Contents

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

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

Minerals/Solids

Minerals

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

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

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

Hardness

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

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

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

Settleable Solids

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

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

Settleable solids	5–50 mL/L

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

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

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

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

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

Volatile Solids

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

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

Total volatile solids	100–500 mg/L

Solids Concentrate

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

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

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

Solids

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

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

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

Nutrients

Simple Nutrients

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

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

Ammonia as N	1–20 mg/L
Nitrate as N	2–25 mg/L
Nitrate plus nitrite as N	2.5–25 mg/L
ortho-Phosphate as P	0.5–5.5 mg/L
Total nitrogen	3–45 mg/L

Complex Nutrients

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

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

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

Nitrite

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

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

Nitrite as N	0.4–4 mg/L

Oil & Grease/Total Petroleum Hydrocarbons

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

Oil & Grease

CRM
Cat. #504

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

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

Oil & Grease Concentrate

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

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

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

1 Liter Oil & Grease

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

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

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

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HEM/SGT-HEM

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

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

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

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

Total Petroleum Hydrocarbons (TPH) in Water #1

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

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

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

Total Petroleum Hydrocarbons (TPH) in Water #2

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

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

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

Learn more about WP products

Demand

Demand

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

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

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

Metals

Trace Metals

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

One 30 mL amber HDPE bottle yields up to 1 liter after dilution. Use with AA, ICP-OES or ICP-MS and select colorimetric methods.

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

Mercury

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

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

Total mercury	3–30 µg/L

Low-Level Mercury

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

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

Total mercury	20–100 ng/L

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

Metals (continued)

Hexavalent Chromium

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

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

Hexavalent chromium	90–900 µg/L

Tin and Titanium

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

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

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

Uranium

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

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

Uranium	25–200 µg/L

Lithium

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

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

Lithium	50–500 µg/L

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

Physical Property

Color

CRM	PT		QR
Cat. #1070C	Cat. #882C	Q	Cat. #1070CQR

One 30 mL screw-cap bottle yields up to 200 mL after dilution. Use with EPA Methods 110.1, 110.2, and 110.3, Standard Methods 2120B, 2120C, 2120E, or other applicable method.

Color ..... 10–75 PC units

Turbidity

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

One 24 mL amber glass vial yields up to 1 liter after dilution. Use with nephelometric methods.

Turbidity ..... 2–30 NTU

Miscellaneous Chemistry

Cyanide

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

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

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

Dissolved Oxygen

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

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

Dissolved oxygen ..... 1–20 mg/L

Total Organic Halides (TOX)

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

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

TOX ..... 300–1500 µg/L

Total Phenolics (4-AAP)

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

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

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

Perchlorate

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

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

Perchlorate ..... 10–200 µg/L

Silica

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

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

Silica as SiO_2 ..... 50–250 mg/L

Sulfide

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

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

Sulfide ..... 2–10 mg/L

Sulfite

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

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

Sulfite ..... 10–250 mg/L

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

Surfactants-MBAS

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

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

Surfactants-MBAS ..... 0.2–1 mg/L

Acidity

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

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

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

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Miscellaneous Chemistry (continued)

pH

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

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

pH ..... 5–10 units

Boron

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

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

Boron ..... 800–2000 µg/L

Bromide

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

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

Bromide ..... 1–10 mg/L

Total Residual Chlorine (TRC)

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

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

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

Low-Level Total Residual Chlorine (TRC)

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

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

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

Volatiles

Volatile Aromatics

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

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

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

Volatiles (continued)

Volatiles

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

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

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

1,4-Dioxane

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

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

1,4-Dioxane ..... 3–30 µg/L

BTEX & MTBE in Water

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

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

Gasoline Range Organics (GRO) in Water

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

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

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

PCBs

PCBs in Water

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

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

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

PCBs in Water Standards

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

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

PCBs in Oil

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

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

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

Herbicides

Chlorinated Acid Herbicides

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

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

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

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

Per-and Polyfluoroalkyl Substances (PFAS)

PFAS in Wastewater

NEW PRODUCT

CRM	PT		QR
Cat. #404	Cat. #599	Q	Cat. #404QR

The diluted standard will contain all of the analytes from the list below.

Perfluorobutanoic acid, PFBA	40–400 ng/L
Perfluoropentanoic acid , PFPeA	40–400 ng/L
Perfluorohexanoic acid, PFHxA	20–200 ng/L
Perfluoroheptanoic acid, PFHpA	20–200 ng/L
Perfluorooctanoic acid, PFOA	20–200 ng/L
Perfluorononanoic acid, PFNA	20–200 ng/L
Perfluorodecanoic acid, PFDA	20–200 ng/L
Perfluoroundecanoic acid, PFUdA	20–200 ng/L
Perfluorododecanoic acid, PFDoA	20–200 ng/L
Perfluorotridecanoic acid, PFTrDA	20–200 ng/L
Perfluorotetradecanoic acid, PFTeDA	20–200 ng/L
Perfluorobutanesulfonic acid, PFBS	20–200 ng/L
Perfluoropentanesulfonic acid, PFPeS	20–200 ng/L
Perfluorohexanesulfonic acid, PFHxS	20–200 ng/L
Perfluoroheptanesulfonic acid, PFHpS	20–200 ng/L
Perfluorooctanesulfonic acid, PFOS	20–200 ng/L
Perfluorononanesulfonic acid, PFNS	20–200 ng/L
Perfluorodecanesulfonic acid, PFDS	20–200 ng/L
Perfluorododecanesulfonic acid, PFDoS	20–200 ng/L
4:2 fluorotelomersulfonic acid, 4:2 FTS	40–400 ng/L
6:2 fluorotelomersulfonic acid, 6:2 FTS	40–400 ng/L
8:2 fluorotelomersulfonic acid, 8:2 FTS	40–400 ng/L
Perfluorooctanesulfonamide, PFOSA	20–200 ng/L
N-ethyl perfluorooctanesulfonamidoacetic acid, NEtFOSAA	20–200 ng/L
N-methyl perfluorooctanesulfonamidoacetic acid, NMeFOSAA	20–200 ng/L
N-ethyl perfluorooctanesulfonamide, NEtFOSA	20–200 ng/L
N-methyl perfluorooctanesulfonamide, NMeFOSA	20–200 ng/L
N-ethyl perfluorooctanesulfonamidoethanol, NEtFOSE	20–200 ng/L
N-methyl perfluorooctanesulfonamidoethanol, NMeFOSE	20–200 ng/L
3-Perfluoropropyl propanoic acid, 3:3 FTCA	40–400 ng/L
2H,2H,3H,3H-Perfluorooctanoic acid, 5:3 FTCA	40–400 ng/L
3-Perfluoroheptyl propanoic acid, 7:3 FTCA	40–400 ng/L
Hexafluoropropylene oxide dimer acid , HFPO-DA	40–400 ng/L
4,8-dioxa-3H-perfluorononanoic acid, ADONA	40–400 ng/L
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid, 9Cl-PF3ONS	40–400 ng/L
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, 11Cl-PF3OUdS	40–400 ng/L
Perfluoro-4-methoxybutanoic acid, PFMBA	40–400 ng/L
Perfluoro-3-methoxypropanoic acid, PFMPA	40–400 ng/L
Perfluoro(2-ethoxyethane) sulfonic acid, PFEESA	40–400 ng/L
Nonafluoro-3,6-dioxaheptanoic acid, NFDHA	40–400 ng/L
Pentafluoropropanoic acid, PFPrA	40–400 ng/L
2H-perfluoro-2-octenoic acid, FHUEA	20–200 ng/L
2H-perfluoro-2-decenoic acid, FOUEA	20–200 ng/L
Bis(trifluoromethane)sulfonamide	20–200 ng/L

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Semivolatiles

Base/Neutrals

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

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

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

Acids

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

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

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

Diesel Range Organics (DRO) in Water

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

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

EDB/DBCP/TCP

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

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

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

Glycols in Water

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

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

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

Low-Level Nitroaromatics & Nitramines

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

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

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

Low-Level PAHs

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

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

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

PAHs – GC/GCMS

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

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

Pesticides

Organochlorine Pesticides

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

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

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

Chlordane

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

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

Toxaphene

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

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

Carbamate Pesticides

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

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

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

Nitrogen Pesticides

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

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

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

Organophosphorus Pesticides (OPP)

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

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

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

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

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

Ready-to-Use CRMs

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

Minerals

CRM
Cat. #506

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

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

Hardness

CRM
Cat. #507

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

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

pH

CRM
Cat. #977

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

pH	5–10 units

Oil & Grease

CRM
Cat. #504

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

Oil and grease	20–200 mg/bottle

Solids

CRM
Cat. #499

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

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

Trace Metals*

CRM
Cat. #740

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

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

Demand*

CRM
Cat. #743

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

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

Simple Nutrients*

CRM
Cat. #739

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

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

Complex Nutrients*

CRM
Cat. #741

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

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

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

QC Plus

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

QC Plus – Demand

CRM
Cat. #4013

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

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

QC Plus – Hexavalent Chromium

CRM
Cat. #4183

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

Hexavalent chromium	100–1000 µg/L

QC Plus – Minerals

CRM
Cat. #4053

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

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

QC Plus – Nutrients

CRM
Cat. #4023

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

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

QC Plus – Oil & Grease

CRM
Cat. #4123

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

Oil and grease	10.0–100 mg/L

QC Plus – pH

CRM
Cat. #4063

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

pH	2.00–12.0 units

QC Plus – Fluoride

CRM
Cat. #4423

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

Fluoride	5–20 mg/L

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.

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

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