DATA VALIDATION REPORT

Early August 2017 Groundwater Sampling Event
Four Corners Power Plant, Arizona Public Service
Farmington, New Mexico

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
4600 East Washington Street, Suite 600
Phoenix, Arizona 85034-1917
(602) 733-6000

December 2017

Project No. 1420162024.2.2

Copyright © 2017 by Amec Foster Wheeler Environment & Infrastructure, Inc.
All rights reserved.

TABLE OF CONTENTS

Page

ACRONYMS iii

1.0 INTRODUCTION 1

2.0 DATA VALIDATION METHODOLOGY 1

3.0 EXPLANATION OF DATA QUALITY INDICATORS 2
- 3.1 Laboratory Control Sample Recoveries 2
- 3.2 Matrix Spike Recoveries 2
- 3.3 Blank Concentrations 3
- 3.4 Laboratory Duplicates 3

4.0 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION 3

5.0 QUALIFICATION REASON CODE 4

6.0 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION 4

7.0 SPECIFIC DATA VALIDATION FINDINGS 4
- 7.1 Metals By EPA Methods 200.7, 200.8, and 245.1 4
  - 7.1.1 Holding Times 4
  - 7.1.2 Laboratory Blanks 4
  - 7.1.3 Laboratory Control Sample Accuracy and Precision 4
  - 7.1.4 Matrix Spikes/Matrix Spike Duplicates 5
  - 7.1.5 Analytical Sensitivity 5
  - 7.1.6 Data Reporting and Analytical Procedures 5
- 7.2 Anions by EPA Method 300.0 6
  - 7.2.1 Holding Times 6
  - 7.2.2 Laboratory Blanks 6
  - 7.2.3 Laboratory Control Samples 6
  - 7.2.4 Matrix Spikes/Matrix Spike Duplicates 6
  - 7.2.5 Laboratory Duplicates 6
  - 7.2.6 Analytical Sensitivity 6
  - 7.2.7 Data Reporting and Analytical Procedures 7
- 7.3 Total Dissolved Solids by SM 2540C 7
  - 7.3.1 Holding Times 7
  - 7.3.2 Laboratory Blanks 7
  - 7.3.3 Laboratory Control Sample Accuracy and Precision 7
  - 7.3.4 Laboratory Duplicates 7
  - 7.3.5 Data Reporting and Analytical Procedures 7
- 7.4 Alkalinity by SM 2320B 7
  - 7.4.1 Holding Times 7
  - 7.4.2 Laboratory Blanks 8
  - 7.4.3 Laboratory Control Sample Accuracy 8
  - 7.4.4 Laboratory Duplicates 8
  - 7.4.5 Data Reporting and Analytical Procedures 8
- 7.5 pH by SM 4500B 8
  - 7.5.1 Holding Times 8
  - 7.5.2 Laboratory Control Sample Accuracy 8
  - 7.5.3 Laboratory Duplicates 8
  - 7.5.4 Data Reporting and Analytical Procedures 8

7.6 Radiochemical Analyses....9
7.6.1 Analytical Sensitivity....9
8.0 FIELD DUPLICATES....9
9.0 SUMMARY AND CONCLUSIONS....9
REFERENCES....10
LIMITATIONS....11

TABLES

Table 1 Field Samples Submitted to TestAmerica Laboratories, Inc.

Table 2 Field Duplicate Detections

Table 3 Qualifiers Added During Data Validation

ACRONYMS

%	percent
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
APS	Arizona Public Service
CCR	coal combustion residual
CLP	Contract Laboratory Program
COC	chain of custody
EPA	United States Environmental Protection Agency
ID	identification
LCS	laboratory control sample
LCSD	laboratory control sample
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
QC	quality control
RL	reporting limit
RPD	relative percent difference
SAP	sampling and analysis plan
SDG	sample delivery group
SM	Standard Method
SU	standard units (pH)
TestAmerica	TestAmerica Laboratories, Inc.
TDS	total dissolved solids

DATA VALIDATION REPORT

Four Corners Power Plant, Arizona Public Service
Farmington, New Mexico

1.0 INTRODUCTION

Arizona Public Service (APS) collected 20 water samples, including two field duplicates, between August 9 and 10, 2017, from the Four Corners Power Plant, located in Farmington, New Mexico. APS submitted the samples to TestAmerica Laboratories, Inc. (TestAmerica) in Phoenix, Arizona. The samples were assigned to sample delivery groups (SDGs) J87922-1, J87922-2, and J87922-3. TestAmerica analyzed the samples for total metals and mercury by United States Environmental Protection Agency (EPA) Methods 200.7, 200.8, and 245.1; anions by EPA Method 300.0; total dissolved solids (TDS) by Standard Method (SM) 2540C; alkalinity by SM 2320B; and pH by SM 4500B. TestAmerica subcontracted the samples to Radiation Safety Engineering, Inc., where they were analyzed for radium 226/228 using GammaRay HPGE. A list of these samples by field sample identification (ID), sample collection date, and the laboratory sample ID is presented in Table 1.

2.0 DATA VALIDATION METHODOLOGY

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) performed an EPA Stage 2A validation on these samples, which is equivalent to a Level I data evaluation as defined in the project sampling and analysis plan (SAP). The Stage 2A validation includes review of the quality control (QC) results in the laboratory's analytical report and does not include review or validation of the raw analytical data. This data validation has been performed in general accordance with:

- AECOM, Inc., 2015. Final Sampling and Analysis Plan Coal Combustion Residual (CCR) Groundwater Monitoring, Four Corners Power Plant, Arizona Public Service, Farmington, New Mexico, December 2015.
- EPA, 2004. SW 846 Test Methods for Evaluating Solid Wastes, Update IIIB.
- EPA, 2017. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-2017-001.

The CLP guidelines were written specifically for the CLP, and have been modified for the purposes of this data review where they differ from method-specific QC requirements.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Chain of custody (COC) compliance;
- Holding time compliance;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;
- Accuracy and bias as demonstrated by recovery of laboratory control sample (LCS) and matrix spike (MS) samples;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, LCS/LCS duplicates (LCSDs), or MSs/MS duplicates (MSDs);
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3.0 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanations of the specific data quality indicators reviewed during data validation are presented below.

3.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples it accompanies. LCS recovery is an indication of a laboratory’s ability to successfully perform an analytical method in an interference free matrix.

3.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Laboratory blanks are processed by the laboratory using exactly the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

When target analytes are detected in blanks, analyte concentrations in associated samples less than five times the concentration detected in the blank, or ten times the concentration for common laboratory contaminants, will be U qualified as being not detected.

3.4 LABORATORY DUPLICATES

Laboratory duplicate analysis verifies acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4.0 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

5.0 QUALIFICATION REASON CODE

The following reason code was applied to the data during data validation:

FD High RPD between field duplicate results.

HT Holding time exceeded.

NS Analytical sensitivity did not meet the project required criteria

6.0 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

The samples were received at the laboratories under proper COC, intact, properly preserved, and at temperatures less than the SAP-specified maximum of 6 degrees Celsius.

7.0 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 METALS BY EPA METHODS 200.7, 200.8, AND 245.1

Total metals and mercury results generated by TestAmerica may be considered usable with the limitations described in Sections 7.1.1 through 7.1.6.

7.1.1 Holding Times

All samples were analyzed for metals within the SAP-specified holding time of 28 days for mercury and 180 days for the additional metals.

7.1.2 Laboratory Blanks

Target analytes were not detected in the laboratory blanks associated with the analysis of these samples.

7.1.3 Laboratory Control Sample Accuracy and Precision

LCS and LCSD recoveries were within the SAP-specified 80 to 120 percent (%) limits and RPDs between the LCS and LCSD results were less than the laboratory-specified maximum of 20%.

7.1.4 Matrix Spikes/Matrix Spike Duplicates

TestAmerica performed MS/MSD analysis on sample FC-CCR-MW7-81017 for beryllium, boron, calcium, lithium, magnesium, potassium, sodium, antimony, arsenic, barium, cadmium, chromium, cobalt, lead, molybdenum, selenium, thallium, and mercury; and FC-CCR-MW61-81017 for mercury. MS/MSD recoveries were within laboratory-specified limits, and RPDs between MS and MSD results were less than the laboratory-specified maximum of 20%, with the following exceptions:

- Boron (56%, 67%), magnesium (-43%, -28%), and sodium (-281%, -219%) recoveries were low in the MS and MSD performed on sample FC-CCR-MW7-81017. The boron, magnesium and sodium concentrations detected in the unspiked native sample were more than four times the spike concentrations. Per CLP guidelines, it is not possible to evaluate data usability based on the MS/MSD performance of these analytes in sample FC-CCR-MW7-81017.

7.1.5 Analytical Sensitivity

Amec Foster Wheeler compared reporting limits (RLs) for antimony, arsenic, barium, beryllium, cadmium, chromium, selenium, thallium, lead and mercury against applicable National Primary Drinking Water Regulation Maximum Contaminant Levels (MCLs) to confirm that the RLs were sufficiently low to meet the MCLs. Non-detect results were reported at RLs less than the applicable MCLs.

- RLs for antimony in samples FC-CCR-MW7-81017, FC-CCR-MW49A-81017, FC-CCR-MW66-8917, FC-CCR-MW67-8917, FC-CCR-MW68-8917, FC-CCR-MW69-8917, FC-CCR-FD01-8917, FC-CCR-MW70-8917, FC-CCR-MW71-81017, FC-CCR-FD02-81017, FC-CCR-MW73-81017, FC-CCR-MW74-81017, and FC-CCR-MW75-81017 were greater than the MCL of 0.006 milligrams per liter (mg/L), at 0.010 mg/L. Amec Foster Wheeler UJ qualified the non-detect antimony results from these samples because analytical sensitivity did not meet the project required criteria. (UJ-NS)

Boron, calcium, cobalt, lithium, magnesium, molybdenum, potassium, and sodium are not EPA-regulated analytes in groundwater and it is not possible to evaluate the RLs for these analytes against Primary Drinking Water Regulation MCLs.

7.1.6 Data Reporting and Analytical Procedures

According to the laboratory, boron was detected in the calibration blank associated with the analysis of samples FC-CCR-MW68-8917, FC-CCR-MW69-8917, FC-CCR-FD01-8917, FC-CCR-MW70-8917, FC-CCR-MW71-81017, FC-CCR-MW72-81017, FC-CCR-FD02-81017, FC-CCR-MW73-81017, FC-CCR-MW74-81017, and FC-CCR-MW75-81017 at a concentration

equal to or greater than the RL. The laboratory reports that for the samples associated with this CCB the detected boron concentrations were greater than 10 times the concentration detected in the CCB and data usability is not adversely affected.

7.2 ANIONS BY EPA METHOD 300.0

Fluoride, chloride, and sulfate results generated by TestAmerica may be considered fully usable without qualification.

7.2.1 Holding Times

Samples were analyzed for anions within the SAP-specified holding time of 28 days.

7.2.2 Laboratory Blanks

Fluoride, chloride, and sulfate were not detected in the laboratory blanks associated with the analysis of these samples.

7.2.3 Laboratory Control Samples

LCS and LCSD recoveries were within the laboratory-specified 90 to 110% limits and RPDs between the LCS and LCSD results were less than the laboratory-specified maximum values.

7.2.4 Matrix Spikes/Matrix Spike Duplicates

TestAmerica performed MS/MSD analysis on samples FC-CCR-MW7-81017 and FC-CCR-MW66-8917 for fluoride, chloride and sulfate. MS/MSD recoveries were within laboratory-specified limits, and RPDs between MS and MSD results were less than the laboratory-specified maximum of 20%.

7.2.5 Laboratory Duplicates

TestAmerica did not perform duplicate analysis on any of the samples covered in this report.

7.2.6 Analytical Sensitivity

Amec Foster Wheeler compared RLs for fluoride against the MCL of 4 mg/L, and confirmed that the RLs were sufficiently low to meet the MCL.

Chloride and sulfate are not EPA-regulated analytes in groundwater and it is not possible to evaluate the RLs for these analytes against the Primary Drinking Water Regulation MCLs.

7.2.7 Data Reporting and Analytical Procedures

There were no data reporting or analytical issues with the data groups associated with this validation.

TestAmerica reported fluoride results for the same samples in SDG pair J87922-1 and J87922-2. Each sample was analyzed for fluoride once and the same fluoride results are reported in both SDGs from each set.

7.3 TOTAL DISSOLVED SOLIDS BY SM 2540C

TDS results generated by TestAmerica may be considered fully usable without qualification.

7.3.1 Holding Times

All samples were analyzed for TDS within the SAP-specified holding time of 7 days.

7.3.2 Laboratory Blanks

TDS was not detected in the laboratory blanks at concentrations above the reporting limit.

7.3.3 Laboratory Control Sample Accuracy and Precision

LCS and LCSD recoveries were within the laboratory-specified 90 to 110% limits and RPDs between the LCS and LCSD results were less than the laboratory-specified maximum of 10%.

7.3.4 Laboratory Duplicates

TestAmerica performed duplicate analysis on samples FC-CCR-MW7-81017, FC-CCR-MW63-8917, and FC-CCR-MW67-8917. RPDs between primary sample and laboratory duplicate results were less than the laboratory-specified 10% limit.

7.3.5 Data Reporting and Analytical Procedures

There were no data reporting or analytical issues with the data groups associated with this validation.

7.4 ALKALINITY BY SM 2320B

Alkalinity results generated by TestAmerica may be considered fully usable without qualification.

7.4.1 Holding Times

All samples were analyzed for alkalinity within the SAP specified holding time of 14 days.

7.4.2 Laboratory Blanks

Alkalinity was not detected in the laboratory blanks at concentrations above the reporting limit.

7.4.3 Laboratory Control Sample Accuracy

LCS and LCSD recoveries were within the laboratory-specified 90 to 110% limits and RPDs between the LCS and LCSD results were less than the laboratory-specified maximum of 20%.

7.4.4 Laboratory Duplicates

TestAmerica performed duplicate analysis for alkalinity on samples FC-CCR-MW7-81017, FC-CCR-MW62-8917, FC-CCR-MW71-81017, and FC-CCR-MW73-81017. RPDs between primary sample and laboratory duplicate results were less than the laboratory-specified maximum of 20%.

7.4.5 Data Reporting and Analytical Procedures

There were no data reporting or analytical issues with the data groups associated with this validation.

7.5 pH BY SM 4500B

pH results generated by TestAmerica may be considered usable with the limitations described in Sections 7.5.1 through 7.5.4.

7.5.1 Holding Times

All samples were analyzed for pH after the method-specified 15 minute hold time had passed. Amec Foster Wheeler J qualified the pH results from these samples because of holding time exceedance. (J-HT)

7.5.2 Laboratory Control Sample Accuracy

LCS recovery was within the laboratory-specified 98.5 to 101.5% limits.

7.5.3 Laboratory Duplicates

TestAmerica performed duplicate analysis for pH on samples FC-CCR-MW7-81017 and FC-CCR-MW68-8917. RPDs between primary sample and laboratory duplicate results were less than the laboratory-specified maximum of 5%.

7.5.4 Data Reporting and Analytical Procedures

There were no data anomalies associated with the pH analysis of these samples.

7.6 RADIOCHEMICAL ANALYSES

It was not possible to evaluate data usability for the radiochemical analyses due to a lack of reported laboratory QC.

7.6.1 Analytical Sensitivity

Amec Foster Wheeler compared RLs for total radium analysis against the MCL to confirm that the RLs were sufficiently low to meet the MCL. Non-detect results were reported to RLs less than the applicable MCL.

8.0 FIELD DUPLICATES

APS collected samples FC-CCR-FD01-8917 (FC-CCR-MW69-8917) and FC-CCR-FD02-81017 (FC-CCR-MW72-81017) as field duplicates and original samples, respectively. Target analyte detections are summarized in Table 2. Precision values were less than the SAP-specified maximum of 20%, or the differences between the detected concentrations were less than the RLs, with the exceptions listed below.

- The RPD between selenium results from sample FC-CCR-MW72-81017 and its field duplicate FC-CCR-FD02-81017 was high at 33%. Amec Foster Wheeler J qualified the detected selenium results from these samples due to potential sampling and/or analytical imprecision. (J-FD)

9.0 SUMMARY AND CONCLUSIONS

Amec Foster Wheeler reviewed 560 data records from field samples during this validation. All of the data generated are usable and of acceptable quality with the addition of qualifiers presented in Table 3. Qualifier definitions are summarized in Section 4.0, reason codes are summarized in Section 5.0, and qualified data are summarized below.

- Amec Foster Wheeler J or UJ qualified 35 records (6.3%) as being estimated concentrations due to hold time exceedances, high RPDs between original samples and field duplicates, or analytical sensitivity not meeting project required criteria.

The data should be considered valid with the addition of the qualifiers presented in Table 3.

REFERENCES

AECOM, 2015. Sampling and Analysis Plan CCR Groundwater Monitoring Four Corners Power Plant Arizona Public Service, Farmington, New Mexico, December 2015.

EPA, 2017. EPA CLP National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-2017-001.

EPA, 2004. SW 846 Test Methods for Evaluating Solid Wastes, Update IIIB.

LIMITATIONS

This report was prepared exclusively for Arizona Public Service by Amec Foster Wheeler Environment & Infrastructure, Inc. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Amec Foster Wheeler services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This data validation report is intended to be used by Arizona Public Service, Four Corners Power Plant site only, subject to the terms and conditions of its contract with Amec Foster Wheeler. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

TABLES

TABLE 1
Field Samples Submitted to Test America Laboratories, Inc.
Four Corners Power Plant, Arizona Public Service
Farmington, New Mexico
Early August 2017 Data

Field Sample ID	Collection Date	Test America Sample ID	Notes
FC-CCR-MW7-81017	8/10/2017	550-87922-1	
FC-CCR-MW49A-81017	8/10/2017	550-87922-2	
FC-CCR-MW60-81017	8/10/2017	550-87922-3	
FC-CCR-MW61-81017	8/10/2017	550-87922-4	
FC-CCR-MW62-8917	8/9/2017	550-87922-5	
FC-CCR-MW63-8917	8/9/2017	550-87922-6	
FC-CCR-MW64-8917	8/9/2017	550-87922-7	
FC-CCR-MW65-8917	8/9/2017	550-87922-8	
FC-CCR-MW66-8917	8/9/2017	550-87922-9	
FC-CCR-MW67-8917	8/9/2017	550-87922-10	
FC-CCR-MW68-8917	8/9/2017	550-87922-11	
FC-CCR-MW69-8917	8/9/2017	550-87922-12	
FC-CCR-FD01-8917	8/9/2017	550-87922-13	Field duplicate of sample FC-CCR-MW69-8917
FC-CCR-MW70-8917	8/9/2017	550-87922-14	
FC-CCR-MW71-81017	8/10/2017	550-87922-15	
FC-CCR-MW72-81017	8/10/2017	550-87922-16	
FC-CCR-FD02-81017	8/10/2017	550-87922-17	Field duplicate of sample FC-CCR-MW72-81017
FC-CCR-MW73-81017	8/10/2017	550-87922-18	
FC-CCR-MW74-81017	8/10/2017	550-87922-19	
FC-CCR-MW75-81017	8/10/2017	550-87922-20	

TABLE 2
Field Duplicate Detections
Four Corners Power Plant, Arizona Public Service
Farmington, New Mexico
Early August 2017 Data

Analyte	RL	Primary Sample Result	Field Duplicate Result	RPD	Notes
FC-CCR-FD01-8917 and FC-CCR-MW69-8917					
Chloride	200 mg/L	1,600	1,500	6.5%	
Fluoride	2.0 mg/L	17	17	0.0%	
Sulfate	400 mg/L	12,000	12,000	0.0%	
Arsenic	0.0020 mg/L	0.0066	0.0072	8.7%	
Barium	0.0050 mg/L	0.016	0.013	21%	± RL
Boron	0.25 mg/L	140	150	6.9%	
Calcium	2.0 mg/L	470	470	0.0%	
Chromium	0.0040 mg/L	0.0040 U	0.0059	NC	± RL
Cobalt	0.0044 mg/L	0.0044	0.0044	0.0%	
Lithium	0.20 mg/L	0.44	0.43	2.3%	
Molybdenum	0.0050 mg/L	0.016	0.014	13%	
Magnesium	10 mg/L	2,800	2,800	0.0%	
Selenium	0.0020 mg/L	0.014	0.016	13%	
Potassium	0.50 mg/L	44	43	2.3%	
Sodium	0.50 mg/L	690	680	1.5%	
Alkalinity as CaCO3	6.0 mg/L	310	300	3.3%	
Bicarbonate Alkalinity as CaCO3	6.0 mg/L	310	300	3.3%	
Total Dissolved Solids	100 mg/L	19,000	19,000	0.0%	
pH	1.7 SU	7.5	7.5	0.0%	
FC-CCR-FD02-81017 and FC-CCR-MW72-81017					
Chloride	10 mg/L	460	460	0.0%	
Sulfate	400 mg/L	11,000	12,000	8.7%	
Arsenic	0.00125 mg/L	0.0040	0.0028	35%	± RL
Barium	0.00275 mg/L	0.0075	0.0089	17%	
Boron	0.15 mg/L	0.21	0.25	17%	
Calcium	2.0 mg/L	450	460	2.2%	
Cobalt	0.00125 mg/L	0.0023	0.0025	8.3%	
Lithium	0.20 mg/L	0.41	0.42	2.4%	
Magnesium	10 mg/L	2,500	2,600	3.9%	
Molybdenum	0.0050 mg/L	0.00087	0.0050 U	NC	± RL
Potassium	0.50 mg/L	30	30	0.0%	
Selenium	0.00125 mg/L	0.14	0.10	33%	J-FD
Sodium	0.50 mg/L	780	800	2.5%	
Thallium	0.00055 mg/L	0.00091	0.0010	9.4%	
Alkalinity as CaCO3	6.0 mg/L	600	610	1.7%	
Bicarbonate Alkalinity as CaCO3	6.0 mg/L	600	610	1.7%	
Total Dissolved Solids	100 mg/L	17,000	17,000	0.0%	
pH	1.7 SU	7.3	7.2	1.4%	

Notes:
CaCO3 = calcium carbonate
mg/L = milligrams per liter
NC = not calculable
RL = reporting limit
RPD = relative percent difference
SU=standard units

Qualifier Definitions:
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

Reason Codes:
±RL = the difference between the detected concentrations was less than the reporting limit
FD = High relative percent difference between field duplicate results

TABLE 3
Qualifiers Added During Data Validation
Four Corners Power Plant, Arizona Public Service
Farmington, New Mexico
Early August 2017 Data

Sample Identifications	Analytes	Concentrations	Qualifiers and Reason Codes
FC-CCR-FD01-8917	Antimony	0.010 mg/L	UJ NS
FC-CCR-FD01-8917	pH	7.5 SU	J HT
FC-CCR-FD02-81017	Antimony	0.010 mg/L	UJ NS
FC-CCR-FD02-81017	pH	7.2 SU	J HT
FC-CCR-FD02-81017	Selenium	0.10 mg/L	J FD
FC-CCR-MW49A-81017	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW49A-81017	pH	7.5 SU	J HT
FC-CCR-MW60-81017	pH	7.7 SU	J HT
FC-CCR-MW61-81017	pH	8.7 SU	J HT
FC-CCR-MW62-8917	pH	7.0 SU	J HT
FC-CCR-MW63-8917	pH	7.2 SU	J HT
FC-CCR-MW64-8917	pH	7.8 SU	J HT
FC-CCR-MW65-8917	pH	7.7 SU	J HT
FC-CCR-MW66-8917	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW66-8917	pH	7.4 SU	J HT
FC-CCR-MW67-8917	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW67-8917	pH	7.4 SU	J HT
FC-CCR-MW68-8917	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW68-8917	pH	7.2 SU	J HT
FC-CCR-MW69-8917	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW69-8917	pH	7.5 SU	J HT
FC-CCR-MW70-8917	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW70-8917	pH	7.2 SU	J HT
FC-CCR-MW71-81017	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW71-81017	pH	7.4 SU	J HT
FC-CCR-MW72-81017	pH	7.3 SU	J HT
FC-CCR-MW72-81017	Selenium	0.14 mg/L	J FD
FC-CCR-MW73-81017	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW73-81017	pH	7.4 SU	J HT
FC-CCR-MW74-81017	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW74-81017	pH	7.9 SU	J HT
FC-CCR-MW75-81017	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW75-81017	pH	8.4 SU	J HT
FC-CCR-MW7-81017	Antimony	0.010 mg/L	UJ NS
FC-CCR-MW7-81017	pH	7.5 SU	J HT

Notes:

mg/L = milligrams per liter

SU = standard units

Qualifier Definitions:

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Reason Codes:

FD = High relative percent difference between field duplicate results

HT = Holding time exceeded

NS = Analytical sensitivity did not meet the project required criteria