ERA

2020–2021
Product Catalog

Environmental and Process Water

Proficiency Testing and Reference Materials

Your Partner In Quality

Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

COMMITMENT TO QUALITY

For more than 40 years, ERA™ has been providing analytical laboratories and organizations with the products and services required to eliminate inaccurate results. Laboratories globally rely on ERA's products to be integrated into their quality programs to ensure total confidence in their data analysis.

Our comprehensive range of Proficiency Testing (PT) programs and Certified Reference Materials (CRMs) are designed to provide you with confidence that your data is valid and defensible. Whether complying with regulatory requirements or internal quality programs, you can depend on ERA to support your efforts in providing sound, well documented data so you can have confidence in your decisions.

Then and Now – 25 Years in Continued Quality Commitment

(left to right)
Lisa Berry, Dale Shallenberger, Curtis Wood, and Craig Huff

CONTENTS

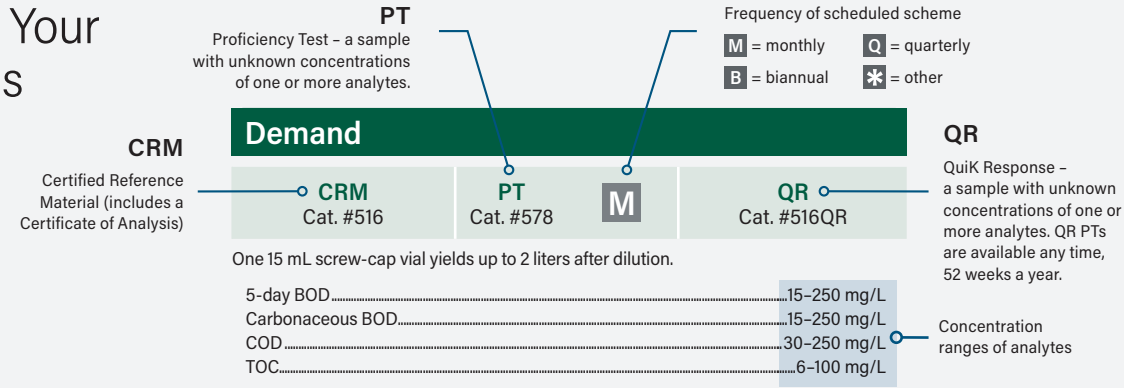
Environmental

Process Water

New and Reformulated Products

Sales Information and Indexes

Ordering Your Standards



DELIVERING CONTINUOUS SUPPORT

1977

Environmental Resource Associates (ERA) is founded in Chicago, Illinois by Mark Carter and Terry Epstein as a reference materials provider for environmental laboratories

1982

Analytical Products Group, Inc. (APG) is founded in Marietta, Ohio as a proficiency testing provider

1993

ERA receives ISO 9001 certification

1999

ERA achieves PT provider accreditation by NIST/NVLAP for EPA approved studies

2000

Process standards product line is launched including reference materials for total organic carbon and conductivity

2006

ERA is acquired by Waters™ Corp, the worldwide leader in liquid chromatography, mass spectrometry and thermal analysis

2006

ERA opens international office in Manchester, UK offering reference materials to laboratories throughout Europe

Waters ERA acquires Analytical Products Group, Inc. (APG)

2008

Waters ERA products go to the International Space Station

2008

Waters ERA introduces Stationary Source Audit Sample (SSAS)

2013

Waters ERA innovates 2-day turn around for final study reports

2014

eDATA 2.0 is launched

2015

Major upgrades to business systems that deliver superior customer experience

2019

Today

After more than 40 years in business, Waters ERA products are in use in over 80 countries by nearly 13,000 labs

2020 Proficiency Testing Scheme Schedule

ERA

www.eraqc.com

Water Pollution (including UST in Water)

	Scheme #	Opens	Closes
Q	WP 300	Jan 13	Feb 27
	WP 301	Feb 10	Mar 26
	WP 302	Mar 9	Apr 23
Q	WP 303	Apr 13	May 28
	WP 304	May 11	Jun 25
	WP 305	Jun 8	Jul 23
Q	WP 306	Jul 13	Aug 27
	WP 307	Aug 10	Sep 24
	WP 308	Sep 8	Oct 23
Q	WP 309	Oct 9	Nov 23
	WP 310	Nov 13	Dec 28
	WP 311	Dec 11	Jan 25, 2021

Water Supply

	Scheme #	Opens	Closes
Q	WS 282	Jan 6	Feb 20
	WS 283	Feb 3	Mar 19
	WS 284	Mar 2	Apr 16
Q	WS 285	Apr 6	May 21
	WS 286	May 4	Jun 18
	WS 287	Jun 1	Jul 16
Q	WS 288	Jul 6	Aug 20
	WS 289	Aug 3	Sep 17
	WS 290	Sep 1	Oct 16
Q	WS 291	Oct 2	Nov 16
	WS 292	Nov 2	Dec 17
	WS 293	Dec 4	Jan 18, 2021

MRAD

Scheme #	Opens	Closes
MRAD 32	Mar 16	May 15
MRAD 33	Sep 14	Nov 13

2 schemes per year – open for 60 days

Soil (including UST in Soil)

	Scheme #	Opens	Closes
Q	SOIL 109	Jan 20	Mar 5
Q	SOIL 110	Apr 20	Jun 4
Q	SOIL 111	Jul 20	Sep 3
Q	SOIL 112	Oct 16	Nov 30

Air & Emissions

	Scheme #	Opens	Closes
Q	AE 51	Jan 27	Mar 12
Q	AE 52	Apr 27	Jun 11
Q	AE 53	Jul 27	Sep 10
Q	AE 54	Oct 23	Dec 7

Radiochemistry

	Scheme #	Opens	Closes
Q	RAD 120	Jan 6	Feb 20
Q	RAD 121	Apr 6	May 21
Q	RAD 122	Jul 6	Aug 20
Q	RAD 123	Oct 2	Nov 16

QuiK Response PT

Need PT results fast? QuiK Response™ PTs are available on demand, 52 weeks a year. Plus, when you report in eDATA, you receive your final QuiK Response PT results instantly. Contact your Customer Service Representative or an authorized Waters ERA sales partner to place your QuiK Response order.

Schedule subject to change – see Waters ERA's website at **www.eraqc.com**.

Q Quarterly Study

2021 Proficiency Testing Scheme Schedule

ERA

www.eraqc.com

Water Pollution (including UST in Water)

	Scheme #	Opens	Closes
Q	WP 312	Jan 18	Mar 4
	WP 313	Feb 15	Apr 1
	WP 314	Mar 15	Apr 29
Q	WP 315	Apr 12	May 27
	WP 316	May 17	Jul 1
	WP 317	Jun 14	Jul 29
Q	WP 318	Jul 19	Sep 2
	WP 319	Aug 16	Sep 30
	WP 320	Sep 13	Oct 28
Q	WP 321	Oct 15	Nov 29
	WP 322	Nov 12	Dec 27
	WP 323	Dec 13	Jan 27, 2022

Water Supply

	Scheme #	Opens	Closes
Q	WS 294	Jan 11	Feb 25
	WS 295	Feb 8	Mar 25
	WS 296	Mar 8	Apr 22
Q	WS 297	Apr 5	May 20
	WS 298	May 10	Jun 24
	WS 299	Jun 7	Jul 22
Q	WS 300	Jul 12	Aug 26
	WS 301	Aug 9	Sep 23
	WS 302	Sep 7	Oct 22
Q	WS 303	Oct 8	Nov 22
	WS 304	Nov 5	Dec 20
	WS 305	Dec 6	Jan 20, 2022

MRAD

Scheme #	Opens	Closes
MRAD 34	Mar 22	May 21
MRAD 35	Sep 20	Nov 19

2 schemes per year – open for 60 days

Soil (including UST in Soil)

	Scheme #	Opens	Closes
Q	SOIL 113	Jan 25	Mar 11
Q	SOIL 114	Apr 19	Jun 3
Q	SOIL 115	Jul 26	Sep 9
Q	SOIL 116	Oct 22	Dec 6

Air & Emissions

	Scheme #	Opens	Closes
Q	AE 55	Jan 29	Mar 15
Q	AE 56	Apr 26	Jun 10
Q	AE 57	Jul 30	Sep 13
Q	AE 58	Oct 29	Dec 13

Radiochemistry

	Scheme #	Opens	Closes
Q	RAD 124	Jan 11	Feb 25
Q	RAD 125	Apr 5	May 20
Q	RAD 126	Jul 12	Aug 26
Q	RAD 127	Oct 8	Nov 22

The Industry Standard for over 40 years

Schedule subject to change – see Waters ERA's website at **www.eraqc.com**.

Q Quarterly Study

WATER POLLUTION

Matrices with high concentrations of analytes for testing water pollution or waste water. Standards may be used to satisfy PT requirements worldwide.

Water Pollution (including UST in Water) PT Schedule 2020

	Scheme #	Opens	Closes
Q	**WP 300**	Jan 13	Feb 27
	WP 301	Feb 10	Mar 26
	WP 302	Mar 9	Apr 23
Q	**WP 303**	Apr 13	May 28
	WP 304	May 11	Jun 25
	WP 305	Jun 8	Jul 23
Q	**WP 306**	Jul 13	Aug 27
	WP 307	Aug 10	Sep 24
	WP 308	Sep 8	Oct 23
Q	**WP 309**	Oct 9	Nov 23
	WP 310	Nov 13	Dec 28
	WP 311	Dec 11	Jan 25, 2021

2021

	Scheme #	Opens	Closes
Q	**WP 312**	Jan 18	Mar 4
	WP 313	Feb 15	Apr 1
	WP 314	Mar 15	Apr 29
Q	**WP 315**	Apr 12	May 27
	WP 316	May 17	Jul 1
	WP 317	Jun 14	Jul 29
Q	**WP 318**	Jul 19	Sep 2
	WP 319	Aug 16	Sep 30
	WP 320	Sep 13	Oct 28
Q	**WP 321**	Oct 15	Nov 29
	WP 322	Nov 12	Dec 27
	WP 323	Dec 13	Jan 27, 2022

Schedule subject to change – see Waters ERA's website at www.eraqc.com

Contents

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response
RM – Reference Material

All Waters ERA WP PTs open monthly (M), quarterly (Q), or biannually (B) unless otherwise noted. * WP Lithium PTs open in February and August. Quarterly months are January, April, July, and October. Biannual months are January and July.

Minerals/Solids

Minerals

CRM	PT		QR
Cat. #506	Cat. #581	M	Cat. #506QR

One 500 mL whole-volume bottle is ready to analyze.

Total alkalinity as $CaCO_3$	25–400 mg/L
Chloride	35–275 mg/L
Fluoride	0.4–4 mg/L
Potassium	4–40 mg/L
Sodium	10–100 mg/L
Specific conductance at 25 °C	200–1200 µmhos/cm
Sulfate	5–125 mg/L
Total dissolved solids at 180 °C	140–800 mg/L
Total solids at 105 °C	140–800 mg/L

Hardness

CRM	PT		QR
Cat. #507	Cat. #580	M	Cat. #507QR

One 500 mL whole-volume bottle is ready to analyze.

Calcium	10–100 mg/L
Calcium hardness as $CaCO_3$	25–250 mg/L
Total hardness as $CaCO_3$	40–415 mg/L
Magnesium	4–40 mg/L
Total suspended solids (TSS)	20–100 mg/L

Settleable Solids

CRM	PT		QR
Cat. #911	Cat. #883	M	Cat. #911QR

One 60 mL poly bottle with a solid yields 1 liter after dilution. Use with EPA Method 160.5, Standard Methods 2540F, or other applicable method.

Settleable solids	5–50 mL/L

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

PT: A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

QR: Similar to a Proficiency Test, a QuiK Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. QuiK Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants – chemical analytical labs.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

Volatile Solids

CRM	PT		QR
Cat. #913	Cat. #884	M	Cat. #913QR

One 12 mL screw-cap vial with a solid yields 1 liter after dilution. Use with EPA Method 160.4, Standard Methods 2540E, or other applicable method.

Total volatile solids	100–500 mg/L

Solids Concentrate

CRM	PT		QR
Cat. #4032	Cat. #4030	M	Cat. #4032QR

One 24 mL screw-cap vial with a powder yields 1 liter of solution.

Total solids at 105 °C	140–800 mg/L
Total dissolved solids at 180 °C	140–800 mg/L
Total suspended solids (TSS)	20–100 mg/L

Solids

CRM	PT		QR
Cat. #499	Cat. #241	M	Cat. #499QR

One 500 mL whole-volume bottle is ready to analyze.

Total solids at 105 °C	140–800 mg/L
Total dissolved solids at 180 °C	140–800 mg/L
Total suspended solids (TSS)	20–100 mg/L

Nutrients

Simple Nutrients

CRM	PT		QR
Cat. #505	Cat. #584	M	Cat. #505QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Ammonia as N	1–20 mg/L
Nitrate as N	2–25 mg/L
Nitrate plus nitrite as N	2.5–25 mg/L
ortho-Phosphate as P	0.5–5.5 mg/L

Complex Nutrients

CRM	PT		QR
Cat. #525	Cat. #579	M	Cat. #525QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Total Kjeldahl nitrogen as N	3–35 mg/L
Total phosphorus as P	0.5–10 mg/L

Nitrite

CRM	PT		QR
Cat. #770	Cat. #888	M	Cat. #770QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Nitrite as N	0.4–4 mg/L

Oil & Grease/Total Petroleum Hydrocarbons

When ordering Oil & Grease or Total Petroleum Hydrocarbons (TPH) PTs, please specify if you need a sample compatible with SPE.

Oil & Grease

CRM
Cat. #504

One 250 mL whole-volume bottle is ready to analyze. For gravimetric and IR analyses.

Hexane Extractable Materials (O&G)..... 20–200 mg/bottle

Oil & Grease Concentrate

CRM	PT		QR
Cat. #4122	Cat. #4120	M	Cat. #4122QR

One 24 mL screw-cap vial yields up to 2 liters after dilution. Use with EPA Method 1664, or other applicable method. Gravimetric analysis only.

Hexane Extractable Materials (O&G)..... 20–200 mg/L

1 Liter Oil & Grease

CRM	PT		QR
Cat. #518	Cat. #582	M	Cat. #518QR

One liter whole-volume glass bottle with a 33–430 thread is ready to analyze. For gravimetric and IR analyses.

Hexane Extractable Materials (O&G)..... 20–200 mg/L

1 Liter Boston Round Oil & Grease

CRM	PT		QR
Cat. #818	Cat. #582	M	Cat. #518QR

One liter whole-volume glass bottle with a 33–400 thread is ready to analyze. For gravimetric and IR analyses.

Hexane Extractable Materials (O&G)..... 20–200 mg/L

HEM/SGT-HEM

CRM	PT		QR
Cat. #519	Cat. #489	Q	Cat. #519QR

One 5 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Method 1664, or other applicable method to measure hexane extractable material (HEM) and silica gel treated-HEM. Contains both hexadecane and stearic acid.

Note: If a NELAC compliant PT is required, use Cat. #582 or Cat. #4120.

Hexane extractable material..... 5–100 mg/L
Silica gel treated-HEM..... 5–100 mg/L

Total Petroleum Hydrocarbons (TPH) in Water #1

CRM	PT		QR
Cat. #600	Cat. #642	Q	Cat. #602QR

One liter whole-volume bottle is ready to analyze for TPH without interfering fatty acids. Use with EPA Methods 1664, 5520, or other applicable method.

Total petroleum hydrocarbons..... 20–200 mg/L

Total Petroleum Hydrocarbons (TPH) in Water #2

CRM	PT		QR
Cat. #601	Cat. #642	Q	Cat. #602QR

One liter whole-volume bottle is ready to analyze for TPH in the presence of interfering fatty acids. Use with EPA Methods 1664, 5520, or other applicable method.

Total petroleum hydrocarbons..... 20–200 mg/L

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

All Waters ERA WP PTs open monthly (M) or quarterly (Q) unless otherwise noted.

Quarterly months are January, April, July, and October.

Mike Deines
General Manager

Years with Waters ERA: 3

Melissa McNamara
Director of Sales and Marketing

Years with Waters ERA: 28

Demand

Demand

CRM	PT		QR
Cat. #516	Cat. #578	M	Cat. #516QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

5-day BOD	18–230 mg/L
Carbonaceous BOD	18–230 mg/L
COD	30–250 mg/L
TOC	6–100 mg/L

Metals

Trace Metals

CRM	PT		QR
Cat. #500	Cat. #586	M	Cat. #500QR

One 15 mL screw-cap vial yields up to 1 liter after dilution. Use with AA, ICP-OES or ICP-MS and selected colorimetric methods.

Aluminum	200–4000 µg/L
Antimony	90–900 µg/L
Arsenic	90–900 µg/L
Barium	100–2500 µg/L
Beryllium	50–500 µg/L
Boron	800–2000 µg/L
Cadmium	100–1000 µg/L
Chromium	100–1000 µg/L
Cobalt	100–1000 µg/L
Copper	100–1000 µg/L
Iron	200–4000 µg/L
Lead	100–1500 µg/L
Manganese	200–2000 µg/L
Molybdenum	60–600 µg/L
Nickel	200–2000 µg/L
Selenium	100–1000 µg/L
Silver	100–1000 µg/L
Strontium	50–500 µg/L
Thallium	80–800 µg/L
Vanadium	50–2000 µg/L
Zinc	300–2000 µg/L

Mercury

CRM	PT		QR
Cat. #514	Cat. #574	M	Cat. #514QR

One 15 mL screw-cap vial yields up to 1 liter after dilution. Analyze for total mercury.

Total mercury	3–30 µg/L

Low-Level Mercury

CRM	PT		QR
Cat. #931	Cat. #896	Q	Cat. #931QR

One 5 mL flame-sealed ampule yields up to 4 liters after dilution. Use with EPA1631, or other sensitive mercury analysis methods.

Total mercury	20–100 ng/L

Waters ERA Low-Level Mercury is also available during February and March WP PT schemes.

Metals (continued)

Hexavalent Chromium

CRM	PT		QR
Cat. #984	Cat. #898	M	Cat. #984QR

One 15 mL screw-cap vial yields up to 2 liters after dilution. Use with IC or colorimetric methods.

Hexavalent chromium	90–900 µg/L

Tin and Titanium

CRM	PT		QR
Cat. #517	Cat. #573	M	Cat. #517QR

One 15 mL screw-cap vial yields up to 1 liter after dilution. Use with AA, ICP-OES or ICP-MS methods.

Tin	200–2000 µg/L
Titanium	60–300 µg/L

Uranium

CRM	PT		QR
Cat. #4402	Cat. #4400	Q	Cat. #4402QR

One 15 mL screw-cap vial yields up to 1 liter after dilution.

Uranium	25–200 µg/L

Lithium

CRM	PT		QR
Cat. #4992	Cat. #4990	*	Cat. #4992QR

One 15 mL screw-cap vial yields up to 1 liter after dilution. Designed for the Ohio VAP program.

Lithium	50–500 µg/L

* Waters ERA WP Lithium PTs open in February and August.

Physical Property

Color

CRM	PT		QR
Cat. #070	Cat. #882	Q	Cat. #070QR

One 125 mL whole-volume bottle is ready to analyze. Use with EPA Methods 110.1, 110.2, and 110.3, Standard Methods 2120B, 2120C, 2120E, or other applicable method.

Color ..... 10–75 PC units

Turbidity

CRM	PT		QR
Cat. #777	Cat. #893	M	Cat. #777QR

One 15 mL screw-cap vial yields up to 1 liter after dilution. Use with nephelometric methods.

Turbidity ..... 2–30 NTU

Miscellaneous Chemistry

Cyanide

CRM	PT		QR
Cat. #502	Cat. #588	M	Cat. #502QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Total cyanide ..... 0.1–1 mg/L
Amenable cyanide ..... 0.1–1 mg/L

Dissolved Oxygen

CRM	PT		QR
Cat. #213	Cat. #212	Q	Cat. #213QR

One 500 mL whole-volume bottle is ready to analyze.

Dissolved oxygen ..... 1–20 mg/L

Total Organic Halides (TOX)

CRM	PT		QR
Cat. #670	Cat. #895	Q	Cat. #670QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Analyze for total organic halides with adsorption pyrolysis titrimetric methods.

TOX ..... 300–1500 µg/L

Total Phenolics (4-AAP)

CRM	PT		QR
Cat. #515	Cat. #589	M	Cat. #515QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Analyze for total phenolic compounds by 4-AAP methods.

Total phenolics by 4-AAP ..... 0.5–5 mg/L

Perchlorate

CRM	PT		QR
Cat. #1501	Cat. #1500	Q	Cat. #1501QR

One 15 mL screw-cap vial yields up to 2 liters after dilution. Use with EPA methods 314.0, 314.2, 331.0, 332.0, or other applicable methods. LCMS and IC compatible.

Perchlorate ..... 10–200 µg/L

Silica

CRM	PT		QR
Cat. #775	Cat. #890	Q	Cat. #775QR

One 60 mL poly bottle yields up to 1 liter after dilution. Analyze for silica as SiO_2 with colorimetric or ICP methods.

Silica as SiO_2 ..... 50–250 mg/L

Sulfide

CRM	PT		QR
Cat. #071	Cat. #891	M	Cat. #071QR

One 10 mL flame-sealed ampule yields up to 1 liter after dilution. Preserved sample is guaranteed stable. Analyze for sulfide by titrimetric or colorimetric methods or ISE.

Sulfide ..... 2–10 mg/L

Sulfite

CRM	PT		QR
Cat. #534	Cat. #244	B	Cat. #534QR

One 10 mL concentrate yields up to 2 liters after dilution.

Sulfite ..... 10–250 mg/L

B Waters ERA WP Sulfite PTs open in January and July.

Surfactants-MBAS

CRM	PT		QR
Cat. #776	Cat. #892	Q	Cat. #776QR

One 15 mL screw-cap vial yields up to 2 liters after dilution. Analyze for surfactants-MBAS with EPA Method 425.1, or other applicable method.

Surfactants-MBAS ..... 0.2–1 mg/L

Acidity

CRM	PT		QR
Cat. #915	Cat. #885	Q	Cat. #915QR

One 250 mL whole-volume bottle is ready to analyze. Designed for use with titrimetric methods to a pH endpoint of 8.3 S.U.

Acidity as $CaCO_3$ ..... 650–1800 mg/L

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

All Waters ERA WP PTs open monthly (M), quarterly (Q), or biannually (B) unless otherwise noted. * WP Lithium PTs open in February and August. Quarterly months are January, April, July, and October. Biannual months are January and July.

Miscellaneous Chemistry (continued)

pH

CRM	PT		QR
Cat. #977	Cat. #577	M	Cat. #977QR

One 250 mL whole-volume bottle is ready to analyze.

pH ..... 5–10 units

Boron

CRM	PT		QR
Cat. #919	Cat. #886	Q	Cat. #919QR

One unpreserved 60 mL poly bottle yields in excess of 2 liters after dilution. Designed for colorimetric methods.

Boron ..... 800–2000 µg/L

Bromide

CRM	PT		QR
Cat. #769	Cat. #887	Q	Cat. #769QR

One 15 mL screw-cap vial yields up to 2 liters after dilution. Use with ion chromatography or colorimetric methods.

Bromide ..... 1–10 mg/L

Total Residual Chlorine (TRC)

CRM	PT		QR
Cat. #501	Cat. #587	M	Cat. #501QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with titrimetric or colorimetric methods.

Total residual chlorine ..... 0.5–3 mg/L
Free residual chlorine ..... 0.5–3 mg/L

Low-Level Total Residual Chlorine (TRC)

CRM	PT		QR
Cat. #917	Cat. #881	M	Cat. #917QR

Designed for testing at low µg/L levels. One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with sensitive titrimetric or colorimetric methods.

Total residual chlorine ..... 50–250 µg/L

Craig Huff
Senior Technical Manager

Years with Waters ERA: 30

Volatiles

Volatiles

CRM	PT		QR
Cat. #710	Cat. #830	M	Cat. #710QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 601, 602, 8021, 624, 8260, or other applicable method. Contains a subset of the analytes listed below at 5–300 µg/L.

- Acetone
- Acetonitrile
- Acrolein
- Acrylonitrile
- Benzene
- Bromobenzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- 2-Butanone (MEK)
- n-Butylbenzene
- sec-Butylbenzene
- tert-Butylbenzene
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chlorodibromomethane
- Chloroethane
- 2-Chloroethyl vinyl ether
- Chloroform
- Chloromethane
- 2-Chlorotoluene
- 4-Chlorotoluene
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (EDB)
- Dibromomethane
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- Dichlorodifluoromethane
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- cis-1,2-Dichloroethene
- 1,1-Dichloroethene
- trans-1,2-Dichloroethene
- 1,3-Dichloropropane
- 1,2-Dichloropropane
- 2,2-Dichloropropane
- cis-1,3-Dichloropropene
- 1,1-Dichloropropene
- trans-1,3-Dichloropropene
- Ethylbenzene
- Hexachlorobutadiene
- Hexachloroethane
- 2-Hexanone
- Isopropylbenzene
- p-Isopropyltoluene
- Methyl tert-butyl ether (MTBE)
- 4-Methyl-2-pentanone (MIBK)
- Methylene chloride
- Naphthalene
- Nitrobenzene
- n-Propylbenzene
- Styrene
- 1,1,1,2-Tetrachloroethane
- 1,1,2,2-Tetrachloroethane
- Tetrachloroethene
- Toluene
- 1,2,3-Trichlorobenzene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethene
- Trichlorofluoromethane
- 1,2,3-Trichloropropane
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Vinyl acetate
- Vinyl chloride
- m&p Xylene
- o-Xylene
- Xylenes, total

1,4-Dioxane

NEW PRODUCT

CRM	PT		QR
Cat. #402	Cat. #597	B	Cat. #402QR

One 2 mL flame-sealed ampule yields up to 1 liter after dilution. Use with modified versions of EPA methods 8260, 8270, 1624, or other applicable methods.

1,4-Dioxane ..... 3–30 µg/L

Volatile Aromatics

CRM	PT		QR
Cat. #4452	Cat. #4450	Q	Cat. #4452QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 602, 8021, or other applicable method. Each standard contains all listed analytes at 10–300 µg/L after dilution.

- Benzene
- Chlorobenzene
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- Ethylbenzene
- Naphthalene
- Toluene
- 1,2,4-Trichlorobenzene
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- m&p Xylene
- o-Xylene
- Xylenes, total

BTEX & MTBE in Water

CRM	PT		QR
Cat. #760	Cat. #643	Q	Cat. #760QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 602, 8021, or other applicable method. Includes all BTEX compounds and MTBE at 10–300 µg/L after dilution.

Volatiles (continued)

Gasoline Range Organics (GRO) in Water

CRM	PT		QR
Cat. #762	Cat. #640	Q	Cat. #762QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with both purge and trap and modified EPA 8015 GC/FID methods or other applicable methods to test for GRO at 400–4000 µg/L. Also use to test for BTEX in gasoline.

Note: This standard is not compliant with the NELAC concentration ranges for the BTEX analytes. If you require a NELAC-compliant sample for these analytes, use WP Volatiles catalog #830 or BTEX in Water catalog #643.

PCBs

PCBs in Water

CRM	PT		QR
Cat. #734S	Cat. #832S	M	Cat. #734SQR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 608, 8082, or other applicable method. Contains a different aroclor randomly selected from the list below at 2–10 µg/L.

- Aroclor 1016
- Aroclor 1221
- Aroclor 1232
- Aroclor 1242
- Aroclor 1248
- Aroclor 1254
- Aroclor 1260

PCBs in Water Standards

PCBs in water standards are sold individually in 2 mL flame-sealed ampules that yield 1 liter after dilution. Use with EPA Methods 608, 8082, or other applicable methods. Each standard contains an Aroclor at 1–15 µg/L after dilution.

CRM Cat. #	Aroclor	Range
860	1016	1–15 µg/L
861	1221	1–15 µg/L
862	1232	1–15 µg/L
863	1242	1–15 µg/L
864	1248	1–15 µg/L
865	1254	1–15 µg/L
866	1260	1–15 µg/L

PCBs in Oil

CRM	PT		QR
Cat. #729S	Cat. #835S	M	Cat. #729SQR

One 10 mL flame-sealed ampule is ready to analyze. Use with EPA Method 8082, or other applicable method. Contains a different aroclor randomly selected from the list below at 10–50 mg/kg.

- Aroclor 1016
- Aroclor 1221
- Aroclor 1232
- Aroclor 1242
- Aroclor 1248
- Aroclor 1254
- Aroclor 1260

Per-and Polyfluoroalkyl Substances (PFAS)

PFAS - Non-Potable Water

NEW PRODUCT

CRM	PT		QR
Cat. #403	Cat. #598	B	Cat. #403QR

One 2 mL flame sealed ampule yields in excess of 1.5 liters after dilution. Design is suitable for methods analyzing non-potable water. Use with LC-MS/MS techniques. The diluted standard will contain a minimum of 17 analytes in each lot selected from the list below.

- 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)..... 100–500 ng/L
- 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)..... 100–500 ng/L
- 4,8-dioxa-3H-perfluorononanoic acid (DONA)..... 100–500 ng/L
- N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)..... 100–500 ng/L
- 1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)..... 100–500 ng/L
- 1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS)..... 100–500 ng/L
- 1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)..... 100–500 ng/L
- Hexafluoropropylene oxide dimer acid (HFPO-DA)..... 100–500 ng/L
- N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)..... 100–500 ng/L
- Perfluorobutanesulfonic acid (PFBS)..... 100–500 ng/L
- Perfluorobutanoic acid (PFBA)..... 100–500 ng/L
- Perfluorodecane sulfonic acid (PFDS)..... 100–500 ng/L
- Perfluorodecanoic acid (PFDA)..... 100–500 ng/L
- Perfluorododecanoic acid (PFDoA)..... 100–500 ng/L
- Perfluoroheptane sulfonic acid (PFHpS)..... 100–500 ng/L
- Perfluoroheptanoic acid (PFHpA)..... 100–500 ng/L
- Perfluorohexanesulfonic acid (PFHxS)..... 100–500 ng/L
- Perfluorohexanoic acid (PFHxA)..... 100–500 ng/L
- Perfluorononane sulfonic acid (PFNS)..... 100–500 ng/L
- Perfluorononanoic acid (PFNA)..... 100–500 ng/L
- Perfluorooctane sulfonamide (PFOSAm)..... 100–500 ng/L
- Perfluorooctanesulfonic acid (PFOS)..... 100–500 ng/L
- Perfluorooctanoic acid (PFOA)..... 100–500 ng/L
- Perfluoropentanoic acid (PFPeA)..... 100–500 ng/L
- Perfluoropentane sulfonic acid (PFPeS)..... 100–500 ng/L
- Perfluorotetradecanoic acid (PFTDA)..... 100–500 ng/L
- Perfluorotridecanoic acid (PFTrDA)..... 100–500 ng/L
- Perfluoroundecanoic acid (PFUnDA)..... 100–500 ng/L

Herbicides

Chlorinated Acid Herbicides

CRM	PT		QR
Cat. #718	Cat. #829	M	Cat. #718QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 615, 8151, or other applicable methods. Contains a subset of the analytes listed below at 2–10 µg/L (except MCPA and MCPP at 10–100 µg/L).

Note: 4-nitrophenol and pentachlorophenol are not within the EPA/NELAC range. Use the Acids standard (page 16) for these compounds in the EPA/NELAC range.

- Acifluorfen
- Bentazon
- Chloramben
- 2,4-D
- 2,4-DB
- Dacthal diacid (DCPA)
- Dalapon
- Dicamba
- 3,5-Dichlorobenzoic acid
- Dichlorprop
- Dinoseb
- MCPA
- MCPP
- 4-Nitrophenol
- Pentachlorophenol
- Picloram
- 2,4,5-T
- 2,4,5-TP (Silvex)

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

All Waters ERA WP PTs open monthly (M), quarterly (Q), or biannually (B) unless otherwise noted. * WP Lithium PTs open in February and August. Quarterly months are January, April, July, and October. Biannual months are January and July.

Semivolatiles

Base/Neutrals

CRM	PT		QR
Cat. #711	Cat. #833	M	Cat. #711QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 625, 8270, or other applicable method. Contains a subset of the analytes listed below at 10–225 µg/L (except Benzidine at 200–1000 µg/L).

- Acenaphthene
- Acenaphthylene
- 2-Amino-1-methylbenzene (o-Toluidine)
- Aniline
- Anthracene
- Benzidine
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Benzyl alcohol
- 4-Bromophenyl phenyl ether
- Butyl benzyl phthalate
- Carbazole
- 4-Chloroaniline
- bis(2-Chloroethoxy)methane
- bis(2-Chloroethyl)ether
- 1-Chloronaphthalene
- 2-Chloronaphthalene
- 4-Chlorophenyl phenyl ether
- Chrysene
- Dibenz(a,h)anthracene
- Dibenzofuran
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- 3,3'-Dichlorobenzidine
- Diethyl phthalate
- Dimethyl phthalate
- Di-n-butyl phthalate
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- Di-n-octyl phthalate
- bis(2-Ethylhexyl)phthalate
- Fluoranthene
- Fluorene
- Hexachlorobenzene
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- Hexachloroethane
- Indeno(1,2,3-cd)pyrene
- Isophorone
- 2-Methylnaphthalene
- Naphthalene
- 2-Nitroaniline
- 3-Nitroaniline
- 4-Nitroaniline
- Nitrobenzene
- N-Nitrosodiethylamine
- N-Nitrosodimethylamine
- N-Nitroso-di-n-propylamine
- N-Nitrosodiphenylamine
- 2,2'-Oxybis(1-Chloropropane)
- Pentachlorobenzene
- Phenanthrene
- Pyrene
- Pyridine
- 1,2,4,5-Tetrachlorobenzene
- 1,2,4-Trichlorobenzene

Acids

CRM	PT		QR
Cat. #712	Cat. #834	M	Cat. #712QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 604, 625, 8041, 8270, or other applicable method. Contains a subset of the analytes listed below at 30–200 µg/L.

- Benzoic acid
- 4-Chloro-3-methylphenol
- 2-Chlorophenol
- 2,4-Dichlorophenol
- 2,6-Dichlorophenol
- 2,4-Dimethylphenol
- 2,4-Dinitrophenol
- 2-Methyl-4,6-dinitrophenol
- 2-Methylphenol
- 3 & 4-Methlyphenol
- 2-Nitrophenol
- 4-Nitrophenol
- Pentachlorophenol
- Phenol
- 2,3,4,6-Tetrachlorophenol
- 2,4,5-Trichlorophenol
- 2,4,6-Trichlorophenol

Diesel Range Organics (DRO) in Water

CRM	PT		QR
Cat. #764	Cat. #641	Q	Cat. #764QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with modified EPA 8015 GC/FID methods, or other applicable method. Includes #2 Diesel at 800–6000 µg/L.

EDB/DBCP/TCP

CRM	PT		QR
Cat. #692	Cat. #562	Q	Cat. #692QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Method 8011, or other applicable method. Each lot contains all analytes at 0.2–2.0 µg/L.

- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (EDB)
- 1,2,3-Trichloropropane (TCP)

Glycols in Water

CRM	PT		QR
Cat. #401	Cat. #271	Q	Cat. #401QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 8015B, 8430, 1671, or other applicable method. Each lot contains all analytes in the concentration range 75–200 mg/L.

- Diethylene glycol
- Ethylene glycol
- Propylene glycol
- Tetraethylene glycol
- Triethylene glycol

Low-Level Nitroaromatics & Nitramines

CRM	PT		QR
Cat. #677	Cat. #932	Q	Cat. #677QR

One 2 mL flame-sealed ampule yields up to 2 liters of sample after dilution. Use with EPA Methods 8330, 8091, or other applicable method for explosive and explosive residue analytes. Contains at least 80% of the analytes, randomly selected from the list below at 1–20 µg/L.

- 4-Amino-2,6-dinitrotoluene
- 2-Amino-4,6-dinitrotoluene
- 1,3-Dinitrobenzene
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- HMX
- Nitrobenzene
- 2-Nitrotoluene
- 3-Nitrotoluene
- 4-Nitrotoluene
- RDX
- Tetryl
- 1,3,5-Trinitrobenzene
- 2,4,6-Trinitrotoluene

Low-Level PAHs

CRM	PT		QR
Cat. #715	Cat. #836	Q	Cat. #715QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA HPLC Methods 610, 8310, or other applicable method, and GC/MS Method 8270 SIM. Contains a subset of the analytes listed below at 0.5–20 µg/L.

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Chrysene
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

PAHs – GC/GCMS

CRM	PT		QR
Cat. #4882	Cat. #4880	Q	Cat. #4882QR

One 2mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 625, 8100, 8270, or other applicable method. Each standard contains a subset of the analytes listed below at 10–200 µg/L.

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Chrysene
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- 1-Methylnaphthalene
- 2-Methylnaphthalene
- Naphthalene
- Phenanthrene
- Pyrene

Pesticides

Organochlorine Pesticides

CRM	PT		QR
Cat. #713	Cat. #831	M	Cat. #713QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 608, 8081, or other applicable method. Contains a subset of the analytes listed below at 1–20 µg/L.

- Aldrin
- alpha-BHC
- beta-BHC
- delta-BHC
- gamma-BHC (Lindane)
- alpha-Chlordane
- gamma-Chlordane
- 4,4'-DDD
- 4,4'-DDE
- 4,4'-DDT
- Dieldrin
- Endosulfan I
- Endosulfan II
- Endosulfan sulfate
- Endrin
- Endrin aldehyde
- Endrin ketone
- Heptachlor
- Heptachlor epoxide (beta)
- Methoxychlor

Chlordane

CRM	PT		QR
Cat. #716	Cat. #837	M	Cat. #716QR

One 2 mL flame-sealed ampule yields up to 2 liters of sample after dilution. Use with EPA Methods 608, 8081, or other applicable method. Contains technical chlordane at 3–25 µg/L.

Toxaphene

CRM	PT		QR
Cat. #717	Cat. #838	M	Cat. #717QR

One 2 mL flame-sealed ampule yields up to 2 liters of sample after dilution. Use with EPA Methods 608, 8081, or other applicable method. Contains toxaphene at 20–100 µg/L.

Carbamate Pesticides

CRM	PT		QR
Cat. #908	Cat. #899	Q	Cat. #908QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA method 632, or other applicable method. Contains a subset of the analytes listed below at 5–200 µg/L.

- Aldicarb
- Aldicarb sulfone
- Aldicarb sulfoxide
- Baygon
- Carbaryl
- Carbofuran
- Diuron
- 3-Hydroxycarbofuran
- Methiocarb
- Methomyl
- Oxamyl
- Propham

Nitrogen Pesticides

CRM	PT		QR
Cat. #674	Cat. #487	Q	Cat. #674QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 619, 633, 8141, 8270, or other applicable method. Contains a subset of the analytes listed below at 2–20 µg/L.

- Alachlor
- Ametryn
- Anilazine
- Atraton
- Atrazine
- Bromacil
- Butachlor
- Butylate
- Cyanazine
- Deethyl atrazine
- Deisopropyl atrazine
- Diaminoatrazine
- EPTC (eptam)
- Hexazinone
- Metolachlor
- Metribuzin
- Napropamide
- Prometon
- Prometryn
- Pronamide
- Propachlor
- Propazine
- Simazine
- Terbacil
- Trifluralin

Organophosphorus Pesticides (OPP)

CRM	PT		QR
Cat. #665	Cat. #934	Q	Cat. #665QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA methods 614, 622, 8141, or other applicable method. Contains a subset of the analytes listed below at 2–20 µg/L.

- Azinphos-methyl (guthion)
- Carbophenothion
- Chlorpyrifos
- Demeton
- Demeton O & S
- Diazinon
- Dichlorvos (DDVP)
- Dimethoate
- Dioxathion
- Disulfoton
- Ethion
- Ethoprop
- Ethyl Parathion (parathion)
- Famphur
- Fonofos
- Malathion
- Methyl parathion
- Phorate
- Phosmet
- Ronnel
- Stirophos (tetrachlorovinphos)
- Terbufos

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

All Waters ERA WP PTs open monthly (M) or quarterly (Q) unless otherwise noted. Quarterly months are January, April, July, and October.

Audrey Cornell
Principal Proficiency Testing Technical Specialist

Years with Waters ERA: 21

Christian Milek
Chemist

Years with Waters ERA: 15

Ready-to-Use CRMs

The following whole-volume standards are ready-to-use as provided and require no dilution before analysis.*

Minerals

CRM
Cat. #506

One 500 mL whole-volume bottle is ready to analyze.

Total alkalinity as $CaCO_3$	25–400 mg/L
Chloride	35–275 mg/L
Fluoride	0.4–4 mg/L
Potassium	4–40 mg/L
Sodium	10–100 mg/L
Specific conductance at 25 °C	200–1200 µmhos/cm
Sulfate	5–125 mg/L
Total dissolved solids at 180 °C	140–800 mg/L
Total solids at 105 °C	140–800 mg/L

Hardness

CRM
Cat. #507

One 500 mL whole-volume bottle is ready to analyze.

Calcium	10–100 mg/L
Calcium hardness as $CaCO_3$	25–250 mg/L
Total hardness as $CaCO_3$	40–415 mg/L
Magnesium	4–40 mg/L
Total suspended solids (TSS)	20–100 mg/L

pH

CRM
Cat. #977

One 250 mL whole-volume bottle is ready to analyze.

pH	5–10 units

Oil & Grease

CRM
Cat. #504

One 250 mL whole-volume bottle is ready to analyze. Use with EPA hexane extraction Method 1664, or other applicable method. Certified values are provided for IR and gravimetric methods. For additional Oil & Grease CRMs see page 11.

Oil and grease	20–200 mg/bottle

Solids

CRM
Cat. #499

One 500 mL whole-volume bottle is ready to analyze.

Total solids at 105 °C	140–800 mg/L
Total dissolved solids at 180 °C	140–800 mg/L
Total suspended solids (TSS)	20–100 mg/L
pH	5–10 units

Trace Metals*

CRM
Cat. #740

One 500 mL whole-volume bottle is ready to analyze. Use with AA, ICP-OES, ICP-MS, and selected colorimetric methods.

Aluminum	200–4000 µg/L
Antimony	90–900 µg/L
Arsenic	90–900 µg/L
Barium	100–2500 µg/L
Beryllium	50–500 µg/L
Boron	800–2000 µg/L
Cadmium	100–1000 µg/L
Chromium	100–1000 µg/L
Cobalt	100–1000 µg/L
Copper	100–1000 µg/L
Iron	200–4000 µg/L
Lead	100–1500 µg/L
Manganese	200–2000 µg/L
Molybdenum	60–600 µg/L
Nickel	200–2000 µg/L
Selenium	100–1000 µg/L
Silver	100–1000 µg/L
Strontium	50–500 µg/L
Thallium	80–800 µg/L
Vanadium	50–2000 µg/L
Zinc	300–2000 µg/L

Demand*

CRM
Cat. #743

One 500 mL whole-volume bottle is ready to analyze.

5-day BOD	18–230 mg/L
Carbonaceous BOD	18–230 mg/L
COD	30–250 mg/L
TOC	6–100 mg/L

Simple Nutrients*

CRM
Cat. #739

One 500 mL whole-volume bottle is ready to analyze.

Ammonia as N	1–20 mg/L
Nitrate as N	2–25 mg/L
Nitrate plus nitrite as N	2.5–25 mg/L
ortho-Phosphate as P	0.5–5.5 mg/L

Complex Nutrients*

CRM
Cat. #741

One 500 mL whole-volume bottle is ready to analyze.

Total Kjeldahl nitrogen as N	3–35 mg/L
Total phosphorus as P	0.5–10 mg/L

*These standards are guaranteed stable for a minimum of one month after receipt at your facility.

QC Plus

The QC Plus Program includes environmental analytes at concentrations that reflect realistic levels of pollutants in industrial settings. Each sample level is designed for wastewater and industrial analysis. These Certified Reference Materials (CRMs) are an asset to any quality assurance program because they enable you to test your internal systems to ensure that your equipment, methods, and analysts are producing quality data.

QC Plus – Demand

CRM
Cat. #4013

One 24 mL screw-cap vial yields up to 1 liter after dilution.

5-day BOD	100–300 mg/L
Carbonaceous BOD	87.0–256 mg/L
COD	150–500 mg/L
TOC	50.0–200 mg/L

QC Plus – Hexavalent Chromium

CRM
Cat. #4183

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Hexavalent chromium	100–1000 µg/L

QC Plus – Minerals

CRM
Cat. #4053

Two 30 mL screw-cap vials to be diluted together to yield up to 2 liters of sample.

Alkalinity as $CaCO_3$	10.0–300 mg/L
Calcium	5.00–150 mg/L
Calcium hardness as $CaCO_3$	12.5–375 mg/L
Chloride	10.0–700 mg/L
Conductivity	100–4000 µmhos/cm
Magnesium	1.00–50.0 mg/L
Potassium	1.00–300 mg/L
Sodium	10.0–300 mg/L
Sulfate	10.0–300 mg/L
Total dissolved solids at 180 °C	20.0–2400 mg/L
Total hardness as $CaCO_3$	15.0–600 mg/L

QC Plus – Nutrients

CRM
Cat. #4023

Two 15 mL screw-cap vials yield up to 2 liters each after dilution.

Ammonia nitrogen as N	0.250–10.0 mg/L
Nitrate nitrogen as N	0.250–10.0 mg/L
ortho-Phosphate as P	0.0500–10.0 mg/L
Total Kjeldahl nitrogen	0.250–10.0 mg/L
Total phosphorus as P	0.100–10.0 mg/L

QC Plus – Oil & Grease

CRM
Cat. #4123

One 24 mL screw-cap vial yields up to 2 liters after dilution.

Oil and grease	10.0–100 mg/L

QC Plus – pH

CRM
Cat. #4063

One 250 mL whole-volume bottle is ready to analyze.

pH	2.00–12.0 units

QC Plus – Fluoride

CRM
Cat. #4423

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Fluoride	5–20 mg/L

Eric Negrey
IT Manager

Years with Waters: 1

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response
RM – Reference Material

Quarterly months are January, April, July, and October. Biannual months are January and July.

QC Plus

QC Plus – Solids

CRM
Cat. #4033

One 24 mL screw-cap vial with a powder yields 1 liter after dilution.

Total dissolved solids at 180 °C	500–2000 mg/L
Total solids at 105 °C	600–2500 mg/L
Total suspended solids (TSS)	100–500 mg/L

QC Plus – Total Cyanide

CRM
Cat. #4093

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Total cyanide	1.00–5.00 mg/L

QC Plus – Total Phenolics

CRM
Cat. #4083

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Total phenolics by 4-AAP	0.05–0.5 mg/L

QC Plus – Total Residual Chlorine

CRM
Cat. #4103

One 24 mL amber screw cap vial yields up to 2 liters of solution after dilution.

Total residual chlorine	0.100–1.00 mg/L

Quarterly months are January, April, July, and October. Biannual months are January and July.

Ginny Barnhill
Proficiency Testing Specialist

Years with Waters ERA: 1

Claire Toon
Customer Service Representative

Years with Waters ERA: 5

TRUST THE DMR-QA EXPERTS

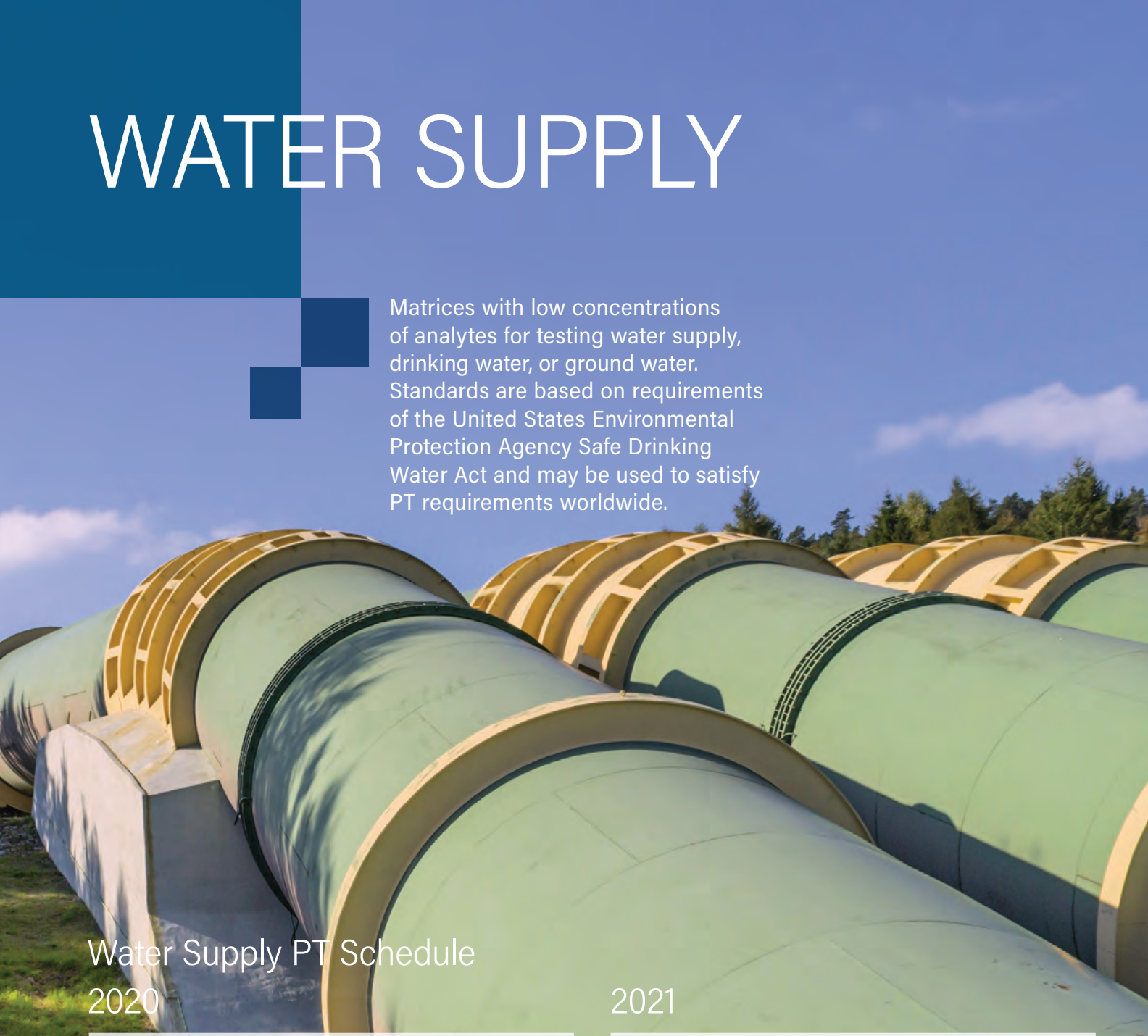
Whether you are new to the U.S. EPA's Discharge Monitoring Report-Quality Assurance (DMR-QA) study, or are a seasoned participant, Waters ERA offers readily-accessible tools and a team of professionals to help you:

- Report data easily with access to eDATA tools
- Receive WP study reports two days after close date
- Access NPDES data from eDATA at the close of study
- Meet study requirements and be successful with the DMR-QA journey

Learn more at **www.eraqc.com/dmrqa**

WATER SUPPLY

Matrices with low concentrations of analytes for testing water supply, drinking water, or ground water. Standards are based on requirements of the United States Environmental Protection Agency Safe Drinking Water Act and may be used to satisfy PT requirements worldwide.



Water Supply PT Schedule

2020

	Scheme #	Opens	Closes
Q	WS 282	Jan 6	Feb 20
	WS 283	Feb 3	Mar 19
	WS 284	Mar 2	Apr 16
Q	WS 285	Apr 6	May 21
	WS 286	May 4	Jun 18
	WS 287	Jun 1	Jul 16
Q	WS 288	Jul 6	Aug 20
	WS 289	Aug 3	Sep 17
	WS 290	Sep 1	Oct 16
Q	WS 291	Oct 2	Nov 16
	WS 292	Nov 2	Dec 17
	WS 293	Dec 4	Jan 18, 2021

2021

	Scheme #	Opens	Closes
Q	WS 294	Jan 11	Feb 25
	WS 295	Feb 8	Mar 25
	WS 296	Mar 8	Apr 22
Q	WS 297	Apr 5	May 20
	WS 298	May 10	Jun 24
	WS 299	Jun 7	Jul 22
Q	WS 300	Jul 12	Aug 26
	WS 301	Aug 9	Sep 23
	WS 302	Sep 7	Oct 22
Q	WS 303	Oct 8	Nov 22
	WS 304	Nov 5	Dec 20
	WS 305	Dec 6	Jan 20, 2022

Schedule subject to change – see Waters ERA's website at www.eraqc.com

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

PT: A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

QR: Similar to a Proficiency Test, a QuiK Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. QuiK Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants – chemical analytical labs.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

All Waters ERA WS PTs open monthly (M), quarterly (Q), or biannually (B) unless otherwise noted. Quarterly months are January, April, July, and October. Biannual months are January and July.

Minerals/Solids

Hardness

CRM	PT		QR
Cat. #693	Cat. #555	M	Cat. #693QR

One 250 mL whole-volume bottle is ready to analyze.

Calcium	30–90 mg/L
Calcium hardness as $CaCO_3$	75–225 mg/L
Total hardness as $CaCO_3$	83–307 mg/L
Magnesium	2–20 mg/L
Sodium	12–50 mg/L

Inorganics

CRM	PT		QR
Cat. #698	Cat. #591	M	Cat. #698QR

One 500 mL whole-volume bottle is ready to analyze. The CRM is also certified for sodium at 10–400 mg/L. For a sodium PT, order Hardness, Cat. #555.

Alkalinity as $CaCO_3$	25–200 mg/L
Chloride	20–160 mg/L
Fluoride	1–8 mg/L
Nitrate as N	3–10 mg/L
Nitrate plus nitrite as N	3–10 mg/L
Potassium	10–40 mg/L
Specific conductance at 25 °C	130–1300 µmhos/cm
Sulfate	25–250 mg/L
Total dissolved solids (TDS) at 180 °C	100–1000 mg/L

Solids Concentrate

CRM	PT		QR
Cat. #5152	Cat. #5150	M	Cat. #5152QR

One 24 mL screw-cap vial with a powder yields 1 liter after dilution.

Total filterable residue (TDS) at 180 °C	100–1000 mg/L
Total solids (TS) at 105 °C	123–1100 mg/L
Total suspended solids (TSS)	23–100 mg/L

The Industry Standard for over 40 years

Kyle Jordan
Account Manager

Years with Waters ERA: 1

Trace Metals

Metals

CRM	PT		QR
Cat. #697	Cat. #590	M	Cat. #697QR

One 15 mL screw-cap vial yields up to 2 liters after dilution. Use with ICP-OES, ICP-MS, and AA methods.

Aluminum	130–1000 µg/L
Antimony	6–50 µg/L
Arsenic	5–50 µg/L
Barium	500–3000 µg/L
Beryllium	2–20 µg/L
Boron	800–2000 µg/L
Cadmium	2–50 µg/L
Chromium	10–200 µg/L
Copper	50–2000 µg/L
Iron	100–1800 µg/L
Lead	5–100 µg/L
Manganese	40–900 µg/L
Molybdenum	15–130 µg/L
Nickel	10–500 µg/L
Selenium	10–100 µg/L
Silver	20–300 µg/L
Thallium	2–10 µg/L
Vanadium	50–1000 µg/L
Zinc	200–2000 µg/L

Mercury

CRM	PT		QR
Cat. #666	Cat. #551	M	Cat. #666QR

One 15 mL screw-cap vial yields up to 1 liter after dilution. Use with CVAA, ICP-MS, or CVAFS methods.

Total mercury	0.5–10 µg/L

Hexavalent Chromium

CRM	PT		QR
Cat. #658	Cat. #854	Q	Cat. #658QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Hexavalent chromium	5–50 µg/L

Uranium

CRM	PT		QR
Cat. #930	Cat. #858	Q	Cat. #930QR

One 15 mL screw-cap vial yields up to 2 liters after dilution. Use with ICP-MS methods.

Uranium	3–104 µg/L

Vanadium

CRM	PT		QR
Cat. #660	Cat. #856	Q	Cat. #660QR

One 15 mL screw-cap vial yields up to 2 liters after dilution. Designed to meet California ELAP requirements.

Vanadium	5–50 µg/L

Disinfection By-Products

Chloral Hydrate

CRM	PT		QR
Cat. #676	Cat. #853	B	Cat. #676QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Method 551, or other applicable method. Includes chloral hydrate at 4–30 µg/L.

B Waters ERA WS Chloral Hydrate PTs open in January and July.

Haloacetic Acids (HAA)

CRM	PT		QR
Cat. #684	Cat. #852	M	Cat. #684QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Method 552, or other applicable method. Includes all the analytes below at 5–50 µg/L.

Bromochloroacetic acid
Dibromoacetic acid
Dichloroacetic acid
Monobromoacetic acid
Monochloroacetic acid
Trichloroacetic acid

Inorganic Disinfection #1

CRM	PT		QR
Cat. #5272	Cat. #5270	M	Cat. #5272QR

One 24 mL screw-cap vial yields up to 4 liters after dilution.

Chlorate ..... 60–180 µg/L
Chlorite ..... 100–1000 µg/L

Inorganic Disinfection #2

CRM	PT		QR
Cat. #5262	Cat. #5260	M	Cat. #5262QR

One 24 mL screw-cap vial yields up to 4 liters after dilution.

Bromate ..... 7–50 µg/L
Bromide ..... 50–300 µg/L

Nutrients

Ammonia as N

CRM	PT		QR
Cat. #1359	Cat. #1319	B	Cat. #1359QR

One 15 mL screw-cap vial yeilds up to 1 liter after dilution.

Ammonia as N ..... 0.1–1 mg/L

B Waters ERA WS Ammonia as N PTs open in January and July.

Nitrite

CRM	PT		QR
Cat. #695	Cat. #594	M	Cat. #695QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Nitrite as N ..... 0.4–2 mg/L

o-Phosphate Nutrients

CRM	PT		QR
Cat. #667	Cat. #558	M	Cat. #667QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

ortho-Phosphate as P ..... 0.5–5.5 mg/L

Miscellaneous Inorganic

Residual Chlorine

CRM	PT		QR
Cat. #696	Cat. #593	M	Cat. #696QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution.

Total residual chlorine ..... 0.5–3 mg/L
Free residual chlorine ..... 0.5–3 mg/L

Cyanide

CRM	PT		QR
Cat. #983	Cat. #556	M	Cat. #983QR

One 15 mL screw-cap vial yields up to 2 liters after dilution. Source material is free cyanide.

Free cyanide ..... 0.1–0.5 mg/L
Total cyanide ..... 0.1–0.5 mg/L
Cyanide ..... 0.1-0.5 mg/L

Darren Sauer
Senior Customer Service Representative

Years with Waters ERA: 22

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

All Waters ERA WS PTs open monthly (M), quarterly (Q), or biannually (B) unless otherwise noted. Quarterly months are January, April, July, and October.

Miscellaneous Inorganic (continued)

Organic Carbon

CRM	PT		QR
Cat. #669	Cat. #557	M	Cat. #669QR

One 15 mL screw-cap vial yields up to 1 liter after dilution.

Total organic carbon ..... 1.3–13 mg/L
Dissolved organic carbon ..... 1.3–13 mg/L

Perchlorate

CRM	PT		QR
Cat. #910	Cat. #903	Q	Cat. #910QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Perchlorate ..... 4–20 µg/L

pH

CRM	PT		QR
Cat. #779	Cat. #552	M	Cat. #779QR

One 250 mL whole-volume bottle is ready to analyze.

pH ..... 5–10 units

Silica

CRM	PT		QR
Cat. #785	Cat. #902	Q	Cat. #785QR

One 60 mL poly bottle yields 1 liter after dilution.

Silica as SiO_2 ..... 5–75 mg/L

Surfactants-MBAS

CRM	PT		QR
Cat. #784	Cat. #901	Q	Cat. #784QR

One 15 mL screw-cap vial yields up to 2 liters after dilution.

Surfactants-MBAS ..... 0.1–1 mg/L

Physical Property

Color

CRM	PT		QR
Cat. #661	Cat. #859	Q	Cat. #661QR

One 125 mL whole-volume bottle is ready to analyze.

Color ..... 10–75 PC units

Corrosivity

CRM	PT		QR
Cat. #980	Cat. #900	Q	Cat. #980QR

One 500 mL whole-volume bottle is ready to analyze for corrosivity, calcium carbonate saturation, and Langelier Saturation Index.

Corrosivity ..... -4 to +4 SI units

Turbidity

CRM	PT		QR
Cat. #699	Cat. #592	M	Cat. #699QR

One 15 mL screw-cap vial yields up to 1 liter after dilution. Use with nephelometric methods.

Turbidity ..... 0.5–8 NTU

UV 254 Absorbance

CRM	PT		QR
Cat. #662	Cat. #904	Q	Cat. #662QR

One 15 mL screw-cap vial yields up to 1 liter after dilution.

UV 254 absorbance ..... 0.05–0.7 cm^{-1}

Our stabilized turbidity calibration solutions give you an affordable alternative to costly turbidity consumables and deliver accurate results to help stretch your facility's budget.

View our Turbidity Standards on page 101.

Volatile Organics

1,4-Dioxane

NEW PRODUCT

CRM	PT	QR
Cat. #689	Cat. #272 B	Cat. #689QR

One 2 mL flame-sealed ampule yields 500 mL after dilution. Use with EPA method 522.

1,4-Dioxane.....0.1–10 µg/L

Gasoline Additives

CRM	PT	QR
Cat. #909	Cat. #905 Q	Cat. #909QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Method 524.2, or other applicable method for gasoline additives/oxygenates. Contains all of the analytes below at 5–50 µg/L.

- tert-Amyl methyl ether (TAME)
- tert-Butyl alcohol
- Di-isopropylether (DIPE)
- Ethyl tert-butyl ether (ETBE)
- Methyl tert-butyl ether (MTBE)
- Trichlorofluoromethane (Freon® 11)
- Trichlorotrifluoroethane (Freon 113)

Halomethanes (THMs)

CRM	PT	QR
Cat. #702	Cat. #842 M	Cat. #702QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 502.2, 524.2, 551, or other applicable method. Contains all of the analytes below at 5–50 µg/L.

- Bromodichloromethane
- Bromoform
- Chlorodibromomethane
- Chloroform

Regulated Volatiles

CRM	PT	QR
Cat. #703	Cat. #840 M	Cat. #703QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 502.2, 524.2, or other applicable method. Contains all of the analytes below at 2–50 µg/L.

- Benzene
- Carbon tetrachloride
- Chlorobenzene
- 1,2-Dichlorobenzene
- 1,4-Dichlorobenzene
- 1,2-Dichloroethane
- 1,1-Dichloroethylene
- cis-1,2-Dichloroethylene
- trans-1,2-Dichloroethylene
- 1,2-Dichloropropane
- Ethylbenzene
- Methylene chloride
- Styrene
- Tetrachloroethylene
- Toluene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethylene
- Vinyl chloride
- Xylenes, total

Unregulated Volatiles

CRM	PT	QR
Cat. #683	Cat. #841 M	Cat. #683QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 502.2, 524.2, or other applicable method. Contains at least 60% of the analytes randomly selected from the list below at 2–50 µg/L.

- Bromobenzene
- Bromochloromethane
- Bromomethane
- n-Butylbenzene
- sec-Butylbenzene
- tert-Butylbenzene
- Chloroethane
- Chloromethane
- 2-Chlorotoluene
- 4-Chlorotoluene
- Dibromomethane
- 1,3-Dichlorobenzene
- Dichlorodifluoromethane
- 1,1-Dichloroethane
- 1,3-Dichloropropane
- 2,2-Dichloropropane
- 1,1-Dichloropropene
- cis-1,3-Dichloropropene
- trans-1,3 Dichloropropene
- Fluorotrichloromethane
- Hexachlorobutadiene
- Isopropylbenzene
- 4-Isopropyltoluene
- Methyl tert-butyl ether (MTBE)
- Naphthalene
- n-Propylbenzene
- 1,1,1,2-Tetrachloroethane
- 1,1,2,2-Tetrachloroethane
- 1,2,3-Trichlorobenzene
- 1,2,3-Trichloropropane
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

All Waters ERA WS PTs open monthly (M), quarterly (Q), or biannually (B) unless otherwise noted. Quarterly months are January, April, July, and October.

Per- and Polyfluoroalkyl Substances (PFAS)

PFAS Drinking Water

NEW ANALYTES

CRM	PT		QR
Cat. #735	Cat. #960	Q	Cat. #735QR

One 2 mL flame sealed ampule yields in excess of 1.5 L after dilution. Use with EPA method 537. The diluted standard will contain 6-8 analytes in each lot selected from the list below.

11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	50–500 ng/L
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	50–500 ng/L
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	50–500 ng/L
4,8-dioxa-3H-perfluorononanoic acid (DONA)	50–500 ng/L
Hexafluoropropylene oxide dimer acid (HFPO-DA)	100–1000 ng/L
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	50–500 ng/L
Perfluorobutanesulfonic acid (PFBS)	100–1000 ng/L
Perfluorodecanoic acid (PFDA)	50–500 ng/L
Perfluorododecanoic acid (PFDoA)	50–500 ng/L
Perfluoroheptanoic acid (PFHpA)	50–500 ng/L
Perfluorohexanesulfonic acid (PFHxS)	50–500 ng/L
Perfluorohexanoic acid (PFHxA)	50–500 ng/L
Perfluorononanoic acid (PFNA)	50–500 ng/L
Perfluorooctanesulfonic acid (PFOS)	50–500 ng/L
Perfluorooctanoic acid (PFOA)	50–500 ng/L
Perfluorotetradecanoic acid (PFTDA)	50–500 ng/L
Perfluorotridecanoic acid (PFTrDA)	50–500 ng/L
Perfluoroundecanoic acid (PFUnDA)	50–500 ng/L

PFAS Ground Water & Surface Water

NEW ANALYTES

CRM	PT		QR
Cat. #731	Cat. #929	Q	Cat. #731QR

One 2 mL flame sealed ampule yields in excess of 1.5 L after dilution. Design is suitable for methods analyzing ground water or surface water. Use with LC/MS/MS techniques. The diluted standard will contain 6-12 analytes in each lot selected from the list below.

11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	100–500 ng/L
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	100–500 ng/L
4,8-dioxa-3H-perfluorononanoic acid (DONA)	100–500 ng/L
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100–500 ng/L
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	100–500 ng/L
1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS)	100–500 ng/L
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	100–500 ng/L
Hexafluoropropylene oxide dimer acid (HFPO-DA)	100–500 ng/L
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100–500 ng/L
Perfluorobutanesulfonic acid (PFBS)	100–500 ng/L
Perfluorobutanoic acid (PFBA)	100–500 ng/L
Perfluorodecane sulfonic acid (PFDS)	100–500 ng/L
Perfluorodecanoic acid (PFDA)	100–500 ng/L
Perfluorododecanoic acid (PFDoA)	100–500 ng/L
Perfluoroheptane sulfonic acid (PFHpS)	100–500 ng/L
Perfluoroheptanoic acid (PFHpA)	100–500 ng/L
Perfluorohexanesulfonic acid (PFHxS)	100–500 ng/L
Perfluorohexanoic acid (PFHxA)	100–500 ng/L
Perfluorononane sulfonic acid (PFNS)	100–500 ng/L
Perfluorononanoic acid (PFNA)	100–500 ng/L
Perfluorooctane sulfonamide (PFOSAm)	100–500 ng/L
Perfluorooctanesulfonic acid (PFOS)	100–500 ng/L
Perfluorooctanoic acid (PFOA)	100–500 ng/L
Perfluoropentanoic acid (PFPeA)	100–500 ng/L
Perfluoropentane sulfonic acid (PFPeS)	100–500 ng/L
Perfluorotetradecanoic acid (PFTDA)	100–500 ng/L
Perfluorotridecanoic acid (PFTrDA)	100–500 ng/L
Perfluoroundecanoic acid (PFUnDA)	100–500 ng/L

Pesticides

Pesticides

CRM	PT		QR
Cat. #709	Cat. #850	M	Cat. #709QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 505, 507, 508, 525, or other applicable method for organochlorine, nitrogen, and organophosphorus pesticides. Each standard contains at least 14 analytes randomly selected from the list below at 0.2–20 µg/L.

- Alachlor
- Aldrin
- Atrazine
- Bromacil
- Butachlor
- Diazinon
- Dieldrin
- Endrin
- Heptachlor
- Heptachlor epoxide (beta)
- Hexachlorobenzene
- Hexachlorocyclopentadiene
- Lindane (gamma-BHC)
- Methoxychlor
- Metolachlor
- Metribuzin
- Molinate (ordram)
- Prometon
- Propachlor
- Simazine
- Thiobencarb
- Trifluralin

Carbamate/Carbamoyloxime Pesticides

CRM	PT		QR
Cat. #707	Cat. #846	M	Cat. #707QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 531.1, 531.2, 632, or other applicable method. Each standard contains at least 8 of the analytes below at 15–150 µg/L.

- Aldicarb
- Aldicarb sulfone
- Aldicarb sulfoxide
- Baygon
- Carbaryl
- Carbofuran
- 3-Hydroxycarbofuran
- Methiocarb
- Methomyl
- Oxamyl

Chlordane

CRM	PT		QR
Cat. #705	Cat. #845	M	Cat. #705QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 505, 508, 525, or other applicable method. Each standard contains technical chlordane at 2–20 µg/L.

Toxaphene

CRM	PT		QR
Cat. #700	Cat. #844	M	Cat. #700QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 505, 508, 525, or other applicable method. Each standard contains toxaphene at 2–20 µg/L.

Brian Miller
Product Line Manager

Years with Waters ERA: 17

GET AHEAD OF INCREASING PFAS DEMANDS

PFASs have long been a contaminant of concern for environmental waters, but they are now emerging in food safety concerns. Laboratories are seeking fast and sensitive solutions to rapidly detect these pollutants in surface, ground, and waste waters to help target remediation efforts and prevent food chain contamination.

Waters offers robust analytical solutions to meet advisory levels for legacy and emerging PFASs:

- LC-MS/MS to reach detection limits in the low-to-sub ng/L range
- SPE sample preparation that allows for sample enrichment to increase sensitivity
- Large volume direct injection method to speed up analysis time
- Employ dependable solutions for POPs and chemical contaminant analysis.

Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

Learn more at www.waters.com/environmental

SAMPLE PREPARATION | CHEMISTRIES | COLUMNS | CHROMATOGRAPHY | MASS SPECTROMETRY

Pesticides (continued)

EDB/DBCP/TCP

CRM	PT		QR
Cat. #706	Cat. #847	M	Cat. #706QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 504, 551, or other applicable method. Each lot contains all analytes below at 0.05–2 µg/L.

- 1,2-Dibromo-3-chloropropane (DBCP)
- Ethylene dibromide (EDB)
- 1,2,3-Trichloropropane (1,2,3-TCP)

Low-Level 1,2,3-TCP

CRM	PT		QR
Cat. #682	Cat. #596	B	Cat. #682QR

One 2 mL flame-sealed ampule yields 100 mL after dilution. Use with California method SRL 524M, or other applicable method. Each standard contains 1,2,3-Trichloropropane (TCP) at 5-100 ng/L after dilution.

B Low-Level 1,2,3-TCP available in January and July.

Semivolatile Organics

Dioxin

CRM	PT		QR
Cat. #663	Cat. #857	Q	Cat. #663QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 613, 1613, 8280, 8290, or other applicable method. Each standard contains 2,3,7,8-TCDD at 20–100 pg/L.

PCBs as Decachlorobiphenyl

CRM	PT		QR
Cat. #708	Cat. #839	Q	Cat. #708QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Quantitative Method 508A. This standard can also be used for aroclor identification and quantification using EPA Methods 505, 508, 508.1, or other applicable method. Includes an aroclor randomly selected from the list below at 0.5–5 µg/L as decachlorobiphenyl.

- Aroclor 1016
- Aroclor 1221
- Aroclor 1232
- Aroclor 1242
- Aroclor 1248
- Aroclor 1254
- Aroclor 1260

Semivolatile Organics (continued)

Semivolatiles #1

CRM	PT		QR
Cat. #690	Cat. #848	M	Cat. #690QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 506, 525, 550, or other applicable method for PAHs, phthalates, and adipates. Each standard contains benzo(a)pyrene, bis(2-ethylhexyl)adipate, and bis(2-ethylhexyl)phthalate plus at least 13 additional analytes, selected from the list below, at 0.2–50 µg/L.

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Butyl benzyl phthalate
- Chyrsene
- Dibenz(a,h)anthracene
- Di-n-butyl phthalate
- Diethyl phthalate
- Dimethyl phthalate
- Di-n-octyl phthalate
- bis(2-Ethylhexyl)adipate
- bis(2-Ethylhexyl)phthalate
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

Naphthalene is not within the EPA/NELAC range. Use the Unregulated Volatiles standard (page 27 for this compound in the EPA/NELAC range.

Herbicides

Chlorinated Acid Herbicides

CRM	PT		QR
Cat. #704	Cat. #851	M	Cat. #704QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 515.1, 515.2, 515.3, 515.4, 555, or other applicable method. All lots include at least 10 analytes from the list below at 1–120 µg/L.

- Acifluorfen
- Bentazon
- Chloramben
- 2,4-D
- 2,4-DB
- Dacthal diacid (DCPA)
- Dalapon
- Dicamba
- 3,5-Dichlorobenzoic acid
- Dichlorprop
- Dinoseb
- 4-Nitrophenol
- Pentachlorophenol
- Picloram
- 2,4,5-T
- 2,4,5-TP (silvex)

Semivolatiles #2 Herbicides

CRM	PT		QR
Cat. #691	Cat. #849	M	Cat. #691QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Methods 547, 548, 549, or other applicable method. Each standard contains all the analytes below at 8–800 µg/L.

- Diquat
- Endothall
- Glyphosate
- Paraquat

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

All Waters ERA WS PTs open monthly (M), quarterly (Q), or biannually (B) unless otherwise noted. Quarterly months are January, April, July, and October.

MAGNIFY YOUR DIOXIN DETECTION

The analysis of dioxins is particularly demanding due to encountered low-level regulatory exposure limits and complex sample matrices. Waters provides LC-MS/MS and GC-MS/MS systems for the detection and quantification of dioxins and related compounds at ultra-trace levels. Combined with our analytical standards & reagents, proficiency testing (ERA), column and sample preparation products, and data management software, these solutions are designed to:

- Increase accuracy
- Enhance sensitivity
- Accelerate throughput
- Ensure compliance

Employ dependable solutions for POPs and chemical contaminant analysis.

Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

Learn more at www.waters.com/environmental

SAMPLE PREPARATION | CHEMISTRIES | COLUMNS | CHROMATOGRAPHY | MASS SPECTROMETRY

MICROBIOLOGY

Matrices with low and high concentrations of analytes for testing bacteria in drinking water and waste water. Samples are delivered as lyophilized pellets in a glass vial with phosphate buffer dilution water.

Water Pollution PT Schedule

2020

	Scheme #	Opens	Closes
Q	WP 300	Jan 13	Feb 27
	WP 301	Feb 10	Mar 26
	WP 302	Mar 9	Apr 23
Q	WP 303	Apr 13	May 28
	WP 304	May 11	Jun 25
	WP 305	Jun 8	Jul 23
Q	WP 306	Jul 13	Aug 27
	WP 307	Aug 10	Sep 24
	WP 308	Sep 8	Oct 23
Q	WP 309	Oct 9	Nov 23
	WP 310	Nov 13	Dec 28
	WP 311	Dec 11	Jan 25, 2021

2021

	Scheme #	Opens	Closes
Q	WP 312	Jan 18	Mar 4
	WP 313	Feb 15	Apr 1
	WP 314	Mar 15	Apr 29
Q	WP 315	Apr 12	May 27
	WP 316	May 17	Jul 1
	WP 317	Jun 14	Jul 29
Q	WP 318	Jul 19	Sep 2
	WP 319	Aug 16	Sep 30
	WP 320	Sep 13	Oct 28
Q	WP 321	Oct 15	Nov 29
	WP 322	Nov 12	Dec 27
	WP 323	Dec 13	Jan 27, 2022

Schedule subject to change – see Waters ERA's website at www.eraqc.com

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

PT: A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

QR: Similar to a Proficiency Test, a QuiK Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. QuiK Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants – chemical analytical labs.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

Water Supply PT Schedule

2020

	Scheme #	Opens	Closes
Q	**WS 282**	Jan 6	Feb 20
	WS 283	Feb 3	Mar 19
	WS 284	Mar 2	Apr 16
Q	**WS 285**	Apr 6	May 21
	WS 286	May 4	Jun 18
	WS 287	Jun 1	Jul 16
Q	**WS 288**	Jul 6	Aug 20
	WS 289	Aug 3	Sep 17
	WS 290	Sep 1	Oct 16
Q	**WS 291**	Oct 2	Nov 16
	WS 292	Nov 2	Dec 17
	WS 293	Dec 4	Jan 18, 2021

2021

	Scheme #	Opens	Closes
Q	**WS 294**	Jan 11	Feb 25
	WS 295	Feb 8	Mar 25
	WS 296	Mar 8	Apr 22
Q	**WS 297**	Apr 5	May 20
	WS 298	May 10	Jun 24
	WS 299	Jun 7	Jul 22
Q	**WS 300**	Jul 12	Aug 26
	WS 301	Aug 9	Sep 23
	WS 302	Sep 7	Oct 22
Q	**WS 303**	Oct 8	Nov 22
	WS 304	Nov 5	Dec 20
	WS 305	Dec 6	Jan 20, 2022

All Waters ERA Microbiology PTs open monthly (M), quarterly (Q), or biannually (B) unless otherwise noted. Waters ERA Massachusetts Ground Water Enterococci PT is available any time. Quarterly months are January, April, July, and October.

WP Microbiology

Wastewater Coliform Microbe

CRM	PT		QR
Cat. #083	Cat. #576	M	Cat. #786QR

Each PT sample is one lyophilized quantitative standard for use with all Clean Water Act quantitative methods, including MF and MPN. If determining MPN by SM 9221 or similar multiple tube techniques, use 083A, 576A, or 786A.

CRM also includes one blank sample. Each standard can be used for total coliform, fecal coliform, and *E. coli* which are present in the range 20–2400 CFU/100 mL or MPN/100 mL.

Wastewater Coliform Microbe – 9221

CRM	PT		QR
Cat. #083A	Cat. #576A	M	Cat. #786AQR

Each PT sample is one lyophilized quantitative standard for use with Standard Methods 9221 or similar multiple tube techniques.

CRM also includes one blank sample. Each standard can be used for total coliform, fecal coliform, and *E. coli* which are present in the range of 20–2400 MPN/100 mL.

Enterococci

CRM	PT		QR
Cat. #081	Cat. #880	Q	Cat. #787QR

Each PT sample is one lyophilized standard, which can be analyzed for enterococci and/or fecal streptococci, MF or MPN in the range 20–1000 CFU/100 mL or MPN/100 mL.

CRM also includes one blank sample. Use with EPA Methods 1106.1 and 1600, ASTM Methods D5259-92, D6503-99, and Standard Methods 9230B and 9230C, and Enterolert Quantitray.

Heterotrophic Plate Count

PT	
Cat. #935	B

One lyophilized sample containing a Heterotrophic bacteria. SPC PT standards are required for laboratories seeking NELAC accreditation as well as by many other state programs.

B Offered Biannually in March and September.

WS Microbiology

Heterotrophic Plate Count

CRM	PT		QR
Cat. #084	Cat. #079	M	Cat. #084QR

Each sample is one lyophilized standard containing a heterotrophic bacteria present in the range 5–500 CFU/mL or MPN/mL. Use with the Standard Methods 9215B – Pour Plate Method, and Most Probable Number (MPN) Method (simplate).

Potable Water Coliform Microbe

CRM	PT		QR
Cat. #694	Cat. #080	M	Cat. #085QR

Each sample set consists of lyophilized standards for the presence or absence analysis of total coliform, fecal coliform, and *E. coli*. The standards are applicable to all SDWA promulgated methods-MF, MPN, presence/absence, and ONPG-MUG. The Potable Water Coliform Microbe PT standard is available in all 12-monthly WS studies.

Source Water Microbe

CRM	PT		QR
Cat. #078	Cat. #595	Q	Cat. #078QR

Each sample is one lyophilized quantitative standard containing *E. coli* in the range 20–200 CFU/100 mL or MPN/100 mL. Use with all SDWA quantitative methods. Each standard can be used for total coliform, fecal coliform, and *E. coli*. If determining MPN by SM 9221 or similar multiple tube techniques, use 078A, 595A, and 078AQR.

Source Water Microbe – 9221

CRM	PT		QR
Cat. #078A	Cat. #595A	Q	Cat. #078AQR

Each sample is one lyophilized quantitative standard containing *E. coli* in the range of 20–200 MPN/100 mL for use with Standard Methods 9221 or similar multiple tube techniques. Each standard can be used for total coliforms, fecal coliforms, and *E. coli*.

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

All Waters ERA Microbiology PTs open monthly (M) or quarterly (Q). Quarterly months are January, April, July, and October.

State-Specific Microbiology

Massachusetts Ground Water Enterococci

CRM	PT	
Cat. #081	Cat. #077	*

Each PT sample set is composed of 10 lyophilized samples to be analyzed for presence or absence of enterococci. This sample is specifically designed for the State of Massachusetts certification for compliance with the federal Ground Water Rule. Each CRM sample set is composed of two lyophilized samples - one quantitative positive and one blank.

* Massachusetts Ground Water Enterococci PT is available any time.

Mike Blades
Technical Manager

Years with Waters ERA: 26

GOING BEYOND THE STANDARD

Supplying Proficiency Testing (PT) and Certified Reference Material (CRM) standards is not unique. What sets us apart is our commitment to being more than a standards provider. Since 1977, we've worked as your partner, helping you produce reliable, defensible data, maintain critical accreditations, and make your laboratory successful.

- **Data Tools to Help You Succeed:** eDATA online PT data management portal allows you to effectively manage your proficiency testing program, assess risk, and evaluate trends over time.
- **Expert Guidance at Your Fingertips:** Direct access to one of the most qualified Customer Service and Technical Support teams in the environmental PT and CRM industry.
- **Superior Standards for Better Results:** Waters ERA maintains ISO 17025, ISO 17034, and ISO 17043 accreditations, giving you greater confidence in your data due to the largest studies, two-day report turn-around time, and more reliable performance evaluations.

SOIL

Matrices designed to fulfill requirements for monitoring soil and solid matrices. Dried and homogenized standards of soil and sewage sludge may be used to satisfy PT requirements.

Soil (including UST in Soil) PT Schedule

2020

	Scheme #	Opens	Closes
Q	**SOIL 109**	Jan 20	Mar 5
Q	**SOIL 110**	Apr 20	Jun 4
Q	**SOIL 111**	Jul 20	Sep 3
Q	**SOIL 112**	Oct 16	Nov 30

2021

	Scheme #	Opens	Closes
Q	**SOIL 113**	Jan 25	Mar 11
Q	**SOIL 114**	Apr 19	Jun 3
Q	**SOIL 115**	Jul 26	Sep 9
Q	**SOIL 116**	Oct 22	Dec 6

Schedule subject to change – see Waters ERA's website at www.eraqc.com

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

PT: A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

QR: Similar to a Proficiency Test, a QuiK Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. QuiK Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants – chemical analytical labs.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

All ERA Soil PTs open quarterly (Q) or biannually (B), unless otherwise noted. Quarterly months are January, April, July, and October.

Metals

Metals in Soil

CRM	PT		QR
Cat. #540	Cat. #620	Q	Cat. #540QR

One 40 g soil sample in a screw-cap bottle for all ICP and AA, RCRA and Superfund Methods including EPA Digestion Methods 3050 Hot Plate and 3051 Microwave, or other applicable methods. Includes all metals shown below.

Aluminum	2500–25,000 mg/kg
Antimony	80–300 mg/kg
Arsenic	40–400 mg/kg
Barium	100–1000 mg/kg
Beryllium	40–400 mg/kg
Boron	80–800 mg/kg
Cadmium	40–400 mg/kg
Calcium	1500–25,000 mg/kg
Chromium	40–400 mg/kg
Cobalt	40–400 mg/kg
Copper	40–400 mg/kg
Iron	5000–50000 mg/kg
Lead	40–400 mg/kg
Magnesium	1200–25,000 mg/kg
Manganese	100–2000 mg/kg
Mercury	1–35 mg/kg
Molybdenum	30–300 mg/kg
Nickel	40–500 mg/kg
Potassium	1400–25,000 mg/kg
Selenium	40–400 mg/kg
Silver	20–100 mg/kg
Sodium	150–15,000 mg/kg
Strontium	40–400 mg/kg
Thallium	40–400 mg/kg
Tin	50–250 mg/kg
Titanium	10–2000 mg/kg
Uranium	1–250 mg/kg
Vanadium	40–400 mg/kg
Zinc	100–1000 mg/kg

Hexavalent Chromium in Soil

CRM	PT		QR
Cat. #921	Cat. #876	Q	Cat. #921QR

One 40 g standard in a screw-cap bottle for use with all promulgated hexavalent chromium methods.

Hexavalent chromium	40–300 mg/kg

TCLP Metals in Soil

CRM	PT		QR
Cat. #544	Cat. #629	Q	Cat. #544QR

One 105 g soil standard in a screw-cap bottle designed specifically to meet all state requirements for TCLP extraction and analysis for the metals listed below. Sample is designed to be extracted with fluid #1.

Antimony	Cadmium	Nickel
Arsenic	Chromium	Selenium
Barium	Lead	Silver
Beryllium	Mercury	Zinc

Metals in Sewage Sludge

CRM	PT		QR
Cat. #160	Cat. #619	Q	Cat. #160QR

One 40 g sludge standard in a screw-cap bottle to be analyzed for the metals listed below.

Aluminum	1000–50,000 mg/kg
Antimony	80–300 mg/kg
Arsenic	50–400 mg/kg
Barium	250–2000 mg/kg
Beryllium	30–200 mg/kg
Cadmium	40–300 mg/kg
Calcium	5000–70,000 mg/kg
Chromium	40–300 mg/kg
Cobalt	5–50 mg/kg
Copper	40–1000 mg/kg
Iron	1000–50,000 mg/kg
Lead	50–250 mg/kg
Magnesium	1200–25,000 mg/kg
Manganese	100–2000 mg/kg
Mercury	1–50 mg/kg
Molybdenum	5–250 mg/kg
Nickel	40–250 mg/kg
Potassium	1400–25,000 mg/kg
Selenium	50–250 mg/kg
Silver	50–250 mg/kg
Sodium	150–15,000 mg/kg
Strontium	200–2000 mg/kg
Thallium	50–250 mg/kg
Vanadium	5–250 mg/kg
Zinc	70–1500 mg/kg

Physical Parameters

Corrosivity/pH in Soil

CRM	PT		QR
Cat. #914	Cat. #875	Q	Cat. #914QR

One 100 g soil standard in a screw-cap bottle. Use to measure corrosivity.

Corrosivity/pH	2–12 S.U.

Ignitability/Flash Point

CRM	PT		QR
Cat. #979	Cat. #874	Q	Cat. #979QR

One standard packaged in three 30 mL bottles. Use to measure ignitability.

Ignitability/flashpoint	100–200 °F

Oil & Grease

Oil & Grease in Soil

CRM	PT		QR
Cat. #549	Cat. #867	Q	Cat. #549QR

One screw-cap bottle containing 50 g of soil ready to analyze. Use with gravimetric method 9071B or infrared spectrometric analysis.

- n-Hexane extractable material (O&G) (Gravimetric) ..... 300–3000 mg/kg
- n-Hexane extractable material (O&G) (Infrared) ..... 300–3000 mg/kg

Inorganics

Anions in Soil

CRM	PT		QR
Cat. #543	Cat. #873	Q	Cat. #543QR

One 40 g soil standard in a screw-cap bottle designed for a DI water extraction procedure for all the anions listed below.

- Bromide ..... 10–100 mg/kg
- Chloride ..... 200–1000 mg/kg
- Fluoride ..... 25–500 mg/kg
- Nitrate as N ..... 25–500 mg/kg
- Phosphate as P ..... 25–500 mg/kg
- Sulfate ..... 25–2000 mg/kg

Cyanide in Soil

CRM	PT		QR
Cat. #541	Cat. #621	Q	Cat. #541QR

One 40 g soil standard in a screw-cap bottle for all distillation/colorimetric methods.

- Total cyanide ..... 20–200 mg/kg
- Amenable cyanide ..... 0–100 mg/kg

Nutrients in Soil

CRM	PT		QR
Cat. #542	Cat. #869	Q	Cat. #542QR

One 40 g soil standard in a screw-cap bottle. Use to analyze for all the nutrients listed below.

- Ammonia as N ..... 300–3000 mg/kg
- Total Kjeldahl nitrogen as N ..... 400–4000 mg/kg
- Total organic carbon (TOC) ..... 1000–20,000 mg/kg
- Total phosphorus as P ..... 300–3000 mg/kg

Nutrients in Sludge

CRM
Cat. #545

One 40 g sludge standard in a screw-cap bottle is ready for analysis.

- Ammonia as N ..... 0.1–5% (w/w)
- Total Kjeldahl nitrogen as N ..... 2–10% (w/w)
- Total organic carbon (TOC) ..... 5–50% (w/w)
- Total phosphorus as P ..... 0.5–10% (w/w)

Volatiles

Volatiles in Soil

CRM	PT		QR
Cat. #721	Cat. #623	Q	Cat. #721QR

One 2 mL flame-sealed ampule in methanol requires spiking onto the provided ten grams of solid matrix before analysis. Use with EPA Methods 8021, 8260, or other applicable methods. Includes a subset of the analytes listed below at 20–200 µg/kg (40–400 µg/kg for total xylenes, 80–1000 for selected ketones, and 100–1000 µg/kg for acetonitrile).

- Acetone
- Acetonitrile
- Acrolein
- Benzene
- Bromobenzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- 2-Butanone (MEK)
- n-Butylbenzene
- sec-Butylbenzene
- tert-Butylbenzene
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chlorodibromomethane
- Chloroethane
- 2-Chloroethyl vinyl ether
- Chloroform
- Chloromethane
- 2-Chlorotoluene
- 4-Chlorotoluene
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (EDB)
- Dibromomethane
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- Dichlorodifluoromethane
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethylene
- cis-1,2-Dichloroethylene
- trans-1,2-Dichloroethylene
- 1,2-Dichloropropane
- 1,3-Dichloropropane
- 2,2-Dichloropropane
- 1,1-Dichloropropene
- cis-1,3-Dichloropropylene
- trans-1,3-Dichloropropylene
- Ethylbenzene
- Hexachlorobutadiene
- Hexachloroethane
- 2-Hexanone
- Isopropylbenzene
- p-Isopropyltoluene
- Methyl tert-butyl ether (MTBE)
- 4-Methyl-2-pentanone (MIBK)
- Methylene chloride
- Naphthalene
- Nitrobenzene
- n-Propylbenzene
- Styrene
- 1,1,1,2-Tetrachloroethane
- 1,1,2,2-Tetrachloroethane
- Tetrachloroethene
- Toluene
- 1,2,3-Trichlorobenzene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethene
- Trichlorofluoromethane
- 1,2,3-Trichloropropane
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Vinyl acetate
- Vinyl chloride
- m&p-Xylene
- o-Xylene
- Xylenes, total

This standard is not compliant with the NELAC concentration for hexachloroethane, hexachlorobutadiene, and nitrobenzene. If a NELAC compliant sample is required for these analytes, use Ready-to-Use VOAs in Soil, or Base/Neutrals and Acids in Soil.

1,4-Dioxane in Soil

NEW PRODUCT

CRM	PT		QR
Cat. #538	Cat. #461	B	Cat. #538QR

One 2 mL flame-sealed ampule requires spiking onto the provided ten grams of solid matrix before analysis. Use with modified versions of EPA method 8260, 1624 or other applicable methods.

- 1,4-Dioxane ..... 20–200 ug/kg

Gasoline Range Organics (GRO) in Soil

CRM	PT		QR
Cat. #763	Cat. #630	Q	Cat. #763QR

One flame-sealed ampule with 20 g of soil spiked with unleaded regular gasoline in the range 100–2000 mg/kg. Use with purge and trap and modified EPA 8015 GC/FID Methods, or other applicable methods. Also use to test for BTEX in gasoline.

Note: This standard is not compliant with the NELAC concentration ranges for the BTEX analytes. If a NELAC-compliant sample for these analytes is required, use Volatiles in Soil, Cat. #623 or BTEX & MTBE Soil, Cat. #633.

All ERA Soil PTs open quarterly (Q) or biannually (B), unless otherwise noted. Quarterly months are January, April, July, and October.

Volatiles (continued)

BTEX & MTBE in Soil

CRM	PT	QR
Cat. #761	Cat. #633 Q	Cat. #761QR

One 2 mL flame-sealed ampule requires spiking onto the ten grams of provided certified clean soil. Includes the anlaytes below at 20–200 µg/kg (40–400 µg/kg for total xylenes). Use with EPA Method 8021, or other applicable methods.

- Benzene
- Ethylbenzene
- Methyl tert-butyl ether (MTBE)
- Toluene
- Xylenes, total
- m&p Xylene
- o-Xylene

Ready-to-Use VOAs in Soil

CRM	PT	QR
Cat. #924	Cat. #870 Q	Cat. #924QR

One 20 mL flame-sealed ampule containing 10 g of soil and 10 mL of methanol is ready to analyze. Use with EPA Methods 8021, 8260, or other applicable methods. Includes a subset of the analytes listed below at 1000–20,000 µg/kg.

- Acetone
- Acetonitrile
- Acrolein
- Benzene
- Bromobenzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- 2-Butanone (MEK)
- n-Butylbenzene
- sec-Butylbenzene
- tert-Butylbenzene
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chlorodibromomethane
- Chloroethane
- 2-Chloroethyl vinyl ether
- Chloroform
- Chloromethane
- 2-Chlorotoluene
- 4-Chlorotoluene
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (EDB)
- Dibromomethane
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- Dichlorodifluoromethane
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethene
- cis-1,2-Dichloroethylene
- trans-1,2-Dichloroethylene
- 1,2-Dichloropropane
- 1,3-Dichloropropane
- 2,2-Dichloropropane
- 1,1-Dichloropropene
- cis-1,3-Dichloropropylene
- trans-1,3-Dichloropropylene
- Ethylbenzene
- Hexachlorobutadiene
- Hexachloroethane
- 2-Hexanone
- Isopropylbenzene
- p-Isopropyltoluene
- Methyl tert-butyl ether (MTBE)
- 4-Methyl-2-pentanone (MIBK)
- Methylene chloride
- Naphthalene
- Nitrobenzene
- n-Propylbenzene
- Styrene
- 1,1,1,2-Tetrachloroethane
- 1,1,2,2-Tetrachloroethane
- Tetrachloroethene
- Toluene
- 1,2,3-Trichlorobenzene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethene
- Trichlorofluoromethane
- 1,2,3-Trichlorobenzene
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Vinyl acetate
- Vinyl chloride
- m&p-Xylene
- o-Xylene
- Xylenes, total

Total Petroleum Hydrocarbons

Total Petroleum Hydrocarbons (TPH) in Soil #1

CRM	PT	QR
Cat. #570	Cat. #632 Q	Cat. #572QR

One screw-top bottle with 50 g of soil to be analyzed for TPH. Use with EPA IR or Gravimetric Methods 8440, 9071B, or other applicable methods.

- Non-polar extractable material (TPH) (Gravimetric) ..... 300–3000 mg/kg
- Non-polar extractable material (TPH) (IR) ..... 300–3000 mg/kg

Total Petroleum Hydrocarbons (TPH) in Soil #2

CRM	PT	QR
Cat. #571	Cat. #632 Q	Cat. #572QR

One screw-top bottle with 50 g of soil to be analyzed for TPH in the presence of interfering fatty acids. Use with EPA IR or Gravimetric Methods 8440, 9071B, or other applicable methods.

- Non-polar extractable material (TPH) (Gravimetric) ..... 300–3000 mg/kg
- Non-polar extractable material (TPH) (IR) ..... 300–3000 mg/kg

TCLP

TCLP Volatiles

CRM	QR
Cat. #730	Cat. #730QR

One 2 mL flame-sealed ampule containing a subset of the analytes listed below, each at a concentration of 0.05–2.0 mg/L.

- Benzene
- 2-Butanone (MEK)
- Carbon tetrachloride
- Chlorobenzene
- Chloroform
- 1,4-Dichlorobenzene
- 1,2-Dichloroethane
- 1,1-Dichloroethylene
- Tetrachloroethylene
- Trichloroethylene
- Vinyl chloride

TCLP Semivolatiles

CRM	QR
Cat. #737	Cat. #737QR

One 2 mL flame-sealed ampule containing a subset of the analytes listed below, each at a concentration of 0.1–2.0 mg/L after dilution. All unspiked analytes are certified at <0.5 mg/L.

- 1,4-Dichlorobenzene
- 2,4-Dinitrotoluene
- Hexachlorobenzene
- Hexachlorobutadiene
- Hexachloroethane
- 2-Methylphenol
- 3 & 4-Methylphenol
- Nitrobenzene
- Pentachlorophenol
- Pyridine
- 2,4,5-Trichlorophenol
- 2,4,6-Trichlorophenol

TCLP Organochlorine Pesticides

CRM	QR
Cat. #732	Cat. #732QR

One 2 mL flame-sealed ampule containing a subset of the analytes listed below, each at a concentration of 0.01–0.2 mg/L after dilution. All unspiked analytes are certified at <0.1 mg/L.

- Endrin
- Heptachlor
- Heptachlor epoxide
- gamma-BHC (Lindane)
- Methoxychlor

Semivolatiles

Nitroaromatics & Nitramines in Soil

CRM	PT	QR
Cat. #920	Cat. #871 Q	Cat. #920QR

Two flame-sealed ampules each containing 30 g of soil are ready to analyze. Use for EPA Methods 8330, 8091, or other applicable methods. Includes a subset of the analytes listed below at 1500–15,000 µg/kg.

- 4-Amino-2,6-dinitrotoluene
- 2-Amino-4,6-dinitrotoluene
- 1,3-Dinitrobenzene
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- HMX
- Nitrobenzene
- 2-Nitrotoluene
- 3-Nitrotoluene
- 4-Nitrotoluene
- RDX
- Tetryl
- 1,3,5-Trinitrobenzene
- 2,4,6-Trinitrotoluene

Per- & Polyfluoroalkyl Substances (PFAS) in Soil

NEW ANALYTES

CRM	PT	QR
Cat. #604	Cat. #462 Q	Cat. #604QR

One flame-sealed ampule containing 10 g of soil. The standard is certified for all analytes listed below. Each lot will be spiked with 6-12 of the analytes specified in the range of 20-100 µg/kg (40-100 µg/kg for HFPO-DA). Design is suitable for methods analyzing these components with LC-MS/MS techniques.

- 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)..... 20-100 µg/kg
- 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)..... 20-100 µg/kg
- 4,8-dioxa-3H-perfluorononanoic acid (DONA)..... 20-100 µg/kg
- N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)..... 20-100 µg/kg
- 1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)..... 20-100 µg/kg
- 1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS)..... 20-100 µg/kg
- 1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)..... 20-100 µg/kg
- Hexafluoropropylene oxide dimer acid (HFPO-DA)..... 40-100 µg/kg
- N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)..... 20-100 µg/kg
- Perfluorobutanesulfonic acid (PFBS)..... 20-100 µg/kg
- Perfluorobutanoic acid (PFBA)..... 20-100 µg/kg
- Perfluorodecane sulfonic acid (PFDS)..... 20-100 µg/kg
- Perfluorodecanoic acid (PFDA)..... 20-100 µg/kg
- Perfluorododecanoic acid (PFDoA)..... 20-100 µg/kg
- Perfluoroheptane sulfonic acid (PFHpS)..... 20-100 µg/kg
- Perfluoroheptanoic acid (PFHpA)..... 20-100 µg/kg
- Perfluorohexanesulfonic acid (PFHxS)..... 20-100 µg/kg
- Perfluorohexanoic acid (PFHxA)..... 20-100 µg/kg
- Perfluorononane sulfonic acid (PFNS)..... 20-100 µg/kg
- Perfluorononanoic acid (PFNA)..... 20-100 µg/kg
- Perfluorooctane sulfonamide (PFOSAm)..... 20-100 µg/kg
- Perfluorooctanesulfonic acid (PFOS)..... 20-100 µg/kg
- Perfluorooctanoic acid (PFOA)..... 20-100 µg/kg
- Perfluoropentanoic acid (PFPeA)..... 20-100 µg/kg
- Perfluoropentane sulfonic acid (PFPeS)..... 20-100 µg/kg
- Perfluorotetradecanoic acid (PFTDA)..... 20-100 µg/kg
- Perfluorotridecanoic acid (PFTrDA)..... 20-100 µg/kg
- Perfluoroundecanoic acid (PFUnDA)..... 20-100 µg/kg

Low-Level PAHs in Soil

CRM	PT	QR
Cat. #722	Cat. #625 Q	Cat. #722QR

Two flame-sealed ampules each containing 30 g are ready to analyze. Use for EPA HPLC Method 8310, 8270 SIM, or other applicable method. Includes a subset of the analytes listed below at 50–1000 µg/kg.

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Chrysene
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

Diesel Range Organics (DRO) in Soil

CRM	PT	QR
Cat. #765	Cat. #631 Q	Cat. #765QR

One flame-sealed ampule with 20 g of soil spiked with #2 Diesel Fuel in the range 300–3000 mg/kg. Use with modified EPA Method 8015, or other applicable GC/FID methods.

Glycols in Soil

CRM	PT	QR
Cat. #928	Cat. #463 Q	Cat. #928QR

Two flame-sealed ampules each containing 30 g of soil are ready-to-use. Use with EPA Methods 8015B, 8430, 1671, or other applicable method. Includes all the analytes listed below at 75-200 mg/kg.

- Diethylene glycol
- Ethylene glycol
- Propylene glycol
- Tetraethylene glycol
- Triethylene glycol

Base/Neutrals & Acids in Soil

CRM	PT	QR
Cat. #727	Cat. #467 Q	Cat. #727QR

Two flame-sealed ampules each containing 30 g of soil are ready-to-use. Use with EPA Method 8270, or other applicable method. Includes a subset of the analytes listed below at 1000–15,000 µg/kg.

- Acenaphthene
- Acenaphthylene
- 2-Amino-1-methylbenzene (o-Toluidine)
- Aniline
- Anthracene
- Benzidine
- Benzoic acid
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Benzyl alcohol
- 4-Bromophenyl phenyl ether
- Butyl benzyl phthalate
- Carbazole
- 4-Chloroaniline
- bis(2-Chloroethyl)ether
- bis(2-Chloroethoxy)methane
- 4-Chloro-3-methylphenol
- 1-Chloronaphthalene
- 2-Chloronaphthalene
- 2-Chlorophenol
- 4-Chlorophenyl phenyl ether
- Chrysene
- Dibenz(a,h)anthracene
- Dibenzofuran
- Di-n-butyl phthalate
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- 3,3'-Dichlorobenzidine
- 2,4-Dichlorophenol
- 2,6-Dichlorophenol
- Diethyl phthalate
- 2,4-Dimethylphenol
- Dimethyl phthalate
- 2,4-Dinitrophenol
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- Di-n-octyl phthalate
- bis(2-Ethylhexyl)phthalate
- Fluoranthene
- Fluorene
- Hexachlorobenzene
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- Hexachloroethane
- Indeno(1,2,3-cd)pyrene
- Isophorone
- 2-Methyl-4,6-dinitrophenol
- 2-Methylnaphthalene
- 2-Methylphenol
- 3 & 4-Methylphenol
- Naphthalene
- 2-Nitroaniline
- 3-Nitroaniline
- 4-Nitroaniline
- Nitrobenzene
- 2-Nitrophenol
- 4-Nitrophenol
- N-Nitrosodiethylamine
- N-Nitrosodimethylamine
- N-Nitrosodiphenylamine
- N-Nitroso-di-n-propylamine
- 2,2'-Oxybis(1-Chloropropane)
- Pentachlorobenzene
- Pentachlorophenol
- Phenanthrene
- Phenol
- Pyrene
- Pyridine
- 1,2,4,5-Tetrachlorobenzene
- 2,3,4,6-Tetrachlorophenol
- 1,2,4-Trichlorobenzene
- 2,4,5-Trichlorophenol
- 2,4,6-Trichlorophenol

All ERA Soil PTs open quarterly (Q) or biannually (B), unless otherwise noted. Quarterly months are January, April, July, and October.

Herbicides

Chlorinated Acid Herbicides in Soil

CRM	PT		QR
Cat. #723	Cat. #626	Q	Cat. #723QR

Two flame-sealed ampules, each containing 30 g of soil are ready-to-use. Use with EPA Method 8151, or other applicable methods. Includes a subset of the analytes listed below at 100–1000 µg/kg (MCPA & MCPP 1000–10,000 µg/kg).

Acifluorfen	Dalapon	MCPP
Bentazon	Dicamba	4-Nitrophenol
Chloramben	3,5-Dichlorobenzoic acid	Pentachlorophenol
2,4-D	Dichlorprop	Picloram
2,4-DB	Dinoseb	2,4,5-T
Dacthal diacid (DCPA)	MCPA	2,4,5-TP (Silvex)

This standard is not compliant with the NELAC concentration for 4-Nitrophenol. If a NELAC compliant sample is required for this analyte, use Base/Neutrals and Acids in Soil.

PCBs

PCBs in Oil

CRM	PT		QR
Cat. #563	Cat. #817	Q	Cat. #563QR

One 10 mL flame-sealed ampule is ready to analyze. Contains a different Aroclor, randomly selected from the list below at 10–50 mg/kg.

Aroclor 1016	Aroclor 1242	Aroclor 1254
Aroclor 1221	Aroclor 1248	Aroclor 1260
Aroclor 1232		

PCBs in Oil Standards

PCBs in oil standards are sold individually in ready-to-use flame-sealed ampules with 5 g of oil. Use with EPA Methods 8082, EPA-600/4-81-045, Sept. 1982, or other applicable methods. LOW LEVEL standards contain an aroclor in the range 10–50 ppm. HIGH LEVEL standards contain an aroclor in the range 51–500 ppm.

CRM Cat. #	Concentration	Aroclor	Range
820	Low	1242	10–50 ppm
821	High	1242	51–500 ppm
826	Low	1248	10–50 ppm
827	High	1248	51–500 ppm
822	Low	1254	10–50 ppm
823	High	1254	51–500 ppm
824	Low	1260	10–50 ppm
825	High	1260	51–500 ppm

PCBs in Soil

CRM	PT		QR
Cat. #726	Cat. #624	Q	Cat. #726QR

One screw-top bottle containing 50 grams of standard is ready to analyze. Use with EPA Method 8082, or other applicable methods. Each standard includes a different aroclor randomly selected from the list below at 1–50 mg/kg.

Aroclor 1016	Aroclor 1242	Aroclor 1254
Aroclor 1221	Aroclor 1248	Aroclor 1260
Aroclor 1232		

PCBs in Soil Standards

PCBs in soil standards are sold individually in screw-top bottles containing 50 g of soil. Use with EPA Methods 8082, 4020, or other applicable methods. LOW LEVEL standards contain an aroclor in the range 0.5–50 ppm. HIGH LEVEL standards contain an aroclor in the range 51–500 ppm.

CRM Cat. #	Concentration	Aroclor	Range
490	Low	1242	0.5–50 ppm
491	High	1242	51–500 ppm
496	Low	1248	0.5–50 ppm
497	High	1248	51–500 ppm
492	Low	1254	0.5–50 ppm
493	High	1254	51–500 ppm
494	Low	1260	0.5–50 ppm
495	High	1260	51–500 ppm

Heidi Senft
Quality Analyst

Years with Waters ERA: 20

Darwin Baxter
Application Engineer

Years with Waters ERA: 12

Pesticides

Organochlorine Pesticides in Soil

CRM	PT		QR
Cat. #728	Cat. #468	Q	Cat. #728QR

Two flame-sealed ampules each containing 30 g of soil are ready-to-use. Use with EPA Method 8081, or other applicable methods. Includes a subset of the analytes listed below at 50–500 µg/kg.

- Aldrin
- alpha-BHC
- beta-BHC
- delta-BHC
- gamma-BHC (Lindane)
- alpha-Chlordane
- gamma-Chlordane
- 4,4'-DDD
- 4,4'-DDE
- 4,4'-DDT
- Dieldrin
- Endosulfan I
- Endosulfan II
- Endosulfan sulfate
- Endrin
- Endrin aldehyde
- Endrin ketone
- Heptachlor
- Heptachlor epoxide
- Methoxychlor

Chlordane in Soil

CRM	PT		QR
Cat. #725	Cat. #628	Q	Cat. #725QR

One screw-top bottle containing 50 g of soil is ready to analyze. Use with EPA Method 8081, or other applicable methods. The standard contains technical chlordane at 100–1000 µg/kg.

Toxaphene in Soil

CRM	PT		QR
Cat. #724	Cat. #627	Q	Cat. #724QR

One screw-top bottle containing 50 g of soil is ready to analyze. Use with EPA Method 8081, or other applicable methods. The standard contains toxaphene at 200–2000 µg/kg.

Carbamate Pesticides in Soil

CRM	PT		QR
Cat. #926	Cat. #879	Q	Cat. #926QR

Two flame-sealed ampules, each containing 30 g of soil are ready to analyze. Use with EPA Methods 8318, 8321, or other applicable methods. Each standard contains a subset of the analytes listed below at 250–2500 µg/kg.

- Aldicarb
- Aldicarb sulfone
- Aldicarb sulfoxide
- Carbaryl
- Carbofuran
- Dioxacarb
- Diuron
- 3-Hydroxycarbofuran
- Methiocarb
- Methomyl
- Oxamyl
- Promecarb
- Propham
- Propoxur

Organophosphorus Pesticides (OPP) in Soil

CRM	PT		QR
Cat. #925	Cat. #878	Q	Cat. #925QR

Two flame-sealed ampules, each containing 30 g of soil are ready to analyze. Use with EPA Method 8141, or other applicable methods. Each standard contains a subset of the analytes listed below at 100–1000 µg/kg.

- Azinphos-methyl (Guthion)
- Chlorpyrifos
- Demeton
- Demeton O & S
- Diazinon
- Dichlorvos (DDVP)
- Disulfoton
- Ethyl parathion (Parathion)
- Malathion
- Methyl parathion
- Phorate
- Ronnel
- Stirophos (Tetrachlorovinphos)
- Terbufos

Blank Soil

Metals & Cyanide Blank Sand

CRM
Cat. #058

One 40 g sand sample in a screw-cap bottle. The concentrations of all EPA/NELAC including the priority pollutant metal and cyanide analytes are below the CLP Required Detection Limits (CRDLs) except iron, which is <250 mg/kg.

Metals & Cyanide Blank Soil

CRM
Cat. #057

One 40 g soil sample in a screw-cap bottle. The concentrations of all of the following analytes are below the CLP CRDL's: antimony, arsenic, beryllium, cadmium, cobalt, mercury, nickel, selenium, silver, sodium, thallium, and cyanide. The concentrations of the following analytes are below 10x the CLP CRDL's: barium, chromium, copper, lead, magnesium, potassium, and vanadium. The concentrations of manganese and zinc are <750 mg/kg. The concentration range for aluminum, calcium, and iron is 3000–25,000 mg/kg.

All ERA Soil PTs open quarterly (Q) or biannually (B), unless otherwise noted. Quarterly months are January, April, July, and October.

WITH eDATA: BOD, COD, AND TOC CAN BE AS EASY AS CSV!

Your time is valuable and should be spent doing more important things than manually entering PT results. Achieve piece of mind knowing that transcription errors are eliminated when you upload your PT results to Waters ERA's online PT data management portal – eDATA.

eDATA allows you to:

- Identify failures and risks to your accreditation
- Review your performance and evaluate overall results
- Investigate root cause and evaluate corrective actions
- Proactively monitor analyte risk to identify possible future non-conformances

Learn more at
www.eraqc.com/eDATA

UNDERGROUND STORAGE TANK

Our Underground Storage Tank (UST) products in water and soil matrices are purposefully designed to meet accreditation requirements for Petroleum Hydrocarbons analysis in various jurisdictions.

UST in Water PT Scheme Schedule

2020

	Scheme #	Opens	Closes
Q	WP 300	Jan 13	Feb 27
Q	WP 303	Apr 13	May 28
Q	WP 306	Jul 13	Aug 27
Q	WP 309	Oct 9	Nov 23

2021

	Scheme #	Opens	Closes
Q	WP 312	Jan 18	Mar 4
Q	WP 315	Apr 12	May 27
Q	WP 318	Jul 19	Sep 2
Q	WP 321	Oct 15	Nov 29

Soil (including UST in Soil) PT Schedule

2020

	Scheme #	Opens	Closes
Q	SOIL 109	Jan 20	Mar 5
Q	SOIL 110	Apr 20	Jun 4
Q	SOIL 111	Jul 20	Sep 3
Q	SOIL 112	Oct 16	Nov 30

2021

	Scheme #	Opens	Closes
Q	SOIL 113	Jan 25	Mar 11
Q	SOIL 114	Apr 19	Jun 3
Q	SOIL 115	Jul 26	Sep 9
Q	SOIL 116	Oct 22	Dec 6

Schedule subject to change – see Waters ERA's website at www.eraqc.com

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

PT: A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

QR: Similar to a Proficiency Test, a QuiK Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. QuiK Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants – chemical analytical labs.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

All Waters ERA UST PTs open quarterly (Q) unless otherwise noted. Quarterly months are January, April, July, and October.

B Waters ERA NJ EPH in Soil PT opens in April and October.

UST in Soil

BTEX & MTBE in Soil

CRM	PT		QR
Cat. #761	Cat. #633	Q	Cat. #761QR

One 2 mL flame-sealed ampule requires spiking onto the ten grams of provided certified clean soil. Includes all the BTEX compounds and MTBE at 20–200 µg/kg (40–400 µg/kg for total xylenes). Use with EPA Method 8021, or other applicable methods.

Gasoline Range Organics (GRO) in Soil

CRM	PT		QR
Cat. #763	Cat. #630	Q	Cat. #763QR

One flame-sealed ampule with 20 g of soil spiked with unleaded regular gasoline in the range 100–2000 mg/kg. Use with purge and trap and modified EPA Method 8015, or other applicable GC/FID methods. Also use to test for BTEX in gasoline.

Note: This standard is not compliant with the NELAC concentration ranges for the BTEX analytes. If a NELAC-compliant sample for these analytes is required, use Volatiles in Soil, Cat. #623 or BTEX & MTBE Soil, Cat. #633.

Diesel Range Organics (DRO) in Soil

CRM	PT		QR
Cat. #765	Cat. #631	Q	Cat. #765QR

One flame-sealed ampule with 20 g of soil spiked with #2 Diesel Fuel in the range 300–3000 mg/kg. Use with modified EPA Method 8015, or other applicable GC/FID methods.

Total Petroleum Hydrocarbons (TPH) in Soil #1

CRM	PT		QR
Cat. #570	Cat. #632	Q	Cat. #572QR

One screw-top bottle with 50 g of soil to be analyzed for total petroleum hydrocarbons (TPH). Use with EPA IR, Gravimetric Methods 8440 and 9071B, or other applicable methods.

Non-polar extractable material (TPH) (Gravimetric)..... 300–3000 mg/kg
Non-polar extractable material (TPH) (IR)..... 300–3000 mg/kg

Total Petroleum Hydrocarbons (TPH) in Soil #2

CRM	PT		QR
Cat. #571	Cat. #632	Q	Cat. #572QR

One screw-top bottle contains 50 g of soil with TPH in the presence of interfering fatty acids. Use with EPA Methods 8440, 9071B, or other applicable methods.

Non-polar extractable material (TPH) (Gravimetric)..... 300–3000 mg/kg
Non-polar extractable material (TPH) (IR)..... 300–3000 mg/kg

UST in Water

BTEX & MTBE in Water

CRM	PT		QR
Cat. #760	Cat. #643	Q	Cat. #760QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Use with EPA Methods 602, 8021, or other applicable methods. Includes all BTEX compounds and MTBE at 5–300 µg/L after dilution.

Gasoline Range Organics (GRO) in Water

CRM	PT		QR
Cat. #762	Cat. #640	Q	Cat. #762QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with both purge and trap, and modified EPA Method 8015, or other applicable GC/FID methods to test for GRO at 400–4000 µg/L. Also use to test for BTEX in gasoline.

Diesel Range Organics (DRO) in Water

CRM	PT		QR
Cat. #764	Cat. #641	Q	Cat. #764QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Use with modified EPA Method 8015, or other applicable GC/FID methods. Includes #2 Diesel Fuel at 800–6000 µg/L.

Total Petroleum Hydrocarbons (TPH) in Water #1

CRM	PT		QR
Cat. #600	Cat. #642	Q	Cat. #602QR

One liter whole-volume bottle is ready to analyze for total petroleum hydrocarbons (TPH) without interfering fatty acids. Use with EPA Methods 418.1, 1664, 5520, or other applicable methods.

Total petroleum hydrocarbons..... 20–200 mg/L

Total Petroleum Hydrocarbons (TPH) in Water #2

CRM	PT		QR
Cat. #601	Cat. #642	Q	Cat. #602QR

One liter whole-volume bottle is ready to analyze for TPH in water in the presence of interfering fatty acids. Use with EPA Methods 418.1, 1664, 5520, 8440, or other applicable methods.

Total petroleum hydrocarbons..... 20–200 mg/L

Laura Stone
Inorganic Chemist

Years with Waters ERA: 9

Alaska UST in Water

Alaska GRO in Water

CRM	QR
Cat. #645	Cat. #473QR

One 2 mL flame-sealed ampule. Use with method AK101 for unleaded regular gasoline at 100–500 µg/L after dilution.

Alaska DRO in Water

CRM	QR
Cat. #647	Cat. #475QR

One 2 mL flame-sealed ampule. Use with method AK102 for #2 Diesel Fuel at 800–2300 µg/L after dilution.

Alaska BTEX in Water

CRM	QR
Cat. #646	Cat. #474QR

One 2 mL flame-sealed ampule. Use with method AK101 for all BTEX analytes at 5–30 µg/L after dilution.

Alaska UST in Soil

Alaska GRO in Soil

CRM	QR
Cat. #635	Cat. #469QR

One 20 mL flame-sealed ampule with 10 g of soil and 10 mL of methanol with unleaded regular gasoline at 30–1500 mg/kg. Use with method AK101.

Alaska DRO in Soil

CRM	QR
Cat. #637	Cat. #471QR

One flame-sealed ampule with 20 g of soil spiked with #2 Diesel Fuel at 30–1500 mg/kg. Use with method AK102.

Alaska RRO in Soil

CRM	QR
Cat. #638	Cat. #472QR

One flame-sealed ampule with 20 g of soil with Residual Range Organic fuels at 150–2000 mg/kg. Use with method AK103.

Alaska BTEX in Soil

CRM	QR
Cat. #636	Cat. #470QR

One 2 mL flame-sealed ampule along with clean soil matrix for spiking. Use with method AK101 for all BTEX analytes at 5–100 mg/kg after spiking.

Arizona UST in Soil

Arizona TPH in Soil

CRM	PT		QR
Cat. #798	Cat. #488	Q	Cat. #798QR

One ready-to-use flame-sealed ampule with 30 g of soil with Oil Range Organics and #2 Diesel Fuel. Use with method 8015AZ for TPH in the range 300–400 mg/kg. Also includes two carbon ranges.

Texas TPH in Water

All Texas TPH PT standards are designed for use with TNRCC 1005 method. The standards meet the requirements of all states that accredit for these methods including Texas, Louisiana, and Oklahoma.

Texas Low-Level Fuels (TPH) in Water

CRM	PT		QR
Cat. #794	Cat. #476	Q	Cat. #794QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Contains unleaded regular gasoline and #2 Diesel Fuel resulting in TPH in the range 5–10 mg/L.

Texas High-Level Fuels (TPH) in Water

CRM	PT		QR
Cat. #795	Cat. #477	Q	Cat. #795QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Contains unleaded regular gasoline and #2 Diesel Fuel resulting in TPH in the range 20–100 mg/L.

Texas TPH in Soil

Texas Low-Level Fuels (TPH) in Soil

CRM	PT		QR
Cat. #796	Cat. #478	Q	Cat. #796QR

One ready-to-use flame-sealed ampule with 20 g of soil with unleaded gasoline and #2 Diesel Fuel for TPH in the range 50–100 mg/kg.

Texas High-Level Fuels (TPH) in Soil

CRM	PT		QR
Cat. #797	Cat. #479	Q	Cat. #797QR

One ready-to-use flame-sealed ampule with 20 g of soil with unleaded gasoline and #2 Diesel Fuel for TPH in the range 1000–20,000 mg/kg.

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response
RM – Reference Material

All Waters ERA UST PTs open quarterly (Q) unless otherwise noted. Quarterly months are January, April, July, and October.

Wisconsin GRO/PVOC/DRO Method UST

All Wisconsin UST PT standards are designed for use with Wisconsin GRO/PVOC or DRO Methods. The standards meet the requirements of all states that accredit for these methods including Wisconsin and Minnesota.

Wisconsin Gasoline Range Organics (GRO/PVOC) in Water

CRM	PT		QR
Cat. #773	Cat. #649	Q	Cat. #773QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Includes ten gasoline range synthetic organic compounds as defined by Wisconsin. Use with Wisconsin GRO/PVOC Method.

Wisconsin Diesel Range Organics (DRO) in Water

CRM	PT		QR
Cat. #772	Cat. #648	Q	Cat. #772QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Includes ten diesel range synthetic organic compounds in the range 200–600 µg/L. Use with the Wisconsin DRO Method.

Washington HEM/SGT-HEM Method UST

The Washington UST PT standard is designed for use with EPA Method 1664 for HEM/SGT-HEM.

Washington HEM/SGT-HEM

CRM	PT		QR
Cat. #519	Cat. #489	Q	Cat. #519QR

One 5 mL flame-sealed ampule yields up to 2 liters after dilution. Use with EPA Method 1664 to measure HEM/SGT-HEM at 5–100 mg/L.

New Jersey EPH

The New Jersey EPH in Soil standard is designed for use with the NJ Extractable Petroleum Hydrocarbons Method.

New Jersey EPH in Soil

CRM	PT		QR
Cat. #564	Cat. #464	B	Cat. #564QR

One flame-sealed ampule with 20 g soil containing EPH in the range of 300–3000 mg/kg.

B The NJ EPH in Soil PT studies open in April and October.

Massachusetts Hydrocarbons in Water

All Massachusetts UST PT standards are designed for use with Massachusetts Volatile Petroleum Hydrocarbon or Extractable Petroleum Hydrocarbon Methods. The standards meet the requirements of all states that accredit for these methods including Massachusetts, North Carolina, and Washington when reporting the Massachusetts carbon ranges.

Massachusetts VPH in Water

CRM	PT		QR
Cat. #566	Cat. #481	Q	Cat. #566QR

One 2 mL flame-sealed ampule yields in excess of 200 mL after dilution. Contains volatile petroleum hydrocarbon fuels (VPH) in the range 400–4000 µg/L. Use with the Massachusetts Volatile Petroleum Hydrocarbon Method for multiple carbon ranges, BTEX compounds and MTBE.

Massachusetts EPH in Water

CRM	PT		QR
Cat. #567	Cat. #482	Q	Cat. #567QR

One 2 mL flame-sealed ampule yields up to 2 liters after dilution. Contains extractable petroleum hydrocarbon fuels (EPH) in the range 800–6000 µg/L. Use with the Massachusetts Extractable Petroleum Hydrocarbon Method for multiple carbon ranges and PAH compounds.

Massachusetts Hydrocarbons in Soil

Massachusetts VPH in Soil

CRM	PT		QR
Cat. #568	Cat. #483	Q	Cat. #568QR

One flame-sealed ampule with 20 g soil with VPH fuels. Contains volatile petroleum hydrocarbon fuels (VPH) in the range 100–2000 mg/kg. Use with the Massachusetts Volatile Petroleum Hydrocarbon Method for multiple carbon ranges, BTEX compounds and MTBE.

Massachusetts EPH in Soil

CRM	PT		QR
Cat. #569	Cat. #484	Q	Cat. #569QR

One flame-sealed ampule with 20 g soil with EPH fuels. Contains extractable petroleum hydrocarbon fuels (EPH) in the range 300–3000 mg/kg. Use with the Massachusetts Extractable Petroleum Hydrocarbon Method for multiple carbon ranges and PAH compounds.

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response
RM – Reference Material

All Waters ERA UST PTs open quarterly (Q) unless otherwise noted. Quarterly months are January, April, July, and October.

WE FOCUS ON QUALITY AND SERVICE, SO YOU CAN FOCUS ON YOUR BUSINESS!

Unmatched Technical Expertise

As your Partner in Quality, our goal is to help you maintain successful PT performance, solve routine analysis challenges, and improve corrective actions. Whether it's organic and/or inorganic chemistry, microbiology, analytical instrumentation or methods, our experts are ready to help you with:

- Method interpretations
- Prep and analytical questions
- Instrumentation troubleshooting
- Quality control issues
- Calibration issues

World-Class Customer Service

Our customer service team understands that you are faced with a myriad of requirements to maintain your laboratory accreditation. Each of our representatives has helped solve questions from customers with the same types of challenges. Your dedicated customer service representative has the experience and knowledge to help you through every step of the process.

For more information, **contact our customer service team at 800.372.0122 / +1.303.431.8454**. or **email at info@eraqc.com**.

AIR & EMISSIONS

Matrices consisting of organic, inorganic, and particulate matter for testing emissions and ambient air. Standards are designed to meet regulations of the United States Environmental Protection Clean Air Act and may be used to satisfy PT requirements worldwide.

Air & Emissions PT Schedule

2020

	Scheme #	Opens	Closes
Q	**AE 51**	Jan 27	Mar 12
Q	**AE 52**	Apr 27	Jun 11
Q	**AE 53**	Jul 27	Sep 10
Q	**AE 54**	Oct 23	Dec 7

2021

	Scheme #	Opens	Closes
Q	**AE 55**	Jan 29	Mar 15
Q	**AE 56**	Apr 26	Jun 10
Q	**AE 57**	Jul 30	Sep 13
Q	**AE 58**	Oct 29	Dec 13

Schedule subject to change – see Waters ERA's website at www.eraqc.com

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

PT: A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

QR: Similar to a Proficiency Test, a QuiK Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. QuiK Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants – chemical analytical labs.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

Q All Waters ERA Air & Emissions PTs open quarterly. Quarterly months are January, April, July, and October.

Volatiles

Volatiles in Gas Cylinder*

RM**	PT	QR
Cat. #1100	Cat. #1000 Q	Cat. #1100QR

One pressurized gas cylinder containing 87 L of gas at 1500 psig (103 bar) for use with EPA methods TO-14, TO-15, or other applicable methods. Contains at least 10 analytes, randomly selected from the list below, at 2-50 ppbv (4-100 ppbv) for Total Xylenes.

- Acetone
- Benzene
- Benzy chloride
- Bromodichloromethane
- Bromoform
- Bromomethane
- 1,3-Butadiene
- 2-Butanone (MEK)
- Methyl tert-butyl ether (MTBE)
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chlorodibromomethane
- Chloroethane
- Chloroform
- Chloromethane
- Cyclohexane
- 1,2-Dibromoethane (EDB)
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- Dichlorodifluoromethane (Freon 12)
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethylene
- cis-1,2-Dichloroethylene
- trans-1,2-Dichloroethylene
- 1,2-Dichloropropane
- cis-1,3-Dichloropropylene
- trans-1,3-Dichloropropylene
- 1,2-Dichlorotetrafluoroethane (Freon 114)
- Ethyl acetate
- Ethylbenzene
- p-Ethyltoluene
- n-Heptane
- Hexachlorobutadiene
- n-Hexane
- 2-Hexanone
- Isopropyl alcohol
- Methylene chloride
- Methyl methacrylate
- 4-Methyl-2-pentanone (MIBK)
- Methyl tert-butyl ether (MTBE)
- Propylene
- Styrene
- 1,1,2,2-Tetrachloroethane
- Tetrachloroethylene
- Toluene
- Trichloroethene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichlorofluoromethane (Freon 11)
- Trichlorotrifluoromethane (Freon 113)
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Vinyl bromide
- Vinyl chloride
- Xylenes, total
- m&p-Xylene
- o-Xylene

*Volatiles in Gas Cylinder ships as dangerous goods.

** Reference Material (RM)

Volatiles on Sorbent

CRM	PT	QR
Cat. #1101	Cat. #1001 Q	Cat. #1101QR

One 2 mL flame-sealed ampule for spiking client-specific sorbent. Use with EPA Methods TO-17, 0030, 0031, or other applicable methods. Contains at least 24 analytes, randomly selected from the list below, at 50–2000 ng/sample (200–3000 ng/sample for Total Xylenes) after preparation.

- Acetone
- Acetonitrile
- Acrolein
- Acrylonitrile
- Benzene
- Bromobenzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- 2-Butanone (MEK)
- n-Butylbenzene
- sec-Butylbenzene
- tert-Butylbenzene
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chlorodibromomethane
- Chloroethane
- 2-Chloroethyl vinyl ether
- Chloroform
- Chloromethane
- 2-Chlorotoluene
- 4-Chlorotoluene
- 1,3-Dichloropropane
- 2,2-Dichloropropane
- 1,1-Dichloropropene
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (EDB)
- Dibromomethane
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- Dichlorodifluoromethane (Freon 12)
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethene
- cis-1,2-Dichloroethene
- trans-1,2-Dichloroethene
- 1,2-Dichloropropane
- cis-1,3-Dichloropropene
- trans-1,3-Dichloropropene
- Ethylbenzene
- Hexachlorobutadiene
- Hexachloroethane
- 2-Hexanone
- Isopropylbenzene
- 4-Isopropyltoluene
- Methyl tert-butyl ether (MTBE)
- Methylene chloride
- 4-Methyl-2-pentanone (MIBK)
- Naphthalene
- Nitrobenzene
- n-Propylbenzene
- Styrene
- 1,1,1,2-Tetrachloroethane
- 1,1,2,2-Tetrachloroethane
- Tetrachloroethene
- Toluene
- 1,2,3-Trichlorobenzene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethlyene
- Trichlorofluoromethane
- 1,2,3-Trichloropropane
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Vinyl acetate
- Vinyl chloride
- Xylenes, total
- m&p-Xylene
- o-Xylene

Stationary Source Audit Sample Program

ERA still offers audit sample products to support the SSAS program.

For more information, **contact us or visit http://www.eraqc.com/Resources/StationarySourceAuditSampleProgram**.

Semivolatiles

Semivolatiles on Polyurethane Foam

CRM	PT		QR
Cat. #1110	Cat. #1010	Q	Cat. #1110QR

Two 2 mL flame-sealed ampules plus one polyurethane foam. Use with EPA Method 0010, or other applicable methods. Contains at least 42 analytes, randomly selected from the list below, at 10–225 µg/sample (200–1000 µg/sample for Benzidine) after preparation.

- Acenaphthene
- Acenaphthylene
- Aniline
- Anthracene
- Benzidine
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Benzyl alcohol
- 4-Bromophenyl phenyl ether
- Butyl benzyl phthalate
- Carbazole
- 4-Chloroaniline
- Bis(2-chloroethoxy)methane
- Bis(2-chloroethyl)ether
- Bis(2-ethylhexyl)phthalate
- 1-Chloronaphthalene
- 2-Chloronaphthalene
- 4-Chlorophenyl phenyl ether
- Chrysene
- Dibenz(a,h)anthracene
- Dibenzofuran
- Di-n-butyl phthalate
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- 3,3'-Dichlorobenzidine
- Diethyl phthalate
- Dimethyl phthalate
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- Di-n-octyl phthalate
- Fluoranthene
- Fluorene
- Hexachlorobenzene
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- Hexachloroethane
- Indeno(1,2,3-cd)pyrene
- Isophorone
- 2-Methylnaphthalene
- Naphthalene
- 2-Nitroaniline
- 3-Nitroaniline
- 4-Nitroaniline
- Nitrobenzene
- N-Nitrosodiethylamine
- N-Nitrosodimethylamine (NDMA)
- N-Nitrosodiphenylamine
- N-Nitroso-di-n-propylamine
- 2,2'-Oxybis(1-chloropropane)
- Pentachlorobenzene
- Phenanthrene
- Pyrene
- Pyridine
- o-Toluidine
- 1,2,4,5-Tetrachlorobenzene
- 1,2,4-Trichlorobenzene
- Benzoic Acid
- 4-Chloro-3-methylphenol
- 2-Chlorophenol
- 2,4-Dichlorophenol
- 2,6-Dichlorophenol
- 2,4-Dimethylphenol
- 2,4-Dinitrophenol
- 2-Methyl-4,6-dinitrophenol
- 2-Methylphenol (o-Cresol)
- 4-Methylphenol (p-Cresol)
- 2-Nitrophenol
- 4-Nitrophenol
- Pentachlorophenol
- Phenol
- 2,3,4,6-Tetrachlorophenol
- 2,4,5-Trichlorophenol
- 2,4,6-Trichlorophenol

Organochlorine Pesticides on Polyurethane Foam

CRM	PT		QR
Cat. #1111	Cat. #1011	Q	Cat. #1111QR

One 2 mL flame-sealed ampule plus one polyurethane foam. Use with EPA Methods TO-04A, TO-10A, or other applicable methods. Contains at least 16 analytes, randomly selected from the list below, at 1–20 µg/sample after preparation.

- Aldrin
- alpha-BHC
- beta-BHC
- delta-BHC
- gamma-BHC (Lindane)
- alpha-Chlordane
- gamma-Chlordane
- 4,4'-DDD
- 4,4'-DDE
- 4,4'-DDT
- Dieldrin
- Endosulfan I
- Endosulfan II
- Endosulfan sulfate
- Endrin
- Endrin aldehyde
- Endrin ketone
- Heptachlor
- Heptachlor epoxide (beta)
- Methoxychlor

PCBs on Polyurethane Foam

CRM	PT		QR
Cat. #1112	Cat. #1012	Q	Cat. #1112QR

One 2 mL flame-sealed ampule plus one polyurethane foam. Use with EPA Methods TO-04A, TO-10A, or other applicable methods. Contains one aroclor, randomly selected from the list below, at 2–10 µg/sample after preparation.

- Aroclor 1016
- Aroclor 1221
- Aroclor 1232
- Aroclor 1242
- Aroclor 1248
- Aroclor 1254
- Aroclor 1260

PAHs on Polyurethane Foam

CRM	PT		QR
Cat. #1113	Cat. #1013	Q	Cat. #1113QR

One 2 mL flame-sealed ampule plus one polyurethane foam. Use with EPA Method TO-13A, or other applicable methods. Contains at least 13 analytes, randomly selected from the list below, at 10–200 µg/sample after preparation.

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Chrysene
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- 1-Methylnaphthalene
- 2-Methylnaphthalene
- Naphthalene
- Phenanthrene
- Pyrene

Aldehydes & Ketones on Sorbent

CRM	PT		QR
Cat. #1114	Cat. #1014	Q	Cat. #1114QR

One 2 mL flame-sealed ampule to be spiked onto sorbent. Use with EPA Method TO-11A, or other applicable methods. Contains at least four analytes, randomly selected from the list below, at 0.5–10 µg/sample after preparation.

- Acetaldehyde
- Acetone
- Benzaldehyde
- 2-Butanone (MEK)
- Butyraldehyde (Butanal)
- Crotonaldehyde
- 2,5-Dimethylbenzaldehyde
- Formaldehyde
- Hexaldehyde (Hexanal)
- Isovaleraldehyde
- Propionaldehyde (Propanal)
- o-Tolualdehyde
- m-Tolualdehyde
- p-Tolualdehyde
- Valeraldehyde (Pentanal)

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response
RM – Reference Material

Q All Waters ERA Air & Emissions PTs open quarterly. Quarterly months are January, April, July, and October.

Brian Stringer
Principal Proficiency Testing Technical Specialist

Years with Waters ERA: 17

Debby Updyke
Senior Proficiency Testing Technical Specialist

Years with Waters ERA: 18

Metals

Metals on Filter Paper

CRM	PT		QR
Cat. #1125	Cat. #1025	Q	Cat. #1125QR

One filter paper sample packaged in a 50 mm polystyrene petri dish containing a single 47 mm tissue quartz filter ready for use with EPA Method 29 or other applicable methods.

Antimony	25–250 µg/filter
Arsenic	20–250 µg/filter
Barium	20–250 µg/filter
Beryllium	10–250 µg/filter
Cadmium	10–250 µg/filter
Chromium	15–250 µg/filter
Cobalt	10–250 µg/filter
Copper	10–250 µg/filter
Lead	20–350 µg/filter
Manganese	10–250 µg/filter
Nickel	20–250 µg/filter
Phosphorus	10–250 µg/filter
Selenium	20–250 µg/filter
Silver	30–250 µg/filter
Thallium	30–250 µg/filter
Zinc	20–250 µg/filter

Metals in Impinger Solution

CRM	PT		QR
Cat. #1126	Cat. #1026	Q	Cat. #1126QR

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Method 29, or other applicable methods.

Antimony	0.25–20 µg/mL
Arsenic	0.2–20 µg/mL
Barium	0.15–25 µg/mL
Beryllium	0.05–20 µg/mL
Cadmium	0.1–20 µg/mL
Chromium	0.2–20 µg/mL
Cobalt	0.1–25 µg/mL
Copper	0.2–20 µg/mL
Lead	0.2–20 µg/mL
Manganese	0.1–20 µg/mL
Nickel	0.15–30 µg/mL
Phosphorus	0.15–25 µg/mL
Selenium	0.15–25 µg/mL
Silver	0.5–20 µg/mL
Thallium	0.15–25 µg/mL
Zinc	0.15–25 µg/mL

Mercury on Filter Paper

CRM	PT		QR
Cat. #1127	Cat. #1027	Q	Cat. #1127QR

One 2 mL flame-sealed ampule containing approximately 2 mL of standard concentrate and a 50 mm polystyrene petri dish containing a single 47 mm glass fiber filter. Sample is ready for use with EPA Method 29, or other applicable methods.

Mercury	1–75 µg/filter

Mercury in Impinger Solution

CRM	PT		QR
Cat. #1128	Cat. #1028	Q	Cat. #1128QR

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Methods 29, 101a, or other applicable methods.

Mercury	0.9–200 ng/mL

Lead on Filter Paper

CRM	PT		QR
Cat. #1129	Cat. #1029	Q	Cat. #1129QR

One filter paper sample packaged in a 50 mm polystyrene petri dish containing a single 47 mm tissue quartz filter spiked with lead ready-for-use with EPA Method 12 or other applicable methods.

Lead	20–350 µg/filter

Lead in Impinger Solution

CRM	PT		QR
Cat. #1130	Cat. #1030	Q	Cat. #1130QR

One impinger solution sample packaged in a 15 mL screw top vial containing approximately 14 mL of standard concentrate for use with EPA Method 12, or other applicable methods.

Lead	0.2–120 µg/mL

Chromium on Filter Paper

CRM	PT		QR
Cat. #1131	Cat. #1031	Q	Cat. #1131QR

One filter paper sample packaged in a 50 mm polystyrene petri dish containing a single 47 mm fiber film filter for use with CARB Method 425, or other applicable methods.

Total chromium	1–20 µg/filter
Hexavalent chromium	1–20 µg/filter

Hexavalent Chromium in Impinger Solution

CRM	PT		QR
Cat. #1132	Cat. #1032	Q	Cat. #1132QR

One impinger solution sample packaged in a 15 mL screw top vial containing approximately 14 mL of standard concentrate for use with EPA Method 0061/7199, or other applicable methods.

Hexavalent chromium	45–880 µg/L

Inorganics

Hydrogen Halides & Halogens in Impinger Solution

CRM	PT		QR
Cat. #1140	Cat. #1040	Q	Cat. #1140QR

Two impinger solution samples packaged in 15 mL screw-top vials containing approximately 14 mL of standard concentrate for use with EPA Methods 26, 26a, or other applicable methods.

Total halides	15–1500 mg/L
Total halogens	10–200 mg/L
Hydrogen chloride	5–500 mg/L
Hydrogen fluoride	5–500 mg/L
Hydrogen bromide	5–500 mg/L
Bromine	5–100 mg/L
Chlorine	5–100 mg/L

Fluoride in Impinger Solution

CRM	PT		QR
Cat. #1141	Cat. #1041	Q	Cat. #1141QR

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Methods 13a, 13b, 14, or other applicable methods.

Fluoride	1–50 mg/dscm

Nitrogen Oxide in Impinger Solution

CRM	PT		QR
Cat. #1142	Cat. #1042	Q	Cat. #1142QR

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Method 7, or other applicable methods.

Oxides of nitrogen (NOx)	100–2000 mg/dscm

Sulfur Dioxide in Impinger Solution

CRM	PT		QR
Cat. #1143	Cat. #1043	Q	Cat. #1143QR

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA Method 6 and Method 8, or other applicable methods.

Sulfur dioxide	50–2000 mg/dscm

Sulfuric Acid & Sulfur Dioxide in Impinger Solution

CRM	PT		QR
Cat. #1144	Cat. #1044	Q	Cat. #1144QR

One impinger solution sample packaged in a 15 mL screw top vial containing approximately 14 mL of standard concentrate for use with EPA Method 8, or other applicable methods.

Sulfuric acid	5–150 mg/dscm

Ammonia in Impinger Solution

CRM	PT		QR
Cat. #1145	Cat. #1045	Q	Cat. #1145QR

One impinger solution sample packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate for use with EPA CTM 027, or other applicable methods.

Ammonium	0.1–10 mg/L

Particulate Matter on Filter Paper

CRM	PT		QR
Cat. #1150	Cat. #1050	Q	Cat. #1150QR

One filter paper sample packaged in a 50 mm polystyrene petri dish containing a single 47 mm tissue quartz filter ready for use with EPA Methods 5, 5A, 5B, 5D, 5F, or other applicable methods.

Particulate matter	50–600 mg/filter

Particulate Matter in Impinger Solution

CRM	PT		QR
Cat. #1151	Cat. #1051	Q	Cat. #1151QR

One impinger solution sample packaged in a 250 mL polyethylene bottle containing approximately 250 mL of standard ready for use with EPA Methods 5, 5A, 5B, 5D, 5F, or other applicable methods.

Particulate matter	140–675 mg/L

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

Q All Waters ERA Air & Emissions PTs open quarterly. Quarterly months are January, April, July, and October.

Colleen Chilson
Account Manager

Years with Waters ERA: 5

Tom Widera
Technical Manager

Years with Waters ERA: 20

RADIOCHEMISTRY

Matrices in soil, vegetation, air filters, and water for monitoring of radiochemicals.

Radiochemistry PT Schedule 2020

	Scheme #	Opens	Closes
Q	RAD 120	Jan 6	Feb 20
Q	RAD 121	Apr 6	May 21
Q	RAD 122	Jul 6	Aug 20
Q	RAD 123	Oct 2	Nov 16

2021

	Scheme #	Opens	Closes
Q	RAD 124	Jan 11	Feb 25
Q	RAD 125	Apr 5	May 20
Q	RAD 126	Jul 12	Aug 26
Q	RAD 127	Oct 8	Nov 22

MRAD PT Schedule 2020

Scheme #	Opens	Closes
MRAD 32	Mar 16	May 15
MRAD 33	Sep 14	Nov 13

2021

Scheme #	Opens	Closes
MRAD 34	Mar 22	May 21
MRAD 35	Sep 20	Nov 19

2 schemes per year – open for 60 days

Schedules are subject to change – see Waters ERA's website at www.eraqc.com

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

PT: A Proficiency Test (PT) is an analysis of what is often referred to as a blind sample or a sample with unknown concentrations of analytes for the purpose of evaluating a laboratory's analytical performance.

QR: Similar to a Proficiency Test, a QuiK Response (QR) is a sample with unknown concentrations. However, unlike a scheduled PT, QR is on-demand and available at any time. Plus, your results are returned within two business days. QuiK Response can be used as a bilateral PT as referenced in the IUPAC/CITAC guide: Selection and use of PT schemes for a limited number of participants – chemical analytical labs.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

Q All Waters ERA WS Radchem PTs open quarterly. Quarterly months are January, April, July, and October.

✱ All Waters ERA MRAD PTs open in March and September.

WS Radchem

All Radchem standards are provided as convenient, easy-to-prepare concentrates except for tritium, which is provided as a whole-volume sample.

Gamma Emitters

CRM	PT		QR
Cat. #758	Cat. #808	Q	Cat. #758QR

One 12 mL screw-top vial yields up to 2 liters after dilution.

Barium-133	10–100 pCi/L
Cesium-134	10–100 pCi/L
Cesium-137	20–240 pCi/L
Cobalt-60	10–120 pCi/L
Zinc-65	30–360 pCi/L

Gross Alpha/Beta

CRM	PT		QR
Cat. #759	Cat. #809	Q	Cat. #759QR

One 12 mL screw-top vial yields up to 1 liter after dilution.

Gross alpha as thorium-230	7–75 pCi/L
Gross beta as cesium-137	8–75 pCi/L

Naturals

CRM	PT		QR
Cat. #751	Cat. #811	Q	Cat. #751QR

One 12 mL screw-top vial yields up to 8 liters after dilution.

Radium-226	1–20 pCi/L
Radium-228	2–20 pCi/L
Uranium (Nat)	2–70 pCi/L
Uranium (Nat) mass	3–104 µg/L

Tritium

CRM	PT		QR
Cat. #752	Cat. #812	Q	Cat. #752QR

One 250 mL whole-volume bottle is ready to analyze as received. Includes tritium at 1000–24000 pCi/L.

Iodine-131

CRM	PT		QR
Cat. #750	Cat. #810	Q	Cat. #750QR

One 12 mL screw-top vial yields up to 2 liters after dilution. Contains iodine-131 within the range 3–30 pCi/L. Due to short half-life, CRMs, PTs, and QRs are available only during January, April, July, and October.

Strontium-89/90

CRM	PT		QR
Cat. #757	Cat. #807	Q	Cat. #757QR

One 12 mL screw-top vial yields up to 2 liters after dilution.

Strontium-89	10–70 pCi/L
Strontium-90	3–45 pCi/L

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

Q All Waters ERA WS Radchem PTs open quarterly. Quarterly months are January, April, July, and October.

Radchem Lab Control & Matrix Spiking (LCS/MS)

Radiochemistry LCS/MS standards are prepared according to your specifications at activity levels that enable you to directly fortify your batch laboratory control and matrix spike QC samples. These single-use spiking standards are verified, conveniently packaged in 2–20 mL glass vials, and very economical.

The direct benefits:

- Easy-to-use – LCS/MS spiking standards are ready-to-use – no dilutions are required.
- Reliable and consistent – Eliminate the possibility of errors from the contamination or repeated multiple dilutions of your primary stock standards.
- Independently verified – LCS/MS standards are analytically verified and traced to NIST SRMs where available.
- Save money – You no longer need to pay for microcuries of activity when you only need picocuries. You also eliminate the cost of activity loss for short-lived isotopes.
- Reduce analytical cost – You no longer need to spend valuable instrument time re-verifying standard stability. Order what you expect to use on a quarterly or annual basis – we'll do the verification.

The process is easy:

1. Select from any of the following carrier-free, single radionuclide standards.
2. Choose an activity up to the maximum listed in the table below.
3. Choose a convenient volume: 2 to 20 mL glass vials available.
4. For labs that analyze samples with more elevated activities, call for standard availability and pricing.

Single Radionuclide Spiking Standards

Cat. #	Radionuclide	Maximum Activity/Vial
AM241	Americium-241	40 pCi
BA133	Barium-133	400 pCi
CS134	Cesium-134	200 pCi
CS137	Cesium-137	400 pCi
CO60	Cobalt-60	200 pCi
GAB	Gross alpha/beta	30/40 pCi
GA	Gross alpha (Th-230)	30 pCi
GB	Gross beta (Cs-137)	40 pCi
PU238	Plutonium-238	40 pCi
PU239	Plutonium-239	40 pCi
RA226	Radium-226	20 pCi
RA228	Radium-228	Call
SR89	Strontium-89	200 pCi
SR90	Strontium-90	40 pCi
H3	Tritium	2000 pCi
UNAT	Uranium, natural	40 pCi
ZN65	Zinc-65	600 pCi

MRAD Solids

Soil Radionuclides

RM	PT	QR
Cat. #608	Cat. #802	Cat. #608QR

One 500 cc standard includes the alpha, beta, and gamma emitting radionuclides listed below.

Actinium-228	500–5000 pCi/kg
Americium-241	50–2000 pCi/kg
Bismuth-212	500–5000 pCi/kg
Bismuth-214	500–5000 pCi/kg
Cesium-134	1000–10,000 pCi/kg
Cesium-137	1000–10,000 pCi/kg
Cobalt-60	1000–10,000 pCi/kg
Lead-212	500–5000 pCi/kg
Lead-214	500–5000 pCi/kg
Plutonium-238	50–2000 pCi/kg
Plutonium-239	50–2000 pCi/kg
Potassium-40	5000–50,000 pCi/kg
Strontium-90	500–10,000 pCi/kg
Thorium-234	500–5000 pCi/kg
Uranium-234	500–5000 pCi/kg
Uranium-238	500–5000 pCi/kg
Uranium (Nat)	1000–10,000 pCi/kg
Uranium (Nat) mass	1500–15,000 µg/kg
Zinc-65	1000–10,00 pCi/kg

Vegetation Radionuclides

RM	PT	QR
Cat. #609	Cat. #803	Cat. #609QR

One 500 cc standard includes the alpha, beta, and gamma emitting radionuclides listed below.

Americium-241	50–5000 pCi/kg
Cesium-134	300–3000 pCi/kg
Cesium-137	300–3000 pCi/kg
Cobalt-60	300–3000 pCi/kg
Curium-244	50–5000 pCi/kg
Plutonium-238	50–5000 pCi/kg
Plutonium-239	50–5000 pCi/kg
Potassium-40	5000–50,000 pCi/kg
Strontium-90	500–10,000 pCi/kg
Uranium-234	50–5000 pCi/kg
Uranium-238	50–5000 pCi/kg
Uranium (Nat)	100–10,000 pCi/kg
Uranium (Nat) mass	150–15,000 µg/kg
Zinc-65	300–3000 pCi/kg

MRAD Air Filter

Air Filter Radionuclides

RM	PT	QR
Cat. #606	Cat. #800	Cat. #606QR

One 47 mm diameter glass fiber filter contains the alpha, beta, and gamma emitting radionuclides listed below.

Americium-241	2–80 pCi/filter
Cesium-134	50–1500 pCi/filter
Cesium-137	50–1500 pCi/filter
Cobalt-60	50–1500 pCi/filter
Iron-55	50–1500 pCi/filter
Plutonium-238	2–80 pCi/filter
Plutonium-239	2–80 pCi/filter
Strontium-90	5–200 pCi/filter
Uranium-234	2–80 pCi/filter
Uranium-238	2–80 pCi/filter
Uranium (Nat)	4–160 pCi/filter
Uranium (Nat) mass	6–240 µg/filter
Zinc-65	50–1500 pCi/filter

Air Filter Gross Alpha/Beta

RM	PT	QR
Cat. #607	Cat. #801	Cat. #607QR

One acrylic treated 47 mm diameter glass fiber filter contains the radionuclides listed below.

Gross alpha as thorium-230	5–100 pCi/filter
Gross beta as cesium-137	5–100 pCi/filter

Chad Lane
Chemist/RSO

Years with Waters ERA: 11

Leo Muñoz
Shipping Team Lead

Years with Waters ERA: 11

MRAD Water

Water Radionuclides

RM	PT	QR
Cat. #617	Cat. #804 *	Cat. #617QR

One 12 mL screw-top vial yields up to 2 liters after dilution. Includes the alpha, beta, and gamma emitting radionuclides listed below.

Americium-241	10–200 pCi/L
Cesium-134	100–3000 pCi/L
Cesium-137	100–3000 pCi/L
Cobalt-60	100–3000 pCi/L
Iron-55	100–3000 pCi/L
Plutonium-238	10–200 pCi/L
Plutonium-239	10–200 pCi/L
Strontium-90	50–1000 pCi/L
Uranium-234	10–200 pCi/L
Uranium-238	10–200 pCi/L
Uranium (Nat)	20–400 pCi/L
Uranium (Nat) mass	30–600 µg/L
Zinc-65	100–3000 pCi/L

Water Gross Alpha/Beta

RM	PT	QR
Cat. #615	Cat. #805 *	Cat. #615QR

One 12 mL screw-top vial yields up to 2 liters after dilution. Includes the radionuclides below.

Gross alpha as thorium-230	10–200 pCi/L
Gross beta as cesium-137	10–200 pCi/L

Water Tritium

RM	PT	QR
Cat. #616	Cat. #806 *	Cat. #616QR

One 125 mL whole-volume bottle is ready to analyze as received.

Tritium	3000–30,000 pCi/L

CRM – Certified Reference Material
PT – Proficiency Testing
QR – QuiK Response

* All Waters ERA MRAD PTs open in March and September.

LOW-LEVEL CRMs

Synthetic drinking and wastewater matrices with low concentrations of analytes for testing water supply, drinking water, ground water, water pollution, or wastewater.

Save time diluting your standards or spending numerous hours producing them yourself with our low-level Certified Reference Materials (CRMs).

Our line of low-level CRMs are optimal for:

- Method development and validation
- System checks
- Evaluating limits of quantitation
- Minimum detection limit studies
- Detection verification
- Many other uses

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

Inorganics

Chlorine

CRM
Cat. #1358

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample.

Total chlorine	75–500 µg/L
Free chlorine	75–500 µg/L

Color

CRM
Cat. #1353

One 125 mL whole-volume bottle sample is ready to be analyzed.

Color	5–25 pc units

Common Inorganics

CRM
Cat. #1249

One liter poly bottle whole-volume sample is ready to be analyzed.

Alkalinity	20–120 mg/L
Calcium	2–50 mg/L
Chloride	25–500 mg/L
Conductivity	80–1,000 µmhos/cm
Fluoride	0.25–5 mg/L
Magnesium	1–25 mg/L
pH	5–10 units
Potassium	2–50 mg/L
Sodium	5–100 mg/L
Sulfate	2–50 mg/L
Total dissolved solids	60–750 mg/L
Total hardness	9–250 mg/L

Common Inorganics in Hard Water

CRM
Cat. #1346

One liter poly bottle whole-volume sample is ready to be analyzed.

Alkalinity	20–100 mg/L
Calcium	10–100 mg/L
Chloride	20–250 mg/L
Conductivity	130–1400 µmhos/cm
Fluoride	0.2–2 mg/L
Magnesium	2–10 mg/L
pH	5–10 units
Potassium	2–25 mg/L
Sodium	20–250 mg/L
Sulfate	20–250 mg/L
Total dissolved solids	100–1000 mg/L
Total hardness	30–300 mg/L

Common Inorganics in Soft Water

CRM
Cat. #1347

A 1 liter poly bottle whole-volume sample is ready to be analyzed.

Alkalinity	20–100 mg/L
Calcium	2–50 mg/L
Chloride	5–50 mg/L
Conductivity	25–300 µmhos/cm
Fluoride	0.2–2 mg/L
Magnesium	0.5–5 mg/L
pH	5–10 units
Potassium	1–10 mg/L
Sodium	5–50 mg/L
Sulfate	5–50 mg/L
Total dissolved solids	20–200 mg/L
Total hardness	5–75 mg/L

Cyanide

CRM
Cat. #1345

One 15 mL screw-cap vial yields up to 2 liters of sample.

Free cyanide	5–100 µg/L
Total cyanide	5–100 µg/L

Demand

CRM
Cat. #1354

One 15 mL screw-cap vial yields up to 2 liters of sample.

5-day BOD	2–25 mg/L
COD	2–25 mg/L
DOC	1–10 mg/L
TOC	1–10 mg/L

CRM
Cat. #1242

One 15 mL screw-cap vial spiking concentrate yields up to 2 liters of sample.

5-day BOD	5–75 mg/L
COD	10–150 mg/L
DOC	2–40 mg/L
TOC	2–40 mg/L

Stanley Dunlavy
EH & S Engineer

Years with Waters ERA: 19

Inorganics (continued)

High Solids

CRM
Cat. #1355

One 24 mL screw-cap vial with a powder concentrate yields 1 liter of solution.

Total dissolved solids	100–1000 mg/L
Total suspended solids (TSS)	5–50 mg/L

Solids Concentrate

CRM
Cat. #1243

One 24 mL screw-cap vial concentrate yields up to 1 liter of sample.

Total dissolved solids	10–250 mg/L
Total suspended solids (TSS)	5–50 mg/L

Total Phenolics (4-AAP)

CRM
Cat. #1250

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample.

Total phenolics by 4-AAP	0.06–5 mg/L

Metals

Hexavalent Chromium

CRM
Cat. #1248

One 15 mL screw-cap vial spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample.

Hexavalent chromium	5–100 µg/L

Mercury

CRM
Cat. #1341

One 15 mL screw-cap vial spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample.

Mercury, total	0.1 to 1.2 µg/L

Metals (continued)

Metals

CRM
Cat. #1244

One 15 mL screw-cap vial spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample.

Aluminum	200–4000 µg/L
Antimony	95–900 µg/L
Arsenic	70–900 µg/L
Barium	100–2500 µg/L
Beryllium	8–900 µg/L
Boron	800–2000 µg/L
Cadmium	8–750 µg/L
Chromium, total	17–1000 µg/L
Cobalt	28–1000 µg/L
Copper	40–900 µg/L
Iron	200–4000 µg/L
Lead	70–3000 µg/L
Manganese	70–4000 µg/L
Molybdenum	60–600 µg/L
Nickel	80–3000 µg/L
Selenium	90–2000 µg/L
Silver	26–600 µg/L
Strontium	30–300 µg/L
Thallium	60–900 µg/L
Vanadium	55–2000 µg/L
Zinc	100–2000 µg/L

The Industry Standard for over 40 years

CRM – Certified Reference Material

Nutrients

Complex Nutrients in Hard Water

CRM
Cat. #1241

One 15 mL screw-cap vial spiking concentrate yields up to 2 liters of sample.

Total Kjeldahl nitrogen	0.5–5 mg/L
Total nitrogen	1–20 mg/L
Total phosphorus	0.5–5 mg/L

Simple Nutrients

CRM
Cat. #1240

Two 15 mL screw-cap vials yields up to 2 liters of sample.

Ammonia (N)	1–20 mg/L
Nitrate (NO_3)	0.5–10 mg/L
Nitrite (NO_2)	0.5–5 mg/L
Total oxidised nitrogen	1–15 mg/L
Soluble reactive phosphorus (P)	0.5–5 mg/L

Simple Nutrients in Hard Water

CRM
Cat. #1348

Two 15 mL screw-cap vial spiking concentrates and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample.

Ammonium (NH_4)	0.1–1 mg/L
Nitrate (NO_3)	3–60 mg/L
Nitrite (NO_2)	0.1–1 mg/L
Soluble reactive phosphorus (P)	0.5–5 mg/L
Total oxidised nitrogen (TON)	3–60 mg/L

Simple Nutrients in Soft Water

CRM
Cat. #1349

Two 15 mL screw-cap vial spiking concentrates and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample.

Ammonium (NH_4)	0.1–1 mg/L
Nitrate (NO_3)	3–60 mg/L
Nitrite (NO_2)	0.1–1 mg/L
Soluble reactive phosphorus (P)	0.5–5 mg/L
Total oxidised nitrogen (TON)	3–60 mg/L

Organics

Organochlorine Pesticides

CRM
Cat. #1374

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 10–150 ng/L (aldrin, dieldrin, heptachlor, and heptachlor epoxide at 2–40 ng/L).

- Aldrin
- alpha-BHC
- beta-BHC
- delta-BHC
- gamma-BHC (Lindane)
- 2,4′-DDT
- 4,4′-DDD
- 4,4′-DDE
- 4,4′-DDT
- Dieldrin
- Endosulfan I
- Endosulfan II
- Endrin
- Heptachlor
- Heptachlor epoxide
- Hexachlorobenzene
- Pentachlorobenzene
- Trifluralin

CRM
Cat. #1253

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 100–2000 ng/L.

- Aldrin
- alpha-BHC
- beta-BHC
- delta-BHC
- gamma-BHC (Lindane)
- alpha-Chlordane
- gamma-Chlordane
- 4,4′-DDD
- 4,4′-DDE
- 4,4′-DDT
- Dieldrin
- Endosulfan I
- Endosulfan II
- Endosulfan sulfate
- Endrin
- Endrin aldehyde
- Endrin ketone
- Heptachlor
- Heptachlor epoxide (beta)
- Methoxychlor
- Pentachlorobenzene

Organophosphorus Pesticides

CRM
Cat. #1256

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 100–1500 ng/L.

- Azinphos-ethyl
- Azinphos-methyl
- Chlorfenvinphos
- Chlorpyrifos
- Cypermethrin
- Diazinon
- Dichlorvos
- Fenitrothion
- Fenthion
- Malathion
- Mevinphos
- Parathion-ethyl
- Parathion-methyl

Curtis Wood
Strategic Account Manager

Years with Waters ERA: 26

Jennifer Watson
Customer Service Representative

Years with Waters ERA: 9

Organics (continued)

PAHs

CRM
Cat. #1254

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 10–250 ng/L.

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Chrysene
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

PCB Congeners

CRM
Cat. #1373

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 5–100 ng/L.

- PCB 28
- PCB 52
- PCB 101
- PCB 118
- PCB 138
- PCB 153
- PCB 180

CRM
Cat. #1255

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 100–1500 ng/L.

- PCB 28
- PCB 52
- PCB 101
- PCB 118
- PCB 138
- PCB 153
- PCB 180

Semivolatiles

CRM
Cat. #1372

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 2–50 ng/L (benzo(a)pyrene at 1–12 ng/L).

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(a)pyrene
- Butylbenzylphthalate
- Chrysene
- Dibenz(a,h)anthracene
- Di-n-butyl phthalate
- Diethyl phthalate
- Dimethyl phthalate
- Di-n-octyl phthalate
- bis(2-Ethylhexyl)adipate
- bis(2-Ethylhexyl)phthalate
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

Triazines, Urons, and Acid Herbicides

CRM
Cat. #1375

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 10–150 ng/L.

- 2,4-D
- AMPA
- Atrazine
- Bentazon
- Chlortoluron
- Diuron
- Glyphosate
- Isoproturon
- Linuron
- MCPA
- MCPB
- MCPP
- Propazine
- Simazine

CRM
Cat. #1257

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 100–1200 ng/L.

- 2,4-D
- AMPA
- Atrazine
- Bentazone
- Chlortoluron
- Diuron
- Glyphosate
- Isoproturon
- Linuron
- MCPA
- MCPB
- MCPP
- Propazine
- Simazine

Trihalomethanes

CRM
Cat. #1371

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 10–100 µg/L.

- Bromodichloromethane
- Bromoform
- Chlorodibromomethane
- Chloroform

Volatiles

CRM
Cat. #1370

One 2 mL flame-sealed ampule spiking concentrate and one 24 mL screw-cap vial matrix concentrate yields up to 2 liters of sample to be analyzed for the compounds listed below at 0.1–50 µg/L.

- Benzene
- Carbon tetrachloride
- Chlorobenzene
- 1,2-Dichlorobenzene
- 1,4-Dichlorobenzene
- 1,2-Dichloroethane
- 1,1-Dichloroethylene
- cis-1,2-Dichloroethylene
- trans-1,2-Dichloroethylene
- 1,2-Dichloropropane
- Ethylbenzene
- Methylene chloride
- Styrene
- Tetrachloroethene
- Toluene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethene
- Vinyl chloride
- o-Xylene
- m-Xylene
- p-Xylene
- m+p-Xylene
- Xylenes, total

CRM – Certified Reference Material

CUSTOM STANDARDS

Standards manufactured to unique specifications available with a range of analytes, concentrations, and matrices.

Experience. Speed. Reliability.

Did you know that our chemists have prepared more than 20,000 unique custom standards?

Custom projects cover a range of analytes, concentrations, and matrices. Whether it is one standard or one hundred, our chemists regularly prepare standards for a range of needs and situations including managed methodology studies, project or site-specific matrices, project or sample-specific limits, and ultra-trace to percent level concentrations.

Examples of custom standards prepared:

- 10,000 mg/kg total organic carbon in soil
- Organic mercury in fish tissue
- Pesticides in freeze-dried spinach
- XRF metals in soil
- Speciated metal standards
- Organometallic standards

Certification of Custom Standards

Three options for certification of custom standards:

- Gravimetric/volumetric
- Analytical
- ISO 17034 certified reference materials*

**Option is based on Waters ERA's ISO 17034 scope of accreditation.*

From Simple to Complex and Everything in Between

A custom standard containing any analyte from the following programs can be supplied:

- Clean Water Act (CWA)
- Safe Drinking Water Act (SDWA)
- Resource Conservation and Recovery Act (RCRA)
- Superfund Contract Laboratory Program (CLP)
- Standards Council of Canada (SCC)
- Canadian Association for Laboratory Accreditation (CALA)
- Ontario Ministry of the Environment and Climate Change (MOECC) Safe Drinking Water Act (SDWA)

To request a custom quotation, please visit us online at
www.eraqc.com/Resources/OrderForms
or email us at **info@eraqc.com**

Custom Standards

Performance Evaluation With Double-Blind Project

Gain a level of confidence with tangible evidence that your laboratory is meeting all quality objectives through a double-blind performance evaluation.

The key to evaluating the real performance of your laboratory is in finding the proper blend of realistic sample designs and accurate, stable analyte concentrations.

Here is how a performance evaluation program works:

1. Specify the matrices, analytes, and concentrations. If a stock standard is not available, we can design and prepare custom PE standards.
2. Send us your empty sample bottles, labels, chain-of-custody forms, and sample coolers.
3. We prepare, dilute (if necessary), and preserve the standards; fill your sample bottles; and, return the samples to you via overnight delivery service. You'll receive Waters ERA's certified values and performance acceptance limits (PALs) under separate sealed cover.
4. Integrate the standards into your sampling event or introduce them into your lab's routine sample load.
5. Your lab analyzes the blind PE standards along with routine samples.
6. Compare your lab's results to Waters ERA's certified values and performance acceptance limits.

We can help you design a double-blind project that matches your project-specific needs. Speak with a Waters ERA representative today to begin the process of understanding the real performance of your laboratory.

Tom Gilroy
North America Sales & Customer Service Manager

Years with Waters ERA: 1

Matt Graves
Organic Chemist

Years with Waters ERA: 19

CUSTOM STANDARD QUOTATION REQUEST FORM

ERA
A Waters Company

Contact Name: Date:

Waters ERA Customer #: Phone: Fax:

Company Name: Email:

Bill to: Ship to:

☐ (shipping address is the same as billing address) **Date Needed:**

Additional/Special Requirements (packaging, shipping, etc.):

	Analytes	CAS #	Concentrations	Units
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Sample Description (for label):

Matrix/Solvent:

Preservative:

Mass/Volume per Container: Number of Containers:

Intended Use (calibration, QC, etc.):

Prep/Analytical Method:

Select: Ready-to-use ☐ Concentrate ☐ Dilution Instructions:

Most custom standards are gravimetrically certified based on the manufacturing process.
Analytical verification may be available for your custom standard, depending upon the standard formulation. Contact Waters ERA to discuss pricing and availability.

- *A Waters ERA representative will contact you within one business day to discuss your request.*
- *Waters ERA provides blind standards to help you evaluate your laboratory's performance. Call and speak with an ERA representative to learn more.*

Email this form to info@eraqc.com or fax to 303.421.0159.

For immediate assistance with a customs quote, call Waters ERA at 800.372.0122 or 303.431.8454 and speak with a Waters ERA Customer Service Representative.

C0005 Oct 2019

CALIBRATION STANDARDS

A variety of inorganic standards including metals, anions, pH, and other common inorganics that can be used for primary calibration or to prepare second source calibration standards.

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at www.eraqc.com/AboutERA/Accreditations.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

1000 mg/L Standards

Standards can be used for primary calibration or to prepare second source calibration check standards. They are analytically traceable to NIST SRM's where available, and are guaranteed stable for one year. The certification documentation includes manufacturing uncertainties, traceability summaries and densities to aid in performing gravimetric dilutions. The documentation for metal standards includes impurities.

Inorganics – 1000 mg/L

Chemical Oxygen Demand (COD)

500 mL Bottle	125 mL Bottle
Cat. #974	Cat. #042

One 1000 mg/L standard preserved with H_2SO_4 in an amber glass bottle.

Total Kjeldahl Nitrogen (TKN)

500 mL Bottle	125 mL Bottle
Cat. #996	Cat. #043

One 1000 mg/L standard preserved with HCl in a poly bottle.

MBAS/LAS Surfactants

Cat. #975

One 15 mL screw-cap vial with LAS at 1000 mg/L preserved with H_2SO_4.

Total Organic Carbon (TOC)

Cat. #978

One 500 mL amber glass bottles with TOC at 1000 mg/L preserved with H_2SO_4.

Total Organic Halides (TOX)

Cat. #976

One 2 mL flame-sealed ampule with TOX at 1000 mg/L in methanol.

Phenol

Cat. #982

One 500 mL amber glass bottle with phenol at 1000 mg/L preserved with H_2SO_4.

Sulfide

Cat. #999

One 10 mL flame-sealed ampule containing 1000 mg/L sulfide preserved with NaOH and zinc acetate.

Ions – 1000 mg/L

Parameter	Matrix	500 mL Bottle	125 mL Bottle
Acetate	H_2O	—	Cat. #78202
Ammonia as NH_3	H_2O	Cat. #986	Cat. #044
Ammonia as N	H_2O	Cat. #985	Cat. #045
Bromate	H_2O	—	Cat. #065
Bromide	H_2O	Cat. #987	Cat. #046
Chlorate	H_2O	—	Cat. #066
Chloride	H_2O	Cat. #988	Cat. #047
Chlorite	H_2O	—	Cat. #067
Complex cyanide*	NaOH	Cat. #998	Cat. #049
Cyanide (free)	NaOH	Cat. #997	Cat. #048
Fluoride	H_2O	Cat. #989	Cat. #050
Iodide	H_2O	—	Cat. #78212
Nitrate as NO_3	H_2O	Cat. #992	Cat. #051
Nitrate as N	H_2O	Cat. #991	Cat. #052
Nitrite as N	H_2O	Cat. #990	Cat. #053
Perchlorate	H_2O	—	Cat. #068
Phosphate as PO_4	H_2O	Cat. #994	Cat. #060
Phosphate as P	H_2O	Cat. #993	Cat. #061
Sulfate	H_2O	Cat. #995	Cat. #062

*Dangerous good. Requires special shipping.

Cations by Ion Chromatography – 100 mg/L

Parameter	Matrix	125 mL Bottle
Ammonium as NH_4	H_2O	Cat. #78102
Ammonium as N	H_2O	Cat. #78104

Cations by Ion Chromatography – 1000 mg/L

Parameter	Matrix	125 mL Bottle
Calcium	H_2O	Cat. #K10
Magnesium	H_2O	Cat. #K11

Metals – 1000 mg/L

Parameter	Matrix		125 mL Bottle
Aluminum	HNO_3	DG	Cat. #011
Arsenic	HNO_3	DG	Cat. #013
Beryllium	HNO_3	DG	Cat. #015
Bismuth	HNO_3	DG	Cat. #K01
Calcium	HNO_3	DG	Cat. #018
Chromium	HNO_3	DG	Cat. #020
Chromium VI	H_2O	—	Cat. #019
Cobalt	HNO_3	DG	Cat. #021
Copper	HNO_3	DG	Cat. #022
Iron	HNO_3	DG	Cat. #023
Lead	HNO_3	DG	Cat. #024
Lithium	HNO_3	DG	Cat. #K04
Magnesium	HNO_3	DG	Cat. #025
Manganese	HNO_3	DG	Cat. #026
Mercury	HNO_3	DG	Cat. #027
Molybdenum	HNO_3	DG	Cat. #028
Nickel	HNO_3	DG	Cat. #029
Phosphorus	HNO_3	DG	Cat. #063
Potassium	HNO_3	DG	Cat. #030
Selenium	HNO_3	DG	Cat. #031
Silica	H_2O	—	Cat. #064
Silicon	HNO_3	DG	Cat. #032
Silver	HNO_3	DG	Cat. #033
Sodium	HNO_3	DG	Cat. #034
Strontium	HNO_3	DG	Cat. #035
Thallium	HNO_3	DG	Cat. #036
Tin	HCl	DG	Cat. #037
Titanium	HCl	DG	Cat. #038
Vanadium	HNO_3	DG	Cat. #039
Yttrium	HNO_3	DG	Cat. #K08
Zinc	HNO_3	DG	Cat. #040

DG – Dangerous good. Requires special shipping.

Other metals, concentrations, and volumes are also available.

Call Waters ERA Customer Service for more information.

ICP-MS Metals

These standards come with a Certificate of Traceability and Uncertainty. Use for initial as well as continuing calibration and tuning verification. Provided as convenient concentrates with densities allowing you to easily perform gravimetric dilutions.

ICP-MS Trace Metals

CRM
Cat. #TMS001*

One 125 mL screw-cap poly bottle preserved with HNO_3 and tartaric acid*

Aluminum	10.0 mg/L	Manganese	10.0 mg/L
Antimony	10.0 mg/L	Molybdenum	10.0 mg/L
Arsenic	10.0 mg/L	Nickel	10.0 mg/L
Barium	10.0 mg/L	Selenium	10.0 mg/L
Beryllium	10.0 mg/L	Silver	10.0 mg/L
Cadmium	10.0 mg/L	Thallium	10.0 mg/L
Chromium	10.0 mg/L	Thorium	10.0 mg/L
Cobalt	10.0 mg/L	Uranium	10.0 mg/L
Copper	10.0 mg/L	Vanadium	10.0 mg/L
Iron	10.0 mg/L	Zinc	10.0 mg/L
Lead	10.0 mg/L		

*Dangerous good. Requires special shipping.

ICP-MS Major Cations

CRM
Cat. #TMS002*

One 125 mL screw-cap poly bottle preserved with HNO_3*

Calcium	50.0 mg/L	Potassium	50.0 mg/L
Magnesium	50.0 mg/L	Sodium	50.0 mg/L

*Dangerous good. Requires special shipping.

Anions

Ion Chromatography

CRM
Cat. #981

One 15 mL screw-cap vial yields up to 200 mL after dilution. Designed to calibrate or verify IC calibrations.

Call for anion standards at lower levels.

Bromide	0.2–20 mg/L	Nitrate as N	0.2–20 mg/L
Chloride	0.2–20 mg/L	Phosphate as P	0.5–30 mg/L
Fluoride	0.1–10 mg/L	Sulfate	0.5–30 mg/L

AA/ICP Metals

All metals standards come with a Certificate of Traceability. The ICP Trace Metals standard also includes uncertainties. Use as initial as well as continuing calibration verification.

Flame AA Trace Metals

CRM
Cat. #508

One 24 mL screw-cap vial, preserved with HNO_3, yields up to 500 mL after dilution. Designed for flame AA. Includes aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, silver, strontium, thallium, vanadium, and zinc.

Flame AA Cations

CRM
Cat. #530

One 15 mL screw-cap vial, preserved with HNO_3, yields up to 250 mL after dilution.

Use with ICP, IC, and AA methods.

Calcium	10–200 mg/L
Magnesium	10–200 mg/L
Potassium	5–100 mg/L
Sodium	10–250 mg/L

ICP Trace Metals

CRM
Cat. #524*

One 500 mL whole-volume standard, preserved with HNO_3 and HCl, is ready-to-use*

Aluminum	10.0 mg/L
Antimony	1.0 mg/L
Arsenic	1.0 mg/L
Barium	1.0 mg/L
Beryllium	1.0 mg/L
Bismuth	1.0 mg/L
Boron	1.0 mg/L
Cadmium	1.0 mg/L
Calcium	10.0 mg/L
Chromium	1.0 mg/L
Cobalt	1.0 mg/L
Copper	1.0 mg/L
Iron	10.0 mg/L
Lanthanum	10.0 mg/L
Lead	10.0 mg/L
Magnesium	10.0 mg/L
Manganese	1.0 mg/L
Molybdenum	1.0 mg/L
Nickel	1.0 mg/L
Phosphorus	1.0 mg/L
Potassium	10.0 mg/L
Selenium	10.0 mg/L
Sodium	10.0 mg/L
Strontium	1.0 mg/L
Tin	1.0 mg/L
Titanium	1.0 mg/L
Vanadium	1.0 mg/L
Zinc	1.0 mg/L

*Dangerous good. Requires special shipping.

pH Buffers

Our pH Buffers are analytically traceable to NIST SRMs, mercury free, guaranteed stable for at least one year after your receipt, and are supplied with a full certificate of analysis. Choose single bottles or convenient six-bottle cases.

Value	Volume	Single Bottle	Six-Bottle Case
pH 4.00	1 pint	Cat. #127	Cat. #128
pH 7.00	1 pint	Cat. #131	Cat. #132
pH 10.00	1 pint	Cat. #135	Cat. #136
Case of 2 ea.	Pints		Cat. #141

Eric Schmidt
Production Technician

Years with Waters ERA: 26

Tony Ciacco
Chemist

Years with Waters ERA: 22

DON'T STRESS THE TEST

We understand one of the biggest challenges you face in your laboratory is time. To help reduce laboratory stress, we provide you with final PT results in just two business days.

- Gain peace of mind knowing that you passed your PT quickly
- Identify the root cause of analysis problems faster
- Implement corrective actions sooner to improve the defensibility of results in less time

When Time Is Not On Your Side

A critical evaluation is just that – critical. Sometimes you need to quickly demonstrate corrective action or confirm a new method, meaning you can't wait for a regularly scheduled PT. QuiK Response™ PTs are on-demand Proficiency Tests that return final results in just two business days of data entry.

Ask your Waters ERA representative or an authorized sales partner about QuiK Response PTs. For more information, **contact our customer service team at 800.372.0122 / +1.303.431.8454**. or **email info@eraqc.com**.

** Two business day final report turnaround is not valid for the DRM-QA Study. PT results outside of the United States are generally available in 10 business days.*

REAGENTS

Reagents for environmental and industrial analysis.

Contents

Reagents

Industrial reagents with tolerances of +/- 0.5%, and will hold the certified value lot-to-lot within 0.5%. Our reagents are shipped with a certificate of analysis and are homogeneous at a 95% confidence interval.

EDTA

0.01 M, 1 Gallon	Cat. #183160
0.02 M, 1 Gallon	Cat. #183212
0.1 M, 1 Liter	Cat. #183118
0.1 M, 1 Gallon	Cat. #183120*
0.1 M, 5 Gallon	Cat. #187525*

Hydrochloric Acid

0.01 N, 1 Liter	DG	Cat. #183026
0.01 N, 1 Gallon	DG	Cat. #183028*
0.01 N, 5 Gallon	DG	Cat. #187503*
0.1 N, 1 Liter	DG	Cat. #183030
0.1 N, 1 Liter, In IPA	DG	Cat. #184001
0.1 N, 2.5 Liter	DG	Cat. #183010*
0.1 N, 1 Gallon	DG	Cat. #183032
0.1 N, 5 Gallon	DG	Cat. #187506
0.25 N, 1 Liter	DG	Cat. #183034*
0.25 N, 1 Gallon	DG	Cat. #183036*
0.25 N, 5 Gallon	DG	Cat. #187507*
0.5 N, 1 Liter	DG	Cat. #183038*
0.5 N, 1 Gallon	DG	Cat. #183040
0.5 N, 5 Gallon	DG	Cat. #187508
0.65 N, 5 Gallon	DG	Cat. #183016
1.0 N, 1 Liter	DG	Cat. #183042
1.0 N, 1 Gallon	DG	Cat. #183044
1.0 N, 5 Gallon	DG	Cat. #187510*

DG – Dangerous good. Requires special shipping.

pH

pH 2 Buffer, No Color (1 Pint)	Cat. #183004
pH 2 Buffer, No Color (1 Liter)	Cat. #183184
pH 2 Buffer, No Color (1 Gallon)	Cat. #187027
pH 2 Buffer, No Color (5 Gallon)	Cat. #183186*
pH 4 Buffer, No Color (1 Pint)	Cat. #183005
pH 4 Buffer, No Color (1 Liter)	Cat. #183180
pH 4 Buffer, No Color (1 Gallon)	Cat. #183181*
pH 4 Buffer, No Color (5 Gallon)	Cat. #183182
pH 6 Concentrated Buffer, No Color (2.5 Liter)	Cat. #183012
pH 7 Buffer, No Color (1 Pint)	Cat. #183006
pH 7 Buffer, No Color (1 Liter)	Cat. #183187
pH 7 Concentrated Buffer, No Color (2.5 Liter)	Cat. #183013
pH 7 Buffer, No Color (1 Gallon)	Cat. #183188*
pH 7 Buffer, No Color (5 Gallon)	Cat. #183189
pH 10 Buffer, No Color (1 Pint)	Cat. #183007
pH 10 Buffer, No Color (1 Liter)	Cat. #183190
pH 10 Buffer, No Color (1 Gallon)	Cat. #183191*
pH 10 Buffer, No Color (5 Gallon)	Cat. #183192
pH 4 Buffer, Red (1 Gallon)	Cat. #187026
pH 4 Buffer, Red (5 Gallon)	Cat. #183217
pH 7 Buffer, Yellow (1 Gallon)	Cat. #187028
pH 7 Buffer, Yellow (5 Gallon)	Cat. #183218
pH 10 Buffer, Blue (1 Gallon)	Cat. #187029
pH 10 Buffer, Blue (5 Gallon)	Cat. #183219

Potassium Hydroxide

0.01 N, 1 Liter	DG	Cat. #183090
0.01 N, 1 Gallon	DG	Cat. #183092
0.01 N, 5 Gallon	DG	Cat. #187521*
0.1 N, 1 Liter	DG	Cat. #183094
In IPA, 0.1 N, 1 Gallon	DG	Cat. #183211*
0.1 N, 1 Gallon	DG	Cat. #183096*
0.1 N, 5 Gallon	DG	Cat. #187522
0.25 N, 1 Liter	DG	Cat. #183098*
0.25 N, 1 Gallon	DG	Cat. #183100*
0.25 N, 5 Gallon	DG	Cat. #187523*
0.5 N, 1 Liter	DG	Cat. #183102*
0.5 N, 1 Gallon	DG	Cat. #183104*
0.5 N, 5 Gallon	DG	Cat. #187524*

DG – Dangerous good. Requires special shipping.

* This item is a custom order product. Please contact us for ordering details.

Silver Nitrate

0.1 N, 1 Liter	DG	Cat. #183110*
0.1 N, 1 Gallon	DG	Cat. #183112*
0.25 N, 1 Liter	DG	Cat. #183114*
0.25 N, 1 Gallon	DG	Cat. #183116*

Sodium Hydroxide

0.01 N, 1 Liter	DG	Cat. #183070
0.01 N, 1 Gallon	DG	Cat. #183072*
0.01 N, 5 Gallon	DG	Cat. #187516*
0.1 N, 1 Liter	DG	Cat. #183074
0.1 N, 1 Gallon	DG	Cat. #183076
0.1 N, 5 Gallon	DG	Cat. #187517
0.25 N, 1 Liter	DG	Cat. #183078*
0.25 N, 1 Gallon	DG	Cat. #183080*
0.25 N, 5 Gallon	DG	Cat. #187518
0.5 N, 1 Gallon	DG	Cat. #183082*
0.5 N, 5 Gallon	DG	Cat. #187519
1.0 N, 1 Liter	DG	Cat. #183086
1.0 N, 1 Gallon	DG	Cat. #183088*
1.0 N, 5 Gallon	DG	Cat. #183156*

DG – Dangerous good. Requires special shipping.

Sodium Thiosulfate

0.0394 N, 1 Gallon	Cat. #182002
0.0394 N, 5 Gallon	Cat. #182003
0.1 N, 1 Liter	Cat. #183126
0.1 N, 1 Gallon	Cat. #183128
0.25 N, 1 Liter	Cat. #183130
0.25 N, 1 Gallon	Cat. #183132*

Sulfuric Acid

0.01 N, 1 Liter	DG	Cat. #183048
0.01 N, 1 Gallon	DG	Cat. #183049*
0.02 N, 1 Liter	DG	Cat. #183050
0.02 N, 1 Gallon	DG	Cat. #183052
0.02 N, 5 Gallon	DG	Cat. #187511
0.05 N, 1 Liter	DG	Cat. #183003*
0.1 N, 1 Liter	DG	Cat. #183054
0.1 N, 1 Gallon	DG	Cat. #183056*
0.1 N, 5 Gallon	DG	Cat. #187512*
0.2 N, 1 Liter	DG	Cat. #183058*
0.2 N, 1 Gallon	DG	Cat. #183060*
0.2 N, 5 Gallon	DG	Cat. #187514*
0.5 N, 1 Liter	DG	Cat. #183062*
0.5 N, 1 Gallon	DG	Cat. #183064*
1.0 N, 1 Liter	DG	Cat. #183066
1.0 N, 1 Gallon	DG	Cat. #183068*
1.0 N, 5 Gallon	DG	Cat. #187515

Miscellaneous

KOH 5 M, KCN 1 M, 5 Gallon	—	Cat. #183213
Manganese Standard, 40 g/L, 1 Liter	DG	Cat. #183008
Manganese Standard, 55 g/L, 1 Liter	DG	Cat. #183009
TISAB, Fluoride Buffer, 1 Gallon	—	Cat. #183162
Barium Perchlorate, 0.1 N, 1 Liter	—	Cat. #183017
Potassium Dichromate, 0.1 N, 1 Liter	DG	Cat. #183221
Potassium Permanganate, 0.1 N, 2.5 Liter	DG	Cat. #183001
Ferrous Ammonium Sulfate, 0.25 N, 1 Gallon	DG	Cat. #183011
Phenolphthalein, 0.5%, 1 Pint	DG	Cat. #183168*
Sodium Carbonate, 1.0 N, 1 Liter	—	Cat. #183172
Sodium Carbonate, 25 g/L, 10 Liter	—	Cat. #183002

DG – Dangerous good. Requires special shipping.

* This item is a custom order product. Please contact us for ordering details.

Matthew Seebeck
Quality Manager

Years with Waters ERA: 3

Kathie Paulling
Project Coordinator - Customs, Reagents

Years with Waters ERA: 16