

Table ECCC-IR-15-1. Detection Limits and Analytical Methods used in the 2017 Field Program

Analytical Group	Parameter	DL	Unit	Method	Methodology Description
Conventional Parameters	Turbidity	0.1	NTU	APHA 2130 B-Nephelometer	This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method
	Conductivity	2	µS/cm	APHA 4500-H, 2510, 2320	Conductivity measurement is based on the sample's capacity to convey an electric current, and is measured with a conductivity meter
	pH	0.1	-		All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed). pH measurement is determined from the activity of the hydrogen ions using a hydrogen electrode and a reference electrode.
	Total alkalinity (as CaCO <sub>3</sub> )	2	mg/L		Alkalinity measurement is based on the sample's capacity to neutralize acid. Auto-titration to pH 4.5 using 0.02N H <sub>2</sub> SO <sub>4</sub> is performed.
	Hardness (as CaCO <sub>3</sub> )	0.05	mg/L	APHA 2340 B-Calculation	Calculation
	Total dissolved solids	10	mg/L	APHA 2540 C	Gravimetric determination of solids in waters by filtration and evaporating filtrate to dryness at 180 degrees Celsius.
	Total suspended solids	3	mg/L	APHA 2540 D-Gravimetric	Gravimetric determination of solids in waters by filtration and drying filter at 104 degrees Celsius.
Major Ions	Chloride	0.5	mg/L	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Dissolved calcium	0.02	mg/L	APHA 3030B/6020A (mod)	Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.
	Dissolved potassium	0.02	mg/L	APHA 3030B/6020A (mod)	Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.
	Dissolved magnesium	0.004	mg/L	APHA 3030B/6020A (mod)	Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.
	Dissolved sodium	0.005	mg/L	APHA 3030B/6020A (mod)	Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.
	Sulphate	0.05	mg/L	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Fluoride	0.02	mg/L	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nutrients	Ammonia- nitrogen	0.005	mg/L	APHA 4500 NH <sub>3</sub> -NITROGEN (AMMONIA)	This analysis is carried out using procedures adapted from APHA Method 4500 NH <sub>3</sub> "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.
	Total Kjeldahl nitrogen	0.05	mg/L	APHA 4500-NORG (TKN)	This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colourimetric finish
	Nitrate-nitrogen	0.005	mg/L	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Nitrite-nitrogen	0.001	mg/L	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Total phosphorus	0.001	mg/L	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.
	Total dissolved phosphorus	0.001	mg/L	APHA 4500-P PHOSPHORUS	This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter
	Dissolved orthophosphate	0.001	mg/L	APHA 4500-P PHOSPHORUS	This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter
	Dissolved organic carbon	0.5	mg/L	APHA 5310 B-Instrumental	The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.
	Reactive silica	0.01	mg/L	APHA 4500-SiO <sub>2</sub> E.	This analysis is carried out using procedures adapted from APHA Method 4500-SiO <sub>2</sub> E. "Silica". Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method.
Total metals	Aluminum	0.003	mg/L	EPA 200.2/6020A (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.
	Antimony	0.0001	mg/L		
	Arsenic	0.0001	mg/L		
	Barium	0.00005	mg/L		
	Beryllium	0.0001	mg/L		
	Boron	0.01	mg/L		
	Cadmium	0.000005	mg/L		
	Chromium	0.0001	mg/L		
	Copper	0.0005	mg/L		
	Iron	0.01	mg/L		
	Lead	0.00005	mg/L		
	Lithium	0.001	mg/L		
	Manganese	0.0001	mg/L		
	Molybdenum	0.00005	mg/L		
	Nickel	0.0005	mg/L		
	Selenium	0.00005	mg/L		
	Silver	0.00001	mg/L		
	Strontium	0.0002	mg/L		
	Thallium	0.00001	mg/L		
	Tin	0.0001	mg/L		
	Titanium	0.0003	mg/L		
	Uranium	0.00001	mg/L		
	Vanadium	0.0005	mg/L		
	Zinc	0.003	mg/L		

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Analytical Group	Parameter	DL	Unit	Method	Methodology Description
	Mercury	0.0005	µg/L	EPA 1631 REV. E	This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.
Dissolved metals	Aluminum	0.0003	mg/L	APHA 3030B/6020A (mod)	Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.
	Antimony	0.00002	mg/L		
	Arsenic	0.00002	mg/L		
	Barium	0.00005	mg/L		
	Beryllium	0.00001	mg/L		
	Boron	0.001	mg/L		
	Cadmium	0.000005	mg/L		
	Chromium	0.00006	mg/L		
	Copper	0.0001	mg/L		
	Iron	0.001	mg/L		
	Lead	0.00001	mg/L		
	Lithium	0.0005	mg/L		
	Manganese	0.00005	mg/L		
	Molybdenum	0.00005	mg/L		
	Nickel	0.00006	mg/L		
	Selenium	0.00004	mg/L		
	Silver	0.000005	mg/L		
	Strontium	0.00005	mg/L		
	Thallium	0.000005	mg/L		
	Tin	0.00005	mg/L		
	Titanium	0.0001	mg/L		
	Uranium	0.00001	mg/L		
	Vanadium	0.00005	mg/L		
	Zinc	0.0008	mg/L		
	Mercury	0.0005	µg/L	APHA 3030 B / EPA 1631 REV. E	This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.