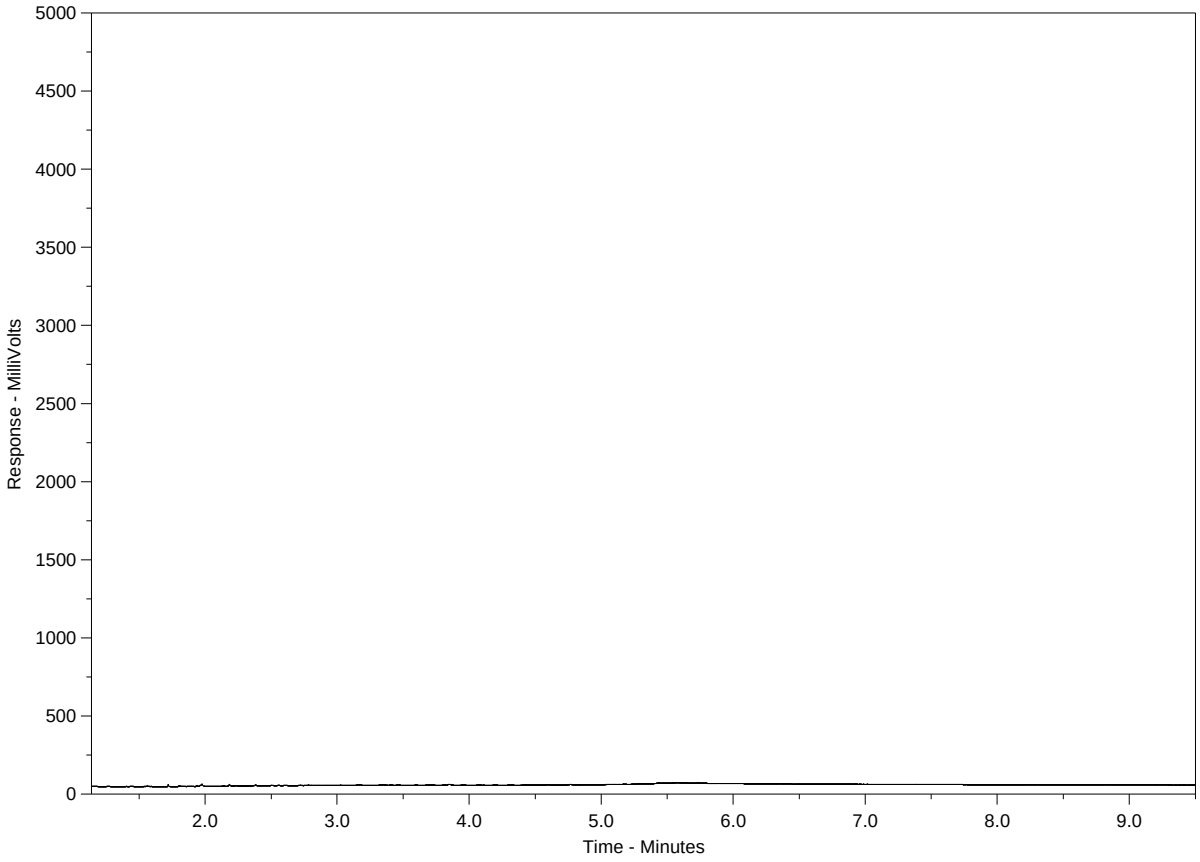
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

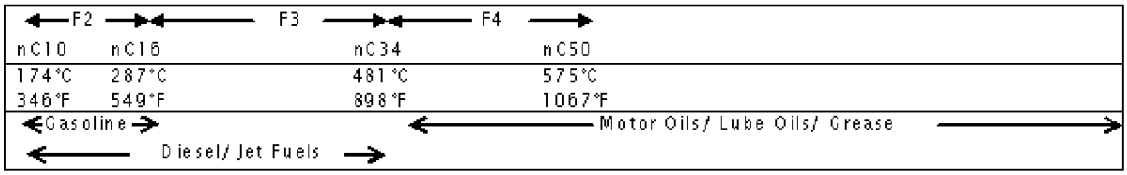
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1529266-3
Client Sample ID: CHAR RIVER





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

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

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

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

10- 313239

L1529266-COFC

ALS Environmental

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Report To	Report Format / Distribution	Service Request: (Rush subject to availability - Contact ALS to confirm TAT)
Company: GN-CGS	Standard: ✓ Other (specify):	Regular (Standard Turnaround Times - Business Days)
Contact: Megan Lusty	Select: PDF ✓ Excel Digital Fax ✓	✓ Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address: P.O. Box 490 Rankin Inlet, Nu X0C 0G0	Email 1: mlusty@gov.nu.ca	Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
	Email 2:	Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone: 867-645-8176 Fax: 867-645-8196		
Invoice To Same as Report ? (circle) Yes or No (if No, provide details)	Client / Project Information	Analysis Request
Copy of Invoice with Report? (circle) Yes or No	Job #: 2AM-GRA1015	(Indicate Filtered or Preserved, F/P)
Company:	PO / AFE:	
Contact:	LSD:	
Address:		
Phone: Fax:	Quote #:	
Lab Work Order # (lab use only)	ALS Contact: Craig Riddel Sampler: Megan Lusty	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	PAH	BTEX,F	F2-F4	BOD	Routine	Total Metals	Total Nutrients	Bacteria	Number of Containers
	Lower Loading Lake	07-10-14	9:50AM	water	✓	✓P	✓P	✓	✓	✓P	✓P	✓P	11
	Nipissar Lake	07-10-14	10:25AM	water	✓	✓P	✓P						6
	Chur River	07-10-14	10:10AM	water	✓	✓P	✓P	✓	✓	✓P	✓P	✓P	11

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

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.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Megan Lusty	07-10-14	10:35		7-10-14	4:25	3 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

GENF 18.01 Front