

Environmental and Process Water

Proficiency Testing and Reference Materials



Your Partner In Quality

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

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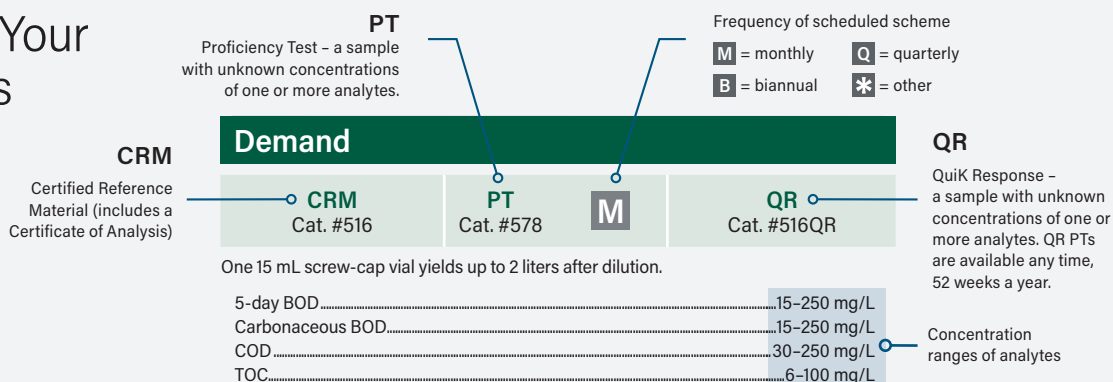
New and Reformulated Products

Cat #	Product	Product Type
597	1,4-Dioxane (WP)	PT 14
402	1,4-Dioxane (WP)	CRM 14
402QR	1,4-Dioxane (WP)	QR 14
272	1,4-Dioxane (WS)	PT 27
689	1,4-Dioxane (WS)	CRM 27
689QR	1,4-Dioxane (WS)	QR 27
461	1,4-Dioxane Soil	PT 39
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538QR	1,4-Dioxane Soil	QR 39
598	PFAS (Non-Potable Water (WP))	PT 15
403	PFAS (Non-Potable Water (WP))	CRM 15
403QR	PFAS (Non-Potable Water (WP))	QR 15
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735QR	PFAS Drinking Water	QR 28
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604	PFAS Soil	CRM 41
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Ordering Your Standards



DELIVERING CONTINUOUS SUPPORT

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

1977

ERA receives ISO 9001 certification

1993

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

2000

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

2006

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

1982

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

1999

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

2006



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

2008

Waters ERA introduces Stationary Source Audit Sample (SSAS)

2013

eDATA 2.0 is launched

2015

Today

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

2008

Waters ERA products go to the International Space Station

2014

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

2019

Major upgrades to business systems that deliver superior customer experience



A Waters Company

2020 Proficiency Testing Scheme Schedule



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

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

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

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



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



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

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

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

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 2021

	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

	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

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1 Liter Oil & Grease	518	582 M	518QR	11
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Bromide	769	887 Q	769QR	14
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Description	CRM	PT	QR	Page
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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 Cat. #506	PT Cat. #581	M	QR Cat. #506QR
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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	PT Cat. #580	M	QR Cat. #507QR
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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 Cat. #911	PT Cat. #883	M	QR Cat. #911QR
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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
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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 Cat. #913	PT Cat. #884	M	QR Cat. #913QR
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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
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Solids Concentrate

CRM Cat. #4032	PT Cat. #4030	M	QR Cat. #4032QR
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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 Cat. #499	PT Cat. #241	M	QR Cat. #499QR
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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 Cat. #505	PT Cat. #584	M	QR Cat. #505QR
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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 Cat. #525	PT Cat. #579	M	QR Cat. #525QR
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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 Cat. #770	PT Cat. #888	M	QR Cat. #770QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution.

Nitrite as N.....	0.4–4 mg/L
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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
Cat. #4122

PT
Cat. #4120

M

QR
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
Cat. #518

PT
Cat. #582

M

QR
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
Cat. #818

PT
Cat. #582

M

QR
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
Cat. #519

PT
Cat. #489

Q

QR
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
Cat. #600

PT
Cat. #642

Q

QR
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
Cat. #601

PT
Cat. #642

Q

QR
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 Cat. #516	PT Cat. #578	M	QR Cat. #516QR
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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 Cat. #500	PT Cat. #586	M	QR Cat. #500QR
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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 Cat. #514	PT Cat. #574	M	QR Cat. #514QR
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One 15 mL screw-cap vial yields up to 1 liter after dilution. Analyze for total mercury.

Total mercury.....	3-30 µg/L
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Low-Level Mercury

CRM Cat. #931	PT Cat. #896	Q	QR Cat. #931QR
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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
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Waters ERA Low-Level Mercury is also available during February and March WP PT schemes.

Metals (continued)

Hexavalent Chromium

CRM Cat. #984	PT Cat. #898	M	QR Cat. #984QR
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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
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Tin and Titanium

CRM Cat. #517	PT Cat. #573	M	QR Cat. #517QR
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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 Cat. #4402	PT Cat. #4400	Q	QR Cat. #4402QR
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One 15 mL screw-cap vial yields up to 1 liter after dilution.

Uranium.....	25-200 µg/L
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Lithium

CRM Cat. #4992	PT Cat. #4990	*	QR Cat. #4992QR
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One 15 mL screw-cap vial yields up to 1 liter after dilution. Designed for the Ohio VAP program.

Lithium.....	50-500 µg/L
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* Waters ERA WP Lithium PTs open in February and August.

Physical Property

Color

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

Color10-75 PC units

Turbidity

CRM Cat. #777	PT Cat. #893	M	QR Cat. #777QR
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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 Cat. #502	PT Cat. #588	M	QR Cat. #502QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution.

Total cyanide0.1-1 mg/L
Amenable cyanide0.1-1 mg/L

Dissolved Oxygen

CRM Cat. #213	PT Cat. #212	Q	QR Cat. #213QR
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One 500 mL whole-volume bottle is ready to analyze.

Dissolved oxygen.....1-20 mg/L

Total Organic Halides (TOX)

CRM Cat. #670	PT Cat. #895	Q	QR Cat. #670QR
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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 Cat. #515	PT Cat. #589	M	QR Cat. #515QR
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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-AAP0.5-5 mg/L

Perchlorate

CRM Cat. #1501	PT Cat. #1500	Q	QR Cat. #1501QR
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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 Cat. #775	PT Cat. #890	Q	QR Cat. #775QR
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One 60 mL poly bottle yields up to 1 liter after dilution. Analyze for silica as SiO₂ with colorimetric or ICP methods.

Silica as SiO₂.....50-250 mg/L

Sulfide

CRM Cat. #071	PT Cat. #891	M	QR Cat. #071QR
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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 Cat. #534	PT Cat. #244	B	QR Cat. #534QR
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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 Cat. #776	PT Cat. #892	Q	QR Cat. #776QR
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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-MBAS0.2-1 mg/L

Acidity

CRM Cat. #915	PT Cat. #885	Q	QR Cat. #915QR
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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 CaCO₃.....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 Cat. #977	PT Cat. #577	M	QR Cat. #977QR
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One 250 mL whole-volume bottle is ready to analyze.

pH.....5-10 units

Boron

CRM Cat. #919	PT Cat. #886	Q	QR Cat. #919QR
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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 Cat. #769	PT Cat. #887	Q	QR Cat. #769QR
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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 Cat. #501	PT Cat. #587	M	QR Cat. #501QR
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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 Cat. #917	PT Cat. #881	M	QR Cat. #917QR
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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 Cat. #710	PT Cat. #830	M	QR Cat. #710QR
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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	1,2-Dibromo-3-chloropropane (DBCP)	Methyl tert-butyl ether (MTBE)
Acetonitrile	1,2-Dibromoethane (EDB)	4-Methyl-2-pentanone (MIBK)
Acrolein	Dibromomethane	Methylene chloride
Acrylonitrile	1,2-Dichlorobenzene	Naphthalene
Benzene	1,3-Dichlorobenzene	Nitrobenzene
Bromobenzene	1,4-Dichlorobenzene	n-Propylbenzene
Bromochloromethane	Dichlorodifluoromethane	Styrene
Bromodichloromethane	1,1-Dichloroethane	1,1,1,2-Tetrachloroethane
Bromoform	1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
Bromomethane	cis-1,2-Dichloroethane	Tetrachloroethene
2-Butanone (MEK)	1,1-Dichloroethene	Toluene
n-Butylbenzene	trans-1,2-Dichloroethene	1,2,3-Trichlorobenzene
sec-Butylbenzene	1,3-Dichloropropane	1,2,4-Trichlorobenzene
tert-Butylbenzene	1,2-Dichloropropane	1,1,1-Trichloroethane
Carbon disulfide	2,2-Dichloropropane	1,1,2-Trichloroethane
Carbon tetrachloride	cis-1,3-Dichloropropene	Trichloroethene
Chlorobenzene	1,1-Dichloropropene	Trichlorofluoromethane
Chlorodibromomethane	trans-1,3-Dichloropropene	1,2,3-Trichloropropane
Chloroethane	Ethylbenzene	1,2,4-Trimethylbenzene
2-Chloroethyl vinyl ether	Hexachlorobutadiene	1,3,5-Trimethylbenzene
Chloroform	Hexachloroethane	Vinyl acetate
Chloromethane	2-Hexanone	Vinyl chloride
2-Chlorotoluene	Isopropylbenzene	m&p Xylene
4-Chlorotoluene	p-Isopropyltoluene	o-Xylene
		Xylenes, total

1,4-Dioxane NEW PRODUCT

CRM Cat. #402	PT Cat. #597	B	QR Cat. #402QR
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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 Cat. #4452	PT Cat. #4450	Q	QR Cat. #4452QR
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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	Ethylbenzene	1,3,5-Trimethylbenzene
Chlorobenzene	Naphthalene	m&p Xylene
1,2-Dichlorobenzene	Toluene	o-Xylene
1,3-Dichlorobenzene	1,2,4-Trichlorobenzene	Xylenes, total
1,4-Dichlorobenzene	1,2,4-Trimethylbenzene	

BTEX & MTBE in Water

CRM Cat. #760	PT Cat. #643	Q	QR Cat. #760QR
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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 Cat. #762	PT Cat. #640	Q	QR Cat. #762QR
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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 Cat. #734S	PT Cat. #832S	M	QR Cat. #734SQR
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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 1242	Aroclor 1254
Aroclor 1221	Aroclor 1248	Aroclor 1260
Aroclor 1232		

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 Cat. #729S	PT Cat. #835S	M	QR Cat. #729SQR
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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 1242	Aroclor 1254
Aroclor 1221	Aroclor 1248	Aroclor 1260
Aroclor 1232		

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

Per- and Polyfluoroalkyl Substances (PFAS)

PFAS - Non-Potable Water

NEW PRODUCT

CRM Cat. #403	PT Cat. #598	B	QR Cat. #403QR
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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-chloroeicosafuoro-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 Cat. #718	PT Cat. #829	M	QR Cat. #718QR
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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	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)

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 Cat. #711	PT Cat. #833	M	QR Cat. #711QR
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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	2-Chloronaphthalene	Hexachlorocyclopentadiene
Acenaphthylene	4-Chlorophenyl phenyl ether	Hexachloroethane
2-Amino-1-methylbenzene (o-Toluidine)	Chrysene	Indeno(1,2,3-cd)pyrene
Aniline	Dibenz(a,h)anthracene	Isophorone
Anthracene	Dibenzofuran	2-Methylnaphthalene
Benzidine	1,2-Dichlorobenzene	Naphthalene
Benzo(a)anthracene	1,3-Dichlorobenzene	2-Nitroaniline
Benzo(b)fluoranthene	1,4-Dichlorobenzene	3-Nitroaniline
Benzo(k)fluoranthene	3,3'-Dichlorobenzidine	4-Nitroaniline
Benzo(g,h,i)perylene	Diethyl phthalate	Nitrobenzene
Benzo(a)pyrene	Dimethyl phthalate	N-Nitrosodiethylamine
Benzyl alcohol	Di-n-butyl phthalate	N-Nitrosodimethylamine
4-Bromophenyl phenyl ether	2,4-Dinitrotoluene	N-Nitroso-di-n-propylamine
Butyl benzyl phthalate	2,6-Dinitrotoluene	N-Nitrosodiphenylamine
Carbazole	Di-n-octyl phthalate	2,2'-Oxybis(1-Chloropropane)
4-Chloroaniline	bis(2-Ethylhexyl)phthalate	Pentachlorobenzene
bis(2-Chloroethoxy)methane	Fluoranthene	Phenanthrene
bis(2-Chloroethyl)ether	Fluorene	Pyrene
1-Chloronaphthalene	Hexachlorobenzene	Pyridine
	Hexachlorobutadiene	1,2,4,5-Tetrachlorobenzene
		1,2,4-Trichlorobenzene

Acids

CRM Cat. #712	PT Cat. #834	M	QR Cat. #712QR
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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	2,4-Dinitrophenol	Pentachlorophenol
4-Chloro-3-methylphenol	2-Methyl-4,6-dinitrophenol	Phenol
2-Chlorophenol	2-Methylphenol	2,3,4,6-Tetrachlorophenol
2,4-Dichlorophenol	3 & 4-Methylphenol	2,4,5-Trichlorophenol
2,6-Dichlorophenol	2-Nitrophenol	2,4,6-Trichlorophenol
2,4-Dimethylphenol	4-Nitrophenol	

Diesel Range Organics (DRO) in Water

CRM Cat. #764	PT Cat. #641	Q	QR Cat. #764QR
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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 Cat. #692	PT Cat. #562	Q	QR Cat. #692QR
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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 Cat. #401	PT Cat. #271	Q	QR Cat. #401QR
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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 µg/L.

Diethylene glycol	Propylene glycol	Triethylene glycol
Ethylene glycol	Tetraethylene glycol	

Low-Level Nitroaromatics & Nitramines

CRM Cat. #677	PT Cat. #932	Q	QR Cat. #677QR
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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	HMX	RDX
2-Amino-4,6-dinitrotoluene	Nitrobenzene	Tetryl
1,3-Dinitrobenzene	2-Nitrotoluene	1,3,5-Trinitrobenzene
2,4-Dinitrotoluene	3-Nitrotoluene	2,4,6-Trinitrotoluene
2,6-Dinitrotoluene	4-Nitrotoluene	

Low-Level PAHs

CRM Cat. #715	PT Cat. #836	Q	QR Cat. #715QR
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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	Benzo(g,h,i)perylene	Fluorene
Acenaphthylene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene
Anthracene	Chrysene	Naphthalene
Benzo(a)anthracene	Dibenz(a,h)anthracene	Phenanthrene
Benzo(b)fluoranthene	Fluoranthene	Pyrene
Benzo(k)fluoranthene		

PAHs – GC/GCMS

CRM Cat. #4882	PT Cat. #4880	Q	QR Cat. #4882QR
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One 2 mL 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	Benzo(k)fluoranthene	Indeno(1,2,3-cd)pyrene
Acenaphthylene	Benzo(g,h,i)perylene	1-Methylnaphthalene
Anthracene	Chrysene	2-Methylnaphthalene
Benzo(a)anthracene	Dibenz(a,h)anthracene	Naphthalene
Benzo(a)pyrene	Fluoranthene	Phenanthrene
Benzo(b)fluoranthene	Fluorene	Pyrene

Pesticides

Organochlorine Pesticides

CRM Cat. #713	PT Cat. #831	M	QR Cat. #713QR
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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	4,4'-DDD	Endrin
alpha-BHC	4,4'-DDE	Endrin aldehyde
beta-BHC	4,4'-DDT	Endrin ketone
delta-BHC	Dieldrin	Heptachlor
gamma-BHC (Lindane)	Endosulfan I	Heptachlor epoxide (beta)
alpha-Chlordane	Endosulfan II	Methoxychlor
gamma-Chlordane	Endosulfan sulfate	

Chlordane

CRM Cat. #716	PT Cat. #837	M	QR Cat. #716QR
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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 Cat. #717	PT Cat. #838	M	QR Cat. #717QR
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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 Cat. #908	PT Cat. #899	Q	QR Cat. #908QR
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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	Carbaryl	Methiocarb
Aldicarb sulfone	Carbofuran	Methomyl
Aldicarb sulfoxide	Diuron	Oxamyl
Baygon	3-Hydroxycarbofuran	Propham

Audrey Cornell
Principal Proficiency Testing
Technical Specialist
Years with Waters ERA: 21



Nitrogen Pesticides

CRM Cat. #674	PT Cat. #487	Q	QR Cat. #674QR
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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	Deethyl atrazine	Prometon
Ametryn	Deisopropyl atrazine	Prometryn
Anilazine	Diaminotrazine	Pronamide
Atraton	EPTC (eptam)	Propachlor
Atrazine	Hexazinone	Propazine
Bromacil	Metolachlor	Simazine
Butachlor	Metribuzin	Terbacil
Butylate	Napropamide	Trifluralin
Cyanazine		

Organophosphorus Pesticides (OPP)

CRM Cat. #665	PT Cat. #934	Q	QR Cat. #665QR
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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)	Dioxathion	Malathion
Carbophenothion	Disulfoton	Methyl parathion
Chlorpyrifos	Ethion	Phorate
Demeton	Ethoprop	Phosmet
Demeton O & S	Ethyl Parathion (parathion)	Ronnel
Diazinon	Famphur	Stirophos (tetrachlorovinphos)
Dichlorvos (DDVP)	Fonofos	Terbufos
Dimethoate		

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.

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
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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
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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
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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



Eric Negrey
IT Manager
Years with Waters: 1

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
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QC Plus - pH

CRM
Cat. #4063

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

pH.....	2.00-12.0 units
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QC Plus - Fluoride

CRM
Cat. #4423

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

Fluoride.....	5-20 mg/L
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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

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Ammonia as N	1359	1319 B	1359QR	25
Carbamates/Carbamoxylxime Pesticides	707	846 M	707QR	28
Chloral Hydrate	676	853 B	676QR	25
Chlordane	705	845 M	705QR	28
Chlorinated Acid Herbicides	704	851 M	704QR	30
Color	661	859 Q	661QR	26
Corrosivity	980	900 Q	980QR	26
Cyanide	983	556 M	983QR	25
Dioxin	663	857 Q	663QR	30
EDB/DBCP/TCP	706	847 M	706QR	30
Gasoline Additives	909	905 Q	909QR	27
Haloacetic Acids (HAA)	684	852 M	684QR	25
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Hardness	693	555 M	693QR	24
Hexavalent Chromium	658	854 Q	658QR	24
Inorganic Disinfection #1	5272	5270 M	5272QR	25
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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.

Description	CRM	PT	QR	Page
Nitrite	695	594 M	695QR	25
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Perchlorate	910	903 Q	910QR	26
Pesticides	709	850 M	709QR	28
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PFAS Ground Water and Surface Water	731	929 Q	731QR	28
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Regulated Volatiles	703	840 M	703QR	27
Residual Chlorine	696	593 M	696QR	25
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Toxaphene	700	844 M	700QR	28
Turbidity	699	592 M	699QR	26
Unregulated Volatiles	683	841 M	683QR	27
Uranium	930	858 Q	930QR	24
UV 254 Absorbance	662	904 Q	662QR	26
Vanadium	660	856 Q	660QR	24

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 Cat. #693	PT Cat. #555	M	QR Cat. #693QR
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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 Cat. #698	PT Cat. #591	M	QR Cat. #698QR
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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 Cat. #5152	PT Cat. #5150	M	QR Cat. #5152QR
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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 Cat. #697	PT Cat. #590	M	QR Cat. #697QR
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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 Cat. #666	PT Cat. #551	M	QR Cat. #666QR
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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
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Hexavalent Chromium

CRM Cat. #658	PT Cat. #854	Q	QR Cat. #658QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution.

Hexavalent chromium.....	5-50 µg/L
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Uranium

CRM Cat. #930	PT Cat. #858	Q	QR Cat. #930QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution. Use with ICP-MS methods.

Uranium.....	3-104 µg/L
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Vanadium

CRM Cat. #660	PT Cat. #856	Q	QR Cat. #660QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution. Designed to meet California ELAP requirements.

Vanadium.....	5-50 µg/L
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Disinfection By-Products

Chloral Hydrate

CRM Cat. #676	PT Cat. #853	B	QR Cat. #676QR
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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 Cat. #684	PT Cat. #852	M	QR Cat. #684QR
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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	Dichloroacetic acid	Monochloroacetic acid
Dibromoacetic acid	Monobromoacetic acid	Trichloroacetic acid

Inorganic Disinfection #1

CRM Cat. #5272	PT Cat. #5270	M	QR Cat. #5272QR
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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 Cat. #5262	PT Cat. #5260	M	QR Cat. #5262QR
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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 Cat. #1359	PT Cat. #1319	B	QR Cat. #1359QR
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One 15 mL screw-cap vial yields up to 1 liter after dilution.

Ammonia as N.....	0.1–1 mg/L
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B Waters ERA WS Ammonia as N PTs open in January and July.

Nitrite

CRM Cat. #695	PT Cat. #594	M	QR Cat. #695QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution.

Nitrite as N.....	0.4–2 mg/L
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o-Phosphate Nutrients

CRM Cat. #667	PT Cat. #558	M	QR Cat. #667QR
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One 15 mL screw-cap vial yields up to 2 liters after dilution.

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

Residual Chlorine

CRM Cat. #696	PT Cat. #593	M	QR Cat. #696QR
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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 Cat. #983	PT Cat. #556	M	QR Cat. #983QR
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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

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

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Darren Sauer
 Senior Customer Service
 Representative
 Years with Waters ERA: 22

Miscellaneous Inorganic (continued)

Organic Carbon

CRM
Cat. #669PT
Cat. #557

M

QR
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
Cat. #910PT
Cat. #903

Q

QR
Cat. #910QR

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

Perchlorate.....4-20 µg/L

pH

CRM
Cat. #779PT
Cat. #552

M

QR
Cat. #779QR

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

pH.....5-10 units

Silica

CRM
Cat. #785PT
Cat. #902

Q

QR
Cat. #785QR

One 60 mL poly bottle yields 1 liter after dilution.

Silica as SiO₂.....5-75 mg/L

Surfactants-MBAS

CRM
Cat. #784PT
Cat. #901

Q

QR
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
Cat. #661PT
Cat. #859

Q

QR
Cat. #661QR

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

Color.....10-75 PC units

Corrosivity

CRM
Cat. #980PT
Cat. #900

Q

QR
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
Cat. #699PT
Cat. #592

M

QR
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
Cat. #662PT
Cat. #904

Q

QR
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 Cat. #689	PT Cat. #272	B	QR Cat. #689QR
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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 Cat. #909	PT Cat. #905	Q	QR Cat. #909QR
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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)	Ethyl tert-butyl ether (ETBE)	Trichlorofluoromethane
tert-Butyl alcohol	Methyl tert-butyl ether (MTBE)	(Freon® 11)
Di-isopropylether (DIPE)		Trichlorotrifluoroethane
		(Freon 113)

Halomethanes (THMs)

CRM Cat. #702	PT Cat. #842	M	QR Cat. #702QR
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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	Chlorodibromomethane	Chloroform
Bromoform		

Regulated Volatiles

CRM Cat. #703	PT Cat. #840	M	QR Cat. #703QR
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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	cis-1,2-Dichloroethylene	Toluene
Carbon tetrachloride	trans-1,2-Dichloroethylene	1,2,4-Trichlorobenzene
Chlorobenzene	1,2-Dichloropropane	1,1,1-Trichloroethane
1,2-Dichlorobenzene	Ethylbenzene	1,1,2-Trichloroethane
1,4-Dichlorobenzene	Methylene chloride	Trichloroethylene
1,2-Dichloroethane	Styrene	Vinyl chloride
1,1-Dichloroethylene	Tetrachloroethylene	Xylenes, total

Unregulated Volatiles

CRM Cat. #683	PT Cat. #841	M	QR Cat. #683QR
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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	1,3-Dichlorobenzene	4-Isopropyltoluene
Bromochloromethane	Dichlorodifluoromethane	Methyl tert-butyl ether (MTBE)
Bromomethane	1,1-Dichloroethane	Naphthalene
n-Butylbenzene	1,3-Dichloropropane	n-Propylbenzene
sec-Butylbenzene	2,2-Dichloropropane	1,1,1,2-Tetrachloroethane
tert-Butylbenzene	1,1-Dichloropropene	1,1,2,2-Tetrachloroethane
Chloroethane	cis-1,3-Dichloropropene	1,2,3-Trichlorobenzene
Chloromethane	trans-1,3-Dichloropropene	1,2,3-Trichloropropene
2-Chlorotoluene	Fluorotrichloromethane	1,2,4-Trimethylbenzene
4-Chlorotoluene	Hexachlorobutadiene	1,3,5-Trimethylbenzene
Dibromomethane	Isopropylbenzene	

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

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Per- and Polyfluoroalkyl Substances (PFAS)

PFAS Drinking Water NEW ANALYTES

CRM Cat. #735	PT Cat. #960	Q	QR 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-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11CI-PF30UDS)	50-500 ng/L		
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-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 Cat. #731	PT Cat. #929	Q	QR 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-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11CI-PF30UDS)	100-500 ng/L		
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CI-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 Cat. #709	PT Cat. #850	M	QR 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	Heptachlor		Metribuzin
Aldrin	Heptachlor epoxide (beta)		Molinate (ordram)
Atrazine	Hexachlorobenzene		Prometon
Bromacil	Hexachlorocyclopentadiene		Propachlor
Butachlor	Lindane (gamma-BHC)		Simazine
Diazinon	Methoxychlor		Thiobencarb
Dieldrin	Metolachlor		Trifluralin
Endrin			

Carbamate/Carbamoyloxime Pesticides

CRM Cat. #707	PT Cat. #846	M	QR 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	Carbaryl		Methiocarb
Aldicarb sulfone	Carbofuran		Methomyl
Aldicarb sulfoxide	3-Hydroxycarbofuran		Oxamyl
Baygon			

Chlordane

CRM Cat. #705	PT Cat. #845	M	QR 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 Cat. #700	PT Cat. #844	M	QR 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.

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SAMPLE PREPARATION | CHEMISTRIES | COLUMNS | CHROMATOGRAPHY | MASS SPECTROMETRY

Pesticides (continued)

EDB/DBCP/TCP

CRM Cat. #706	PT Cat. #847	M	QR Cat. #706QR
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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) 1,2,3-Trichloropropane (1,2,3-TCP)
Ethylene dibromide (EDB)

Low-Level 1,2,3-TCP

CRM Cat. #682	PT Cat. #596	B	QR Cat. #682QR
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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 Cat. #663	PT Cat. #857	Q	QR Cat. #663QR
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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 Cat. #708	PT Cat. #839	Q	QR Cat. #708QR
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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 1242 Aroclor 1254
Aroclor 1221 Aroclor 1248 Aroclor 1260
Aroclor 1232

Semivolatile Organics (continued)

Semivolatiles #1

CRM Cat. #690	PT Cat. #848	M	QR Cat. #690QR
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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	Butyl benzyl phthalate	bis(2-Ethylhexyl)phthalate
Acenaphthylene	Chrysene	Fluoranthene
Anthracene	Dibenz(a,h)anthracene	Fluorene
Benzo(a)anthracene	Di-n-butyl phthalate	Indeno(1,2,3-cd)pyrene
Benzo(b)fluoranthene	Diethyl phthalate	Naphthalene
Benzo(k)fluoranthene	Dimethyl phthalate	Phenanthrene
Benzo(g,h,i)perylene	Di-n-octyl phthalate	Pyrene
Benzo(a)pyrene	bis(2-Ethylhexyl)adipate	

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 Cat. #704	PT Cat. #851	M	QR Cat. #704QR
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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	Dalapon	4-Nitrophenol
Bentazon	Dicamba	Pentachlorophenol
Chloramben	3,5-Dichlorobenzoic acid	Picloram
2,4-D	Dichlorprop	2,4,5-T
2,4-DB	Dinoseb	2,4,5-TP (silvex)
Dacthal diacid (DCPA)		

Semivolatiles #2 Herbicides

CRM Cat. #691	PT Cat. #849	M	QR Cat. #691QR
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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	Glyphosate	Paraquat
Endothall		

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.

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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.

Description	CRM	PT	QR	Page
Enterococci	081	880 Q	787QR	34
Heterotrophic Plate Count (WP)		935 B		34
Heterotrophic Plate Count (WS)	084	079 M	084QR	34
Massachusetts Ground Water Enterococci	081	077 *	–	34
Potable Water Coliform Microbe	694	080 M	085QR	34
Source Water Microbe	078	595 Q	078QR	34
Source Water Microbe - 9221	078A	595A Q	078AQR	34
Wastewater Coliform Microbe	083	576 M	786QR	34
Wastewater Coliform Microbe - 9221	083A	576A M	786AQR	34

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
Cat. #083

PT
Cat. #576

M

QR
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
Cat. #083A

PT
Cat. #576A

M

QR
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
Cat. #081

PT
Cat. #880

Q

QR
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.

State-Specific Microbiology

Massachusetts Ground Water Enterococci

CRM
Cat. #081

PT
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.

WS Microbiology

Heterotrophic Plate Count

CRM
Cat. #084

PT
Cat. #079

M

QR
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
Cat. #694

PT
Cat. #080

M

QR
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
Cat. #078

PT
Cat. #595

Q

QR
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
Cat. #078A

PT
Cat. #595A

Q

QR
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.

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

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Anions in Soil	543	873 Q	543QR	39
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BTEX & MTBE in Soil	761	633 Q	761QR	40
Carbamate Pesticides in Soil	926	879 Q	926QR	43
Chlordane in Soil	725	628 Q	725QR	43
Chlorinated Acid Herbicides in Soil	723	626 Q	723QR	42
Corrosivity/pH in Soil	914	875 Q	914QR	38
Cyanide in Soil	541	621 Q	541QR	39
Diesel Range Organics (DRO) in Soil	765	631 Q	765QR	41
Gasoline Range Organics (GRO) in Soil	763	630 Q	763QR	39
Glycols in Soil	928	463 Q	928QR	41
Hexavalent Chromium in Soil	921	876 Q	921QR	38
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Metals in Sewage Sludge	160	619 Q	160QR	38
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Organophosphorus Pesticides (OPP) in Soil	925	878 Q	925QR	43
PCBs in Oil	563	817 Q	563QR	42
PCBs in Oil Standards	see page 42 for options			
PCBs in Soil	726	624 Q	726QR	42
PCBs in Soil Standards	see page 42 for options			
Per- and Polyfluoroalkyl Substances (PFAS) in Soil	604	462 Q	604QR	41
Ready-to-Use VOAs in Soil	924	870 Q	924QR	40
TCLP Metals in Soil	544	629 Q	544QR	38
TCLP Organochlorine Pesticides	732	—	732QR	40
TCLP Semivolatiles	737	—	737QR	40
TCLP Volatiles	730	—	730QR	40
Total Petroleum Hydrocarbons (TPH) in Soil #1	570	632 Q	572QR	40
Total Petroleum Hydrocarbons (TPH) in Soil #2	571	632 Q	572QR	40
Toxaphene in Soil	724	627 Q	724QR	43
Volatiles in Soil	721	623 Q	721QR	39

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 Cat. #540	PT Cat. #620	Q	QR Cat. #540QR
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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 Cat. #921	PT Cat. #876	Q	QR Cat. #921QR
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One 40 g standard in a screw-cap bottle for use with all promulgated hexavalent chromium methods.

Hexavalent chromium.....	40-300 mg/kg
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TCLP Metals in Soil

CRM Cat. #544	PT Cat. #629	Q	QR Cat. #544QR
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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 Cat. #160	PT Cat. #619	Q	QR Cat. #160QR
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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 Cat. #914	PT Cat. #875	Q	QR Cat. #914QR
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One 100 g soil standard in a screw-cap bottle. Use to measure corrosivity.

Corrosivity/pH.....	2-12 S.U.
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Ignitability/Flash Point

CRM Cat. #979	PT Cat. #874	Q	QR Cat. #979QR
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One standard packaged in three 30 mL bottles. Use to measure ignitability.

Ignitability/flashpoint.....	100-200 °F
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Oil & Grease in Soil

CRM Cat. #549	PT Cat. #867	Q	QR Cat. #549QR
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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 Cat. #543	PT Cat. #873	Q	QR Cat. #543QR
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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 Cat. #541	PT Cat. #621	Q	QR Cat. #541QR
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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 Cat. #542	PT Cat. #869	Q	QR Cat. #542QR
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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 in Soil

CRM Cat. #721	PT Cat. #623	Q	QR Cat. #721QR
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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	1,3-Dichlorobenzene	1,1,2,2-Tetrachloroethane
Acetonitrile	1,4-Dichlorobenzene	Tetrachloroethene
Acrolein	Dichlorodifluoromethane	Toluene
Benzene	1,1-Dichloroethane	1,2,3-Trichlorobenzene
Bromobenzene	1,2-Dichloroethane	1,2,4-Trichlorobenzene
Bromochloromethane	1,1-Dichloroethylene	1,1,1-Trichloroethane
Bromodichloromethane	cis-1,2-Dichloroethylene	1,1,2-Trichloroethane
Bromoform	trans-1,2-Dichloroethylene	Trichloroethene
Bromomethane	1,2-Dichloropropane	Trichlorofluoromethane
2-Butanone (MEK)	1,3-Dichloropropane	1,2,3-Trichloropropane
n-Butylbenzene	2,2-Dichloropropane	1,2,4-Trimethylbenzene
sec-Butylbenzene	1,1-Dichloropropene	1,3,5-Trimethylbenzene
tert-Butylbenzene	cis-1,3-Dichloropropylene	Vinyl acetate
Carbon disulfide	trans-1,3-Dichloropropylene	Vinyl chloride
Carbon tetrachloride	Ethylbenzene	m&p-Xylene
Chlorobenzene	Hexachlorobutadiene	o-Xylene
Chlorodibromomethane	Hexachloroethane	Xylenes, total
Chloroethane	2-Hexanone	
2-Chloroethyl vinyl ether	Isopropylbenzene	
Chloroform	p-Isopropyltoluene	
Chloromethane	Methyl tert-butyl ether (MTBE)	
2-Chlorotoluene	4-Methyl-2-pentanone (MIBK)	
4-Chlorotoluene	Methylene chloride	
1,2-Dibromo-3-chloropropane (DBCP)	Naphthalene	
1,2-Dibromoethane (EDB)	Nitrobenzene	
Dibromomethane	n-Propylbenzene	
1,2-Dichlorobenzene	Styrene	
	1,1,1,2-Tetrachloroethane	

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 Cat. #538	PT Cat. #461	B	QR Cat. #538QR
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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
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Gasoline Range Organics (GRO) in Soil

CRM Cat. #763	PT Cat. #630	Q	QR Cat. #763QR
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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/IR 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 Cat. #761	PT Cat. #633	Q	QR Cat. #761QR
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One 2 mL flame-sealed ampule requires spiking onto the ten grams of provided certified clean soil. Includes the analytes below at 20–200 µg/kg (40–400 µg/kg for total xylenes). Use with EPA Method 8021, or other applicable methods.

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

Ready-to-Use VOAs in Soil

CRM Cat. #924	PT Cat. #870	Q	QR Cat. #924QR
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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	1,2-Dibromoethane (EDB)	Methylene chloride
Acetonitrile	Dibromomethane	Naphthalene
Acrolein	1,2-Dichlorobenzene	Nitrobenzene
Benzene	1,3-Dichlorobenzene	n-Propylbenzene
Bromobenzene	1,4-Dichlorobenzene	Styrene
Bromochloromethane	Dichlorodifluoromethane	1,1,1,2-Tetrachloroethane
Bromodichloromethane	1,1-Dichloroethane	1,1,2,2-Tetrachloroethane
Bromoform	1,2-Dichloroethane	Tetrachloroethene
Bromomethane	1,1-Dichloroethene	Toluene
2-Butanone (MEK)	cis-1,2-Dichloroethylene	1,2,3-Trichlorobenzene
n-Butylbenzene	trans-1,2-Dichloroethylene	1,2,4-Trichlorobenzene
sec-Butylbenzene	1,2-Dichloropropane	1,1,1-Trichloroethane
tert-Butylbenzene	1,3-Dichloropropane	1,1,2-Trichloroethane
Carbon disulfide	2,2-Dichloropropane	Trichloroethene
Carbon tetrachloride	1,1-Dichloropropene	Trichlorofluoromethane
Chlorobenzene	cis-1,3-Dichloropropylene	1,2,3-Trichlorobenzene
Chlorodibromomethane	trans-1,3-Dichloropropylene	1,2,4-Trimethylbenzene
Chloroethane	Ethylbenzene	1,3,5-Trimethylbenzene
2-Chloroethyl vinyl ether	Hexachlorobutadiene	Vinyl acetate
Chloroform	Hexachloroethane	Vinyl chloride
Chloromethane	2-Hexanone	m&p-Xylene
2-Chlorotoluene	Isopropylbenzene	o-Xylene
4-Chlorotoluene	p-Isopropyltoluene	Xylenes, total
1,2-Dibromo-3-chloropropane (DBCP)	Methyl tert-butyl ether (MTBE)	
	4-Methyl-2-pentanone (MIBK)	



Total Petroleum Hydrocarbons

Total Petroleum Hydrocarbons (TPH) in Soil #1

CRM Cat. #570	PT Cat. #632	Q	QR Cat. #572QR
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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 Cat. #571	PT Cat. #632	Q	QR Cat. #572QR
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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 Cat. #730	QR Cat. #730QR
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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	Chloroform	Tetrachloroethylene
2-Butanone (MEK)	1,4-Dichlorobenzene	Trichloroethylene
Carbon tetrachloride	1,2-Dichloroethane	Vinyl chloride
Chlorobenzene	1,1-Dichloroethylene	

TCLP Semivolatiles

CRM Cat. #737	QR Cat. #737QR
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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	Hexachloroethane	Pentachlorophenol
2,4-Dinitrotoluene	2-Methylphenol	Pyridine
Hexachlorobenzene	3 & 4-Methylphenol	2,4,5-Trichlorophenol
Hexachlorobutadiene	Nitrobenzene	2,4,6-Trichlorophenol

TCLP Organochlorine Pesticides

CRM Cat. #732	QR Cat. #732QR
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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 epoxide	Methoxychlor
Heptachlor	gamma-BHC (Lindane)	

Nitroaromatics & Nitramines in Soil

CRM Cat. #920	PT Cat. #871	Q	QR Cat. #920QR
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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	HMX	RDX
2-Amino-4,6-dinitrotoluene	Nitrobenzene	Tetryl
1,3-Dinitrobenzene	2-Nitrotoluene	1,3,5-Trinitrobenzene
2,4-Dinitrotoluene	3-Nitrotoluene	2,4,6-Trinitrotoluene
2,6-Dinitrotoluene	4-Nitrotoluene	

Per- & Polyfluoroalkyl
Substances (PFAS) in SoilNEW
ANALYTES

CRM Cat. #604	PT Cat. #462	Q	QR Cat. #604QR
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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-chloroeicosfluoro-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 Cat. #722	PT Cat. #625	Q	QR Cat. #722QR
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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	Benzo(g,h,i)perylene	Fluorene
Acenaphthylene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene
Anthracene	Chrysene	Naphthalene
Benzo(a)anthracene	Dibenz(a,h)anthracene	Phenanthrene
Benzo(b)fluoranthene	Fluoranthene	Pyrene
Benzo(k)fluoranthene		

Diesel Range Organics (DRO) in Soil

CRM Cat. #765	PT Cat. #631	Q	QR Cat. #765QR
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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 Cat. #928	PT Cat. #463	Q	QR Cat. #928QR
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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	Propylene glycol	Triethylene glycol
Ethylene glycol	Tetraethylene glycol	

Base/Neutrals & Acids in Soil

CRM Cat. #727	PT Cat. #467	Q	QR Cat. #727QR
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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	Dibenz(a,h)anthracene	2-Methylnaphthalene
Acenaphthylene	Dibenzofuran	2-Methylphenol
2-Amino-1-methylbenzene	Di-n-butyl phthalate	3 & 4-Methylphenol
(o-Toluidine)	1,2-Dichlorobenzene	Naphthalene
Aniline	1,3-Dichlorobenzene	2-Nitroaniline
Anthracene	1,4-Dichlorobenzene	3-Nitroaniline
Benidine	3,3'-Dichlorobenzidine	4-Nitroaniline
Benzoic acid	2,4-Dichlorophenol	Nitrobenzene
Benzo(a)anthracene	2,6-Dichlorophenol	2-Nitrophenol
Benzo(b)fluoranthene	Diethyl phthalate	4-Nitrophenol
Benzo(k)fluoranthene	2,4-Dimethylphenol	N-Nitrosodiethylamine
Benzo(g,h,i)perylene	Dimethyl phthalate	N-Nitrosodimethylamine
Benzo(a)pyrene	2,4-Dinitrophenol	N-Nitrosodiphenylamine
Benzyl alcohol	2,4-Dinitrotoluene	N-Nitroso-di-n-propylamine
4-Bromophenyl phenyl ether	2,6-Dinitrotoluene	2,2'-Oxybis(1-Chloropropane)
Butyl benzyl phthalate	Di-n-octyl phthalate	Pentachlorobenzene
Carbazole	bis(2-Ethylhexyl)phthalate	Pentachlorophenol
4-Chloroaniline	Fluoranthene	Phenanthrene
bis(2-Chloroethyl)ether	Fluorene	Phenol
bis(2-Chloroethoxy)methane	Hexachlorobenzene	Pyrene
4-Chloro-3-methylphenol	Hexachlorobutadiene	Pyridine
1-Chloronaphthalene	Hexachlorocyclopentadiene	1,2,4,5-Tetrachlorobenzene
2-Chloronaphthalene	Hexachloroethane	2,3,4,6-Tetrachlorophenol
2-Chlorophenol	Indeno(1,2,3-cd)pyrene	1,2,4-Trichlorobenzene
4-Chlorophenyl phenyl ether	Isophorone	2,4,5-Trichlorophenol
Chrysene	2-Methyl-4,6-dinitrophenol	2,4,6-Trichlorophenol

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Herbicides

Chlorinated Acid Herbicides in Soil

CRM Cat. #723	PT Cat. #626	Q	QR Cat. #723QR
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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 Cat. #563	PT Cat. #817	Q	QR Cat. #563QR
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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 Cat. #726	PT Cat. #624	Q	QR Cat. #726QR
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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 Cat. #728	PT Cat. #468	Q	QR Cat. #728QR
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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	4,4'-DDD	Endrin
alpha-BHC	4,4'-DDE	Endrin aldehyde
beta-BHC	4,4'-DDT	Endrin ketone
delta-BHC	Dieldrin	Heptachlor
gamma-BHC (Lindane)	Endosulfan I	Heptachlor epoxide
alpha-Chlordane	Endosulfan II	Methoxychlor
gamma-Chlordane	Endosulfan sulfate	

Chlordane in Soil

CRM Cat. #725	PT Cat. #628	Q	QR Cat. #725QR
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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 Cat. #724	PT Cat. #627	Q	QR Cat. #724QR
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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 Cat. #926	PT Cat. #879	Q	QR Cat. #926QR
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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	Dioxacarb	Oxamyl
Aldicarb sulfone	Diuron	Promecarb
Aldicarb sulfoxide	3-Hydroxycarbofuran	Propham
Carbaryl	Methiocarb	Propoxur
Carbofuran	Methomyl	

Organophosphorus Pesticides (OPP) in Soil

CRM Cat. #925	PT Cat. #878	Q	QR Cat. #925QR
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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)	Dichlorvos (DDVP)	Phorate
Chlorpyrifos	Disulfoton	Ronnel
Demeton	Ethyl parathion (Parathion)	Stirophos (Tetrachlorovinphos)
Demeton O & S	Malathion	Terbufos
Diazinon	Methyl parathion	

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.



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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

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Alaska GRO in Soil	635	—	469QR	49
Alaska GRO in Water	645	—	473QR	49
Alaska RRO in Soil	638	—	472QR	49
Arizona TPH in Soil	798	488 Q	798QR	49
BTEX & MTBE in Soil	761	633 Q	761QR	48
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Massachusetts EPH in Water	567	482 Q	567QR	50
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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.

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Texas Low-Level Fuels in Water	794	476 Q	794QR	49
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Washington HEM/SGT-HEM	519	489 Q	519QR	50
Wisconsin Gasoline Range Organics (GRO/PVOC) in Water	773	649 Q	773QR	50
Wisconsin Diesel Range Organics (DRO) in Water	772	648 Q	772QR	50

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 Cat. #761	PT Cat. #633	Q	QR Cat. #761QR
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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 Cat. #763	PT Cat. #630	Q	QR Cat. #763QR
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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 Cat. #765	PT Cat. #631	Q	QR Cat. #765QR
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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 Cat. #570	PT Cat. #632	Q	QR Cat. #572QR
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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 Cat. #571	PT Cat. #632	Q	QR Cat. #572QR
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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 Cat. #760	PT Cat. #643	Q	QR Cat. #760QR
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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 Cat. #762	PT Cat. #640	Q	QR Cat. #762QR
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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 Cat. #764	PT Cat. #641	Q	QR Cat. #764QR
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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 Cat. #600	PT Cat. #642	Q	QR Cat. #602QR
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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 Cat. #601	PT Cat. #642	Q	QR Cat. #602QR
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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
Cat. #645

QR
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
Cat. #647

QR
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
Cat. #646

QR
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
Cat. #635

QR
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
Cat. #637

QR
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
Cat. #638

QR
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
Cat. #636

QR
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
Cat. #798

PT
Cat. #488



QR
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
Cat. #794

PT
Cat. #476



QR
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
Cat. #795

PT
Cat. #477



QR
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
Cat. #796

PT
Cat. #478



QR
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
Cat. #797

PT
Cat. #479



QR
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 Cat. #773	PT Cat. #649	Q	QR Cat. #773QR
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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 Cat. #772	PT Cat. #648	Q	QR Cat. #772QR
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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 Cat. #519	PT Cat. #489	Q	QR Cat. #519QR
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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 µg/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 Cat. #564	PT Cat. #464	B	QR Cat. #564QR
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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 Cat. #566	PT Cat. #481	Q	QR Cat. #566QR
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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 Cat. #567	PT Cat. #482	Q	QR Cat. #567QR
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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 Cat. #568	PT Cat. #483	Q	QR Cat. #568QR
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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 Cat. #569	PT Cat. #484	Q	QR Cat. #569QR
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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

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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.

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

Volatiles

Volatiles in Gas Cylinder*

RM** Cat. #1100	PT Cat. #1000	Q	QR Cat. #1100QR
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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	1,1-Dichloroethane	Styrene
Benzene	1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
Benzyl chloride	1,1-Dichloroethylene	Tetrachloroethylene
Bromodichloromethane	cis-1,2-Dichloroethylene	Toluene
Bromoform	trans-1,2-Dichloroethylene	Trichloroethene
Bromomethane	1,2-Dichloropropane	1,2,4-Trichlorobenzene
1,3-Butadiene	cis-1,3-Dichloropropylene	1,1,1-Trichloroethane
2-Butanone (MEK)	trans-1,3-Dichloropropylene	1,1,2-Trichloroethane
Methyl tert-butyl ether (MTBE)	1,2-Dichlorotetrafluoroethane	Trichlorofluoromethane
Carbon disulfide	(Freon 114)	(Freon 11)
Carbon tetrachloride	Ethyl acetate	Trichlorotrifluoromethane
Chlorobenzene	Ethylbenzene	(Freon 113)
Chlorodibromomethane	p-Ethyltoluene	1,2,4-Trimethylbenzene
Chloroethane	n-Heptane	1,3,5-Trimethylbenzene
Chloroform	Hexachlorobutadiene	Vinyl bromide
Chloromethane	n-Hexane	Vinyl chloride
Cyclohexane	2-Hexanone	Xylenes, total
1,2-Dibromoethane (EDB)	Isopropyl alcohol	m&p-Xylene
1,2-Dichlorobenzene	Methylene chloride	o-Xylene
1,3-Dichlorobenzene	Methyl methacrylate	
1,4-Dichlorobenzene	4-Methyl-2-pentanone (MIBK)	
Dichlorodifluoromethane	Methyl tert-butyl ether (MTBE)	
(Freon 12)	Propylene	

*Volatiles in Gas Cylinder ships as dangerous goods.

** Reference Material (RM)

Volatiles on Sorbent

CRM Cat. #1101	PT Cat. #1001	Q	QR Cat. #1101QR
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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	1,1-Dichloropropene	Methylene chloride
Acetonitrile	1,2-Dibromo-3-chloropropane	4-Methyl-2-pentanone (MIBK)
Acrolein	(DBCP)	Naphthalene
Acrylonitrile	1,2-Dibromoethane (EDB)	Nitrobenzene
Benzene	Dibromomethane	n-Propylbenzene
Bromobenzene	1,2-Dichlorobenzene	Styrene
Bromochloromethane	1,3-Dichlorobenzene	1,1,1,2-Tetrachloroethane
Bromodichloromethane	1,4-Dichlorobenzene	1,1,2,2-Tetrachloroethane
Bromoform	Dichlorodifluoromethane	Tetrachloroethene
Bromomethane	(Freon 12)	Toluene
2-Butanone (MEK)	1,1-Dichloroethane	1,2,3-Trichlorobenzene
n-Butylbenzene	1,2-Dichloroethane	1,2,4-Trichlorobenzene
sec-Butylbenzene	1,1-Dichloroethene	1,1,1-Trichloroethane
tert-Butylbenzene	cis-1,2-Dichloroethene	1,1,2-Trichloroethane
Carbon disulfide	trans-1,2-Dichloroethene	Trichloroethylene
Carbon tetrachloride	1,2-Dichloropropane	Trichlorofluoromethane
Chlorobenzene	cis-1,3-Dichloropropene	1,2,3-Trichloropropane
Chlorodibromomethane	trans-1,3-Dichloropropene	1,2,4-Trimethylbenzene
Chloroethane	Ethylbenzene	1,3,5-Trimethylbenzene
2-Chloroethyl vinyl ether	Hexachlorobutadiene	Vinyl acetate
Chloroform	Hexachloroethane	Vinyl chloride
Chloromethane	2-Hexanone	Xylenes, total
2-Chlorotoluene	Isopropylbenzene	m&p-Xylene
4-Chlorotoluene	4-Isopropyltoluene	o-Xylene
1,3-Dichloropropane	Methyl tert-butyl ether	
2,2-Dichloropropane	(MTBE)	

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 on Polyurethane Foam

CRM Cat. #1110	PT Cat. #1010	Q	QR Cat. #1110QR
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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	1,3-Dichlorobenzene	N-Nitroso-di-n-propylamine
Acenaphthylene	1,4-Dichlorobenzene	2,2'-Oxybis(1-chloropropane)
Aniline	3,3'-Dichlorobenzidine	Pentachlorobenzene
Anthracene	Diethyl phthalate	Phenanthrene
Benzidine	Dimethyl phthalate	Pyrene
Benzo(a)anthracene	2,4-Dinitrotoluene	Pyridine
Benzo(b)fluoranthene	2,6-Dinitrotoluene	o-Toluidine
Benzo(k)fluoranthene	Di-n-octyl phthalate	1,2,4,5-Tetrachlorobenzene
Benzo(g,h,i)perylene	Fluoranthene	1,2,4-Trichlorobenzene
Benzo(a)pyrene	Fluorene	Benzoic Acid
Benzyl alcohol	Hexachlorobenzene	4-Chloro-3-methylphenol
4-Bromophenyl phenyl ether	Hexachlorobutadiene	2-Chlorophenol
Butyl benzyl phthalate	Hexachlorocyclopentadiene	2,4-Dichlorophenol
Carbazole	Hexachloroethane	2,6-Dichlorophenol
4-Chloroaniline	Indeno(1,2,3-cd)pyrene	2,4-Dimethylphenol
Bis(2-chloroethoxy)methane	Isophorone	2,4-Dinitrophenol
Bis(2-chloroethyl)ether	2-Methylnaphthalene	2-Methyl-4,6-dinitrophenol
Bis(2-ethylhexyl)phthalate	Naphthalene	2-Methylphenol (o-Cresol)
1-Chloronaphthalene	2-Nitroaniline	4-Methylphenol (p-Cresol)
2-Chloronaphthalene	3-Nitroaniline	2-Nitrophenol
4-Chlorophenyl phenyl ether	4-Nitroaniline	4-Nitrophenol
Chrysene	Nitrobenzene	Pentachlorophenol
Dibenz(a,h)anthracene	N-Nitrosodiethylamine	Phenol
Dibenzofuran	N-Nitrosodimethylamine	2,3,4,6-Tetrachlorophenol
Di-n-butyl phthalate	(NDMA)	2,4,5-Trichlorophenol
1,2-Dichlorobenzene	N-Nitrosodiphenylamine	2,4,6-Trichlorophenol

Organochlorine Pesticides on Polyurethane Foam

CRM Cat. #1111	PT Cat. #1011	Q	QR Cat. #1111QR
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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	4,4'-DDD	Endrin
alpha-BHC	4,4'-DDE	Endrin aldehyde
beta-BHC	4,4'-DDT	Endrin ketone
delta-BHC	Dieldrin	Heptachlor
gamma-BHC (Lindane)	Endosulfan I	Heptachlor epoxide (beta)
alpha-Chlordane	Endosulfan II	Methoxychlor
gamma-Chlordane	Endosulfan sulfate	

Brian Stringer
Principal Proficiency Testing
Technical Specialist
Years with Waters ERA: 17



PCBs on Polyurethane Foam

CRM Cat. #1112	PT Cat. #1012	Q	QR Cat. #1112QR
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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 1242	Aroclor 1260
Aroclor 1221	Aroclor 1248	
Aroclor 1232	Aroclor 1254	

PAHs on Polyurethane Foam

CRM Cat. #1113	PT Cat. #1013	Q	QR Cat. #1113QR
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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	Benzo(g,h,i)perylene	Indeno(1,2,3-cd)pyrene
Acenaphthylene	Benzo(a)pyrene	1-Methylnaphthalene
Anthracene	Chrysene	2-Methylnaphthalene
Benzo(a)anthracene	Dibenz(a,h)anthracene	Naphthalene
Benzo(b)fluoranthene	Fluoranthene	Phenanthrene
Benzo(k)fluoranthene	Fluorene	Pyrene

Aldehydes & Ketones on Sorbent

CRM Cat. #1114	PT Cat. #1014	Q	QR Cat. #1114QR
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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	Crotonaldehyde	Propionaldehyde (Propanal)
Acetone	2,5-Dimethylbenzaldehyde	o-Tolualdehyde
Benzaldehyde	Formaldehyde	m-Tolualdehyde
2-Butanone (MEK)	Hexaldehyde (Hexanal)	p-Tolualdehyde
Butyraldehyde (Butanal)	Isovaleraldehyde	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.



Debby Updyke
Senior Proficiency Testing
Technical Specialist
Years with Waters ERA: 18

Metals

Metals on Filter Paper

CRM Cat. #1125	PT Cat. #1025	Q	QR Cat. #1125QR
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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 Cat. #1126	PT Cat. #1026	Q	QR Cat. #1126QR
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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 Cat. #1127	PT Cat. #1027	Q	QR 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 Cat. #1128	PT Cat. #1028	Q	QR 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
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Lead on Filter Paper

CRM Cat. #1129	PT Cat. #1029	Q	QR 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 Cat. #1130	PT Cat. #1030	Q	QR Cat. #1130QR
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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
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Chromium on Filter Paper

CRM Cat. #1131	PT Cat. #1031	Q	QR 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 Cat. #1132	PT Cat. #1032	Q	QR Cat. #1132QR
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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
--------------------------	-------------

Hydrogen Halides & Halogens in Impinger Solution

CRM Cat. #1140	PT Cat. #1040	Q	QR Cat. #1140QR
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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 Cat. #1141	PT Cat. #1041	Q	QR 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
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Nitrogen Oxide in Impinger Solution

CRM Cat. #1142	PT Cat. #1042	Q	QR Cat. #1142QR
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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 Cat. #1143	PT Cat. #1043	Q	QR Cat. #1143QR
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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
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Sulfuric Acid & Sulfur Dioxide in Impinger Solution

CRM Cat. #1144	PT Cat. #1044	Q	QR Cat. #1144QR
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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 Cat. #1145	PT Cat. #1045	Q	QR Cat. #1145QR
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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 Cat. #1150	PT Cat. #1050	Q	QR Cat. #1150QR
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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 Cat. #1151	PT Cat. #1051	Q	QR Cat. #1151QR
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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.

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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 Cat. #758	PT Cat. #808	Q	QR 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 Cat. #759	PT Cat. #809	Q	QR 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 Cat. #751	PT Cat. #811	Q	QR Cat. #751QR
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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 Cat. #752	PT Cat. #812	Q	QR Cat. #752QR
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One 250 mL whole-volume bottle is ready to analyze as received. Includes tritium at 1000-24000 pCi/L.

Iodine-131

CRM Cat. #750	PT Cat. #810	Q	QR 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 Cat. #757	PT Cat. #807	Q	QR Cat. #757QR
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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 Cat. #608	PT Cat. #802	QR Cat. #608QR
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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 Cat. #609	PT Cat. #803	QR Cat. #609QR
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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

Chad Lane
Chemist/RSO

Years with Waters ERA: 11



MRAD Air Filter

Air Filter Radionuclides

RM Cat. #606	PT Cat. #800	QR Cat. #606QR
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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 Cat. #607	PT Cat. #801	QR Cat. #607QR
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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


Leo Muñoz

Shipping Team Lead

Years with Waters ERA: 11




Water Radionuclides

RM Cat. #617	PT Cat. #804		QR Cat. #617QR
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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 Cat. #615	PT Cat. #805		QR Cat. #615QR
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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 Cat. #616	PT Cat. #806		QR Cat. #616QR
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One 125 mL whole-volume bottle is ready to analyze as received.

Tritium	3000-30,000 pCi/L
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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

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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.

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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
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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	4,4'-DDE	Heptachlor epoxide
alpha-BHC	4,4'-DDT	Hexachlorobenzene
beta-BHC	Dieldrin	Pentachlorobenzene
delta-BHC	Endosulfan I	Trifluralin
gamma-BHC (Lindane)	Endosulfan II	
2,4'-DDT	Endrin	
4,4'-DDD	Heptachlor	

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	4,4'-DDD	Endrin
alpha-BHC	4,4'-DDE	Endrin aldehyde
beta-BHC	4,4'-DDT	Endrin ketone
delta-BHC	Dieldrin	Heptachlor
gamma-BHC (Lindane)	Endosulfan I	Heptachlor epoxide (beta)
alpha-Chlordane	Endosulfan II	Methoxychlor
gamma-Chlordane	Endosulfan sulfate	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	Diazinon	Mevinphos
Azinphos-methyl	Dichlorvos	Parathion-ethyl
Chlorfenvinphos	Fenitrothion	Parathion-methyl
Chlorpyrifos	Fenthion	
Cypermethrin	Malathion	

Curtis Wood
Strategic Account Manager
Years with Waters ERA: 26



Jennifer Watson
Customer Service Representative
Years with Waters ERA: 9



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

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 118	PCB 153
PCB 52	PCB 138	PCB 180
PCB 101		

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 118	PCB 180
PCB 52	PCB 138	
PCB 101	PCB 153	

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

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	Diuron	MCPB
AMPA	Glyphosate	MCPD
Atrazine	Isoproturon	Propazine
Bentazon	Linuron	Simazine
Chlortoluron	MCPA	

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	Diuron	MCPB
AMPA	Glyphosate	MCPD
Atrazine	Isoproturon	Propazine
Bentazone	Linuron	Simazine
Chlortoluron	MCPA	

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	Chlorodibromomethane
Bromoform	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	Ethylbenzene	o-Xylene
Carbon tetrachloride	Methylene chloride	m-Xylene
Chlorobenzene	Styrene	p-Xylene
1,2-Dichlorobenzene	Tetrachloroethene	m+p-Xylene
1,4-Dichlorobenzene	Toluene	Xylenes, total
1,2-Dichloroethane	1,2,4-Trichlorobenzene	
1,1-Dichloroethylene	1,1,1-Trichloroethane	
cis-1,2-Dichloroethylene	1,1,2-Trichloroethane	
trans-1,2-Dichloroethylene	Trichloroethene	
1,2-Dichloropropane	Vinyl chloride	

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) | ■ Standards Council of Canada (SCC) |
| ■ Safe Drinking Water Act (SDWA) | ■ Canadian Association for Laboratory Accreditation (CALA) |
| ■ Resource Conservation and Recovery Act (RCRA) | ■ Ontario Ministry of the Environment and Climate Change (MOECC) Safe Drinking Water Act (SDWA) |
| ■ Superfund Contract Laboratory Program (CLP) | |

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



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.

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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
Cat. #974

125 mL Bottle
Cat. #042

One 1000 mg/L standard preserved with H₂SO₄ in an amber glass bottle.

Total Kjeldahl Nitrogen (TKN)

500 mL Bottle
Cat. #996

125 mL Bottle
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 H₂SO₄.

Total Organic Carbon (TOC)

Cat. #978

One 500 mL amber glass bottles with TOC at 1000 mg/L preserved with H₂SO₄.

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 H₂SO₄.

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 ₂ O	—	Cat. #78202
Ammonia as NH ₃	H ₂ O	Cat. #986	Cat. #044
Ammonia as N	H ₂ O	Cat. #985	Cat. #045
Bromate	H ₂ O	—	Cat. #065
Bromide	H ₂ O	Cat. #987	Cat. #046
Chlorate	H ₂ O	—	Cat. #066
Chloride	H ₂ O	Cat. #988	Cat. #047
Chlorite	H ₂ O	—	Cat. #067
Complex cyanide*	NaOH	Cat. #998	Cat. #049
Cyanide (free)	NaOH	Cat. #997	Cat. #048
Fluoride	H ₂ O	Cat. #989	Cat. #050
Iodide	H ₂ O	—	Cat. #78212
Nitrate as NO ₃	H ₂ O	Cat. #992	Cat. #051
Nitrate as N	H ₂ O	Cat. #991	Cat. #052
Nitrite as N	H ₂ O	Cat. #990	Cat. #053
Perchlorate	H ₂ O	—	Cat. #068
Phosphate as PO ₄	H ₂ O	Cat. #994	Cat. #060
Phosphate as P	H ₂ O	Cat. #993	Cat. #061
Sulfate	H ₂ O	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 ₂ O	Cat. #78102
Ammonium as N	H ₂ O	Cat. #78104

Cations by Ion Chromatography – 1000 mg/L

Parameter	Matrix	125 mL Bottle
Calcium	H ₂ O	Cat. #K10
Magnesium	H ₂ O	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 ₂ O	—	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 ₂ O	—	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 HNO₃ 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 HNO₃*

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 HNO₃, 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 HNO₃, 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 HNO₃ 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.**

REAGENTS

Reagents for environmental
and industrial analysis.



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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*

Matthew Seebeck
Quality Manager
Years with Waters ERA: 3

**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.

Kathie Paulling
Project Coordinator -
Customs, Reagents
Years with Waters ERA: 16

