

## ACZ Laboratories, Inc. Memorandum

To	Analytical Staff		
From	Mark McNeal		
Cc	Audrey Stover, Matt Sowards, Steve Pulford		
Subject	WS-177 Unacceptable Results	Laboratory ID(s): L87331, L88368, L88834	
CAR#	<b>1077</b>	Open: 6/2/11	Close: 7/19/11

ACZ received the results of ERA's WS-177 study. Unacceptable results and corrective actions are as follows.

Unacceptable Results							
Analyte	Method	Units	Reported	Assigned	Limits	%Rec.	Workgroup#
Lead	200.8	ug/L	17.0	13.0	9.10 – 16.9	131	300570
Silver	200.8	ug/L	145	245	217 – 271	60	300419

### CORRECTIVE ACTION

**Lead** – Lead was analyzed by EPA 200.8 and a value of 17.0 ug/L was reported, which is outside the PT acceptance limits of 9.10 – 16.9. The percent recovery for Pb in the associated quality control samples was ICV=97.9%; PQV=73.9%; PQVR=77.9%; LFB=94.3%; CCV1=102% and CCV2=103.6%. No contamination or other anomalies with the analysis were noted or apparent in the raw data.

**A Quick Response sample was obtained from ERA (QR062411C, L88834) and analyzed by EPA 200.8. ACZ reported a result of 27.6 ug/L which is within the QR acceptance limits of 21.9 – 40.7 ug/L. The system is judged to be in control.**

**Silver** – Silver was analyzed by EPA 200.8 and a value of 145 ug/L was reported, which is outside the PT acceptance limits of 217- 271 ug/L. The percent recovery for Ag in the associated quality control samples was ICV=100.9%; PQV=99.8%; LFB=96.8%; CCV=101%; CCV2=96.9%. No contamination or other anomalies with the analysis were noted or apparent in the raw data.

**A Quick Response sample was obtained from ERA (QR060311E, L88368) and analyzed by EPA 200.8. ACZ reported a result of 62.9 ug/L which is within the QR acceptance limits of 54.7 -71.4 ug/L. A second Quick Response sample was obtained from ERA (QR062411C, L88834) and analyzed by 200.8. ACZ reported a result of 114 ug/L which is within the QR acceptance limits of 113 – 143 ug/L. The system is judged to be in control.**



A Waters Company

Mark McNeal  
ACZ Laboratories  
2773 Downhill Drive  
Steamboat Springs, CO 80487

**060311E**



***Final Report***

**QuiK™ Response Proficiency Testing**



A Waters Company

June 9, 2011

Mark McNeal  
ACZ Laboratories  
2773 Downhill Drive  
Steamboat Springs, CO 80487

Fax: 815-301-3857

Enclosed is your final report for ERA's QuiK™Response program. Your final report includes an evaluation of all results submitted by your laboratory to ERA. None of the assigned value(s) or acceptance limits were available to your laboratory at or before the time of reporting.

As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a supplemental (QuiK™Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting the quality of your routine data. Our laboratory and technical staff have well over three hundred years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be helpful in helping you work through your technical issues.

The data contained herein are confidential and intended for your use only.

DMR-QA Corrective Action Help:

If you are using this report for DMR-QA 31 Corrective Action, please note the following: permittees must submit a copy of this report to your DMRQA Coordinator, along with your corrective action documentation by September 30, 2011. Contract Laboratories should send a copy of this report to your permittees upon receipt.

Thank you for your participation in ERA's QuiK™Response program. If you have any questions, please contact Ellen LaRiviere, QuiK™Response Coordinator, or me at 1-800-372-0122.

Sincerely,

A handwritten signature in black ink that reads "Jay R. McBurney". The signature is written in a cursive, flowing style.

Jay R. McBurney  
Quality Program Manager

cc: Project File Number 060311E



A Waters Company

<b>Report Recipient</b>	<b>Contact/Phone Number</b>	<b>Reporting Type</b>
Arizona	Ali Mayfield / (602) 364-0728	All Analytes
Colorado	Ben Chouaf / 303-692-3045	All Analytes
EPA Region 8	Marcie Tidd / (303) 312-7764	All Analytes
Utah	Kristin Brown / 801-965-2540	All Analytes

Project Number: **060311E**

ERA Customer Number: **A144801**

Laboratory Name: **ACZ Laboratories**

## Inorganic Results





A Waters Company

# 060311E Final Complete Report

**Mark McNeal**  
**QA/QC Coordinator**  
**ACZ Laboratories**  
**2773 Downhill Drive**  
**Steamboat Springs, CO 80487**  
**970-879-6590**

**EPA ID:**  
**ERA Customer Number:**

**CO00028**  
**A144801**

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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**WS Metals (cat# 697) Study Dates: 06/03/11 - 06/09/11**

1000	Aluminum	µg/L		1610	1380 - 1780	Not Reported	
0140	Antimony	µg/L		17.0	11.9 - 22.1	Not Reported	
0001	Arsenic	µg/L		27.1	19.0 - 35.2	Not Reported	
0002	Barium	µg/L		1210	1030 - 1390	Not Reported	
0141	Beryllium	µg/L		4.13	3.51 - 4.75	Not Reported	
0226	Boron	µg/L		1140	1000 - 1260	Not Reported	
0003	Cadmium	µg/L		46.0	36.8 - 55.2	Not Reported	
0004	Chromium	µg/L		62.5	53.1 - 71.9	Not Reported	
0091	Copper	µg/L		631	568 - 694	Not Reported	
1070	Iron	µg/L		470	409 - 523	Not Reported	
0005	Lead	µg/L		63.6	44.5 - 82.7	Not Reported	
0236	Manganese	µg/L		774	697 - 851	Not Reported	
0237	Molybdenum	µg/L		98.5	85.6 - 109	Not Reported	
0142	Nickel	µg/L		69.8	59.3 - 80.3	Not Reported	
0007	Selenium	µg/L		50.4	40.3 - 60.5	Not Reported	
1150	Silver	µg/L	62.9	63.3	54.7 - 71.4	Acceptable	EPA 200.8
0143	Thallium	µg/L		6.41	4.49 - 8.33	Not Reported	
1185	Vanadium	µg/L		890	801 - 979	Not Reported	
0239	Zinc	µg/L		789	710 - 868	Not Reported	





A Waters Company

Mark McNeal  
ACZ Laboratories  
2773 Downhill Drive  
Steamboat Springs, CO 80487

**062411C**



***Final Report***

**QuiK™ Response Proficiency Testing**



A Waters Company

July 15, 2011

Mark McNeal  
ACZ Laboratories  
2773 Downhill Drive  
Steamboat Springs, CO 80487

Fax: 815-301-3857

Enclosed is your final report for ERA's QuiK™Response program. Your final report includes an evaluation of all results submitted by your laboratory to ERA. None of the assigned value(s) or acceptance limits were available to your laboratory at or before the time of reporting.

As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a supplemental (QuiK™Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting the quality of your routine data. Our laboratory and technical staff have well over three hundred years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be helpful in helping you work through your technical issues.

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Thank you for your participation in ERA's QuiK™Response program. If you have any questions, please contact Ellen LaRiviere, QuiK™Response Coordinator, or me at 1-800-372-0122.

Sincerely,

A handwritten signature in black ink that reads "Jay R. McBurney". The signature is written in a cursive, flowing style.

Jay R. McBurney  
Quality Program Manager

cc: Project File Number 062411C



A Waters Company

<b>Report Recipient</b>	<b>Contact/Phone Number</b>	<b>Reporting Type</b>
Arizona	Ali Mayfield / (602) 364-0728	All Analytes
Colorado	Ben Chouaf / 303-692-3045	All Analytes
EPA Region 8	Marcie Tidd / (303) 312-7764	All Analytes
Utah	Kristin Brown / 801-965-2540	All Analytes

Project Number: **062411C**

ERA Customer Number: **A144801**

Laboratory Name: **ACZ Laboratories**

## Inorganic Results





A Waters Company

# 062411C Final Complete Report

**Mark McNeal**  
**QA/QC Coordinator**  
**ACZ Laboratories**  
**2773 Downhill Drive**  
**Steamboat Springs, CO 80487**  
**970-879-6590**

**EPA ID:**  
**ERA Customer Number:**

**CO00028**  
**A144801**

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
<b>WS Metals (cat# 697) Study Dates: 06/24/11 - 07/15/11</b>							
1000	Aluminum	µg/L		243	200 - 291	Not Reported	
0140	Antimony	µg/L		11.8	8.26 - 15.3	Not Reported	
0001	Arsenic	µg/L		41.4	29.0 - 53.8	Not Reported	
0002	Barium	µg/L		946	804 - 1090	Not Reported	
0141	Beryllium	µg/L		6.15	5.23 - 7.07	Not Reported	
0226	Boron	µg/L		1240	1090 - 1370	Not Reported	
0003	Cadmium	µg/L		23.1	18.5 - 27.7	Not Reported	
0004	Chromium	µg/L		25.7	21.8 - 29.6	Not Reported	
0091	Copper	µg/L		707	636 - 778	Not Reported	
1070	Iron	µg/L		390	336 - 437	Not Reported	
0005	Lead	µg/L	27.6	31.3	21.9 - 40.7	Acceptable	EPA 200.8
0236	Manganese	µg/L		270	243 - 297	Not Reported	
0237	Molybdenum	µg/L		80.2	69.5 - 89.0	Not Reported	
0142	Nickel	µg/L		240	204 - 276	Not Reported	
0007	Selenium	µg/L		39.3	31.4 - 47.2	Not Reported	
1150	Silver	µg/L	114	129	113 - 143	Acceptable	EPA 200.8
0143	Thallium	µg/L		8.24	5.77 - 10.7	Not Reported	
1185	Vanadium	µg/L		491	442 - 540	Not Reported	
0239	Zinc	µg/L		627	564 - 690	Not Reported	





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**LABORATORY INFORMATION**

ACZ Laboratories 2773 Downhill Drive Steamboat Springs, CO 80487	<b>Customer ID:</b> A144801 <b>Fax:</b> 815-301-3857 <b>Email:</b> MARKM@ACZ.COM <b>Phone:</b> 970-879-6590	<b>USEPA ID:</b> CO00028 <b>Contact:</b> Mark McNeal <b>Contact Title:</b> QA/QC Coordinator <b>Approval Date:</b> 5/17/2011
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**REGULATORY AGENCY INFORMATION**

You have authorized to send copies of your WS-177 study final to the following agencies:	
Arizona (AZ0102)	EPA Region 8 (8TMS-Q)
Colorado	Utah (ACZ)

**THIRD PARTY INFORMATION**

There are no third parties listed to receive reports.
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**Study WS-177  
Exception Report**

This exception report shows only those analytes with a performance evaluation of 'Not Acceptable'.

**Metals (cat# 590)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Not Acceptable Evaluation	Method Description
Lead	µg/L	17.0	13.0	9.10 - 16.9	Not Acceptable	EPA 200.8 5.4 1994
Silver	µg/L	145	245	217 - 271	Not Acceptable	EPA 200.8 5.4 1994

**Study WS-177  
Complete Final Report  
Hardness (cat# 555)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Calcium	mg/L	65.5	64.3	57.3 - 71.2	Acceptable	EPA 200.7 4.4 1994
Magnesium	mg/L	4.79	4.65	4.13 - 5.28	Acceptable	EPA 200.7 4.4 1994
Sodium	mg/L	20.1	19.3	17.0 - 21.3	Acceptable	EPA 200.7 4.4 1994
Calcium Hardness as CaCO3	mg/L		160	142 - 177	Not Reported	
Total Hardness as CaCO3	mg/L	183	180	160 - 200	Acceptable	SM2340B 20th ED 1998

**Inorganics (cat# 591)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Alkalinity as CaCO3	mg/L		94.5	85.1 - 104	Not Reported	
Chloride	mg/L		90.2	81.2 - 99.2	Not Reported	
Conductivity at 25°C	µmhos/cm		568	511 - 625	Not Reported	
Fluoride	mg/L	2.16	2.12	1.91 - 2.33	Acceptable	SM4500F- C 20th ED 1998
Nitrate + Nitrite as N	mg/L		4.38	3.89 - 4.82	Not Reported	
Nitrate as N	mg/L		4.38	3.94 - 4.82	Not Reported	
Potassium	mg/L		16.6	14.3 - 19.5	Not Reported	
Sulfate	mg/L		25.2	21.1 - 28.8	Not Reported	
Total Dissolved Solids at 180°C	mg/L		411	264 - 558	Not Reported	

**Study WS-177**  
**Complete Final Report**  
**Inorganics (cat# 591)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Alkalinity as CaCO3	mg/L	96.8	94.5	85.1 - 104	Acceptable	SM2320B 20th ED 1998
Chloride	mg/L	89.9	90.2	81.2 - 99.2	Acceptable	EPA 300.0 2.1 1993
Conductivity at 25°C	µmhos/cm	573	568	511 - 625	Acceptable	SM2510B 20th ED 1998
Fluoride	mg/L	2.07	2.12	1.91 - 2.33	Acceptable	EPA 300.0 2.1 1993
Nitrate + Nitrite as N	mg/L	4.08	4.38	3.89 - 4.82	Acceptable	EPA 353.2 2 1993
Nitrate as N	mg/L	4.08	4.38	3.94 - 4.82	Acceptable	EPA 353.2 2 1993
Potassium	mg/L		16.6	14.3 - 19.5	Not Reported	
Sulfate	mg/L	24.0	25.2	21.1 - 28.8	Acceptable	EPA 300.0 2.1 1993
Total Dissolved Solids at 180°C	mg/L	404	411	264 - 558	Acceptable	SM2540C 20th ED 1998

**pH (cat# 552)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
pH	S.U.	6.04	6.03	5.83 - 6.23	Acceptable	SM4500H+ B 20th ED 1998

**Metals (cat# 590)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Aluminum	µg/L	645	649	552 - 734	Acceptable	EPA 200.7 4.4 1994
Antimony	µg/L		45.0	31.5 - 58.5	Not Reported	
Arsenic	µg/L		13.3	9.31 - 17.3	Not Reported	
Barium	µg/L		1820	1550 - 2090	Not Reported	
Beryllium	µg/L		7.64	6.49 - 8.79	Not Reported	
Boron	µg/L		1180	1040 - 1310	Not Reported	
Cadmium	µg/L		14.1	11.3 - 16.9	Not Reported	
Chromium	µg/L		72.9	62.0 - 83.8	Not Reported	
Copper	µg/L		521	469 - 573	Not Reported	
Iron	µg/L	592	571	501 - 632	Acceptable	EPA 200.7 4.4 1994
Lead	µg/L		13.0	9.10 - 16.9	Not Reported	
Manganese	µg/L	497	488	439 - 537	Acceptable	EPA 200.7 4.4 1994
Molybdenum	µg/L		46.3	39.6 - 52.0	Not Reported	
Nickel	µg/L		98.1	83.4 - 113	Not Reported	
Selenium	µg/L		91.3	73.0 - 110	Not Reported	
Silver	µg/L		245	217 - 271	Not Reported	
Thallium	µg/L		6.11	4.28 - 7.94	Not Reported	
Vanadium	µg/L		1310	1180 - 1440	Not Reported	
Zinc	µg/L	1090	1070	963 - 1180	Acceptable	EPA 200.7 4.4 1994

**Metals (cat# 590)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Aluminum	µg/L	663	649	552 - 734	Acceptable	EPA 200.8 5.4 1994
Antimony	µg/L	49.0	45.0	31.5 - 58.5	Acceptable	EPA 200.8 5.4 1994

**Study WS-177**  
**Complete Final Report**  
**Metals (cat# 590)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Arsenic	µg/L	17.0	13.3	9.31 - 17.3	Acceptable	EPA 200.8 5.4 1994
Barium	µg/L	1860	1820	1550 - 2090	Acceptable	EPA 200.8 5.4 1994
Beryllium	µg/L	7.00	7.64	6.49 - 8.79	Acceptable	EPA 200.8 5.4 1994
Boron	µg/L		1180	1040 - 1310	Not Reported	
Cadmium	µg/L	14.0	14.1	11.3 - 16.9	Acceptable	EPA 200.8 5.4 1994
Chromium	µg/L	74.0	72.9	62.0 - 83.8	Acceptable	EPA 200.8 5.4 1994
Copper	µg/L	496	521	469 - 573	Acceptable	EPA 200.8 5.4 1994
Iron	µg/L		571	501 - 632	Not Reported	
Lead	µg/L	17.0	13.0	9.10 - 16.9	Not Acceptable	EPA 200.8 5.4 1994
Manganese	µg/L	468	488	439 - 537	Acceptable	EPA 200.8 5.4 1994
Molybdenum	µg/L		46.3	39.6 - 52.0	Not Reported	
Nickel	µg/L	100	98.1	83.4 - 113	Acceptable	EPA 200.8 5.4 1994
Selenium	µg/L	90.0	91.3	73.0 - 110	Acceptable	EPA 200.8 5.4 1994
Silver	µg/L	145	245	217 - 271	Not Acceptable	EPA 200.8 5.4 1994
Thallium	µg/L	6.00	6.11	4.28 - 7.94	Acceptable	EPA 200.8 5.4 1994
Vanadium	µg/L		1310	1180 - 1440	Not Reported	
Zinc	µg/L	1090	1070	963 - 1180	Acceptable	EPA 200.8 5.4 1994

**Mercury (cat# 551)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Mercury	µg/L	1.99	2.18	1.53 - 2.83	Acceptable	EPA 245.1 3 1994

**Inorganic Disinfection #2 (cat# 5260)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Bromate	µg/L		28.3	19.8 - 36.8	Not Reported	
Bromide	µg/L	105	110	80.1 - 138	Acceptable	EPA 300.0 2.1 1993

**Nitrite (cat# 594)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Nitrite as N	mg/L	1.14	1.12	0.952 - 1.29	Acceptable	EPA 353.2 2 1993

**o-Phosphate Nutrients (cat# 558)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
ortho-Phosphate as P	mg/L	3.76	3.67	3.24 - 4.13	Acceptable	EPA 365.1 2 1993

**Cyanide (cat# 556)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Cyanide	mg/L	.283	0.293	0.220 - 0.366	Acceptable	ASTM-6888-04

**Study WS-177  
Complete Final Report  
Cyanide (cat# 556)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Cyanide	mg/L	.287	0.293	0.220 - 0.366	Acceptable	EPA 335.4 1993

**Organic Carbon (cat# 557)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Dissolved Organic Carbon (DOC)	mg/L		3.62	3.01 - 4.25	Not Reported	
Total Organic Carbon (TOC)	mg/L	3.76	3.62	3.01 - 4.25	Acceptable	SM5310B 20th ED 1998

**Silica (cat# 902)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Silica as SiO <sub>2</sub>	mg/L	18.4	18.7	15.9 - 21.5	Acceptable	EPA 200.7 4.4 1994

**Turbidity (cat# 592)**

Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
Turbidity	NTU	4.88	5.27	4.63 - 6.25	Acceptable	EPA 180.1 2 1993