METHODS LIST

Methods List for Automated Ion Analyzers

Flow Injection Analysis • Ion Chromatography

September 2012

LACHAT INSTRUMENTS
A Hach Company Brand

QuikChem® Methods List

Use this list to:

- Identify and select analytical methods for your analyte, range, and matrix requirements.
- Locate all current Lachat methods for ion chromatography and flow injection analysis.
- Find methods accepted for USEPA compliance monitoring. These methods have symbols after the method number depending on whether the method is Accepted or Equivalent for NPDES and/or NPDWR reporting. Additional regulatory information can be found in the Regulatory Quick Reference section.
- Find methods with ERA or other external QC included in the support data. These methods have a * after the method number.

Performance Data Specifications

•**Range**: The range quoted in the Lachat methods list is based on the **actual, calibrated range.** The calibrated range is the lowest calibration standard to the highest calibration standard.

•**MDL**: The MDL (method detection limit) is calculated by the following protocols:

The Student's T number for the number of replicates is multiplied by the standard deviation calculated from those replications.

If 7 replicates are used: The Student's T value is 3.14.

If 21 replicates are used: The Student's T value is 2.528.

Example for 21 replicates: 2.528 X 0.123 = 0.39 for an MDL

•**Quantitation Limit**: Quantitation limit is typically 3 to 5 times the calculated MDL or 10X the standard deviation of the MDL standard used. Typically, this is the lowest calibration standard in a given method.

•**Precision**: Stated in the methods as %RSD. %RSD is calculated as follows: %RSD = (SD /Mean) x 100

Part Numbers Versus Method Numbers

To convert Method Numbers to part numbers, place an E in front of the Method Number.

Table of Contents

This is a list of the reaction modules presently available for use with QuikChem® instruments. The analytical capabilities of these instruments are not limited to these methods. The Lachat Applications group regularly adds new methods to this list. Requests for custom and proprietary methods development or consulting can be sent to Lachat Sales at 800-247-7613 ext 3580 or sales@lachatinstruments.com.

Methods, other than those listed as EPA-Accepted, were developed to meet individual customer requirements. In order to ensure that Lachat methods exactly meet the requirements of your application, please contact your local Sales Representative or Distributor.

When you have purchased a manifold, a copy of the method will be sent with a manifold diagram. Copies of methods without manifold diagrams are available to Lachat customers upon request.

Lachat QuikChem® Method Number Key

XX	-	XXX	-	XX	-	X	-	X
matrix		analyte		form		chemistry		concentration

Matrix:

10	Waters, wastewaters	11	Seawater
12	Soil extracts	13	Plant or soil digests
14	Fertilizer digests	15	Feeds & forages
16	Blood serum, plasma	17	Pharmaceuticals
18	Aqueous formulations	19	Plating baths / mineral processing
20	Food stuffs	21	Beverages
22	Detergents	23	Bioreactor solutions
24	Extracts of air sampling filters	25	Chlor-Alkali (Caustic, brine)
26	Tobacco extracts	27	Urine
29	Produced/Flowback Water	30	Brackish waters
31	Brackish or seawater	40	Non-aqueous
50	Dilute seawater	60	Biological fluids
70	High purity water	80	Ultra Low Flow Method
90	Multi-matrix method		

Analyte:

The first three numbers indicate the predominant chemical moiety.

Class (Ion Chromatography)

510	Anions	511	Rapid IC Anions
512	Rapid Sulfate	520	Cations
530	Metals	540	Oxyhalides
550	Organic Acids		

Element

105	Boron	107	Nitrogen
109	Fluorine	111	Sodium
112	Magnesium	113	Aluminum
114	Silicate	115	Phosphorus
116	Sulfur	117	Chlorine
119	Potassium	120	Calcium
123	Molybdenum	124	Chromium (Hexavalent)
125	Uranium	126	Iron
127	Beryllium	128	Nickel
129	Copper	130	Zinc
131	Manganese	135	Bromine
136	Iodine	138	Mercury
140	Carbon	141	Chromium (Total)

Enzymes

401	Protease	402	Amylase
403	Lactate dehydrogenase (LDH)	404	Catalase

Molecules

201	Reducing sugars (Total)	202	Nicotine
203	Glucose	204	Cyanide
206	Urea	207	Lactic acid, D (-)
208	Lowry protein (albumin)	209	Hydrogen peroxide
210	Phenol	212	Glucan (beta-Glucan)
213	Citric acid	214	Ethanol
215	Penicillin	216	Carbon dioxide
217	Hydrazine	218	Total amino acids
219	Ascorbic acid	220	Riboflavin
221	Formaldehyde	223	Humic acid
224	Chlorate	225	Hydroxide
226	Hypochlorite	227	Creatinine
228	Sorbic acid	229	Thiocyanate
230	Pyruvate	231	Polyvinyl alcohol (PVA)
232	Glutamate	233	Glutamine
234	CMC	235	Glycerol
236	Erythromycin	237	Free amino nitrogen
238	Methanol	239	Glycolate
240	Sebacate	241	Sulfur dioxide
243	Hydroxy-Proline	244	Amylose
245	Monochloramine	246	Reducing Substances

Parameters

301	Hardness (Total)	302	Conductivity
303	Alkalinity	304	pH
305	Acidity	306	Surfactants
307	Oxygen	308	Color

Form:

The method either determines this form of the analyte or converts the analyte to this form for determination.

00	Form given by previous three numbers	01	Phosphate (PO_4^{3-})
02	Calcium (Ca^{2+})	03	Potassium (K^+)
04	Nitrate (NO_3^-)	05	Nitrite (NO_2^-)
06	Ammonium (NH_4^+), Ammonia (NH_3)	07	Chloride (Cl^-)
08	Boric Acid (H_3BO_3)	09	Iodide (I^-)
10	Sulfate (SO_4^{2-})	11	Sulfite (SO_3^{2-})
12	Fluoride (F^-)	13	Chromium (VI) (Cr)
14	Chromium (Cr^{3+})	15	Cobalt (II) (Co^{2+})
16	Nickel (II) (Ni^{2+})	17	Copper (III) (Cu^{2+})
18	Total Iron (Fe^{2+} + Fe^{3+})	19	Iron (II) (Fe^{2+})
20	Iron (III), (Fe^{3+})	21	Bromide (Br^-)
22	Silver (I)	23	Molybdenum (VI) (Mo)
24	Hydronium (H_3O^+, H^+)	25	Hydroxide (OH^-)
26	Magnesium (Mg^{2+})	27	Silicate (SiO_2)
29	Sulfide (S^{2-})	30	Acidity (volatile)

31	Calcium carbonate ($CaCO_3$)	32	Sodium cation (Na^+)
33	Aluminum (inorganic) (Al)	34	Aluminum (organic) (Al)
35	Chlorate (ClO_3^-)	36	Hypochlorite (OCl^-)
37	Mercury (atomic) (Hg)	38	Sorbate
39	Carbon dioxide (CO_2)	40	Perchlorate
41	Iodate (IO_3^-)	42	Sulfur dioxide

Chemistry:

Some analytes have more than one chemistry.

Example:

Ammonia	**10-107-06-**1	phenolate, phenate
	10-107-06-2	salicylate
	10-106-06-5	gas diffusion

Concentration:

Each range of concentrations for an analyte is given by a single letter. See the methods list for the ranges. Some methods cover more than one range.

Heaters:

Standard heater: Has 175 cm of 0.032" i.d. (0.8mm) and 650 cm of of 0.032" i.d. tubing
Non-standard heater: Has a different type and or length of tubing than that listed above. (Controller and heater block are the same; only the tubing is different).

What's New June 2011 through August 2012

These 10 Lachat methods were introduced since the last Lachat method's list, from June 2011 through August 2012. For more information on any of these methods, please contact Lachat Technical Support.

Method Number	Analyte	Range(s)	Comments
Soil Extracts			
12-140-39-5-A	Total Dissolved Carbon	5-400 mg C/L	0.5M K_2SO_4. Phenol red method; 440 nm. Can measure TN from the same digest using method 12-107-04-3-C. in-line digestion module required. (Only one module is needed for one or both methods).
12-117-07-1-C	Chloride	5-800 mg Cl^-/L	2M HNO_3 Mercuric thiocyanate, 480 nm.
12-117-07-1-D	Chloride	0.1-30 mg Cl^-/L	0.014M $Ca(SO_4)_2$ Mercuric thiocyanate, 480 nm.
12-107-04-3-C	Total Dissolved Nitrogen	0.375-30 mg N/L	0.5M K_2SO4 extracts of soils; inline module required; persulfate digestion; samples w/ particulates not suitable. Cadmium reduction, sulfanilamide/NED. 540 nm. Carbon may be measured in the same digest using 12-140-39-5-A
12-115-01-1-P	Total Phosphorus	0.1-5 mg P/L	Ashed soil, dissolved in 0.5M H_2SO_4 Molybdenum blue, 880 nm.
Chlor-Alkali			
25-116-10-3-B	Na_2SO_4	1-25 g Na_2SO_4/L 12.5-150 g Na_2SO_4/L	Turbidimetric method. 420 nm. 20% NaCl matrix. Requires a 1 mm path length flow cell.
25-116-10-3-C	Na_2SO_4	1-25 g Na_2SO_4/L	Turbidimetric method. 420 nm. Caustic must be diluted to 25% w/v (0.5-12.5 g/L in diluted samples)
Seawater & Brackish Waters			
31-107-06-1-I	Ammonia	5-500 µg N/L	Alkaline phenol; 630 nm. Requires a standard heater.
31-107-04-4-C	Total Nitrogen, NO+2+ + NO_3, NO_2	0.02 to 5.00 mg N/L 1.00 to 40.0 mg N/L	Off-line dual digestion. Includes information for the analysis of NO_2 + NO_3 (2.5-500 µg N/L as NO_2+ NO_3) and NO_2 (1-125 µg N/L as NO_2.). Imidazole buffer. Total Phos can be analyzed from the same digestate.
31-115-04-4-B	Total Phosphorus Ortho Phos Particulate phosphate	0.005 to 1.0 mg P/L 0.25 to 10 mg P/L 5-1000 µg P/L 0.25 to 10 mg P/L 0.1-5.0 mg P/L	Off-line dual digestion. Revised with additional data for OP and pPO_4 Molybdenum blue method. 880 nm Requires minor modifications to reagents. Requires minor modifications to reagents.

Regulatory Quick Reference

These QuikChem® methods are considered permitted reporting options for the National Pollutant Discharge Elimination (NPDES) and/or the National Primary Drinking Water Regulations (NPDWR) programs of the US Environmental Protection Agency (USEPA). Also listed are those QuikChem® methods that follow ISO standards.

The most recent MUR (Method Update Rule) was signed by the Administrator on April 17, 2012 and published at the CFR on May 18, 2012. There are some changes included that have the potential to positively affect Lachat Customers.

Standard Methods (Which are Lachat Methods) that were added to Table 1B:

Analyte	Lachat #*	SM #
Ammonia	10-107-06-1-J	4500-NH_3-H
Organic Nitrogen (Kjeldahl Nitrogen)	10-107-06-2-D 10-107-06-2-E	4500 N_{ORG} D-1997
Orthophosphorus	10-115-01-1-A	4500 P G 1999
Total phosphorus (manual digest)	10-115-01-1-E	4500 P H 1999
Silica	10-114-27-1-A	4500 SiO_2 F-1997
Sulfate	10-116-10-2-A	4500 SO_4 G-1997

(Please note that all of these methods, except for sulfate, already had letters of acceptance).

Although the information in the MUR is published in the CFR, states still have primacy. As a result, it is absolutely vital that labs discuss their plans to use any method (including a modified method) with their auditor prior to implementation, to be sure the proposed change or modified method will be accepted. By doing so, the lab will also know in advance what validation will be required in their specific case for implementation

Method Number	USEPA NPDES	USEPA NPDWR	USEPA Method	ISO
Alkalinity				
10-303-31-1-A	Accepted			
10-303-31-1-D	Equivalent		310.2	
Chloride				
10-117-07-1-A	Accepted	Accepted		15682
10-117-07-1-B	Accepted	Accepted		15682
10-117-07-1-C	Equivalent		USGS I2 187-85	
10-117-07-1-E	Equivalent		USGS I2 187-85	
10-117-07-1-H	Accepted			
10-117-07-1-I	Accepted			
10-117-07-1-K	Equivalent		USGS I2 187-85	
80-117-07-1-A	Equivalent		USGS I2 187-85	

Method Number	USEPA NPDES	USEPA NPDWR	USEPA Method	ISO
Chromium				
10-124-13-1-A	Accepted			
10-124-13-1-B	Equivalent		SM (20th) 3500 Cr-B USGS I-2030-85 ASTM D1687-92, 02	
10-141-13-2-A				23913
Conductivity				
10-302-00-1-A	Accepted			
10-302-00-1-B	Accepted			
Cyanide				
10-204-00-1-A	Accepted	Accepted		
10-204-00-1-B	Equivalent		335.4	
10-204-00-1-F	Equivalent		335.4	
10-204-00-1-X	Approved	Approved	Promulgated method	
10-204-00-1-X2	Equivalent	Accepted		
10-204-00-2-C[1]	Equivalent			
10-204-00-2-D[1]	Equivalent			
10-204-00-2-E[1]	Equivalent			
10-204-00-5-A	Equivalent	Accepted	ASTM Method D6888-04	.
10-204-00-5-C	Equivalent		ASTM Method D7237-10	
10-204-00-5-D	Equivalent		ASTM Method D7511-09	
80-204-00-1-A	Equivalent		335.4	
80-204-00-1-X	Equivalent		10-204-00-1-X	
Fluoride				
10-109-12-2-A	Accepted	Accepted		
10-109-12-2-B	Equivalent		SM (20th) 4500 F-B USGS I-4327-85 ASTM D1179-93, 99	
10-109-12-2-C	Equivalent		SM (20th) 4500 F-B USGS I-4327-85 ASTM D1179-93, 99	
10-109-12-2-D	Equivalent		SM (20th) 4500 F-B USGS I-4327-85 ASTM D1179-93, 99	
Hardness				
10-301-31-1-A	Accepted			
10-301-31-1-B	Accepted			
10-301-31-1-C	Equivalent		130.1	

Method Number	USEPA NPDES	USEPA NPDWR	USEPA Method	ISO
Nitrogen – Ammonia				
10-107-06-1-B	Accepted			
10-107-06-1-C	Accepted			
10-107-06-1-F	Equivalent		350.1	
10-107-06-1-G	Equivalent		350.1	
10-107-06-1-I	Accepted	Accepted		
10-107-06-1-J	Accepted	Accepted		
10-107-06-1-K	Accepted			
10-107-06-1-M	Equivalent		350.1	
10-107-06-1-O	Equivalent		350.1	
10-107-06-1-X	Equivalent		350.1	
10-107-06-2-A	Equivalent		350.1	
10-107-06-2-L	Equivalent		350.1	
10-107-06-2-O	Equivalent		350.1	
10-107-06-3-F	Equivalent		350.1	
10-107-06-5-B				11732
10-107-06-5-E				11732
10-107-06-5-G				11732
10-107-06-5-H				11732
10-107-06-6-A[1,2]	Equivalent		350.1	
10-107-06-6-B[1]	Equivalent		350.1	
30-107-06-1-A	Accepted			
31-107-06-1-B	Equivalent		350.1	
31-107-06-1-F	Equivalent		350.1	
31-107-06-1-G	Equivalent		350.1	
31-107-06-1-H	Equivalent		350.1	
80-107-06-1-A	Equivalent		350.1	
80-107-06-1-B	Equivalent		350.1	
80-107-06-1-C	Equivalent		350.1	
Nitrogen – Kjeldahl **(TKN)**				
10-107-06-2-D	Accepted			
10-107-06-2-E	Accepted			
10-107-06-2-H	Equivalent		351.2	
10-107-06-2-I	Equivalent		351.2	
10-107-06-2-K	Equivalent		351.2	
10-107-06-2-M	Equivalent			
10-107-06-2-N	Equivalent		351.2	
10-107-06-2-P	Equivalent		351.2	
10-107-06-5-F	Equivalent		PAI DK03	11732
10-107-06-6-C[1]	Equivalent		351.2	
10-107-06-6-D[1]	Equivalent		351.2	

Method Number	USEPA NPDES	USEPA NPDWR	USEPA Method	ISO
Nitrogen – Nitrate + Nitrite				
10-107-04-1-A	Accepted	Accepted		
10-107-04-1-B	Accepted	Accepted		
10-107-04-1-C	Accepted	Accepted		
10-107-04-1-F	Equivalent		353.2	
10-107-04-1-H	Equivalent		353.2	
10-107-04-1-J	Accepted	Accepted		
10-107-04-1-K	Accepted	Accepted		
10-107-04-1-L	Accepted	Accepted		
10-107-04-1-O	Accepted	Accepted		
10-107-04-1-Q	Equivalent		353.2	
10-107-04-1-R	Equivalent	Accepted	353.2	
10-107-04-2-A[2]	Accepted	Accepted		
10-107-04-2-B[2]	Accepted	Accepted		
10-107-04-2-D[2]	Accepted	Accepted		
30-107-04-1-A	Accepted			
30-107-04-1-C	Equivalent		353.2	
31-107-04-1-A	Equivalent		353.4	
31-107-04-1-C	Equivalent		353.4	
31-107-04-1-D	Equivalent		353.4	
31-107-04-1-E	Equivalent		353.4	
31-107-04-1-F	Equivalent		353.4	
31-107-04-1-G	Equivalent		353.4	
31-107-04-1-H	Equivalent		353.4	
80-107-04-1-A	Equivalent	Accepted	353.2	
Nitrogen – Nitrite				
10-107-05-1-A	Equivalent	Accepted	353.2	
10-107-05-1-B	Equivalent		353.2	
10-107-05-1-C	Equivalent		353.2	
10-107-05-1-O	Equivalent		353.2	
31-107-05-1-A	Equivalent		353.4	
31-107-05-1-B	Equivalent		353.4	
80-107-05-1-A	Equivalent	Accepted	353.2	
Phenol				
10-210-00-1-A	Accepted			
10-210-00-1-B	Accepted			
10-210-00-1-X	Equivalent		420.1	
10-210-00-1-Y	Equivalent		420.1	
10-210-00-3-C[1]	Equivalent		420.4	

Method Number	USEPA NPDES	USEPA NPDWR	USEPA Method	ISO
Phosphorus				
10-115-01-1-A	Accepted	Accepted		
10-115-01-1-B	Accepted	Accepted		
10-115-01-1-C	Accepted			
10-115-01-1-D	Accepted			
10-115-01-1-E	Accepted			
10-115-01-1-F	Accepted			
10-115-01-1-I	Equivalent		365.4	
10-115-01-1-M	Accepted	Accepted		
10-115-01-1-O	Equivalent		365.1	
10-115-01-1-P	Accepted	Accepted		
10-115-01-1-Q	Accepted	Accepted		
10-115-01-1-T	Accepted	Accepted		
10-115-01-1-V	Equivalent	Accepted	365.1	
10-115-01-1-W	Equivalent		365.1	
10-115-01-1-Y	Equivalent		365.1	
10-115-01-2-B	Equivalent		365.4	
10-115-01-3-A	Equivalent		365.3	
10-115-01-3-B	Equivalent		365.3	
10-115-01-3-C	Equivalent		365.3	
10-115-01-3-E	Equivalent		365.3	
10-115-01-3-F	Equivalent		365.3	
10-115-01-4-I	Equivalent		365.3	
10-115-01-4-S	Equivalent		365.3	
10-115-01-4-U	Equivalent		365.3	
31-115-01-1-G	Equivalent		365.5	
Phosphorus				
31-115-01-1-H	Equivalent		365.5	
31-115-01-1-I	Equivalent		365.5	
31-115-01-1-J	Equivalent		365.5	
31-115-01-1-W	Equivalent		365.5	
31-115-01-1-Y	Equivalent		365.5	
31-115-01-4-A	Equivalent		365.3	
80-115-01-1-A	Equivalent	Accepted	365.1	
Silicate				
10-114-27-1-A	Accepted			
10-114-27-1-B	Equivalent		SM(20th)4500-SiO2C USGS I-2700-85 ASTM D859-94, 00	
10-114-27-1-C	Equivalent		SM(20th)4500-SiO2C USGS I-2700-85 ASTM D859-94, 00	

Method Number	USEPA NPDES	USEPA NPDWR	USEPA Method	ISO
31-114-27-1-A	Equivalent		366.0	
31-114-27-1-B	Equivalent		366.0	
31-114-27-1-D	Equivalent		366.0	
31-114-27-1-E	Equivalent		366.0	
31-114-27-1-F	Equivalent		366.0	
Sodium				
10-111-32-1-A	Equivalent		SM(20th) 3500-Na-B	
Sulfate				
10-116-10-1-A	Equivalent			
10-116-10-1-C	Equivalent			
10-116-10-1-E	Equivalent			
10-116-10-1-G	Equivalent			
10-116-10-2-A	Equivalent		375.2	
10-116-10-2-B	Equivalent		375.2	
10-116-10-2-E	Equivalent		375.2	
Sulfide				
10-116-29-1-A	Equivalent		SM(20th) 4500-S-D	
10-116-29-1-B	Equivalent		SM(20th) 4500-S-D	
Surfactants				
10-306-00-1-D	Equivalent		SM(20th) 5540-C	
Anions (Ion Chromatography)				
10-510-00-1-A	Equivalent	Accepted	300.0	
10-510-00-1-E	Equivalent	Accepted	300.0	
10-511-00-1-A	Equivalent	Accepted	300.0	
10-540-00-1-C		Accepted		

[1] EPA has revised the language at (b)(4)(T) be **more specific with respect to the use of gas diffusion across a hydrophobic semi-permeable membrane,** to separate the analyte of interest from the sample matrix in place of manual or automated distillation for the analysis of certain analytes. This is an acceptable change to an approved method for the following analytes: ammonia, cyanide, TKN, and Total Phenolics.

[2] Betholot-based method, uses salicylate. See Table 1B

Method No	Range	MDL	Units	Matrix	Comments	Rev Date

Ion Chromatography Methods

Anions

10-136-09-1-B			**Waters**			**11-Aug-09**
Iodide	0.05 – 5.0		mg I^-/L			
10-510-00-1-A #			**Waters and extracts of soil**	**USEPA method 300.0 (A); multi-range method (multiple ranges possible with different sample loops)**		**29-Nov-01**
10-510-00-1-A1						
Bromide	0.05 – 5.0	0.018	mg Br^-/L			
Chloride	0.5 – 50.0	0.004	mg Cl^-/L			
Fluoride	0.05 – 5.0	0.004	mg F^-/L			
Nitrate	0.05 – 5.0	0.004	mg NO_3^- - N/L			
Nitrite	0.05 – 5.0	0.008	mg NO_2^- - N/L			
Phosphorus	0.05 – 5.0	0.012	mg HPO_4^{2-} - P/L	Orthophosphate		
Sulfate	1.0 – 100	0.012	mg SO_4^{2-}/L			
10-510-00-1-A2						
Bromide	0.1 – 5		mg Br^-/L			
Chloride	2 – 100		mg Cl^-/L			
Fluoride	0.2 – 10		mg F^-/L			
Nitrate	0.2 – 10		mg NO_3^- - N/L			
Nitrite	0.1 – 5		mg NO_2^- - N/L			
Phosphorus	0.2 – 10		mg HPO_4^{2-} - P/L	Orthophosphate		
Sulfate	4 – 200		mg SO_4^{2-}/L			
10-510-00-1-A3						
Bromide	0.025 – 2.5	0.005	mg Br^-/L			
Chloride	0.25 – 25	0.012	mg Cl^-/L			
Fluoride	0.025 – 2.5	0.004	mg F^-/L			
Nitrate	0.025 – 2.5	0.002	mg NO_3^- - N/L			
Nitrite	0.025 – 2.5	0.005	mg NO_2^- - N/L			
Phosphorus	0.025 – 2.5	0.003	mg HPO_4^{2-} - P/L	Orthophosphate		
Sulfate	0.5 – 50	0.003	mg SO_4^{2-}/L			
10-510-00-1-A4						
Bromide	0.16 – 3.0	0.02	mg Br^-/L			
Chloride	32 – 600		mg Cl^-/L			
Fluoride	0.04 – 0.75	0.008	mg F^-/L			
Nitrate	0.04 – 0.75	0.005	mg NO_3^- - N/L			
Nitrite	0.04 – 0.75	0.02	mg NO_2^- - N/L			
Phosphorus	0.10 – 1.875	0.02	mg HPO_4^{2-} - P/L	Orthophosphate		
Sulfate	32 – 600		mg SO_4^{2-}/L			

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-510-00-1-C			**Waters**		**Common Inorganic Anions**	**8-Sep-03**
Bromide	0.06 – 6.0	0.02	mg Br^-/L			
Chloride	0.6 – 60	0.005	mg Cl^-/L			
Fluoride	0.04 – 4.0	0.006	mg F^-/L			
Nitrate	0.06 – 6.0	0.007	mg NO_3^- - N/L			
Nitrite	0.016 – 1.6	0.002	mg NO_2^- - N/L			
Phosphorus	0.06 – 6.0	0.015	mg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	2.0 – 200	0.03	mg SO_4^{2-}/L			
10-510-00-1-D			**Waters**			**9-Sep-03**
Bromide	40 – 400		µg Br^-/L			
Nitrate	20 – 200		µg NO_3^- - N/L			
Nitrite	20 – 200		µg NO_2^- - N/L			
10-510-00-1-E ^#			**Waters**		**Rapid anions method; Omnion 3.0 only; multi-range method (multiple ranges possible with different sample loops)**	**29-Oct-08**
10-510-00-1-E1						
Bromide	0.05 – 5.0	0.016	mg Br^-/L			
Chloride	0.5 – 50	0.029	mg Cl^-/L			
Fluoride	0.05 – 5.0	0.004	mg F^-/L			
Nitrate	0.05 – 5.0	0.008	mg NO_3^- - N/L			
Nitrite	0.05 – 5.0	0.033	mg NO_2^- - N/L			
Phosphorus	0.05 – 5.0	0.015	mg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	1.0 – 100	0.02	mg SO_4^{2-}/L			
10-510-00-1-E2						
Bromide	0.025 – 2.5	0.015	mg Br^-/L			
Chloride	0.015 – 2.5	0.006	mg Cl^-/L			
Fluoride	0.025 – 2.5	0.003	mg F^-/L			
Nitrate	0.025 – 2.5	0.0048	mg NO_3^- - N/L			
Nitrite	0.025 – 2.5	0.0048	mg NO_2^- - N/L			
Phosphorus	0.025 – 2.5	0.0098	mg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	0.5 – 50	0.02	mg SO_4^{2-}/L			
10-510-00-1-E3						
Bromide	0.1 – 5	0.038	mg Br^-/L			
Chloride	2 – 100	0.016	mg Cl^-/L			
Fluoride	0.2 – 10	0.016	mg F^-/L			
Nitrate	0.2 – 10	0.029	mg NO_3^- - N/L			
Nitrite	0.1 – 5.0	0.01	mg NO_2^- - N/L			
Phosphorus	0.2 – 10	0.034	mg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	4 – 200	0.144	mg SO_4^{2-}/L			

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-510-00-1-F				**Waters**	**Anions method; High Conductance samples (3µS/cm)Omnion 3.0**	**23-Aug-10**
Bromide	0.2 to 4.0	0.021	mg Br^-/L			
Chloride	50-1000	0.0102	mg Cl^-/L			
Fluoride	0.1 to 2.0	0.0075	mg F^-/L			
Nitrate	0.2 to5.0	0.0115	mg NO_3^- - N/L			
Nitrite	0.1-2.0	0.0075	mg NO_2^- - N/L			
Phosphorus	0.2 to 4.0	0.025	mg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	50 to 1000	0.144	mg SO_4^{2-}/L			
10-511-00-1-A #				**Waters**	**Rapid anions method; multi-range method (multiple ranges possible with different sample loops)**	**16-Sep-03**
10-511-00-1-A1						
Chloride	1.0 – 100	0.004	mg Cl^-/L			
Nitrate	0.2 – 20.0	0.003	mg NO_3^- - N/L			
Phosphorus	0.05 – 5.0	0.006	mg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	1.0 – 100	0.014	mg SO_4^{2-}/L			
10-511-00-1-A2						
Chloride	1.5 – 150	0.01	mg Cl^-/L			
Nitrate	0.25 – 25	0.005	mg NO_3^- - N/L			
Phosphorus	0.1 – 10	0.016	mg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	2.5 – 250	0.04	mg SO_4^{2-}/L			
10-510-13-1-B				**Waters**	**USEPA method 218.6; (modified) Omnion 3.0 only**	**24-Nov-08**
Cr(VI)	0.05-10	0.02	µg CrO_4^-		IC with Post column derivatization;2 cm flow cell; QC8500 ONLY.	
10-540-00-1-C #				**Waters**	**USEPA method 300.1; determination of disinfection byproducts; Omnion 3.0 only**	**24-Nov-08**
Bromate	5 – 50	1.15	µg BrO_3^-/L			
Bromide	10 – 100	2.01	µg Br^-/L			
Chlorate	20 – 200	5.00	µg ClO_3^-/L			
Chlorite	5 – 50	2.61	µg ClO_2^-/L			
21-510-00-1-A				**Beverages**	**Omnion 3.0 only**	**11-Nov-08**
Chloride	1 – 50	0.045	mg Cl^-/L			
Fluoride	0.2 – 10	0.037	mg F^-/L			
Nitrate	0.2 – 10	0.021	mg NO_3^- - N/L			

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Phosphorus	4 – 200	0.062	mg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	4 – 200	0.102	mg SO_4^{2-}/L			
70-510-00-1-A			**High purity waters**			**9-Sep-03**
Chloride	0.5 – 10		µg Cl^-/L			
Nitrate	0.5 – 10		µg NO_3^- - N/L			
Phosphorus	1.0 – 20		µg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	1.0 – 20		µg SO_4^{2-}/L			
70-510-00-1-B			**High purity waters**			**9-Sep-03**
Bromide	2.0 – 20.0		µg Br^-/L			
Chloride	1.0 – 10.0		µg Cl^-/L			
Fluoride	1.0 – 10.0		µg F^-/L			
Nitrate	1.0 – 10.0		µg NO_3^- - N/L			
Nitrite	1.0 – 10.0		µg NO_2^- - N/L			
Phosphorus	3.0 – 30.0		µg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	1.5 – 15.0		µg SO_4^{2-}/L			
70-510-00-1-C			**High Purity Waters**			**17-Dec-08**
Bromide	2.0 – 40.0	0.67	µg Br^-/L			
Chloride	1.0 – 20.0	0.22	µg Cl^-/L			
Fluoride	1.0 – 20.0	0.39	µg F^-/L			
Nitrate	1.0 – 20.0	0.20	µg NO_3^- - N/L			
Nitrite	1.0 – 20.0	0.40	µg NO_2^- - N/L			
Phosphorus	3.0 – 60.0	0.60	µg HPO_4^{2-} - P/L		Orthophosphate	
Sulfate	1.5 – 30.0	0.45	µg SO_4^{2-}/L			

Cations

10-520-00-1-D			**Waters**		**Omnion 3.0 only; multi-range method (multiple ranges possible with different sample loops)**	**17-Feb-09**
10-520-00-1-D1						
Ammonium	0.8 – 32	0.16	mg NH_4^+/L			
Calcium	1.6 – 64	0.60	mg Ca^{2+}/L			
Lithium	0.25 – 10	0.05	mg Li^+/L			
Magnesium	0.8 – 32	0.16	mg Mg^{2+}/L			
Potassium	1.6 – 64	0.32	mg K^+/L			
Sodium	1.8 – 72	0.36	mg Na^+/L			
10-520-00-1-D2						
Ammonium	0.20 – 4.0	0.04	mg NH_4^+/L			
Calcium	0.25 – 5.0	0.053	mg Ca^{2+}/L			
Lithium	0.05 – 1.0	0.58	mg Li^+/L			
Magnesium	0.25 – 5.0	0.05	mg Mg^{2+}/L			
Potassium	0.20 – 4.0	0.04	mg K^+/L			
Sodium	0.20 – 4.0	0.04	mg Na^+/L			

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-520-00-1-D3						
Ammonium	0.005 – 0.250	0.00349	mg NH_4^+/L			
Calcium	0.025 – 1.250	0.00744	mg Ca^{2+}/L			
Lithium	0.008 – 0.4	0.00058	mg Li^+/L			
Magnesium	0.012 – 0.6	0.0026	mg Mg^{2+}/L			
Potassium	0.020 – 1.0	0.00574	mg K^+/L			
Sodium	0.010 – 0.5	0.00144	mg Na^+/L			
10-520-00-1-E				**Waters**	**Omnion 3.0 only; High Conductance samples (3µS/cm)**	**1-Sep-10**
Ammonium	1.0 to 20	0.14	mg NH_4^+/L			
Calcium	5.0 to 100	1.14	mg Ca^{2+}/L			
Lithium	0.5 to 10	0.06	mg Li^+/L			
Magnesium	5.0 to 100	1.47	mg Mg^{2+}/L			
Potassium	5.0 to 100	1.08	mg K^+/L			
Sodium	5.0 to 100	0.10	mg Na^+/L			

Organic Acids

21-550-00-1-B				**Beverages**	**Omnion 3.0 only**	**31-Jan-09**
Acetic Acid	3 – 300	1.16	mg/L			
Adipic Acid	4.5 – 450	3.34	mg/L			
Citric Acid	3 – 300	0.45	mg/L			
Formic Acid	3 – 300	0.50	mg/L			
Fumaric Acid	3 – 300	0.45	mg/L			
Lactic Acid	3 – 300	0.90	mg/L			
Malic Acid	3 – 300	0.60	mg/L			
Malonic Acid	3 – 300	1.07	mg/L			
Oxalic Acid	3 – 300	0.71	mg/L			
Succinic Acid	3 – 300	0.77	mg/L			
Tartaric Acid	3 – 300	0.92	mg/L			

Notes

Method No	Range	MDL	Units	Matrix	Comments	Rev Date

Method No	Range	MDL	Units	Matrix	Comments	Rev Date

Flow Injection Analysis

Acidity

10-305-31-1-A	30 – 500	4.0	mg $CaCO_3$/L	Waters	Thymol blue method. 600 nm	3-Sep-03
10-305-31-1-B	1.0 – 30.0	0.19	mg $CaCO_3$/L	Waters	Thymol blue method. 600 nm	3-Sep-03

Alkalinity

10-303-31-1-A #	10 – 500	2.3	mg $CaCO_3$/L	Waters	Methyl orange method; NPDES Accepted. 550 nm	23-Jan-01
10-303-31-1-D ^	1 – 50	0.27	mg $CaCO_3$/L	Waters	Methyl orange method; NPDES Equivalent (310.2). 550 nm	3-Sep-03
10-303-31-2-B	10 – 200	3.0	mg $CaCO_3$/L	Waters	Phenolphthalein method. 520 nm	3-Sep-03
10-303-31-3-A *	50 – 400	2.7	mg $CaCO_3$/L	Waters	Bromocresol green method. 640 nm	3-Sep-03
10-303-31-4-A	50 – 500	1.1	mg $CaCO_3$/L	Waters	Bromocresol green / methyl red method; low-flow method. 640 nm	3-Sep-03

Aluminum

10-113-33-1-B	0.1 – 5.0	0.02	mg Al/L	Waters	Total reactive Al; determination in 0.15% HNO_3 matrix. 580 nm. **Inert Probe required**	27-Aug-03
10-113-33-1-C	10 – 300	1.0	µg Al/L	Waters	Total reactive Al; Dilute HNO_3 preservation required. 580 nm. **Inert Probe required.**	14-Apr-08
10-113-34-1-B	0.01 – 0.3	0.0015	mg Al/L	Waters	Non-exchangeable Al. Dilute HNO_3 preservation required. 580 nm. **Inert Probe required**	27-Aug-03
12-113-33-1-B	1.0 – 30	0.1	mg Al/L	Soil extracts	Determination in 1 M KCl extracts. **Inert Probe required**	3-Sep-03
13-113-33-1-B	0.8 – 4.0	0.05	mg Al/L	Plant extracts	Low-flow method. 580 nm 1M HCl final matrix. **Inert Probe required**	3-Sep-03

Amino Acids

18-218-00-1-A	1.25 – 40	0.22	mM Leucine	Aqueous formulations	Ninhydrin. Determination in rumen fluid. 580 nm. **Requires a non-standard heater**.	3-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Ammonia		***See also IC section***				
10-107-06-1-B # *	0.05 – 5.0	0.007	mg N/L as NH_3	Waters	Alkaline phenol-based method; determination in 0.2% H_2SO_4 preserved samples; 630 nm**. Requires a standard heater**.NPDES Accepted	27-Aug-01
10-107-06-1-C #	0.01 – 4.0	0.004	mg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. determination in non-preserved samples; **Requires a standard heater** NPDES Accepted	2-Nov-01
10-107-06-1-F ^	10 to 100	1.0	µg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. low-flow method; **Requires a standard heater** NPDES Equivalent (350.1)	25-Aug-03
10-107-06-1-G ^	10 – 500	0.00153	µg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. **Requires a standard heater.** Ultra High Throughput method (>100 samples/hr); NPDES Equivalent (350.1)	14-Dec-07
10-107-06-1-I #	0.1 – 30.0	0.01	mg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. **Requires a standard heater** NPDES/NPDWR Accepted	15-Mar-01
10-107-06-1-J #	0.01 – 2.0	0.002	mg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. Low-flow method; determination in preserved and non-preserved samples; **Requires a standard heater** NPDES/NPDWR Accepted	29-Nov-07
10-107-06-1-K #	0.2 – 20.0	0.01	mg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. **Requires a standard heater**. Low-flow method; NPDES Accepted	15-Mar-01
10-107-06-1-L	0.01 – 2.0	0.0028	mg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. Use w/ 10-245-00-1-A for monochloramine **Requires a standard heater**	6-Nov-07
10-107-06-1-M ^	0.01 – 2.0 0.02 – 20	0.002 0.011	mg N/L as NH_3	Waters	Alkaline phenol-based method; determination in acid preserved or non-acid preserved samples; multi-range method; 630 nm. **Requires a standard heater** NPDES Equivalent (350.1)	9-Nov-07

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-107-06-1-O ^	0.002 – 0.500 0.25 – 10	0.56	µg N/L as NH_3	Waters	Alkaline phenol-based method; multi-range method; 630 nm. **Requires a standard heater** NPDES Equivalent (350.1)	22-Feb-08
10-107-06-1-Q^	0.005- 2.0 0.25-20.0	0.0022 0.0038	mg N/L as NH_3	Waters	Alkaline phenol-based method, citrate buffer; multi-range method; 630 nm. **Requires a standard heater** NPDES Equivalent (349.0)	17-Aug-10
10-107-06-1-X ^	0.05 – 20.0	0.007	mg N/L as NH_3	Waters	MicroDist method; Alkaline phenol determination. 630 nm. **Requires a standard heater** NPDES Equivalent (350.1)	17-Sep-09
10-107-06-2-A * ^	0.10 – 5.0	0.005	mg N/L as NH_3	Waters	Sodium salicylate-based method; 660 nm. **Requires a standard heater** NPDES Equivalent (350.1)	25-Mar-08
10-107-06-2-L * ^	0.05 – 20	0.01	mg N/L as NH_3	Waters	Sodium salicylate-based method; 660 nm Ultra High Throughput method (>120 samples/hr); **Requires a standard heater** NPDES Equivalent (350.1)	16-Aug-07
10-107-06-2-O ^	10 – 500 0.25 – 30	1.1 0.011	µg N/L as NH_3	Waters	Sodium salicylate-based method; 660 nm. **Requires a standard heater** multi-range method; NPDES Equivalent (350.1)	7-Dec-07
10-107-06-2-R	0.02 – 5.00	0.004	mg N/L as NH_3	Waters	Sodium salicylate-based method; 660 nm. **Requires a standard heater** . Determination in **10 mM H_3PO_4 matrix**	18-Dec-09
10-107-06-3-B	0.05 – 1.0	0.008	mg N/L as NH_3	Waters	Sodium salicylate-based method; 660 nm. **Requires a standard heater.** Uses DClC instead of NaOCl	26-Aug-03
10-107-06-3-D	0.005 – 0.25	0.001	mg N/L as NH_3	Waters	Sodium salicylate-based method; 660 nm. **Requires a standard heater** uses DClC instead of NaOCl	26-Aug-03
10-107-06-3-F ^	1.25 – 100	0.41	µg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. **Requires a non-standard heater** uses DClC; 2-cm detector method; for **QC8500 only**; NPDES Equivalent (350.1)	17-Feb-09
10-107-06-4-D	0.5 – 80.0	0.10	mg N/L as NH_3	Waters	Sodium salicylate-based method; 660 nm. **Requires a standard heater**. Dialysis method	13-Nov-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-107-06-5-B	0.10 – 1.0	0.01	mg N/L as NH_3	Waters	Gas diffusion method; low-flow method; ISO (11732) 590nm	19-Mar-04
10-107-06-5-E	0.1 – 10.0	0.02	mg N/L as NH_3	Waters	Gas diffusion method; ISO (11732) 590 nm	18-Mar-04
10-107-06-5-G	0.1 – 0.9	0.005	mg N/L as NH_3	Waters	Gas diffusion method; ISO (11732) 590 nm	08-Sep-03
10-107-06-5-H	10 – 90	1.5	µg N/L as NH_3	Waters	Gas diffusion method; low-flow method; ISO (11732) 590 nm	23-Mar-04
10-107-06-5-I	0.1-4.0	0.004	mg N/L as NH_3	Waters	Gas diffusion method; low-flow method; ISO (11732)590 nm	15-Oct-10
10-107-06-6-A ^	0.25 – 20	0.13	mg N/L as NH_3	Waters	Sodium salicylate-based method; 660 nm. inline distillation method; NPDES Equivalent (350.1); **Requires a standard heater and in-line module for distillation step.** Samples w/ particulates not suitable.	24-Jul-08
10-107-06-6-B ^	0.25 – 10	0.066	mg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. inline distillation method; low-flow method; NPDES Equivalent (350.1); **Requires a standard heater and an in-line module for the distillation.** Samples w/ particulates not suitable.	29-Jul-08
10-107-06-6-E^	10-250	5 (pres.) 1 (un-pres.)	µg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm inline distillation method; **Requires a standard heater and an in-line module for the distillation.** Low-flow method; NPDES Equivalent (350.1); samples w/ particulates not suitable	15-Apr-11
12-107-06-1-A	0.01 – 1.0	0.002	mg N/L as NH_3	Soil extracts	Alkaline phenol-based method; 630 nm. **Requires a standard heater.** Determination in **2M KCl** soil extracts	17-Sep-08
12-107-06-1-B	1.0 – 20.0	0.035	mg N/L as NH_3	Soil extracts	Alkaline phenol-based method; 630 nm. **Requires a standard heater.** Determination in **2M KCl** soil extracts	15-Sep-08
12-107-06-2-A	0.10 – 20.0	0.035	mg N/L as NH_3	Soil extracts	Sodium salicylate-based method; 660 nm. **Requires a standard heater.** Determination in **2M KCl** soil extracts	3-Sep-03
12-107-06-2-E	0.05 – 10.0	0.016	mg N/L as NH_3	Soil extracts	Sodium salicylate-based method; 660 nm. **Requires a standard heater.** Determination in **0.5M K_2SO_4** soil extracts	3-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
12-107-06-2-F	0.1 – 20	0.026	mg N/L as NH_3	Soil extracts	Sodium salicylate-based method; 660 nm. **Requires a standard heater.** Determination in **2M KCl** soil extracts; Ultra High Throughput method (>120 samples/hr)	15-Aug-07
12-107-06-2-G	25-500	4.32	µg N/L as NH_3	Soil extracts	Sodium salicylate-based method; 660 nm. **Requires a standard heater.** Determination in **2M KCl** soil extracts	12-May-10
12-107-06-3-A	2.0 – 40.0	0.11	mg N/L as NH_3	Soil extracts	Sodium salicylate-based method; 660 nm. **Requires a standard heater.** Determination in **0.0125M $CaCl_2$** soil extracts	3-Sep-03
12-107-06-3-B	0.2 – 4.0	0.01	mg N/L as NH_3	Soil extracts	Sodium salicylate-based method; 660 nm. determination in **2M KCl** soil extracts	3-Sep-03
12-107-06-3-C	0.2 – 4.0	0.03	mg N/L as NH_3	Soil extracts	Sodium salicylate-based method; 660 nm. **Requires a standard heater.**determination in **0.0125M $CaCl_2$** soil extracts	3-Sep-03
12-107-06-5-A	0.1 – 20.0	0.02	mg N/L as NH_3	Soil extracts	Gas diffusion method; 590 nm. determination in **2M KCl** soil extracts	23-Feb-10
14-107-06-1-A	1.75 – 7.0		% N/L as NH_3	Fertilizers	Alkaline phenol-based method. Liquid fertilizers. 630 nm. **Requires a standard heater**	3-Sep-03
14-107-06-1-B	5.0 – 180	0.5	mg N/L as NH_3	Fertilizers	Alkaline phenol-based method. HCl digest of solid fertilizers. 630 nm. **Requires a standard heater and inert probe.**	3-Sep-03
14-107-06-1-C	60 – 600	1.33	mg N/L as NH_4	Fertilizers	Salicylate/DCIC based method. 660 nm. **Requires a standard heater.**	21-Aug-03
14-107-06-1-D	1.5 – 150	0.05	mg N/L as NH_4	Fertilizers	Salicylate/DCIC based method. 660 nm. **Requires a standard heater.**	14-Nov-01
14-107-06-2-B	400 – 800		mg N/L as NH_4	Fertilizers	Sodium salicylate-based method. 660 nm. **Requires a standard heater and Internal Sample Loop Valve.**	3-Sep-03
14-107-06-2-C	75 – 600	1.0	mg N/L as NH_4	Fertilizers	Sodium salicylate-based method. 660 nm. **Requires a standard heater and 1 mm pathlength flow cell.** Intended for use with method number 14-206-00-4-A, urea in fertilizers, but may be used alone.	3-Sep-09
18-107-06-1-A	1.75 – 140	0.08	mg N/L as NH_3	Aqueous formulations	Alkaline phenol-based method; 630 nm determination in **0.10M HCl and Rumen fluid. Requires a standard heater.**	10-Aug-09

	Method No	Range	MDL	Units	Matrix	Comments	Rev Date
	18-107-06-5-A	0.1 – 10	0.025	mg N/L as NH_3	Aqueous formulations	Gas diffusion method; 590 nm. Determination of ammonia in **nitric acid (diluted to 1.59M)**	10-Sep-09
	23-107-06-3-A	10 – 1000		mg N/L as NH_3	Bioreactor solutions	Sodium salicylate/DCIC method; 660 nm. Determination in fermentation beers **Requires a standard heater and Internal Sample Loop Valve.**	3-Sep-03
	24-107-06-5-A	2.0 – 50 0.05 – 1.0	0.02 0.003	mg N/L as NH_3	Air sample filter extracts	Gas diffusion method; determination in **0.02M citric acid** extracts; multi-range method. 590nm	15-Dec-09
	26-107-06-4-A	10 – 50.0	0.151	mg N/L as NH_3	Tobacco extracts	Sodium salicylate/DCIC method; **0.005M H_2SO_4** matrix. 660 nm; dialysis method; **Requires a standard heater**.	3-Sep-03
	30-107-06-1-A #	0.1 – 20.0 **0.007-1.43**		mg N/L as NH_3 **mM N/L as NH_3**	Brackish / Seawaters	Alkaline phenol-based method; 630 nm. **Requires a standard heater.** Macro distillation method; NPDES Accepted (350.1)	14-Nov-01
	31-107-06-1-B ^	5 – 600 **0.36-42.86**	0.7	µg N/L as NH_3 **µM N/L as NH_3**	Brackish / Seawaters	Alkaline phenol-based method;630 nm. **Requires a standard heater.** Can used for determination of samples w/ 0 to 35 ppt salinity; NPDES Equivalent (350.1)	18-Sep-08
	31-107-06-1-F ^	0.005 – 2.0 **0.36-142.86**	0.002	mg N/L as NH_3 **µM N/L as NH_3**	Brackish / Seawaters	Alkaline phenol-based method; 630 nm. **Requires a standard heater.** Can used for determination of samples w/ 0 to 35 ppt salinity; NPDES Equivalent (350.1)	12-Nov-07
	31-107-06-1-G ^	1.25 – 100 **0.089-7.143**	0.41	µg N/L as NH_3 **µM N/L as NH_3**	Brackish / Seawaters	Alkaline phenol-based method; 630 nm **2-cm detector method; QC8500 only;** DCIC. Can used for determination of samples w/ 0 to 35 ppt salinity; **Requires a non-standard heater**. NPDES Equivalent (350.1)	26-Jan-10
	31-107-06-1-H ^	0.25 – 30.0 **0.018-2.143**	0.025	mg N/L as NH_3 **mM N/L as NH_3**	Brackish / Seawaters	Alkaline phenol-based method; 630 nm. high range method; Can used for determination of samples w/ 0 to 35 ppt salinity; **Requires a standard heater.** Ultra-High Throughput method (>120 samples/hr)	31-Oct-08
NEW	31-107-06-1-I	5-500 **0.3571-35.71**	0.47	µg N/L as NH_3 **µM N/L as NH_3**	Brackish / Seawaters	Alkaline phenol-based method, 630 nm, citrate/tartrate buffer. **Requires a standard heater.**	21-Feb-12

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
31-107-06-1-Q^	0.005-2.0 **0.36-142.86**	0.0022	mg N/L as NH_3 **µM N/L as NH_3**	Brackish / Seawaters	Alkaline phenol-based method, 630 nm, citrate buffer. **Requires a standard heater.** NPDES Equivalent to 349.0	17-Aug-10
31-107-06-4-A5	1.0– 30.0 **0.071-2.143**	0.1	µg N/L as NH_3 **µM N/L as NH_3**	Brackish / Seawaters	Fluorescence method; **QC8500 only** method Fluorescence detector must be purchased separately **Also requires a standard heater, Direct Voltage Module, and cable**.	22-May-07
31-107-06-5-A	35 – 140 **2.5-10.0**	8.54	µg N/L as NH_3 **µM N/L as NH_3**	Brackish / Seawaters	Gas diffusion method; contact Sales (special care required). Phenol Red, 570 nm.	12-Apr-01
80-107-06-1-A ^	0.25 – 20 0.1 – 5.0 0.01-1.0	0.05 0.015 0.0027	mg N/L as NH_3	Waters	**Ultra Low Flow** method (must be run alone or with other ULF methods, pump speed is 10); Alkaline phenol-based method; 630 nm. NPDES Equivalent (350.1); multi-range method; non-preserved samples. **Standard heater required.**	31-Jul-09
80-107-06-1-B ^	0.1 – 5.0 0.25 – 20	0.005 0.05	mg N/L as NH_3	Waters	Alkaline phenol-based method; 630 nm. **Standard heater required** preserved samples; NPDES Equivalent (350.1); multi-range method	11-Aug-09
80-107-06-1-C ^	0.01 – 1.0	0.05	mg N/L as NH_3	Waters	**Ultra Low Flow** method (must be run alone or with other ULF methods, pump speed is 10); Alkaline phenol-based method; 630 nm. **Standard heater required.** preserved samples; NPDES Equivalent (350.1)	11-Aug-09
90-107-06-3-A	0.1-6.0	0.02-0.06	mg N/L as NH_3	Water/Soils	Multiple matrix Method**. Water, 2M KCl, 0.5M K_2SO_4, 0.01 $CaCl_2$**. Salicylate/DCIC. 660 nm. **Standard heater required.** Ultra High Throughput method. 120 samples per hour.	08-Feb-11
Amylose						
20-244-00-1-A	1 – 500	0.044	mg Amylose/L	Food stuffs	Determination in 0.1 N NaOH/ETOH digests of rice; low-flow method. 600 nm.	20-Jul-07

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Boron						
10-105-08-1-B	0.5 – 10.0	0.02	mg B/L	Waters	Azomethine-H method. 430 nm	22-Aug-03
13-105-08-1-D	2.0 – 10.0	0.04	mg B/L	Plant extracts	Determination in 4% HCl matrix (following ashing of samples). Azomethine-H method. 430 nm	3-Sep-03
13-105-08-1-E	1.0 – 4.0	0.10	mg B/L	Plant extracts	Determination in 1 M HCl matrix; low-flow method. Azomethine-H method. 430 nm	3-Sep-03
31-105-08-1-A	0.1 – 5.0 **9.25-462.53**	0.047	mg B/L **µM B/L**	Brackish / Seawaters	Determination in 0 to 35 ppt salin ity samples. **Requires a non-standard heater.** Azomethine-H method. 430 nm.	3-Apr-08
70-105-08-2-A	0.25 – 10.0	0.035	µg BL	High purity waters	Fluorescence method, chromotropic acid. Detector must be purchased separately. **Also requires a standard heater, Direct Voltage Module, and cable**.	3-Sep-03
Bromide			***See also IC section***			
10-135-21-2-B	0.5 – 10	0.075	mg Br^-/L	Waters	Phenol red method. 590 nm.	3-Sep-03
18-135-21-2-B	0.5 – 10	0.05	mg Br^-/L	Aqueous formulations	Phenol Red method. 590 nm. Determination in 0 to 30% w/v NaCl solutions	3-Sep-03
30-135-21-1-A	0.5 – 10.0 **0.0063-0.1252**	0.005	mg Br^-/L **mM Br^-/L**	Brackish / Seawaters	Phenol Red method. 590 nm. Low-flow method; follows Standard Methods (4500-Br-D)	3-Sep-03
30-135-21-1-B	5.0 – 60.0 **0.0625-0.751**	0.22	mg Br^-/L **mM Br^-/L**	Brackish / Seawaters	Phenol Red method. 590 nm. Follows Standard Methods (4500-Br-D)	3-Sep-03
Calcium			***See also IC section and Hardness***			
10-120-02-1-B	0.5 – 50.0	0.07	mg Ca/L	Waters	o-cresolphthalein complexone 600 nm.	24-Jul-08
10-120-02-1-C	20 – 500 5 – 125	1.1 0.2	mg Ca/L	Waters	Multi-range method o-cresolphthalein complexone	6-Jul-09
NEW 12-120-02-2-B	0.25-50 10-1000	0.05 0.7	mg Ca/L	Soil extracts	Multi-range method. 1M ammonium acetate. 600 nm.	16-May-2012
14-120-02-1-B	5 – 120	0.5	mg Ca/L	Fertilizers	Determination in HCl digests 600 nm. o-cresolphthalein complexone	4-Sep-03
14-120-02-1-C	750 – 2000		mg Ca/L	Fertilizers	600 nm. o-cresolphthalein complexone **Requires an internal sample loop valve.**	4-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Carbon (Total Dissolved)						
12-140-39-5-A	5-400	0.7	mg C/L	Soil Extracts	0.5M K_2SO_4. Phenol red method; 440 nm. Can measure TN from the same digest using method 12-107-04-3-C. Requires an in-line digestion module (Only one module is needed for one or both methods).	19-Dec-11
Chlorate			***See also IC section***			
25-224-35-1-D	0.1-2.0	0.005	mg $NaClO_3$/L	Chlor-Alkali	Determination in 50-200g NaOH/L. Ferrozine. 500 nm. **Requires a standard heater.**	4-Sep-03
25-224-35-1-E	0.5 – 10		mg $NaClO_3$/L	Chlor-Alkali	Determination in membrane cell liquors; 29 to 34% NaOH matrix; ferrozine method **500 nm**. Requires a standard heater.	4-Sep-03
25-224-35-1-F	1.0 – 20		mg $NaClO_3$/kg	Chlor-Alkali	Determination in membrane cell liquors; 6 to 36% NaOH and 1 to 6% NaCl matrix; ferrozine method **500 nm. Requires a standard heater.**	4-Sep-03
25-224-35-1-G	0.1 – 2.0	0.005	g $NaClO_3$/L	Chlor-Alkali	Determination in diaphragm cell liquors; 50 to 200 g NaOH/L matrix; ferrozine method. **500 nm. Requires a standard heater.**	4-Sep-03
25-224-35-1-H	0.25 – 3.0	0.005	mg $NaClO_3$/L	Chlor-Alkali	135 to 275 g NaCl/L sample matrix (no NaOH in matrix); ferrozine method; selective against hypochlorite. **500 nm. Requires a standard heater.**	4-Sep-03
25-224-35-1-I	10 – 50	0.597	g $NaClO_3$/L	Chlor-Alkali	100 to 300 g NaCl/L sample matrix (no NaOH in matrix) **500 nm. Requires a standard heater.**	11-Sep-08
25-224-35-1-J	5 – 60	0.4	mg $NaClO_3$/L	Chlor-Alkali	250 to 500 g NaOH/L (25-50%) sample matrix. **500 nm. Requires a standard heater.**	17-Sep-08
25-224-35-1-K	0.25-3.0	0.012	g $NaClO_3$/L	Chlor-Alkali	135 to 275 g NaCl/L Matrix, No NaOH. **500 nm. Requires a standard heater.**	10-Jun-10

	Method No	Range	MDL	Units	Matrix	Comments	Rev Date
	Chloride			***See also IC section***			
	10-117-07-1-A # *	6 – 300	0.15	mg Cl^-/L	Waters	Mercuric thiocyanate, 480 nm. Low-flow method; NPDES/NPDWR Accepted; also follows ISO (15682)	29-Nov-07
	10-117-07-1-B #	2.5 – 100	0.5	mg Cl^-/L	Waters	Mercuric thiocyanate, 480 nm. Low-flow method; NPDES/NPDWR Accepted; also follows ISO (15682)	29-Nov-07
	10-117-07-1-C ^	0.1 – 10.0	0.017	mg Cl^-/L	Waters	Mercuric thiocyanate, 480 nm. Low-flow method; NPDES Equivalent. follows Standard Methods (4500-Cl-G); USGS I2187-85);	28-Aug-03
	10-117-07-1-E ^	5.0 – 2000	0.6	mg Cl^-/L	Waters	Mercuric thiocyanate, 480 nm. NPDES Equivalent.	19-Sep-08
	10-117-07-1-H #	2.5 – 100	0.2	mg Cl^-/L	Waters	Mercuric thiocyanate, 480 follows Standard Methods (4500-Cl-G); USGS I2187-85);nm.Low-flow method; NPDES Accepted	5-Apr-01
	10-117-07-1-I #	50 – 1000	1.0	mg Cl^-/L	Waters	Mercuric thiocyanate, 480 nm.Low-flow method; NPDES Accepted	15-Aug-01
	10-117-07-1-K ^	1.0 – 150	0.277	mg Cl^-/L	Waters	Mercuric thiocyanate, 480 nm.Ultra High Throughput method (120 samples/hr); NPDES Equivalent; follows Standard Methods (4500-Cl-G); USGS I2187-85);	27-May-09
	12-117-07-1-B	0.25-30	0.05	mg Cl^-/L	Soil Extracts	0.01M $Ca(NO_3)_2.4\ H_2O$. Mercuric thiocyanate, 480 nm.	26-Aug-2011
NEW	12-117-07-1-C	5-800	1	mg Cl^-/L	Soil Extracts	2M HNO_3 Mercuric thiocyanate, 480 nm.	05-Jun-12
NEW	12-117-07-1-D	0.1-30	0.05	mg Cl^-/L	Soil Extracts	0.014M $Ca(SO_4)_2$ Mercuric thiocyanate, 480 nm.	11-Jun-12
	19-117-07-1-B	5 – 40	0.1	mg Cl^-/L	Plating baths	Determination in 34% zinc sulfate matrix. Mercuric thiocyanate. 480 nm.	4-Sep-03
	25-117-07-1-B	5 – 100		mg Cl^-/L	Chlor-Alkali	Determination in membrane cell liquors; 29 to 34% NaOH matrix. Mercuric thiocyanate, 480 nm.	4-Sep-03
	25-117-07-1-C	175 – 200	3.0	g Cl^-/L	Chlor-Alkali	No NaOH in matrix. Mercuric thiocyanate, 480 nm.	4-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
25-117-07-1-D	120-200	3.3	g Cl^-/L	Chlor-Alkali	No NaOH in matrix **Requires 1 mm flow cell and Internal Sample Loop Valve**. Mercuric thiocyanate, 480 nm.	25-May-10
25-117-07-1-E	5-100	1.0	mg Cl^-/L	Chlor-Alkali	Mercuric thiocyanate, 480 nm. 29-34% w/w NaOH Matrix	21-Jun-10
25-117-07-1-F	10-250	N/A	g Cl^-/L	Chlor-Alkali	Mercuric thiocyanate, 480 nm. 70-200g naOH Matrix. **Requires 1 mm flow cell**	08-Nov-10
26-117-07-1-A	6-300	1.5	mg Cl^-/L	Tobacco Extracts	5% Acetic acid extracts of tobacco. Mercuric thiocyanate, 480 nm	30-Nov-10
26-117-07-2-A	10-225	3.0	mg Cl^-/L	Tobacco Extracts	5% Acetic acid extracts of tobacco. Pre-valve dialysis to exclude color interference. Mercuric thiocyanate, 480 nm	08-Dec-10
80-117-07-1-A ^	0.25 – 20 2.5 – 100 6 – 300	0.13 0.2 1.0	mg Cl^-/L	Waters	**Ultra Low Flow** method (must be run alone or with other ULF methods, pump speed is 10); NPDES Equivalent; follows Standard Methods (4500-Cl-E); USGS I2187-85.; multi-range method Mercuric thiocyanate, 480 nm	8-Jul-09

Chromium

See also IC section

10-124-13-1-A #	5 – 400	0.35	µg Cr/L as Cr(VI)	Waters	Hexavalent chromium; NPDES Accepted. Diphenylcarbazide; 540 nm. Has Omnion 3.0 support added.	9-Oct-00
10-124-13-1-B ^	2 – 200	0.27	µg Cr/L as Cr(VI)	Waters	Hexavalent chromium; NPDES Equivalent; follows Standard Methods (3500 Cr-B) Diphenylcarbazide; 540 nm	4-Apr-04
10-141-13-2-A	0.1 – 1.0 1.0 - 10	0.028	mg Cr/L	Waters	Total or hexavalent chromium (trivalent chromium can be measured by subtraction).; ISO (23913) Diphenylcarbazide; 540 nm. **Requires a non-standard heater.**	18-May-04
31-124-13-1-A	2– 200 0.038-3.85	0.66	µg Cr/L as Cr(VI) µM Cr/L as Cr(VI)	Brackish / Seawaters	Hexavalent chromium in seawater/brackish waters. Diphenylcarbazide; 540 nm.	24-Aug-09

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Color						
10-308-00-1-B	25 – 250	0.49	Pt-Co Color Units	Waters	450 nm	2-Dec-08
10-308-00-1-C	2.5- 100	0.6	Pt-Co Color Units	Waters	450 nm	4-Nov-10
21-308-00-1-A	0.250 – 0.700		Abs units	Beverages	Low-flow method Cobaltous chloride, 570nm.	18-Sep-03
Conductivity						
10-302-00-1-A5 # 10-302-00-1-AS2 #	5.94 – 575	0.5	µS/cm	Waters	QC8500 method; NPDES Accepted **Dedicated channel required** QC8500 Series 2 method; NPDES Accepted; **Dedicated channel required**	29-Nov-07
10-302-00-1-B5 # 10-302-00-1-BS2 #	146.9 – 6667		µS/cm	Waters	QC8500 method; NPDES Accepted **Dedicated channel required** QC8500 Series 2 method; NPDES Accepted; **Dedicated channel required**	29-Nov-07
10-302-00-1-E 10-302-00-1-ES2	1 – 5.0	0.01	µS/cm	Waters	QC8500 method; **Dedicated channel required** QC8500 Series 2 method; **Dedicated channel required.**	26-Sep-07
Copper						
10-129-17-1-A	0.02 – 3.0		mg Cu/L	Waters	Bathocuprine method; 480 nm.	26-Sep-08
Cyanide						
10-204-00-1-A #	0.005 – 0.5	0.0005	mg CN^-/L	Waters	**Total Cyanide** Macro distillation method; 0.25 M NaOH matrix following distillation; NPDES / NPDWR Accepted; follows Standard Methods (4500-CN). Pyridine/barbituric acid, 570 nm. **Standard heater required.**	29-Nov-07
10-204-00-1-B ^	0.50 – 50.0		mg CN^-/L	Waters	**Total Cyanide** 0.25 M NaOH matrix following distillation; NPDES Equivalent (335.4) Pyridine/barbituric acid, 570 nm. <u>High Throughput method</u> (120 samples per hour) **Standard heater required.**	19-Sep-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-204-00-1-D	0.20 – 10.0	0.003	mg CN^-/L	Waters	**Total Cyanide** Acetate buffer; 0.25 M NaOH matrix following distillation. Pyridine/ barbituric acid, 570 nm. **Standard heater required.**	18-Sep-03
10-204-00-1-E	0.002 – 0.03	0.00045	mg CN^-/L	Waters	**Total Cyanide** Acetate buffer; 0.25 M NaOH matrix following distillation Pyridine/barbituric acid, 570 nm. **Standard heater required.**	16-Sep-03
10-204-00-1-F ^	50 – 500		mg CN^-/L	Waters	**Free Cyanide**; low-flow method; 0.25 M NaOH matrix following distillation; NPDES Equivalent (335.4). Pyridine/barbituric acid, 570 nm. **Standard heater and internal sample loop required.**	16-Sep-03
10-204-00-1-G	2.0 – 500	0.5	µg CN^-/L	Waters	Macro distillation method; 0.25 M NaOH matrix following digestion; pyridine-free reagents (isonicotinic/barituric acid). 600 nm. **Standard heater required.**	16-Sep-03
10-204-00-1-H	0.002 – 0.01 0.1 – 5.0	0.00047 0.0138	mg CN^-/L	Waters	**Free Cyanide**; pyridine-free reagents; can be used w/ 10-204-00-2-G for inline total CN; multi-range method; (isonicotinic/barituriic acid). 600 nm. **Standard heater required.**	7-Jun-06
10-204-00-1-V	0.005 – 0.50	0.0008	mg CN^-/L	Waters	**Total Cyanide**; midi distillation method; 0.25 M NaOH matrix following distillation Pyridine/barbituric acid, 570 nm. **Standard heater required.**	16-Sep-03
10-204-00-1-WX	5 – 500	1.48	µg CN^-/L	Waters	**WAD Cyanide**; MicroDIST® method Pyridine/barbituric acid, 570 nm. **Standard heater required.**	1-Apr-09
10-204-00-1-X #	0.005 – 0.50	0.001	mg CN^-/L	Waters	**Total Cyanide**; MicroDIST® method; 0.25 M NaOH matrix following distillation; Pyridine/barbituric acid, 570 nm. **Standard heater required.** NPDES/NPDWR Approved method	29-Nov-07
10-204-00-1-X2 #^	0.002 – 0.5	0.00038	mg CN^-/L	Waters	**Total Cyanide**; MicroDIST® method; Ultra-High Throughput method (>125 samples/hr); Pyridine/barbituric acid, 570 nm. **Standard heater required.** NPDES Equivalent / NPDWR Accepted	16-Apr-08

	Method No	Range	MDL	Units	Matrix	Comments	Rev Date
	10-204-00-2-C ^	2 – 100	0.21	µg CN^-/L	Waters	**Total Cyanide**; inline method; low-flow method; NPDES Equivalent; Pyridine/barbituric acid, 570 nm**. Inline module and Standard heater required.** Samples w/ particulates not suitable	14-Sep-07
	10-204-00-2-D ^	5 – 500	0.51	µg CN^-/L	Waters	**Total Cyanide**; inline method; low-flow method; NPDES Equivalent; Pyridine/barbituric acid, 570 nm**. Inline module and Standard heater required.** Samples w/ particulates not suitable	19-Sep-07
	10-204-00-2-E ^	2 – 100	0.5	µg CN^-/L	Waters	**Total Cyanide**; inline method; low-flow method; lower recovery of ferricyanide; NPDES Equivalent; Pyridine/barbituric acid, 570 nm**. Inline module and Standard heater required.** Samples w/ particulates not suitable	3-Dec-08
	10-204-00-2-G	0.002 – 0.01 0.1 – 5.0	0.00016 0.015	mg CN^-/L	Waters	**Total Cyanide**; inline method; pyridine-free reagents; can be used w/ 10-204-00-2-H for free cyanide; 600 nm multi-range method; Samples w/ particulates not suitable	22-Jun-07
NEW	10-204-00-2-H	2 – 200		µg CN^-/L	Waters	**Free or Total CN**. Free CN is measured by reducing the heater temperature in the in-line module and turning off the UV lamp. ISO14403-1. 1,3 dimethylbarbituric/ isonicotinic acid. 600 nm. **Requires an in-line module and standard heater.** Samples w/ particulates not suitable	28-Jun-2010
	10-204-00-2-I	2 – 100	0.34	µg CN^-/L	Waters	**Total Cyanide**; inline method; pyridine-free reagents; uses 1,3-dimethylbarbituric acid; Samples w/particulates not suitable. **Requires in-line module and standard heater.** Isonicotinic/1,3 dimethyl barbituric acid 600 nm.	13-Aug-09
	10-204-00-3-A	10 – 500	1.0	µg CN^-/L	Waters	**WAD Cyanide**; inline method; samples w/ particulates not suitable. Pyridine/barbituric acid; 570 nm. **In-line module and standard heater required**.	28-May-04

	Method No	Range	MDL	Units	Matrix	Comments	Rev Date
	10-204-00-4-B	2.0 – 100	0.16	µg CN^-/L	Waters	**WAD Cyanide**; inline method; pyridine-free reagents; Isonicotinic/barbituric acid 600 nm. samples w/ particulates not suitable; MANIFOLD ONLY	27-Jul-07
	10-204-00-4B51					DEDICATED 115V CHANNEL FOR QC8500. **Requires 2 channels, two heaters, one detector and one valve)** Isonicotinic/barbituric acid 600 nm. samples w/ particulates not suitable	
	10-204-00-4B52					DEDICATED 220V CHANNEL FOR QC8500 **Requires 2 channels, two heaters, one detector and one valve)** Isonicotinic/barbituric acid 600 nm. samples w/ particulates not suitable	
	10-204-00-5-A# ^	2.0 – 400	0.65	µg CN^-/L	Waters	**Available Cyanide**; Amperometric detection w/ Ligand Exchange; NPDES Equivalent (335.4/ASTM 6888-09). Requires an amperometric detector, direct voltage module, cable, and standard heater. **Not available outside US**	02-May-08
	10-204-00-5-B^	2.0 – 500	0.914	µg CN^-/L	Waters	**Total Cyanide**; inline method; Amperometric detection; **Requires an in-line digestion module, amperometric detector, direct voltage module, cable, and standard heater**. Samples w/ particulates not suitable. **Not available outside US**;	29-May-08
	10-204-00-5-C^	2.0 – 400	0.08	µg CN^-/L	Waters	**Free Cyanide**; Amperometric detection; Requires an amperometric detector, direct voltage module, cable, and standard heater. NPDES equivalent (ASTM D7237-10). **Not available outside US**	12-Feb-10
NEW	10-204-00-5-D ^	2.0 – 500	0.21	µg CN^-/L	Waters	**Total Cyanide**. Amperometric detection; Requires an amperometric detector, direct voltage module, cable, In-line module and standard heater. **NPDES equivalent to ASTM D7511-09. Not available outside US**	20-Dec-12

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-204-00-5-WX	5.0 – 400	0.56	µg CN^-/L	Waters	**WAD Cyanide**; Amperometric detection; MicroDIST® method; Requires an amperometric detector, direct voltage module, cable, and standard heater. **Not available outside US**	5-May-09
10-204-00-5-X^	5.0 – 400	0.975	µg CN^-/L	Waters	**Total Cyanide**; Amperometric detection; MicroDIST® method; Requires an amperometric detector, direct voltage module, cable, and standard heater. NPDES Equivalent (ASTM D7284-08) **Not available outside US**	30-May-08
12-204-00-2-A	2 – 200	0.16	µg CN^-/L	Soil extracts	Inline method; determination in **1 M NaOH soil extracts**; pyridine-free reagents; 600 nm. **Requires an in-line sample preparation module and standard heater**. Extracts must be filtered prior to analysis.	25-Aug-08
26-204-00-1-A	1.0 – 15	0.024	mg CN^-/L	Tobacco extracts	Determination in mainstream tobacco smoke. Pyridine-pyrazolone; 600 nm. **Requires a standard heater**.	4-May-10
80-204-00-1-A ^	0.005 – 0.5	0.001	mg CN^-/L	Waters	**Total Cyanide**; **Ultra Low Flow** method (must be run alone or with other ULF methods, pump speed is 10); macro-distillation method; NPDES Equivalent (335.4). Pyridine/barbituric acid; 570 nm. **Requires a standard heater.**	25-Jun-09
80-204-00-1-X ^	0.005 – 0.5	0.001	mg CN^-/L	Waters	**Total Cyanide**; **Ultra Low Flow** method (must be run alone or with other ULF methods, pump speed is 10); MicroDIST® method; NPDES Equivalent (MicroDist® method). Pyridine/barbituric acid; 570 nm. **Requires a standard heater.**	24-Jun-09

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Fluoride			***See also IC section***			
10-109-12-2-A5 #	0.10 – 5.0	0.05	mg F^-/L	Waters	Ion Selective Electrode methods; NPDES / NPDWR Accepted; follows Standard Methods (4500-F-B); QC8500 specific. **Requires a fluoride detector module**.	23-Dec-09
10-109-12-2-AS2 #					QC8500 Series 2 specific. **Requires a fluoride detector module**	23-Dec-09
10-109-12-2-B5 ^	1 – 1000	0.14	mg F^-/L	Waters	Ion Selective Electrode methods; NPDES Equivalent; QC8500 specific. **Requires a fluoride detector module**	23-Dec-09
10-109-12-2-BS2 ^					QC8500 Series 2 specific. **Requires a fluoride detector module**	23-Dec-09
10-109-12-2-C5 ^	0.10 – 2.0	0.02	mg F^-/L	Waters	Ion Selective Electrode methods; NPDES Equivalent; QC8500 specific **Requires a fluoride detector module**	23-Dec-09
10-109-12-2-CS2 ^					QC8500 Series 2 specific **Requires a fluoride detector module**	23-Dec-09
10-109-12-2-D5 ^	0.10 – 10.0	0.03	mg F^-/L	Waters	Ion Selective Electrode methods; NPDES Equivalent QC8500 specific **Requires a fluoride detector module**	23-Dec-09
10-109-12-2-DS2 ^					QC8500 Series 2 specific **Requires a fluoride detector module**	23-Dec-09
14-109-12-2-A5	0.5 – 20	0.1	mg F^-/L	Fertilizers	Ion Selective Electrode methods; QC8500 specific **.** HCL digests of fertilizer **Requires a fluoride detector module**	4-Sep-03
14-109-12-2-AS2					QC8500 Series 2 specific HCL digests of fertilizer. **Requires a fluoride detector module**	4-Sep-03
19-109-12-2-A5	1.6 – 80	0.4	mg F^-/L	Plating baths	Ion Selective Electrode methods; determination in 34% zinc sulfate; QC8500 specific **Requires a fluoride detector module**	4-Sep-03
19-109-12-2-AS2				H_2SO_4	QC8500 Series 2 specific **Requires a fluoride detector module**	4-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
19-109-12-2-B5	0.1 – 10	0.02	mg F^-/L	Plating baths	Ion Selective Electrode methods; determination in 34% zinc sulfate; QC8500 specific **Requires a fluoride detector module**	4-Sep-03
19-109-12-2-BS2					QC8500 Series 2 specific **Requires a fluoride detector module**	4-Sep-03
Formaldehyde						
10-221-00-1-B	0.05-5.0	0.01	mg HCHO/L	Waters	MBTH method. 630 nm. **Requires a standard heater.**	13-Apr-11
24-221-00-1-A	0.1-10.0	0.033	mg HCHO/L	Air Monitoring Extracts	Chromotropic acid method. Bisulfite extracts. 580 nm. **Requires a standard heater.**	09-Sep-03
Free Amino Nitrogen (FAN)						
21-237-00-1-A	10 – 120		mg N/L	Beverages	Free Amino Nitrogen; determination in beer. Ninhydrin method; 570 nm. **Requires a non-standard heater.**	5-Sep-03
Glucose (Reducing Sugars)						
26-201-00-1-B	10 – 500	NA	mg glucose/L	Tobacco extracts	Ferricyanide method; 420 nm. 5% Acetic acid. **Requires a standard heater.**	18-Nov-08
Hardness						
10-301-31-1-A * #	5 – 300	0.331	mg $CaCO_3$/L	Waters	Total hardness; calmagite method; NPDES Accepted (130.1); 630 nm	2-Jul-09
10-301-31-1-B * #	30 – 800	5.4	mg $CaCO_3$/L	Waters	Total hardness; calmagite method; NPDES Accepted (130.1); 630 nm	18-Dec-00
10-301-31-1-C ^	125 – 1500	17.0	mg $CaCO_3$/L	Waters	Total hardness; calmagite method; NPDES Equivalent (130.1); 630 nm	5-Sep-03
Hydrazine						
10-217-00-1-B	0.005 – 1.0	0.002	mg N_2H_4/L	Waters	4-dimethylaminobenzaldehyde; 460 nm. **Requires a standard heater.**	3-Mar-10

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Hydroxide						
25-225-25-1-A	70 – 200	10	g NaOH/L	Chlor-Alkali	Determination in diaphragm or mercury cell liquors; EDA/copper sulfate method. 630 nm. **Internal Sample Loop Valve required.**	5-Sep-03
25-225-25-1-B	29 – 34		% w/w NaOH	Chlor-Alkali	Determination in membrane cell liquors; EDA/copper sulfate method. 630 nm. **Internal Sample Loop Valve required.**	5-Sep-03
25-225-25-1-E	29 – 34		% w/w NaOH	Chlor-Alkali	Determination in membrane cell liquors; EDA/copper sulfate method. 500 nm. **1 mm path length flow cell, NO internal sample loop valve**	10-Jul-10
25-225-25-1-F	29 – 34		% w/w NaOH	Chlor-Alkali	Determination in membrane cell liquors; EDA/copper sulfate method. 500 nm. **Internal Sample Loop Valve required.**	07-Jul-10
25-225-25-1-G	70 – 200		g NaOH/L	Chlor-Alkali	Determination in diaphragm or mercury cell liquors; EDA/copper sulfate method. 630 nm. **1 mm path length flow cell, NO internal sample loop valve**	03-Nov-10
Hydroxyproline						
20-243-00-1-A	0.1 – 5.0 1 – 40	0.007	mg/L	Food stuffs	Para dimethylaminobenzaldehyde; 550 nm. Determination in acid digests of meat; **0.0138 M H2SO4 final matrix** **QC8500 only**; multi-range method. **Requires non-standard heater.**	5-Feb-07
Hypochlorite						
18-226-36-1-A	0.05 – 2.0	0.0033	g NaOCl/L	Aqueous formulations	Gas diffusion method; determination in commercial products. Methyl orange; 550 nm.	16-Jan-09
18-226-36-1-B	0.05 – 2.0	0.001	g NaOCl/L	Aqueous formulations	Determination in commercial products. Potassium iodide method. 350 nm. Requires **Kandolite lamp.**	19-Oct-09
25-226-36-1-B	1.25 – 10	0.20	mg NaOCl/L	Chlor-Alkali	Methyl-orange method; 550 nm. dialysis method	19-Oct-05

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
25-226-36-1-C	18.75 – 150	0.77	mg NaOCl/L	Chlor-Alkali	Methyl-orange method; 550 nm. dialysis method	8-Sep-03
25-226-36-1-D	3.0 – 37.5	0.5	mg NaOCl/L	Chlor-Alkali	Potassium iodide method. 350 nm. Requires **Kandolite lamp.**	8-Sep-03
25-226-36-1-E	10 – 50		mg NaOCl/L	Chlor-Alkali	Determination in diaphragm cell liquors; potassium iodide method 350 nm. Requires **Kandolite lamp.**	8-Sep-03
25-226-36-1-F	3 – 75		mg NaOCl/L	Chlor-Alkali	Determination in diaphragm cell liquors; 5 to 20% NaOH matrix; potassium iodide method. 350 nm. Requires **Kandolite lamp.**	8-Sep-03
Iodate						
18-136-41-1-A	0.25 – 8.0	0.014	mg IO_3^-/L	Aqueous formulations	DPD method. 550 nm. Determination in NaCl / H_2SO_4 solutions	12-Sep-03
Iodide			***See also IC section***			
10-136-09-1-A	0.50 – 10.0	0.3	µg I^-/L	waters	420 nm;. 0.2M KOH. **Requires a standard heater**	12-Sep-03
18-136-09-1-A	0.1 – 3.0	0.02	mg I^-/L	Aqueous formulations	Determination in NaCl / H_2SO_4 solutions	12-Sep-03
Iron						
10-126-18-1-A	0.1 – 5.0	0.01	mg Fe/L	Waters	Total soluble iron as Fe (II and III); TPTZ indicator; 590 nm. **Inert sample probe required.**	12-Sep-03
10-126-18-1-B	0.05 – 0.5	0.002	mg Fe/L	Waters	Total soluble iron as Fe (II and III); TPTZ indicator 590 nm. **Inert sample probe required.**	12-Sep-03
10-126-18-1-C	1.0 – 5.0	0.01	mg Fe/L	Waters	Total iron as Fe (II and III); Thiocyanate method 460 nm. **HCl/persulfate digests. Inert sample probe required.**	12-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-126-18-1-D	0.1 – 5.0 0.05 – 5.0	0.01	mg Fe/L	Waters	Total soluble iron as Fe (II and III); Ferrozine indicator; 560 nm. Determination in 0.5% HNO_3 matrix (preservation); dual-range method **Inert sample probe required.**	6-Jul-09
10-126-18-3-A	0.1-5.0	0.04 NEW	mg Fe/L	Waters	**In-line digestion for total iron**. **Inert sample probe required.** Alkaline UV digestion. **Inline module required.** Can measure free iron on a second channel with method 10-126-18-1-D	22-Oct-10
31-126-18-1-A	0.5-30 mg Fe/L	0.024	Mg Fe/L	Brackish / Seawaters	Total soluble iron as Fe (II and III); TPTZ indicator. 600 nm. **Inert sample probe required.**	15-Sep-03
31-126-18-1-B	0.05 – 0.500 0.895-8.95	0.004	mg Fe/L µg Fe/L	Brackish / Seawaters	Total soluble iron as Fe (II and III); TPTZ indicator. 600 nm. **Inert sample probe required.**	15-Sep-03
31-126-19-1-A	0.50 – 30.0 0.00895-0.537	0.23	mg Fe/L mM Fe/L	Brackish / Seawaters	Total soluble iron as Fe (II); TPTZ indicator **Inert sample probe required.**	26-Nov-08
Kjeldahl Nitrogen (TKN)						
10-107-06-2-D #	0.5 – 20	0.07	mg N/L	Waters	**Kjeldahl digests; mercury catalyst; NPDES Accepted. Salicylate/nitroprusside; 660 nm.** Requires a standard heater. Equivalent to 351.2/4500 N_{ORG} D-1997	1-May-01
10-107-06-2-E #	0.1 – 5.0	0.018	mg N/L	Waters	**Kjeldahl digests; mercury catalyst; NPDES Accepted. Salicylate/nitroprusside; 660 nm.** Requires a standard heater. Equivalent to 351.2/4500 N_{ORG} D-1997	5-Dec-07
10-107-06-2-H ^	0.1 – 5.0	0.034	mg N/L	Waters	Kjeldahl digests; copper catalyst; NPDES Equivalent (351.2); follows Standard Methods (4500-N_{ORG} D). Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	13-May-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-107-06-2-I ^	0.5 – 20.0	0.10	mg N/L	Waters	Kjeldahl digests; copper catalyst; NPDES Equivalent (351.2). Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	14-May-08
10-107-06-2-K ^	0.1 – 20.0	0.0093	mg N/L	Waters	Kjeldahl digests; mercury catalyst; low-flow method; NPDES Equivalent (351.2) Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	15-May-08
10-107-06-2-M	0.25 – 25	0.05	mg N/L	Waters	Kjeldahl digests; copper catalyst; NPDES Accepted Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	27-Mar-06
10-107-06-2-N ^	0.5 – 20 0.1 – 5.0	0.02 0.04	mg N/L	Waters	Kjeldahl digests; mercury catalyst; Ultra High Throughput method (>125 samples/hr.); multi-range method; NPDES Equivalent (351.2) Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	12-Sep-07
10-107-06-2-P ^	0.25 – 25	0.056	mg N/L	Waters	Kjeldahl digests; copper catalyst; Ultra High Throughput method (>125 samples/hr.); NPDES Equivalent (351.2) Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	14-Apr-08
10-107-06-2-Q^	0.5 – 20.0 0.1 – 5.0	0.1 0.04	mg N/L	Waters	Kjeldahl digests; mercury catalyst; low-flow method; multi-range method Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	8-Dec-09
10-107-06-2-S	0.2-20	0.01	mg N/L	Waters	**Simplified TKN (s-TKN™).** Two channel method TN and NO_2+ NO_3. S-TKN by subtraction.	14-Jul-10
10-107-06-5-F^	0.1 – 10.0	0.01	mg N/L	Waters	Kjeldahl digests; gas diffusion method; can also be used w/ brackish/seawater samples; ISO (11732). **Equivalent to PAI -DK03**	26-Aug-03
10-107-06-6-C ^	0.5 – 20	0.21	mg N/L	Waters	Kjeldahl digests; mercury catalyst; inline distillation method; NPDES Equivalent (351.2); samples w/ particulates not suitable. Can be used with brackish/ seawater digests. Salicylate/ nitroprusside; 660 nm. **Requires an in-line module and a standard heater, or two heated channels (with one heater non-standard)**	13-Aug-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-107-06-6-D ^	0.5 – 20	0.25	mg N/L	Waters	Kjeldahl digests; copper catalyst; inline distillation method; NPDES Equivalent (351.2); samples w/ particulates not suitable. Can be used with brackish/seawater digests. **Requires an in-line module and a standard heater or two heated channels (with one heater non-standard).**	31-Jul-09
13-107-06-1-A	1.0 – 25.0	0.1	mg N/L	Plant digests	Kjeldahl digests; selenium oxide catalyst Phenate; 630 nm. **Requires a standard heater.**	15-Sep-03
13-107-06-2-D *	10 – 150	0.5	mg N/L	Plant digests	Kjeldahl digests; copper catalyst; low-flow method Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	29-Oct-07
13-107-06-2-G *	1 – 50	0.12	mg N/L	Plant digests	Kjeldahl digests; selenium oxide catalyst; requires 10% sulfuric acid digest Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	15-Sep-03
14-107-06-2-A	5.0 – 200	0.04	mg N/L	Fertilizers	Kjeldahl digests; selenium oxide catalyst Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	15-Sep-03
15-107-06-2-E	30 – 300		mg N/L	Feeds	Kjeldahl digests; selenium oxide catalyst Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	15-Sep-03
15-107-06-2-F	7.5 – 300	0.75	mg N/L	Feeds	Kjeldahl digests Salicylate/ nitroprusside; 660 nm. **Requires a standard heater.**	15-Sep-03

Kjeldahl Phosphorus (TKP)

10-115-01-1-C #	0.1 – 5.0	0.015	mg P/L	Waters	Total P; Kjeldahl digests; mercury catalyst; molybdate based method; 880 nm. NPDES Accepted. **Requires a standard heater.**	15-May-01
10-115-01-1-D #	0.05 – 0.5	0.002	mg P/L	Waters	Total P; Kjeldahl digests; mercury catalyst; molybdate based method; 880 nm **Requires a standard heater.** NPDES Accepted	26-Dec-00

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-115-01-1-I ^	0.1 – 5.0	0.007	mg P/L	Waters	Total P; Kjeldahl digests; mercury catalyst; molybdate based method; ; 880 nm **Requires a standard heater.** NPDES Equivalent (365.4); Ultra High Throughput method (>100 samples/hr)	28-Aug-07
10-115-01-2-B ^	0.10 – 10	0.010	mg P/L	Waters	Total P; Kjeldahl digests; copper catalyst; molybdate based method; ; 880 nm **Requires a standard heater.** NPDES Equivalent (365.4)	27-Mar-06
10-115-01-2-C ^	0.1 – 5.0	0.025	mg P/L	Waters	Total P; Kjeldahl digests; copper catalyst; molybdate based method; Ultra High Throughput method (>120 samples/hr) ; 880 nm **Requires a standard heater.**	4-Apr-08
13-115-01-1-B *	1.0 – 50.0	0.08	mg P/L	Plant extracts	Total P; Kjeldahl digests; copper catalyst; molybdate based method; 880 nm **Requires a standard heater.**	26-Oct-06

Magnesium

See also IC section and Hardness

10-112-26-1-A	5.0 – 200	0.51	mg Mg/L	Waters	Xylidyl blue-I method. 520 nm. **Requires an internal sample loop valve.**	27-Aug-03
12-112-26-1-A	5.0 – 200	1.26	mg Mg/L	Soil extracts	**Morgans** extract method; Xylidyl blue-I method. 520 nm. **Requires an internal sample loop valve.**	15-Sep-03

Manganese

10-131-35-1-A	0.005 – 0.30	0.0008	mg Mn/L	Waters	Manganese II**; 0.13% HNO_3** matrix Formaldoxime, 460 nm.	27-Aug-08
10-131-35-1-B	0.2 – 10	0.005	mg Mn/L	Waters	Manganese II Formaldoxime, **0.15% HNO_3** matrix 460 nm.	15-Sep-03
10-131-35-1-D	12.5 – 250	5.0	µg Mn/L	Waters	Manganese II; **0.5% HNO_3** matrix. Formaldoxime, 460 nm.	15-Sep-03
12-131-35-1-A	0.5 – 2.0	0.01	mg Mn/L	Soil extracts	Low-flow method; **0.1N HCl.** Formaldoxime, 460 nm.	15-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Molybdenum						
12-123-23-1-B	0.1 – 0.40	0.007	mg Mo/L	Soil extracts	Low-flow method. **0.1N HCl.** Iodine method, 420 nm. **Requires a standard heater.**	15-Sep-03
13-123-23-1-A	0.0625 – 0.25	0.0079	mg Mo/L	Plant extracts	Low-flow method Ashed samples, **1 M HCl** final matrix. Iodine method, 420 nm. **Requires a standard heater.**	15-Sep-03
Monochloramine						
10-245-00-1-A	0.01 – 2.0	0.0028	mg N/L as NH_4Cl	Waters	Alkaline phenol-based method; low-flow method; 630 nm; **requires a standard heater**. **Use w/ 10-107-06-1-L for free ammonia**	5-Nov-07
Nitrate + Nitrite		*See also IC section*				
10-107-04-1-A # *	0.2 – 20.0	0.01	mg N/L	Waters	Cd reduction method; low-flow method; Sulfanilamide/NED. 520 nm. NPDES / NPDWR Accepted	29-Nov-07
10-107-04-1-B #	0.002 – 0.10	0.0003	mg N/L	Waters	Cd reduction method; Sulfanilamide/NED. 520 nm. NPDES / NPDWR Accepted	29-Nov-07
10-107-04-1-C #	0.01 – 2.0	0.002	mg N/L	Waters	Cd reduction method; Sulfanilamide/NED. 520 nm. Ultra High Throughput method/120 samples per hour. NPDES / NPDWR Accepted; follows Standard Methods (4500-NO3-I)	14-Jul-08
10-107-04-1-F ^	1 – 50.0	0.12	mg N/L	Waters	Cd reduction method; Sulfanilamide/NED. 520 nm. NPDES Equivalent (353.2). **Requires an internal sample loop valve.**	1-May-08
10-107-04-1-H ^	5 – 80.0	0.027	mg N/L	Waters	Cd reduction method; dialysis method; Sulfanilamide/NED. 520 nm. NPDES Equivalent (353.2)	1-May-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-107-04-1-J #	0.10 – 10.0	0.012	mg N/L	Waters	Cd reduction method; low-flow method; Sulfanilamide/NED. 520 nm. NPDES / NPDWR Accepted	29-Nov-07
10-107-04-1-K #	0.5 – 5.0	0.059	µM N	Waters	Cd reduction method; low-flow method; Sulfanilamide/NED. 520 nm. NPDES / NPDWR Accepted	29-Nov-07
10-107-04-1-L #	0.02 – 2.0	0.002	mg N/L	Waters	Cd reduction method; low-flow method; Sulfanilamide/NED. 520 nm. NPDES / NPDWR Accepted	29-Nov-07
10-107-04-1-M	0.25 – 14	0.042	µg N/L	Waters	Cd reduction method; Sulfanilamide/NED 540 nm. **2-cm detector method; QC8500 only. Requires a standard heater.** PN 58112 allows replicate injections from a single sample tube.	25-Feb-09
10-107-04-1-O #	0.05 – 10.0	0.007	mg N/L	Waters	Cd reduction method; Sulfanilamide/NED. 520 nm. NPDES / NPDWR Accepted	29-Nov-07
10-107-04-1-Q ^	0.005 – 0.8 0.5 – 10	0.0005 0.022	mg N/L	Waters	Cd reduction method; low-flow method; imidazole buffer; determination in non-preserved and acid preserved samples; multi-range method; Sulfanilamide/NED. 520 nm. NPDES Equivalent (353.2)	10-Aug-06
10-107-04-1-R #^*	0.002 – 0.25 0.025 – 20	0.0005 0.0012	mg N/L	Waters	Cd reduction method; Ultra High Throughput method (>120 samples/hr.); multi-range method; Sulfanilamide/NED. 520 nm. NPDES Equivalent; NPDWR Accepted	16-Apr-08
10-107-04-2-A # *	2 – 100	0.1	mg N/L	Waters	Hydrazine reduction; Sulfanilamide/NED. 520 nm. NPDES/NPDWR Accepted; follows Standard Methods (4500-NO3-I). **Requires a standard heater.**	29-Nov-07
10-107-04-2-B #	0.05 – 1.0	0.002	mg N/L	Waters	Hydrazine reduction; Sulfanilamide/NED. 520 nm. NPDES/NPDWR Accepted; follows Standard Methods (4500-NO3-I) **Requires a standard heater.**	29-Nov-07
10-107-04-2-C	0.005 – 0.2	0.0018	mg N/L	Waters	Hydrazine reduction. Sulfanilamide/NED. 520 nm. **Requires a standard heater.**	25-Aug-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-107-04-2-D #	0.05 – 7	0.006	mg N/L	Waters	Hydrazine reduction; Sulfanilamide/NED. 520 nm. NPDES/NPDWR Accepted; follows Standard Methods (4500-NO3-I) **Requires a standard heater.**	14-Jan-02
10-107-04-5-A	0.02 – 5.0 0.2 – 20	0.009 0.023	mg N/L	Waters	**Nitrate Reductase method**; reagents must be purchased from NECi; multi-range method. Sulfanilamide/NED 540 nm.	9-Feb-09
10-107-04-6-A	0.05 – 5.0 0.2 – 20	0.005 0.022	mg N/L	Waters	UV Nitrate Reduction; PATENT PENDING sulfanilamide/NED 540 nm. **In-line module with UV lamp required.** Multi-range method PATENT PENDING	4-Sep-09
12-107-04-1-A	0.2 – 40.0		mg N/L	Soil extracts	Cd reduction method; determination in **1mM $CaCl_2$** soil extracts Sulfanilamide/NED 520 nm	15-Sep-03
12-107-04-1-B	0.025 – 20.0	0.005	mg N/L	Soil extracts	Cd reduction method; determination in **2M KCl** soil extracts; Sulfanilamide/NED 520 nm	21-Aug-03
12-107-04-1-C	0.2 – 20.0		mg N/L	Soil extracts	Cd reduction method; determination in saturated **0.02M CaO** soil extracts Sulfanilamide/NED 520 nm	15-Sep-03
12-107-04-1-E	0.05 – 5.0		mg N/L	Soil extracts	Hydrazine reduction. **1M KCl** soil extracts. Sulfanilamide/NED 520 nm	15-Sep-03
12-107-04-1-F	0.01 – 2.0	0.0013	mg N/L	Soil extracts	Cd reduction method; determination in **2M KCl** soil extracts Sulfanilamide/NED 520 nm	15-Sep-03
12-107-04-1-G	1.0 – 20.0	0.01	mg N/L	Soil extracts	Cd reduction method; determination in **0.0125M $CaCl_2$** soil extracts Sulfanilamide/NED 520 nm	15-Sep-03
12-107-04-1-H	0.05 – 10.0	0.011	mg N/L	Soil extracts	Cd reduction method; determination in **0.5M K_2SO_4** soil extracts Sulfanilamide/NED 520 nm	15-Sep-03
12-107-04-1-I	0.3 – 10	0.013	mg N/L	Soil extracts	Cd reduction method; determination in **2M KCl** soil extracts; imidazole buffer method Sulfanilamide/NED 520 nm	06-Dec-06
12-107-04-1-J	0.025-20	0.003	Mg N/L	Soil Extracts	Cd Reduction Method. Sulfanilamide.NED 520 nm. **2M KCl** extracts of soils. Ultra High Throughout method; 120 samples per hour.	15-Aug-07

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
12-107-04-5-A	0.2 – 20	0.028	mg N/L	Soil extracts	Nitrate Reductase method; reagents must be purchased from NECi **2M KCl** Sulfanilamide/NED 540 nm.	28-Jan-09
12-107-04-6-A	0.2 – 20	0.015	mg N/L	Soil extracts	UV Nitrate Reduction; PATENT PENDING **2M KCl. Requires an in-line module with UV lamp.**	24-Jun-09
13-107-04-1-A	0.2 – 20.0		mg N/L	Plant extracts	Cd reduction method; determination in **2% acetic acid** extracts of plants. Sulfanilamide/NED 520 nm.	15-Sep-03
13-107-04-1-B	0.02 – 2.0	0.003	mg N/L	Plant extracts	Cd reduction method; determination in **water extracts of plants** Sulfanilamide/NED 520 nm.	15-Sep-03
14-107-04-1-A	1790 – 7140		mg N/kg	Fertilizers	Cd reduction method; dialysis method Sulfanilamide/NED 520 nm. Diluted liquid fertilizer.	15-Sep-03
14-107-04-1-B	30 – 300	0.38	mg N/L	Fertilizers	Cd reduction method; dialysis method Sulfanilamide/NED 520 nm.	15-Sep-03
14-107-04-1-C	30 – 70.0		mg N/L	Fertilizers	Cd reduction method; dialysis method Sulfanilamide/NED 520 nm.	15-Sep-03
18-107-04-1-A	0.5 – 2.5	0.017	mg N/L	Aqueous formulations	Cd reduction method; determination in **31% KOH** solutions. Sulfanilamide/NED 520 nm.	15-Sep-03
18-107-04-1-D	0.02 – 0.75	0.0030	mg N/L	Aqueous formulations	Cd reduction method; determination in **2 to 20% NaCl** solutions. Sulfanilamide/NED 520 nm.	15-Sep-03
19-107-04-1-A	0.04 – 2.0	0.008	mg N/L	Plating baths	Cd reduction method; determination in sulfuric acid Sulfanilamide/NED 520 nm.	15-Sep-03
19-107-04-1-B	0.0125 – 2.0	0.0013	mg N/L	Plating baths	Cd reduction method; determination in **34% $ZnSO_4$** Sulfanilamide/NED 520 nm.	15-Sep-03
20-107-04-1-B	0.025 – 0.5 0.25 – 5.0	 0.018	mg NO_2^-/L mg NO_3^-/L	Food stuffs	Cd reduction method; dialysis method; determination in **dairy products**; ISO (14673-3) Sulfanilamide/NED 540 nm.	16-Sep-03
20-107-04-1-C	0.025 – 1.0 0.25 – 5.0	0.002 0.021	mg NO_2^-/L mg NO_3^-/L	Food stuffs	Cd reduction method; dialysis method; Sulfanilamide/NED 540 nm. determination in **dairy products**; multi-range method	25-Mar-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
26-107-04-1-A	10 – 50.0	0.103	mg N/L	Tobacco extracts	Cd reduction method; determination in **0.005 M sulfuric acid** Sulfanilamide/NED 520 nm.	16-Sep-03
26-107-04-2-A	10 – 100	0.25	mg N/L	Tobacco extracts	Cd reduction method; determination in **0.05 M sulfuric acid** Sulfanilamide/NED 520 nm. **Requires a standard heater.**	16-Sep-03
30-107-04-1-A ^	0.05 – 1.00 **3.57-71.43**	0.0029	mg N/L **µM N/L**	Brackish / Seawaters	Cd reduction method; NPDES Equivalent. (353.2); follows Standard Methods (4500-NO3-I). Sulfanilamide/NED 520 nm.	20-Nov-08
30-107-04-1-C ^	0.05 – 2.0 **3.57-142.86** 0.1 – 10 **0.0071-0.713**	0.0029 0.0049	mg N/L **µM N/L** mg N/L **mM N/L**	Brackish / Seawaters	Cd reduction method; multi-range method; NPDES Equivalent (353.2) Sulfanilamide/NED 520 nm.	20-Nov-08
31-107-04-1-A ^	17.5 – 70 **1.25-5.0**	0.126	µg N/L **µM N/L**	Brackish / Seawaters	Cd reduction method; NPDES Equivalent (353.2) Sulfanilamide/NED 520 nm.	2-May-08
31-107-04-1-C ^	0.07 – 0.70 **5.0-50.0**	0.00168	mg N/L **µM N/L**	Brackish /Seawaters	Cd reduction method; NPDES Equivalent (353.2) Sulfanilamide/NED 520 nm.	2-May-08
31-107-04-1-D ^	0.5 – 14 **0.036-1.0**	0.2	µg N/L **µM N/L**	Brackish / Seawaters	Cd reduction method; NPDES Equivalent (353.2). Sulfanilamide/NED 540 nm. **Requires a standard heater**.	2-May-08
31-107-04-1-E ^	5 – 400 **0.36-28.57**	0.51	µg N/L **µM N/L**	Brackish / Seawaters	Cd reduction method; NPDES Equivalent (353.2) Sulfanilamide/NED 540 nm.	19-Aug-03
31-107-04-1-F ^	0.25 – 14 **0.018-1.0**	0.042	µg N/L **µM N/L**	Brackish / Seawaters	Cd reduction method; Sulfanilamide/NED. 540 nm. 2-cm detector method; **QC8500 only**; NPDES Equivalent (353.2). **Requires a standard heater.**	8-Jul-08
31-107-04-1-G ^	0.25 – 10 **0.018-0.714** 0.01– 1.0 **0.714-71.43**	0.05 0.002	mg N/L **mM N/L** mg N/L **µM N/L**	Brackish / Seawaters	Cd reduction method; Ultra High Throughput method Sulfanilamide/NED 540 nm. (>120 samples/hr); multi-range; NPDES Equivalent (353.2)	24-Apr-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
31-107-04-1-H ^	0.25 – 30 **0.18-2.143**	0.025	mg N/L **mM N/L**	Brackish / Seawaters	Cd reduction method; can also use w/ non-saline matrix; Sulfanilamide/NED 540 nm. NPDES Equivalent (353.2)	28-Oct-08
31-107-04-1-I	5 – 500 **0.357-35.71**	0.025	mg N/L **mM N/L**	Brackish / Seawaters	Cd reduction method; Sulfanilamide/NED 540 nm. Ultra high level, inline dialysis method	12-Jul-09
31-107-04-1-J^	1-100 **0.071-7.143**	0.2	µg N/L **µM N/L**	Brackish / Seawaters	Cd reduction method;Sulfanilamide/NED 520 nm. NPDES Equivalent (353.2)	30-Jun-10
31-107-04-1-K	1-100 **0.071-7.143**	0.2	µg N/L **µM N/L**	Brackish / Seawaters	Cd reduction method. **Imidazole buffer**. Sulfanilamide/NED 540 nm. NPDES Equivalent (353.2)	20-May-11
31-107-04-5-A	0.01 – 5.0 **1.43-357.14**	0.009	mg N/L **µM N/L**	Brackish / Seawaters	**Nitrate Reductase method**; Sulfanilamide/NED 540 nm. Enzymatic reagents must be purchased from NECi.	11-Feb-09
31-107-04-6-A	0.05 – 5.0 **0.0036-0.357** 0.2 – 20 **0.0143-1.43**	0.006 0.07	mg N/L **mM N/L** mg N/L **mM N/L**	Brackish / Seawaters	**UV Nitrate Reduction**; Sulfanilamide/NED 540 nm. Multi-range method PATENT PENDING **Requires an in-line module with UV lamp.**	19-Jun-09
60-107-04-1-A	0.0014 – 0.07		mg N/L	Biological fluids	Cd reduction method; **HEPES Buffer** low-flow method	16-Sep-03
80-107-04-1-A #^	0.001 – 0.10 0.01 – 1.0 0.10 – 10.0	0.0002 0.001 0.002	mg N/L	Waters	Cd reduction method; **Ultra Low Flow** method (must be run alone or with other ULF methods, pump speed is 10); NPDES Equivalent (353.2); multi-range method	10-Jun-09
90-107-04-2-A	0.1-6.0		mg N/L	Water/Soils	Multiple Matrix Method. **Water, 2M KCl, 0.5M K_2SO_4, 0.01M $CaCl_2$.** Hydrazine Reduction.	27-Jan-11

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Nitrite		***See also IC section***				
10-107-05-1-A # ^	0.01 – 10.0	0.005	mg N/L as NO_2^-	Waters	Nitrite only; Sulfanilamide/NED 520 nm. NPDES Equivalent / NPDWR Accepted (353.2)	29-Nov-07
10-107-05-1-B ^	0.014 – 0.07	0.0004	mg N/L as NO_2^-	Waters	Nitrite only; Sulfanilamide/NED 520 nm. low-flow method; NPDES Equivalent (353.2)	12-May-08
10-107-05-1-C ^	0.02 – 2.0	0.0016	mg N/L as NO_2^-	Waters	Nitrite only; low-flow method; Sulffaniliamide/NED 520 nm. NPDES Equivalent (353.2)	21-Aug-03
10-107-05-1-E	0.05 – 5.0 0.2 – 20	0.03 NEW 0.0008	mg N/L as NO_2^-	Waters	Nitrite only**;** Sulfanilamide/NED 540 nm. **companion method for UV Nitrate reduction**; multi-range method	9-Sep-09
10-107-05-1-F	4 – 400	0.46	µg N/L as NO_2^-	Waters	Nitrite only. Sulfanilamide/NED 520 nm.	22-Feb-10
10-107-06-1-M	0.25-14	0.01	µg N/L as NO_2^-		Nitrite only. Sulfanilamide/NED 540 nm. **Requires a standard heater. 2 cm flow cell QC8500 Only.** PN 58112 allows replicate injections	5-Aug-10
10-107-05-1-O ^	10 – 1000	4.0	µg N/L as NO_2^-	Waters	Nitrite only; low-flow method; NPDES Equivalent (353.2)	13-May-08
31-107-05-1-A ^	17.5 – 70 **1.25-5.0**	**0.01**	µg N/L as NO_2^- **µM N/L as NO_2^-**	Brackish / Seawaters	Nitrite only; Sulfanilamide/NED 540 nm. NPDES Equivalent (353.2)	13-May-08
31-107-05-1-B ^	0.1 – 15 **0.007-1.07**	0.01	mg N/L as NO_2^- **mM N/L as NO_2^-**	Brackish / Seawaters	Nitrite only; Sulfanilamide/NED 540 nm. NPDES Equivalent (353.2)	29-Oct-08
31-107-05-1-F^	0.25-14 **0.0018-1.0**	0.01	µg N/L as NO_2^- **µM N/L as NO_2^-**	Brackish / Seawaters	Nitrite only. Sulfanilamide/NED 540 nm. **Requires a standard heater. 2 cm flow cell QC8500 Only.** PN 58112 allows replicate injections	5-Aug-10
80-107-05-1-A# ^	0.01 – 1.0 0.1 – 10.0	0.002 0.02	mg N/L as NO_2^-	Waters	Nitrite only; Sulfanilamide/NED 520 nm. **Ultra Low Flow** method (must be run alone or with other ULF methods, pump speed is 10); NPDES Equivalent (353.2); multi-range method	5-Jun-09

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Nitrogen - Total Nitrogen						
10-107-04-3-A *	200 – 2000	5.6	µg N/L	Waters	Total N; inline method; alkaline persulfate digestion method; samples w/ particulates not suitable. **In-line sample prep module required. Nitrate/Nitrite support added**. Cadmium Reduction; Sulfanilamide/NED; 540 nm.	16-Nov-09
10-107-04-3-B *	0.5 – 30.0	0.1	mg N/L	Waters	Total N; inline method; persulfate digestion method; samples w/ particulates not suitable **In-line sample prep module required. Nitrate/Nitrite support added**. Cadmium Reduction; Sulfanilamide/NED; 540 nm..	16-Nov-09
10-107-04-3-C	0.5 – 10.0	0.011	mg N/L	Waters	Total N; inline method; persulfate digestion method; samples w/ particulates not suitable **In-line sample prep module required.** . Cadmium Reduction; Sulfanilamide/NED; 540 nm.	29-Jun-07
10-107-04-3-D	0.05 – 5.0 0.2 – 20.0	0.003 0.008	mg N/L	Waters	Total N; inline method; persulfate digestion method; uses imidazole buffer; multi-range method; samples w/ particulates not suitable. **In-line sample prep module required. Nitrate/Nitrite support added**. Cadmium Reduction; Sulfanilamide/NED; 540 nm.	2-Dec-12
10-107-04-3-E	0.05 – 10	0.005	mg N/L	Waters	Total N; inline method; persulfate digestion; samples w/ particulates not suitable **In-line sample prep module required.** Cadmium Reduction; Sulfanilamide/NED; 540 nm.	12-Nov-10
10-107-04-3-P	0.2 – 10.0	0.05	mg N/L	Waters	Total N; inline method; persulfate digestion; follows Standard Methods (4500-N-B); samples w/ particulates not suitable	29-Jun-07
10-107-04-4-A	0.5 – 10	0.02	mg N/L	Waters	Total N; **manual alkaline persulfate** digestion; low-flow method. Cadmium reduction. Sulfanilamide/NED 520nm.	11-Jan-10

	Method No	Range	MDL	Units	Matrix	Comments	Rev Date
	10-107-04-4-B	0.02 – 5.0 1.00 – 40.0	0.006 0.024	mg N/L	Waters	Total N; **manual persulfate** digest; **total phosphorus can be measured from same digest (10-115-01-4-B);** multi-range method **In-line sample prep module required. Nitrate/Nitrite support added**. Cadmium Reduction; Sulfanilamide/NED; 520 nm.. Based upon Standard Method 4500-N_{org} (proposed)	22-Jun-07
	12-107-04-3-B	0.2 – 30.0	0.04	mg N/L	Soil extracts	Total N; **0.5M K_2SO_4** extracts of soils; **inline module required**; persulfate digestion; samples w/ particulates not suitable. Cadmium reduction, sulfanilamide/NED. 540 nm.	13-Nov-09
NEW	12-107-04-3-C	0.375-30	0.05	mg N/L	Soil extracts	Total N; **0.5M K_2SO_4** extracts of soils; **inline module required**;; persulfate digestion; samples w/ particulates not suitable. Cadmium reduction, sulfanilamide/NED. 540 nm. Carbon may be measured in the same digest using 12-140-39-5-A	
	31-107-04-3-A	25 – 1000 **1.79-71.43**	4.90	µg N/L **µM N/L**	Brackish / Seawaters	Total N; inline digestion method w/ Cd reduction; samples w/ particulates not suitable	3-Feb-10
	31-107-04-3-B	500 – 5000 **35.71-357.14**	78	µg N/L **µM N/L**	Brackish / Seawaters	Total N; inline digestion method w/ Cd reduction; samples w/ particulates not suitable	2-Jul-07
	31-107-04-4-B	0.02– 5.00 **1.43-357.14** 1.0– 40.0 **0.071-2.86**	0.0068 0.111	mg N/L **µM N/L** mg N/L **mM N/L**	Brackish / Seawaters	Total N; **manual persulfate** digestion w/ Cd reduction; low-flow method; **total phosphorus can be measured from same digest (31-115-01-4-B);** multi-range method	16-Jun-08

	Method No	Range	MDL	Units	Matrix	Comments	Rev Date
NEW	31-107-04-4-C	0.02– 5.00 **1.43-357.14** 1.0– 40.0 **0.071-2.86** **NO_2 + NO_3-N:** **2.5-500** **NO_2- N:** **1-125**	0.0068 0.111 0.44 0.2	mg N/L **µM N/L** mg N/L **mM N/L** µg N/L **µM N/L** µg N/L **µM N/L**	Brackish / Seawaters	Total N; **manual persulfate digestion w/ Cd reduction;** Imidazole buffer; low-flow method; total phosphorus can be measured from same digest (31-115-01-4-B); **Support for NO_2 + NO_3 and NO_2 included.**	21-Feb-12

Orthophosphate

See also IC section

10-115-01-1-A #	0.01 – 2.0	0.002	mg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; 880 nm. NPDES/NPDWR Accepted; follows Standard Methods (4500-P-G). **Requires a standard heater.**	29-Nov-07
10-115-01-1-B #	0.01 – 0.20	0.0007	mg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; 880 nmNPDES/NPDWR Accepted. **Requires a standard heater.**	29-Nov-07
10-115-01-1-M #	1 – 100	0.1	µg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; 880 nm. NPDES/NPDWR Accepted. **Requires a standard heater.**	29-Nov-07
10-115-01-1-O * ^	1.0 – 20	0.045	mg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; NPDES Equivalent (365.1); Ultra High Throughput method (>120 samples/hr). 880 nm. **Requires a standard heater.**	16-Dec-07
10-115-01-1-P #	0.05 – 2.00	0.005	mg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; low-flow method; NPDES/NPDWR Accepted. 880 nm. **Requires a standard heater.**	29-Nov-07
10-115-01-1-Q #	0.010 – 0.20	0.0003	mg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; low-flow method; NPDES/NPDWR Accepted880 nm. **Requires a standard heater.**	29-Nov-07

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-115-01-1-T #	0.025 – 2.5	0.005	mg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; NPDES/NPDWR Accepted880 nm. **Requires a standard heater.**	29-Nov-07
10-115-01-1-V # *	0.01 – 2.0 0.2 – 20.0	0.0012 0.0046	mg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; multi-range method; NPDES Equivalent / NPDWR Accepted; Ultra High Throughput method (>125 samples/hr) 880 nm. **Requires a standard heater.** PN 58112 allows replicate injections from single sample tubes.	16-Apr-08
10-115-01-1-W * ^	0.25 – 20	0.046	µg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; 2-cm detector method; QC8500 only; **for samples with very low or no silicate**; NPDES Equivalent (365.1) 880 nm. **Requires a non-standard heater.** PN 58112 allows replicate injections from single sample tubes.	22-Feb-08
10-115-01-1-Y * ^	0.5 – 100	0.164	µg P/L as PO_4^{2-}	Waters	Orthophosphate; molybdate based method; 2-cm detector method; QC8500 only; **for samples with high silicate**; NPDES Equiv-alent (365.1) 880 nm. **Requires a non-standard heater.**	21-Jul-08
12-115-01-1-A	0.25 – 10.0		mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **Mehlich III** soil extracts	17-Sep-03
12-115-01-1-B	0.01 – 1.0	0.006	mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **0.5 M bicarbonate** (Olsens) soil extracts. 880 nm. **Requires a standard heater**	17-Sep-03
12-115-01-1-E	0.25 – 10.0	0.02	mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **0.5 M acetic acid, 0.5 M ammonium acetate** soil extracts. 880 nm. **Requires a standard heater**	17-Sep-03
12-115-01-1-I	0.5 – 20.0	0.02	mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **calcium acetate** soil extracts. 880 nm. **Requires a standard heater**	17-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
12-115-01-1-J	1.25 – 50.0	0.125	mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **calcium lactate** soil extracts. 880 nm. **Requires a standard heater**	17-Sep-03
12-115-01-1-K	1.0 – 30.0		mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **Morgans** soil extracts. 880 nm. **Requires a standard heater**	17-Sep-03
12-115-01-1-L	0.05 – 6.0	0.01	mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **Morgans** soil extracts. 880 nm. **Requires a standard heater**	17-Sep-03
12-115-01-1-M	0.25 – 10	0.04	mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **Mehlich III** soil extracts. 880 nm. **Requires a standard heater**	21-Jun-06
12-115-01-1-N	0.4 – 20	0.07	mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **Bray 1, Bray 2, Mehlich I**, **Mehlich III** soil extracts; 880 nm. Ultra High Throughput method (>120 samples/hr) **Requires a standard heater**	04-Sep-07
12-115-01-1-O	0.1-5.0	0.002	mg P/L as PO_4^{2-}	Soil extracts	Orthophosphate; molybdate based method; determination in **0.1N HCl** soil extracts. 880 nm. **Requires a standard heater**	15-Dec-10
NEW 12-115-01-1-P	0.1-5.0	0.01	mg P/L as PO_4^{2-}	Soil Extracts	Orthophosphate; molybdate based method; determination in **0.5M H_2SO_4 dissolved ashed soil**. 880 nm. **Requires a standard heater**	27-Jan-12
18-115-01-1-B	0.25 – 10	0.01	mg P/L as PO_4^{2-}	Aqueous formulations	Orthophosphate; molybdate based method; determination in **up to 10% NaCl** solutions. 880 nm. **Requires a standard heater and 1 mm path length flow cell.**	17-Sep-03
18-115-01-1-C	5 – 375	0.5	mg P/L as PO_4^{2-}	Aqueous formulations	Orthophosphate; molybdate based method; determination in water treatment products. **880 nm. Requires a standard heater**	17-Sep-03
19-115-01-1-A	0.02 – 2.0	0.01	mg PO_4^{2-}/L	Plating baths	Orthophosphate; molybdate based method; determination in **34% zinc sulfate. 880 nm. Requires a standard heater**	17-Sep-03
20-115-01-2-B	100 – 1500	0.71	mg P/L as PO_4^{2-}	Food stuffs	Orthophosphate; Vanadate based method. 420 nm. Ashed samples; final matrix 1.2M HCl.	16-Apr-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
31-115-01-1-G ^	62 – 310 **2.0-10.0**		µg P/L as PO_4^{2-} **µM P/L as PO_4^{2-}**	Brackish / Seawaters	Orthophosphate; molybdate based method; NPDES Equivalent (365.5). 880 nm. **Requires a standard heater**	13-May-08
31-115-01-1-H ^	5 – 400 **0.16-12.9**	1.0	µg P/L as PO_4^{2-} **µM P/L as PO_4^{2-}**	Brackish / Seawaters	Orthophosphate; molybdate based method; NPDES Equivalent (365.5). 880 nm. **Requires a standard heater**	13-May-08
31-115-01-1-I ^	1-100 **0.032-3.23**	0.25	µg P/L as PO_4^{2-} **µM P/L as PO_4^{2-}**	Brackish / Seawaters	Orthophosphate; molybdate based method; NPDES Equivalent (365.5) **Requires a standard heater**	13-May-08
31-115-01-1-J ^	0.01 – 2.0 **0.323-64.52** 0.5-20 0.016-0.645	0.002	mg P/L as PO_4^{2-} **µM P/L as PO_4^{2-}** mg P/L as PO_4^{2-} **mM P/L as PO_4^{2-}**	Brackish / Seawaters	Orthophosphate; molybdate based method; 880 nm. NPDES Equivalent (365.5) **Requires a standard heater**	30-Nov-07
31-115-01-1-W ^	0.25 – 20 **0.008-0.645**	0.007	µg P/L as PO_4^{2-} **µM P/L as PO_4^{2-}**	Brackish / Seawaters	Orthophosphate; molybdate based method; 2-cm detector method; **QC8500 only**; for samples with very low or no silicate; NPDES Equivalent (365.5). **Requires a non-standard Heater PN 58112 allows replicates from a single sample tube.**	22-Feb-08
31-115-01-1-Y * ^	0.5 – 100 **0.016-3.23**	0.164	µg P/L as PO_4^{2-} **µM P/L as PO_4^{2-}**	Brackish / Seawaters	Orthophosphate; molybdate based method; 2-cm detector method**; QC8500 only**; for samples with high silicate; NPDES Eq. (365.5) **Requires a non-standard Heater PN 58112 allows replicates from a single sample tube.**	29-Feb-08
80-115-01-1-A# ^	0.05 – 2.0	0.005	mg P/L as PO_4^{2-}	Waters	Orthophosphate; Molybdate method. Ultra Low Flow method must be run alone or with other ultra low flow methods. 880 nm. **Requires a standard heater**. NPDWR accepted.	5-Jun-09

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
pH						
10-304-24-2-E	3.0 – 12.0		pH units	Waters	Not for low-conductivity samples. Requires a pH detector module.	18-Sep-03
Phenol						
10-210-00-1-A #	5 – 200	0.6	µg phenol/L	Waters	Total recoverable phenol; macro distillation method; NPDES Accepted. 4-aminoantipyrene method; 500 nm.	14-Dec-01
10-210-00-1-B #	0.05 – 2.0	0.0013	mg phenol/L	Waters	Total recoverable phenol; macro distillation method; NPDES Accepted. 4-aminoantipyrene method; 500 nm.	18-Oct-07
10-210-00-1-E^	0.5-100	0.25	µg phenol/L	Waters	Total recoverable phenol; Macro or Midi (glass) distillation method; 2 cm flow cell **QC8500 only**. . 4-aminoantipyrene method; 500 nm.	10-Oct-10
10-210-00-1-X ^	0.005 – 0.2 0.05 – 2.0	0.000856 0.0013	mg phenol/L	Waters	MicroDIST® method; multi-range method; NPDES Equivalent (420.1) . 4-aminoantipyrene method; 500 nm.	3-Sep-09
10-210-00-1-Y ^	0.5 – 50	0.4	mg phenol/L	Waters	MicroDIST® method; NPDES Equivalent (420.1) . 4-aminoantipyrene method; 500 nm.	13-May-08
10-210-00-3-A	2 – 200	0.28	µg phenol/L	Waters	Volatile phenol; inline method; samples w/ particulates not suitable; . 4-amino antipyrene method; 500 nm. This PN **manifold only**	20-Dec-06
10-210-00-3A51					QC8500 115V dedicated channel	
10-210-00-3A52					QC8500 220V dedicated channel	
10-210-00-3AU1					QC8500 115V dedicated channel; upgrade module	
10-210-00-3AU2					QC8500 220V dedicated channel; upgrade module	

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-210-00-3-B	5 – 500 10 – 1000	0.80 2.15	µg phenol/L	Waters	Volatile phenol; inline method; multi-range method; samples w/ particulates not suitable; . 4-aminoantipyrene method; 500 nm.This PN **manifold only**	27-Mar-08
10-210-00-3B51					QC8500 115V dedicated channel	
10-210-00-3B52					QC8500 220V dedicated channel	
10-210-00-3-C *^	2 – 200	0.61	µg phenol/L	Waters	Volatile phenol; inline method; NPDES Equivalent (420.4); samples w/ particulates not suitable; . 4-aminoantipyrene method; 500 nm.This PN **manifold only**	15-Oct-08
10-210-00-3C51 *^					QC8500 115V dedicated channel	
10-210-00-3C52 *^					QC8500 220V dedicated channel	

Phosphorus (Other)

10-115-01-4-K	10 – 1000	1.79	µg P/L	Waters	**Suspended phosphorus**; molybdate based method; determination in 0.16 N HCl digestion solution. 880 nm. **Requires a standard heater and glass standard and sample vials.**	26-Feb-09
10-115-01-4-L	10 – 1000	0.83	µg P/L	Waters	**Bio-available phosphorus**; molybdate based method; determination in 0.11 N NaOH extracts. **Requires a standard heater and glass standard and sample vials.**	26-Feb-09
13-115-01-2-A	1.0 – 80	0.095	mg P/L	Plants	**Total P** in ashed plant material (**1M HCl matrix**); Vanadate based method 420 nm.	6-Feb-95
13-115-01-2-B	20 – 100	0.2	mg P/L	Plants	**Total P** in ashed plant material (**1M HCl** final **matrix**); Vanadate based method 420 nm	17-Sep-03
14-115-01-2-A	10 – 180	0.2	mg P/L	Fertilizers	**Total P in solid fertilizers**; Vanadate based method; **HCl digest.** 420 nm.	17-Sep-03
14-115-01-2-B	400 – 1600	0.2	mg P_2O_5/L	Fertilizers	**Total P in solid fertilizers**; Vanadate based method; **HCl/HNO_3** digest; AOAC method for Total P in fertilizers and phosphate rock420 nm. **Requires an internal sample loop valve.**	17-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
14-115-01-2-C	16.25 – 260	0.47	mg P_2O_5/L	Fertilizers	**Total P in fertilizers**; Vanadate based method; **HCl/HNO_3** digests; Assoc. of Florida Phosphate Chemists method. 420 nm.	17-Jul-08
14-115-01-2-E	72 – 180	0.02	mg P/L	Fertilizers	**Total P in fertilizers**; Vanadate based method. 420 nm.	17-Sep-03
14-115-01-2-F	1200 – 2400		mg P_2O_5/L	Fertilizers	**Total P in fertilizers;** Vanadate based method; digest in **6% HCl.** 420 nm. **Requires an internal sample loop valve.**	17-Sep-03
14-115-01-2-G	30 – 65		% P_2O_5	Fertilizers	Vanadate based method; determination of P_2O_5 in **phosphoric acid.** 420 nm. **Requires an internal sample loop valve.**	17-Sep-03
14-115-01-2-H	20 – 600		mg P_2O_5/L	Fertilizers	**Available phosphate** Vanadate based method; based on AOAC Method #993.31 and Magruder Method 41.60; determination in **ammonium citrate** extracts. 420 nm. **Requires a standard heater.**	29-Jan-10
15-115-01-3-A	5.0 – 400	1.2	mg P_2O_5/L	Feeds	**Available phosphate**; Vanadate based method; determination in **ammonium citrate** extracts. 420 nm. **Requires a standard heater.**	17-Sep-03
15-115-01-3-B	20 – 800	1	mg P_2O_5/L	Feeds	**Available phosphate**; Vanadate based method; determination in **ammonium citrate** extracts. 420 nm. **Requires a standard heater.**	28-Mar-05
15-115-01-3-C	20.0-2,500	5	mg P_2O_5/L	Fertilizers /Feeds	**Available phosphate**; Vanadate based method; determination in **ammonium citrate or EDTA-citrate** extracts. Based on AOAC Method #993.31 and Magruder Method 41.60. 420 nm. (pump speed 20). **Requires a non-standard heater.**	18-May-11
21-115-01-1-A	15 – 70	0.05	mg H_3PO_4/dL	Beverages	Orthophosphate; molybdate based method;Cola Beverages. **Requires a standard heater and Internal Sample loop Valve.**	17-Sep-03
30-115-01-4-A	0.01 – 0.50 **0.32-1.61**		mg P/L **µM P/L**	Brackish / Seawaters	**Total P**; molybdate based method; **alkaline** persulfate manual digests. **Requires a standard heater.**	17-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Phosphorus, Total (Acidic Persulfate)						
10-115-01-1-E #	0.2 – 10.0	0.1	mg P/L	Waters	Total P; **manual persulfate digests**; molybdate based method; 880 nm; **requires a standard heater**. NPDES Accepted	8-Nov-01
10-115-01-1-F #	0.003 – 0.2	0.0009	mg P/L	Waters	Total P; **manual persulfate digests**; molybdate based method; 880 nm; **requires a standard heater**. NPDES Accepted	5-Dec-07
10-115-01-3-A ^	0.1 – 10.0	0.007	mg P/L	Waters	Total P; persulfate digests; molybdate method, 880 nm. NPDES Equivalent (365.3); follows Standard Methods (4500-P-I); samples w/ particulates not suitable. **Requires an in-line sample prep module**. Can also use for orthophosphorus over the same range.	18-Nov-09
10-115-01-3-B * ^	0.1 – 4.0	0.01	mg P/L	Waters	Total P; persulfate digests; molybdate method; 880 nm; NPDES Equivalent (365.3); samples w/ particulates not suitable **Requires an in-line sample prep module.** Can also use for orthophosphorus over the same range.	18-Nov-09
10-115-01-3-C * ^	0.05 – 1.0	0.0011	mg P/L	Waters	Total P; persulfate digests; molybdate method; 880 nm. NPDES Equivalent (365.3); samples w/ particulates not suitable **Requires an in-line sample prep module.** Can also use for orthophosphorus over the same range.	18-Nov-09
10-115-01-3-E ^	10 – 500	1.4	µg P/L	Waters	Total P; persulfate digests; molybdate method; 880 nm. NPDES Equivalent (365.3); samples w/ particulates not suitable **Requires an in-line sample prep module and standard heater.** Can also use for orthophosphorus over the same range.	5-Jul-07

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-115-01-3-F ^	2 – 100	0.42	µg P/L	Waters	Total P; persulfate digests; molybdate method; 880 nm method; NPDES Equivalent (365.3); samples w/ particulates not suitable **Requires an in-line sample prep module and non-standard heater.**	13-Nov-06
10-115-01-4-B	0.05 – 1.0 0.25 - 10	0.006	mg P/L	Waters	Total P; **manual persulfate** digests; Molybdate method; 880 nm. Dual digest- **total nitrogen can be measured from same digest (10-107-04-4-B)**; Requires a block digester and glassware for the digestion; glass calibration vials. **Requires a standard heater.** Multi range method.	22-Jun-07
10-115-01-4-I ^	0.2 – 20.0		mg P/L	Waters	Total P; **manual persulfate** digests; Molybdate method; 880 nm. Ultra High Throughput method (120 samples /hour)NPDES Equivalent (365.3)	11-Nov-08
10-115-01-4-J *	0.2 – 10	0.0033	mg P/L	Waters	Total P; **manual persulfate** digests; Ultra High Throughput method (>125 samples/hr) Molybdate chemistry; 880 nm. **Requires a standard heater.**	27-Aug-07
10-115-01-4-S ^	0.2 – 10	0.002	mg P/L	Waters	Total P; manual potassium persulfate manual digests; Molybdate chemistry; 880 nm. low-flow method; NPDES Equivalent (365.3). **Requires a standard heater.**	27-Aug-03
10-115-01-4-U ^	0.01 – 0.2	0.0008	mg P/L	Waters	Total P; **manual persulfate** digests; low-flow method; Molybdate chemistry; 880 nm. NPDES Equivalent (365.3). glass calibration vials. **Requires a standard heater.**	28-Aug-03
18-115-01-3-B	12.5 – 375		mg P/L	Aqueous formulations	Total P; molybdate based method; 880 nm. samples w/ particulates not suitable. **Requires an in-line module and standard heater.**	5-Jul-07
31-115-01-3-D	0.050 – 1.0 **1.63-32.36**	0.002	mg P/L **µM P/L**	Brackish / Seawaters	Total P; molybdate method; 880 nm. inline persulfate digestion; samples w/ particulates not suitable. glass calibration vials. **Requires an in-line sample prep module.**	5-Jul-07

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
31-115-01-3-F	2-100 **0.065-3.23**	0.59	µg P/L **µM P/L**	Brackish / Seawaters	Total P; molybdate based method; inline persulfate digestion; samples w/ particulates not suitable **Requires an in-line sample prep module. Glass standard and sample vials and non-standard heater.**	13-Oct-08
31-115-01-4-A ^	12.5 – 400 **0.40-12.9**	1.66	µg P/L **µM P/L**	Brackish / Seawaters	Total P; molybdate based method; 880 nm. **manual persulfate** digestion; Requires a standard heater and autoclave for the digestion. NPDES Equivalent (365.3)	17-Sep-03
31-115-01-4-B	0.005 – 1.0 **0.16-32.23**	0.0038	mg P/L **µM P/L**	Brackish / Seawaters	Total P; molybdate based method; **manual persulfate** digestion; low-flow method; dual-	12-Dec-09
	0.25 – 10 **0.008-0.323**	0.0358	mg P/L **mM P/L**		Digest .**Total N Can be measured simultaneously using 31-107-04-4-B;** multi-range method Can also analyze particulate phosphorus and orthophosphorus with this method.	
OP:	5 – 1000 **0.16-32.23**	0.7	µg P/L			
	0.25 – 10 **0.008-0.323**	0.013	mg P/L			
pP:	0.1-5.0	0.015	mg P/L			

Potassium

See also IC section

10-119-03-1-A	2.0 – 100	0.33	mg K/L	Waters	Flame emission method. **Flame A.A. and direct voltage module required.**	2-Aug-01
12-119-03-1-A	0.20 – 10.0	0.01	mg K/L	Soil extracts	Flame emission method. Ammonium acetate extracts of soils **Flame A.A. and direct voltage module required.**	17-Sep-03
12-119-03-1-B	1.0 – 50.0	0.2	mg K_2O/L	Soil extracts	Flame emission method. Calcium Lactate extracts of soils. **Flame A.A. and direct voltage module required.**	17-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
12-119-03-1-C	1.0 – 20.0	0.1	mg K_2O/L	Soil extracts	Flame emission method. Calcium Acetate extracts of soils. **Flame A.A. and direct voltage module required.**	17-Sep-03
12-119-03-1-D	5 – 200	0.126	mg K/L	Soil extracts	Flame emission method; determination in Morgan's soil extracts. **Flame A.A. and direct voltage module required.**	17-Sep-03
13-119-03-1-B	100 – 400	0.14	mg K/L	Plant extracts	Flame emission method. Digested ash. **Flame A.A. and direct voltage module required.**	17-Sep-03
14-119-03-1-A	80 – 320		g K_2O/g	Fertilizers	Flame emission method. Diluted liquid fertilizer. **Flame A.A. and direct voltage module required.**	17-Sep-03
14-119-03-1-B	5 – 250	0.4	mg K/L	Fertilizers	Flame emission method. HCl digests of solid fertilizer. **Inert probe, Flame A.A. and direct voltage module required.**	17-Sep-03
14-119-03-1-C	100 – 250		mg K/L	Fertilizers	Flame emission method. Diluted fertilizers **Flame A.A. and direct voltage module required.**	17-Sep-03
14-119-03-1-D	20 – 450	1.02	mg K_2O/L	Fertilizers	Flame emission method; K_2O in ammonium citrate or oxalate extracts of fertilizer. **Inert probe, Flame A.A. and direct voltage module required.**	24-Sep-07
Reducing Substances						
26-246-00-1-A	200 – 2500	20	mg glucose/L	Tobacco Extracts	As glucose. 5% Acetic acid extract. Based upon ISO method 15153:2003(E). May not give identical results to ISO 15154 (Which uses water extracts).	18-May-10
Reducing Sugars						
26-201-01-2-A	20 – 2500	6.5	mg glucose/L	Tobacco Extracts	This method is sensitive to reducing substances other than sugars that are present in tobacco. Pre-valve dialysis to exclude color.	18-May-10

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
Silicate						
10-114-27-1-A #	0.2 – 20	0.04	mg SiO_2/L	Waters	Molybdate reactive method; ANSA reduction. 820 nm. NPDES Accepted	13-Sep-00
10-114-27-1-B ^	10 – 100	0.58	µg SiO_2/L	Waters	Molybdate reactive method; Stannous chloride reductant. 820 nm. **Plastic sample and standard vials and standard heater required.** Ultra High Throughput method (>120 samples/hr); NPDES Equivalent; follows Standard Methods (4500-SiO2-C)	30-Oct-07
10-114-27-1-C ^	2.5 – 100	0.61	µg SiO_2/L	Waters	Molybdate reactive method; Stannous chloride reductant. 820 nm. **Plastic sample and standard vials and standard heater required. 2cm detector method; QC8500 only**; NPDES Equivalent; follows Standard Methods (4500-SiO2-C)	17-Feb-09
31-114-27-1-A ^	1,202-6,009 **20 – 100**	**0.2**	µg SiO_2/L **µM SiO_2/L**	Brackish / Seawaters	Molybdate reactive method; Stannous chloride reductant. 820 nm. **Requires a standard heater.** NPDES Equivalent (USGS I-2700-85)	17-Sep-03
31-114-27-1-B ^	75.0-300.45 **1.25 – 5.0**	**0.01**	µg SiO_2/L **µM SiO_2/L**	Brackish / Seawaters	Molybdate reactive method; Stannous chloride reductant. 820 nm. **Requires a standard heater.** NPDES Equivalent (USGS I-2700-85)	17-Sep-03
31-114-27-1-D ^	10 – 1700 **0.166-28.29**	1.43	µg SiO_2/L **µM SiO_2/L**	Brackish / Seawaters	Molybdate reactive method; Stannous chloride reductant. 820 nm. **Requires a standard heater.** NPDES Equivalent (USGS I-2700-85)	17-Sep-03
31-114-27-1-E ^	2.5 – 100 **0.042-1.66**	0.606	µg SiO_2/L **µM SiO_2/L**	Brackish / Seawaters	Molybdate reactive method; **2cm detector method; QC8500 only; Requires a standard heater.** NPDES Equivalent (USGS I-2700-85)	28-Feb-08
31-114-27-1-F ^	0.5 – 30 **0.0083-0.499**	0.05	mg SiO_2/L mM **SiO_2/L**	Brackish / Seawaters	Molybdate reactive method; NPDES Equivalent. (USGS I-2700-85) . 820 nm, **requires a standard heater**. Stannous chloride reductant	23-Oct-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
31-114-27-2-A	60.09-6009 **1-100**		µg SiO_2/L **µM SiO_2/L**	Brackish / Seawaters	Molybdate reactive method; NPDES Equivalent (366.0) 820 nm. **Requires a standard heater**. Ascorbic acid reductant	23-Nov-10
Sodium			***See also IC section***			
10-111-32-1-A ^	5.0 – 300	1.2	mg Na/L	Waters	Flame emission method; NPDES Equivalent; follows Standard Methods (3500 Na-B) **Flame A.A. and direct voltage module required.**	27-Aug-03
Sorbic Acid						
26-228-38-1-A	2.0 – 10.0	0.18	mg sorbic acid/L	Tobacco extracts	Dialysis method. 0.1N H_2SO_4 extractant. 530 nm. **Requires a standard heater.**	17-Sep-03
Sulfate			***See also IC section***			
10-116-10-1-A	3.0 – 300	0.95	mg SO_4^{2-}/L	Waters	Turbidimetric method;	28-Aug-03
10-116-10-1-C	0.5 – 10.0	0.2	mg SO_4^{2-}/L	Waters	Turbidimetric method;	28-Aug-03
10-116-10-1-E	10 – 100	0.6	mg SO_4^{2-}/L	Waters	Turbidimetric method;	29-Aug-03
10-116-10-1-G	50 – 2000		mg SO_4^{2-}/L	Waters	Turbidimetric method; low-flow method;	17-May-08
10-116-10-2-A ^	5.0 – 100	1.8	mg SO_4^{2-}/L	Waters	Methylthymol blue method; NPDES Equivalent (375.2); follows Standard Methods (4500-SO4-G)	28-Aug-03
10-116-10-2-B #^	50 – 300	7.2	mg SO_4^{2-}/L	Waters	Methylthymol blue method; NPDES Equivalent / NPDWR Accepted	28-Aug-03
10-116-10-2-E ^	2 – 40	0.36	mg SO_4^{2-}/L	Waters	Methylthymol blue method; NPDES Equivalent (375.2)	24-Apr-08
10-116-10-3-A^	10 – 300	3.0	mg SO_4^{2-}/L	Waters	Turbidimetric method; based on ASTM method. NPDES Equivalent	18-Mar-10
12-116-10-1-D	1 – 20	0.67	mg SO_4^{2-}/L	Soil extracts	Turbidimetric method; determination in 8M monobasic calcium phosphate soil extracts	16-Sep-03
14-116-10-1-A	10 – 360		mg SO_4^{2-}/L	Fertilizers	Turbidimetric method; HCl digest	16-Sep-03
NEW 25-116-10-3-B	1-25 12.5-150	0.44 2.5	g SO_4^{2-}/L g SO_4^{2-}/L	Brine	Turbidimetric method. Multi range method, very high range samples (grams/liter). 420 nm. **Requires a 1 mm pathlength flow cell.**	08-May-12

	Method No	Range	MDL	Units	Matrix	Comments	Rev Date
NEW	25-116-10-3-C	1-25	0.6	g SO_4^{2-}/L	50% Caustic	Turbidimetric method. Samples are diluted 1:2 (to 25% NaOH) prior to the analysis. 420 nm.	08-May-12
	29-116-10-3-A	12.5-500	4.0	mg SO_4^{2-}/L	Brines. Produced/Fracturing water	Turbidimetric method. 420 nm.	03-Mar-11

Sulfide

10-116-29-1-A ^	0.02 – 2.0	0.005	mg S/L	Waters	Methylene blue method; MicroDIST® method; 0.25 M NaOH final matrix. 660 nm. **Requires a MicroDist block and tubes and standard heater.** Distillation required; NPDES Equivalent; follows Standard Methods (4500-S-I)	24-May-08
10-116-29-1-C ^	25 – 100	0.58	mg S/L	Waters	Methylene blue method; 0.25 M NaOH distillation required; 660 nm. **Requires a MicroDist block and tubes and standard heater.** Distillation required; NPDES Equivalent; follows Standard Methods (4500-S-I) NPDES Equivalent; follows Standard Methods (4500-S-I)	24-May-08
10-116-29-1-D^	0.01-1.0	0.001	mg S/L	Waters	Methylene blue method. Samples preserved with NaOH (0.025M) and zinc acetate. **No distillation.** Requires a standard heater.	1-Dec-10
10-116-29-1-X	0.02 – 2.00 1 – 100	0.005 0.023	mg S/L	Waters	Methylene blue method; MicroDIST® method; multi-range method **Requires a MicroDist block and tubes and standard heater if** Distillation required (Must have final matrix of 0.25M NaOH)	23-Mar-10
10-116-29-3-A 10-116-29-3A51 10-116-29-3A52	0.01 – 2.0	0.006	mg S/L	Waters	In line distillation method; 660 nm. **Requires two dedicated channels with one standard and one non-standard heater**; samples w/ particulates not suitable manifold only Dedicated channels; QC8500 115V Dedicated channels; QC8500 220V	4-Oct-07

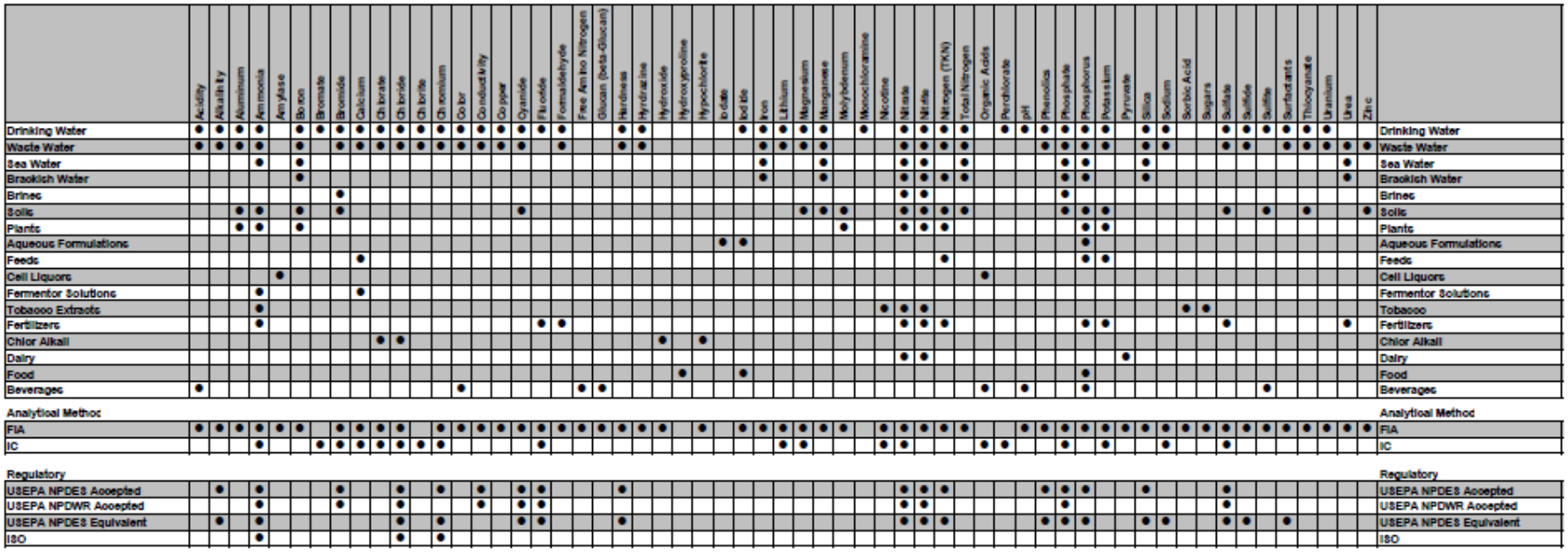
Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-116-29-3-B	1.0 – 10.0	0.2	mg S/L	Waters	Inline method; requires two dedicated channels; **Requires two dedicated channels with one standard and one non-standard heater** samples w/ particulates not suitable; manifold only	5-Jul-07
10-116-29-3B51					Dedicated channels; QC8500 115V	
10-116-29-3B52					Dedicated channels; QC8500 220V	
12-116-29-3-A	0.01 – 2.0	0.008	mg S/L	Soil extracts	Inline method; determination in **1M NaOH soil extracts**; 660 nm. **Requires two dedicated channels with one standard and one non-standard heater** Soil extracts must be filtered prior to analysis (samples w/ particulates not suitable).	20-Aug-08
Sulfite						
10-116-11-1-A	0.25 – 2.0	0.03	mg SO_3^{2-}/L	Waters	Pararosanaline method; 560 nm. Ultra High Throughput method. **Requires a standard heater.**	4-Apr-08
21-116-11-2-D	0.5 – 30	0.25	mg SO_3^{2-}/L	Beverages	Determination in beers and wines. 560 nm. **Requires a standard heater.**	16-Sep-03
Sulfur Dioxide						
24-116-42-1-A	0.08 – 2.4	0.008	mg SO_2/L	Air sample filter extracts	Determination of air extracts in 0.04M potassium tetrachloromercurate (TCM) solutions. 560 nm. **Requires a standard heater.**	18-Sep-03
Surfactants (MBAS)						
10-306-00-1-C	0.025 – 2.0 0.010 – 1.0	0.004 0.0056	mg/L as LAS mg/L as SDS	Waters	Methylene blue method; dual extraction Method. SDS or LAS. Glass calibration and standard vials must be used. 650 nm.	19-Dec-08
10-306-00-1-D ^	0.010 – 1.0	0.0024	mg SDS/L	Waters	Methylene blue method; single extraction method; NPDES Equivalent; follows Standard Methods (5540-C). SDS. Glass calibration and standard vials must be used. 650 nm.	25-Mar-08

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
10-306-00-1-E	0.1 – 20.0	0.05	mg SDS/L	Waters	Methylene blue method; dual extraction method (SDS only) 650 nm. Glass calibration and standards vials must be used.	29-Sep-05
Thiocyanate						
10-229-00-1-A	0.1 – 2.0	0.02	mg SCN^-/L	Waters	Ferric thiocyanate method. 460 nm.	16-Sep-03
12-229-00-1-A	0.05 – 2.0	0.008	mg SCN^-/L	Soil extracts	Determination in **1 M NaOH soil extracts. Extracts must be filtered prior to analysis.** Ferric thiocyanate method. 460 nm	1-Sep-08
Urea						
10-206-00-1-A	0.1 – 20	0.007	mg N/L as Urea	Waters	**Cannot be run simultaneously w/ other methods** as uses 0.84 M NaCl wash solution. Diacetyl monoxime/thiosemicarbazide. 530 nm. **Requires non-standard heater and 60 position sample racks**.	17-Apr-08
10-206-00-1-B	15 – 500	3.3	µg N/L as Urea	Waters	**Cannot be run simultaneously w/ other methods** as uses 0.84 M NaCl wash solution. Diacetyl monoxime/thiosemicarbazide. 530 nm. **Requires non-standard heater and 60 position sample racks**.	15-Apr-08
14-206-00-2-A	75 – 600	1.0	mg N/L as Urea	Fertilizers	Sodium salicylate-based method. Urease enzymatic method; **must be run w/ ammonia method 14-107-06-2-C 660 nm.** Requires a standard heater and 1 mm pathlength flow cell.	16-Sep-03
14-206-00-3-B	4500 – 18000	NA	mg N/L as Urea	Fertilizers	DMAB method. 440 nm.	16-Sep-03
14-206-00-3-C	60 – 600	0.97	mg N/L as Urea	Fertilizers	DMAB method. 440 nm	16-Sep-03
14-206-00-3-D	60 – 150	0.07	mg N/L as Urea	Fertilizers	DMAB method 440 nm.	16-Sep-03
31-206-00-1-A	10 – 400 **0.714-28.57**	2.9	µg N/L as Urea **µM N/L as Urea**	Brackish / Seawaters	Diacetyl monoxime/thiosemicarbazide method. 530 nm. **Requires non-standard heater and 60 position sample racks**.	16-Sep-03

Method No	Range	MDL	Units	Matrix	Comments	Rev Date
31-206-00-1-B	0.025 – 5.00 **1.79-357.14**	0.004	mg N/L as Urea **µM N/L as Urea**	Brackish / Seawaters	Multi-range method Diacetyl monoxime/thiosemicarbazide. 530 nm. **Requires non-standard heater and 60 position sample racks**.	7-Dec-07
	0.2 – 20 **0.0143-1.429**	0.026	mg N/L as Urea **mM N/L as Urea**			

Zinc

10-130-18-2-A	0.1 – 5.0	0.007	mg Zn/L	Waters	Zincon method. 620 nm.	16-Sep-03
12-130-18-2-A	1.25 – 5.0	0.004	mg Zn/L	Soil extracts	Zincon method; low-flow method. 620 nm. **0.1M HCl**.	17-Sep-03


Acidity
Alkalinity
Aluminium
Ammonia
Amylase
Boron
Bromate
Bromide
Calcium
Chlorate
Chloride
Chlorite
Chromium
Color
Conductivity
Copper
Cyanide
Fluoride
Formaldehyde
Free Amino Nitrogen
Glucan (beta-Glucan)
Hardness
Hydrazine
Hydroxide
Hydroxyproline
Hypochlorite
Iodate
Iodide
Iron
Lithium
Magnesium
Manganese
Molybdenum
Monochloramine
Nicotine
Nitrate
Nitrite
Nitrogen (TKN)
Total Nitrogen
Organic Acids
Perchlorate
pH
Phenolics
Phosphate
Phosphorus
Potassium
Pyruvate
Silica
Sodium
Sorbic Acid
Sugars
Sulfate
Sulfide
Sulfite
Surfactants
Thiocyanate
Uranium
Urea
Zinc
Drinking Water
Waste Water
Sea Water
Brackish Water
Brines
Solids
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