



A Waters Company

WP-276 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
03/05/18
01/15/18 - 03/01/18

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# P276-506)

1505	Alkalinity as CaCO3	mg/L	75	80.2	68.2 - 92.2	Acceptable	SM 2320 B-2011 2011	1/29/2018	-1.18	78.6	3.06	
1575	Chloride	mg/L	40.0	40.3	34.7 - 46.0	Acceptable	EPA 300.0 2.1 1993	2/7/2018	0.495	39.2	1.64	
1610	Conductivity at 25°C	µmhos/cm	389	383	345 - 421	Acceptable	SM 2510 B-2011 2011	1/29/2018	0.519	384	9.15	
1730	Fluoride	mg/L	0.567	0.636	0.460 - 0.812	Acceptable	EPA 300.0 2.1 1993	2/7/2018	-0.842	0.609	0.0500	
1125	Potassium	mg/L	34.7	34.5	27.6 - 41.4	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.466	33.8	1.86	
1155	Sodium	mg/L	61.5	63.2	50.6 - 75.8	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.210	60.9	3.07	
2000	Sulfate	mg/L	44.9	40.8	33.3 - 46.9	Acceptable	EPA 300.0 2.1 1993	2/7/2018	2.98	39.7	1.74	
1955	Total Dissolved Solids at 180°C	mg/L	290	318	273 - 363	Acceptable	SM 2540 C-2011 2011	1/29/2018	-0.925	302	12.9	
1950	Total Solids at 105°C	mg/L	315	331	286 - 376	Acceptable	SM 2540 B-2011 2011	1/29/2018	-0.309	319	11.7	

WP Minerals (cat# 581, lot# P276-506)

1505	Alkalinity as CaCO3	mg/L		80.2	68.2 - 92.2	Not Reported				78.6	3.06	
1575	Chloride	mg/L		40.3	34.7 - 46.0	Not Reported				39.2	1.64	
1610	Conductivity at 25°C	µmhos/cm		383	345 - 421	Not Reported				384	9.15	
1730	Fluoride	mg/L		0.636	0.460 - 0.812	Not Reported				0.609	0.0500	
1125	Potassium	mg/L	32.1	34.5	27.6 - 41.4	Acceptable	EPA 200.8 5.4 1994	2/12/2018	-0.929	33.8	1.86	
1155	Sodium	mg/L	62.5	63.2	50.6 - 75.8	Acceptable	EPA 200.8 5.4 1994	2/12/2018	0.536	60.9	3.07	
2000	Sulfate	mg/L		40.8	33.3 - 46.9	Not Reported				39.7	1.74	
1955	Total Dissolved Solids at 180°C	mg/L		318	273 - 363	Not Reported				302	12.9	
1950	Total Solids at 105°C	mg/L		331	286 - 376	Not Reported				319	11.7	

All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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WP Hardness (cat# 580, lot# P276-507)

1960	Total Suspended Solids	mg/L		90.7	74.7 - 101	Not Reported				85.9	3.45	
1035	Calcium	mg/L	28.6	28.2	24.0 - 32.4	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.867	27.4	1.37	
1085	Magnesium	mg/L	14.6	14.6	12.4 - 16.8	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.436	14.3	0.735	
1550	Calcium Hardness as CaCO3	mg/L		70.3	59.8 - 80.8	Not Reported				68.3	3.20	
1755	Total Hardness as CaCO3	mg/L	132	130	110 - 150	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.974	127	5.28	

WP Hardness (cat# 580, lot# P276-507)

1960	Total Suspended Solids	mg/L		90.7	74.7 - 101	Not Reported				85.9	3.45	
1035	Calcium	mg/L	28.6	28.2	24.0 - 32.4	Acceptable	EPA 6010B 2 1996	2/8/2018	0.867	27.4	1.37	
1085	Magnesium	mg/L	14.6	14.6	12.4 - 16.8	Acceptable	EPA 6010B 2 1996	2/8/2018	0.436	14.3	0.735	
1550	Calcium Hardness as CaCO3	mg/L		70.3	59.8 - 80.8	Not Reported				68.3	3.20	
1755	Total Hardness as CaCO3	mg/L	132	130	110 - 150	Acceptable	SM 2340 B-2011 2011	2/19/2018	0.974	127	5.28	

WP Hardness (cat# 580, lot# P276-507)

1960	Total Suspended Solids	mg/L		90.7	74.7 - 101	Not Reported				85.9	3.45	
1035	Calcium	mg/L	28.8	28.2	24.0 - 32.4	Acceptable	EPA 200.8 5.4 1994	2/12/2018	1.01	27.4	1.37	
1085	Magnesium	mg/L	14.3	14.6	12.4 - 16.8	Acceptable	EPA 200.8 5.4 1994	2/12/2018	0.0283	14.3	0.735	
1550	Calcium Hardness as CaCO3	mg/L		70.3	59.8 - 80.8	Not Reported				68.3	3.20	
1755	Total Hardness as CaCO3	mg/L	131	130	110 - 150	Acceptable	EPA 200.8 5.4 1994	2/20/2018	0.784	127	5.28	

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WP Hardness (cat# 580, lot# P276-507)

1960	Total Suspended Solids	mg/L	86.7	90.7	74.7 - 101	Acceptable	SM 2540 D-2011 2011	1/24/2018	0.240	85.9	3.45	
1035	Calcium	mg/L		28.2	24.0 - 32.4	Not Reported				27.4	1.37	
1085	Magnesium	mg/L		14.6	12.4 - 16.8	Not Reported				14.3	0.735	
1550	Calcium Hardness as CaCO3	mg/L		70.3	59.8 - 80.8	Not Reported				68.3	3.20	
1755	Total Hardness as CaCO3	mg/L	121	130	110 - 150	Acceptable	SM 2340 C-2011 2011	1/26/2018	-1.11	127	5.28	

WP pH (cat# 577, lot# P276-977)

1900	pH	S.U.	6.90	6.89	6.69 - 7.09	Acceptable	SM 4500-H+ B-2011 2011	1/29/2018	-0.596	6.93	0.0482	
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WP pH (cat# 577, lot# P276-977)

1900	pH	S.U.	6.90	6.89	6.69 - 7.09	Acceptable	EPA 9040B 2 1995	1/29/2018	-0.596	6.93	0.0482	
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WP Settleable Solids (cat# 883, lot# P276-911)

1965	Settleable Solids	mL/L	10.0	10.0	7.27 - 13.6	Acceptable	SM 2540 F-2011 2011	1/25/2018	-0.819	10.8	0.946	
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WP Simple Nutrients (cat# 584, lot# P276-505)

1515	Ammonia as N	mg/L	14.9	15.9	12.8 - 18.9	Acceptable	EPA 350.1 2 1993	1/29/2018	-1.04	15.9	0.930	
1820	Nitrate + Nitrite as N	mg/L	7.54	7.54	6.24 - 8.78	Acceptable	EPA 300.0 2.1 1993	2/7/2018	0.0437	7.52	0.389	
1810	Nitrate as N	mg/L	7.54	7.54	6.18 - 8.86	Acceptable	EPA 300.0 2.1 1993	2/7/2018	0.0523	7.52	0.387	
1870	ortho-Phosphate as P	mg/L	3.10	3.22	2.74 - 3.70	Acceptable	SM 4500-P E-2011 2011	1/29/2018	-0.643	3.20	0.155	

WP Simple Nutrients (cat# 584, lot# P276-505)

1515	Ammonia as N	mg/L		15.9	12.8 - 18.9	Not Reported				15.9	0.930	
1820	Nitrate + Nitrite as N	mg/L	7.33	7.54	6.24 - 8.78	Acceptable	EPA 353.2 2 1993	1/29/2018	-0.496	7.52	0.389	
1810	Nitrate as N	mg/L	7.33	7.54	6.18 - 8.86	Acceptable	EPA 353.2 2 1993	1/29/2018	-0.491	7.52	0.387	
1870	ortho-Phosphate as P	mg/L		3.22	2.74 - 3.70	Not Reported				3.20	0.155	

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WP Complex Nutrients (cat# 579, lot# P276-525)

1795	Total Kjeldahl Nitrogen	mg/L	13.0	16.5	12.3 - 20.2	Acceptable	EPA 351.2 2 1993	1/31/2018	-3.28	16.5	1.06	
1910	Total phosphorus as P	mg/L	7.63	7.33	6.10 - 8.48	Acceptable	SM 4500-P E-2011 2011	1/30/2018	0.712	7.34	0.410	

WP Nitrite (cat# 888, lot# P276-770)

1840	Nitrite as N	mg/L	2.40	2.66	2.29 - 3.04	Acceptable	EPA 300.0 2.1 1993	2/7/2018	-1.55	2.64	0.158	
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WP Nitrite (cat# 888, lot# P276-770)

1840	Nitrite as N	mg/L	2.70	2.66	2.29 - 3.04	Acceptable	SM 4500-NO2 B-2011 2011	1/29/2018	0.351	2.64	0.158	
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WP Nitrite (cat# 888, lot# P276-770)

1840	Nitrite as N	mg/L	2.57	2.66	2.29 - 3.04	Acceptable	EPA 353.2 2 1993	1/29/2018	-0.471	2.64	0.158	
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WP Demand (cat# 578, lot# P276-516)

1530	BOD	mg/L	89	96.8	51.9 - 142	Acceptable	SM 5210 B-2001 2001	2/7/2018	-0.384	94.8	15.1	
1555	CBOD	mg/L	78	87.6	40.6 - 135	Acceptable	SM 5210 B-2011 2011	2/7/2018	-0.652	89.2	17.1	
1565	COD	mg/L	143	157	125 - 184	Acceptable	SM 5220 D-2011 2011	2/2/2018	-0.856	154	13.3	
2040	TOC	mg/L	60.7	62.1	51.9 - 71.7	Acceptable	SM 5310 C-2011 2011	2/8/2018	-0.422	61.8	2.68	

WP Demand (cat# 578, lot# P276-516)

1530	BOD	mg/L		96.8	51.9 - 142	Not Reported				94.8	15.1	
1555	CBOD	mg/L		87.6	40.6 - 135	Not Reported				89.2	17.1	
1565	COD	mg/L	142	157	125 - 184	Acceptable	HACH 8000	2/2/2018	-0.931	154	13.3	
2040	TOC	mg/L		62.1	51.9 - 71.7	Not Reported				61.8	2.68	

WP Oil & Grease (cat# 582, lot# P276-518)

1803	n-Hexane Extractable Material(O&G)(Grav)	mg/L	146	149	109 - 170	Acceptable	EPA 1664A HEM 1999	2/14/2018	0.392	141	12.3	
1803	n-Hexane Extractable Material(O&G)(IR)	mg/L		183	135 - 208	Not Reported				145	35.7	

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WP Oil & Grease (cat# 582, lot# P276-518)

1803	n-Hexane Extractable Material(O&G)(Grav)	mg/L	146	149	109 - 170	Acceptable	EPA 1664B (HEM) 2010	2/14/2018	0.392	141	12.3	
1803	n-Hexane Extractable Material(O&G)(IR)	mg/L		183	135 - 208	Not Reported				145	35.7	



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WP Trace Metals (cat# 586, lot# P276-500)

1000	Aluminum	µg/L	3950	3550	2960 - 4030	Acceptable	EPA 200.7 4.4 1994	2/8/2018	1.91	3590	189	
1005	Antimony	µg/L	631	611	497 - 706	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.985	605	26.8	
1010	Arsenic	µg/L	100	100	72.2 - 129	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.143	99.1	6.19	
1015	Barium	µg/L	1730	1690	1440 - 1940	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.648	1690	68.1	
1020	Beryllium	µg/L	336	331	281 - 381	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.368	330	15.8	
1025	Boron	µg/L	1660	1670	1420 - 1920	Acceptable	EPA 200.7 4.4 1994	2/9/2018	0.135	1650	81.7	
1030	Cadmium	µg/L	437	433	368 - 498	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.661	426	17.0	
1040	Chromium	µg/L	224	211	179 - 243	Acceptable	EPA 200.7 4.4 1994	2/8/2018	1.08	214	8.86	
1050	Cobalt	µg/L	860	792	673 - 911	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.980	825	36.2	
1055	Copper	µg/L	605	576	490 - 662	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.939	579	27.4	
1070	Iron	µg/L	1910	1770	1500 - 2040	Acceptable	EPA 200.7 4.4 1994	2/8/2018	1.32	1800	87.3	
1075	Lead	µg/L	140	133	113 - 153	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.948	133	7.00	
1090	Manganese	µg/L	261	256	218 - 294	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.670	253	12.3	
1100	Molybdenum	µg/L	182	176	148 - 202	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.879	174	8.59	
1105	Nickel	µg/L	917	874	769 - 985	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.818	885	38.7	
1140	Selenium	µg/L	698	686	583 - 789	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.372	684	36.5	
1150	Silver	µg/L	917	855	727 - 983	Acceptable	EPA 200.7 4.4 1994	2/8/2018	1.47	859	39.7	
1160	Strontium	µg/L	446	428	364 - 492	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.984	427	19.5	
1165	Thallium	µg/L	505	481	395 - 559	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.953	481	25.1	
1185	Vanadium	µg/L	660	651	553 - 749	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.498	646	28.5	

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WP Trace Metals (cat# 586, lot# P276-500) (Continued)

1190	Zinc	µg/L	566	553	470 - 636	Acceptable	EPA 200.7 4.4 1994	2/8/2018	0.479	554	25.2	
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WP Trace Metals (cat# 586, lot# P276-500)

1000	Aluminum	µg/L	3950	3550	2960 - 4030	Acceptable	EPA 6010B 2 1996	2/8/2018	1.91	3590	189	
1005	Antimony	µg/L	631	611	497 - 706	Acceptable	EPA 6010B 2 1996	2/8/2018	0.985	605	26.8	
1010	Arsenic	µg/L	100	100	72.2 - 129	Acceptable	EPA 6010B 2 1996	2/8/2018	0.143	99.1	6.19	
1015	Barium	µg/L	1730	1690	1440 - 1940	Acceptable	EPA 6010B 2 1996	2/8/2018	0.648	1690	68.1	
1020	Beryllium	µg/L	336	331	281 - 381	Acceptable	EPA 6010B 2 1996	2/8/2018	0.368	330	15.8	
1025	Boron	µg/L	1660	1670	1420 - 1920	Acceptable	EPA 6010B 2 1996	2/9/2018	0.135	1650	81.7	
1030	Cadmium	µg/L	437	433	368 - 498	Acceptable	EPA 6010B 2 1996	2/8/2018	0.661	426	17.0	
1040	Chromium	µg/L	224	211	179 - 243	Acceptable	EPA 6010B 2 1996	2/8/2018	1.08	214	8.86	
1050	Cobalt	µg/L	860	792	673 - 911	Acceptable	EPA 6010B 2 1996	2/8/2018	0.980	825	36.2	
1055	Copper	µg/L	605	576	490 - 662	Acceptable	EPA 6010B 2 1996	2/8/2018	0.939	579	27.4	
1070	Iron	µg/L	1910	1770	1500 - 2040	Acceptable	EPA 6010B 2 1996	2/8/2018	1.32	1800	87.3	
1075	Lead	µg/L	140	133	113 - 153	Acceptable	EPA 6010B 2 1996	2/8/2018	0.948	133	7.00	
1090	Manganese	µg/L	261	256	218 - 294	Acceptable	EPA 6010B 2 1996	2/8/2018	0.670	253	12.3	
1100	Molybdenum	µg/L	182	176	148 - 202	Acceptable	EPA 6010B 2 1996	2/8/2018	0.879	174	8.59	
1105	Nickel	µg/L	917	874	769 - 985	Acceptable	EPA 6010B 2 1996	2/8/2018	0.818	885	38.7	
1140	Selenium	µg/L	698	686	583 - 789	Acceptable	EPA 6010B 2 1996	2/8/2018	0.372	684	36.5	
1150	Silver	µg/L	917	855	727 - 983	Acceptable	EPA 6010B 2 1996	2/8/2018	1.47	859	39.7	
1160	Strontium	µg/L	446	428	364 - 492	Acceptable	EPA 6010B 2 1996	2/8/2018	0.984	427	19.5	
1165	Thallium	µg/L	505	481	395 - 559	Acceptable	EPA 6010B 2 1996	2/8/2018	0.953	481	25.1	
1185	Vanadium	µg/L	660	651	553 - 749	Acceptable	EPA 6010B 2 1996	2/8/2018	0.498	646	28.5	

All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Study #: WP-276





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WP-276 2009 TNI Evaluation Final Complete Report

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

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WP Trace Metals (cat# 586, lot# P276-500) (Continued)

1190	Zinc	µg/L	566	553	470 - 636	Acceptable	EPA 6010B 2 1996	2/8/2018	0.479	554	25.2	
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WP Trace Metals (cat# 586, lot# P276-500)

1000	Aluminum	µg/L	3630	3550	2960 - 4030	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.215	3590	189	
1005	Antimony	µg/L	604	611	497 - 706	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.0206	605	26.8	
1010	Arsenic	µg/L	98.3	100	72.2 - 129	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.131	99.1	6.19	
1015	Barium	µg/L	1610	1690	1440 - 1940	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-1.11	1690	68.1	
1020	Beryllium	µg/L	340	331	281 - 381	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.620	330	15.8	
1025	Boron	µg/L	1750	1670	1420 - 1920	Acceptable	EPA 200.8 5.4 1994	2/9/2018	1.24	1650	81.7	
1030	Cadmium	µg/L	424	433	368 - 498	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.103	426	17.0	
1040	Chromium	µg/L	213	211	179 - 243	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.164	214	8.86	
1050	Cobalt	µg/L	804	792	673 - 911	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.569	825	36.2	
1055	Copper	µg/L	575	576	490 - 662	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.154	579	27.4	
1070	Iron	µg/L	1820	1770	1500 - 2040	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.284	1800	87.3	
1075	Lead	µg/L	120	133	113 - 153	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-1.91	133	7.00	
1090	Manganese	µg/L	246	256	218 - 294	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.551	253	12.3	
1100	Molybdenum	µg/L	178	176	148 - 202	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.413	174	8.59	
1105	Nickel	µg/L	874	874	769 - 985	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.294	885	38.7	
1140	Selenium	µg/L	690	686	583 - 789	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.153	684	36.5	
1150	Silver	µg/L	891	855	727 - 983	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.813	859	39.7	
1160	Strontium	µg/L	441	428	364 - 492	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.727	427	19.5	
1165	Thallium	µg/L	474	481	395 - 559	Acceptable	EPA 200.8 5.4 1994	2/9/2018	-0.280	481	25.1	
1185	Vanadium	µg/L	648	651	553 - 749	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.0781	646	28.5	

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WP Trace Metals (cat# 586, lot# P276-500) (Continued)

1190	Zinc	µg/L	556	553	470 - 636	Acceptable	EPA 200.8 5.4 1994	2/9/2018	0.0825	554	25.2	
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WP Trace Metals (cat# 586, lot# P276-500)

1000	Aluminum	µg/L	3770	3550	2960 - 4030	Acceptable	EPA 6020	2/19/2018	0.955	3590	189	
1005	Antimony	µg/L	598	611	497 - 706	Acceptable	EPA 6020	2/19/2018	-0.244	605	26.8	
1010	Arsenic	µg/L	99.8	100	72.2 - 129	Acceptable	EPA 6020	2/19/2018	0.111	99.1	6.19	
1015	Barium	µg/L	1720	1690	1440 - 1940	Acceptable	EPA 6020	2/19/2018	0.501	1690	68.1	
1020	Beryllium	µg/L	364	331	281 - 381	Acceptable	EPA 6020	2/19/2018	2.14	330	15.8	
1025	Boron	µg/L	1760	1670	1420 - 1920	Acceptable	EPA 6020	2/19/2018	1.36	1650	81.7	
1030	Cadmium	µg/L	424	433	368 - 498	Acceptable	EPA 6020	2/19/2018	-0.103	426	17.0	
1040	Chromium	µg/L	214	211	179 - 243	Acceptable	EPA 6020	2/19/2018	-0.0506	214	8.86	
1050	Cobalt	µg/L	806	792	673 - 911	Acceptable	EPA 6020	2/19/2018	-0.514	825	36.2	
1055	Copper	µg/L	586	576	490 - 662	Acceptable	EPA 6020	2/19/2018	0.247	579	27.4	
1070	Iron	µg/L	1820	1770	1500 - 2040	Acceptable	EPA 6020	2/19/2018	0.284	1800	87.3	
1075	Lead	µg/L	131	133	113 - 153	Acceptable	EPA 6020	2/19/2018	-0.338	133	7.00	
1090	Manganese	µg/L	240	256	218 - 294	Acceptable	EPA 6020	2/19/2018	-1.04	253	12.3	
1100	Molybdenum	µg/L	166	176	148 - 202	Acceptable	EPA 6020	2/19/2018	-0.984	174	8.59	
1105	Nickel	µg/L	897	874	769 - 985	Acceptable	EPA 6020	2/19/2018	0.301	885	38.7	
1140	Selenium	µg/L	699	686	583 - 789	Acceptable	EPA 6020	2/19/2018	0.399	684	36.5	
1150	Silver	µg/L	856	855	727 - 983	Acceptable	EPA 6020	2/19/2018	-0.0690	859	39.7	
1160	Strontium	µg/L	412	428	364 - 492	Acceptable	EPA 6020	2/19/2018	-0.762	427	19.5	
1165	Thallium	µg/L	472	481	395 - 559	Acceptable	EPA 6020	2/19/2018	-0.360	481	25.1	
1185	Vanadium	µg/L	654	651	553 - 749	Acceptable	EPA 6020	2/19/2018	0.288	646	28.5	

All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Quality Assurance Manager
Basic Laboratory, Inc.
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WP Trace Metals (cat# 586, lot# P276-500) (Continued)

1190	Zinc	µg/L	542	553	470 - 636	Acceptable	EPA 6020	2/19/2018	-0.472	554	25.2	
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WP Trace Metals (cat# 586, lot# P276-500)

1000	Aluminum	µg/L	3390	3550	2960 - 4030	Acceptable	EPA 1638 1996	2/16/2018	-1.05	3590	189	
1005	Antimony	µg/L	556	611	497 - 706	Acceptable	EPA 1638 1996	2/16/2018	-1.81	605	26.8	
1010	Arsenic	µg/L	100	100	72.2 - 129	Acceptable	EPA 1638 1996	2/16/2018	0.143	99.1	6.19	
1015	Barium	µg/L	1640	1690	1440 - 1940	Acceptable	EPA 1638 1996	2/16/2018	-0.674	1690	68.1	
1020	Beryllium	µg/L	321	331	281 - 381	Acceptable	EPA 1638 1996	2/16/2018	-0.579	330	15.8	
1025	Boron	µg/L	1570	1670	1420 - 1920	Acceptable	EPA 1638 1996	2/16/2018	-0.966	1650	81.7	
1030	Cadmium	µg/L	424	433	368 - 498	Acceptable	EPA 1638 1996	2/16/2018	-0.103	426	17.0	
1040	Chromium	µg/L	211	211	179 - 243	Acceptable	EPA 1638 1996	2/16/2018	-0.389	214	8.86	
1050	Cobalt	µg/L	837	792	673 - 911	Acceptable	EPA 1638 1996	2/16/2018	0.344	825	36.2	
1055	Copper	µg/L	564	576	490 - 662	Acceptable	EPA 1638 1996	2/16/2018	-0.555	579	27.4	
1070	Iron	µg/L	1830	1770	1500 - 2040	Acceptable	EPA 1638 1996	2/16/2018	0.398	1800	87.3	
1075	Lead	µg/L	126	133	113 - 153	Acceptable	EPA 1638 1996	2/16/2018	-1.05	133	7.00	
1090	Manganese	µg/L	246	256	218 - 294	Acceptable	EPA 1638 1996	2/16/2018	-0.551	253	12.3	
1100	Molybdenum	µg/L	167	176	148 - 202	Acceptable	EPA 1638 1996	2/16/2018	-0.867	174	8.59	
1105	Nickel	µg/L	903	874	769 - 985	Acceptable	EPA 1638 1996	2/16/2018	0.456	885	38.7	
1140	Selenium	µg/L	680	686	583 - 789	Acceptable	EPA 1638 1996	2/16/2018	-0.121	684	36.5	
1150	Silver	µg/L	856	855	727 - 983	Acceptable	EPA 1638 1996	2/16/2018	-0.0690	859	39.7	
1160	Strontium	µg/L	416	428	364 - 492	Acceptable	EPA 1638 1996	2/16/2018	-0.557	427	19.5	
1165	Thallium	µg/L	458	481	395 - 559	Acceptable	EPA 1638 1996	2/16/2018	-0.917	481	25.1	
1185	Vanadium	µg/L	634	651	553 - 749	Acceptable	EPA 1638 1996	2/16/2018	-0.412	646	28.5	

All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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WP Trace Metals (cat# 586, lot# P276-500) (Continued)

1190	Zinc	µg/L	543	553	470 - 636	Acceptable	EPA 1638 1996	2/16/2018	-0.433	554	25.2	
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WP Trace Metals (cat# 586, lot# P276-500)

1000	Aluminum	µg/L		3550	2960 - 4030	Not Reported				3590	189	
1005	Antimony	µg/L		611	497 - 706	Not Reported				605	26.8	
1010	Arsenic	µg/L		100	72.2 - 129	Not Reported				99.1	6.19	
1015	Barium	µg/L		1690	1440 - 1940	Not Reported				1690	68.1	
1020	Beryllium	µg/L		331	281 - 381	Not Reported				330	15.8	
1025	Boron	µg/L		1670	1420 - 1920	Not Reported				1650	81.7	
1030	Cadmium	µg/L	402	433	368 - 498	Acceptable	EPA 7131A 1 1994	2/14/2018	-1.40	426	17.0	
1040	Chromium	µg/L		211	179 - 243	Not Reported				214	8.86	
1050	Cobalt	µg/L		792	673 - 911	Not Reported				825	36.2	
1055	Copper	µg/L		576	490 - 662	Not Reported				579	27.4	
1070	Iron	µg/L		1770	1500 - 2040	Not Reported				1800	87.3	
1075	Lead	µg/L		133	113 - 153	Not Reported				133	7.00	
1090	Manganese	µg/L		256	218 - 294	Not Reported				253	12.3	
1100	Molybdenum	µg/L		176	148 - 202	Not Reported				174	8.59	
1105	Nickel	µg/L		874	769 - 985	Not Reported				885	38.7	
1140	Selenium	µg/L		686	583 - 789	Not Reported				684	36.5	
1150	Silver	µg/L		855	727 - 983	Not Reported				859	39.7	
1160	Strontium	µg/L		428	364 - 492	Not Reported				427	19.5	
1165	Thallium	µg/L		481	395 - 559	Not Reported				481	25.1	
1185	Vanadium	µg/L		651	553 - 749	Not Reported				646	28.5	

All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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WP Trace Metals (cat# 586, lot# P276-500) (Continued)

1190	Zinc	µg/L		553	470 - 636	Not Reported				554	25.2	
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WP Mercury (cat# 574, lot# P276-514)

1095	Mercury	µg/L	14.3	15.7	11.0 - 20.4	Acceptable	EPA 245.2 1983	2/6/2018	-0.774	15.5	1.55	
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WP Mercury (cat# 574, lot# P276-514)

1095	Mercury	µg/L	14.6	15.7	11.0 - 20.4	Acceptable	EPA 7470A 1 1994	2/6/2018	-0.580	15.5	1.55	
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WP Low-Level Mercury (cat# 896, lot# P276-931)

1095	Low Level Mercury	ng/L	49.6	44.2	30.5 - 57.5	Acceptable	EPA 1631E 2002	2/13/2018	0.693	45.5	5.87	
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WP Hexavalent Chromium (cat# 898, lot# P276-984)

1045	Hexavalent Chromium	µg/L	340	340	283 - 393	Acceptable	EPA 218.6 3.3 1994	2/2/2018	0.112	338	18.8	
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WP Hexavalent Chromium (cat# 898, lot# P276-984)

1045	Hexavalent Chromium	µg/L	321	340	283 - 393	Acceptable	SM 3500-Cr B-2011 2011	2/2/2018	-0.900	338	18.8	
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WP Turbidity (cat# 893, lot# P276-777)

2055	Turbidity	NTU	8.7	8.72	7.00 - 10.4	Acceptable	SM 2130 B-2011 2011	1/25/2018	0.383	8.50	0.515	
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WP Turbidity (cat# 893, lot# P276-777)

2055	Turbidity	NTU	8.7	8.72	7.00 - 10.4	Acceptable	EPA 180.1 2 1993	1/25/2018	0.383	8.50	0.515	
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WP Total Cyanide (cat# 588, lot# P276-502)

1645	Cyanide, total	mg/L	0.598	0.600	0.390 - 0.810	Acceptable	EPA 335.4 1993	1/25/2018	0.126	0.590	0.0614	
1510	Amenable Cyanide	mg/L		0.357	0.232 - 0.482	Not Reported				0.358	0.0801	

WP Total Cyanide (cat# 588, lot# P276-502)

1645	Cyanide, total	mg/L	0.597	0.600	0.390 - 0.810	Acceptable	SM 4500-CN E-2011 2011	1/25/2018	0.110	0.590	0.0614	
1510	Amenable Cyanide	mg/L		0.357	0.232 - 0.482	Not Reported				0.358	0.0801	

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01/15/18 - 03/01/18

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# P276-502)

1645	Cyanide, total	mg/L	0.604	0.600	0.390 - 0.810	Acceptable	EPA 9014 1996	1/25/2018	0.224	0.590	0.0614	
1510	Amenable Cyanide	mg/L		0.357	0.232 - 0.482	Not Reported				0.358	0.0801	

WP Total Phenolics (4-AAP) (cat# 589, lot# P276-515)

1905	Phenolics, total	mg/L	2.09	1.95	0.989 - 2.91	Acceptable	EPA 420.1 1978	1/25/2018	0.192	2.01	0.412	
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WP Total Residual Chlorine (cat# 587, lot# P276-501)

1940	Total Residual Chlorine	mg/L	2.09	2.07	1.52 - 2.42	Acceptable	SM 4500-Cl G-2011 2011	2/6/2018	0.740	2.00	0.123	
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All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Study # : WP-276





A Waters Company

WP-276 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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01/15/18 - 03/01/18

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 WasteWatR™ Coliform MicrobE™ (cat# 576, lot# P276-083)

2500	Total Coliforms (MF)	CFU/100mL		236	68.0 - 723	Not Reported				221	109	
2530	Fecal Coliforms (MF)	CFU/100mL		236	51.0 - 424	Not Reported				146	62.2	
2525	E.coli (MF)	CFU/100mL		236	52.0 - 420	Not Reported				148	61.4	
2500	Total Coliforms (MPN)	MPN/100mL	365	276	133 - 485	Acceptable	SM 9223 B (Colilert Quanti-Tray)-2004 2004	1/30/2018	0.0892	254	58.8	
2530	Fecal Coliforms (MPN)	MPN/100mL		276	109 - 364	Not Reported				200	42.4	
2525	E.coli (MPN)	MPN/100mL	365	276	130 - 488	Acceptable	SM 9223 B (Colilert Quanti-Tray)-2004 2004	1/30/2018	0.0909	252	59.7	

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# P276-083)

2500	Total Coliforms (MF)	CFU/100mL		236	68.0 - 723	Not Reported				221	109	
2530	Fecal Coliforms (MF)	CFU/100mL		236	51.0 - 424	Not Reported				146	62.2	
2525	E.coli (MF)	CFU/100mL		236	52.0 - 420	Not Reported				148	61.4	
2500	Total Coliforms (MPN)	MPN/100mL	326	276	133 - 485	Acceptable	SM 9223 B (Colilert-18 Quanti-Tray)-2004 2004	1/30/2018	0.0615	254	58.8	
2530	Fecal Coliforms (MPN)	MPN/100mL		276	109 - 364	Not Reported				200	42.4	
2525	E.coli (MPN)	MPN/100mL	326	276	130 - 488	Acceptable	SM 9223 B (Colilert-18 Quanti-Tray)-1997 1997	1/30/2018	0.0633	252	59.7	

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# P276-083A)

2500	Total Coliforms (MPN)	MPN/100mL	300	276	9.36 - 2110	Acceptable	SM 9221 B + C-2006 2006	2/8/2018	0.129	148	264	
2530	Fecal Coliforms (MPN)	MPN/100mL	300	276	20.4 - 1260	Acceptable	SM 9221 B + E + C-2006 2006	2/8/2018	0.117	160	207	
2525	E.coli (MPN)	MPN/100mL		276	3.75 - 4340	Not Reported				128	723	

All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Study #: WP-276

