



A Waters Company

# WP-288 2009 TNI Evaluation Final Complete Report

Josh Kirkpatrick  
Quality Assurance Manager  
Basic Laboratory, Inc.  
2218 Railroad Ave  
Redding, CA 96001  
(530) 243-7234-204

EPA ID:  
ERA Customer Number:  
Report Issued:  
Study Dates:

CA00381  
B062101  
03/04/19  
01/14/19 - 02/28/19

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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**WP Minerals (cat# 581, lot# P288-506)**

1505	Alkalinity as CaCO3	mg/L	56	59.4	50.5 - 68.3	Acceptable	SM 2320 B-1997 1997	1/22/2019	-0.894	58.7	2.98	Rebecca Goerner
1575	Chloride	mg/L	93.5	94.8	83.1 - 107	Acceptable	EPA 300.0 2.1 1993	1/22/2019	0.145	92.9	3.81	Amethyst Vozar
1610	Conductivity at 25°C	µmhos/cm	533	527	474 - 580	Acceptable	SM 2510 B-1997 1997	1/22/2019	1.22	520	10.7	Rebecca Goerner
1730	Fluoride	mg/L	0.75	0.809	0.603 - 1.01	Acceptable	EPA 300.0 2.1 1993	1/22/2019	-0.543	0.784	0.0626	Amethyst Vozar
1125	Potassium	mg/L	30.1	30.9	24.7 - 37.1	Acceptable	EPA 200.7 4.4 1994	2/7/2019	-0.0634	30.2	1.41	Ry Jensen
1155	Sodium	mg/L	87.0	88.7	71.0 - 106	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.329	85.6	4.26	Ry Jensen
2000	Sulfate	mg/L	33.9	35.9	29.2 - 41.3	Acceptable	EPA 300.0 2.1 1993	1/22/2019	-0.669	35.3	2.04	Amethyst Vozar
1955	Total Dissolved Solids at 180°C	mg/L	340	349	304 - 394	Acceptable	SM 2540 C-1997 1997	1/22/2019	-0.0799	342	19.4	Jon Cartee
1950	Total Solids at 105°C	mg/L	350	354	309 - 399	Acceptable	SM 2540 B-1997 1997	1/28/2019	0.0326	349	20.1	Jon Cartee

**WP Minerals (cat# 581, lot# P288-506)**

1505	Alkalinity as CaCO3	mg/L		59.4	50.5 - 68.3	Not Reported				58.7	2.98	
1575	Chloride	mg/L		94.8	83.1 - 107	Not Reported				92.9	3.81	
1610	Conductivity at 25°C	µmhos/cm		527	474 - 580	Not Reported				520	10.7	
1730	Fluoride	mg/L		0.809	0.603 - 1.01	Not Reported				0.784	0.0626	
1125	Potassium	mg/L	30.6	30.9	24.7 - 37.1	Acceptable	EPA 200.8 5.4 1994	2/7/2019	0.292	30.2	1.41	Eric Mathews
1155	Sodium	mg/L	86.4	88.7	71.0 - 106	Acceptable	EPA 200.8 5.4 1994	2/7/2019	0.188	85.6	4.26	Eric Mathews
2000	Sulfate	mg/L		35.9	29.2 - 41.3	Not Reported				35.3	2.04	
1955	Total Dissolved Solids at 180°C	mg/L		349	304 - 394	Not Reported				342	19.4	
1950	Total Solids at 105°C	mg/L		354	309 - 399	Not Reported				349	20.1	

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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**WP Hardness (cat# 580, lot# P288-507)**

1960	Total Suspended Solids	mg/L	83.5	88.0	72.3 - 97.6	Acceptable	SM 2540 D-1997 1997	1/25/2019	0.0681	83.3	2.96	Merle McCullough
1035	Calcium	mg/L	78.4	86.2	73.3 - 99.1	Acceptable	EPA 200.7 4.4 1994	2/7/2019	-1.58	83.7	3.35	Ry Jensen
1085	Magnesium	mg/L	18.8	19.2	16.3 - 22.1	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.128	18.7	0.867	Ry Jensen
1550	Calcium Hardness as CaCO3	mg/L		215	183 - 247	Not Reported				209	7.73	
1755	Total Hardness as CaCO3	mg/L	273	294	250 - 338	Acceptable	EPA 200.7 4.4 1994	2/7/2019	-1.05	284	10.9	Ry Jensen

**WP Hardness (cat# 580, lot# P288-507)**

1960	Total Suspended Solids	mg/L		88.0	72.3 - 97.6	Not Reported				83.3	2.96	
1035	Calcium	mg/L		86.2	73.3 - 99.1	Not Reported				83.7	3.35	
1085	Magnesium	mg/L		19.2	16.3 - 22.1	Not Reported				18.7	0.867	
1550	Calcium Hardness as CaCO3	mg/L		215	183 - 247	Not Reported				209	7.73	
1755	Total Hardness as CaCO3	mg/L	273	294	250 - 338	Acceptable	SM 2340 B-1997 1997	2/7/2019	-1.05	284	10.9	Ry Jensen

**WP Hardness (cat# 580, lot# P288-507)**

1960	Total Suspended Solids	mg/L		88.0	72.3 - 97.6	Not Reported				83.3	2.96	
1035	Calcium	mg/L	81.1	86.2	73.3 - 99.1	Acceptable	EPA 200.8 5.4 1994	2/7/2019	-0.770	83.7	3.35	Eric Mathews
1085	Magnesium	mg/L	18.7	19.2	16.3 - 22.1	Acceptable	EPA 200.8 5.4 1994	2/7/2019	0.0125	18.7	0.867	Eric Mathews
1550	Calcium Hardness as CaCO3	mg/L		215	183 - 247	Not Reported				209	7.73	
1755	Total Hardness as CaCO3	mg/L	280	294	250 - 338	Acceptable	EPA 200.8 5.4 1994	2/7/2019	-0.405	284	10.9	Eric Mathews

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**WP Hardness (cat# 580, lot# P288-507)**

1960	Total Suspended Solids	mg/L		88.0	72.3 - 97.6	Not Reported				83.3	2.96	
1035	Calcium	mg/L		86.2	73.3 - 99.1	Not Reported				83.7	3.35	
1085	Magnesium	mg/L		19.2	16.3 - 22.1	Not Reported				18.7	0.867	
1550	Calcium Hardness as CaCO3	mg/L		215	183 - 247	Not Reported				209	7.73	
1755	Total Hardness as CaCO3	mg/L	269	294	250 - 338	Acceptable	SM 2340 C-1997 1997	2/1/2019	-1.42	284	10.9	Jared Bradley

**WP pH (cat# 577, lot# P288-977)**

1900	pH	S.U.	9.05	8.99	8.79 - 9.19	Acceptable	SM 4500-H+ B-2000 2000	1/22/2019	0.610	9.00	0.0825	Amethyst Vozar
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**WP pH (cat# 577, lot# P288-977)**

1900	pH	S.U.	9.06	8.99	8.79 - 9.19	Acceptable	EPA 9040B 2 1995	1/22/2019	0.731	9.00	0.0825	Amethyst Vozar
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**WP Settleable Solids (cat# 883, lot# P288-911)**

1965	Settleable Solids	mL/L	20.0	18.4	14.5 - 23.9	Acceptable	SM 2540 F-1997 1997	1/22/2019	-0.289	20.5	1.58	Jon Cartee
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**WP Simple Nutrients (cat# 584, lot# P288-505)**

1515	Ammonia as N	mg/L	10.4	9.79	7.78 - 11.8	Acceptable	EPA 350.1 2 1993	1/22/2019	1.00	9.76	0.640	Jon Cartee
1820	Nitrate + Nitrite as N	mg/L	3.09	2.99	2.40 - 3.55	Acceptable	EPA 353.2 2 1993	1/22/2019	0.554	2.99	0.178	Rebecca Goerner
1810	Nitrate as N	mg/L	3.09	2.99	2.34 - 3.63	Acceptable	EPA 353.2 (calc)	1/22/2019	0.677	2.97	0.171	Rebecca Goerner
1870	ortho-Phosphate as P	mg/L	0.982	1.02	0.867 - 1.17	Acceptable	SM 4500-P E-1999 1999	1/22/2019	-0.532	1.02	0.0670	Amethyst Vozar

**WP Simple Nutrients (cat# 584, lot# P288-505)**

1515	Ammonia as N	mg/L		9.79	7.78 - 11.8	Not Reported				9.76	0.640	
1820	Nitrate + Nitrite as N	mg/L	2.90	2.99	2.40 - 3.55	Acceptable	EPA 300.0 2.1 1993	1/22/2019	-0.516	2.99	0.178	Amethyst Vozar
1810	Nitrate as N	mg/L	2.90	2.99	2.34 - 3.63	Acceptable	EPA 300.0 2.1 1993	1/22/2019	-0.437	2.97	0.171	Amethyst Vozar
1870	ortho-Phosphate as P	mg/L		1.02	0.867 - 1.17	Not Reported				1.02	0.0670	

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**WP Complex Nutrients (cat# 579, lot# P288-525)**

1795	Total Kjeldahl Nitrogen	mg/L	11.1	11.7	8.62 - 14.5	Acceptable	EPA 351.2 2 1993	2/5/2019	-0.605	11.6	0.863	Jon Cartee
1910	Total phosphorus as P	mg/L	6.14	6.04	5.01 - 7.00	Acceptable	SM 4500-P E-1999 1999	2/4/2019	0.259	6.05	0.356	Taylor Needham

**WP Nitrite (cat# 888, lot# P288-770)**

1840	Nitrite as N	mg/L	3.07	3.01	2.60 - 3.43	Acceptable	EPA 353.2 2 1993	1/22/2019	0.453	3.01	0.134	Rebecca Goerner
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**WP Nitrite (cat# 888, lot# P288-770)**

1840	Nitrite as N	mg/L	3.06	3.01	2.60 - 3.43	Acceptable	EPA 300.0 2.1 1993	1/22/2019	0.379	3.01	0.134	Amethyst Voazar
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**WP Nitrite (cat# 888, lot# P288-770)**

1840	Nitrite as N	mg/L	2.90	3.01	2.60 - 3.43	Acceptable	SM 4500-NO2 B-2000 2000	1/22/2019	-0.813	3.01	0.134	Jon Cartee
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**WP Demand (cat# 578, lot# P288-516)**

1530	BOD	mg/L	115	111	59.8 - 162	Acceptable	SM 5210 B-2001 2001	1/30/2019	0.262	111	16.6	Jon Cartee
1555	CBOD	mg/L		101	46.9 - 154	Not Reported				104	18.4	
1565	COD	mg/L	181	181	145 - 210	Acceptable	SM 5220 D-1997 1997	1/25/2019	0.141	179	11.3	Jared Bradley
2040	TOC	mg/L	73.8	71.7	60.1 - 82.6	Acceptable	SM 5310 C-2000 2000	1/30/2019	0.593	71.4	4.00	Erich Bowman

**WP Demand (cat# 578, lot# P288-516)**

1530	BOD	mg/L		111	59.8 - 162	Not Reported				111	16.6	
1555	CBOD	mg/L		101	46.9 - 154	Not Reported				104	18.4	
1565	COD	mg/L	181	181	145 - 210	Acceptable	HACH 8000	1/25/2019	0.141	179	11.3	Jared Bradley
2040	TOC	mg/L		71.7	60.1 - 82.6	Not Reported				71.4	4.00	

**WP Oil & Grease (cat# 582, lot# P288-518)**

1803	n-Hexane Extractable Material(O&G)(Grav)	mg/L	91.5	97.5	69.1 - 113	Acceptable	EPA 1664A 1999	2/20/2019	0.614	87.1	7.18	Erich Bowman
1803	n-Hexane Extractable Material(O&G)(IR)	mg/L		120	86.5 - 138	Not Reported				84.2	36.7	

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**WP Oil & Grease (cat# 582, lot# P288-518)**

1803	n-Hexane Extractable Material(O&G)(Grav)	mg/L	91.5	97.5	69.1 - 113	Acceptable	EPA 1664B 2010	2/20/2019	0.614	87.1	7.18	Erich Bowman
1803	n-Hexane Extractable Material(O&G)(IR)	mg/L		120	86.5 - 138	Not Reported				84.2	36.7	

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**WP Trace Metals (cat# 586, lot# P288-500)**

1000	Aluminum	µg/L	2070	2030	1680 - 2320	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.0239	2070	105	Eric Mathews
1005	Antimony	µg/L	422	426	341 - 498	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.0608	424	24.9	Eric Mathews
1010	Arsenic	µg/L	372	381	315 - 443	Acceptable	EPA 200.8 5.4 1994	2/6/2019	0.0274	371	18.8	Eric Mathews
1015	Barium	µg/L	1150	1170	994 - 1350	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.387	1170	48.8	Eric Mathews
1020	Beryllium	µg/L	50.3	52.3	44.5 - 60.1	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.550	51.7	2.56	Eric Mathews
1025	Boron	µg/L	1420	1450	1230 - 1670	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.110	1430	74.9	Eric Mathews
1030	Cadmium	µg/L	717	743	632 - 854	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.571	736	33.6	Eric Mathews
1040	Chromium	µg/L	105	104	88.4 - 120	Acceptable	EPA 200.8 5.4 1994	2/6/2019	0.00917	105	4.52	Eric Mathews
1050	Cobalt	µg/L	739	735	625 - 845	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.644	762	35.0	Eric Mathews
1055	Copper	µg/L	462	483	411 - 555	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-1.04	487	23.5	Eric Mathews
1070	Iron	µg/L	1870	1820	1550 - 2090	Acceptable	EPA 200.8 5.4 1994	2/6/2019	0.272	1850	80.9	Eric Mathews
1075	Lead	µg/L	901	908	772 - 1040	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.402	917	39.5	Eric Mathews
1090	Manganese	µg/L	850	861	732 - 990	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.693	876	37.8	Eric Mathews
1100	Molybdenum	µg/L	510	522	453 - 585	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.516	521	21.6	Eric Mathews
1105	Nickel	µg/L	749	739	648 - 834	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.0663	751	35.1	Eric Mathews
1140	Selenium	µg/L	461	485	412 - 558	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.575	477	27.8	Eric Mathews
1150	Silver	µg/L	162	163	139 - 187	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.266	164	9.03	Eric Mathews
1160	Strontium	µg/L	343	341	290 - 392	Acceptable	EPA 200.8 5.4 1994	2/6/2019	0.00705	343	12.4	Eric Mathews
1165	Thallium	µg/L	522	521	429 - 604	Acceptable	EPA 200.8 5.4 1994	2/6/2019	0.0458	521	28.6	Eric Mathews
1185	Vanadium	µg/L	1790	1850	1570 - 2130	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.749	1850	75.4	Eric Mathews

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**WP Trace Metals (cat# 586, lot# P288-500) (Continued)**

1190	Zinc	µg/L	653	679	577 - 781	Acceptable	EPA 200.8 5.4 1994	2/6/2019	-0.893	683	33.9	Eric Mathews
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**WP Trace Metals (cat# 586, lot# P288-500)**

1000	Aluminum	µg/L	2240	2030	1680 - 2320	Acceptable	EPA 200.7 4.4 1994	2/7/2019	1.59	2070	105	Ry Jensen
1005	Antimony	µg/L	433	426	341 - 498	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.380	424	24.9	Ry Jensen
1010	Arsenic	µg/L	382	381	315 - 443	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.559	371	18.8	Ry Jensen
1015	Barium	µg/L	1180	1170	994 - 1350	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.227	1170	48.8	Ry Jensen
1020	Beryllium	µg/L	52.1	52.3	44.5 - 60.1	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.153	51.7	2.56	Ry Jensen
1025	Boron	µg/L	1450	1450	1230 - 1670	Acceptable	EPA 200.7 4.4 1994	2/11/2019	0.291	1430	74.9	Ry Jensen
1030	Cadmium	µg/L	743	743	632 - 854	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.202	736	33.6	Ry Jensen
1040	Chromium	µg/L	112	104	88.4 - 120	Acceptable	EPA 200.7 4.4 1994	2/7/2019	1.56	105	4.52	Ry Jensen
1050	Cobalt	µg/L	825	735	625 - 845	Acceptable	EPA 200.7 4.4 1994	2/7/2019	1.81	762	35.0	Ry Jensen
1055	Copper	µg/L	497	483	411 - 555	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.443	487	23.5	Ry Jensen
1070	Iron	µg/L	1930	1820	1550 - 2090	Acceptable	EPA 200.7 4.4 1994	2/7/2019	1.01	1850	80.9	Ry Jensen
1075	Lead	µg/L	913	908	772 - 1040	Acceptable	EPA 200.7 4.4 1994	2/7/2019	-0.0980	917	39.5	Ry Jensen
1090	Manganese	µg/L	882	861	732 - 990	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.155	876	37.8	Ry Jensen
1100	Molybdenum	µg/L	537	522	453 - 585	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.731	521	21.6	Ry Jensen
1105	Nickel	µg/L	762	739	648 - 834	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.305	751	35.1	Ry Jensen
1140	Selenium	µg/L	487	485	412 - 558	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.358	477	27.8	Ry Jensen
1150	Silver	µg/L	160	163	139 - 187	Acceptable	EPA 200.7 4.4 1994	2/7/2019	-0.487	164	9.03	Ry Jensen
1160	Strontium	µg/L	334	341	290 - 392	Acceptable	EPA 200.7 4.4 1994	2/7/2019	-0.721	343	12.4	Ry Jensen
1165	Thallium	µg/L	569	521	429 - 604	Acceptable	EPA 200.7 4.4 1994	2/7/2019	1.69	521	28.6	Ry Jensen
1185	Vanadium	µg/L	1890	1850	1570 - 2130	Acceptable	EPA 200.7 4.4 1994	2/7/2019	0.578	1850	75.4	Ry Jensen

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Study #: WP-288







A Waters Company

# WP-288 2009 TNI Evaluation Final Complete Report

Josh Kirkpatrick  
Quality Assurance Manager  
Basic Laboratory, Inc.  
2218 Railroad Ave  
Redding, CA 96001  
(530) 243-7234-204

EPA ID:  
ERA Customer Number:  
Report Issued:  
Study Dates:

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01/14/19 - 02/28/19

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**WP Trace Metals (cat# 586, lot# P288-500) (Continued)**

1190	Zinc	µg/L	677	679	577 - 781	Acceptable	EPA 200.7 4.4 1994	2/7/2019	-0.185	683	33.9	Ry Jensen
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**WP Trace Metals (cat# 586, lot# P288-500)**

1000	Aluminum	µg/L	2240	2030	1680 - 2320	Acceptable	EPA 6010B 2 1996	2/7/2019	1.59	2070	105	Ry Jensen
1005	Antimony	µg/L	433	426	341 - 498	Acceptable	EPA 6010B 2 1996	2/7/2019	0.380	424	24.9	Ry Jensen
1010	Arsenic	µg/L	385	381	315 - 443	Acceptable	EPA 6010B 2 1996	2/7/2019	0.719	371	18.8	Ry Jensen
1015	Barium	µg/L	1180	1170	994 - 1350	Acceptable	EPA 6010B 2 1996	2/7/2019	0.227	1170	48.8	Ry Jensen
1020	Beryllium	µg/L	52.1	52.3	44.5 - 60.1	Acceptable	EPA 6010B 2 1996	2/7/2019	0.153	51.7	2.56	Ry Jensen
1025	Boron	µg/L	1450	1450	1230 - 1670	Acceptable	EPA 6010B 2 1996	2/11/2019	0.291	1430	74.9	Ry Jensen
1030	Cadmium	µg/L	743	743	632 - 854	Acceptable	EPA 6010B 2 1996	2/7/2019	0.202	736	33.6	Ry Jensen
1040	Chromium	µg/L	112	104	88.4 - 120	Acceptable	EPA 6010B 2 1996	2/7/2019	1.56	105	4.52	Ry Jensen
1050	Cobalt	µg/L	825	735	625 - 845	Acceptable	EPA 6010B 2 1996	2/7/2019	1.81	762	35.0	Ry Jensen
1055	Copper	µg/L	497	483	411 - 555	Acceptable	EPA 6010B 2 1996	2/7/2019	0.443	487	23.5	Ry Jensen
1070	Iron	µg/L	1930	1820	1550 - 2090	Acceptable	EPA 6010B 2 1996	2/7/2019	1.01	1850	80.9	Ry Jensen
1075	Lead	µg/L	913	908	772 - 1040	Acceptable	EPA 6010B 2 1996	2/7/2019	-0.0980	917	39.5	Ry Jensen
1090	Manganese	µg/L	882	861	732 - 990	Acceptable	EPA 6010B 2 1996	2/7/2019	0.155	876	37.8	Ry Jensen
1100	Molybdenum	µg/L	537	522	453 - 585	Acceptable	EPA 6010B 2 1996	2/7/2019	0.731	521	21.6	Ry Jensen
1105	Nickel	µg/L	762	739	648 - 834	Acceptable	EPA 6010B 2 1996	2/7/2019	0.305	751	35.1	Ry Jensen
1140	Selenium	µg/L	487	485	412 - 558	Acceptable	EPA 6010B 2 1996	2/7/2019	0.358	477	27.8	Ry Jensen
1150	Silver	µg/L	160	163	139 - 187	Acceptable	EPA 6010B 2 1996	2/7/2019	-0.487	164	9.03	Ry Jensen
1160	Strontium	µg/L	334	341	290 - 392	Acceptable	EPA 6010B 2 1996	2/7/2019	-0.721	343	12.4	Ry Jensen
1165	Thallium	µg/L	569	521	429 - 604	Acceptable	EPA 6010B 2 1996	2/7/2019	1.69	521	28.6	Ry Jensen
1185	Vanadium	µg/L	1890	1850	1570 - 2130	Acceptable	EPA 6010B 2 1996	2/7/2019	0.578	1850	75.4	Ry Jensen

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**WP Trace Metals (cat# 586, lot# P288-500) (Continued)**

1190	Zinc	µg/L	677	679	577 - 781	Acceptable	EPA 6010B 2 1996	2/7/2019	-0.185	683	33.9	Ry Jensen
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**WP Trace Metals (cat# 586, lot# P288-500)**

1000	Aluminum	µg/L	2150	2030	1680 - 2320	Acceptable	EPA 6020	2/19/2019	0.738	2070	105	
1005	Antimony	µg/L	439	426	341 - 498	Acceptable	EPA 6020	2/19/2019	0.621	424	24.9	
1010	Arsenic	µg/L	374	381	315 - 443	Acceptable	EPA 6020	2/19/2019	0.134	371	18.8	
1015	Barium	µg/L	1180	1170	994 - 1350	Acceptable	EPA 6020	2/20/2019	0.227	1170	48.8	
1020	Beryllium	µg/L	52.0	52.3	44.5 - 60.1	Acceptable	EPA 6020	2/19/2019	0.114	51.7	2.56	
1025	Boron	µg/L	1440	1450	1230 - 1670	Acceptable	EPA 6020	2/19/2019	0.157	1430	74.9	
1030	Cadmium	µg/L	731	743	632 - 854	Acceptable	EPA 6020	2/19/2019	-0.155	736	33.6	
1040	Chromium	µg/L	104	104	88.4 - 120	Acceptable	EPA 6020	2/19/2019	-0.212	105	4.52	
1050	Cobalt	µg/L	771	735	625 - 845	Acceptable	EPA 6020	2/19/2019	0.270	762	35.0	
1055	Copper	µg/L	494	483	411 - 555	Acceptable	EPA 6020	2/19/2019	0.315	487	23.5	
1070	Iron	µg/L	1940	1820	1550 - 2090	Acceptable	EPA 6020	2/19/2019	1.14	1850	80.9	
1075	Lead	µg/L	921	908	772 - 1040	Acceptable	EPA 6020	2/19/2019	0.104	917	39.5	
1090	Manganese	µg/L	916	861	732 - 990	Acceptable	EPA 6020	2/19/2019	1.05	876	37.8	
1100	Molybdenum	µg/L	527	522	453 - 585	Acceptable	EPA 6020	2/19/2019	0.269	521	21.6	
1105	Nickel	µg/L	764	739	648 - 834	Acceptable	EPA 6020	2/19/2019	0.362	751	35.1	
1140	Selenium	µg/L	472	485	412 - 558	Acceptable	EPA 6020	2/19/2019	-0.180	477	27.8	
1150	Silver	µg/L	162	163	139 - 187	Acceptable	EPA 6020	2/19/2019	-0.266	164	9.03	
1160	Strontium	µg/L	364	341	290 - 392	Acceptable	EPA 6020	2/19/2019	1.71	343	12.4	
1165	Thallium	µg/L	538	521	429 - 604	Acceptable	EPA 6020	2/19/2019	0.606	521	28.6	
1185	Vanadium	µg/L	1940	1850	1570 - 2130	Acceptable	EPA 6020	2/20/2019	1.24	1850	75.4	

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**WP Trace Metals (cat# 586, lot# P288-500) (Continued)**

1190	Zinc	µg/L	655	679	577 - 781	Acceptable	EPA 6020	2/19/2019	-0.834	683	33.9	
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**WP Trace Metals (cat# 586, lot# P288-500)**

1000	Aluminum	µg/L		2030	1680 - 2320	Not Reported				2070	105	
1005	Antimony	µg/L		426	341 - 498	Not Reported				424	24.9	
1010	Arsenic	µg/L		381	315 - 443	Not Reported				371	18.8	
1015	Barium	µg/L		1170	994 - 1350	Not Reported				1170	48.8	
1020	Beryllium	µg/L		52.3	44.5 - 60.1	Not Reported				51.7	2.56	
1025	Boron	µg/L		1450	1230 - 1670	Not Reported				1430	74.9	
1030	Cadmium	µg/L	795	743	632 - 854	Acceptable	EPA 7131A 1 1994	2/7/2019	1.75	736	33.6	Taylor Needham
1040	Chromium	µg/L		104	88.4 - 120	Not Reported				105	4.52	
1050	Cobalt	µg/L		735	625 - 845	Not Reported				762	35.0	
1055	Copper	µg/L		483	411 - 555	Not Reported				487	23.5	
1070	Iron	µg/L		1820	1550 - 2090	Not Reported				1850	80.9	
1075	Lead	µg/L		908	772 - 1040	Not Reported				917	39.5	
1090	Manganese	µg/L		861	732 - 990	Not Reported				876	37.8	
1100	Molybdenum	µg/L		522	453 - 585	Not Reported				521	21.6	
1105	Nickel	µg/L		739	648 - 834	Not Reported				751	35.1	
1140	Selenium	µg/L		485	412 - 558	Not Reported				477	27.8	
1150	Silver	µg/L		163	139 - 187	Not Reported				164	9.03	
1160	Strontium	µg/L		341	290 - 392	Not Reported				343	12.4	
1165	Thallium	µg/L		521	429 - 604	Not Reported				521	28.6	
1185	Vanadium	µg/L		1850	1570 - 2130	Not Reported				1850	75.4	

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**WP Trace Metals (cat# 586, lot# P288-500) (Continued)**

1190	Zinc	µg/L		679	577 - 781	Not Reported				683	33.9	
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**WP Trace Metals (cat# 586, lot# P288-500)**

1000	Aluminum	µg/L	2080	2030	1680 - 2320	Acceptable	EPA 1638 1996	2/20/2019	0.0713	2070	105	Eric Mathews
1005	Antimony	µg/L	422	426	341 - 498	Acceptable	EPA 1638 1996	2/20/2019	-0.0608	424	24.9	Eric Mathews
1010	Arsenic	µg/L	370	381	315 - 443	Acceptable	EPA 1638 1996	2/20/2019	-0.0790	371	18.8	Eric Mathews
1015	Barium	µg/L	1210	1170	994 - 1350	Acceptable	EPA 1638 1996	2/20/2019	0.841	1170	48.8	Eric Mathews
1020	Beryllium	µg/L	52.1	52.3	44.5 - 60.1	Acceptable	EPA 1638 1996	2/20/2019	0.153	51.7	2.56	Eric Mathews
1025	Boron	µg/L	1400	1450	1230 - 1670	Acceptable	EPA 1638 1996	2/20/2019	-0.377	1430	74.9	Eric Mathews
1030	Cadmium	µg/L	720	743	632 - 854	Acceptable	EPA 1638 1996	2/20/2019	-0.482	736	33.6	Eric Mathews
1040	Chromium	µg/L	103	104	88.4 - 120	Acceptable	EPA 1638 1996	2/20/2019	-0.433	105	4.52	Eric Mathews
1050	Cobalt	µg/L	757	735	625 - 845	Acceptable	EPA 1638 1996	2/20/2019	-0.130	762	35.0	Eric Mathews
1055	Copper	µg/L	482	483	411 - 555	Acceptable	EPA 1638 1996	2/20/2019	-0.195	487	23.5	Eric Mathews
1070	Iron	µg/L	1780	1820	1550 - 2090	Acceptable	EPA 1638 1996	2/20/2019	-0.841	1850	80.9	Eric Mathews
1075	Lead	µg/L	939	908	772 - 1040	Acceptable	EPA 1638 1996	2/20/2019	0.560	917	39.5	Eric Mathews
1090	Manganese	µg/L	877	861	732 - 990	Acceptable	EPA 1638 1996	2/20/2019	0.0222	876	37.8	Eric Mathews
1100	Molybdenum	µg/L	515	522	453 - 585	Acceptable	EPA 1638 1996	2/20/2019	-0.285	521	21.6	Eric Mathews
1105	Nickel	µg/L	752	739	648 - 834	Acceptable	EPA 1638 1996	2/20/2019	0.0192	751	35.1	Eric Mathews
1140	Selenium	µg/L	480	485	412 - 558	Acceptable	EPA 1638 1996	2/20/2019	0.107	477	27.8	Eric Mathews
1150	Silver	µg/L	161	163	139 - 187	Acceptable	EPA 1638 1996	2/20/2019	-0.376	164	9.03	Eric Mathews
1160	Strontium	µg/L	330	341	290 - 392	Acceptable	EPA 1638 1996	2/20/2019	-1.04	343	12.4	Eric Mathews
1165	Thallium	µg/L	543	521	429 - 604	Acceptable	EPA 1638 1996	2/20/2019	0.781	521	28.6	Eric Mathews
1185	Vanadium	µg/L	1820	1850	1570 - 2130	Acceptable	EPA 1638 1996	2/20/2019	-0.351	1850	75.4	Eric Mathews

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**WP Trace Metals (cat# 586, lot# P288-500) (Continued)**

1190	Zinc	µg/L	664	679	577 - 781	Acceptable	EPA 1638 1996	2/20/2019	-0.569	683	33.9	Eric Mathews
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**WP Mercury (cat# 574, lot# P288-514)**

1095	Mercury	µg/L	14.4	14.7	10.3 - 19.1	Acceptable	EPA 245.2 1974	1/25/2019	0.0596	14.3	1.53	Cassie Havens
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**WP Mercury (cat# 574, lot# P288-514)**

1095	Mercury	µg/L	14.4	14.7	10.3 - 19.1	Acceptable	EPA 7470A 1 1994	1/25/2019	0.0596	14.3	1.53	Cassie Havens
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**WP Low-Level Mercury (cat# 896, lot# P288-931)**

1095	Low Level Mercury	ng/L	40.7	37.4	24.7 - 49.8	Acceptable	EPA 1631E 2002	2/11/2019	0.779	37.2	4.43	Cassie Havens
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**WP Hexavalent Chromium (cat# 898, lot# P288-984)**

1045	Hexavalent Chromium	µg/L	377	371	309 - 429	Acceptable	EPA 218.6 3.3 1994	1/30/2019	0.587	367	16.6	Erich Bowman
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**WP Hexavalent Chromium (cat# 898, lot# P288-984)**

1045	Hexavalent Chromium	µg/L	335	371	309 - 429	Acceptable	SM 3500-Cr B-2009 2009	2/7/2019	-1.94	367	16.6	Jon Cartee
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**WP Hexavalent Chromium (cat# 898, lot# P288-984)**

1045	Hexavalent Chromium	µg/L	335	371	309 - 429	Acceptable	EPA 7196A 1 1992	2/7/2019	-1.94	367	16.6	Jon Cartee
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**WP Turbidity (cat# 893, lot# P288-777)**

2055	Turbidity	NTU	21.0	19.9	16.6 - 23.3	Acceptable	SM 2130 B-2001 2001	1/18/2019	0.984	20.0	1.06	Jon Cartee
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**WP Turbidity (cat# 893, lot# P288-777)**

2055	Turbidity	NTU	20.9	19.9	16.6 - 23.3	Acceptable	EPA 180.1 2 1993	1/18/2019	0.889	20.0	1.06	Jon Cartee
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**WP Total Cyanide (cat# 588, lot# P288-502)**

1645	Cyanide, total	mg/L	0.204	0.234	0.152 - 0.316	Acceptable	SM 4500-CN E-1999 1999	1/24/2019	-0.929	0.226	0.0239	Amethyst Voazar
1510	Amenable Cyanide	mg/L		0.122	0.0793 - 0.165	Not Reported				0.146	0.0483	

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Study # : WP-288





A Waters Company

# WP-288 2009 TNI Evaluation Final Complete Report

Josh Kirkpatrick  
Quality Assurance Manager  
Basic Laboratory, Inc.  
2218 Railroad Ave  
Redding, CA 96001  
(530) 243-7234-204

EPA ID:  
ERA Customer Number:  
Report Issued:  
Study Dates:

CA00381  
B062101  
03/04/19  
01/14/19 - 02/28/19

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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**WP Total Cyanide (cat# 588, lot# P288-502)**

1645	Cyanide, total	mg/L	0.204	0.234	0.152 - 0.316	Acceptable	EPA 9014 1996	1/24/2019	-0.929	0.226	0.0239	Amethyst Vozar
1510	Amenable Cyanide	mg/L		0.122	0.0793 - 0.165	Not Reported				0.146	0.0483	

**WP Total Cyanide (cat# 588, lot# P288-502)**

1645	Cyanide, total	mg/L	0.218	0.234	0.152 - 0.316	Acceptable	EPA 335.4 1993	1/24/2019	-0.344	0.226	0.0239	Amethyst Vozar
1510	Amenable Cyanide	mg/L		0.122	0.0793 - 0.165	Not Reported				0.146	0.0483	

**WP Total Phenolics (4-AAP) (cat# 589, lot# P288-515)**

1905	Phenolics, total	mg/L	2.93	2.76	1.41 - 4.12	Acceptable	EPA 420.1 1978	2/5/2019	0.389	2.71	0.568	Jon Cartee
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**WP Total Residual Chlorine (cat# 587, lot# P288-501)**

1945	Free Residual Chlorine	mg/L	1.62	1.64	1.21 - 1.93	Acceptable	SM 4500-Cl G-2000 2000	1/30/2019	0.999	1.52	0.0967	Amethyst Vozar
1940	Total Residual Chlorine	mg/L	1.64	1.64	1.21 - 1.93	Acceptable	SM 4500-Cl G-2000 2000	1/30/2019	0.679	1.57	0.103	Amethyst Vozar



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**WP WasteWatR™ Coliform MicrobE™ (cat# 576, lot# P288-083)**

2500	Total Coliforms (MF)	CFU/100mL		690	322 - 1050	Not Reported				581	121	
2530	Fecal Coliforms (MF)	CFU/100mL		690	121 - 970	Not Reported				342	142	
2525	E.coli (MF)	CFU/100mL		690	209 - 1030	Not Reported				465	138	
2500	Total Coliforms (MPN)	MPN/100mL	770	662	301 - 1440	Acceptable	SM 9223 B (Colilert Quanti-Tray)-2004 2004	1/31/2019	0.0302	657	189	Taylor Needham
2530	Fecal Coliforms (MPN)	MPN/100mL		662	230 - 984	Not Reported				476	126	
2525	E.coli (MPN)	MPN/100mL	770	662	316 - 1330	Acceptable	SM 9223 B (Colilert Quanti-Tray)-2004 2004	1/31/2019	0.0336	648	169	Taylor Needham

Per Section 6.4.3 a of the 2009 TNI Standard, "The assigned values for quantitative microbiology analytes shall be equal to the mean of the assigned value verification and/or homogeneity testing per Sections 7.1 and 7.2". The final acceptance limits are derived from the calculated study mean and study standard deviation from laboratory-reported results. Disagreement between the assigned values and study means/acceptance limits are due to the inherent variability of microbiology methods and differences in the methods used by ERA and participant laboratories. For quantitative microbiology analytes, the assigned value is not used in the evaluation of laboratories.

**WP WasteWatR™ Coliform MicrobE™ (cat# 576, lot# P288-083)**

2500	Total Coliforms (MF)	CFU/100mL		690	322 - 1050	Not Reported				581	121	
2530	Fecal Coliforms (MF)	CFU/100mL		690	121 - 970	Not Reported				342	142	
2525	E.coli (MF)	CFU/100mL		690	209 - 1030	Not Reported				465	138	
2500	Total Coliforms (MPN)	MPN/100mL	687	662	301 - 1440	Acceptable	SM 9223 B (Colilert-18 Quanti-Tray)-2004 2004	1/31/2019	0.00844	657	189	Taylor Needham
2530	Fecal Coliforms (MPN)	MPN/100mL		662	230 - 984	Not Reported				476	126	
2525	E.coli (MPN)	MPN/100mL	687	662	316 - 1330	Acceptable	SM 9223 B (Colilert-18 Quanti-Tray)-2004 2004	1/31/2019	0.0114	648	169	Taylor Needham

Per Section 6.4.3 a of the 2009 TNI Standard, "The assigned values for quantitative microbiology analytes shall be equal to the mean of the assigned value verification and/or homogeneity testing per Sections 7.1 and 7.2". The final acceptance limits are derived from the calculated study mean and study standard deviation from laboratory-reported results. Disagreement between the assigned values and study means/acceptance limits are due to the inherent variability of microbiology methods and differences in the methods used by ERA and participant laboratories. For quantitative microbiology analytes, the assigned value is not used in the evaluation of laboratories.

**WP WasteWatR™ Coliform MicrobE™ - SM 9221 (cat# 576A, lot# P288-083A)**

2500	Total Coliforms (MPN)	MPN/100mL	500	662	59.6 - 3700	Acceptable	SM 9221 B + C-2006 2006	2/10/2019	0.00981	470	607	Taylor Needham
2530	Fecal Coliforms (MPN)	MPN/100mL	500	662	62.7 - 3650	Acceptable	SM 9221 B + E + C-2006 2006	2/10/2019	0.00686	479	598	Taylor Needham
2525	E.coli (MPN)	MPN/100mL		662	195 - 1970	Not Reported				620	296	

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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A Waters Company

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**Redding, CA 96001**  
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**Report Issued:**  
**Study Dates:**

**CA00381**  
**B062101**  
**03/04/19**  
**01/14/19 - 02/28/19**

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Per Section 6.4.3 a of the 2009 TNI Standard, "The assigned values for quantitative microbiology analytes shall be equal to the mean of the assigned value verification and/or homogeneity testing per Sections 7.1 and 7.2". The final acceptance limits are derived from the calculated study mean and study standard deviation from laboratory-reported results. Disagreement between the assigned values and study means/acceptance limits are due to the inherent variability of microbiology methods and differences in the methods used by ERA and participant laboratories. For quantitative microbiology analytes, the assigned value is not used in the evaluation of laboratories.



All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Study # : WP-288





A Waters Company

# 040419D 2009 TNI Evaluation Final Complete Report

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(530) 243-7234-204

EPA ID:  
ERA Customer Number:

CA00381  
B062101

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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**WP Demand (cat# 516, lot# 040419D) Study Dates: 04/04/19 - 04/22/19**

1530	BOD	mg/L		90.5	48.4 - 133	Not Reported				90.9	14.3	
1555	CBOD	mg/L	74	82.0	37.8 - 126	Acceptable	SM 5210 B-2001 2001	4/15/2019	-0.817	85.4	14.0	Jon Cartee
1565	COD	mg/L		147	116 - 172	Not Reported				145	12.7	
2040	TOC	mg/L		58.1	48.5 - 67.1	Not Reported				58.6	3.06	

All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Project # : 040419D

