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SCS ENGINEERS

January 30, 2018
SCS Project 16215106.00

Mr. Darryl Sparks
Compliance Manager
NAES Corporation
2161 Rattlesnake Road
Riesel, Texas 76682

Subject: Sandy Creek Energy Station
McLennan County, Texas
2017 Annual Groundwater Monitoring and Corrective Action Report Submittal

Dear Mr. Sparks:

SCS Engineers (SCS) is pleased to submit the 2017 Annual Groundwater Monitoring and Corrective Action Report to the Sandy Creek Energy Station (SCES), in accordance with Coal Combustion Residual Rule (CCR) 40 CFR Part §257.94, and the site Groundwater Sampling and Analysis Plan (GWSAP), prepared by SCS, dated March 2, 2016.

Please contact James Lawrence at (817) 358-6106 if you have comments or require additional information.

Sincerely,

Doug Steen
Associate Professional
SCS ENGINEERS
TBPE Registration No. F-3407

Brett DeVries, Ph.D., P.E.
Project Engineer
SCS ENGINEERS

James Lawrence, P.G.
Project Director
SCS ENGINEERS

Attachment: 2017 Annual Groundwater Monitoring and Corrective Action Report

cc: Paulette Heuer at PHeuer@lspower.com
Alan Riddle at ariddle@sandycreekservices.com

SCS ENGINEERS



2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

SANDY CREEK ENERGY STATION RIESEL, TEXAS

Prepared for:

SANDY CREEK ENERGY STATION
2161 Rattlesnake Road
Riesel, Texas 76682

Prepared by:

SCS ENGINEERS
Dallas/Fort Worth Office
1901 Central Drive, Suite 550
Bedford, Texas 76021
817-571-2288

January 2018
File No. 16215106.00

Offices Nationwide
www.scsengineers.com

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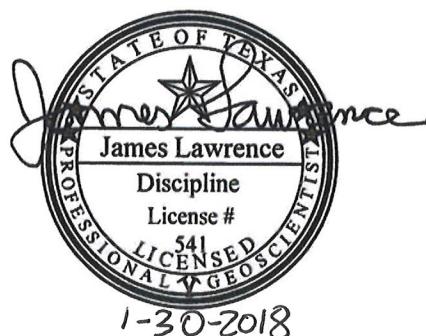
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SECTION 1.0

INTRODUCTION AND BACKGROUND

SCS Engineers (SCS) is submitting the 2017 Annual Groundwater Monitoring and Corrective Action Report for the Sandy Creek Energy Station (SCES), in accordance with Coal Combustion Residual Rule (CCR) 40 CFR §257.90(e), and site Groundwater Sampling and Analysis Plan (GWSAP) prepared by SCS, dated March 2, 2016. This report includes results for the first semiannual detection monitoring event at SCES, conducted in December 2017.

SCES is a pulverized coal-fired electric generation facility which operates a landfill for disposal of dry scrubber ash and bottom ash generated during the coal combustion process at the facility. Incidental wastes generated during the operation of the facility may also be disposed in the landfill, as described in the initial registration notification to TCEQ and the most recent version of the Operations Plan for the facility. The landfill is currently comprised of two CCR disposal cells, Cells 1 and 2, which commenced receiving waste in early 2013 and October 2014, respectively. The approximate area of Cells 1 and 2 are 10.0 and 14.3 acres, respectively.

Sampling of groundwater monitoring wells is conducted in accordance with 40 CFR §257.93 and the GWSAP. Background monitoring of four wells (MW-1, MW-2, MW-3, and BW-1; as depicted on Figure 1) was performed for eight consecutive quarters in accordance with 40 CFR §257.94(b) (i.e., eight independent samples were collected for each well). The background monitoring described above commenced in December 2015 and was completed in August 2017. In accordance with 40 CFR §257 Appendix III and IV, the constituents monitored during the first eight quarters and the first semiannual detection monitoring event included 18 inorganic compounds, total dissolved solids, radium-226, and radium-228.

SECTION 2.0**GROUNDWATER MONITORING SUMMARY****Groundwater Monitoring System**

The current groundwater monitoring system at the SCES landfill consists of four wells (see Table 1 below). One (BW-1) is upgradient and three (MW-1, -2, & -3) are downgradient. All four wells are currently in detection monitoring. Figure 1 shows monitoring well locations at SCES.

Table 1 - Sandy Creek Energy Station Groundwater Monitoring System

Well Name (U/D) ¹	Completion Date	Status	Top of Casing Elevation (ft msl) ²	Well Depth (ft bgs) ²	Screen Interval (ft bgs) ²	Water Level Elevation (ft msl on 12/20/2017)
MW-1 (D)	9/21/2015	Detection	465.87	37.25	23.90 - 33.90	454.22
MW-2 (D)	9/23/2015	Detection	442.15	22.60	9.30 - 19.30	429.47
MW-3 (D)	9/1/2010	Detection	430.06	19.95	5.98 - 15.98	421.08
BW-1 (U)	9/22/2015	Detection	485.57	41.50	28.30 - 38.30	466.51

¹ (U) = upgradient; (D) = downgradient

² Top of Casing Elevation, Well Depth, and Screen Interval information obtained from Table 1 – Monitoring Well and Piezometer Construction Details and Groundwater Elevations prepared by Geosyntec Consultants, dated March 11, 2016

ft msl = feet above mean sea level

ft bgs = feet below ground surface

Summary of Groundwater Monitoring Events

All sampling events followed the groundwater sampling and laboratory analysis procedures outlined in the GWSAP. A duplicate sample was collected from one well during each event for Quality Assurance & Quality Control (QA/QC) purposes. All monitoring wells were sampled and analyzed for 40 CFR 257 Appendix III & IV constituents, in accordance with 40 CFR §257.94(b).

December 2015 – First Quarterly Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on December 14, 2015 using the conventional purge and sampling method with disposable PVC bailers. The results of the sampling were provided to SCES in a report prepared by SCS, dated March 2, 2016.

Exceedances of EPA drinking water primary maximum contaminant levels (MCLs) during this event included selenium (MW-1) (see Table 2 below).

February 2016 – Second Quarterly Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on February 25, 2016 using the conventional purge and sampling method with disposable PVC bailers. The results of the sampling were provided to SCES in a report prepared by SCS, dated April 22, 2016.

Exceedances of EPA primary drinking water MCLs during this event included arsenic (MW-2, BW-1) and selenium (MW-1) (see Table 2 below).

May 2016 – Third Quarterly Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on May 11, 2016 using the conventional purge and sampling method with disposable PVC bailers. The results of the sampling were provided to SCES in a report prepared by SCS, dated July 8, 2016.

Exceedances of EPA primary drinking water MCLs during this event included arsenic (MW-1), beryllium (MW-1), chromium (MW-1), lead (MW-1), and combined radium (MW-1, BW-1) (see Table 2 below).

August 2016 – Fourth Quarterly Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on August 16, 2016 using the conventional purge and sampling method with disposable PVC bailers. The results of the sampling were provided to SCES in a report prepared by SCS, dated October 17, 2016.

Exceedances of EPA primary drinking water MCLs during this event included selenium (MW-1) and combined radium (MW-3) (see Table 2 below).

November 2016 – Fifth Quarterly Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on November 17, 2016 using the conventional purge and sampling method with disposable PVC bailers. The results of the sampling were provided to SCES in a report prepared by SCS, dated January 23, 2017.

Exceedances of EPA primary drinking water MCLs during this event included selenium (MW-1) and combined radium (MW-3) (see Table 2 below).

February 2017 – Sixth Quarterly Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on February 23, 2017 using the conventional purge and sampling method with disposable PVC bailers. The results of the sampling were provided to the SCES in a report prepared by SCS, dated April 24, 2017.

Exceedances of EPA primary drinking water MCLs during this event included selenium (MW-1) and combined radium (MW-2) (see Table 2 below).

June 2017 – Seventh Quarterly Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on June 7, 2017 using the conventional purge and sampling method with disposable PVC bailers. The results of the sampling were provided to the SCES in a report prepared by SCS, dated August 9, 2017.

Exceedances of EPA primary drinking water MCLs during this event included selenium (MW-1) (see Table 2 below).

August 2017 – Eighth Quarterly Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on August 24, 2017 using the conventional purge and sampling method with disposable PVC bailers. The results of the sampling were provided to SCES in a report prepared by SCS, dated September 26, 2017.

Exceedances of EPA drinking water MCLs during this event included selenium (MW-1) and combined radium (MW-3) (see Table 2 below).

December 2017 – Semiannual Detection Monitoring Event

All four wells (MW-1, MW-2, MW-3, and BW-1) were purged and sampled on December 20, 2017 using the conventional purge and sampling method with disposable PVC bailers. This sampling event marks the first semiannual detection monitoring event following the collection of eight independent quarterly samples, in accordance with 40 CFR §257.94(b). Though 40 CFR §257.94(b) states that only Appendix III constituents must be monitored during semiannual detection monitoring events, wells were also monitored for 40 CFR §257 Appendix IV constituents due to multiple EPA primary MCL exceedances of Appendix IV constituents during quarterly monitoring (see Appendix C). Field forms and laboratory results for this event are provided in Appendices A & B, respectively.

Exceedances of federally-promulgated primary MCLs during this event included selenium (MW-1) and combined radium (MW-2).

The analysis of Appendix IV constituents during the December 2017 monitoring event does not represent a decision to initiate an assessment monitoring program. The facility remains in a detection monitoring program, in accordance with 40 CFR §257.94.

Table 2 – Sandy Creek Energy Station MCL Exceedances

Constituent	Well Name	Date	Concentration (mg/L)	MCL (mg/L)
Arsenic	MW-1	5/11/2016	0.12	0.01
	MW-2	2/25/2016	0.014	
	BW-1	2/25/2016	0.015	
Beryllium	MW-1	5/11/2016	0.029	0.004
Chromium	MW-1	5/11/2016	0.69	0.1
Lead	MW-1	5/11/2016	0.21	0.015
Selenium	MW-1	12/14/2015	0.16	0.05
		2/25/2016	0.2	
		8/16/2016	0.13	
		11/17/2016	0.16	
		2/23/2017	0.066	
		6/7/2017	0.15	
		8/24/2017	0.17	
		12/20/2017	0.18	
Combined Radium	MW-1	5/11/2016	12.33	5
	MW-2	2/23/2017	5.79	
		12/20/2017	5.015	
	MW-3	8/16/2016	5.991	
		11/17/2016	6.102	
		8/24/2017	5.67	
		BW-1	5.20	

SECTION 3.0

RESULTS AND STATISTICAL ANALYSIS

A summary of December 2017 laboratory results and statistical limits in each well – constituent pair is provided in Appendix D. Statistical limits were determined accordance with 40 CFR §257.93(f-g) and the GWSAP using the software program Sanitas ®. Limits are presented using Shewhart-CUSUM control charts, non-parametric prediction limits, or parametric prediction limits as deemed appropriate by background data distributions. EPA primary drinking water MCLs are also presented for comparison to current data.

Unconfirmed statistically significant increases (SSIs) were indicated for fluoride at MW-1 and boron in MW-3 (see Appendix D). In accordance with 40 CFR §257.94(e)(2), two alternate source demonstrations (ASDs) are provided in Appendix F to demonstrate that these unconfirmed SSIs likely result from natural variation in groundwater quality at the site, and are not indicative of impacts from the SCES landfill.

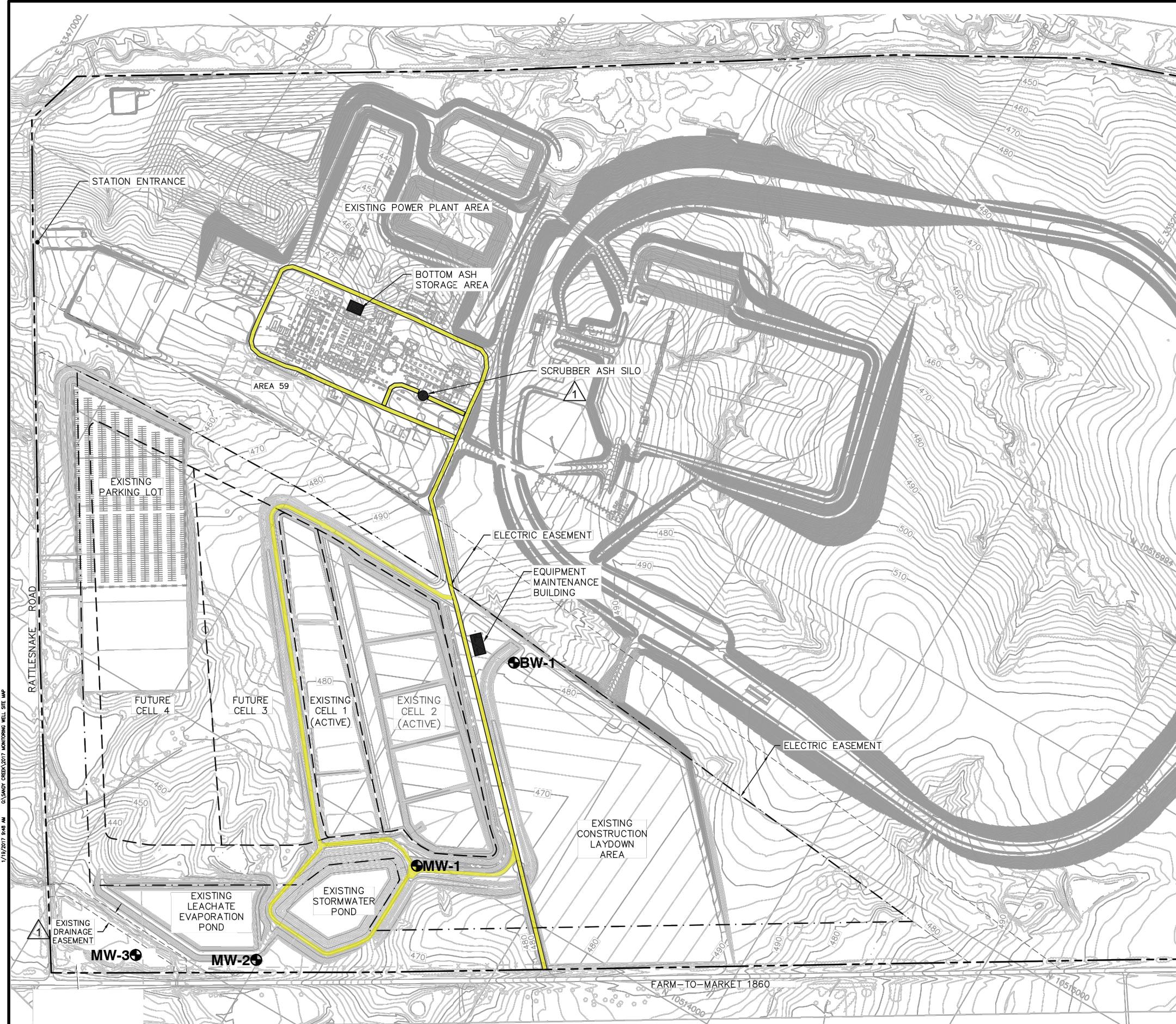
SECTION 4.0

RECOMMENDATIONS

No confirmed SSIs were indicated for any wells during the December 2017 detection monitoring event at the SCES, as outlined in the attached ASDs for fluoride in MW-1 and boron in MW-3 (see Appendix F). These ASDs should be filed with the annual groundwater monitoring and corrective action report, in accordance with the recordkeeping requirements specified in 40 CFR §257.105(f), notification requirements specified in 40 CFR §257.106(h), and internet requirements specified in 40 CFR §257.107(h). SCS recommends that the facility remain in semiannual detection monitoring, in accordance with 40 CFR §257.94.

Due to the lack of confirmed SSIs for Appendix III and IV constituents during the December 2017 detection monitoring event, the facility will continue monitoring for all constituents listed in 40 CFR §257 Appendix III during semiannual groundwater monitoring events, in accordance with 40 CFR §257.94(a). The Appendix IV constituent list will be analyzed if any confirmed statistical exceedances of the Appendix III list are indicated in future events. The next planned groundwater monitoring event is a semiannual detection monitoring event scheduled for June 2018.

FIGURE 1: MONITORING WELL LOCATION MAP



SCS ENGINEERS STEARNIS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 1900 CENTRAL DRIVE, SUITE 550, BEDFORD, TX 76021 PH (817) 571-2288 FAX NO. (817) 571-2188 PROJ. NO. 16215174.00 DSN. BY: RD CHK. BY: JL DWN. BY: BCB Q/A/RW BY: JL APP. BY: JL	MONITORING WELL LOCATION MAP	
	DRAWING TITLE NAES CORPORATION 2161 RATTLESNAKE ROAD RIESLE, TEXAS 76682	PROJECT TITLE SANDY CREEK ENERGY STATION GROUNDWATER MONITORING
REV. DATE 1/18/2018	DESCRIPTION	BT
LEGEND		
MW-1 		
NOTES:		
<ol style="list-style-type: none"> THE EXISTING CONTOUR MAP SHOWN ON THIS DRAWING WAS COMPILED USING EXISTING TOPOGRAPHY DATED APRIL 2006 AND DESIGN GRADES DATED OCTOBER 2007 FROM BLACK & VEATCH CORPORATION; DESIGN GRADES DEVELOPED BY GEOSYNTEC CONSULTANTS, INC. FOR THE LEACHATE EVAPORATION POND AND CELL 2 DATED APRIL 2011 AND APRIL 2014, RESPECTIVELY; AND AREA 59 EXISTING TOPOGRAPHY SURVEY CONDUCTED BY WALKER PARTNERS DATED 9 MAY 2013. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL (FT, MSL) AS DEFINED BY THE USGS NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1988. STATE PLANE COORDINATE GRID CORRESPONDS TO TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), NORTH AMERICAN DATUM OF 1983 (NAD-83). 		
DATE: 01/2018		
SCALE: AS SHOWN		
DRAWING NO. 1		
CADD FILE: 2017 MONITORING WELL SITE MAP		
DATE: 01/2018		
SCALE: AS SHOWN		
DRAWING NO. 1		
TEXAS BOARD OF PROFESSIONAL ENGINEERS REG. NO. F-3407		

**APPENDIX A
DECEMBER 2017 GROUNDWATER MONITORING FIELD FORMS**

Groundwater Monitoring Form

Facility name: Sandy Creek Energy Station
Permittee: Sandy Creek Energy Associates, L.P.
County: McLennan

Name of sampler: Doug Steen
Affiliation of sampler: SCS Engineers
If split sampled, with whom? N/A
Integrity of well: GOOD
Installation date: 9/21/2015

5. Purgging/Sampling method: Bailer (Enter bailer or pump)
Were low-flow methods used? yes no (check one)
If yes, what volume was purged? N/A gal.
6. Well volumes purged: 2.0
7. Was the well dry before purging? yes no (check one)
8. Was the well dry after purging? yes no (check one)
9. How long before sampling? 2.0
10. Unit of measure? hours (Enter value as days, hours, or mins.)

Field Measurements:

14. pH 5.86
15. Spec. cond. 4,287
17. Temp. 21.41
19. Turbidity 66.2

1. Facility Type: Power Station
2. Monitor well no.: MW-1
3. Date of sampling: 12/20/2017

Most recent previous sampling: 8/24/2017
Date of water level measurements: 12/20/2017
Datum reference point: Top of Casing
Datum elevation*: 465.87
Depth to water(below datum)*: 11.65
4. Water level elevation*: 454.22

11. Sample event: Detection
- Background - Corrective Action
- Detection - Other
- Assessment
12. Sample schedule: Semi-Annual
- Quarterly - Fourth Year
- Semi-Annual - Other
- Annual
13. Sample type: Regular
- Regular - Split
- Duplicate - Other
- Resample

Laboratory:

21. Name Pace Analytical Services, Inc.
Address: 2657 Gravel Drive, Fort Worth, TX 76118

Phone: (817) 335-1186

16. umho/cm or mmho/cm (check one)
18. F or C (check one)
20. NTU

* Report depth to water and elevations to nearest 0.01 foot relative to mean sea level (msl).

Groundwater Monitoring Form

Facility name: Sandy Creek Energy Station
Permittee: Sandy Creek Energy Associates, L.P.
County: McLennan

Name of sampler: Doug Steen
Affiliation of sampler: SCS Engineers
If split sampled, with whom? N/A
Integrity of well: GOOD
Installation date: 9/23/2015

5. Purgging/Sampling method: Bailer (Enter bailer or pump)
Were low-flow methods used? yes no (check one)
If yes, what volume was purged? N/A gal.
6. Well volumes purged: 2.5
7. Was the well dry before purging? yes no (check one)
8. Was the well dry after purging? yes no (check one)
9. How long before sampling? 2.0
10. Unit of measure? hours (Enter value as days, hours, or mins.)

Field Measurements:

14. pH 5.39
15. Spec. cond. 6,198
17. Temp. 20.23
19. Turbidity 37.7

1. Facility Type: Power Station
2. Monitor well no.: MW-2
3. Date of sampling: 12/20/2017

Most recent previous sampling: 8/24/2017
Date of water level measurements: 12/20/2017
Datum reference point: Top of Casing
Datum elevation*: 442.15
Depth to water(below datum)*: 12.68
4. Water level elevation*: 429.47

11. Sample event: Detection
- Background - Corrective Action
- Detection - Other
- Assessment
12. Sample schedule: Semi-Annual
- Quarterly - Fourth Year
- Semi-Annual - Other
- Annual
13. Sample type: Regular
- Regular - Split
- Duplicate - Other
- Resample

Laboratory:

21. Name Pace Analytical Services, Inc.
Address: 2657 Gravel Drive, Fort Worth, TX 76118

Phone: (817) 335-1186

16. umho/cm or mmho/cm (check one)
18. F or C (check one)
20. NTU

* Report depth to water and elevations to nearest 0.01 foot relative to mean sea level (msl).

Groundwater Monitoring Form

Facility name: Sandy Creek Energy Station
Permittee: Sandy Creek Energy Associates, L.P.
County: McLennan

Name of sampler: Doug Steen
Affiliation of sampler: SCS Engineers
If split sampled, with whom? N/A
Integrity of well: GOOD
Installation date: 9/1/2010

5. Purgging/Sampling method: Bailer (Enter bailer or pump)
Were low-flow methods used? yes no (check one)
If yes, what volume was purged? N/A gal.
6. Well volumes purged: 3.1
7. Was the well dry before purging? yes no (check one)
8. Was the well dry after purging? yes no (check one)
9. How long before sampling? 2.0
10. Unit of measure? hours (Enter value as days, hours, or mins.)

Field Measurements:

14. pH 5.58
15. Spec. cond. 6,459
17. Temp. 21.52
19. Turbidity 22.4

1. Facility Type: Power Station
2. Monitor well no.: MW-3
3. Date of sampling: 12/20/2017

Most recent previous sampling: 8/24/2017
Date of water level measurements: 12/20/2017
Datum reference point: Top of Casing
Datum elevation*: 430.06
Depth to water(below datum)*: 8.98
4. Water level elevation*: 421.08

11. Sample event: Detection
- Background - Corrective Action
- Detection - Other
- Assessment
12. Sample schedule: Semi-Annual
- Quarterly - Fourth Year
- Semi-Annual - Other
- Annual
13. Sample type: Regular
- Regular - Split
- Duplicate - Other
- Resample

Laboratory:

21. Name Pace Analytical Services, Inc.
Address: 2657 Gravel Drive, Fort Worth, TX 76118

Phone: (817) 335-1186

16. umho/cm or mmho/cm (check one)
18. F or C (check one)
20. NTU

* Report depth to water and elevations to nearest 0.01 foot relative to mean sea level (msl).

Groundwater Monitoring Form

Facility name: Sandy Creek Energy Station
Permittee: Sandy Creek Energy Associates, L.P.
County: McLennan

Name of sampler: Doug Steen
Affiliation of sampler: SCS Engineers
If split sampled, with whom? N/A
Integrity of well: GOOD
Installation date: 9/22/2015

5. Purgging/Sampling method: Bailer (Enter bailer or pump)
Were low-flow methods used? yes no (check one)
If yes, what volume was purged? N/A gal.
6. Well volumes purged: 3.1
7. Was the well dry before purging? yes no (check one)
8. Was the well dry after purging? yes no (check one)
9. How long before sampling? 2.0
10. Unit of measure? hours (Enter value as days, hours, or mins.)

Field Measurements:

14. pH 7.14
15. Spec. cond. 7,063
17. Temp. 20.33
19. Turbidity 180

1. Facility Type: Power Station
2. Monitor well no.: BW-1
3. Date of sampling: 12/20/2017

Most recent previous sampling: 8/24/2017
Date of water level measurements: 12/20/2017
Datum reference point: Top of Casing
Datum elevation*: 485.57
Depth to water(below datum)*: 19.06
4. Water level elevation*: 466.51

11. Sample event: Detection
- Background - Corrective Action
- Detection - Other
- Assessment
12. Sample schedule: Semi-Annual
- Quarterly - Fourth Year
- Semi-Annual - Other
- Annual
13. Sample type: Regular
- Regular - Split
- Duplicate - Other
- Resample

Laboratory:

21. Name Pace Analytical Services, Inc.
Address: 2657 Gravel Drive, Fort Worth, TX 76118

Phone: (817) 335-1186

16. umho/cm or mmho/cm (check one)
18. F or C (check one)
20. NTU

* Report depth to water and elevations to nearest 0.01 foot relative to mean sea level (msl).

Groundwater Monitoring Form

Facility name: Sandy Creek Energy Station
Permittee: Sandy Creek Energy Associates, L.P.
County: McLennan

Name of sampler: Doug Steen
Affiliation of sampler: SCS Engineers
If split sampled, with whom? N/A
Integrity of well: N/A
Installation date: N/A

5. Purgging/Sampling method: N/A (Enter bailer or pump)
Were low-flow methods used? yes no (check one)
If yes, what volume was purged? N/A gal.
6. Well volumes purged: N/A
7. Was the well dry before purging? yes no (check one)
8. Was the well dry after purging? yes no (check one)
9. How long before sampling? N/A
10. Unit of measure? N/A (Enter value as days, hours, or mins.)

Field Measurements:

14. pH N/A
15. Spec. cond. N/A
17. Temp. N/A
19. Turbidity N/A

1. Facility Type: Power Station
2. Monitor well no.: DUP
3. Date of sampling: 12/20/2017

Most recent previous sampling: N/A
Date of water level measurements: N/A
Datum reference point: Top of Casing
Datum elevation*: N/A
Depth to water(below datum)*: N/A
4. Water level elevation*: N/A

11. Sample event: Detection
- Background - Corrective Action
- Detection - Other
- Assessment
12. Sample schedule: Semi-Annual
- Quarterly - Fourth Year
- Semi-Annual - Other
- Annual
13. Sample type: Duplicate
- Regular - Split
- Duplicate - Other
- Resample

16. umho/cm or mmho/cm (check one)
18. F or C (check one)
20. NTU

Laboratory:

21. Name Pace Analytical Services, Inc.
Address: 2657 Gravel Drive, Fort Worth, TX 76118

Phone: (817) 335-1186

* Report depth to water and elevations to nearest 0.01 foot relative to mean sea level (msl).

**APPENDIX B
DECEMBER 2017 LABORATORY REPORT WITH CHAIN OF CUSTODY**

January 29, 2018

Jim Lawrence
SCS Engineers
1901 Central Dr.
Suite 550
Bedford, TX 76021

RE: Project: 16215106.00/Sandy Creek
Pace Project No.: 7579575

Dear Jim Lawrence:

Enclosed are the analytical results for sample(s) received by the laboratory on December 22, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Report revised 1/29/18 to include calcium results.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Vince Egyed
vince.egyed@pacelabs.com
(817) 335-1186
Project Manager

Enclosures

cc: Tyson Milbrand, SCS Engineers
Madison Rosene, SCS Engineers
Doug Steen, SCS Engineers
Valerie Wooters, SCS Engineers



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

New Orleans Certification IDs

California Env. Lab Accreditation Program Branch:
11277CA
Florida Department of Health (NELAC): E87595
Illinois Environmental Protection Agency: 0025721
Kansas Department of Health and Environment (NELAC):
E-10266
Louisiana Dept. of Environmental Quality (NELAC/LELAP):
02006

Pennsylvania Dept. of Env Protection (NELAC): 68-04202
Texas Commission on Env. Quality (NELAC):
T104704405-09-TX
U.S. Dept. of Agriculture Foreign Soil Import: P330-10-
00119
Commonwealth of Virginia (TNI): 480246

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235

Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Dallas Certification IDs:

400 West Bethany Dr Suite 190, Allen, TX 75013
EPA# TX00074
Florida Certification #: E871118
Texas Certification #: T104704232
Kansas Certification #: E-10388
Arkansas Certification #: 88-0647

Oklahoma Certification #: 8727
Louisiana Certification #: 30686
Iowa Certification #: 408
Florida Certification #: E871118
Nevada Certification #: TX00074

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Lab ID	Sample ID	Matrix	Date Collected	Date Received
7579575001	MW-1	Water	12/20/17 12:55	12/22/17 07:21
7579575002	MW-2	Water	12/20/17 13:25	12/22/17 07:21
7579575003	MW-3	Water	12/20/17 13:55	12/22/17 07:21
7579575004	BW-1	Water	12/20/17 12:10	12/22/17 07:21
7579575005	DUP	Water		12/22/17 07:21

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 16215106.00/Sandy Creek
Pace Project No.: 7579575

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
7579575001	MW-1	EPA 6010	DT1	11	PASI-D
		EPA 6010	KJR	1	PASI-N
		EPA 6020	KJR	2	PASI-N
		EPA 7470	IZC	1	PASI-D
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	NT	1	PASI-D
		EPA 9040	TMS	1	PASI-D
		EPA 9056A	LNF	3	PASI-D
7579575002	MW-2	EPA 6010	DT1, SPS	11	PASI-D
		EPA 6010	KJR	1	PASI-N
		EPA 6020	KJR	2	PASI-N
		EPA 7470	IZC	1	PASI-D
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	NT	1	PASI-D
		EPA 9040	TMS	1	PASI-D
		EPA 9056A	LNF	3	PASI-D
7579575003	MW-3	EPA 6010	DT1	11	PASI-D
		EPA 6010	KJR	1	PASI-N
		EPA 6020	KJR	2	PASI-N
		EPA 7470	IZC	1	PASI-D
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	NT	1	PASI-D
		EPA 9040	TMS	1	PASI-D
		EPA 9056A	LNF	3	PASI-D
7579575004	BW-1	EPA 6010	DT1	11	PASI-D
		EPA 6010	KJR	1	PASI-N
		EPA 6020	KJR	2	PASI-N
		EPA 7470	IZC	1	PASI-D
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	NT	1	PASI-D
		EPA 9040	TMS	1	PASI-D
		EPA 9056A	LNF	3	PASI-D
7579575005	DUP	EPA 6010	DT1	11	PASI-D

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SAMPLE ANALYTE COUNT

Project: 16215106.00/Sandy Creek
Pace Project No.: 7579575

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6010	KJR	1	PASI-N
		EPA 6020	KJR	2	PASI-N
		EPA 7470	IZC	1	PASI-D
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	NT	1	PASI-D
		EPA 9040	TMS	1	PASI-D
		EPA 9056A	LNF	3	PASI-D

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: MW-1	Lab ID: 7579575001	Collected: 12/20/17 12:55	Received: 12/22/17 07:21	Matrix: Water					
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 Metals, Total	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lithium	0.38	mg/L	0.050	0.012	1	12/26/17 07:50	12/29/17 13:53	7439-93-2	
Arsenic	ND	mg/L	0.0060	0.0037	1	12/26/17 06:05	12/27/17 15:31	7440-38-2	
Barium	0.017	mg/L	0.010	0.0033	1	12/26/17 06:05	12/27/17 15:31	7440-39-3	
Beryllium	ND	mg/L	0.0010	0.00017	1	12/26/17 06:05	12/27/17 15:31	7440-41-7	
Boron	1.3	mg/L	0.10	0.018	1	12/26/17 06:05	12/27/17 15:31	7440-42-8	
Cadmium	ND	mg/L	0.0050	0.00061	1	12/26/17 06:05	12/27/17 15:31	7440-43-9	
Calcium	548	mg/L	1.0	0.33	1	12/26/17 06:05	12/27/17 15:31	7440-70-2	
Chromium	ND	mg/L	0.0070	0.0021	1	12/26/17 06:05	12/27/17 15:31	7440-47-3	
Cobalt	ND	mg/L	0.0025	0.00049	1	12/26/17 06:05	12/27/17 15:31	7440-48-4	
Lead	ND	mg/L	0.010	0.0017	1	12/26/17 06:05	12/27/17 15:31	7439-92-1	
Molybdenum	ND	mg/L	0.030	0.0097	1	12/26/17 06:05	12/27/17 15:31	7439-98-7	
Selenium	0.18	mg/L	0.020	0.0042	1	12/26/17 06:05	12/27/17 15:31	7782-49-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	ND	mg/L	0.0010	0.00025	1	01/02/18 07:46	01/02/18 12:16	7440-36-0	
Thallium	ND	mg/L	0.00050	0.00012	1	01/02/18 07:46	01/02/18 12:16	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	mg/L	0.00020	0.000070	1	12/27/17 07:02	12/27/17 13:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	4250	mg/L	62.5	62.5	1			12/22/17 22:56	
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	7.4	Std. Units	0.10	0.10	1			12/26/17 12:24	H6
9056 IC Anions	Analytical Method: EPA 9056A								
Chloride	248	mg/L	80.0	35.8	100			01/11/18 17:12	16887-00-6
Fluoride	1.1	mg/L	0.50	0.18	1			01/11/18 14:14	16984-48-8
Sulfate	2340	mg/L	700	393	1000			01/12/18 14:22	14808-79-8

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: MW-2	Lab ID: 7579575002	Collected: 12/20/17 13:25	Received: 12/22/17 07:21	Matrix: Water					
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 Metals, Total	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	mg/L	0.012	0.0074	2	12/26/17 06:05	12/28/17 14:50	7440-38-2	D3
Lithium	0.74	mg/L	0.050	0.012	1	12/28/17 07:50	12/29/17 14:17	7439-93-2	
Barium	0.022	mg/L	0.010	0.0033	1	12/26/17 06:05	12/27/17 15:38	7440-39-3	
Beryllium	ND	mg/L	0.0010	0.00017	1	12/26/17 06:05	12/27/17 15:38	7440-41-7	
Boron	2.2	mg/L	0.10	0.018	1	12/26/17 06:05	12/27/17 15:38	7440-42-8	
Cadmium	ND	mg/L	0.010	0.0012	2	12/26/17 06:05	12/28/17 14:50	7440-43-9	D3
Calcium	716	mg/L	1.0	0.33	1	12/26/17 06:05	12/27/17 15:38	7440-70-2	
Chromium	ND	mg/L	0.014	0.0042	2	12/26/17 06:05	12/28/17 14:50	7440-47-3	D3
Cobalt	0.0072	mg/L	0.0050	0.00098	2	12/26/17 06:05	12/28/17 14:50	7440-48-4	D3
Lead	ND	mg/L	0.020	0.0033	2	12/26/17 06:05	12/28/17 14:50	7439-92-1	D3
Molybdenum	ND	mg/L	0.030	0.0097	1	12/26/17 06:05	12/27/17 15:38	7439-98-7	
Selenium	ND	mg/L	0.040	0.0084	2	12/26/17 06:05	12/28/17 14:50	7782-49-2	D3
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	ND	mg/L	0.0010	0.00025	1	01/02/18 07:46	01/02/18 12:20	7440-36-0	
Thallium	ND	mg/L	0.00050	0.00012	1	01/02/18 07:46	01/02/18 12:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	mg/L	0.00020	0.000070	1	12/27/17 07:02	12/27/17 14:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	9600	mg/L	500	500	1			12/27/17 17:51	
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	7.2	Std. Units	0.10	0.10	1			12/26/17 12:33	H6
9056 IC Anions	Analytical Method: EPA 9056A								
Chloride	2590	mg/L	800	358	1000			01/12/18 14:40	16887-00-6
Fluoride	ND	mg/L	0.50	0.18	1			01/11/18 14:31	16984-48-8
Sulfate	3100	mg/L	700	393	1000			01/12/18 14:40	14808-79-8

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ANALYTICAL RESULTS

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: MW-3	Lab ID: 7579575003	Collected: 12/20/17 13:55	Received: 12/22/17 07:21	Matrix: Water					
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 Metals, Total	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lithium	0.92	mg/L	0.050	0.012	1	12/26/17 07:50	12/29/17 14:21	7439-93-2	
Arsenic	ND	mg/L	0.0060	0.0037	1	12/26/17 06:05	12/27/17 15:45	7440-38-2	
Barium	0.034	mg/L	0.010	0.0033	1	12/26/17 06:05	12/27/17 15:45	7440-39-3	
Beryllium	ND	mg/L	0.0010	0.00017	1	12/26/17 06:05	12/27/17 15:45	7440-41-7	
Boron	1.3	mg/L	0.10	0.018	1	12/26/17 06:05	12/27/17 15:45	7440-42-8	
Cadmium	ND	mg/L	0.0050	0.00061	1	12/26/17 06:05	12/27/17 15:45	7440-43-9	
Calcium	563	mg/L	1.0	0.33	1	12/26/17 06:05	12/27/17 15:45	7440-70-2	
Chromium	ND	mg/L	0.0070	0.0021	1	12/26/17 06:05	12/27/17 15:45	7440-47-3	
Cobalt	0.0086	mg/L	0.0025	0.00049	1	12/26/17 06:05	12/27/17 15:45	7440-48-4	
Lead	ND	mg/L	0.010	0.0017	1	12/26/17 06:05	12/27/17 15:45	7439-92-1	
Molybdenum	ND	mg/L	0.030	0.0097	1	12/26/17 06:05	12/27/17 15:45	7439-98-7	
Selenium	ND	mg/L	0.020	0.0042	1	12/26/17 06:05	12/27/17 15:45	7782-49-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	ND	mg/L	0.0010	0.00025	1	01/02/18 07:46	01/02/18 12:31	7440-36-0	
Thallium	ND	mg/L	0.00050	0.00012	1	01/02/18 07:46	01/02/18 12:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	mg/L	0.00020	0.000070	1	12/27/17 07:02	12/27/17 14:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	5790	mg/L	83.3	83.3	1			12/27/17 17:49	
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	6.8	Std. Units	0.10	0.10	1			12/26/17 12:47	H6
9056 IC Anions	Analytical Method: EPA 9056A								
Chloride	380	mg/L	80.0	35.8	100			01/11/18 17:48	16887-00-6
Fluoride	0.61	mg/L	0.50	0.18	1			01/11/18 14:49	16984-48-8
Sulfate	2830	mg/L	700	393	1000			01/12/18 14:58	14808-79-8

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ANALYTICAL RESULTS

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: BW-1	Lab ID: 7579575004	Collected: 12/20/17 12:10	Received: 12/22/17 07:21	Matrix: Water					
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 Metals, Total	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	mg/L	0.0060	0.0037	1	12/26/17 06:05	12/27/17 15:51	7440-38-2	
Lithium	0.73	mg/L	0.050	0.012	1	12/28/17 07:50	12/29/17 14:25	7439-93-2	
Barium	0.044	mg/L	0.010	0.0033	1	12/26/17 06:05	12/27/17 15:51	7440-39-3	
Beryllium	ND	mg/L	0.0010	0.00017	1	12/26/17 06:05	12/27/17 15:51	7440-41-7	
Boron	3.5	mg/L	0.10	0.018	1	12/26/17 06:05	12/27/17 15:51	7440-42-8	
Cadmium	ND	mg/L	0.0050	0.00061	1	12/26/17 06:05	12/27/17 15:51	7440-43-9	
Calcium	658	mg/L	1.0	0.33	1	12/26/17 06:05	12/27/17 15:51	7440-70-2	
Chromium	ND	mg/L	0.0070	0.0021	1	12/26/17 06:05	12/27/17 15:51	7440-47-3	
Cobalt	0.0034	mg/L	0.0025	0.00049	1	12/26/17 06:05	12/27/17 15:51	7440-48-4	
Lead	ND	mg/L	0.010	0.0017	1	12/26/17 06:05	12/27/17 15:51	7439-92-1	
Molybdenum	ND	mg/L	0.030	0.0097	1	12/26/17 06:05	12/27/17 15:51	7439-98-7	
Selenium	ND	mg/L	0.020	0.0042	1	12/26/17 06:05	12/27/17 15:51	7782-49-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	ND	mg/L	0.0010	0.00025	1	01/02/18 07:46	01/02/18 12:35	7440-36-0	
Thallium	ND	mg/L	0.00050	0.00012	1	01/02/18 07:46	01/02/18 12:35	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	mg/L	0.00020	0.000070	1	12/27/17 07:02	12/27/17 14:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	6140	mg/L	83.3	83.3	1			12/27/17 17:50	
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	7.2	Std. Units	0.10	0.10	1			12/26/17 12:21	H6
9056 IC Anions	Analytical Method: EPA 9056A								
Chloride	1030	mg/L	80.0	35.8	100			01/11/18 18:06	16887-00-6
Fluoride	ND	mg/L	0.50	0.18	1			01/11/18 15:07	16984-48-8
Sulfate	2620	mg/L	700	393	1000			01/12/18 15:16	14808-79-8

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ANALYTICAL RESULTS

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: DUP	Lab ID: 7579575005	Collected:			Received: 12/22/17 07:21		Matrix: Water		
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 Metals, Total	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lithium	0.71	mg/L	0.050	0.012	1	12/26/17 07:50	12/29/17 14:30	7439-93-2	
Arsenic	ND	mg/L	0.0060	0.0037	1	12/26/17 06:05	12/27/17 15:58	7440-38-2	
Barium	0.044	mg/L	0.010	0.0033	1	12/26/17 06:05	12/27/17 15:58	7440-39-3	
Beryllium	ND	mg/L	0.0010	0.00017	1	12/26/17 06:05	12/27/17 15:58	7440-41-7	
Boron	3.3	mg/L	0.10	0.018	1	12/26/17 06:05	12/27/17 15:58	7440-42-8	
Cadmium	ND	mg/L	0.0050	0.00061	1	12/26/17 06:05	12/27/17 15:58	7440-43-9	
Calcium	630	mg/L	1.0	0.33	1	12/26/17 06:05	12/27/17 15:58	7440-70-2	
Chromium	ND	mg/L	0.0070	0.0021	1	12/26/17 06:05	12/27/17 15:58	7440-47-3	
Cobalt	0.0031	mg/L	0.0025	0.00049	1	12/26/17 06:05	12/27/17 15:58	7440-48-4	
Lead	ND	mg/L	0.010	0.0017	1	12/26/17 06:05	12/27/17 15:58	7439-92-1	
Molybdenum	ND	mg/L	0.030	0.0097	1	12/26/17 06:05	12/27/17 15:58	7439-98-7	
Selenium	ND	mg/L	0.020	0.0042	1	12/26/17 06:05	12/27/17 15:58	7782-49-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	ND	mg/L	0.0010	0.00025	1	01/02/18 07:46	01/02/18 12:39	7440-36-0	
Thallium	ND	mg/L	0.00050	0.00012	1	01/02/18 07:46	01/02/18 12:39	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	mg/L	0.00020	0.000070	1	12/27/17 07:02	12/27/17 14:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	6100	mg/L	83.3	83.3	1			12/27/17 17:50	
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	7.4	Std. Units	0.10	0.10	1			12/26/17 12:52	H6
9056 IC Anions	Analytical Method: EPA 9056A								
Chloride	1080	mg/L	80.0	35.8	100			01/11/18 18:24	16887-00-6
Fluoride	ND	mg/L	0.50	0.18	1			01/11/18 15:25	16984-48-8
Sulfate	2870	mg/L	700	393	1000			01/12/18 15:33	14808-79-8

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch:	89710	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
Associated Lab Samples:	7579575001, 7579575002, 7579575003, 7579575004, 7579575005		

METHOD BLANK: 397217 Matrix: Water

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

Parameter	Units	Blank	Reporting	MDL	Analyzed	Qualifiers
		Result	Limit			
Mercury	mg/L	ND	0.00020	0.000070	12/27/17 13:51	

LABORATORY CONTROL SAMPLE: 397218

Parameter	Units	Spike	LCS	LCS	% Rec	Qualifiers
		Conc.	Result	% Rec	Limits	
Mercury	mg/L	.0025	0.0028	112	83-117	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 397219 397220

Parameter	Units	MS	MSD	MS	MSD	MS	MSD	% Rec	% Rec	Max	RPD	RPD	Qual
		7579575001	Spike										
Mercury	mg/L	ND	.0025	.0025	0.0032	0.0028	127	112	37-137	13	20		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch:	89626	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3010	Analysis Description:	6010 MET
Associated Lab Samples:	7579575001, 7579575002, 7579575003, 7579575004, 7579575005		

METHOD BLANK: 396893 Matrix: Water

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

Parameter	Units	Blank	Reporting	MDL	Analyzed	Qualifiers
		Result	Limit			
Arsenic	mg/L	ND	0.0060	0.0037	12/26/17 13:33	
Barium	mg/L	ND	0.010	0.0033	12/26/17 13:33	
Beryllium	mg/L	ND	0.0010	0.00017	12/26/17 13:33	
Boron	mg/L	ND	0.10	0.018	12/26/17 13:33	
Cadmium	mg/L	ND	0.0050	0.00061	12/26/17 13:33	
Calcium	mg/L	ND	1.0	0.33	12/26/17 13:33	
Chromium	mg/L	ND	0.0070	0.0021	12/26/17 13:33	
Cobalt	mg/L	ND	0.0025	0.00049	12/26/17 13:33	
Lead	mg/L	ND	0.010	0.0017	12/26/17 13:33	
Molybdenum	mg/L	ND	0.030	0.0097	12/27/17 15:00	
Selenium	mg/L	ND	0.020	0.0042	12/26/17 13:33	

LABORATORY CONTROL SAMPLE: 396894

Parameter	Units	Spike	LCS	LCS	% Rec	Qualifiers
		Conc.	Result	% Rec	Limits	
Arsenic	mg/L	1	1.1	106	83-111	
Barium	mg/L	1	1.1	106	87-116	
Beryllium	mg/L	1	1.1	108	86-113	
Boron	mg/L	1	1.1	109	80-120	
Cadmium	mg/L	1	1.1	108	86-113	
Calcium	mg/L	10	10.6	106	85-114	
Chromium	mg/L	1	1.0	104	89-114	
Cobalt	mg/L	1	1.1	112	90-117	
Lead	mg/L	1	1.1	112	90-117	
Molybdenum	mg/L	1	1.1	106	80-120	
Selenium	mg/L	1	1.1	112	83-121	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 396895 396896

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		7579488001 Result	Spike Conc.	Spike Conc.	MS Result						
Arsenic	mg/L	ND	1	1	1.1	1.1	110	110	71-126	1	20
Barium	mg/L	90.8 ug/L	1	1	1.2	1.2	108	108	66-124	0	20
Beryllium	mg/L	ND	1	1	1.1	1.1	110	110	67-123	0	20
Boron	mg/L	ND	1	1	1.1	1.1	110	111	76-126	1	20
Cadmium	mg/L	ND	1	1	1.1	1.1	111	111	70-130	0	20
Calcium	mg/L	103000 ug/L	10	10	111	109	78	54	10-200	2	20

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		396895		396896								
Parameter	Units	MS		MSD		MS Result	% Rec	MSD % Rec	% Rec	Max		
		7579488001	Spike Conc.	Spike Conc.	MS Result					RPD	RPD	Qual
Chromium	mg/L	ND	1	1	1.0	1.0	103	103	68-123	0	20	
Cobalt	mg/L	ND	1	1	1.1	1.1	111	111	52-134	0	20	
Lead	mg/L	ND	1	1	1.1	1.1	111	111	56-130	0	20	
Molybdenum	mg/L	ND	1	1	1.1	1.1	107	107	75-125	0	20	
Selenium	mg/L	ND	1	1	1.2	1.2	115	115	70-139	0	20	

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch: 97879 Analysis Method: EPA 6010

QC Batch Method: EPA 3010 Analysis Description: 6010 MET

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

METHOD BLANK: 421455 Matrix: Water

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

Parameter	Units	Blank	Reporting	MDL	Analyzed	Qualifiers
		Result	Limit			
Lithium	mg/L	ND	0.050	0.012	12/29/17 13:45	

LABORATORY CONTROL SAMPLE: 421456

Parameter	Units	Spike	LCS	LCS	% Rec	Qualifiers
		Conc.	Result	% Rec	Limits	
Lithium	mg/L	1	0.98	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 421457 421458

Parameter	Units	MS	MSD	MS	MSD	MS	MSD	% Rec	% Rec	Max	RPD	RPD	Qual
		7579575001	Spike										
Lithium	mg/L	0.38	1	1	1.4	1.3	97	94	80-120	3	20		

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch: 98006 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

METHOD BLANK: 422024 Matrix: Water

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

Parameter	Units	Blank	Reporting	MDL	Analyzed	Qualifiers
		Result	Limit			
Antimony	mg/L	ND	0.0010	0.00025	01/02/18 11:53	
Thallium	mg/L	ND	0.00050	0.00012	01/02/18 11:53	

LABORATORY CONTROL SAMPLE: 422025

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.02	0.018	92	85-115	
Thallium	mg/L	.02	0.018	90	82-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 422026 422027

Parameter	Units	Result	MS		MSD		MS		MSD		% Rec	Max			
			Spike	Conc.	Spike	Conc.	MS	Result	MSD	Result	MS	% Rec	Limits	RPD	RPD
Antimony	mg/L	ND	.02	.02	0.0085		0.0084		42		41	80-120	2	20	M1
Thallium	mg/L	ND	.02	.02	0.019		0.019		96		95	80-120	1	20	

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch:	89659	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
Associated Lab Samples:	7579575001		

METHOD BLANK: 397058 Matrix: Water

Associated Lab Samples: 7579575001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	12/22/17 22:42	

LABORATORY CONTROL SAMPLE: 397059

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	258	103	85-115	

SAMPLE DUPLICATE: 397060

Parameter	Units	7579517001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	616	615	0	5	

SAMPLE DUPLICATE: 397061

Parameter	Units	7579575001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	4250	4250	0	5	

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch:	89790	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
Associated Lab Samples:	7579575002, 7579575003, 7579575004, 7579575005		

METHOD BLANK: 397449 Matrix: Water

Associated Lab Samples: 7579575002, 7579575003, 7579575004, 7579575005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	12/27/17 17:46	

LABORATORY CONTROL SAMPLE: 397450

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	241	96	85-115	

SAMPLE DUPLICATE: 397537

Parameter	Units	7579600013 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	70300	70400	0	5	

SAMPLE DUPLICATE: 397538

Parameter	Units	7579600014 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	54700	53700	2	5	

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch: 89684 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

LABORATORY CONTROL SAMPLE: 397144

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	6	6.0	100	99-101	H6

SAMPLE DUPLICATE: 397145

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	6.8	0	20	H6

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QUALITY CONTROL DATA

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch:	90492	Analysis Method:	EPA 9056A
QC Batch Method:	EPA 9056A	Analysis Description:	9056 IC Anions
Associated Lab Samples:	7579575001, 7579575002, 7579575003, 7579575004, 7579575005		

METHOD BLANK: 401010 Matrix: Water

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

Parameter	Units	Blank	Reporting	MDL	Analyzed	Qualifiers
		Result	Limit			
Chloride	mg/L	ND	0.80	0.36	01/11/18 12:44	
Fluoride	mg/L	ND	0.50	0.18	01/11/18 12:44	
Sulfate	mg/L	ND	0.70	0.39	01/11/18 12:44	

LABORATORY CONTROL SAMPLE: 401011

Parameter	Units	Spike	LCS	LCS	% Rec	Qualifiers
		Conc.	Result	% Rec	Limits	
Chloride	mg/L	5	5.0	101	90-110	
Fluoride	mg/L	5	5.0	100	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 401012 401013

Parameter	Units	MS	MSD	MS	MSD	MS	MSD	% Rec	% Rec	RPD	RPD	Max
		7579315001	Spike	Spike	Result	Result	% Rec	Limits	RPD	RPD	Qual	
Chloride	mg/L	6.9	5.6	5.6	13.6	13.7	121	122	80-120	1	15	M1
Fluoride	mg/L	0.24J	5.6	5.6	4.5	4.5	76	78	80-120	2	15	M1
Sulfate	mg/L	23.8	50	50	77.9	78.4	108	109	80-120	1	15	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: MW-1	Lab ID: 7579575001	Collected: 12/20/17 12:55	Received: 12/22/17 07:21	Matrix: Water	
PWS:	Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	
Radium-226	EPA 903.1	1.26 ± 0.680 (0.686) C:NA T:86%	pCi/L	01/12/18 17:39	13982-63-3
Radium-228	EPA 904.0	2.46 ± 0.888 (1.38) C:75% T:61%	pCi/L	01/11/18 12:48	15262-20-1

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: MW-2	Lab ID: 7579575002	Collected: 12/20/17 13:25	Received: 12/22/17 07:21	Matrix: Water		
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.945 ± 0.578 (0.709) C:NA T:100%	pCi/L	01/12/18 17:54	13982-63-3	
Radium-228	EPA 904.0	4.07 ± 0.940 (0.702) C:80% T:84%	pCi/L	01/11/18 12:48	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: MW-3	Lab ID: 7579575003	Collected: 12/20/17 13:55	Received: 12/22/17 07:21	Matrix: Water		
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.626 ± 0.567 (0.835) C:NA T:95%	pCi/L	01/12/18 17:54	13982-63-3	
Radium-228	EPA 904.0	2.77 ± 0.728 (0.734) C:78% T:84%	pCi/L	01/11/18 12:48	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: BW-1	Lab ID: 7579575004	Collected: 12/20/17 12:10	Received: 12/22/17 07:21	Matrix: Water		
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.07 ± 0.681 (0.878) C:NA T:92%	pCi/L	01/12/18 17:54	13982-63-3	
Radium-228	EPA 904.0	3.13 ± 0.788 (0.742) C:76% T:85%	pCi/L	01/11/18 12:48	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Sample: DUP	Lab ID: 7579575005	Collected:	Received: 12/22/17 07:21	Matrix: Water	
PWS:	Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	
Radium-226	EPA 903.1	1.54 ± 0.774 (0.877) C:NA T:90%	pCi/L	01/12/18 17:54	13982-63-3
Radium-228	EPA 904.0	2.78 ± 0.712 (0.650) C:81% T:80%	pCi/L	01/11/18 12:49	15262-20-1

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch: 283643 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

METHOD BLANK: 1392418 Matrix: Water

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.506 ± 0.433 (0.587) C:NA T:96%	pCi/L	01/12/18 17:39	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

QC Batch: 283773 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

METHOD BLANK: 1392877 Matrix: Water

Associated Lab Samples: 7579575001, 7579575002, 7579575003, 7579575004, 7579575005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.202 ± 0.329 (0.715) C:79% T:82%	pCi/L	01/11/18 12:47	

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QUALIFIERS

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

LABORATORIES

PASI-D Pace Analytical Services - Dallas

PASI-N Pace Analytical Services - New Orleans

PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
7579575001	MW-1	EPA 3010	89626	EPA 6010	89702
7579575001	MW-1	EPA 3010	97879	EPA 6010	97949
7579575002	MW-2	EPA 3010	89626	EPA 6010	89702
7579575002	MW-2	EPA 3010	97879	EPA 6010	97949
7579575003	MW-3	EPA 3010	89626	EPA 6010	89702
7579575003	MW-3	EPA 3010	97879	EPA 6010	97949
7579575004	BW-1	EPA 3010	89626	EPA 6010	89702
7579575004	BW-1	EPA 3010	97879	EPA 6010	97949
7579575005	DUP	EPA 3010	89626	EPA 6010	89702
7579575005	DUP	EPA 3010	97879	EPA 6010	97949
7579575001	MW-1	EPA 3010	98006	EPA 6020	98126
7579575002	MW-2	EPA 3010	98006	EPA 6020	98126
7579575003	MW-3	EPA 3010	98006	EPA 6020	98126
7579575004	BW-1	EPA 3010	98006	EPA 6020	98126
7579575005	DUP	EPA 3010	98006	EPA 6020	98126
7579575001	MW-1	EPA 7470	89710	EPA 7470	89738
7579575002	MW-2	EPA 7470	89710	EPA 7470	89738
7579575003	MW-3	EPA 7470	89710	EPA 7470	89738
7579575004	BW-1	EPA 7470	89710	EPA 7470	89738
7579575005	DUP	EPA 7470	89710	EPA 7470	89738
7579575001	MW-1	EPA 903.1	283643		
7579575002	MW-2	EPA 903.1	283643		
7579575003	MW-3	EPA 903.1	283643		
7579575004	BW-1	EPA 903.1	283643		
7579575005	DUP	EPA 903.1	283643		
7579575001	MW-1	EPA 904.0	283773		
7579575002	MW-2	EPA 904.0	283773		
7579575003	MW-3	EPA 904.0	283773		
7579575004	BW-1	EPA 904.0	283773		
7579575005	DUP	EPA 904.0	283773		
7579575001	MW-1	SM 2540C	89659		
7579575002	MW-2	SM 2540C	89790		
7579575003	MW-3	SM 2540C	89790		
7579575004	BW-1	SM 2540C	89790		
7579575005	DUP	SM 2540C	89790		
7579575001	MW-1	EPA 9040	89684		
7579575002	MW-2	EPA 9040	89684		
7579575003	MW-3	EPA 9040	89684		
7579575004	BW-1	EPA 9040	89684		
7579575005	DUP	EPA 9040	89684		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 16215106.00/Sandy Creek

Pace Project No.: 7579575

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
7579575001	MW-1	EPA 9056A	90492		
7579575002	MW-2	EPA 9056A	90492		
7579575003	MW-3	EPA 9056A	90492		
7579575004	BW-1	EPA 9056A	90492		
7579575005	DUP	EPA 9056A	90492		

REPORT OF LABORATORY ANALYSIS

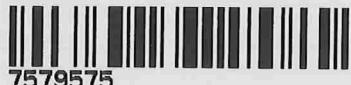
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	Document Name: Sample Condition Upon Receipt	Document Revised: 09-26-17 Page 1 of 1
	Document No.: F-DAL-C-001-rev.07	Issuing Authority: Pace Dallas Quality Office

Sample Condition Upon Receipt

Dallas Ft Worth

WO# : 7579575



7579575

Client Name: SCS Engineers Project Work order:

Courier: FedEX UPS USPS Client LSO PACE Other:

Tracking #:

Custody Seal on Cooler/Box: Yes No Seals Intact: Yes No NA

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: IR CSH4 Type of Ice: Wet Blue None Sample Received on ice, cooling process has begun

Cooler Temp °C: 8.8 (Recorded) -0.5 (Correction Factor) 8.3 (Actual) (Thermal preservation not required)

Temp should be above freezing to 6°C

Chain of Custody Present	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 1
Chain of Custody filled out	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 2
Chain of Custody relinquished	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 3
Sampler name & signature on COC	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 4
Sample received within HT <i>DVP 12/22/17</i>	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 5 <i>pH out of Hold</i>
Short HT analyses (<72 hrs)	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 6
Rush TAT requested	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 7
Sufficient Volume received	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 8
Correct Container used	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 9
Pace Container used	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 10
Container Intact	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 11
Unpreserved 503A soil frozen within 48 hrs	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 12
Filtered volume received for Dissolved tests	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 13
Sample labels match COC	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 14a. pH Strip Lot #: <u>6705201</u> Original pH: pH<2 <input checked="" type="checkbox"/> pH>9 <input type="checkbox"/> pH>12 <input type="checkbox"/> Neutral <input checked="" type="checkbox"/> Lot# of Iodine strip: _____ Lot# of Lead Acetate strip: _____
Include date/time/ID/analyses Matrix: <u>Water</u>	14b. Preservation: Lot# and adjusted pH: <u>HNO3 99448</u> pH<2 <input checked="" type="checkbox"/> pH>9 <input type="checkbox"/> pH>12
All containers needing preservation have been checked and found to be in Compliance with EPA recommendation (includes residual chlorine checks) Exception: VOA, coliform, O&G	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 15.
Do containers require preservation at the lab <i>Added 1.0/1.5mL HNO3 to sample(002,003)(RAD) respectively 12/22/17</i>	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 16.
Are soil samples (volatiles) received in Bulk <input type="checkbox"/> Terracore <input type="checkbox"/> EnCore <input type="checkbox"/> NA <input type="checkbox"/>	17.
Trip Blank present	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 18. List State <input checked="" type="checkbox"/>
Trip Blank Custody Seals Intact	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
Pace Trip Blank Lot# (if purchased):	
Headspace in VOA (>6mm)	Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> 19.
Project sampled in USDA Regulated Area:	Yes <input type="checkbox"/> No <input type="checkbox"/> 20.

Triage Person: BB Date: 12/22/17 Login Person: DVP Date: 12/22/17 Labeling Person: DVP Date: 12/22/17

Client Notification/Resolution/Comments:

Person Contacted: _____ Date: _____

Comments/Resolution: _____

Project Manager Review: Val R. Ziegler



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

**APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL DATA**

APPENDIX C - GROUNDWATER ANALYTICAL DATA
2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
SANDY CREEK ENERGY STATION
2161 RATTLESNAKE ROAD
RIESEL, TX 76682

	Boron	Calcium	Chloride	pH at 25°C	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Lead	Lithium	Merkury	Molybdenum	Selenium	Thallium	Radium-226	Radium-228	Combined Radium	Fluoride
Units	mg/L	mg/L	mg/L	Std. Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	pCi/L	pCi/L	mg/L
MW-1																							
12/14/2015	1.2	454	253	7.6	2090	4090	<0.0010	<0.0050	0.044	<0.0010	<0.0010	0.0073	<0.0025	<0.0050	0.43	<0.00020	<0.010	0.16	<0.00050	1.04 ± 0.838	1.09 ± 0.523	2.13	<0.30
2/25/2016	1.4	520	236	7.5	2190	4060	<0.0010	<0.0050	0.033	<0.0010	<0.0010	0.0074	<0.0025	0.0084	0.39	<0.00020	<0.010	0.2	<0.00050	0.922 ± 0.720	1.46 ± 0.496	2.382	<0.30
5/11/2016	2.6	1030	402	7.2	2580	5260	<0.0010	0.12	1	0.029	<0.0020	0.69	0.087	0.21	0.78	<0.00020	<0.020	0.039	0.00089	3.94 ± 1.31	8.39 ± 1.74	12.33	<0.30
8/16/2016	1.3	535	239	6.8	2300	3880	<0.0010	<0.0050	0.022	<0.0010	<0.0010	<0.0050	<0.0025	<0.0050	0.41	<0.00020	<0.010	0.13	<0.00050	0.593 ± 0.620	3.29 ± 0.828	3.883	0.35
11/17/2016	1.2	542	216	7	2130	3720	<0.0010	<0.0050	0.018	<0.0010	<0.0010	<0.0050	<0.0025	<0.0050	0.37	<0.00020	<0.020	0.16	<0.00050	0.338 ± 0.339	2.49 ± 0.783	2.828	<0.30
2/23/2017	1.3	531	223	7	2350	3980	<0.0010	<0.010	<0.20	<0.0050	<0.0050	<0.010	<0.010	<0.0050	0.44	<0.00020	<0.010	0.066	<0.00050	-0.207 ± 0.945	3.13 ± 0.908	2.923	<0.30
6/7/2017	1.2	530	203	7.5	2010	3680	<0.0010	<0.0050	0.019	<0.0010	<0.0010	<0.0050	<0.0025	<0.0050	0.36	<0.00020	<0.020	0.15	<0.00050	0.000 ± 0.449	1.30 ± 0.518	1.3	<0.30
8/24/2017	1.2	518	241	7.1	2620	4550	<0.0010	<0.0050	0.02	<0.0010	<0.0010	<0.0050	<0.0025	<0.0050	0.395	<0.00020	<0.020	0.17	<0.00050	0.577 ± 0.429	1.69 ± 0.634	2.267	0.4
12/20/2017	1.3	548	248	7.4	2340	4250	<0.0010	<0.0060	0.017	<0.0010	<0.0050	<0.0070	<0.0025	<0.010	0.38	<0.00020	<0.030	0.18	<0.00050	1.26 ± 0.680	2.46 ± 0.888	3.72	1.1
MW-2																							
12/14/2015	1.9	569	1890	6.7	2810	8520	<0.0010	<0.0050	0.031	<0.0010	<0.0010	<0.0050	0.0061	<0.0050	0.69	<0.00020	<0.010	0.10	<0.00050	1.41 ± 0.938	2.76 ± 0.771	4.17	0.98
2/25/2016	2.4	697	2080	7.3	2890	8070	<0.0010	0.014	0.038	<0.0010	<0.0010	<0.0050	<0.011	<0.0050	0.74	<0.00020	<0.010	0.10	<0.00050	0.857 ± 0.590	2.57 ± 0.665	3.427	<0.30
5/11/2016	2.2	613	2340	6.7	3010	9930	<0.0010	0.0059	0.027	<0.0010	<0.0010	<0.0050	0.0079	<0.0050	0.87	<0.00020	<0.010	0.10	<0.00050	0.859 ± 0.561	3.13 ± 0.822	3.989	<0.30
8/16/2016	2.1	680	2440	6.7	3080	7870	<0.0020	<0.0050	0.021	<0.0010	<0.0010	<0.0050	0.0084	<0.0050	0.84	<0.00020	<0.010	0.10	<0.00050	0.237 ± 0.329	3.28 ± 0.775	3.517	0.64
11/17/2016	1.9	701	2140	6.7	2770	9680	<0.0010	0.0059	0.024	<0.0010	<0.0010	<0.0050	0.0064	<0.0050	0.82	<0.00020	<0.010	0.24	<0.00050	0.923 ± 0.594	3.16 ± 0.826	4.083	0.35
2/23/2017	1.9	646	2320	6.9	3110	9630	<0.0010	<0.010	<0.20	<0.0050	<0.0050	<0.010	<0.010	<0.0050	0.8	<0.00020	<0.010	0.10	<0.00050	1.52 ± 1.50	4.27 ± 1.07	5.79	0.46
6/7/2017	1.9	640	2420	7.5	2970	14200	<0.0010	<0.0050	0.016	<0.0010	<0.0010	<0.0050	0.0051	<0.0050	0.75	<0.00020	<0.020	0.10	<0.00050	0.344 ± 0.415	3.82 ± 0.931	4.164	1.3
8/24/2017	1.9	664	2520	6.8	3710	9600	<0.0010	<0.010	0.017	<0.0010	<0.0020	<0.0050	0.0065	<0.010	0.729	<0.00020	<0.020	0.26	<0.00050	1.12 ± 0.610	3.78 ± 0.960	4.9	0.32
12/20/2017	2.2	716	2590	7.2	3100	9600	<0.0010	<0.012	0.022	<0.0010	<0.010	<0.014	0.0072	<0.020	0.74	<0.00020	<0.030	0.40	<0.00050	0.945 ± 0.578	4.07 ± 0.940	5.015	<0.50
MW-3																							
12/14/2015	0.35	67.6	12.3	7.2	135	586	<0.0010	<0.0050	0.021	<0.0010	<0.0010	<0.0050	<0.0025	<0.0050	<0.050	<0.00020	<0.010	0.10	<0.00050	0.997 ± 0.813	0.736 ± 0.505	1.733	0.62
2/25/2016	1.2	479	347	7	2430	5400	<0.0010	0.0061	0.052	<0.0010	<0.0010	<0.0050	0.0098	<0.0050	0.85	<0.00020	<0.010	0.10	<0.00050	1.26 ± 0.762	3.02 ± 0.791	4.28	0.9
5/11/2016	1.1	465	349	6.5	2330	5440	<0.0010	<0.0050	0.024	<0.0010	<0.0010	<0.0050	0.0059	<0.0050	0.65	<0.00020	<0.010	0.10	<0.00050	1.54 ± 0.797	1.62 ± 0.547	3.16	<0.30
8/16/2016	1.2	505	381	7.3	2950	5680	<0.0010	<0.0050	0.018	<0.0010	<0.0010	<0.0050	0.006	<0.0050	0.98	<0.00020	<0.010	0.10	<0.00050	0.891 ± 0.626	5.10 ± 1.13	5.991	<0.30
11/17/2016	1.1	494	322	6.6	2420	5420	<0.0010	<0.0050	0.028	<0.0010	<0.0010	<0.0050	0.0068	<0.0050	0.94	<0.00020	<0.020	0.10	<0.00050	0.872 ± 0.059	5.23 ± 1.30	6.102	<0.30
2/23/2017	1.1	389	202	7	1450	2900	<0.0010	<0.010	<0.20	<0.0050	<0.0050	<0.010	<0.010	<0.0050	0.7	<0.00020	<0.010	0.10	<0.00050	-0.239 ± 1.09	4.07 ± 1.03	3.831	0.45
6/7/2017	1.2	486	327	7.1	2260	4740	<0.0010	<0.0050	0.015	<0.0010	<0.0010	<0.0050	0.0058	<0.0050	0.62	<0.00020	<0.020	0.10	<0.00050	0.941 ± 0.658	2.76 ± 0.765	3.701	0.57
8/24/2017	1.1	519	401	6.5	2890	6160	<0.0010	<0.010	0.014	<0.0010	<0.0020	<0.0050	0.0084	<0.010	1.03	<0.00020	<0.020	0.26	<0.00050	1.26 ± 0.600	4.41 ± 1.07	5.67	<0.30
12/20/2017	1.3	563	380	6.8	2830	5790	<0.0010	<0.0060	0.034	<0.0010	<0.0050	<0.0070	0.0086	<0.010	0.92	<0.00020	<0.030	0.20	<0.00050	0.626 ± 0.567	2.77 ± 0.728	3.396	0.61
BW-1																							
12/14/2015	1.8	465	727	9.5	2130	4900	<0.0010	<0.0050	0.17	<0.0010	<0.0010	0.015	0.0026	<0.0050	0.7	<0.00020	<0.010	0.10	<0.00073	0.900 ± 0.728	1.13 ± 0.513	2.03	<0.30
2/25/2016	3.5	586	1050	7.4	2690	6420	<0.0010	0.015	0.055	<0.0010	<0.0010	0.0053	0.0035	0.0069	0.71	<0.00020	<0.010	0.10	<0.00050	0.887 ± 0.697	1.82 ± 0.541	2.707	0.67
5/11/2016	4	566	1120	7	2610	6360	<0.0010	0.0084	0.04	<0.0010	<0.0010	0.011	0.0035	0.0091	0.79	<0.00020	<0.010	0.10	<0.00050	2.40 ± 0.944	2.80 ± 0.710	5.2	0.32
8/16/2016	3.7	566	1130	7.2	2720	6280	<0.0010	0.0064	0.04	<0.0010	<0.0010	0.0073	0.0029	<0.0050	0.78	<0.00020	<0.010	0.10	<0.00050	0.610 ± 0.483	3.42 ± 0.777	4.03	0.94
11/17/2016	2.8	548	991	6.8	2590	6400	<0.0010	0.0066	0.023	<0.0010	<0.0010	<0.0050	<0.0025	<0.0050	0.74	<0.00020	<0.010	0.22	<0.00050	0.605 ± 0.548	2.94 ± 0.799	3.545	0.85
2/23/2017	3.1	532	1080	7.2	2760	6280	<0.0010	<0.010	<0.20	<0.0050	<0.0050	<0.010	<0.010	<0.0050	0.73	<0.00020	<0.010	0.20	<0.00050	0.816 ± 0.983	4.07 ± 1.08	4.886	<0.30
6/7/2017	3.8	539	1020	7.7	2220	7320	<0.0010	<0.0050	0.026	<0.0010	<0.0010	<0.0050	<0.0025	<0.0050	0.79	<0.00020	<0.020	0.10	<0.00050	1.36 ± 0.685	3.13 ± 0.783	4.49	<0.30
8/24/2017	3.4	531	1160	7.1	2870	7260	<0.0010	<0.010	0.037	<0.0010	<0.0020	<0.0050	<0.0050	<0.010	0.738	<0.00020	<0.020	0.20	<0.00050	1.58 ± 0.602	2.80 ± 0.759	4.38	0.37
12/20/2017	3.5	658	1030	7.2	2620	6140	<0.0010	<0.0060	0.044	<0.0010	<0.0050	<0.0070	0.0034	<0.010	0.73	<0.00020	<0.030	0.20	<0.00050	1.07 ±			

APPENDIX D
DECEMBER 2017 RESULTS AND STATISTICAL LIMITS

Appendix D – December 2017 Results and Statistical Limits - MW-1						
MW-ID	CFR 257 Appendix	Constituent	Lab Result	MCL	Statistical Limit	Statistical Method
MW-1	III	Boron (mg/L)	1.3	n/a	2.6	Non-Parametric Prediction Limit
		Calcium (mg/L)	548	n/a	1030	Non-Parametric Prediction Limit
		Chloride (mg/L)	248	n/a	402	Non-Parametric Prediction Limit
		pH at 25°C	7.4	n/a	6.136 - 8.289	Parametric Prediction Limit
		Sulfate (mg/L)	2340	n/a	3402	Shewhart-Cusum Control Chart
		TDS (mg/L)	4250	n/a	6765	Shewhart-Cusum Control Chart
		Fluoride (mg/L)	1.1	4	0.4	Non-Parametric Prediction Limit
MW-1	IV	Antimony (mg/L)	<0.0010	0.006	0.001	Non-Parametric Prediction Limit
		Arsenic (mg/L)	<0.0060	0.01	0.12	Non-Parametric Prediction Limit
		Barium (mg/L)	0.017	2	1	Non-Parametric Prediction Limit
		Beryllium (mg/L)	<0.0010	0.004	0.029	Non-Parametric Prediction Limit
		Cadmium (mg/L)	<0.0050	0.005	0.001	Non-Parametric Prediction Limit
		Chromium (mg/L)	<0.0070	0.1	0.69	Non-Parametric Prediction Limit
		Cobalt (mg/L)	<0.0025	n/a	0.087	Non-Parametric Prediction Limit
		Lead (mg/L)	<0.010	0.015	0.21	Non-Parametric Prediction Limit
		Lithium (mg/L)	0.38	n/a	0.78	Non-Parametric Prediction Limit
		Mercury (mg/L)	<0.00020	0.002	0.0002	Non-Parametric Prediction Limit
		Molybdenum (mg/L)	<0.030	n/a	0.02	Non-Parametric Prediction Limit
		Selenium (mg/L)	0.18	0.05	0.2535	Shewhart-Cusum Control Chart
		Thallium (mg/L)	<0.00050	0.002	0.00089	Non-Parametric Prediction Limit
		Radium - 226 (pCi/L)	1.26 ± 0.680	n/a	n/a	n/a
		Radium - 228 (pCi/L)	2.46 ± 0.888	n/a	n/a	n/a
		Combined Radium (pCi/L)	3.72	5	12.33	Non-Parametric Prediction Limit
		Fluoride (mg/L)	1.1	4	0.4	Non-Parametric Prediction Limit

Bolded value indicates that constituent exceeded intrawell statistical limit

Appendix D – December 2017 Results and Statistical Limits - MW-2						
MW-ID	CFR 257 Appendix	Constituent	Lab Result	MCL	Statistical Limit	Statistical Method
MW-2	III	Boron (mg/L)	2.2	n/a	2.4	Non-Parametric Prediction Limit
		Calcium (mg/L)	716	n/a	874.4	Shewhart-Cusum Control Chart
		Chloride (mg/L)	2590	n/a	3336	Shewhart-Cusum Control Chart
		pH at 25°C	7.2	n/a	6.7 - 7.5	Non-Parametric Prediction Limit
		Sulfate (mg/L)	3100	n/a	4635	Shewhart-Cusum Control Chart
		TDS (mg/L)	9600	n/a	23969	Shewhart-Cusum Control Chart
		Fluoride* (mg/L)	<0.50	4	2.831	Shewhart-Cusum Control Chart
	IV	Antimony (mg/L)	<0.0010	0.006	0.001	Non-Parametric Prediction Limit
		Arsenic (mg/L)	<0.012	0.01	0.014	Non-Parametric Prediction Limit
		Barium (mg/L)	0.022	2	0.5299	Shewhart-Cusum Control Chart
		Beryllium (mg/L)	<0.0010	0.004	0.001	Non-Parametric Prediction Limit
		Cadmium (mg/L)*	<0.010	0.005	0.002	Non-Parametric Prediction Limit
		Chromium (mg/L)*	<0.014	0.1	0.005	Non-Parametric Prediction Limit
		Cobalt (mg/L)	0.0072	n/a	0.02189	Shewhart-Cusum Control Chart
		Lead (mg/L)	<0.020	0.015	0.01	Non-Parametric Prediction Limit
		Lithium (mg/L)	0.74	n/a	1.09	Shewhart-Cusum Control Chart
		Mercury (mg/L)	<0.00020	0.002	0.0002	Non-Parametric Prediction Limit
		Molybdenum (mg/L)	<0.030	n/a	0.024	Non-Parametric Prediction Limit
		Selenium (mg/L)	<0.040	0.05	0.026	Non-Parametric Prediction Limit
		Thallium (mg/L)	<0.00050	0.002	0.0005	Non-Parametric Prediction Limit
		Radium - 226 (pCi/L)	0.945 ± 0.578	n/a	n/a	n/a
		Radium - 228 (pCi/L)	4.07 ± 0.940	n/a	n/a	n/a
		Combined Radium (pCi/L)	5.015	5	8.09	Shewhart-Cusum Control Chart
		Fluoride (mg/L)	<0.50	4	2.831	Shewhart-Cusum Control Chart

Bolded value indicates that constituent exceeded intrawell statistical limit

Appendix D – December 2017 Results and Statistical Limits - MW-3						
MW-ID	CFR 257 Appendix	Constituent	Lab Result	MCL	Statistical Limit	Statistical Method
MW-3	III	Boron (mg/L)	1.3	n/a	1.2	Non-Parametric Prediction Limit
		Calcium (mg/L)	563	n/a	688.1	Shewhart-Cusum Control Chart
		Chloride (mg/L)	380	n/a	606.9	Shewhart-Cusum Control Chart
		pH at 25°C	6.8	n/a	8.09 - 5.71	Parametric Prediction Limit
		Sulfate (mg/L)	2830	n/a	4447	Shewhart-Cusum Control Chart
		TDS (mg/L)	5790	n/a	9375	Shewhart-Cusum Control Chart
		Fluoride* (mg/L)	0.61	4	2.201	Shewhart-Cusum Control Chart
	IV	Antimony (mg/L)	<0.0010	0.006	0.001	Non-Parametric Prediction Limit
		Arsenic (mg/L)	<0.0060	0.01	0.0061	Non-Parametric Prediction Limit
		Barium (mg/L)	0.034	2	0.3241	Shewhart-Cusum Control Chart
		Beryllium (mg/L)	<0.0010	0.004	0.001	Non-Parametric Prediction Limit
		Cadmium (mg/L)	<0.0050	0.005	0.002	Non-Parametric Prediction Limit
		Chromium (mg/L)	<0.0070	0.1	0.005	Non-Parametric Prediction Limit
		Cobalt (mg/L)	0.0086	n/a	0.02018	Shewhart-Cusum Control Chart
		Lead (mg/L)	<0.010	0.015	0.01	Non-Parametric Prediction Limit
		Lithium (mg/L)	0.92	n/a	2.336	Shewhart-Cusum Control Chart
		Mercury (mg/L)	<0.00020	0.002	0.0002	Non-Parametric Prediction Limit
		Molybdenum (mg/L)	<0.030	n/a	0.02	Non-Parametric Prediction Limit
		Selenium (mg/L)	<0.020	0.05	0.02	Non-Parametric Prediction Limit
		Thallium (mg/L)	<0.00050	0.002	0.0005	Non-Parametric Prediction Limit
		Radium - 226 (pCi/L)	0.626 ± 0.567	n/a	n/a	n/a
		Radium - 228 (pCi/L)	2.77 ± 0.728	n/a	n/a	n/a
		Combined Radium (pCi/L)	3.396	5	11.97	Shewhart-Cusum Control Chart
		Fluoride (mg/L)	0.61	4	2.201	Shewhart-Cusum Control Chart

Bolded value indicates that constituent exceeded introwell statistical limit

Appendix D – December 2017 Results and Statistical Limits - BW-1						
MW-ID	CFR 257 Appendix	Constituent	Lab Result	MCL	Statistical Limit	Statistical Method
BW-1	III	Boron (mg/L)	3.5	n/a	6.787	Shewhart-Cusum Control Chart
		Calcium (mg/L)	658	n/a	723.7	Shewhart-Cusum Control Chart
		Chloride (mg/L)	1030	n/a	1540	Shewhart-Cusum Control Chart
		pH at 25°C	7.2	n/a	6.8 - 9.5	Non-Parametric Prediction Limit
		Sulfate (mg/L)	2620	n/a	3884	Shewhart-Cusum Control Chart
		TDS (mg/L)	6140	n/a	10119	Shewhart-Cusum Control Chart
		Fluoride* (mg/L)	<0.50	4	2.356	Shewhart-Cusum Control Chart
	IV	Antimony (mg/L)	<0.0010	0.006	0.001	Non-Parametric Prediction Limit
		Arsenic (mg/L)	<0.0060	0.01	0.02645	Shewhart-Cusum Control Chart
		Barium (mg/L)	0.044	2	0.4562	Shewhart-Cusum Control Chart
		Beryllium (mg/L)	<0.0010	0.004	0.001	Non-Parametric Prediction Limit
		Cadmium (mg/L)	<0.0050	0.005	0.002	Non-Parametric Prediction Limit
		Chromium (mg/L)	<0.0070	0.1	0.02912	Shewhart-Cusum Control Chart
		Cobalt (mg/L)	0.0034	n/a	0.04052	Shewhart-Cusum Control Chart
		Lead (mg/L)	<0.010	0.015	0.0091	Non-Parametric Prediction Limit
		Lithium (mg/L)	0.73	n/a	0.9244	Shewhart-Cusum Control Chart
		Mercury (mg/L)	<0.00020	0.002	0.0002	Non-Parametric Prediction Limit
		Molybdenum (mg/L)	<0.030	n/a	0.022	Non-Parametric Prediction Limit
		Selenium (mg/L)	<0.020	0.05	0.02	Non-Parametric Prediction Limit
		Thallium (mg/L)	<0.00050	0.002	0.00073	Non-Parametric Prediction Limit
		Radium - 226 (pCi/L)	1.07 ± 0.681	n/a	n/a	n/a
		Radium - 228 (pCi/L)	3.13 ± 0.788	n/a	n/a	n/a
		Combined Radium (pCi/L)	4.2	5	9.354	Shewhart-Cusum Control Chart
		Fluoride (mg/L)	<0.50	4	2.356	Shewhart-Cusum Control Chart

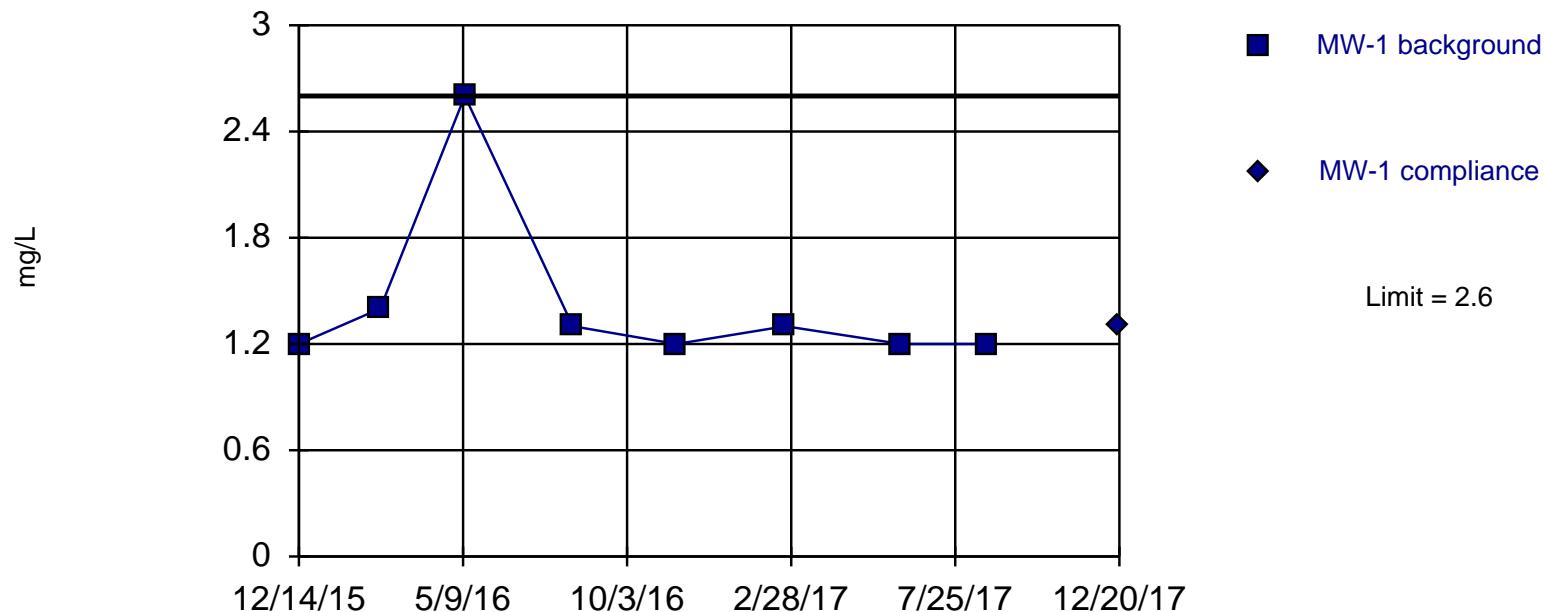
Bolded value indicates that constituent exceeded introwell statistical limit

**APPENDIX E
STATISTICAL ANALYSIS GRAPHS**

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Boron Analysis Run 1/25/2018 11:37 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Boron (mg/L) Analysis Run 1/25/2018 11:38 AM

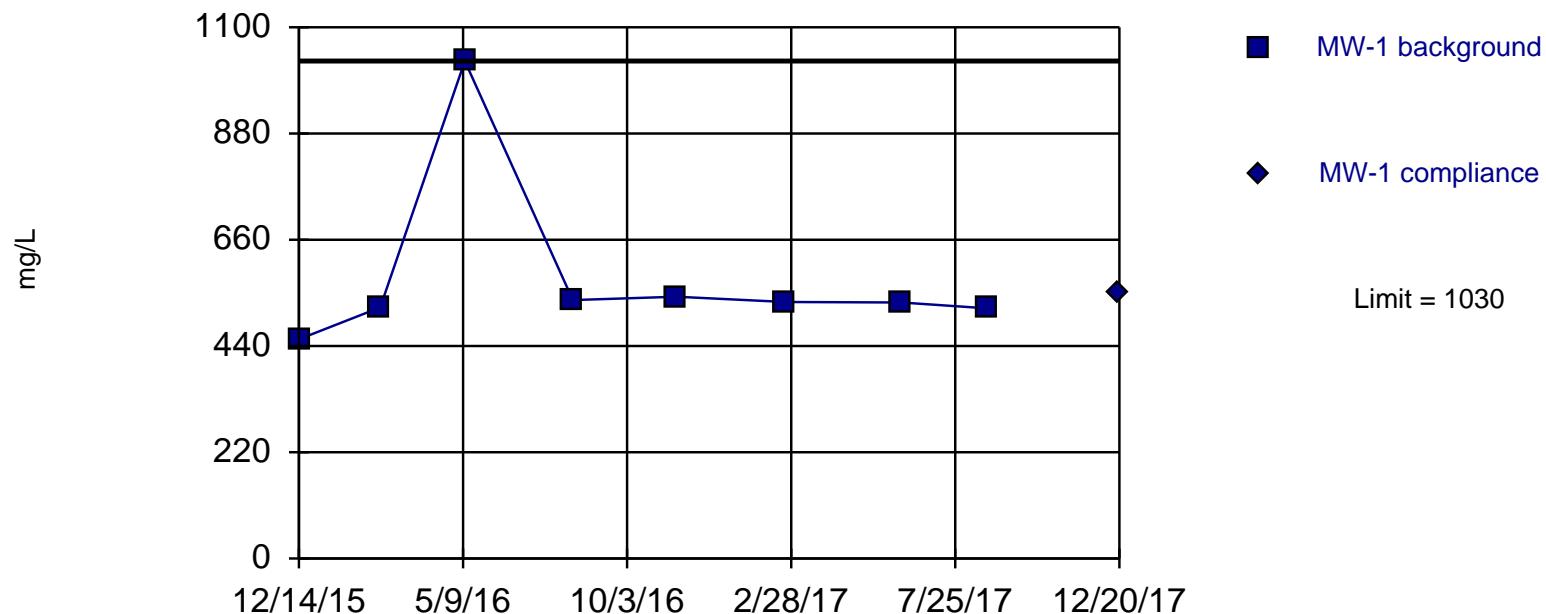
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	1.2
2/25/2016	1.4
5/11/2016	2.6
8/16/2016	1.3
11/17/2016	1.2
2/23/2017	1.3
6/7/2017	1.2
8/24/2017	1.2
12/20/2017	1.3

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Calcium Analysis Run 1/26/2018 10:15 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Calcium (mg/L) Analysis Run 1/26/2018 10:16 AM

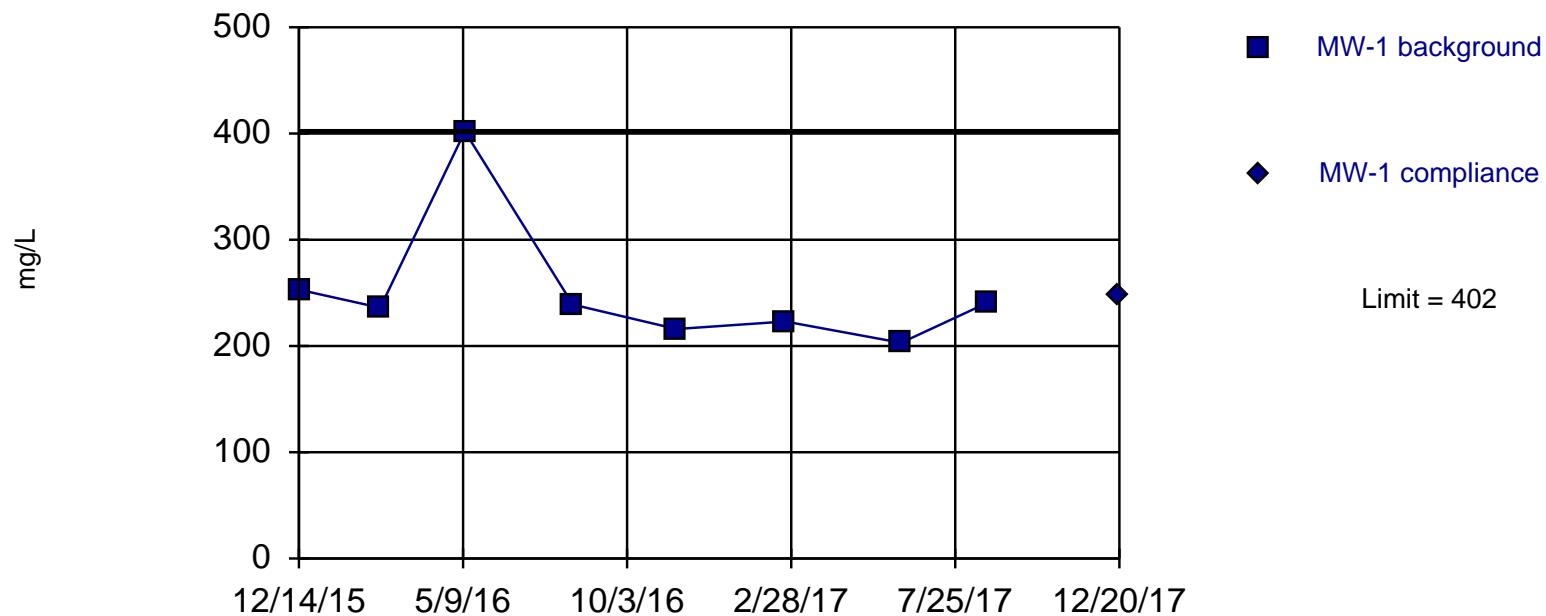
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	454
2/25/2016	520
5/11/2016	1030
8/16/2016	535
11/17/2016	542
2/23/2017	531
6/7/2017	530
8/24/2017	518
12/20/2017	548

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Chloride Analysis Run 1/25/2018 11:37 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Chloride (mg/L) Analysis Run 1/25/2018 11:38 AM

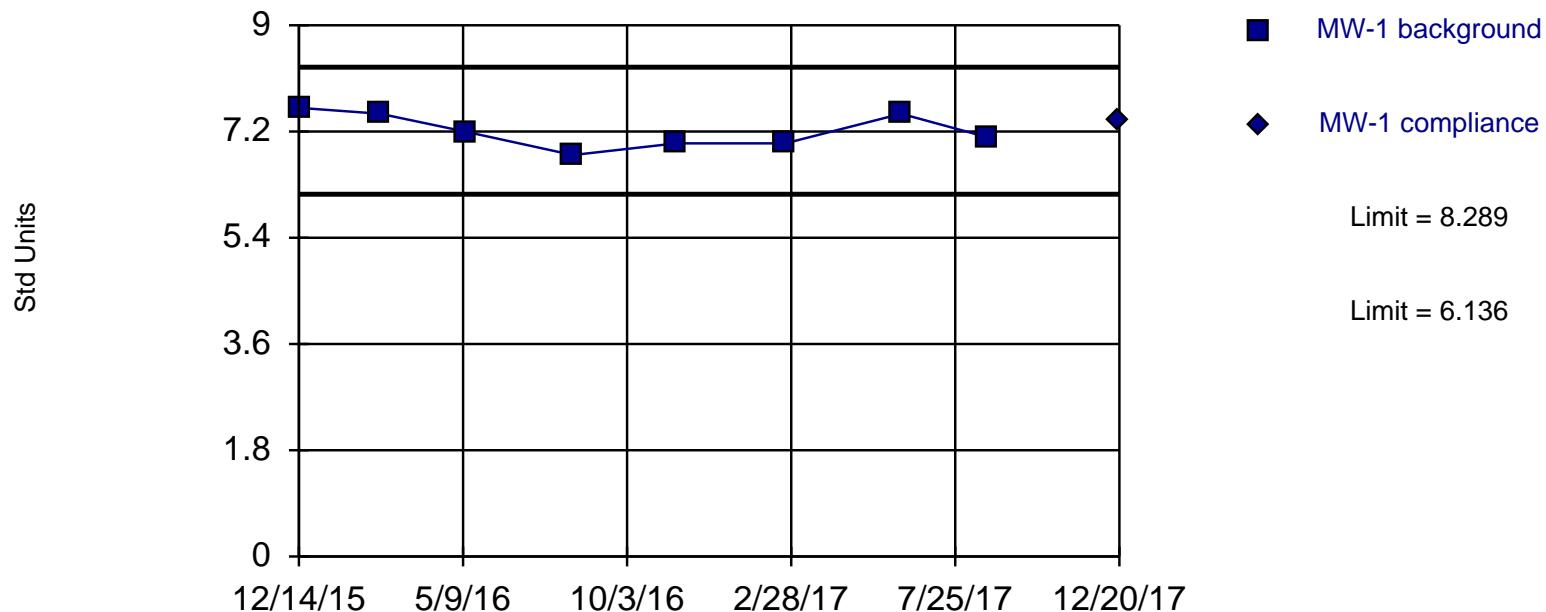
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	253
2/25/2016	236
5/11/2016	402
8/16/2016	239
11/17/2016	216
2/23/2017	223
6/7/2017	203
8/24/2017	241
12/20/2017	248

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.213, Std. Dev.=0.29, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9179, critical = 0.818. Report alpha = 0.01. Most recent point compared to limit.

Constituent: pH Analysis Run 1/25/2018 11:42 AM

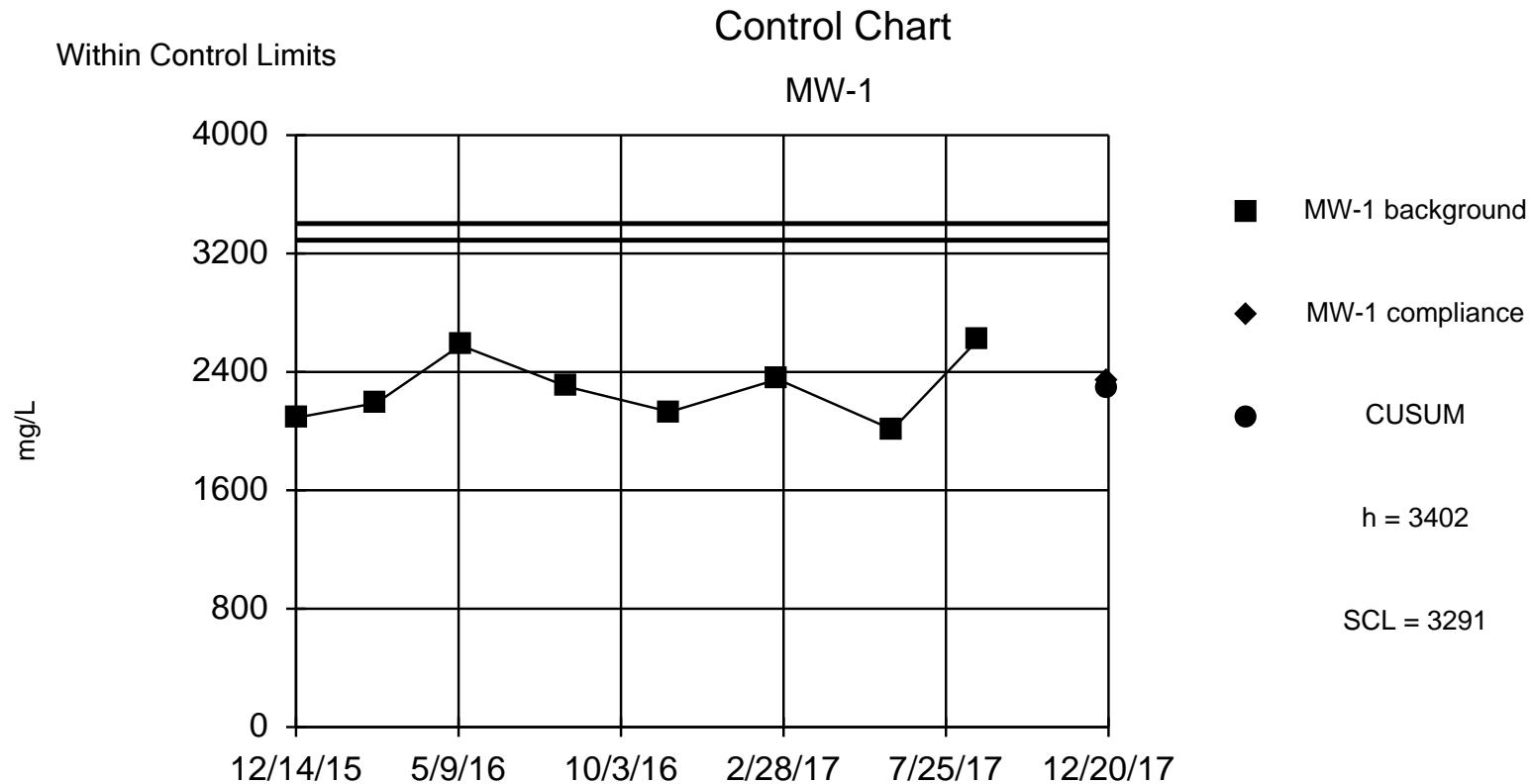
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Prediction Limit

Constituent: pH (Std Units) Analysis Run 1/25/2018 11:43 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	7.6
2/25/2016	7.5
5/11/2016	7.2
8/16/2016	6.8
11/17/2016	7
2/23/2017	7
6/7/2017	7.5
8/24/2017	7.1
12/20/2017	7.4



Background Data Summary: Mean=2284, Std. Dev.=223.7, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9231, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Sulfate Analysis Run 1/25/2018 11:37 AM

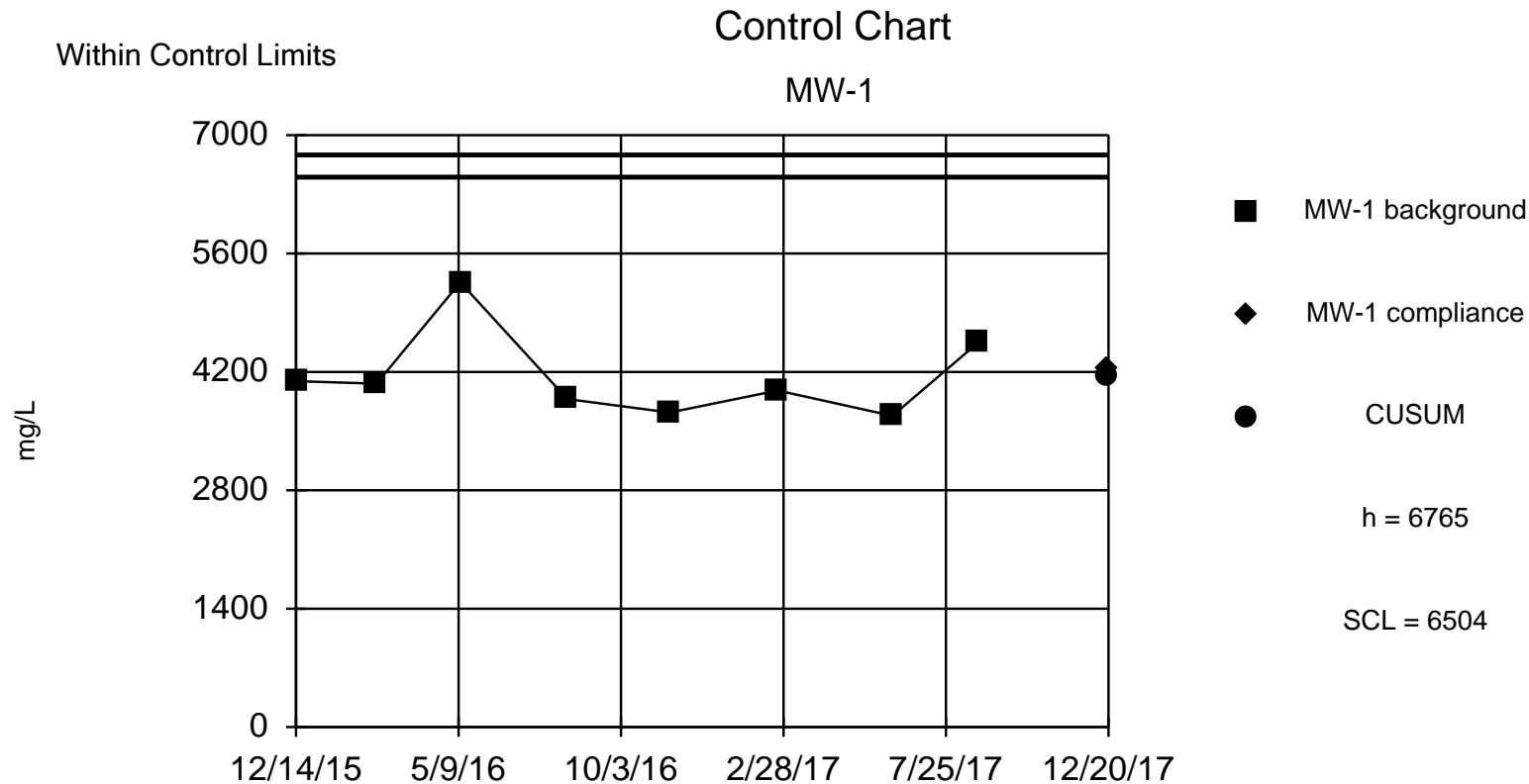
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Sulfate (mg/L) Analysis Run 1/25/2018 11:38 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1	Std. Mean	CUSUM
12/14/2015	2090		
2/25/2016	2190		
5/11/2016	2580		
8/16/2016	2300		
11/17/2016	2130		
2/23/2017	2350		
6/7/2017	2010		
8/24/2017	2620		
12/20/2017	2340	0.2514	2284



Background Data Summary: Mean=4153, Std. Dev.=522.5, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8305, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Total Dissolved Solids Analysis Run 1/25/2018 11:37 AM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/25/2018 11:38 AM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

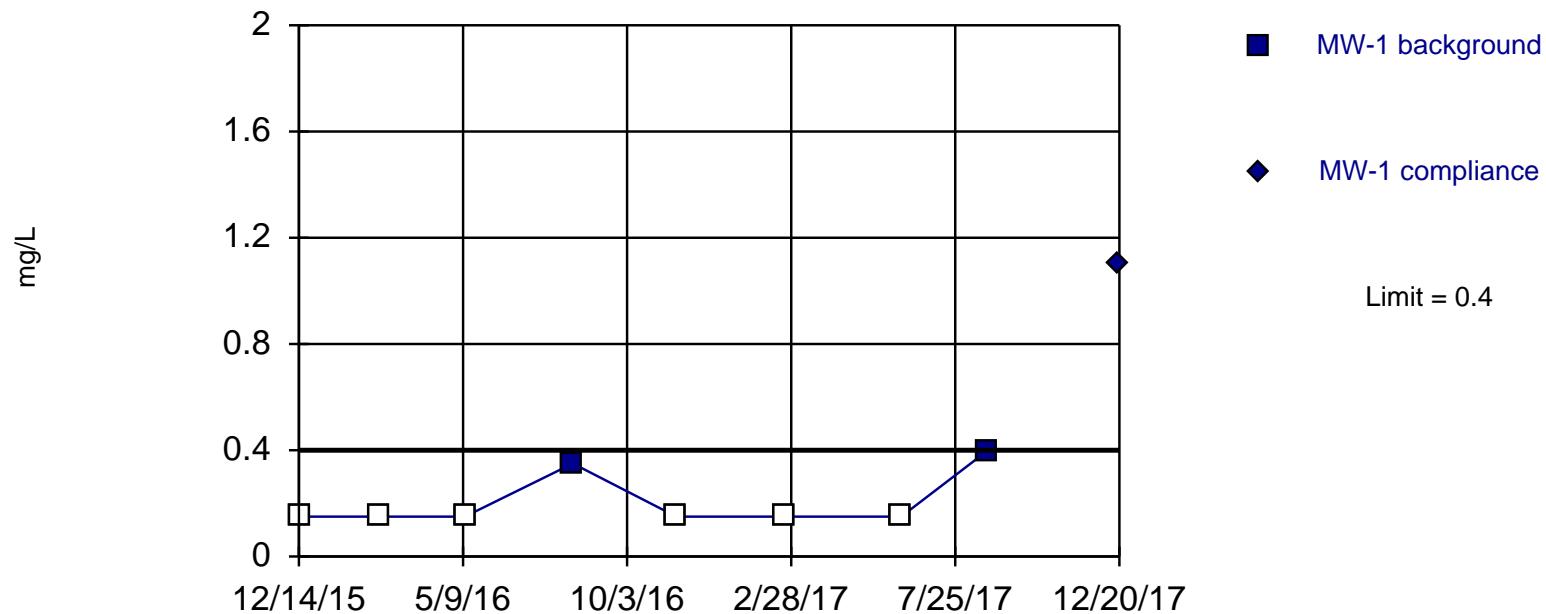
MW-1	MW-1	Std. Mean	CUSUM
12/14/2015	4090		
2/25/2016	4060		
5/11/2016	5260		
8/16/2016	3880		
11/17/2016	3720		
2/23/2017	3980		
6/7/2017	3680		
8/24/2017	4550		
12/20/2017	4250	0.1866	4153

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Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 75% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Fluoride Analysis Run 1/25/2018 11:37 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Fluoride (mg/L) Analysis Run 1/25/2018 11:38 AM

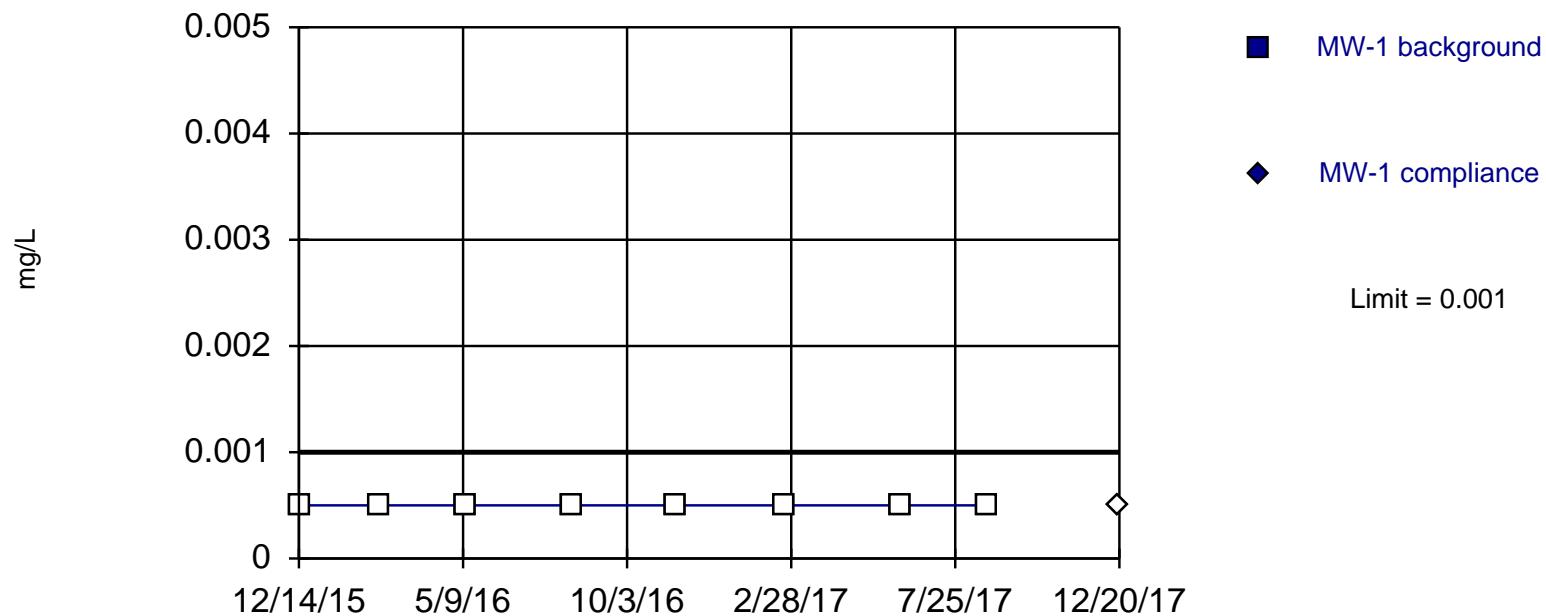
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.3
2/25/2016	<0.3
5/11/2016	<0.3
8/16/2016	0.35
11/17/2016	<0.3
2/23/2017	<0.3
6/7/2017	<0.3
8/24/2017	0.4
12/20/2017	1.1

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Antimony Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Antimony (mg/L) Analysis Run 1/25/2018 12:04 PM

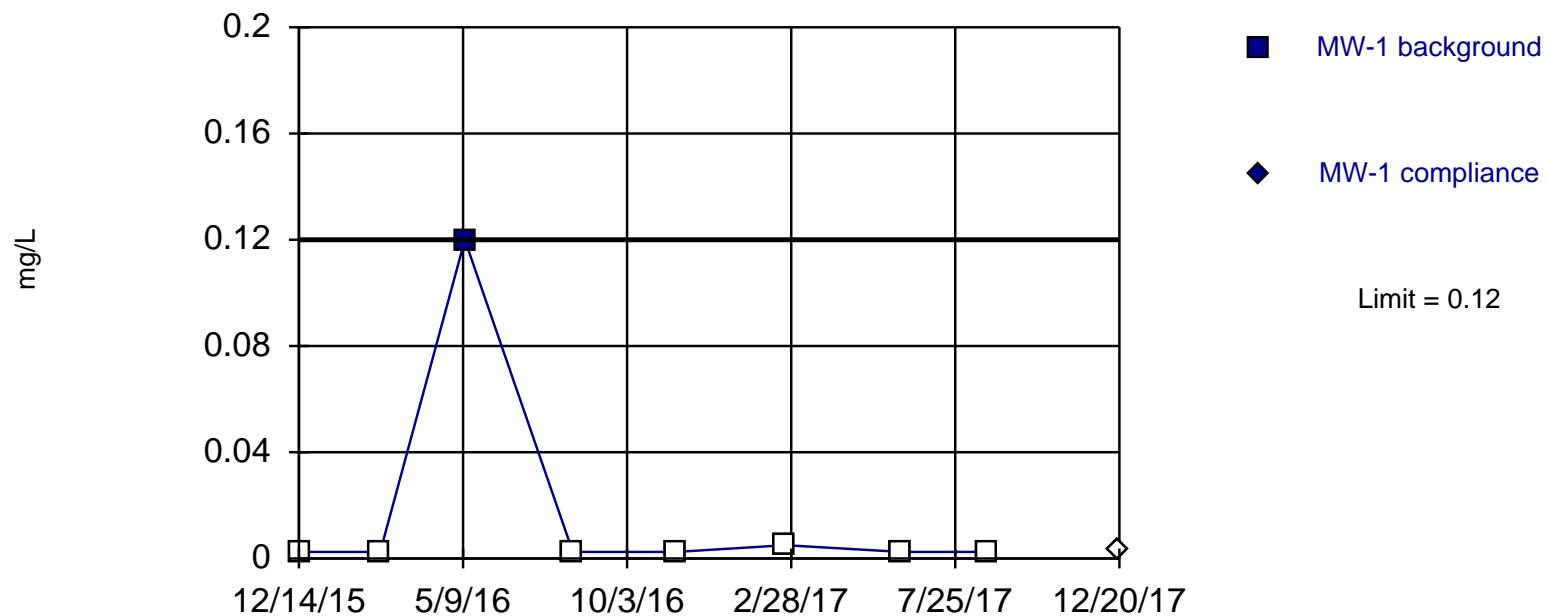
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.001
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.001

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Arsenic Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Arsenic (mg/L) Analysis Run 1/25/2018 12:04 PM

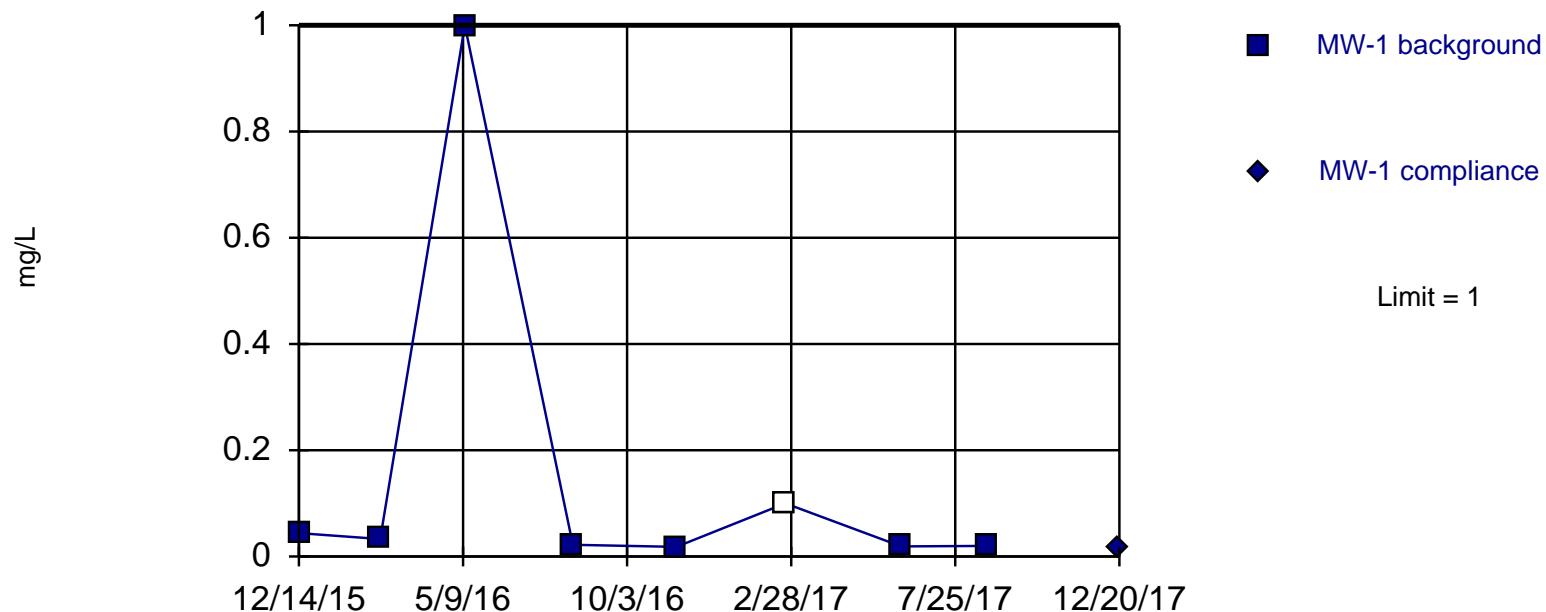
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.005
2/25/2016	<0.005
5/11/2016	0.12
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.01
6/7/2017	<0.005
8/24/2017	<0.005
12/20/2017	<0.006

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. 12.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Barium Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Barium (mg/L) Analysis Run 1/25/2018 12:04 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

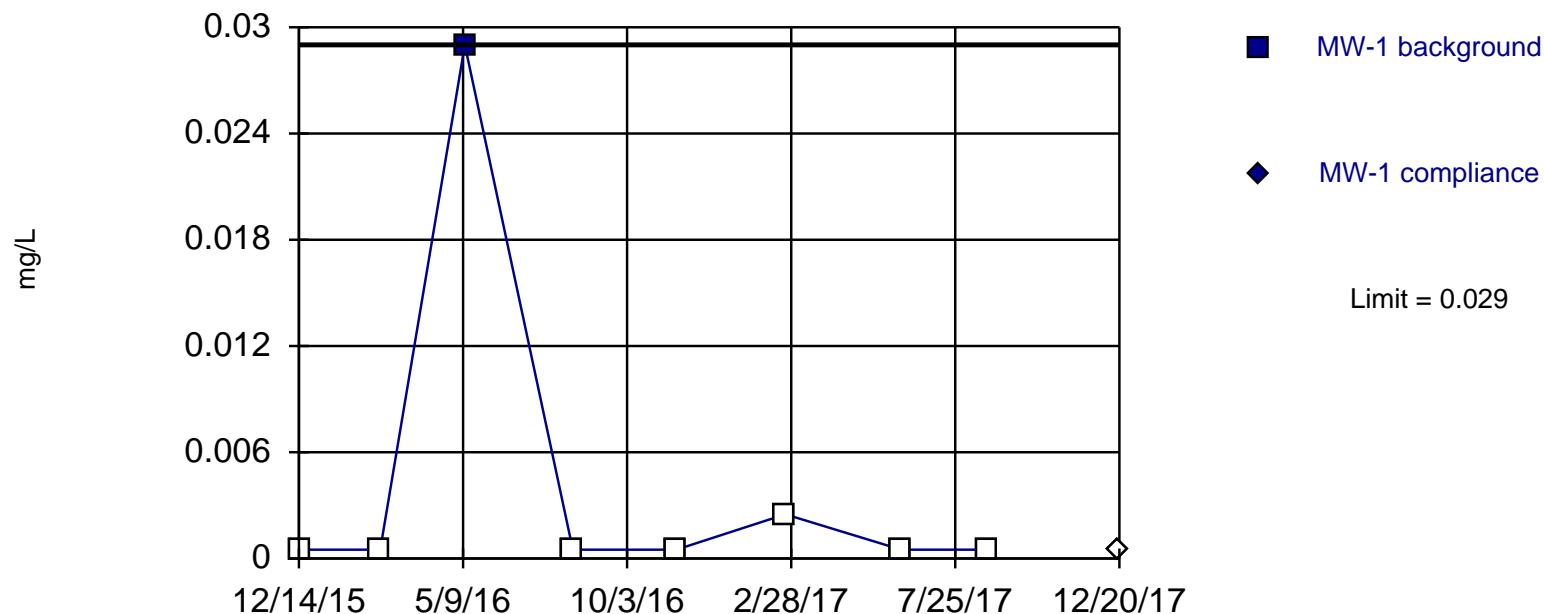
MW-1	MW-1
12/14/2015	0.044
2/25/2016	0.033
5/11/2016	1
8/16/2016	0.022
11/17/2016	0.018
2/23/2017	<0.2
6/7/2017	0.019
8/24/2017	0.02
12/20/2017	0.017

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Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Beryllium Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Beryllium (mg/L) Analysis Run 1/25/2018 12:04 PM

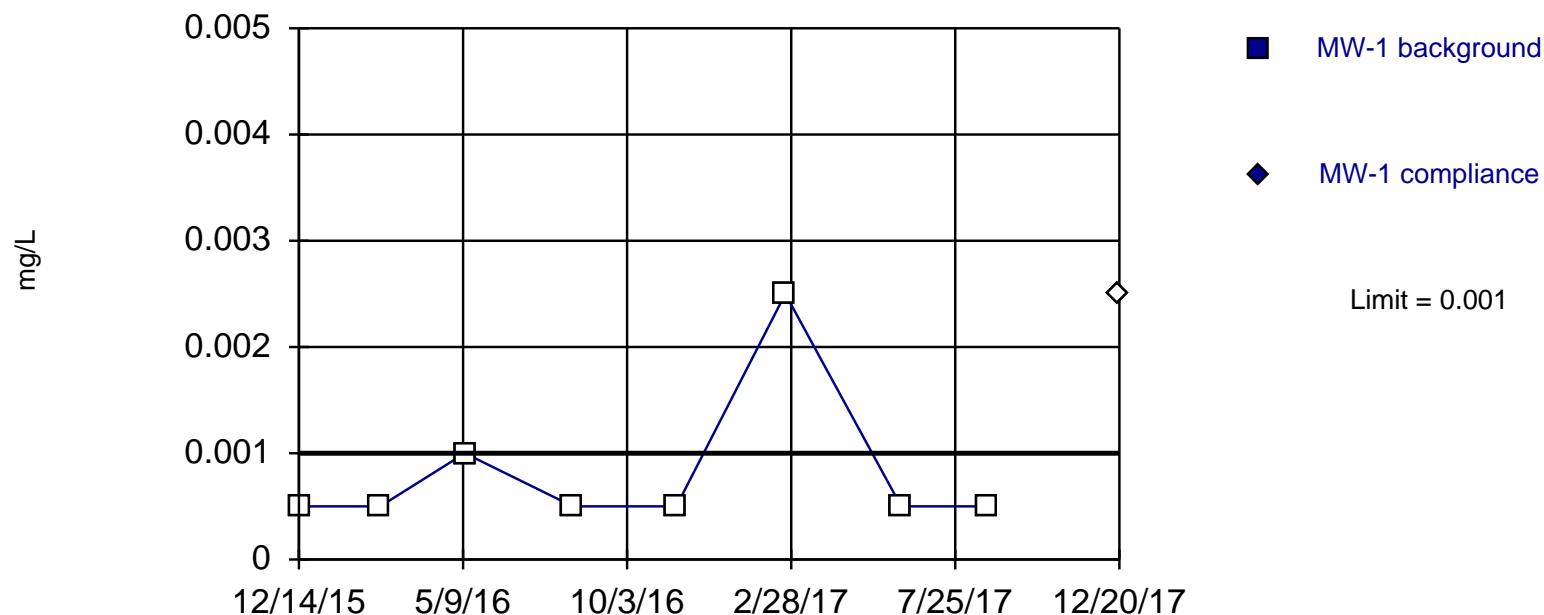
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	0.029
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.005
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.001

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Cadmium Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Cadmium (mg/L) Analysis Run 1/25/2018 12:04 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

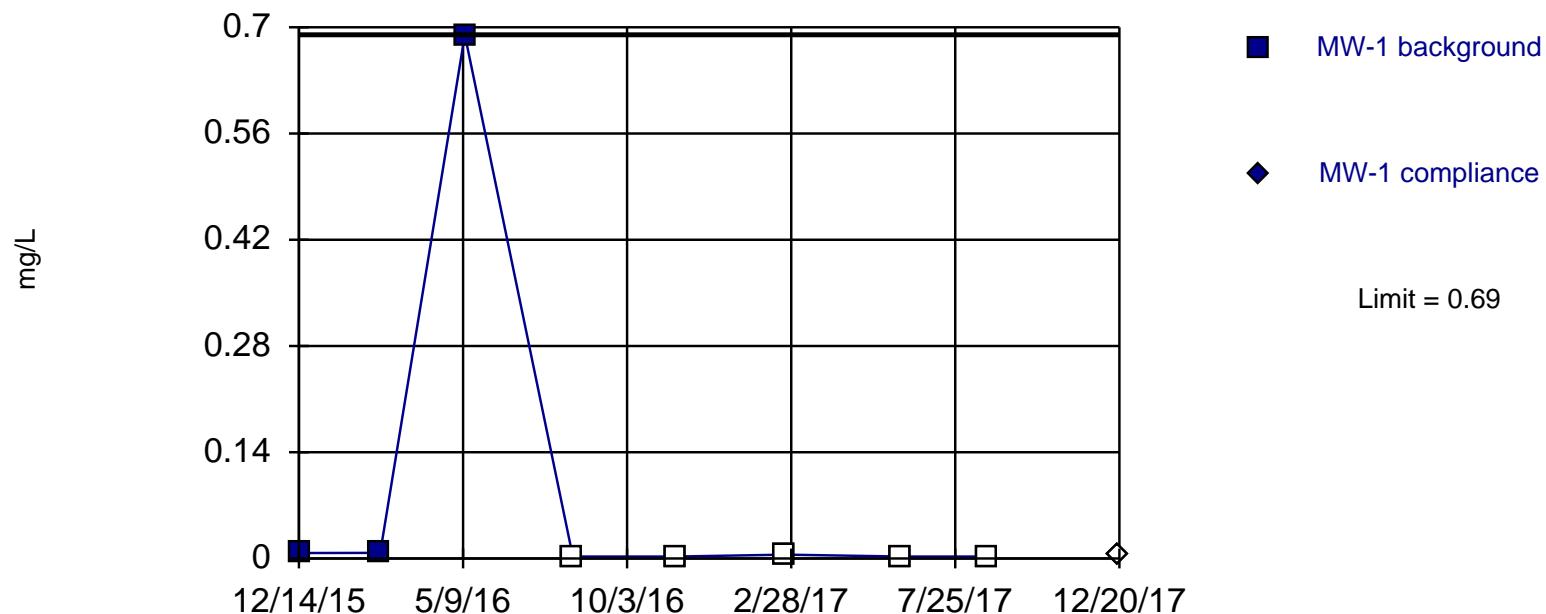
MW-1	MW-1
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.002
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.005
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.005

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Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 62.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Chromium Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Chromium (mg/L) Analysis Run 1/25/2018 12:04 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

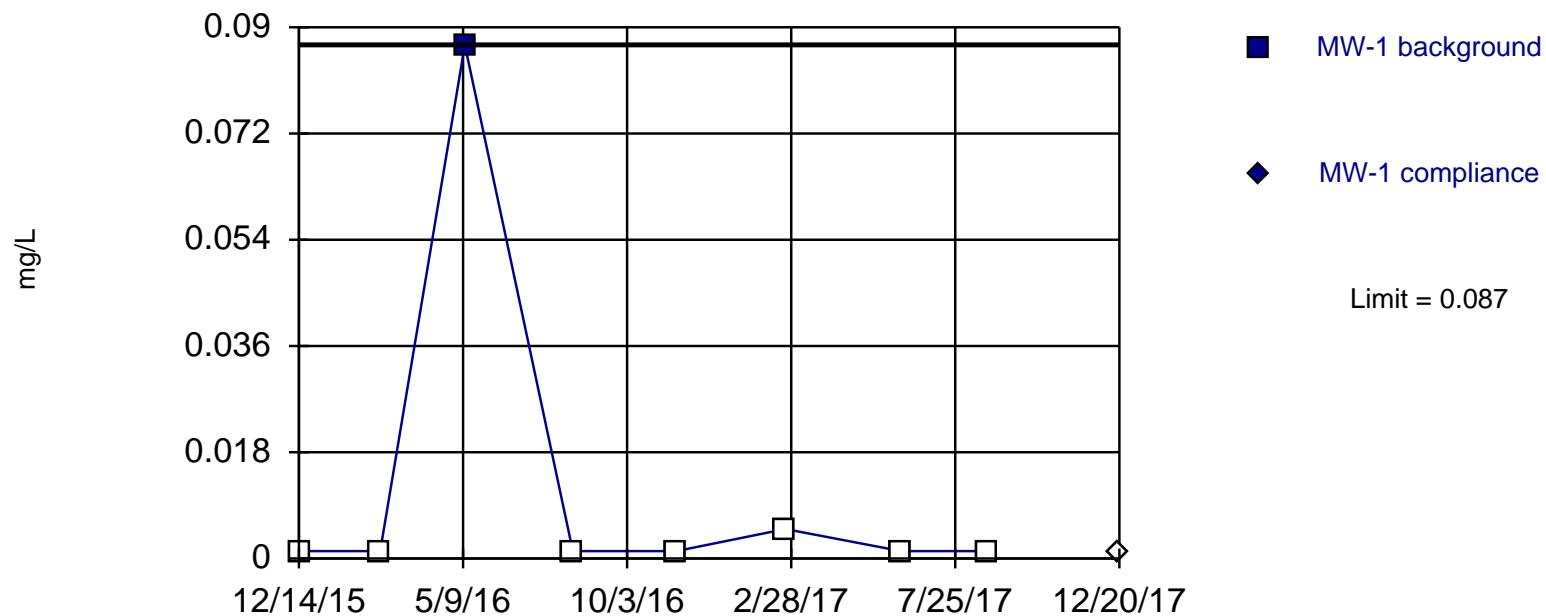
MW-1	MW-1
12/14/2015	0.0073
2/25/2016	0.0074
5/11/2016	0.69
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.01
6/7/2017	<0.005
8/24/2017	<0.005
12/20/2017	<0.007

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Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Cobalt Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Cobalt (mg/L) Analysis Run 1/25/2018 12:04 PM

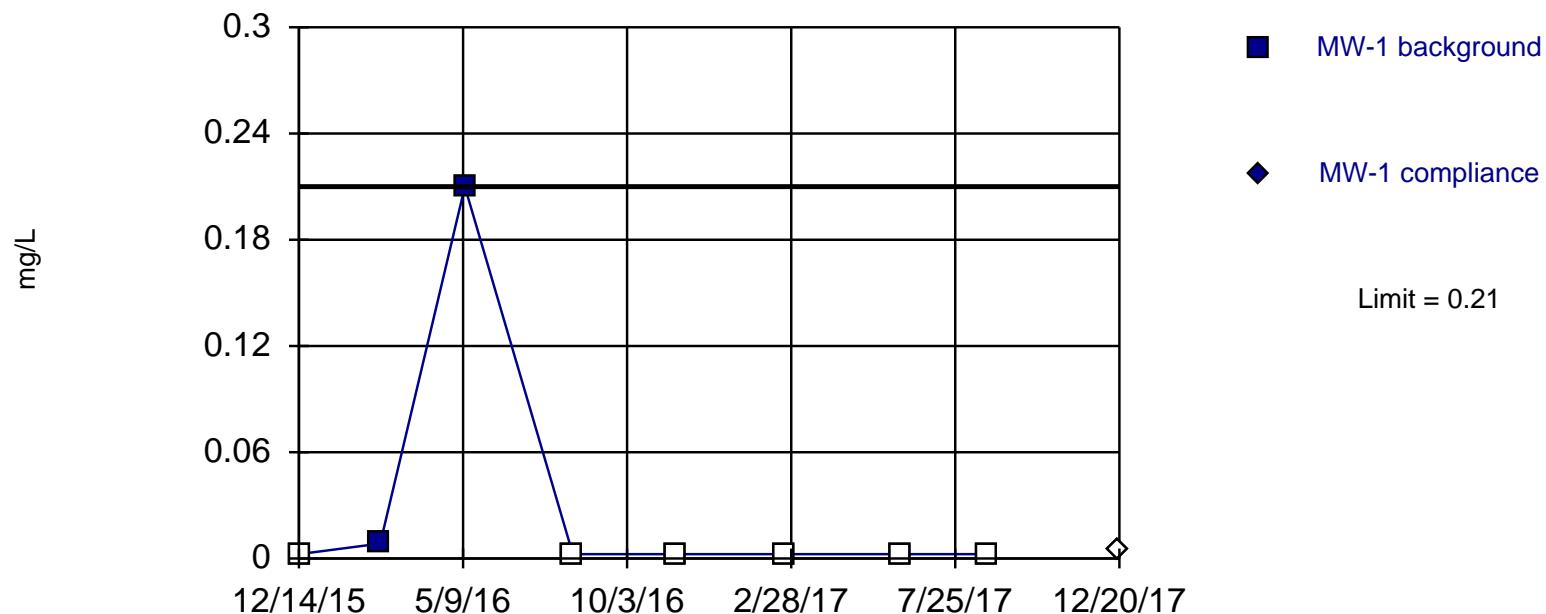
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.0025
2/25/2016	<0.0025
5/11/2016	0.087
8/16/2016	<0.0025
11/17/2016	<0.0025
2/23/2017	<0.01
6/7/2017	<0.0025
8/24/2017	<0.0025
12/20/2017	<0.0025

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 75% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Lead Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Lead (mg/L) Analysis Run 1/25/2018 12:04 PM

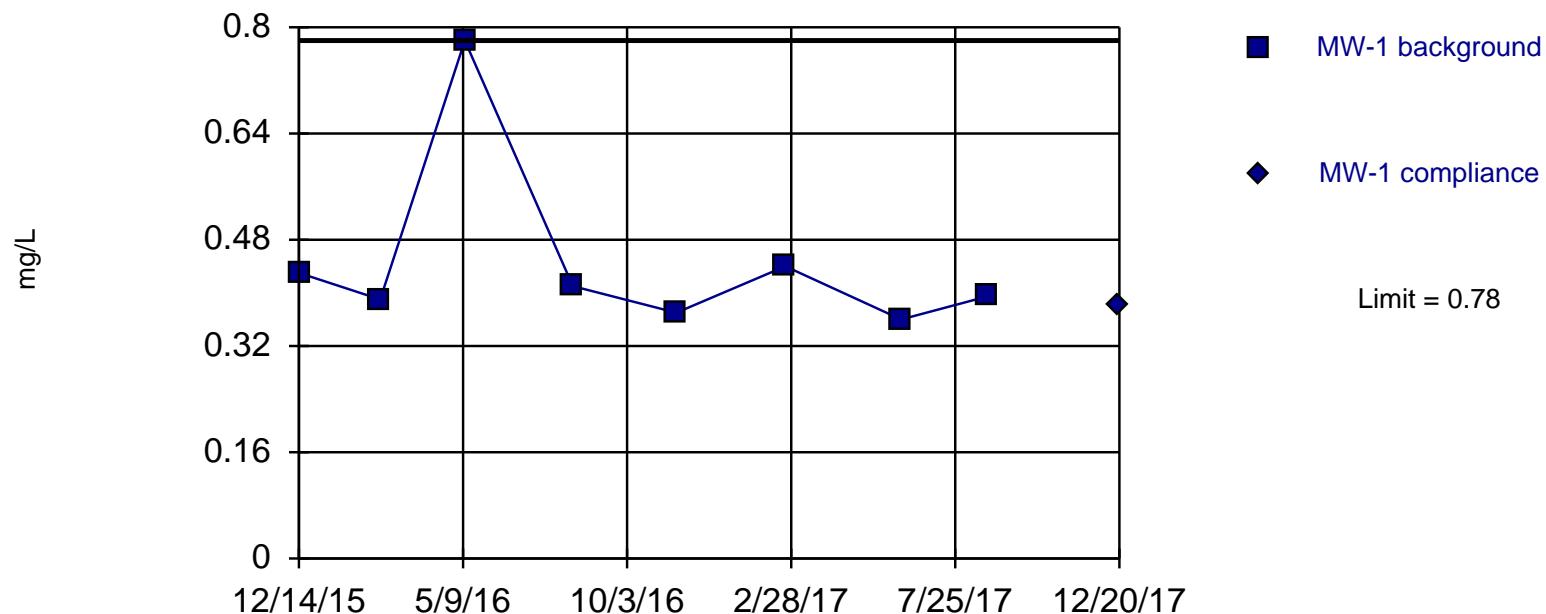
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.005
2/25/2016	0.0084
5/11/2016	0.21
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.005
6/7/2017	<0.005
8/24/2017	<0.005
12/20/2017	<0.01

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Lithium Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Lithium (mg/L) Analysis Run 1/25/2018 12:04 PM

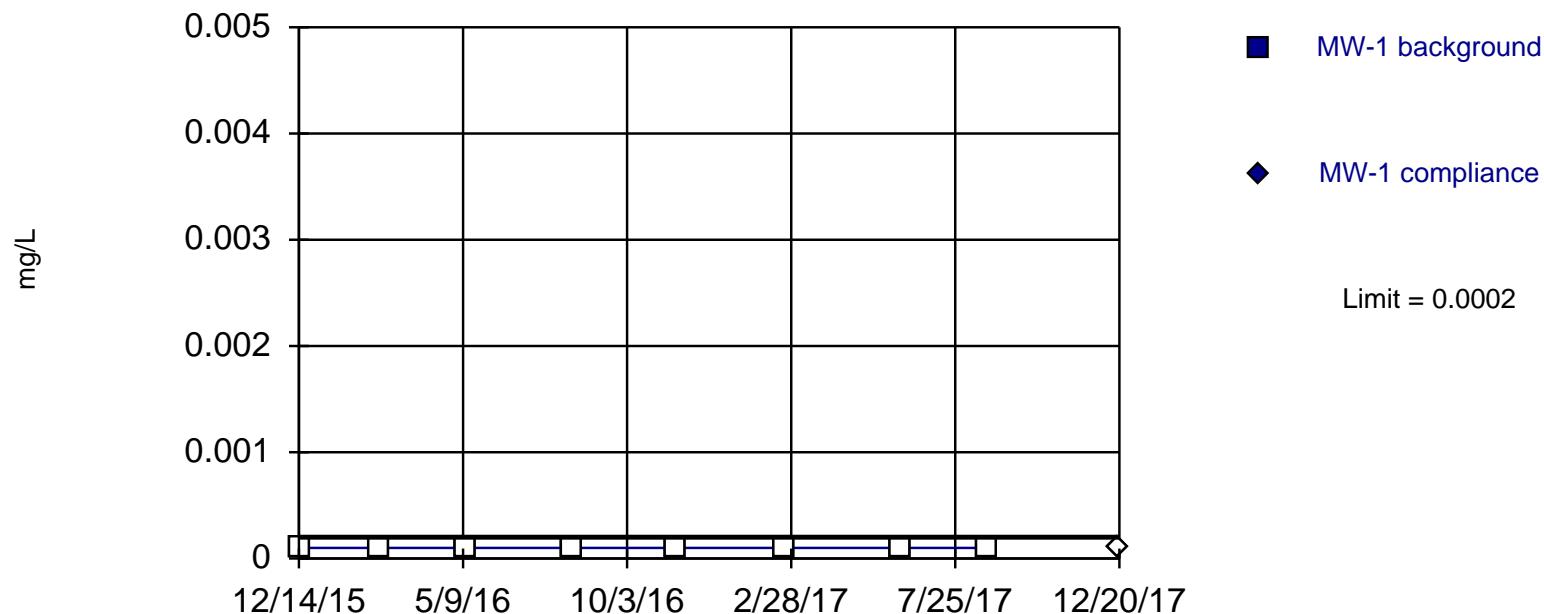
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	0.43
2/25/2016	0.39
5/11/2016	0.78
8/16/2016	0.41
11/17/2016	0.37
2/23/2017	0.44
6/7/2017	0.36
8/24/2017	0.395
12/20/2017	0.38

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Mercury Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Mercury (mg/L) Analysis Run 1/25/2018 12:04 PM

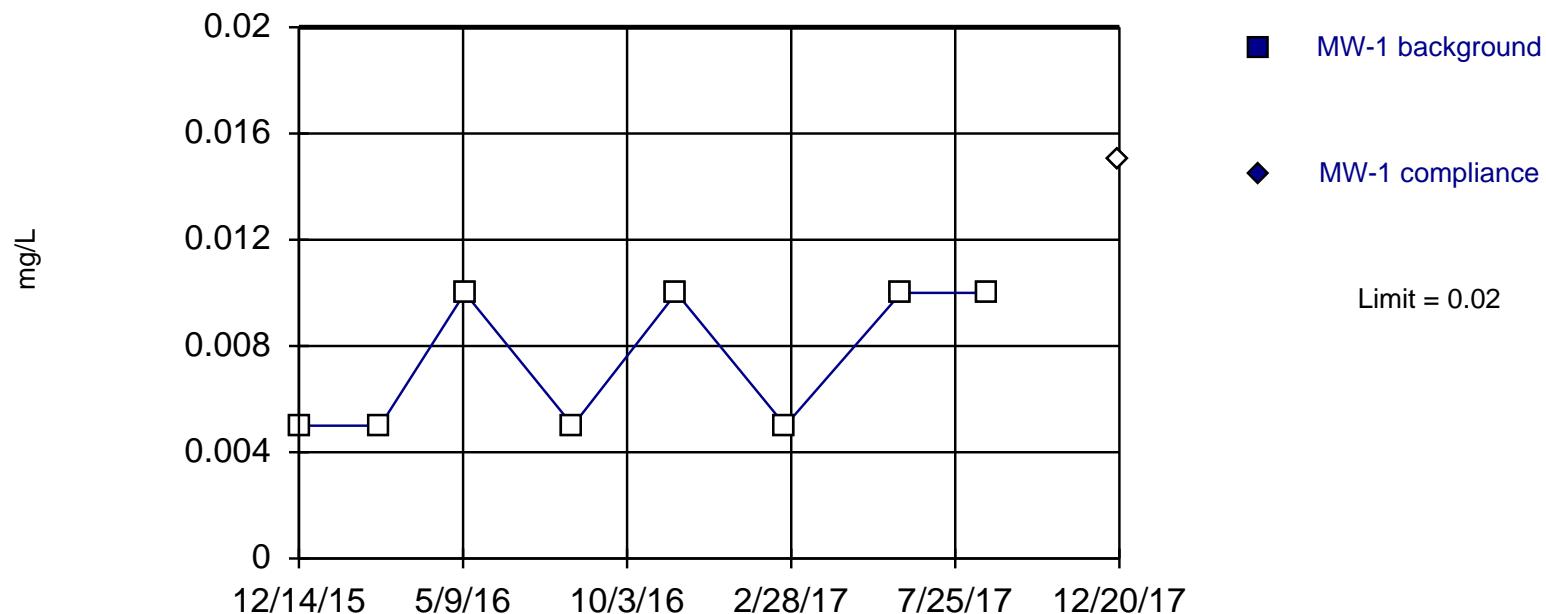
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.0002
2/25/2016	<0.0002
5/11/2016	<0.0002
8/16/2016	<0.0002
11/17/2016	<0.0002
2/23/2017	<0.0002
6/7/2017	<0.0002
8/24/2017	<0.0002
12/20/2017	<0.0002

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Molybdenum Analysis Run 1/25/2018 11:58 AM

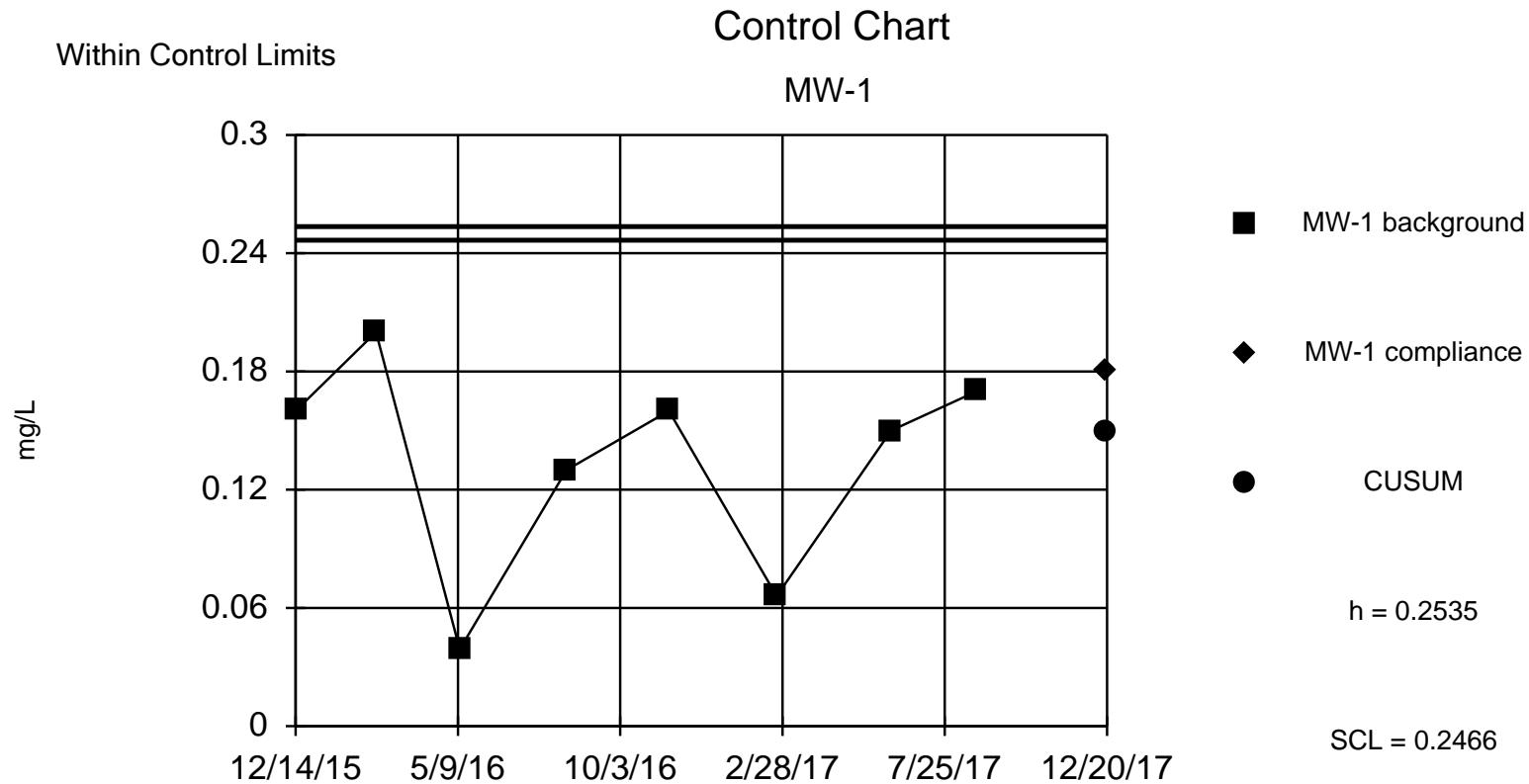
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Molybdenum (mg/L) Analysis Run 1/25/2018 12:04 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.01
2/25/2016	<0.01
5/11/2016	<0.02
8/16/2016	<0.01
11/17/2016	<0.02
2/23/2017	<0.01
6/7/2017	<0.02
8/24/2017	<0.02
12/20/2017	<0.03



Background Data Summary (based on cube transformation): Mean=0.003378, Std. Dev.=0.002583, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9441, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Selenium Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Selenium (mg/L) Analysis Run 1/25/2018 12:04 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

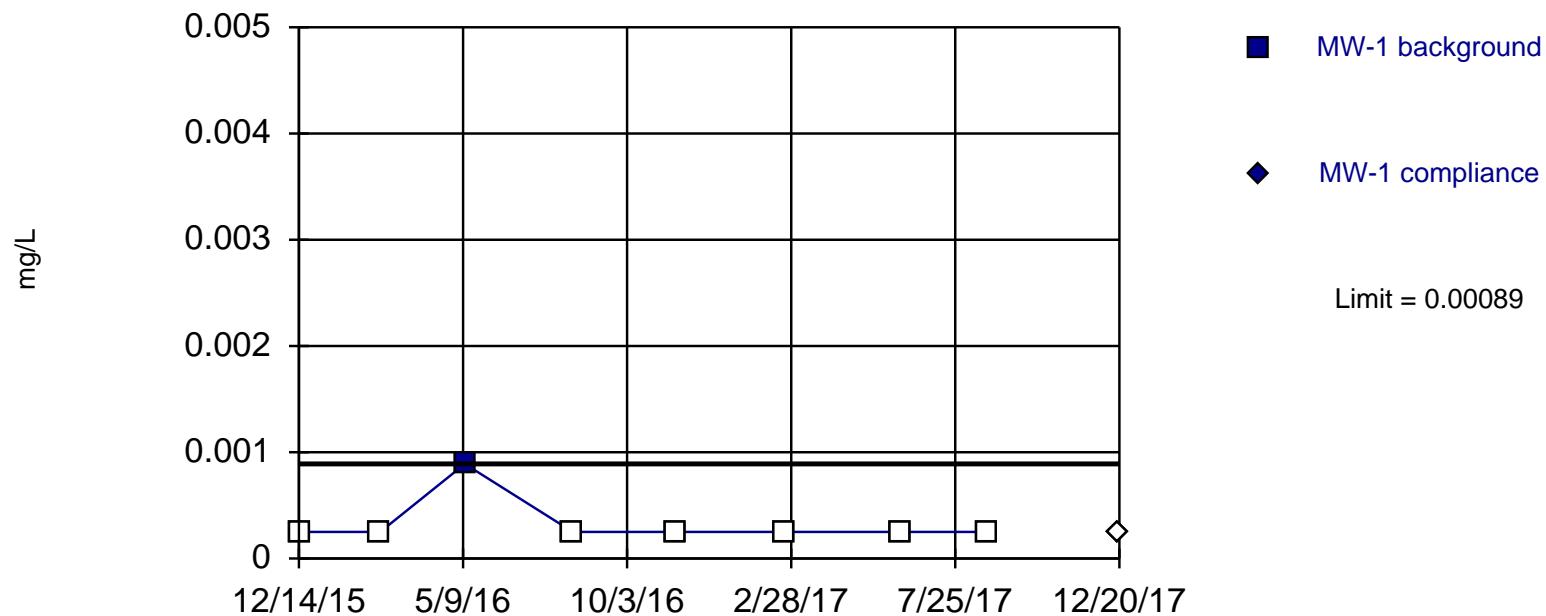
MW-1	MW-1	Cube	Std. Mean	CUSUM
12/14/2015	0.16	0.004096		
2/25/2016	0.2	0.008		
5/11/2016	0.039	5.9319E-05		
8/16/2016	0.13	0.002197		
11/17/2016	0.16	0.004096		
2/23/2017	0.066	0.000287496		
6/7/2017	0.15	0.003375		
8/24/2017	0.17	0.004913		
12/20/2017	0.18	0.005832	0.95	0.15

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Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Thallium Analysis Run 1/25/2018 11:58 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Thallium (mg/L) Analysis Run 1/25/2018 12:04 PM

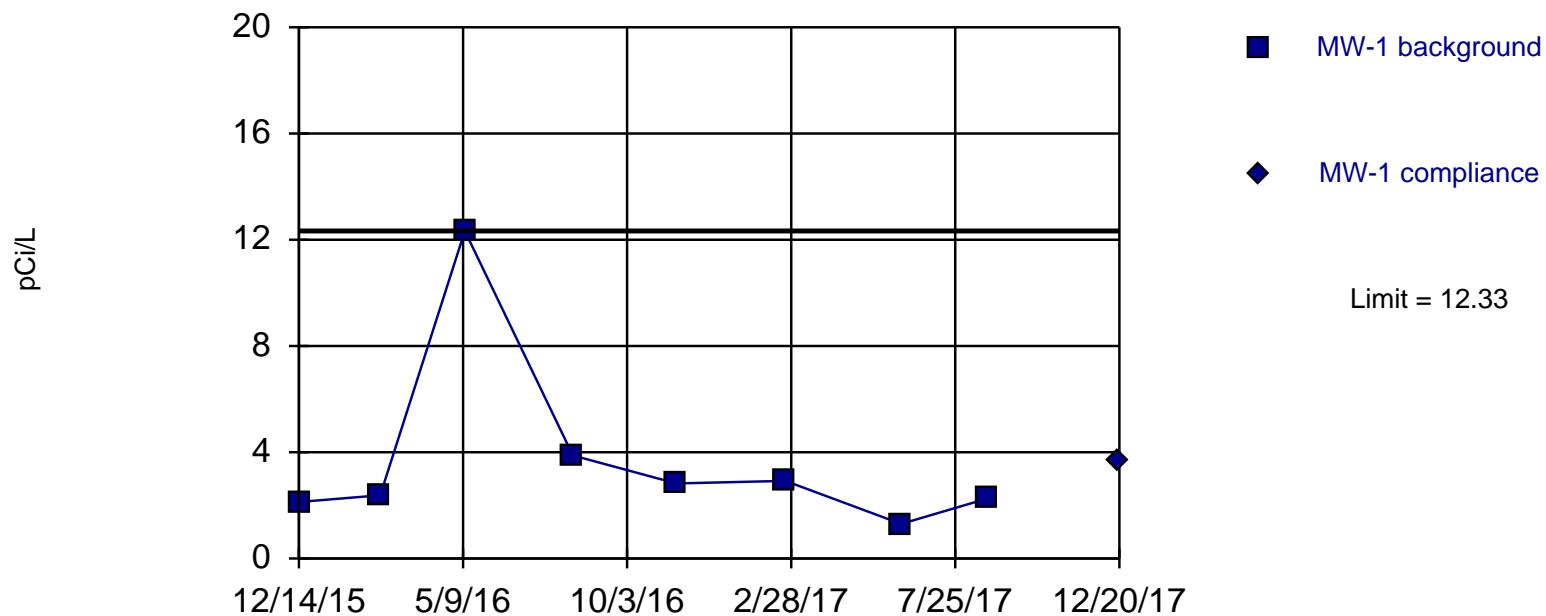
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	<0.0005
2/25/2016	<0.0005
5/11/2016	0.00089
8/16/2016	<0.0005
11/17/2016	<0.0005
2/23/2017	<0.0005
6/7/2017	<0.0005
8/24/2017	<0.0005
12/20/2017	<0.0005

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Combined Radium Analysis Run 1/25/2018 12:05 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

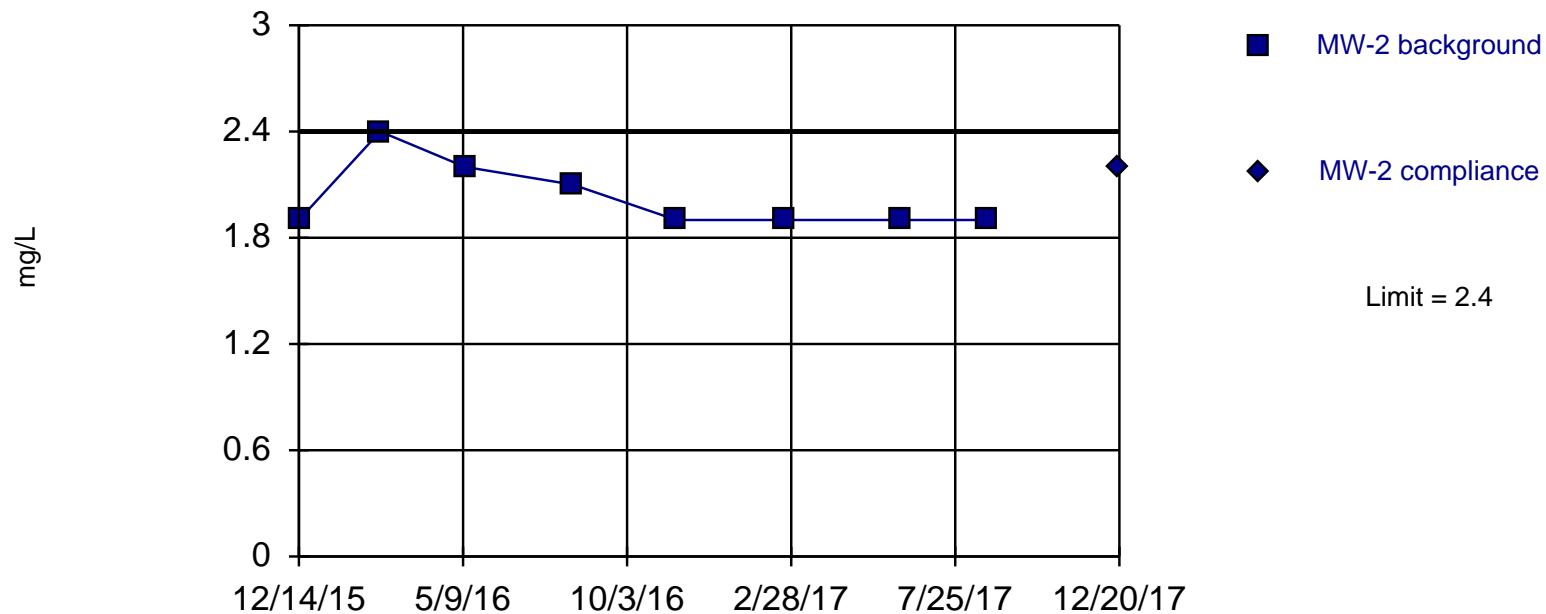
Constituent: Combined Radium (pCi/L) Analysis Run 1/25/2018 12:05 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-1	MW-1
12/14/2015	2.13
2/25/2016	2.382
5/11/2016	12.33
8/16/2016	3.883
11/17/2016	2.828
2/23/2017	2.923
6/7/2017	1.3
8/24/2017	2.267
12/20/2017	3.72

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Boron Analysis Run 1/25/2018 12:10 PM

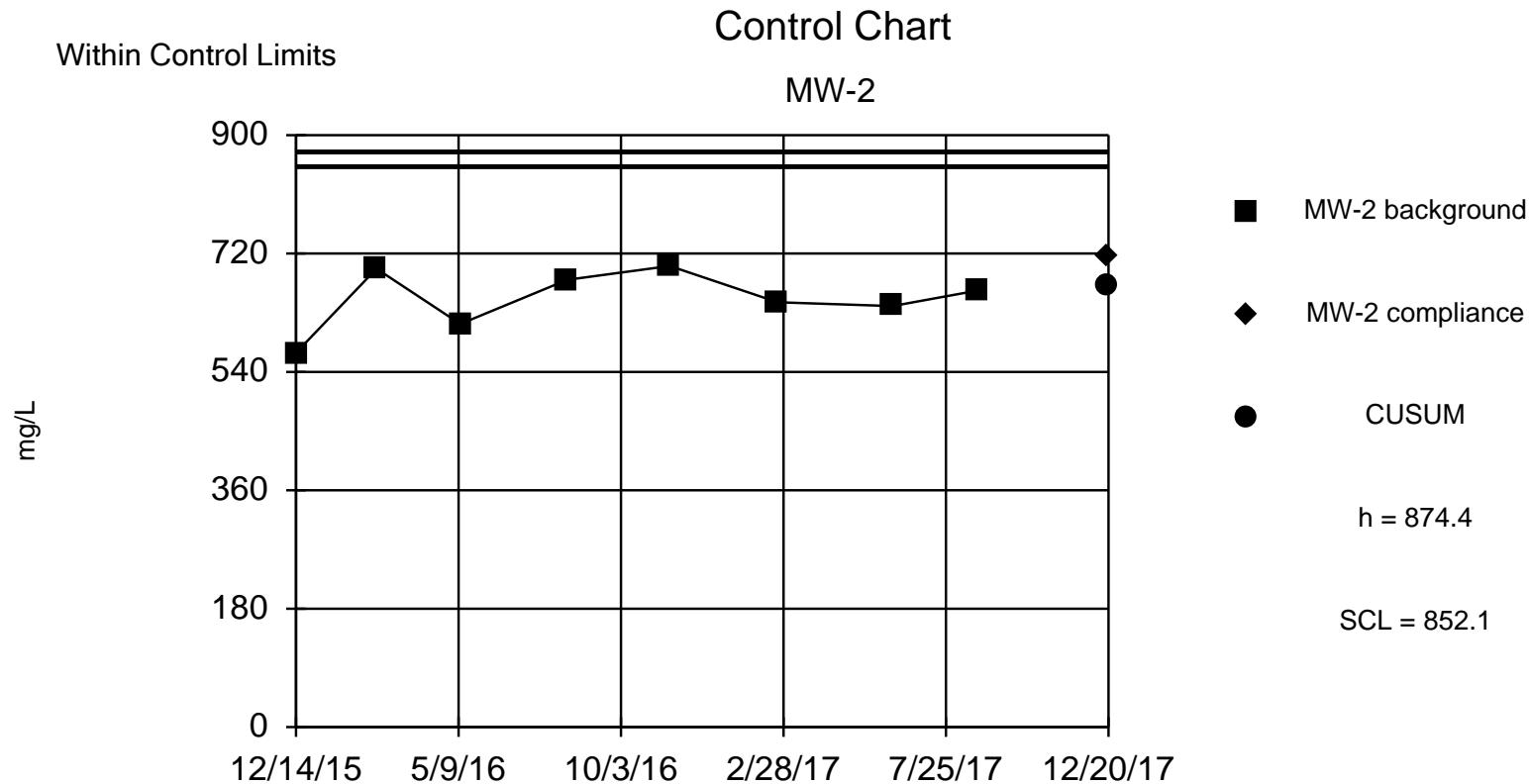
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Boron (mg/L) Analysis Run 1/25/2018 12:12 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	1.9
2/25/2016	2.4
5/11/2016	2.2
8/16/2016	2.1
11/17/2016	1.9
2/23/2017	1.9
6/7/2017	1.9
8/24/2017	1.9
12/20/2017	2.2



Background Data Summary: Mean=651.3, Std. Dev.=44.62, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9396, critical = 0.818. Report alpha = 0.001952. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Calcium Analysis Run 1/26/2018 10:16 AM

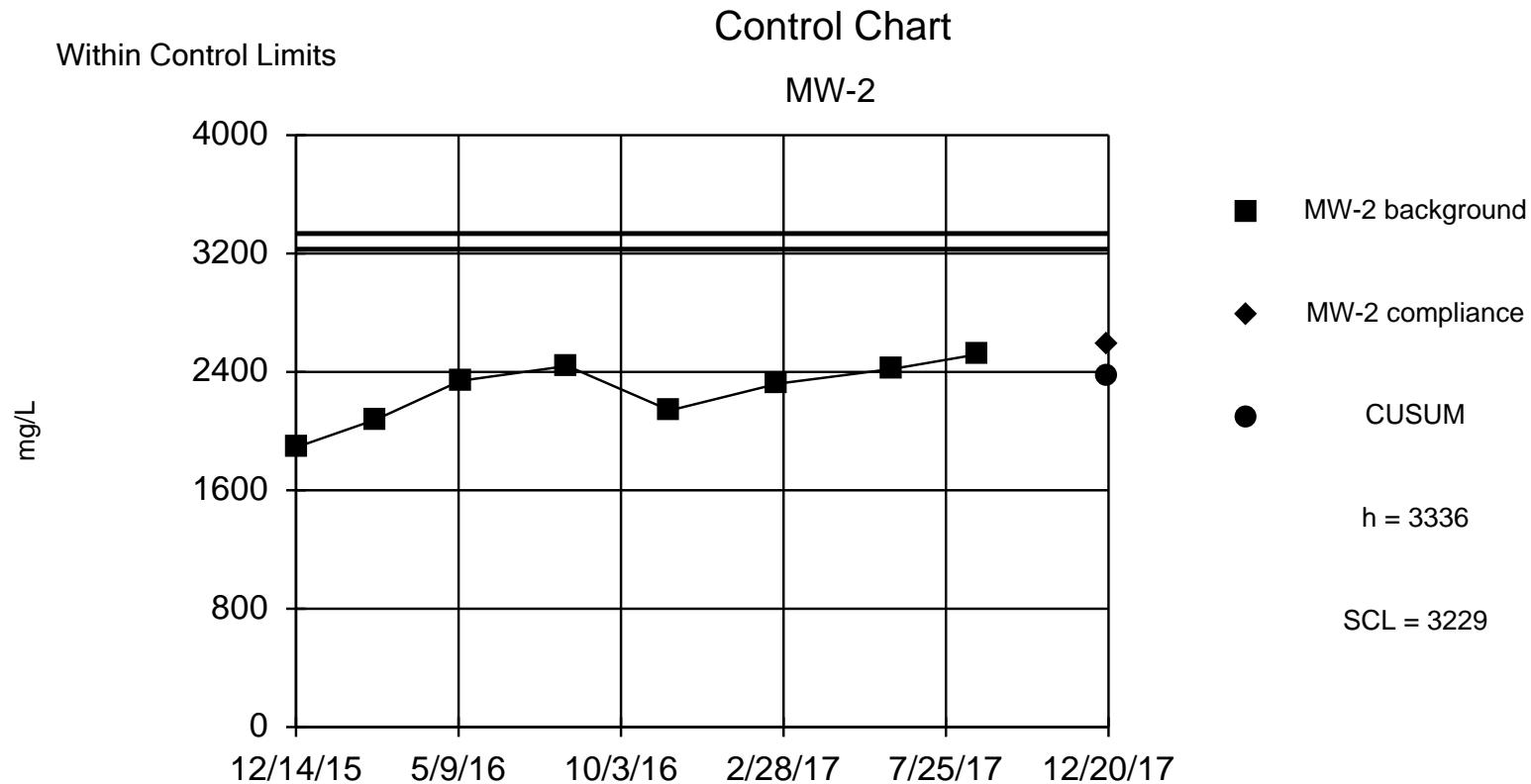
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Calcium (mg/L) Analysis Run 1/26/2018 10:16 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2	Std. Mean	CUSUM
12/14/2015	569		
2/25/2016	697		
5/11/2016	613		
8/16/2016	680		
11/17/2016	701		
2/23/2017	646		
6/7/2017	640		
8/24/2017	664		
12/20/2017	716	1.451	671.4



Background Data Summary: Mean=2269, Std. Dev.=213.4, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9324, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Chloride Analysis Run 1/25/2018 12:10 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Chloride (mg/L) Analysis Run 1/25/2018 12:12 PM

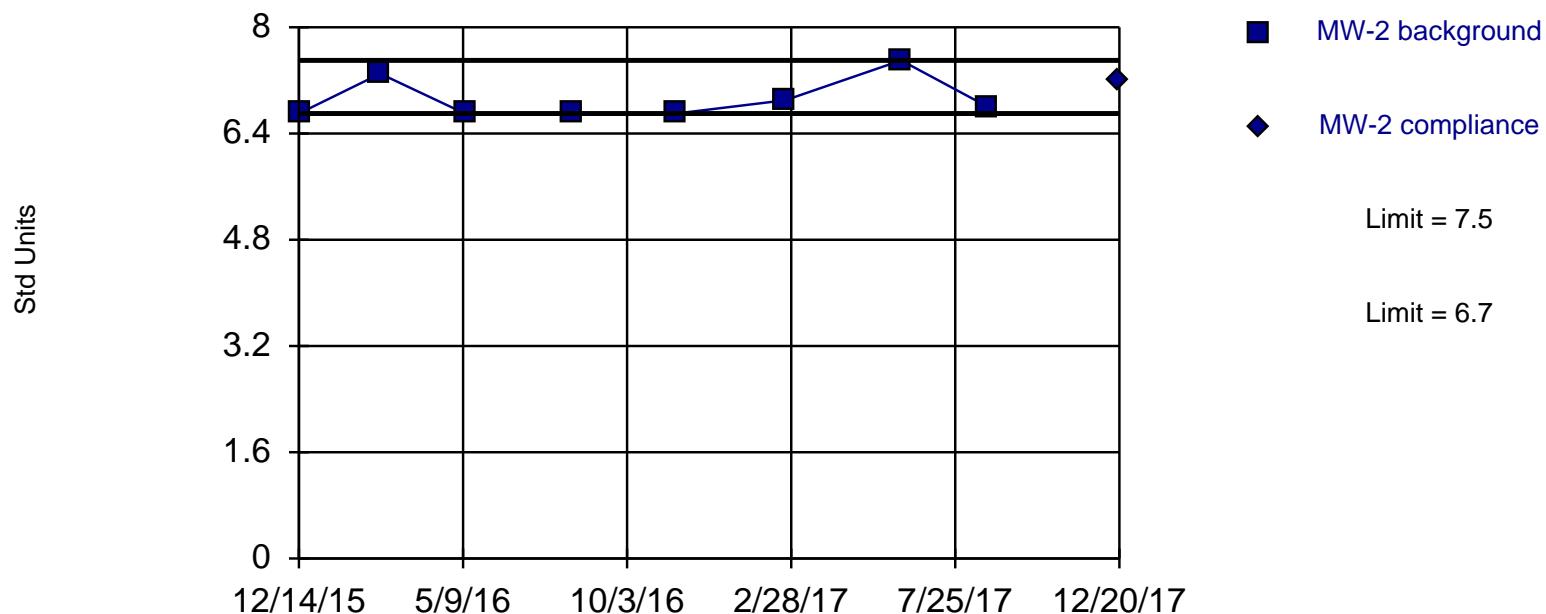
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2	Std. Mean	CUSUM
12/14/2015	1890		
2/25/2016	2080		
5/11/2016	2340		
8/16/2016	2440		
11/17/2016	2140		
2/23/2017	2320		
6/7/2017	2420		
8/24/2017	2520		
12/20/2017	2590	1.506	2377

Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limits are highest and lowest of 8 background values. Report alpha = 0.2222. Most recent point compared to limit.

Constituent: pH Analysis Run 1/25/2018 12:06 PM

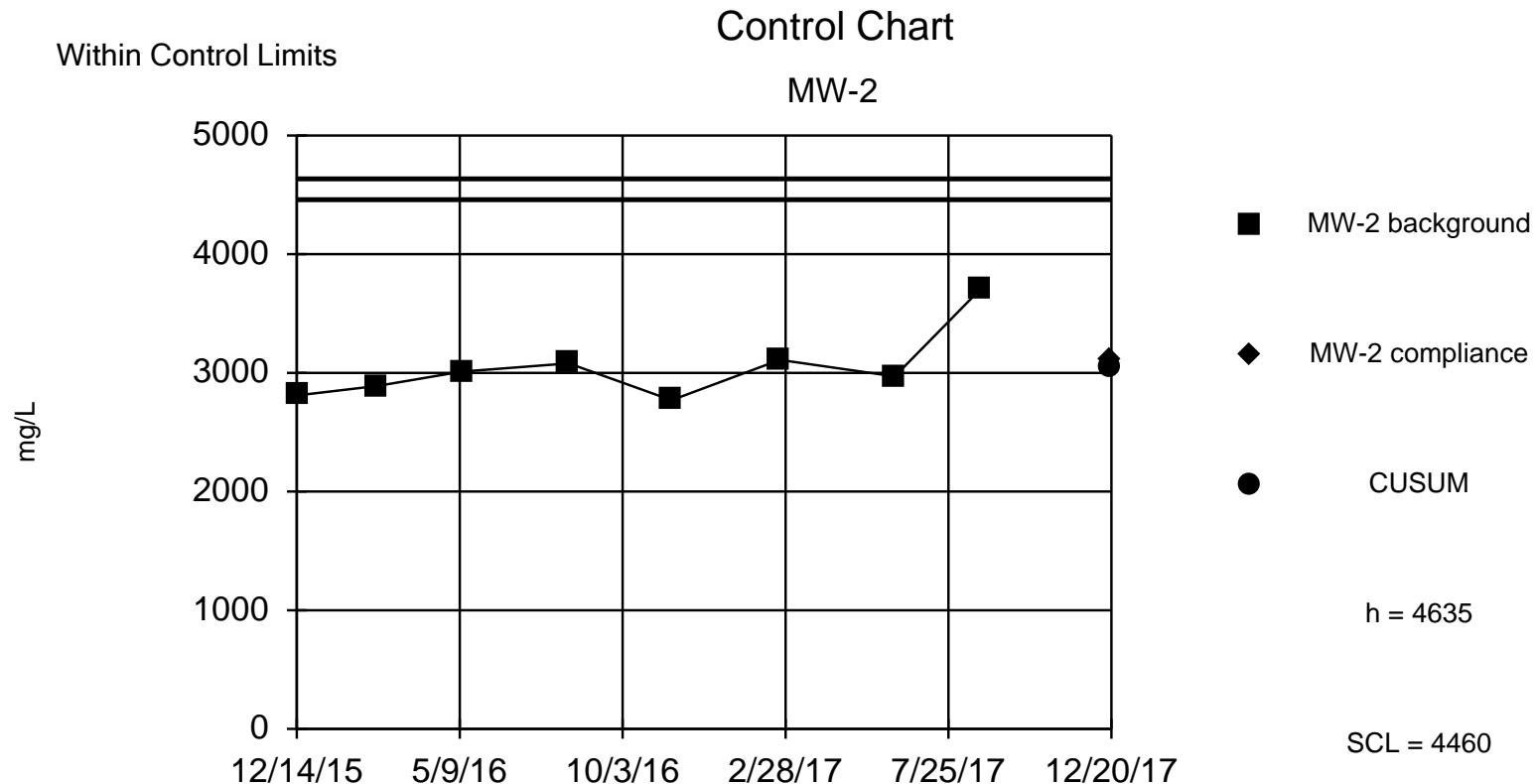
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Prediction Limit

Constituent: pH (Std Units) Analysis Run 1/25/2018 12:07 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	6.7
2/25/2016	7.3
5/11/2016	6.7
8/16/2016	6.7
11/17/2016	6.7
2/23/2017	6.9
6/7/2017	7.5
8/24/2017	6.8
12/20/2017	7.2



Background Data Summary (based on square root transformation): Mean=55.12, Std. Dev.=2.592, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8189, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Sulfate Analysis Run 1/25/2018 12:10 PM

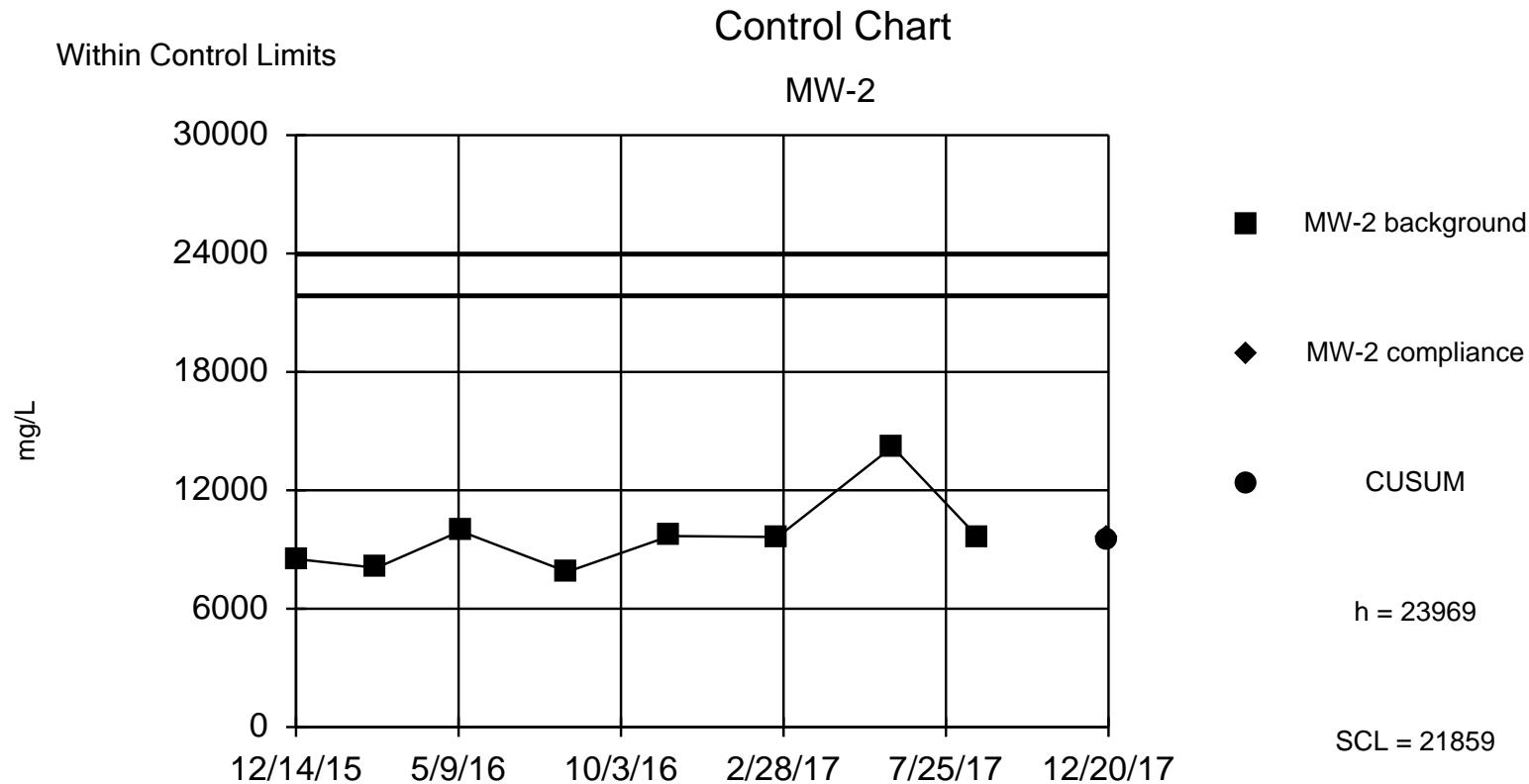
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Sulfate (mg/L) Analysis Run 1/25/2018 12:12 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2	Square Root	Std. Mean	CUSUM
12/14/2015	2810	53.01		
2/25/2016	2890	53.76		
5/11/2016	3010	54.86		
8/16/2016	3080	55.5		
11/17/2016	2770	52.63		
2/23/2017	3110	55.77		
6/7/2017	2970	54.5		
8/24/2017	3710	60.91		
12/20/2017	3100	55.68	0.2163	3038



Background Data Summary (based on natural log transformation): Mean=9.163, Std. Dev.=0.1844, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.833, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

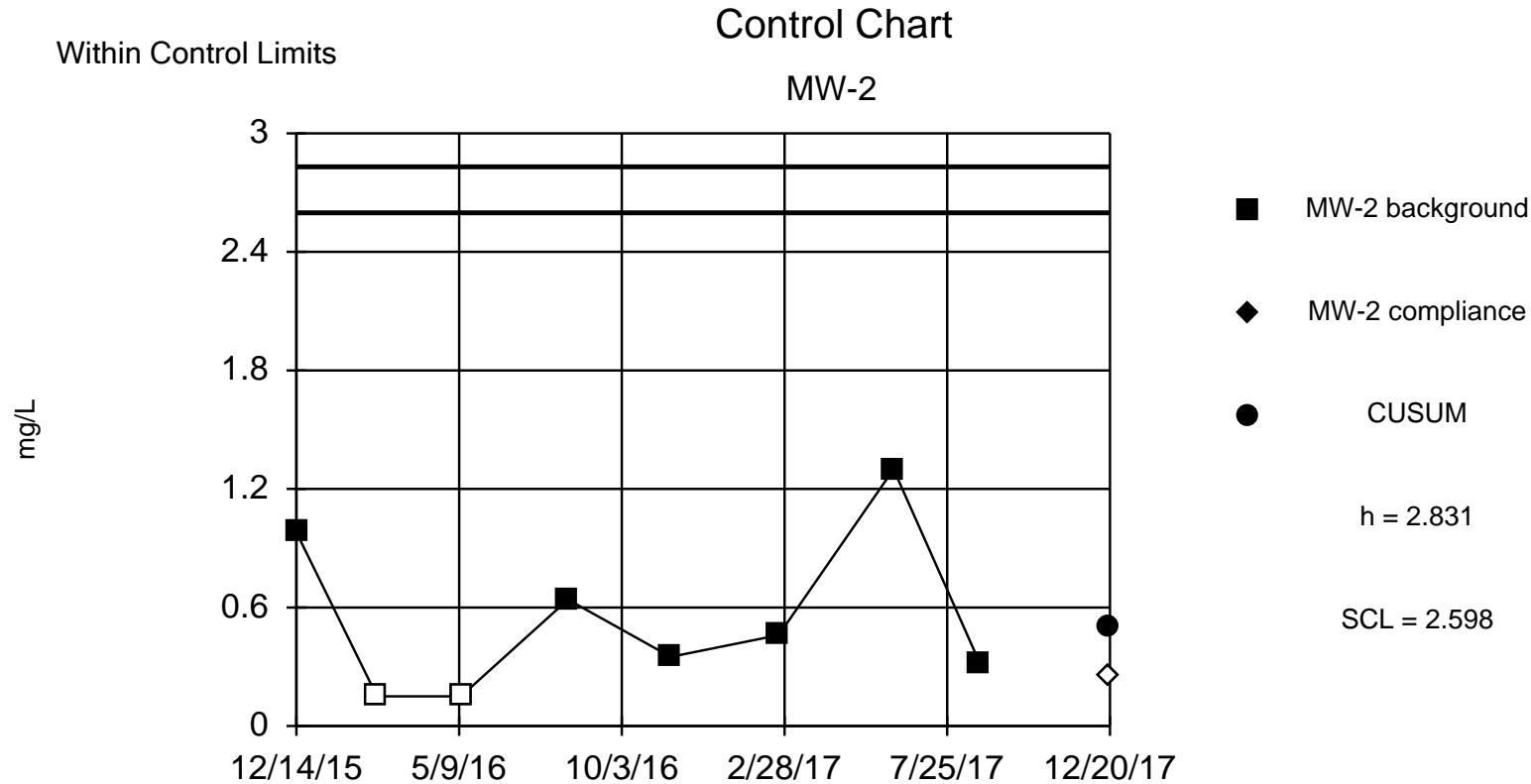
Constituent: Total Dissolved Solids Analysis Run 1/25/2018 12:11 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/25/2018 12:12 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2	Natural Log	Std. Mean	CUSUM
12/14/2015	8520	9.05		
2/25/2016	8070	8.996		
5/11/2016	9930	9.203		
8/16/2016	7870	8.971		
11/17/2016	9680	9.178		
2/23/2017	9630	9.173		
6/7/2017	14200	9.561		
8/24/2017	9600	9.17		
12/20/2017	9600	9.17	0.03726	9538



Background Data Summary (after Cohen's Adjustment): Mean=0.5048, Std. Dev.=0.4652, n=8, 25% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8855, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Fluoride Analysis Run 1/25/2018 12:10 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Fluoride (mg/L) Analysis Run 1/25/2018 12:12 PM

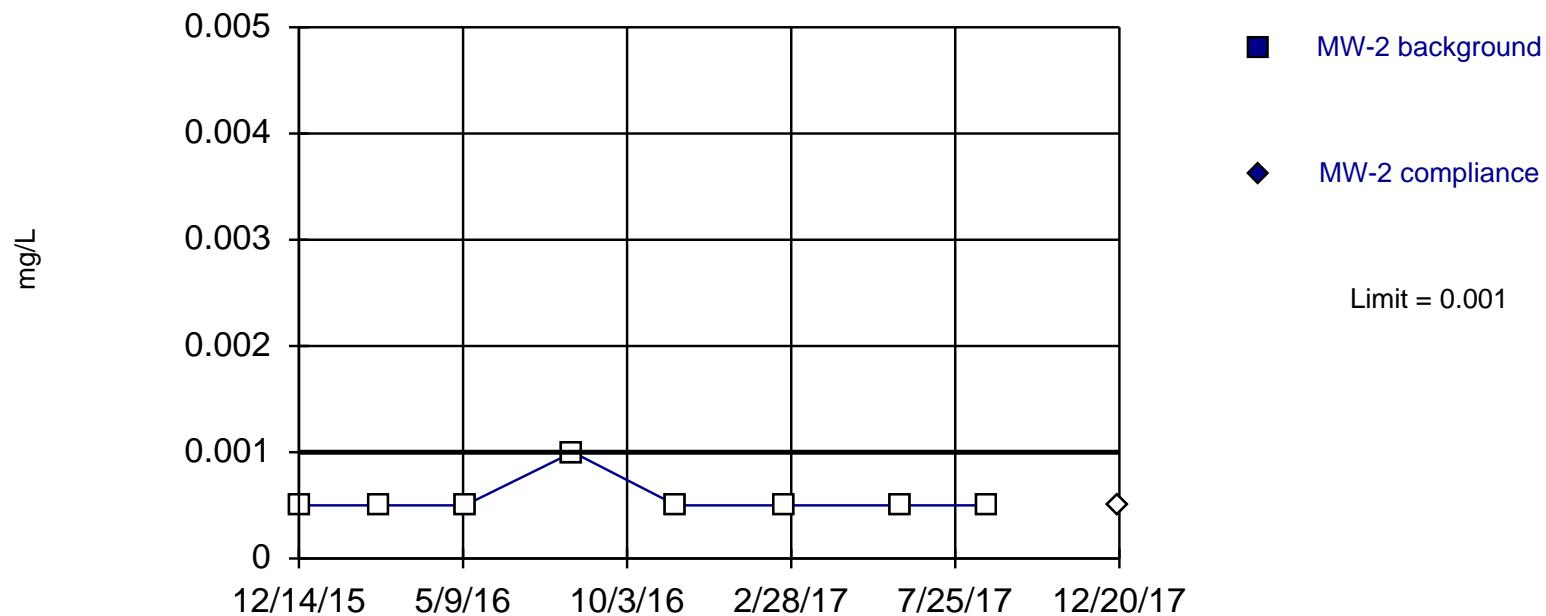
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-2	MW-2	Std. Mean	CUSUM
12/14/2015	0.98			
2/25/2016	<0.3			
5/11/2016	<0.3			
8/16/2016	0.64			
11/17/2016	0.35			
2/23/2017	0.46			
6/7/2017	1.3			
8/24/2017	0.32			
12/20/2017		<0.5	-0.5478	0.5048

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Antimony Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Antimony (mg/L) Analysis Run 1/25/2018 12:21 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

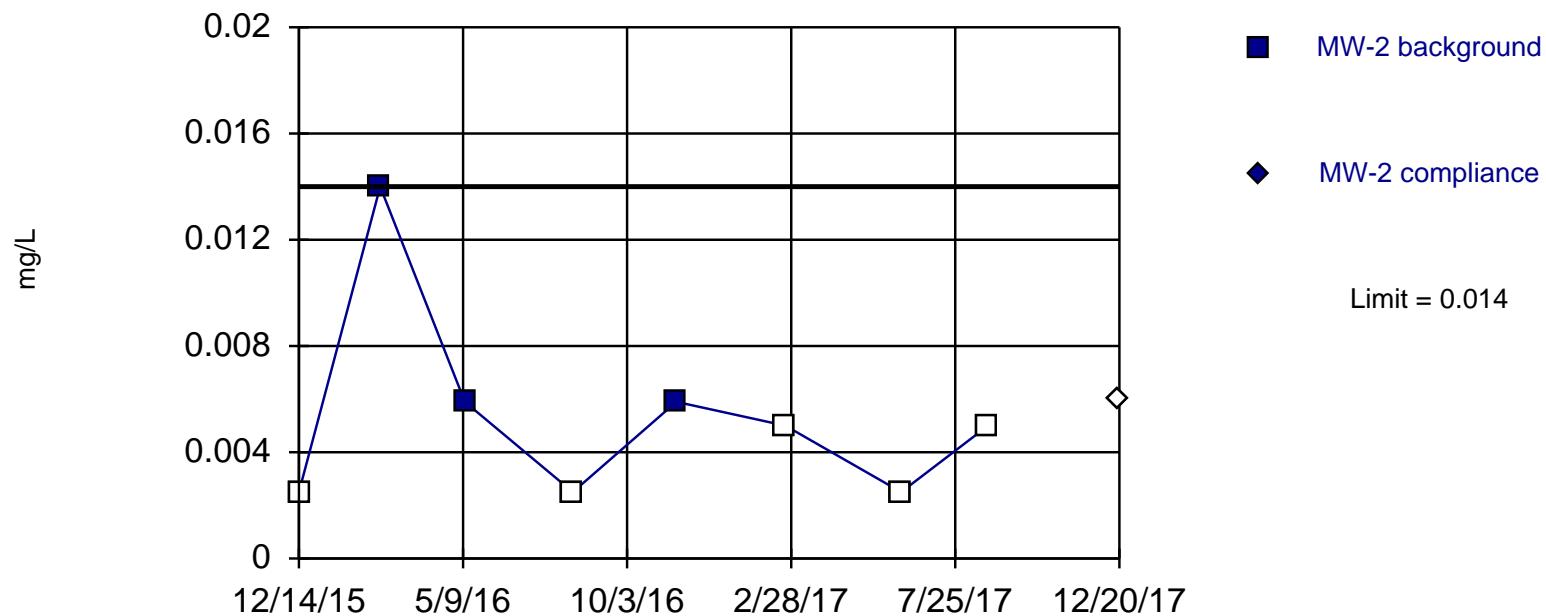
MW-2	MW-2
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.002
11/17/2016	<0.001
2/23/2017	<0.001
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.001

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Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 62.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Arsenic Analysis Run 1/25/2018 12:13 PM

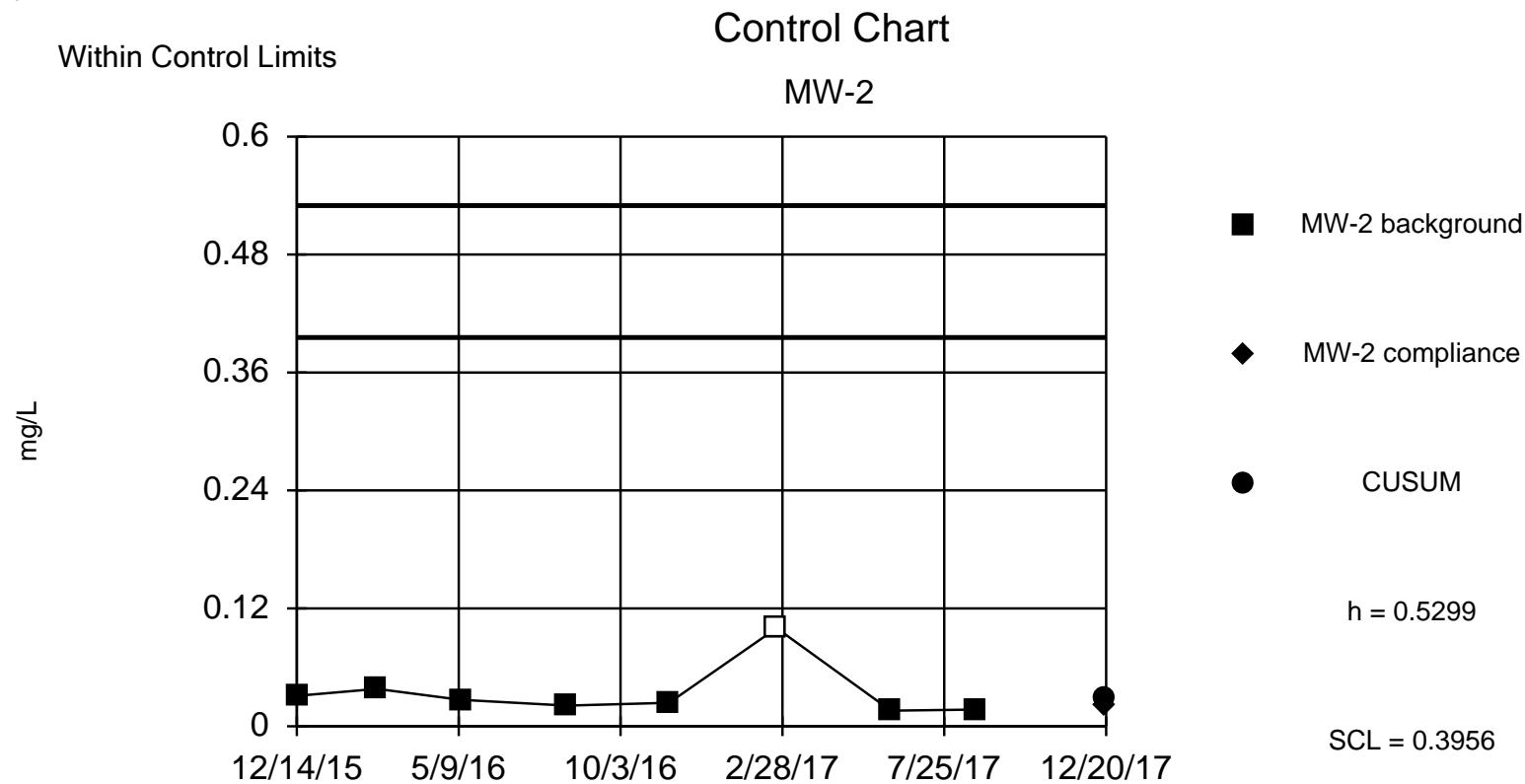
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Arsenic (mg/L) Analysis Run 1/25/2018 12:21 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	<0.005
2/25/2016	0.014
5/11/2016	0.0059
8/16/2016	<0.005
11/17/2016	0.0059
2/23/2017	<0.01
6/7/2017	<0.005
8/24/2017	<0.01
12/20/2017	<0.012



Background Data Summary (based on natural log transformation): Mean=-3.558, Std. Dev.=0.5845, n=8, 12.5% NDs.
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8648, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Barium Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Barium (mg/L) Analysis Run 1/25/2018 12:21 PM

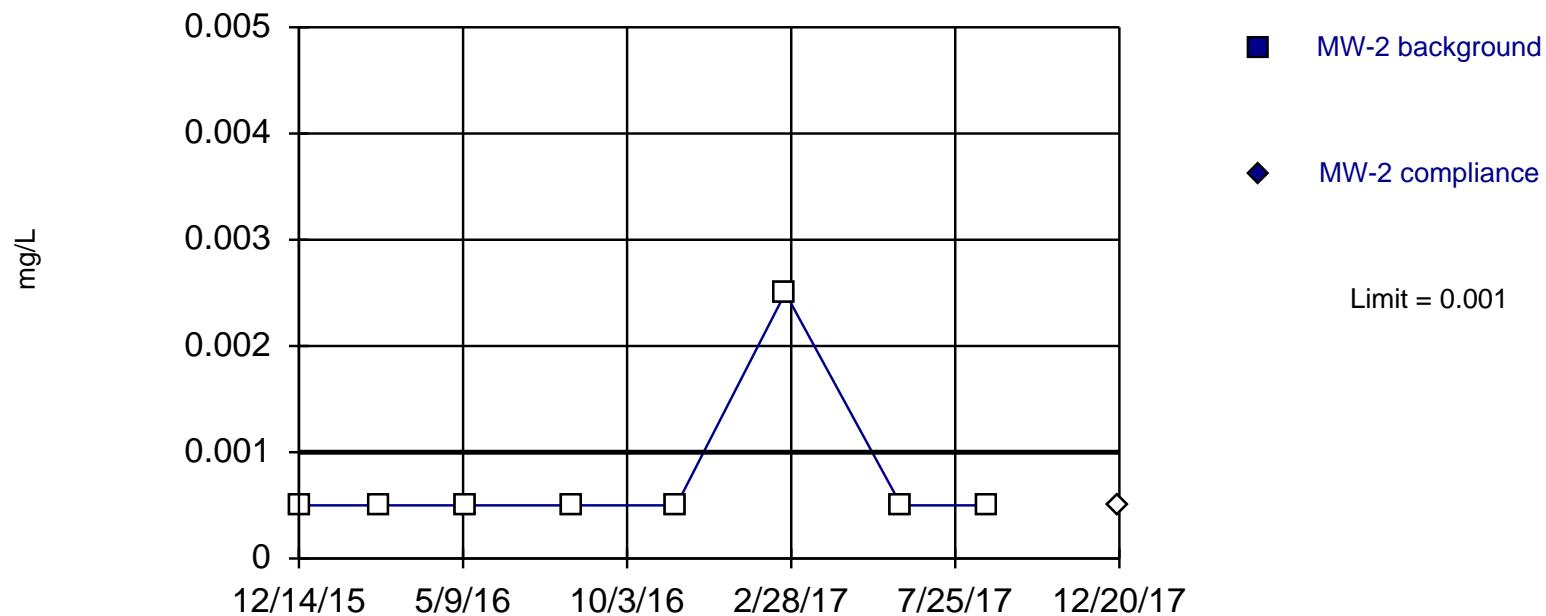
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2	Natural Log	Std. Mean	CUSUM
12/14/2015	0.031	-3.474		
2/25/2016	0.038	-3.27		
5/11/2016	0.027	-3.612		
8/16/2016	0.021	-3.863		
11/17/2016	0.024	-3.73		
2/23/2017	<0.2	-2.303		
6/7/2017	0.016	-4.135		
8/24/2017	0.017	-4.075		
12/20/2017	0.022	-3.817	-0.4432	0.0285

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Beryllium Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Beryllium (mg/L) Analysis Run 1/25/2018 12:21 PM

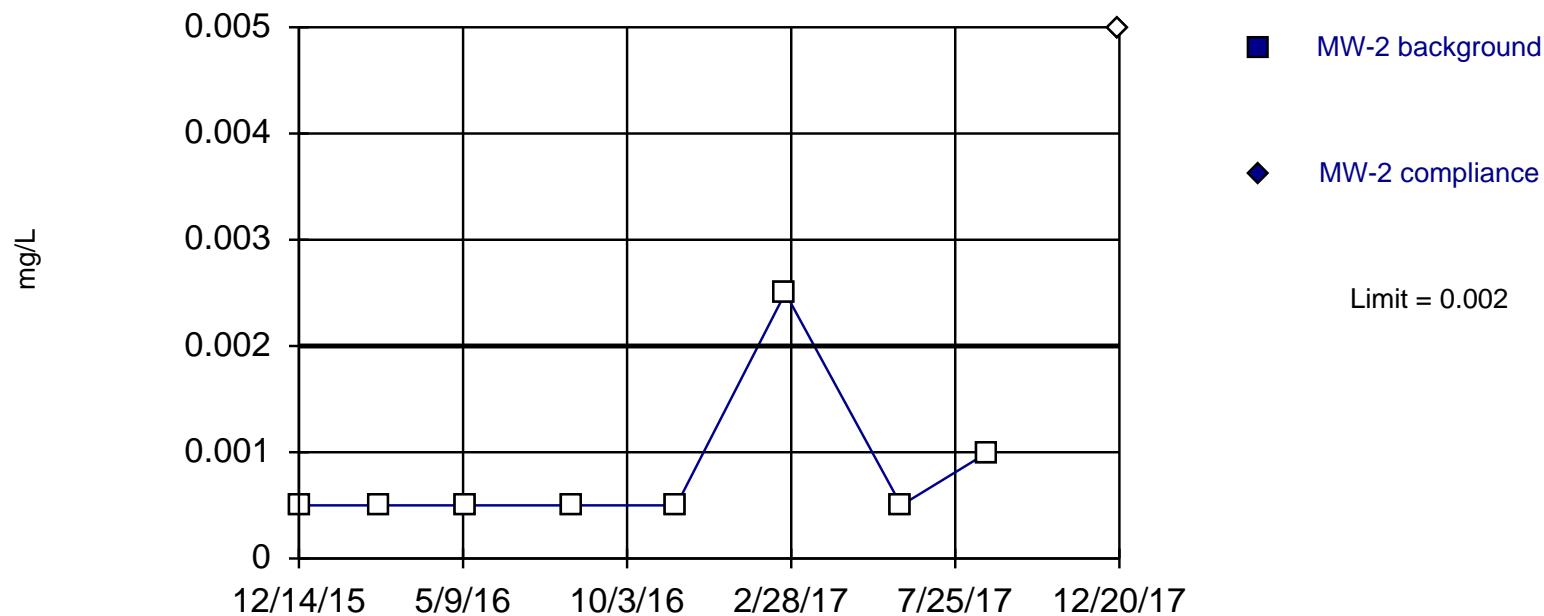
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.005
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.001

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Cadmium Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Cadmium (mg/L) Analysis Run 1/25/2018 12:21 PM

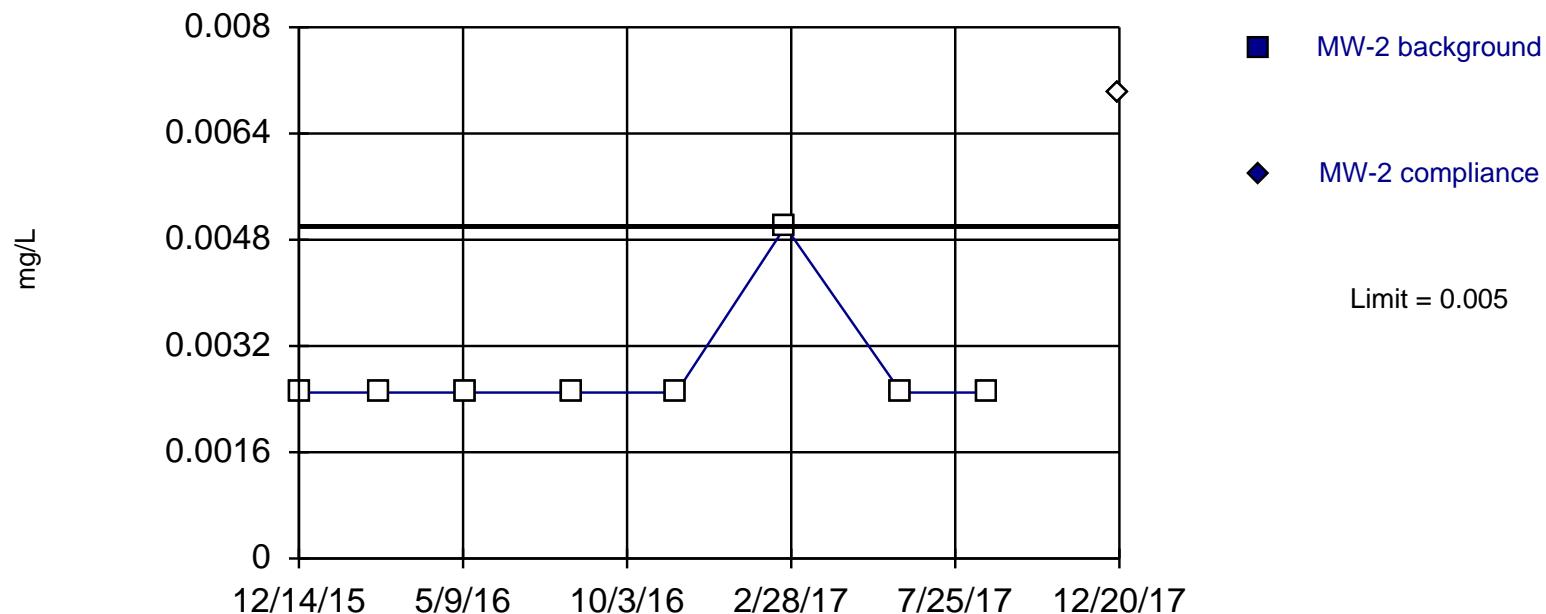
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.005
6/7/2017	<0.001
8/24/2017	<0.002
12/20/2017	<0.01

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Chromium Analysis Run 1/25/2018 12:13 PM

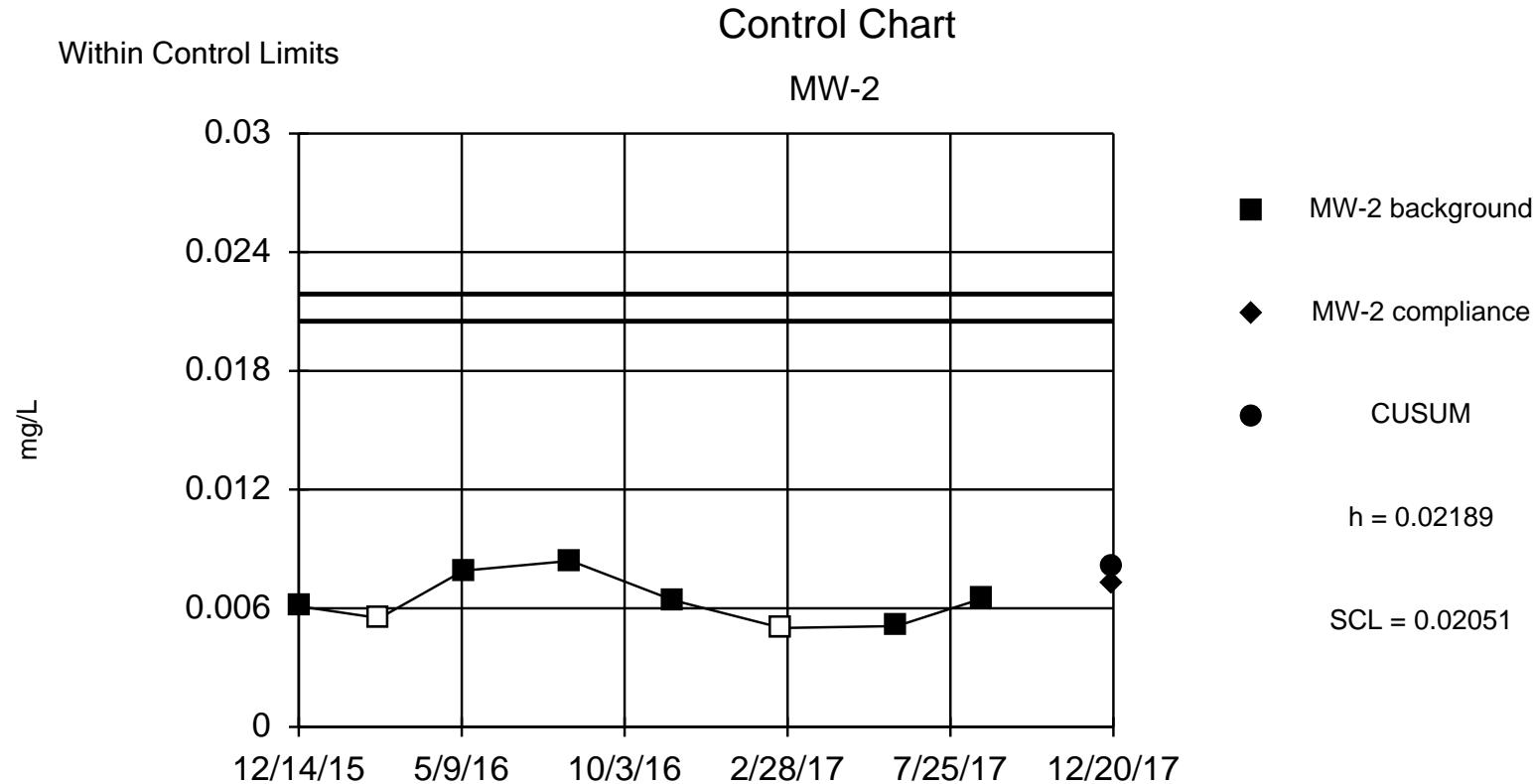
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Chromium (mg/L) Analysis Run 1/25/2018 12:21 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	<0.005
2/25/2016	<0.005
5/11/2016	<0.005
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.01
6/7/2017	<0.005
8/24/2017	<0.005
12/20/2017	<0.014



Background Data Summary (after Cohen's Adjustment): Mean=0.008155, Std. Dev.=0.002746, n=8, 25% NDs.
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.91, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Cobalt Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Cobalt (mg/L) Analysis Run 1/25/2018 12:21 PM

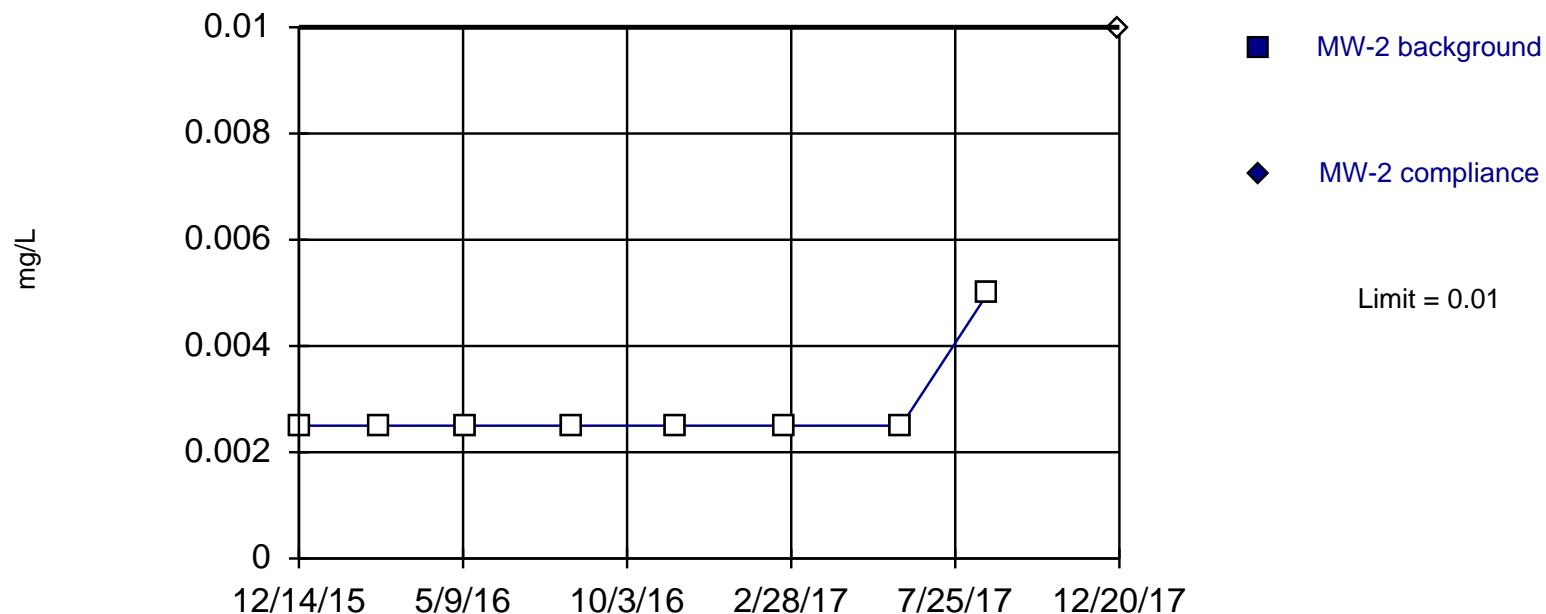
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2	Std. Mean	CUSUM
12/14/2015	0.0061		
2/25/2016	<0.011		
5/11/2016	0.0079		
8/16/2016	0.0084		
11/17/2016	0.0064		
2/23/2017	<0.01		
6/7/2017	0.0051		
8/24/2017	0.0065		
12/20/2017	0.0072	-0.3479	0.008155

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Lead Analysis Run 1/25/2018 12:13 PM

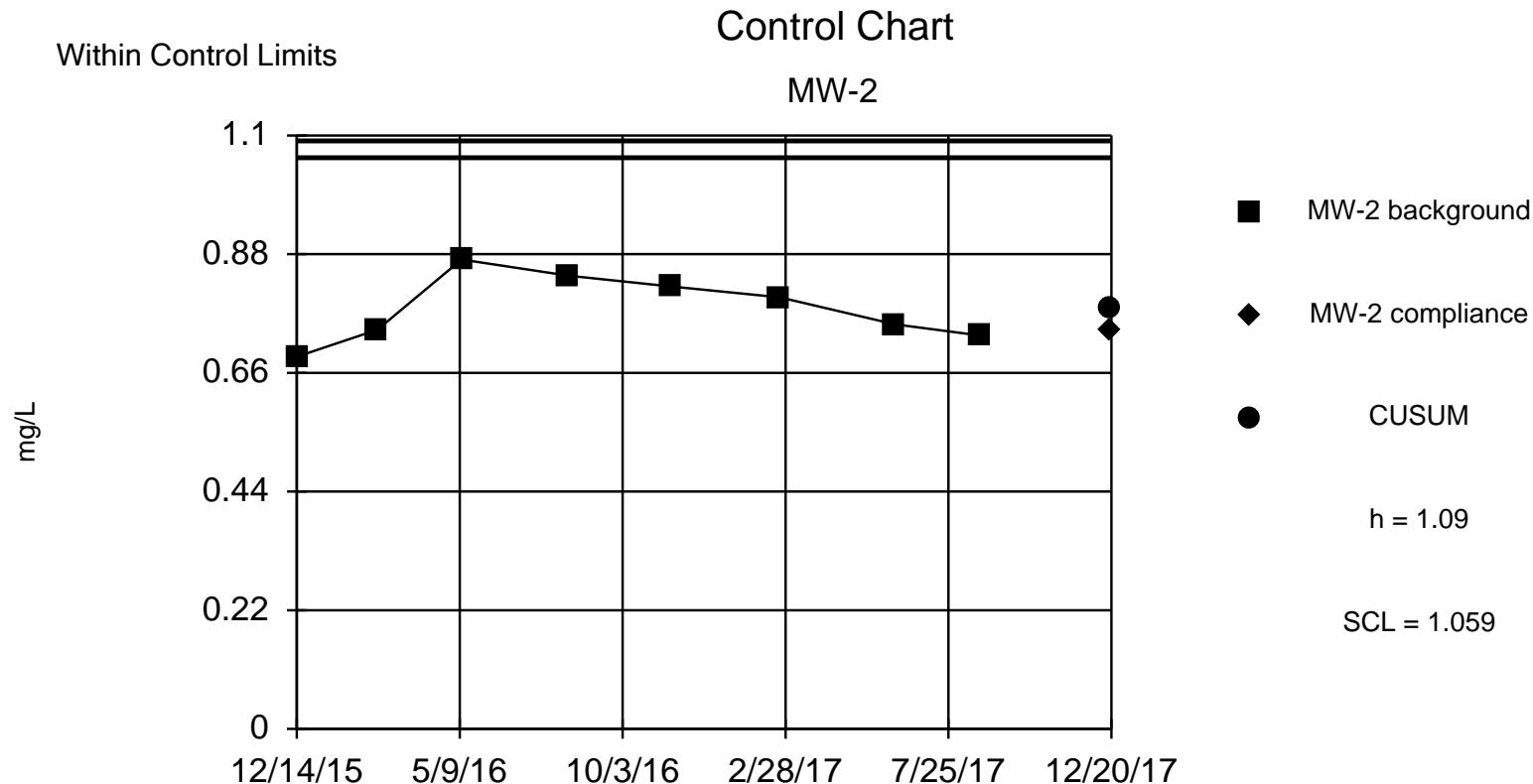
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Lead (mg/L) Analysis Run 1/25/2018 12:21 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	<0.005
2/25/2016	<0.005
5/11/2016	<0.005
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.005
6/7/2017	<0.005
8/24/2017	<0.01
12/20/2017	<0.02



Background Data Summary: Mean=0.7799, Std. Dev.=0.06199, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9612, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Lithium Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Lithium (mg/L) Analysis Run 1/25/2018 12:21 PM

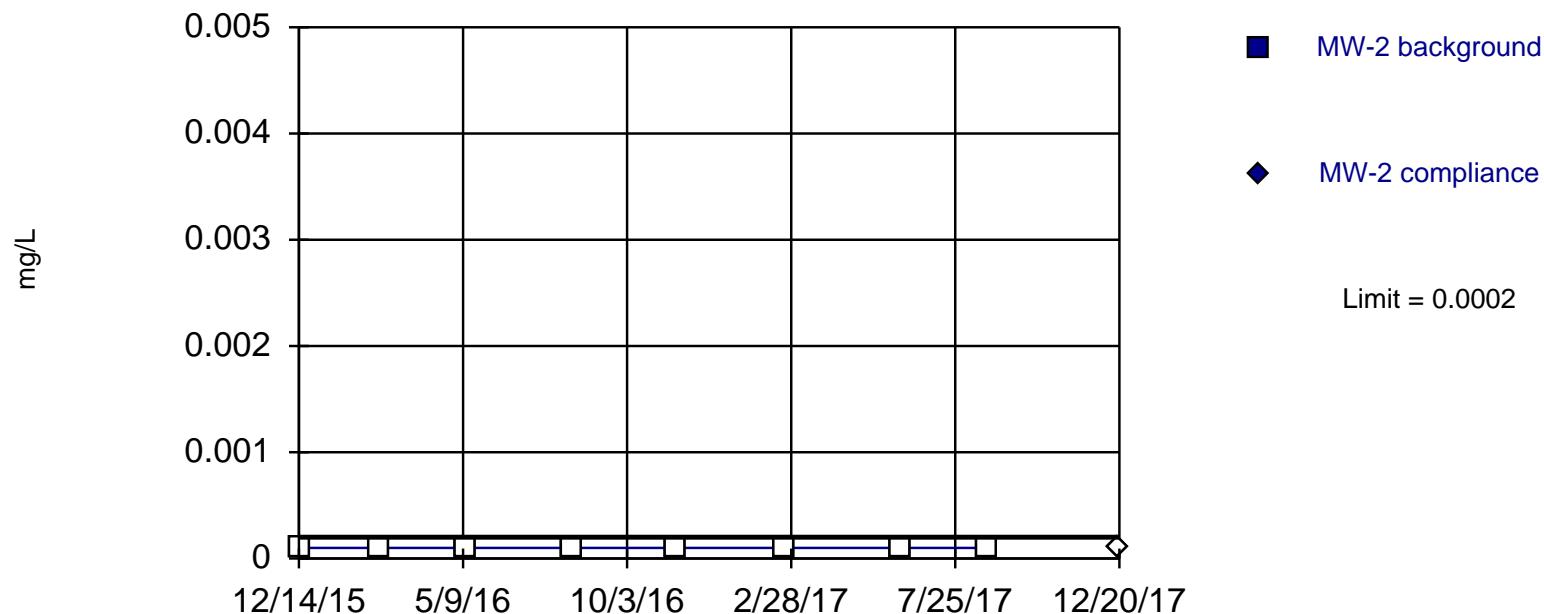
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-2	MW-2	Std. Mean	CUSUM
12/14/2015	0.69			
2/25/2016	0.74			
5/11/2016	0.87			
8/16/2016	0.84			
11/17/2016	0.82			
2/23/2017	0.8			
6/7/2017	0.75			
8/24/2017	0.729			
12/20/2017		0.74	-0.6432	0.7799

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Mercury Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Mercury (mg/L) Analysis Run 1/25/2018 12:21 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

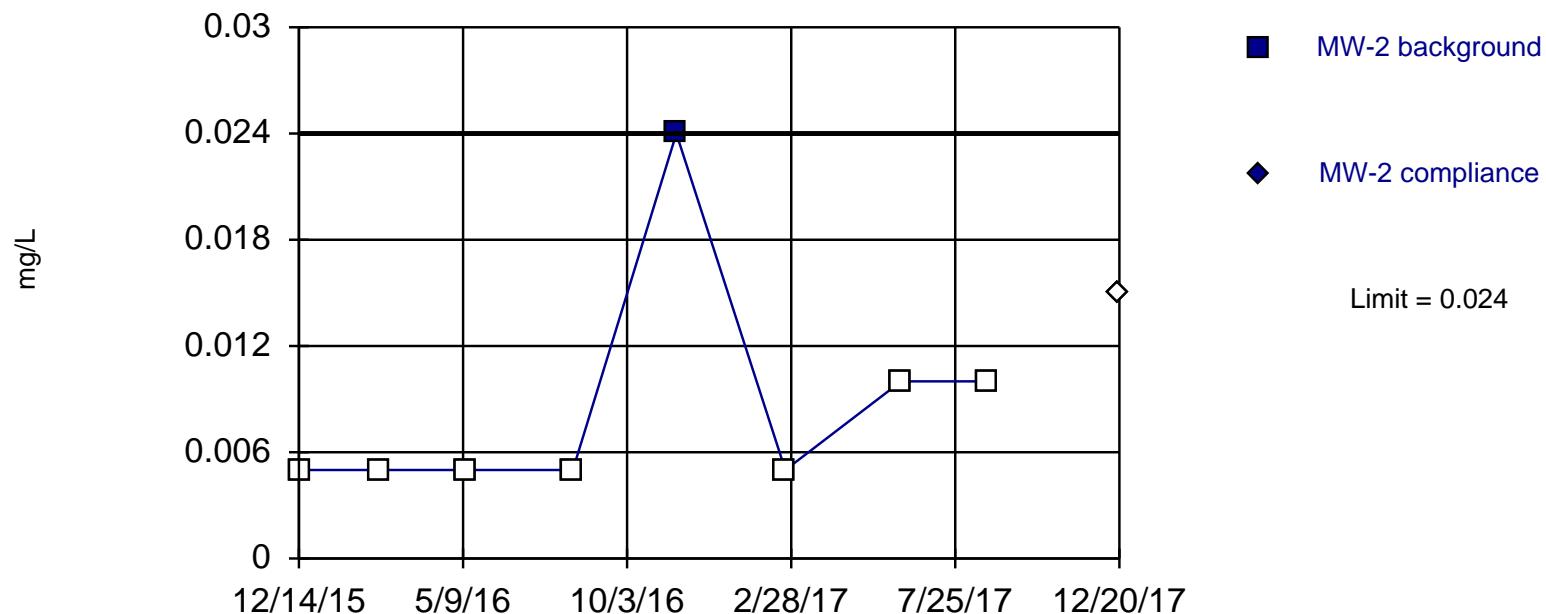
MW-2	MW-2
12/14/2015	<0.0002
2/25/2016	<0.0002
5/11/2016	<0.0002
8/16/2016	<0.0002
11/17/2016	<0.0002
2/23/2017	<0.0002
6/7/2017	<0.0002
8/24/2017	<0.0002
12/20/2017	<0.0002

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Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Molybdenum Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Molybdenum (mg/L) Analysis Run 1/25/2018 12:21 PM

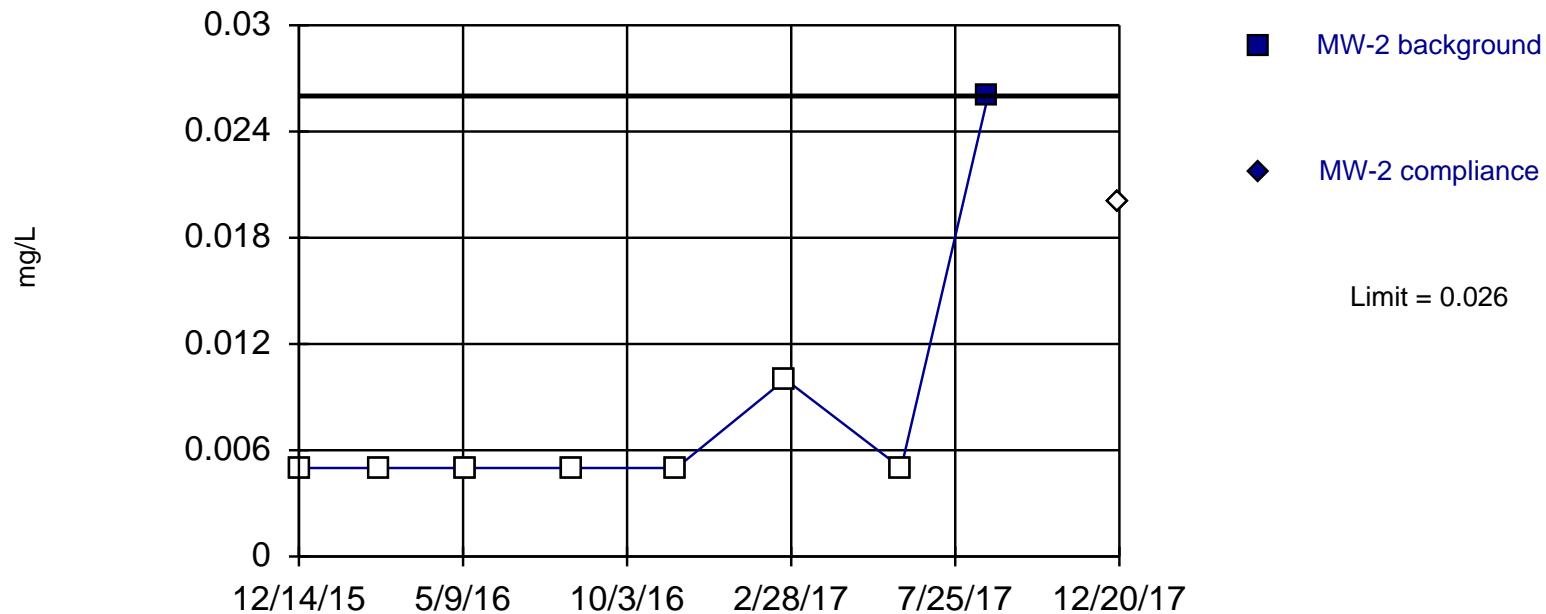
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	<0.01
2/25/2016	<0.01
5/11/2016	<0.01
8/16/2016	<0.01
11/17/2016	0.024
2/23/2017	<0.01
6/7/2017	<0.02
8/24/2017	<0.02
12/20/2017	<0.03

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Selenium Analysis Run 1/25/2018 12:13 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Selenium (mg/L) Analysis Run 1/25/2018 12:21 PM

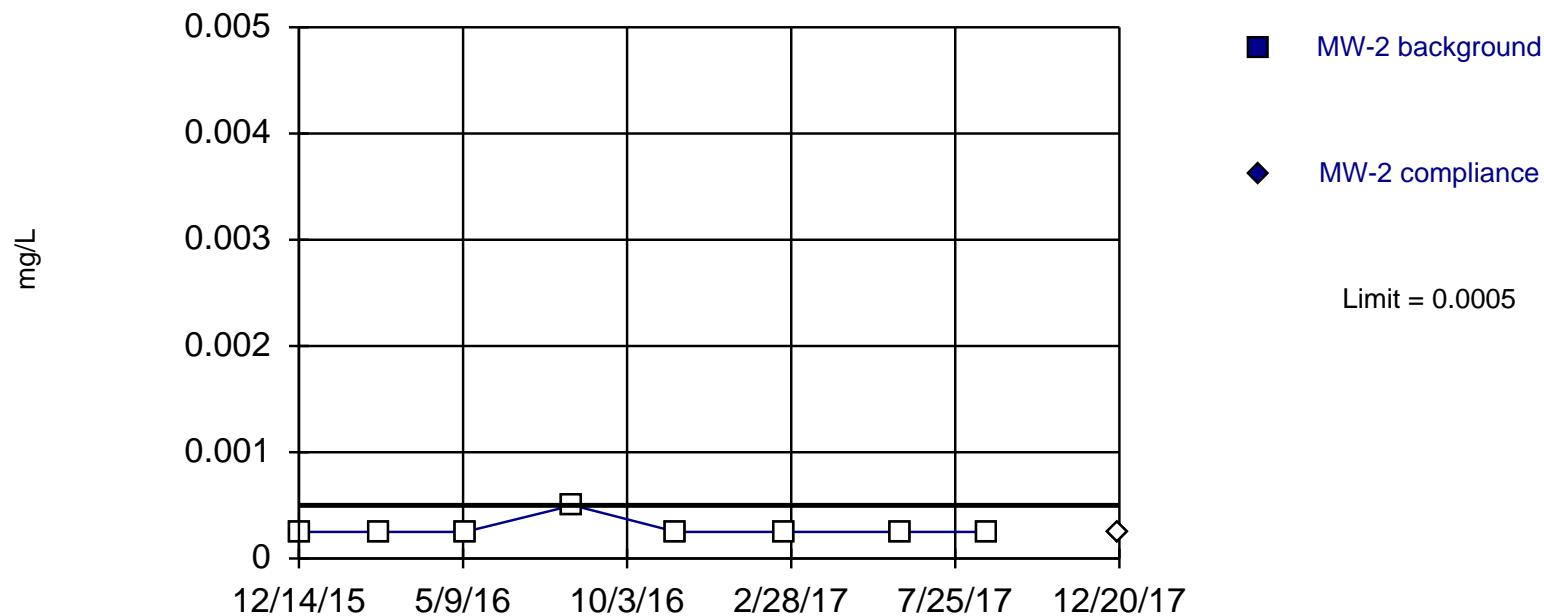
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	<0.01
2/25/2016	<0.01
5/11/2016	<0.01
8/16/2016	<0.01
11/17/2016	<0.01
2/23/2017	<0.02
6/7/2017	<0.01
8/24/2017	0.026
12/20/2017	<0.04

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Thallium Analysis Run 1/25/2018 12:13 PM

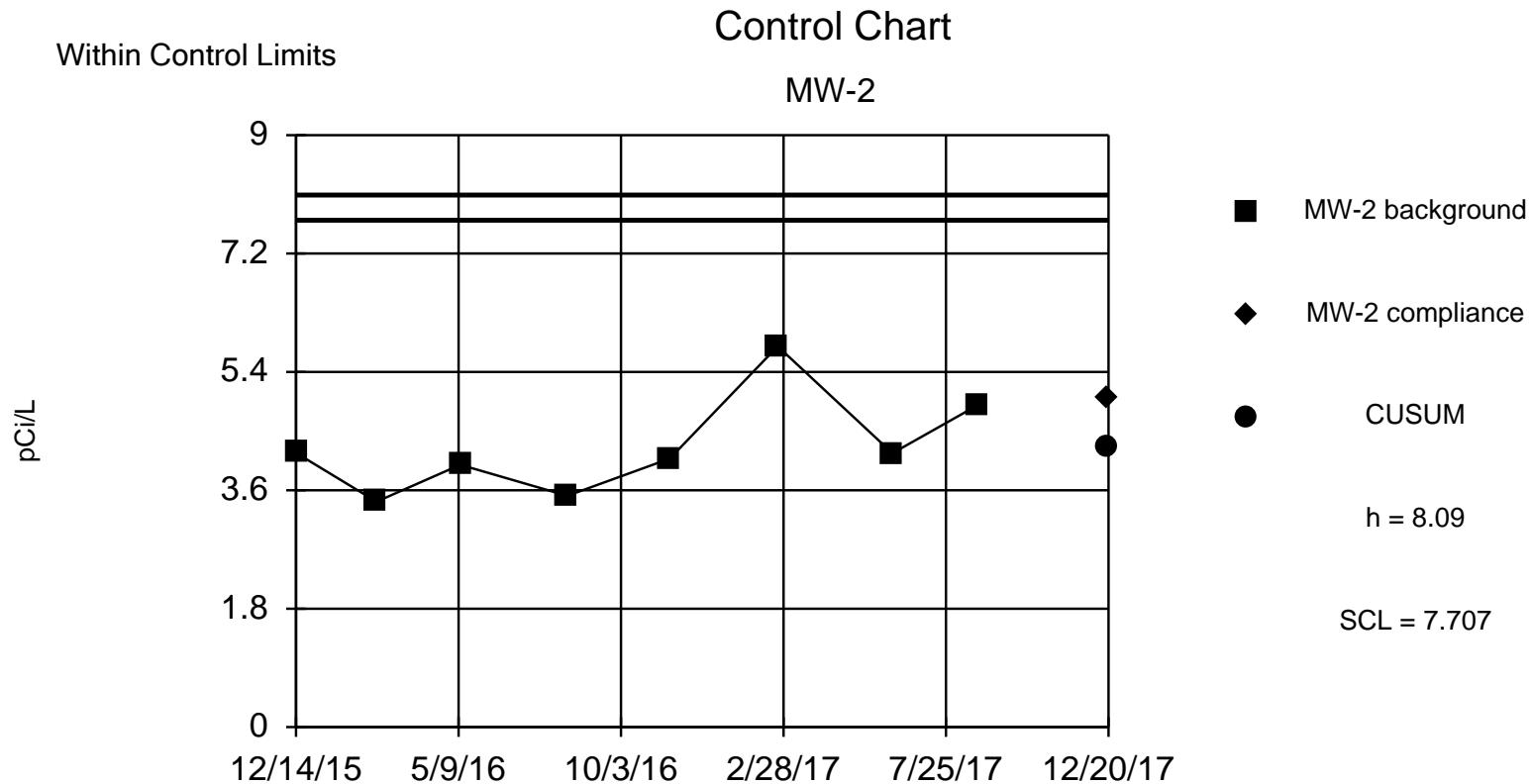
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Thallium (mg/L) Analysis Run 1/25/2018 12:21 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2
12/14/2015	<0.0005
2/25/2016	<0.0005
5/11/2016	<0.0005
8/16/2016	<0.001
11/17/2016	<0.0005
2/23/2017	<0.0005
6/7/2017	<0.0005
8/24/2017	<0.0005
12/20/2017	<0.0005



Background Data Summary: Mean=4.255, Std. Dev.=0.767, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.88, critical = 0.818. Report alpha = 0.001916. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Combined Radium Analysis Run 1/25/2018 2:47 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

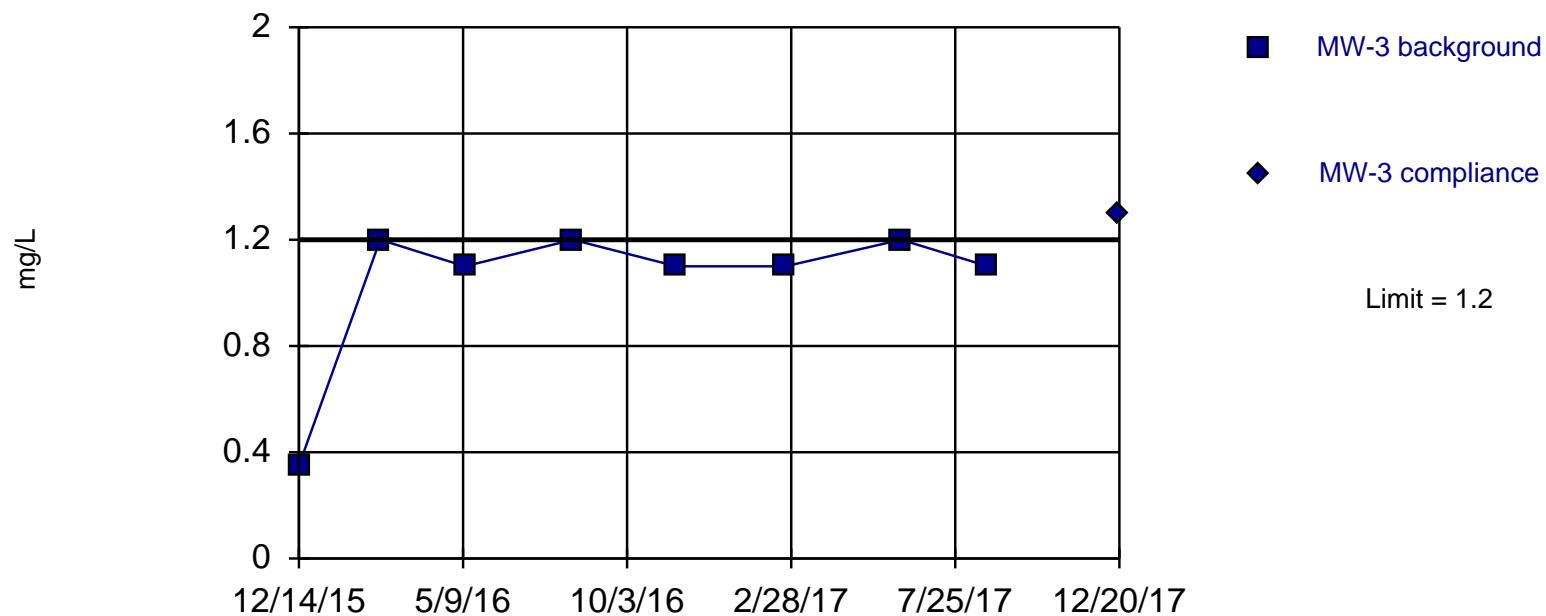
Constituent: Combined Radium (pCi/L) Analysis Run 1/25/2018 2:47 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-2	MW-2	Std. Mean	CUSUM
12/14/2015	4.17		
2/25/2016	3.427		
5/11/2016	3.989		
8/16/2016	3.517		
11/17/2016	4.083		
2/23/2017	5.79		
6/7/2017	4.164		
8/24/2017	4.9		
12/20/2017	5.015	0.9908	4.255

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Boron Analysis Run 1/25/2018 12:25 PM

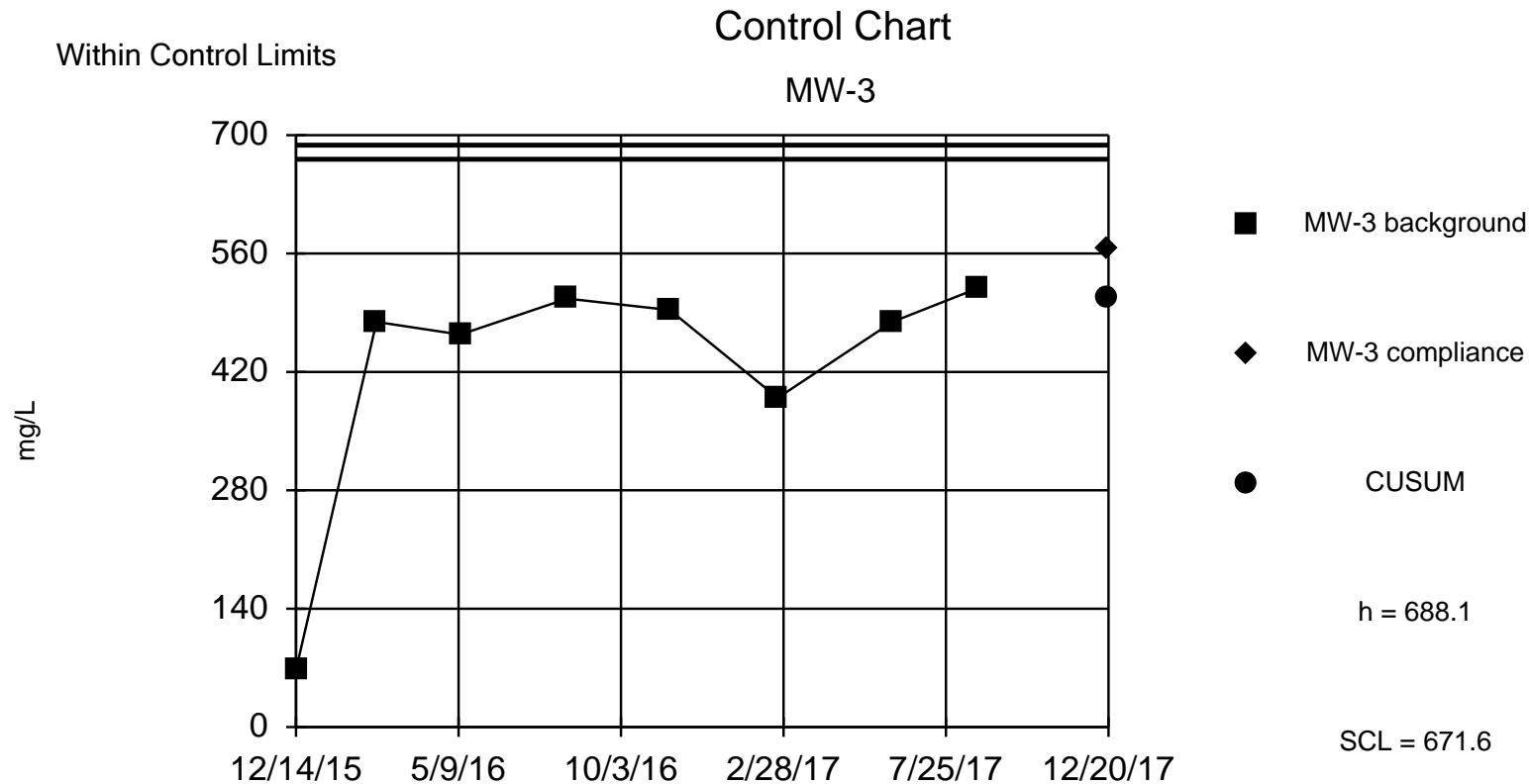
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Boron (mg/L) Analysis Run 1/25/2018 12:27 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	0.35
2/25/2016	1.2
5/11/2016	1.1
8/16/2016	1.2
11/17/2016	1.1
2/23/2017	1.1
6/7/2017	1.2
8/24/2017	1.1
12/20/2017	1.3



Background Data Summary (based on cube transformation): Mean=9.7e7, Std. Dev.=4.6e7, n=8. Normality test:
Shapiro Wilk @alpha = 0.05, calculated = 0.828, critical = 0.818. Report alpha = 0.001952. Dates ending 8/24/2017
used for control stats. Standardized h=5, SCL=4.5.

Constituent: Calcium Analysis Run 1/26/2018 10:17 AM

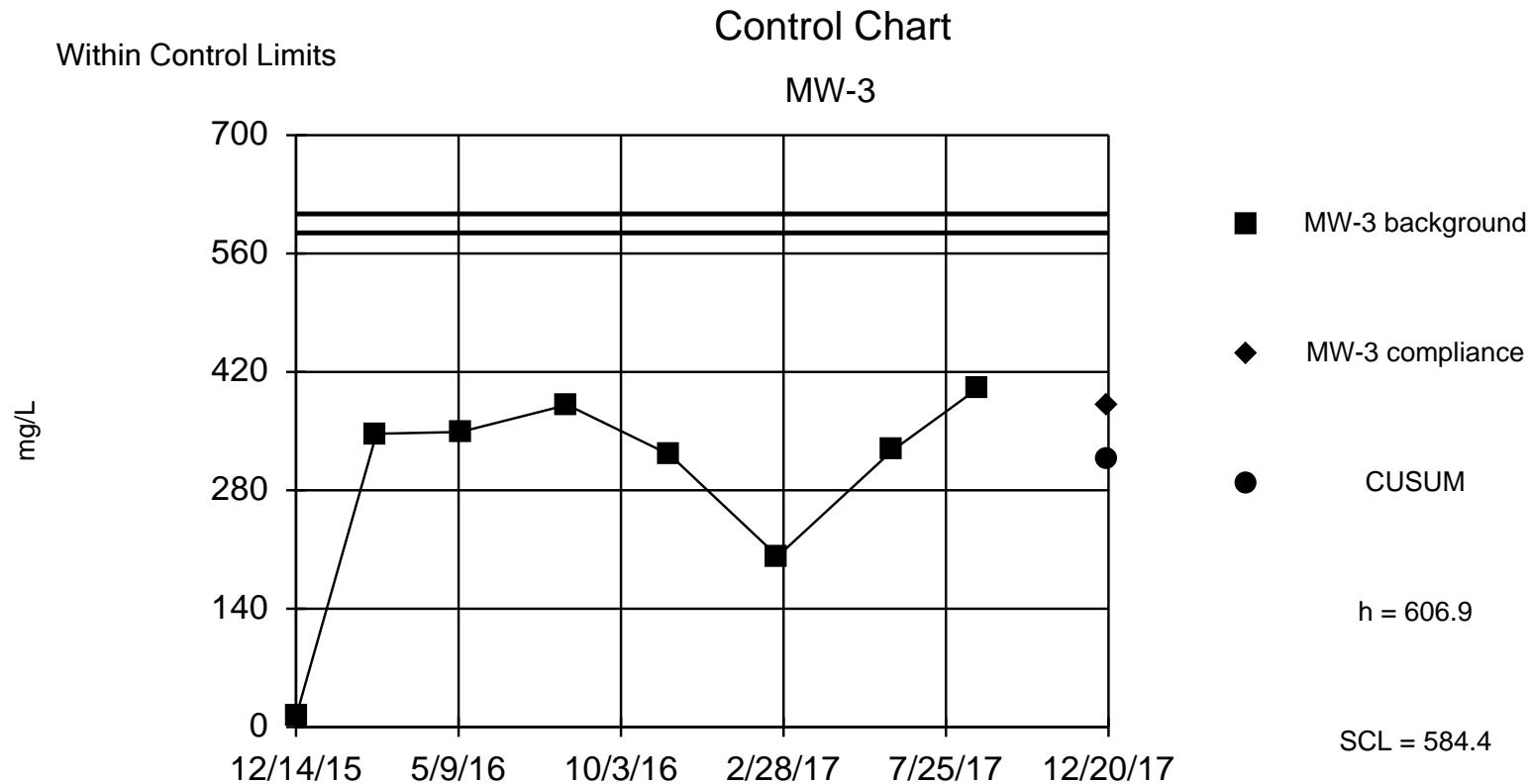
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Calcium (mg/L) Analysis Run 1/26/2018 10:17 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-3	MW-3	Cube	Std. Mean	CUSUM
12/14/2015	67.6		308915.776		
2/25/2016	479		109902239		
5/11/2016	465		100544625		
8/16/2016	505		128787625		
11/17/2016	494		120553784		
2/23/2017	389		58863869		
6/7/2017	486		114791256		
8/24/2017	519		139798359		
12/20/2017		563	178453547	1.784	506.6



Background Data Summary (based on square transformation): Mean=99968, Std. Dev.=53670, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8926, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Chloride Analysis Run 1/25/2018 12:25 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Chloride (mg/L) Analysis Run 1/25/2018 12:27 PM

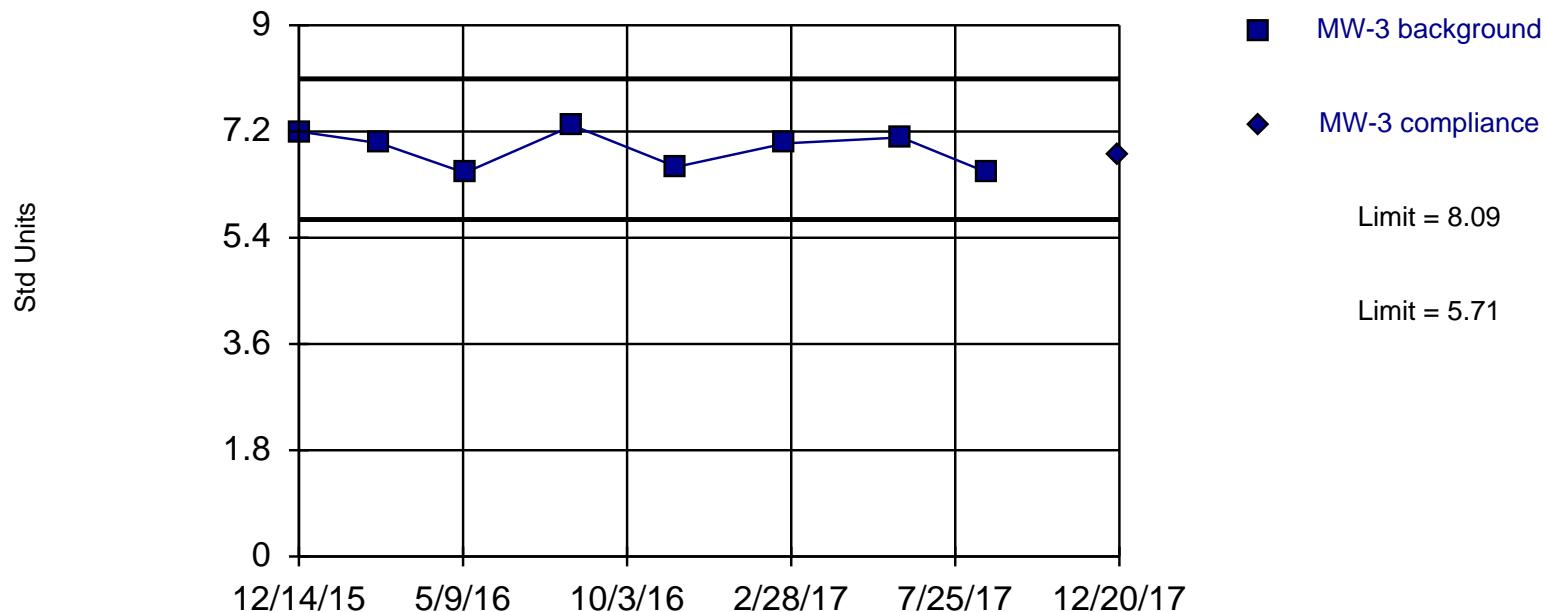
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-3	MW-3	Square	Std. Mean	CUSUM
12/14/2015	12.3		151.29		
2/25/2016	347		120409		
5/11/2016	349		121801		
8/16/2016	381		145161		
11/17/2016	322		103684		
2/23/2017	202		40804		
6/7/2017	327		106929		
8/24/2017	401		160801		
12/20/2017		380	144400	0.8279	316.2

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.9, Std. Dev.=0.3207, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8729, critical = 0.818. Report alpha = 0.01. Most recent point compared to limit.

Constituent: pH Analysis Run 1/25/2018 12:23 PM

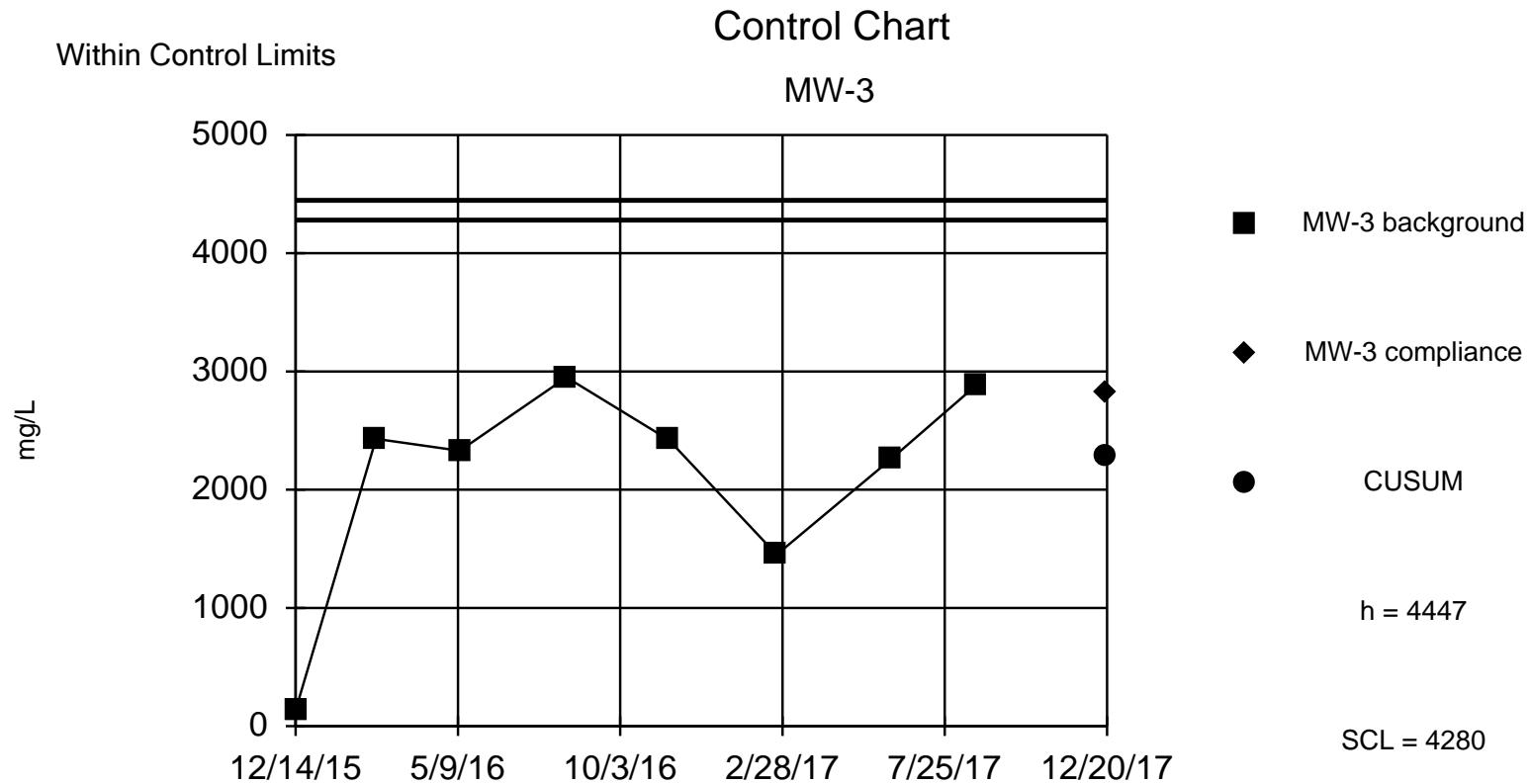
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Prediction Limit

Constituent: pH (Std Units) Analysis Run 1/25/2018 12:24 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-3	MW-3
12/14/2015	7.2	
2/25/2016	7	
5/11/2016	6.5	
8/16/2016	7.3	
11/17/2016	6.6	
2/23/2017	7	
6/7/2017	7.1	
8/24/2017	6.5	
12/20/2017		6.8



Background Data Summary (based on square transformation): Mean=5184141, Std. Dev.=2918787, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9173, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Sulfate Analysis Run 1/25/2018 12:25 PM

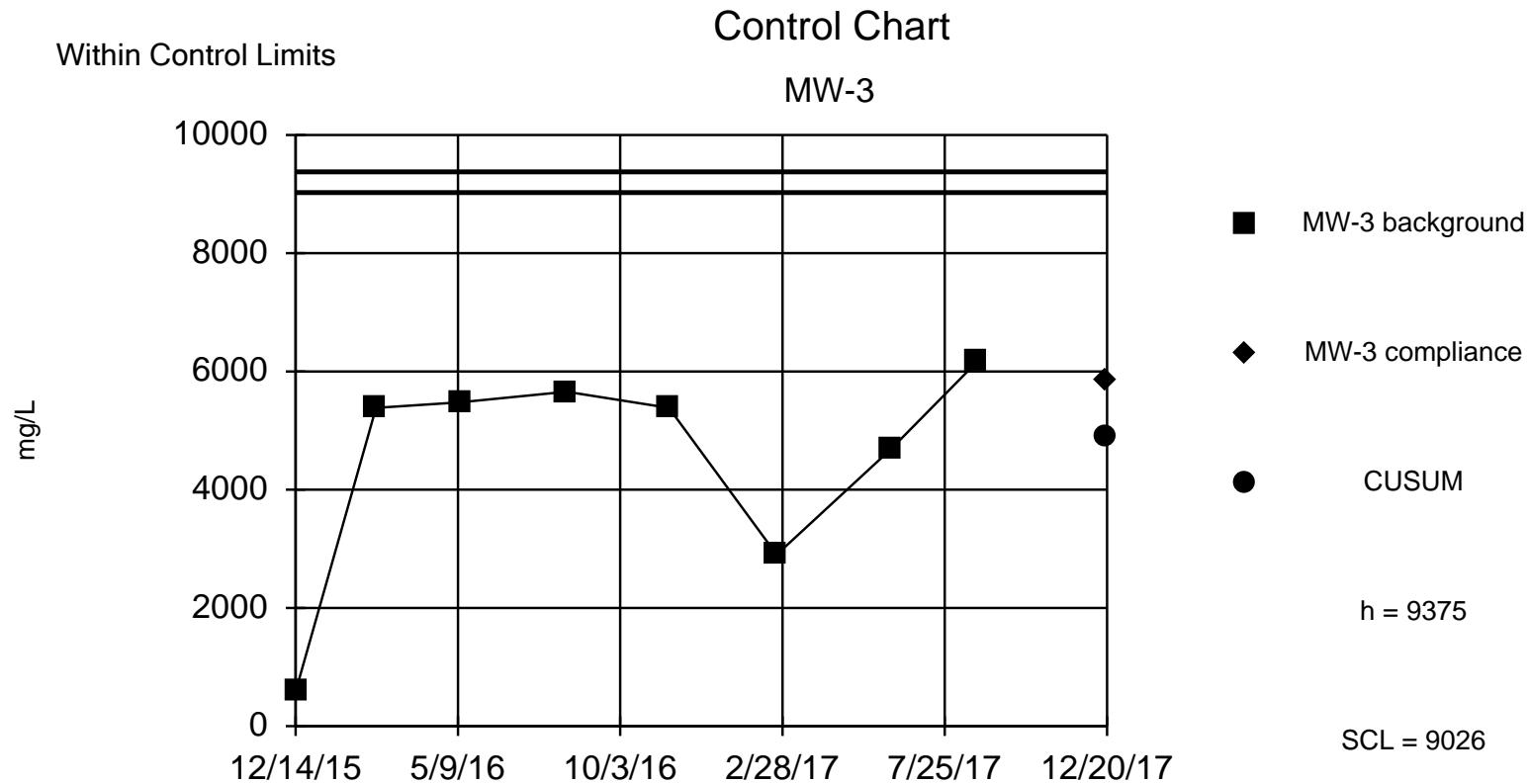
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Sulfate (mg/L) Analysis Run 1/25/2018 12:27 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-3	MW-3	Square	Std. Mean	CUSUM
12/14/2015	135		18225		
2/25/2016	2430		5904900		
5/11/2016	2330		5428900		
8/16/2016	2950		8702500		
11/17/2016	2420		5856400		
2/23/2017	1450		2102500		
6/7/2017	2260		5107600		
8/24/2017	2890		8352100		
12/20/2017		2830	8008900	0.9678	2277



Background Data Summary (based on square transformation): Mean=2.4e7, Std. Dev.=1.3e7, n=8. Normality test:
Shapiro Wilk @alpha = 0.05, calculated = 0.8631, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017
used for control stats. Standardized h=5, SCL=4.5.

Constituent: Total Dissolved Solids Analysis Run 1/25/2018 12:25 PM

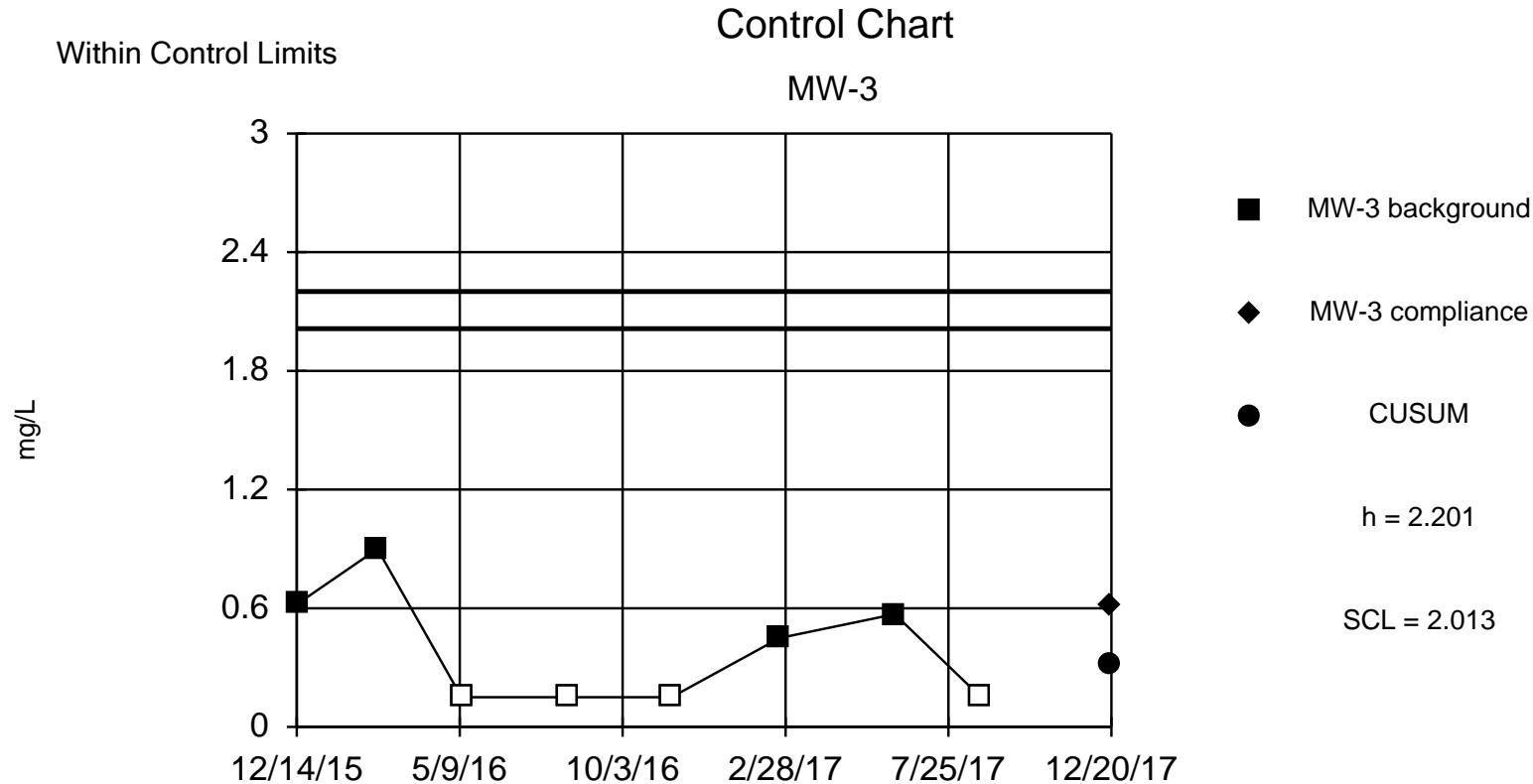
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/25/2018 12:27 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-3	MW-3	Square	Std. Mean	CUSUM
12/14/2015	586		343396		
2/25/2016	5400		29160000		
5/11/2016	5440		29593600		
8/16/2016	5680		32262400		
11/17/2016	5420		29376400		
2/23/2017	2900		8410000		
6/7/2017	4740		22467600		
8/24/2017	6160		37945600		
12/20/2017		5790	33524100	0.7656	4899



Background Data Summary (after Cohen's Adjustment): Mean=0.3213, Std. Dev.=0.376, n=8, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8281, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Fluoride Analysis Run 1/25/2018 12:25 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Fluoride (mg/L) Analysis Run 1/25/2018 12:27 PM

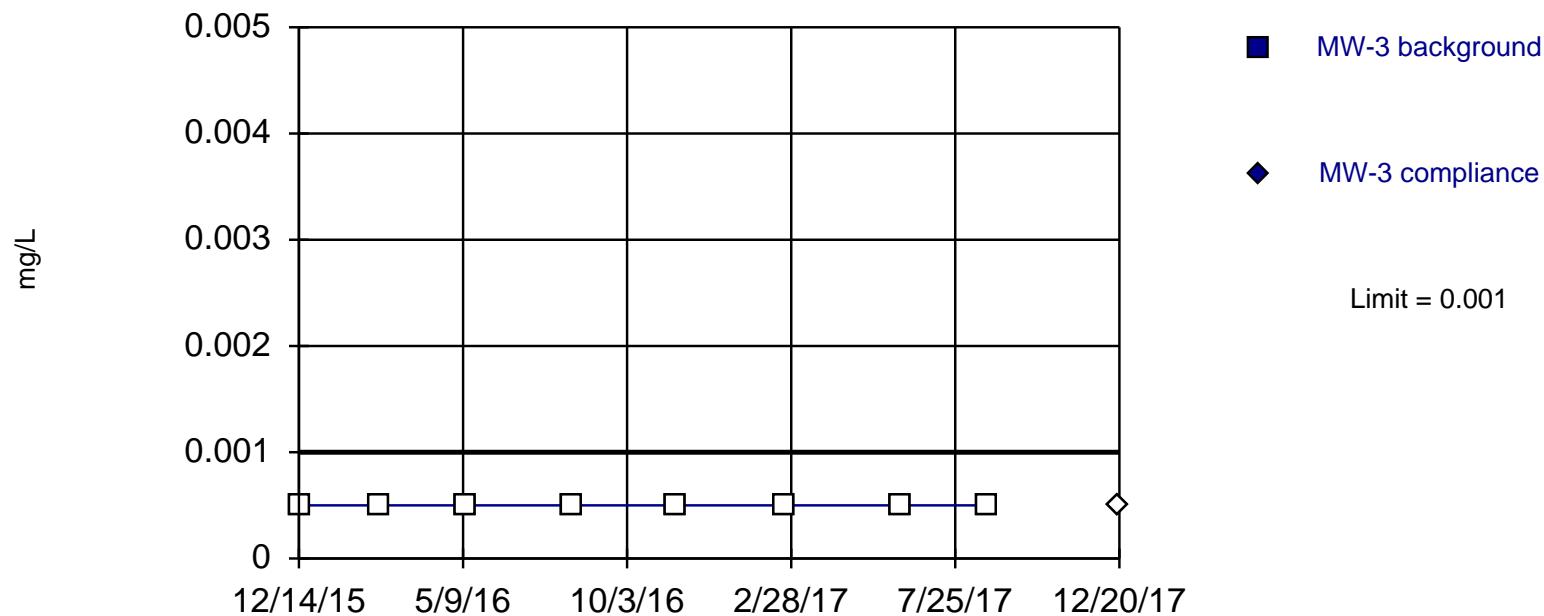
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-3	MW-3	Std. Mean	CUSUM
12/14/2015	0.62			
2/25/2016	0.9			
5/11/2016	<0.3			
8/16/2016	<0.3			
11/17/2016	<0.3			
2/23/2017	0.45			
6/7/2017	0.57			
8/24/2017	<0.3			
12/20/2017		0.61	0.7678	0.3213

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Antimony Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Antimony (mg/L) Analysis Run 1/25/2018 12:36 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

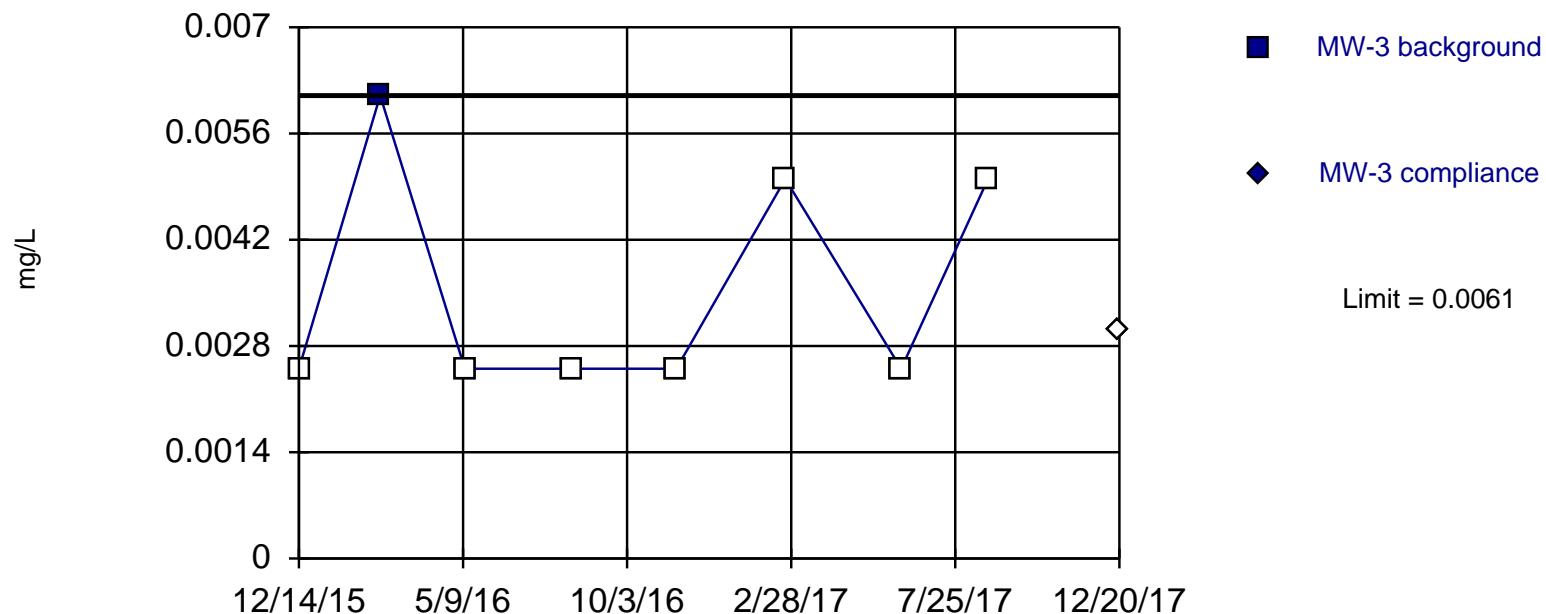
MW-3	MW-3
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.001
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.001

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Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Arsenic Analysis Run 1/25/2018 12:31 PM

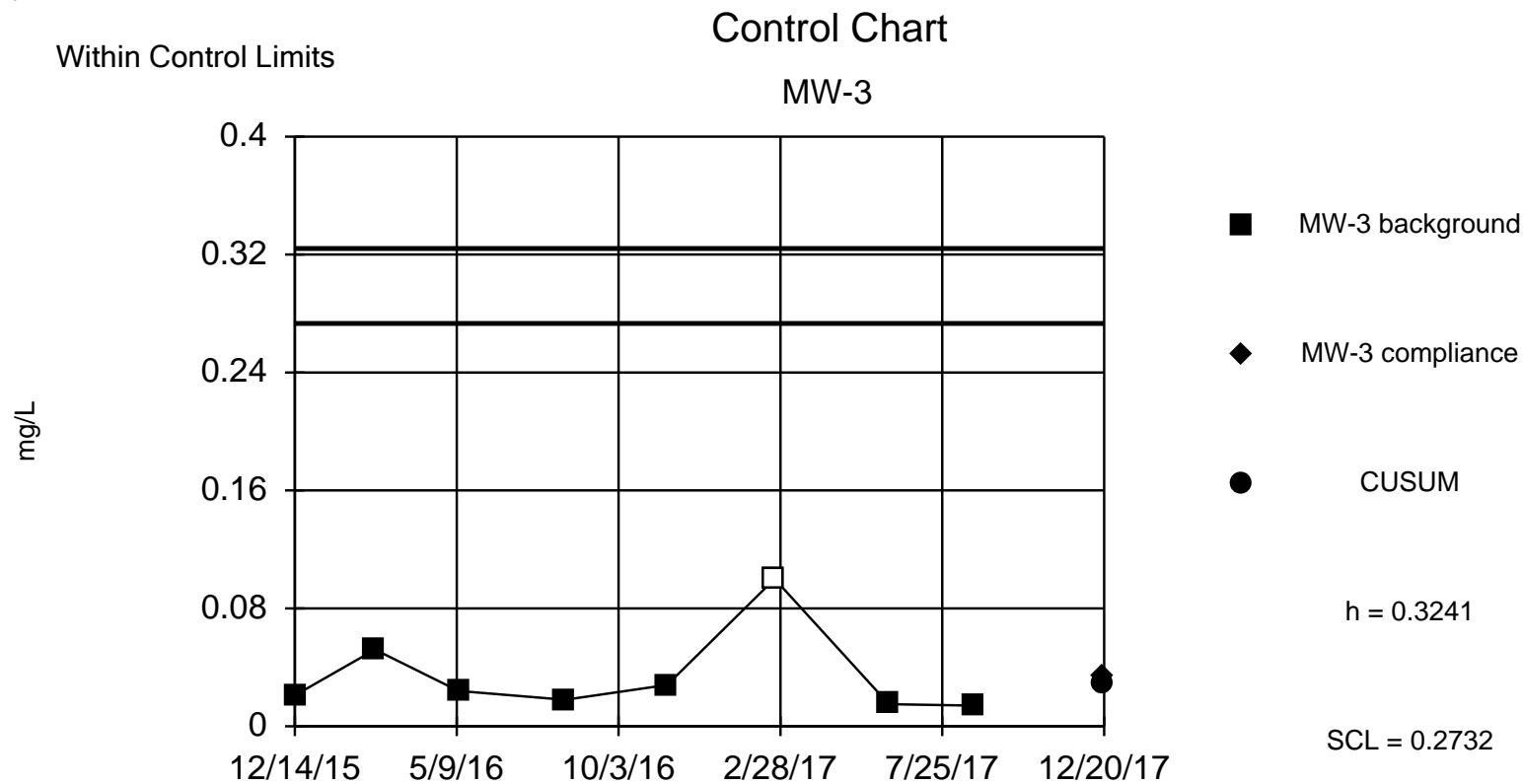
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Arsenic (mg/L) Analysis Run 1/25/2018 12:36 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.005
2/25/2016	0.0061
5/11/2016	<0.005
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.01
6/7/2017	<0.005
8/24/2017	<0.01
12/20/2017	<0.006



Background Data Summary (based on cube root transformation): Mean=0.3069, Std. Dev.=0.076, n=8, 12.5% NDs.
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8289, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Barium Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Barium (mg/L) Analysis Run 1/25/2018 12:36 PM

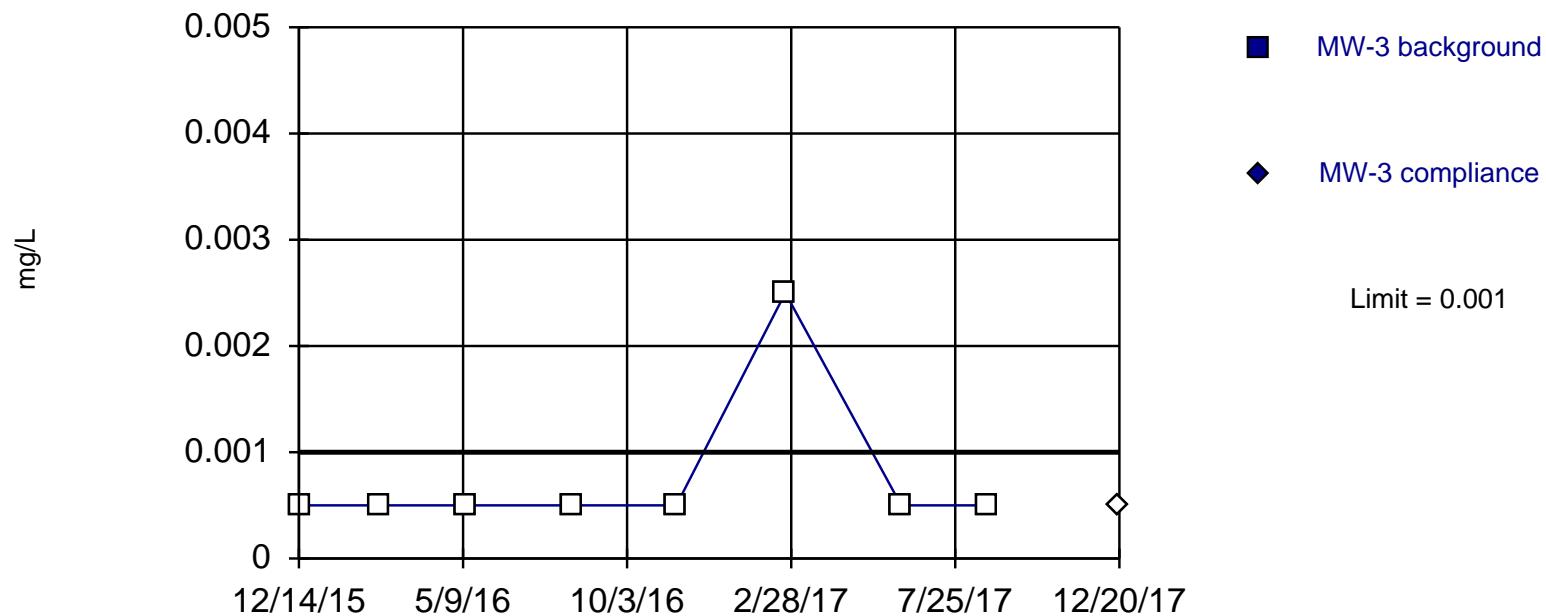
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3	Cube Root	Std. Mean	CUSUM
12/14/2015	0.021	0.2759		
2/25/2016	0.052	0.3733		
5/11/2016	0.024	0.2884		
8/16/2016	0.018	0.2621		
11/17/2016	0.028	0.3037		
2/23/2017	<0.2	0.4642		
6/7/2017	0.015	0.2466		
8/24/2017	0.014	0.241		
12/20/2017	0.034	0.324	0.2246	0.02891

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Beryllium Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Beryllium (mg/L) Analysis Run 1/25/2018 12:36 PM

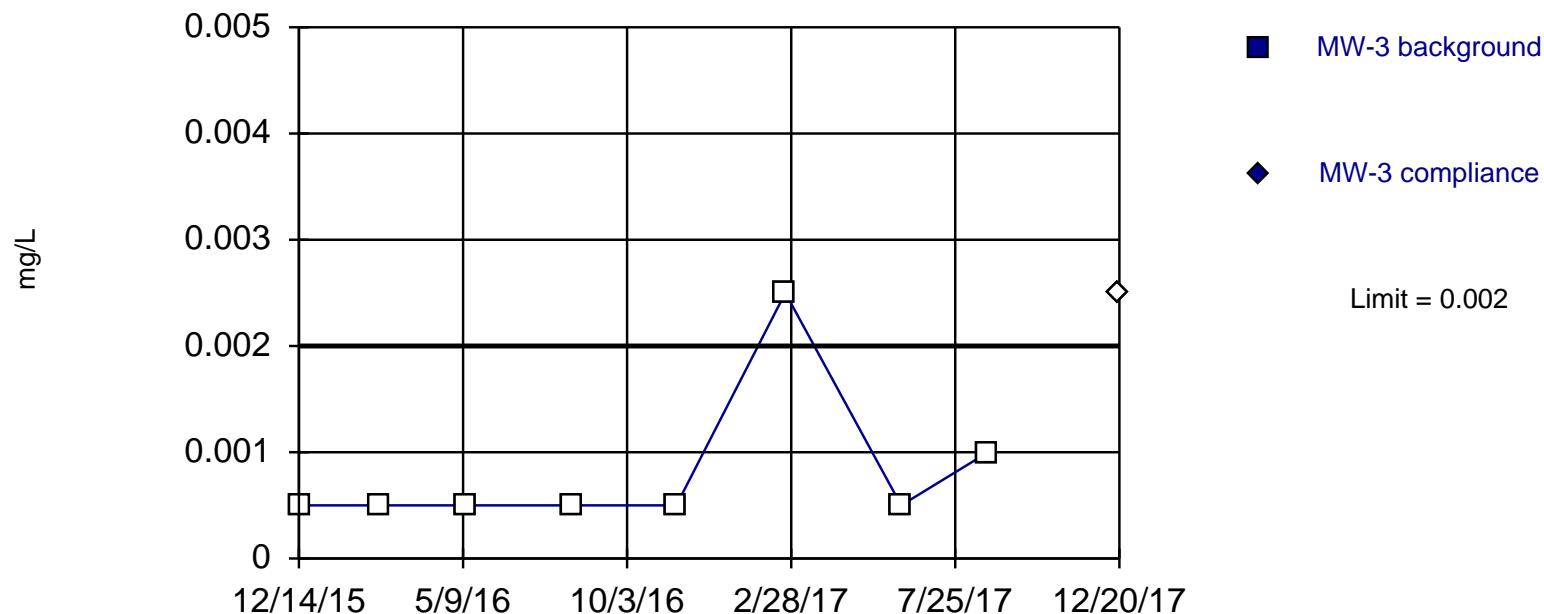
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.005
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.001

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Cadmium Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Cadmium (mg/L) Analysis Run 1/25/2018 12:36 PM

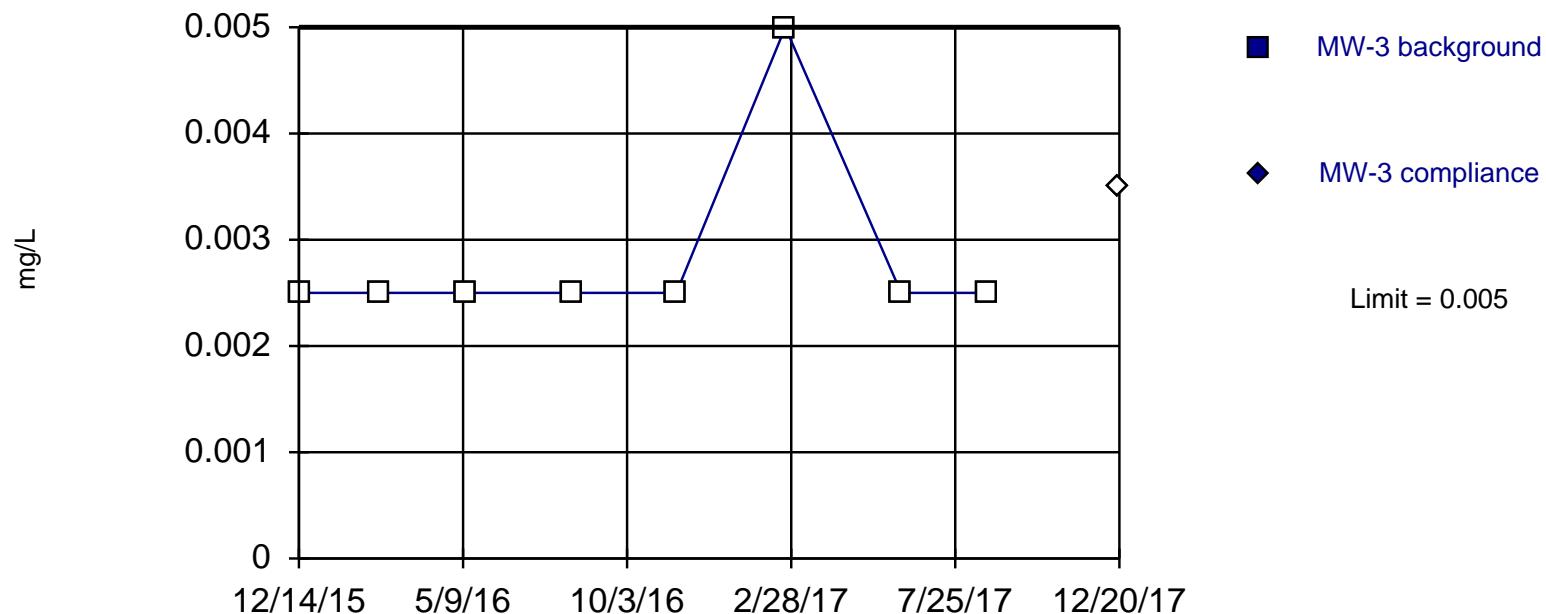
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.005
6/7/2017	<0.001
8/24/2017	<0.002
12/20/2017	<0.005

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Chromium Analysis Run 1/25/2018 12:31 PM

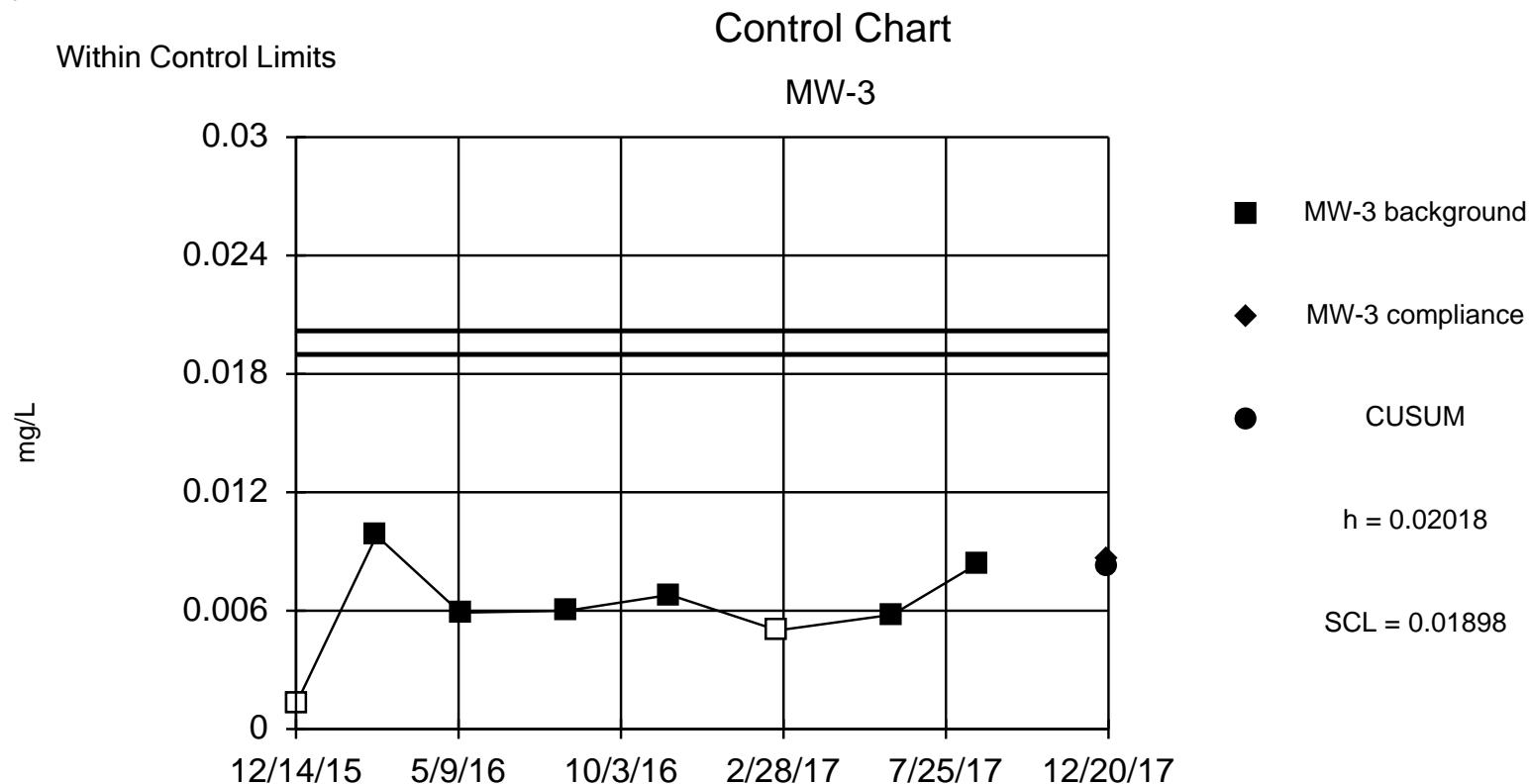
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Chromium (mg/L) Analysis Run 1/25/2018 12:36 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.005
2/25/2016	<0.005
5/11/2016	<0.005
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.01
6/7/2017	<0.005
8/24/2017	<0.005
12/20/2017	<0.007



Background Data Summary (after Cohen's Adjustment): Mean=0.008184, Std. Dev.=0.0024, n=8, 25% NDs.
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9325, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Cobalt Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Cobalt (mg/L) Analysis Run 1/25/2018 12:36 PM

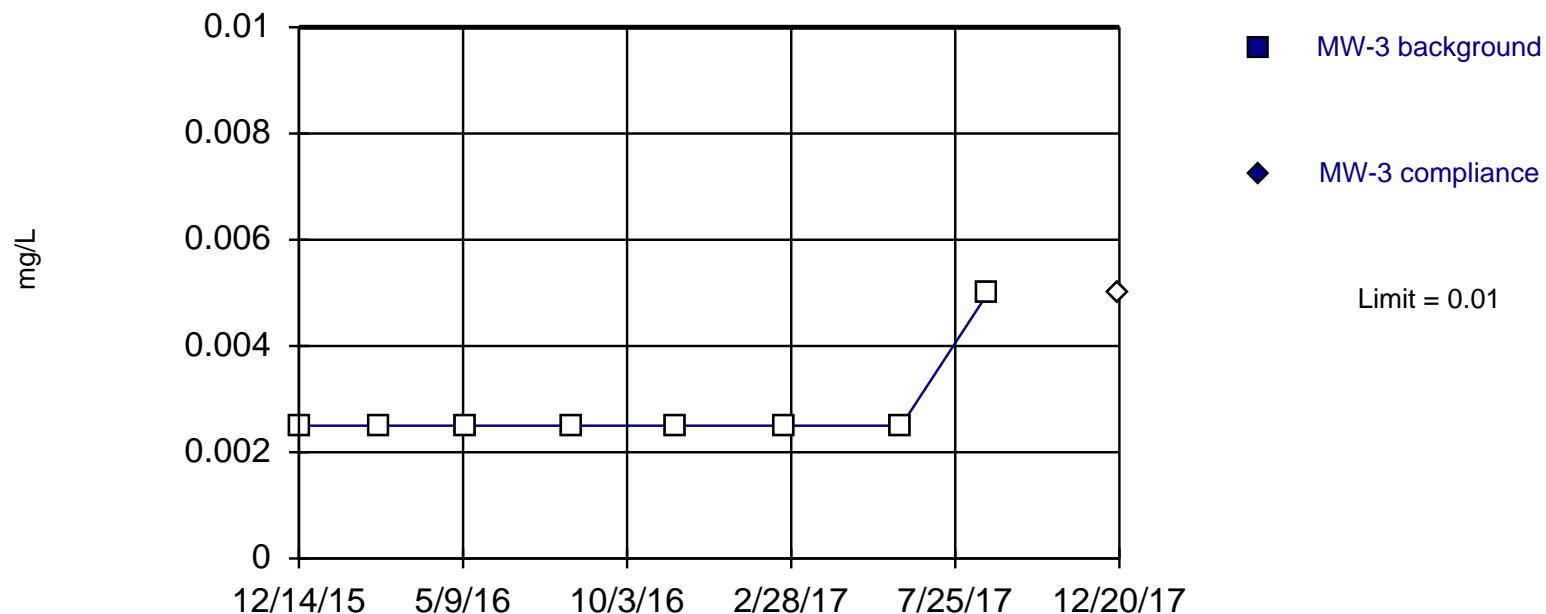
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-3	MW-3	Std. Mean	CUSUM
12/14/2015	<0.0025			
2/25/2016	0.0098			
5/11/2016	0.0059			
8/16/2016	0.006			
11/17/2016	0.0068			
2/23/2017	<0.01			
6/7/2017	0.0058			
8/24/2017	0.0084			
12/20/2017		0.0086	0.1735	0.008184

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Lead Analysis Run 1/25/2018 12:31 PM

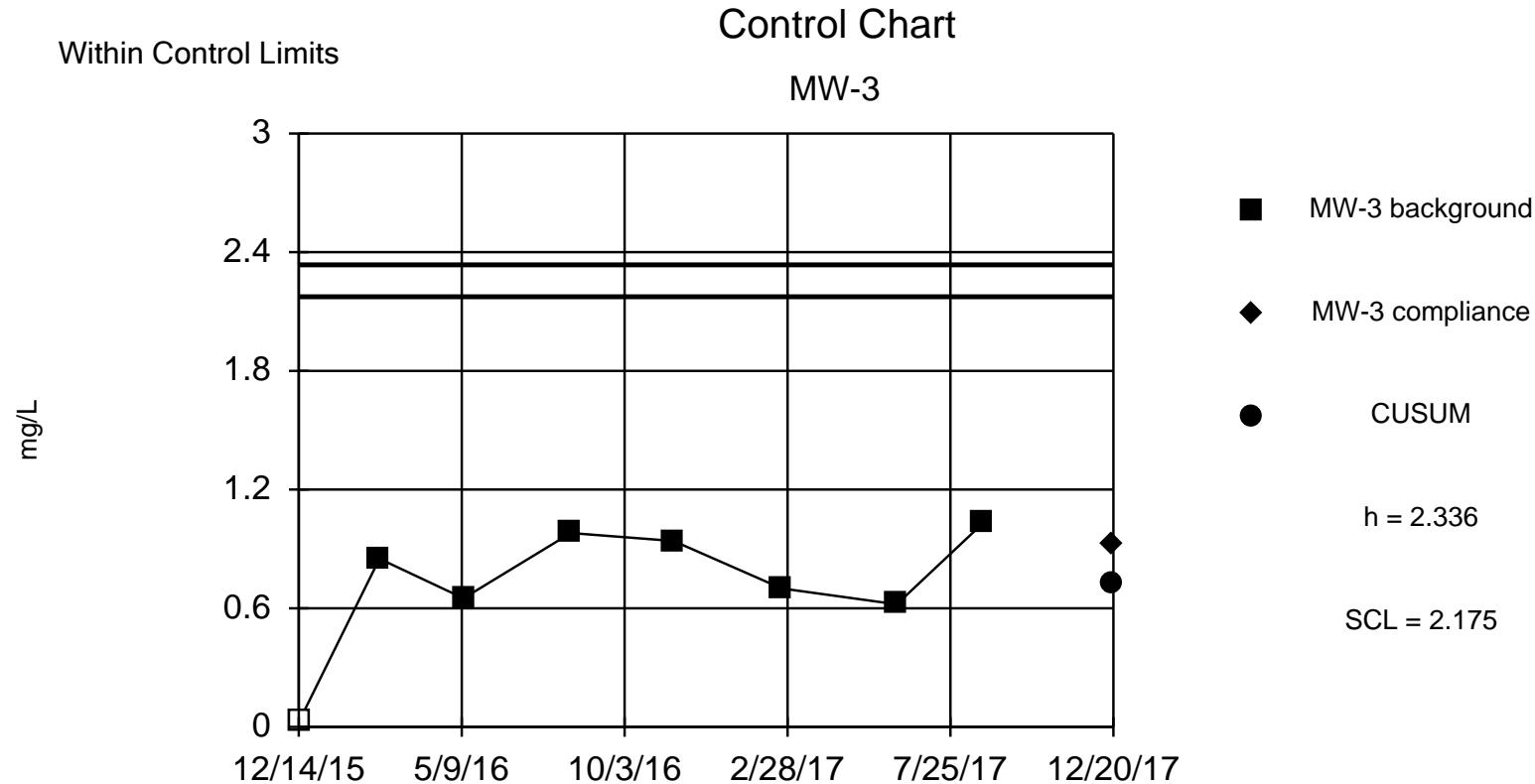
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Lead (mg/L) Analysis Run 1/25/2018 12:36 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.005
2/25/2016	<0.005
5/11/2016	<0.005
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.005
6/7/2017	<0.005
8/24/2017	<0.01
12/20/2017	<0.01



Background Data Summary: Mean=0.7244, Std. Dev.=0.3223, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.839, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Lithium Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Lithium (mg/L) Analysis Run 1/25/2018 12:36 PM

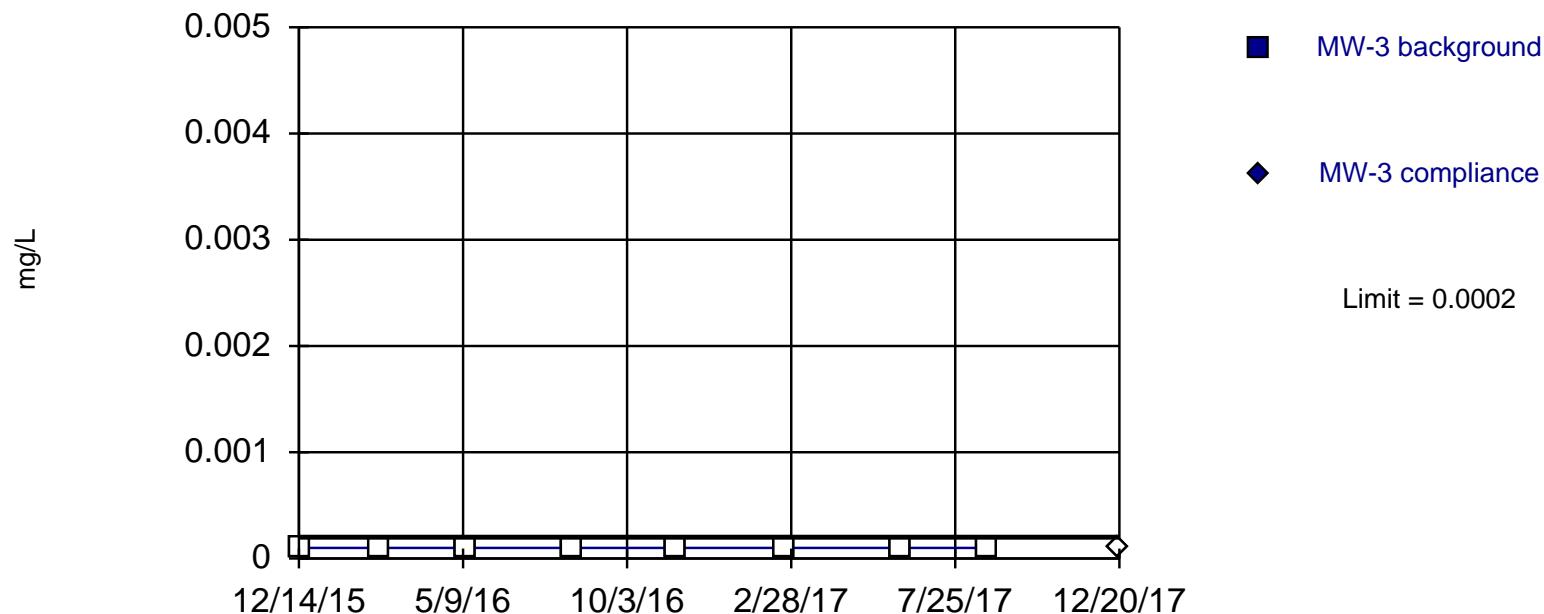
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	MW-3	MW-3	Std. Mean	CUSUM
12/14/2015	<0.05			
2/25/2016	0.85			
5/11/2016	0.65			
8/16/2016	0.98			
11/17/2016	0.94			
2/23/2017	0.7			
6/7/2017	0.62			
8/24/2017	1.03			
12/20/2017		0.92	0.607	0.7244

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Mercury Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Mercury (mg/L) Analysis Run 1/25/2018 12:36 PM

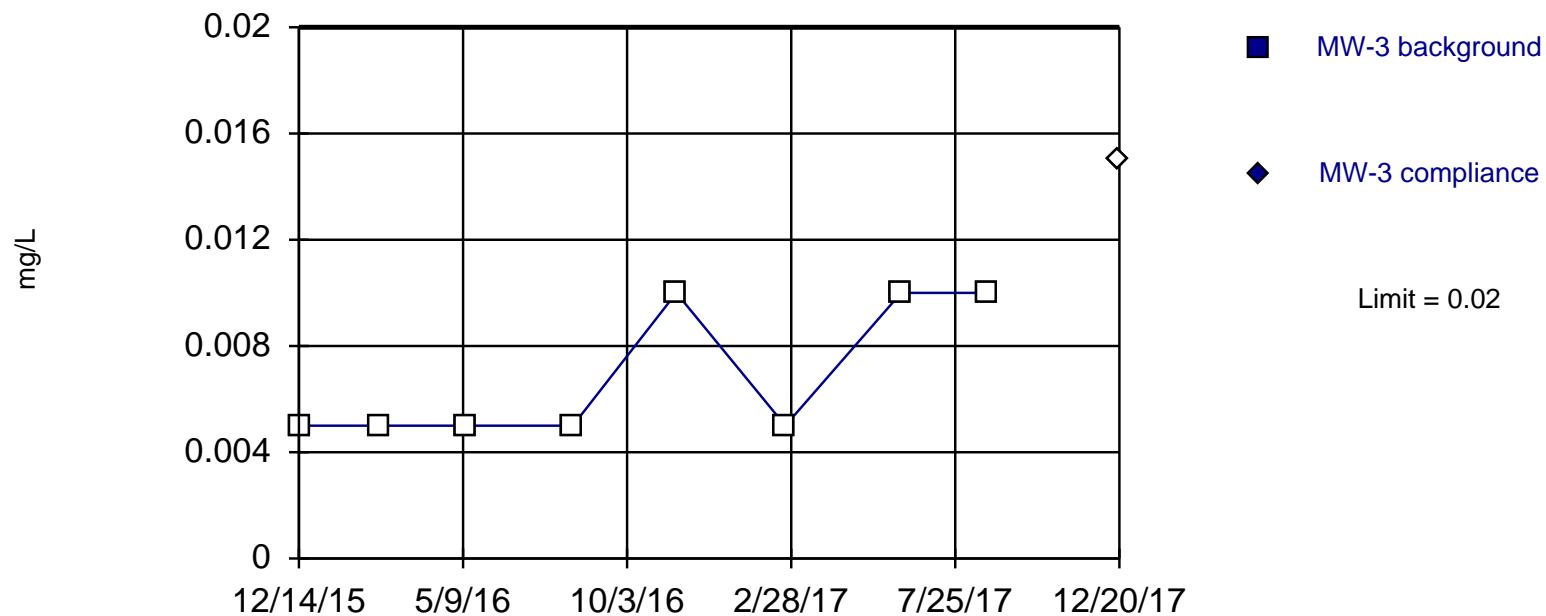
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.0002
2/25/2016	<0.0002
5/11/2016	<0.0002
8/16/2016	<0.0002
11/17/2016	<0.0002
2/23/2017	<0.0002
6/7/2017	<0.0002
8/24/2017	<0.0002
12/20/2017	<0.0002

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Molybdenum Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Molybdenum (mg/L) Analysis Run 1/25/2018 12:36 PM

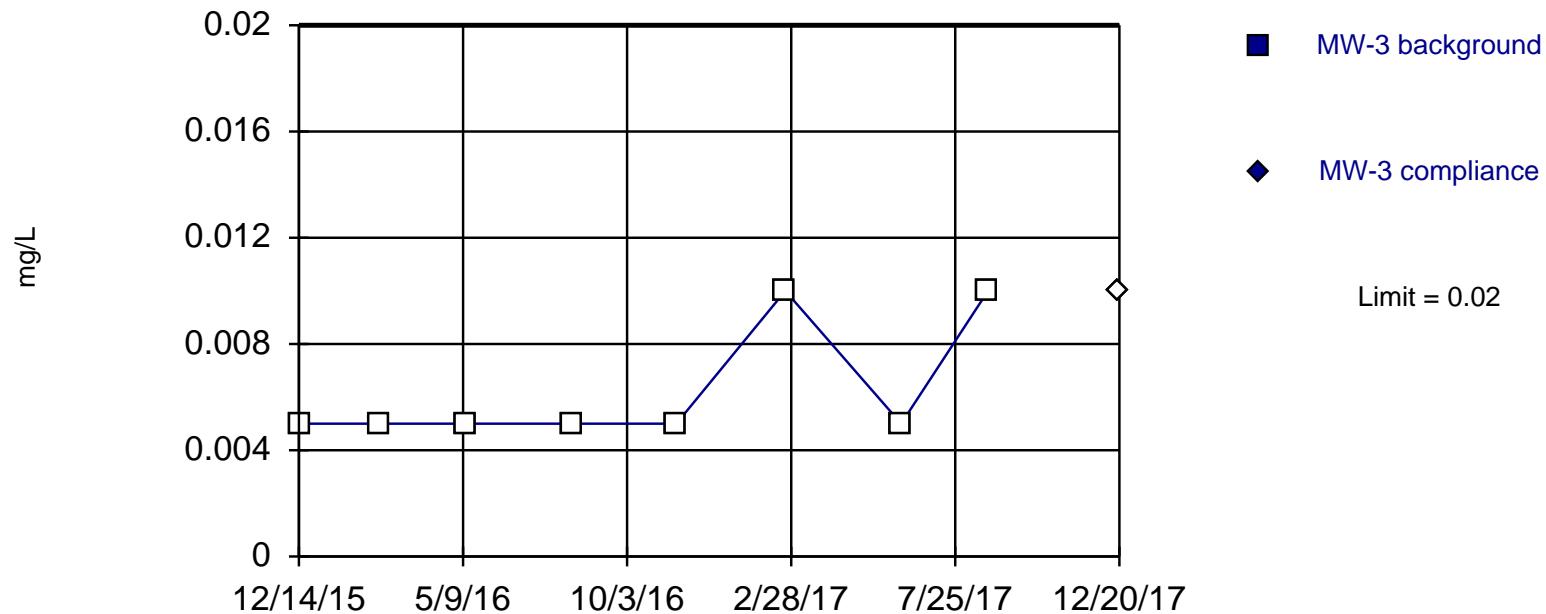
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.01
2/25/2016	<0.01
5/11/2016	<0.01
8/16/2016	<0.01
11/17/2016	<0.02
2/23/2017	<0.01
6/7/2017	<0.02
8/24/2017	<0.02
12/20/2017	<0.03

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Selenium Analysis Run 1/25/2018 12:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Selenium (mg/L) Analysis Run 1/25/2018 12:36 PM

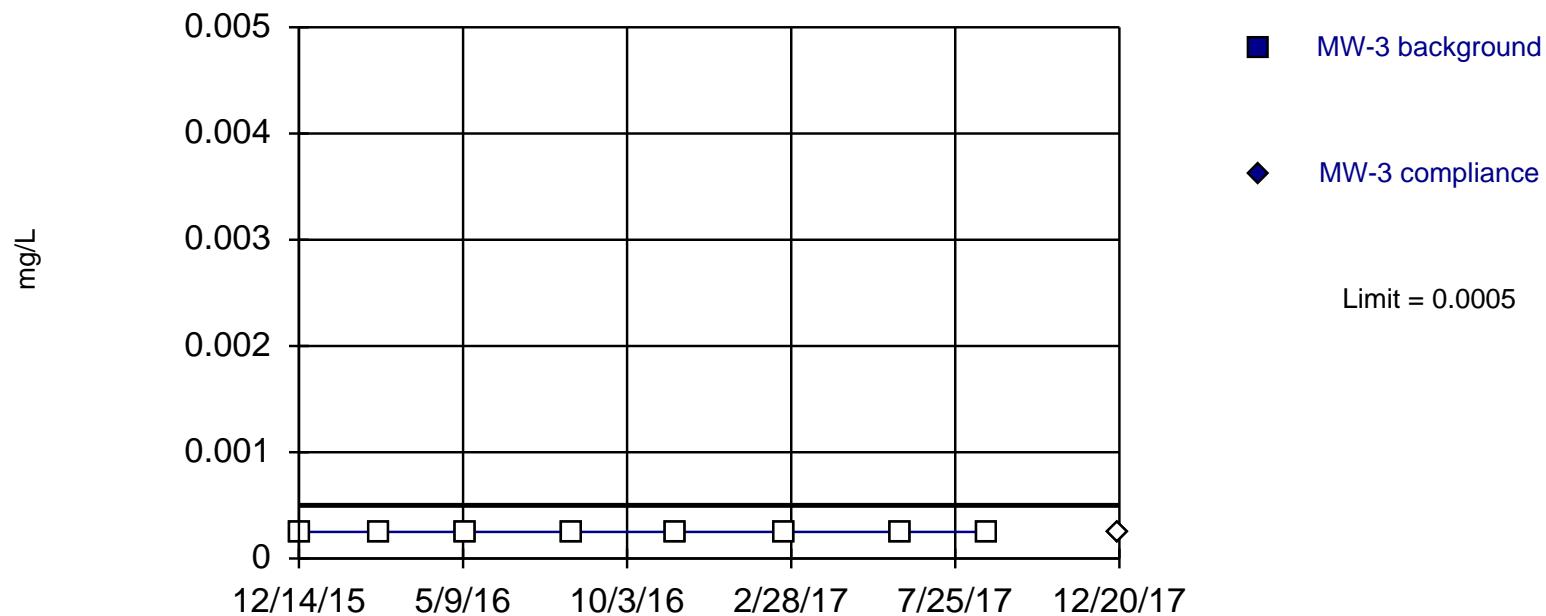
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.01
2/25/2016	<0.01
5/11/2016	<0.01
8/16/2016	<0.01
11/17/2016	<0.01
2/23/2017	<0.02
6/7/2017	<0.01
8/24/2017	<0.02
12/20/2017	<0.02

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Thallium Analysis Run 1/25/2018 12:31 PM

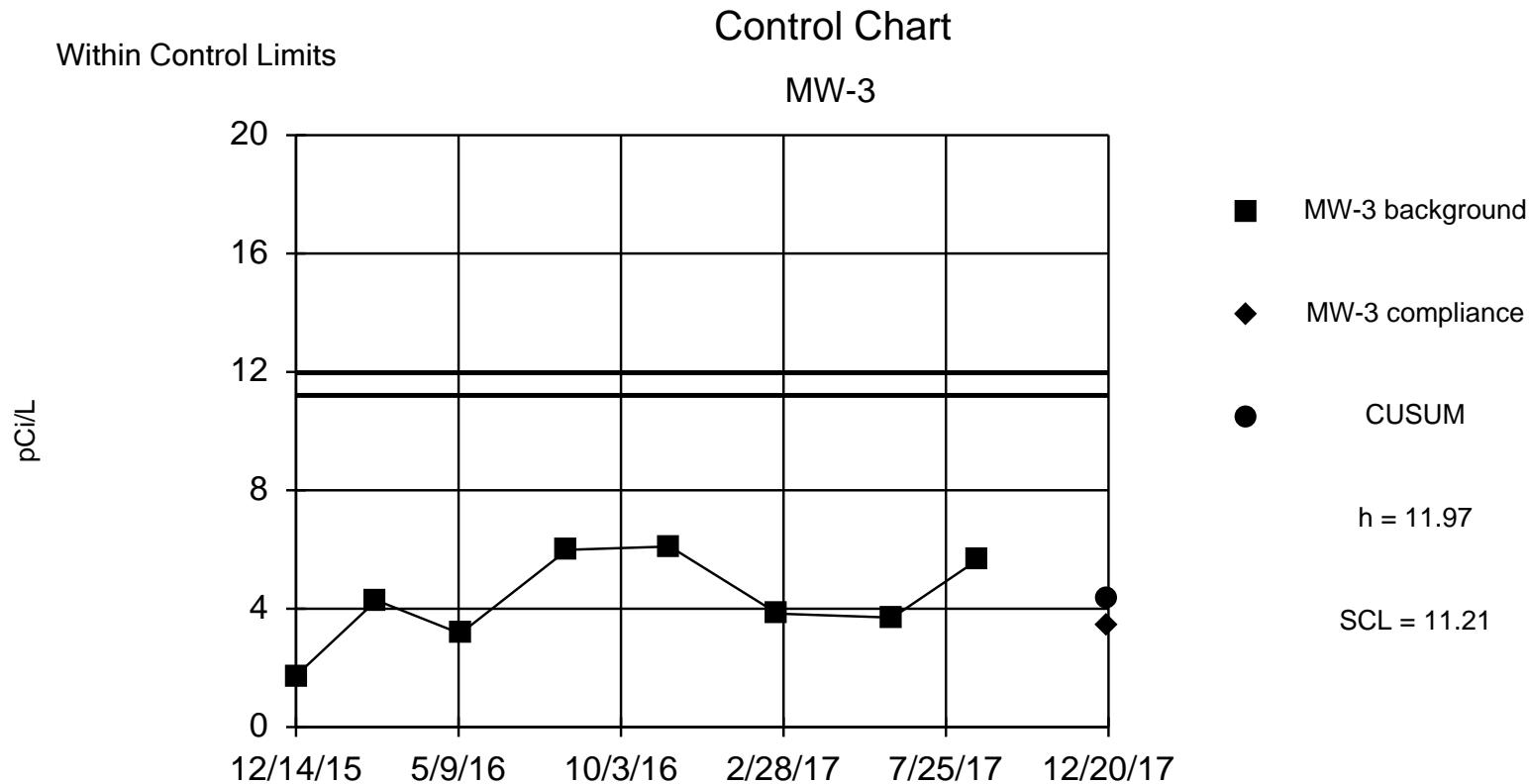
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Thallium (mg/L) Analysis Run 1/25/2018 12:36 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3
12/14/2015	<0.0005
2/25/2016	<0.0005
5/11/2016	<0.0005
8/16/2016	<0.0005
11/17/2016	<0.0005
2/23/2017	<0.0005
6/7/2017	<0.0005
8/24/2017	<0.0005
12/20/2017	<0.0005



Background Data Summary: Mean=4.309, Std. Dev.=1.533, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9285, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

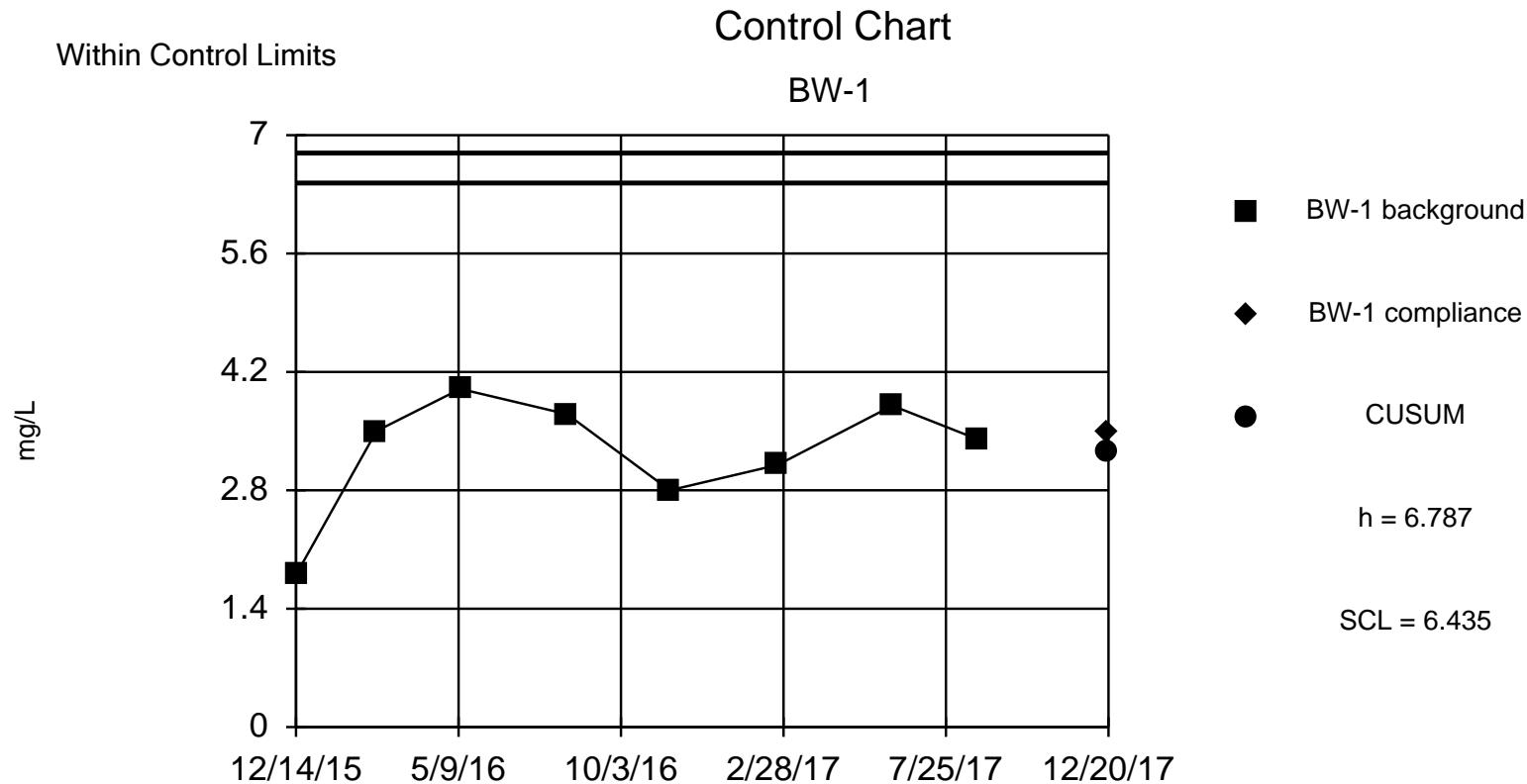
Constituent: Combined Radium Analysis Run 1/25/2018 12:38 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Combined Radium (pCi/L) Analysis Run 1/25/2018 12:39 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

MW-3	MW-3	Std. Mean	CUSUM
12/14/2015	1.733		
2/25/2016	4.28		
5/11/2016	3.16		
8/16/2016	5.991		
11/17/2016	6.102		
2/23/2017	3.831		
6/7/2017	3.701		
8/24/2017	5.67		
12/20/2017	3.396	-0.5952	4.309



Background Data Summary: Mean=3.263, Std. Dev.=0.705, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8884, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Boron Analysis Run 1/25/2018 12:41 PM

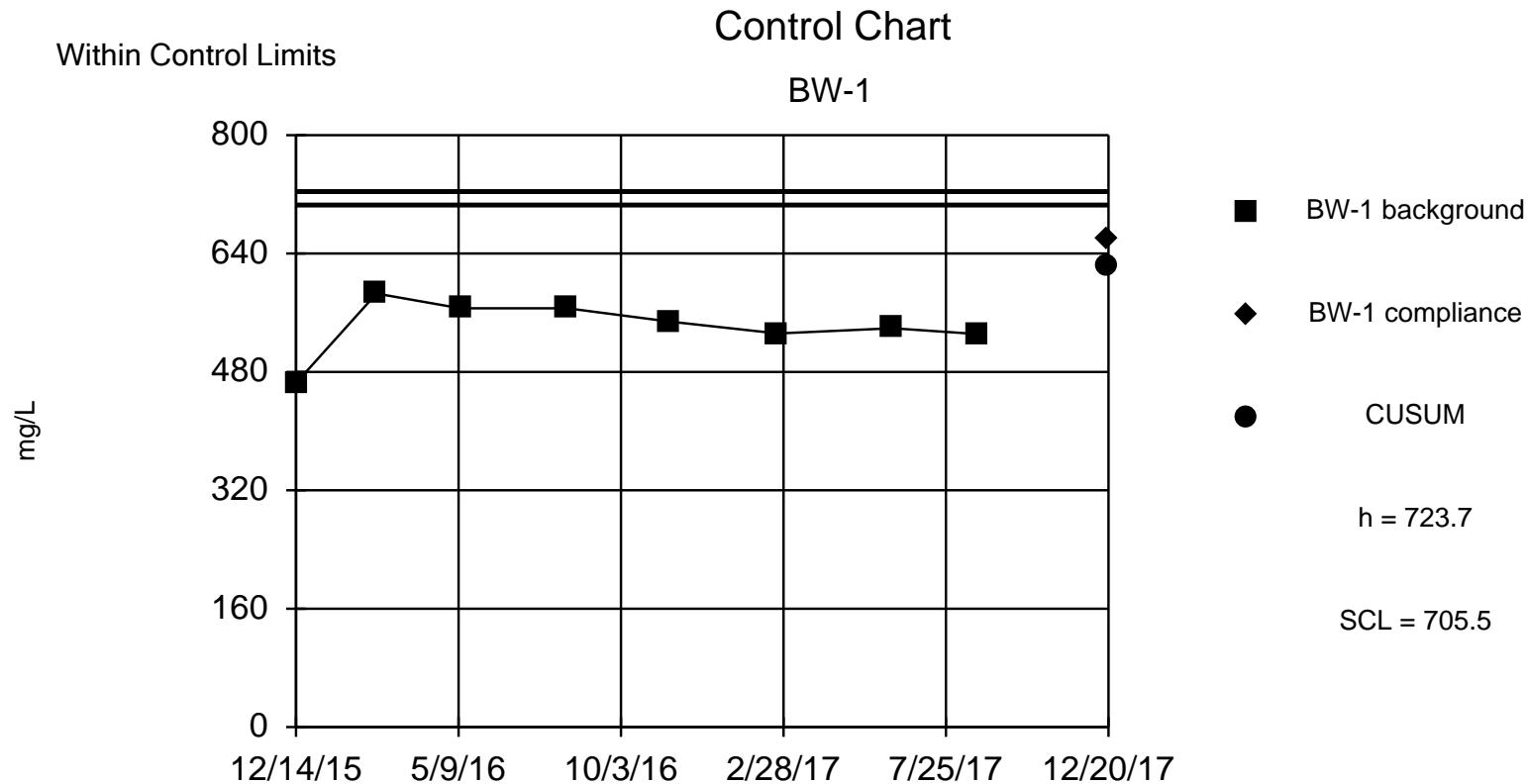
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Boron (mg/L) Analysis Run 1/25/2018 12:43 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	1.8		
2/25/2016	3.5		
5/11/2016	4		
8/16/2016	3.7		
11/17/2016	2.8		
2/23/2017	3.1		
6/7/2017	3.8		
8/24/2017	3.4		
12/20/2017	3.5	0.3369	3.263



Background Data Summary: Mean=541.6, Std. Dev.=36.41, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.887, critical = 0.818. Report alpha = 0.001952. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Calcium Analysis Run 1/26/2018 10:17 AM

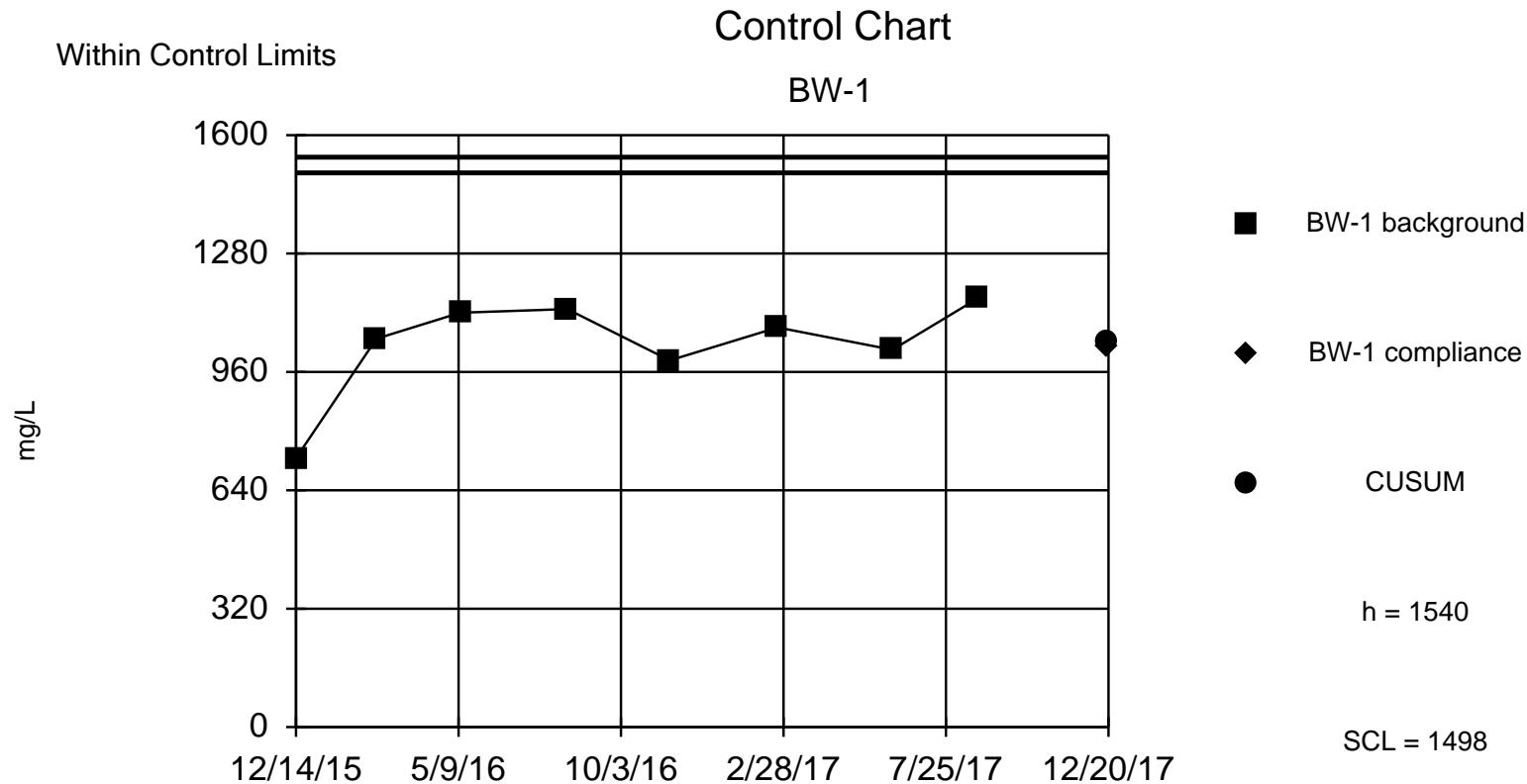
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Calcium (mg/L) Analysis Run 1/26/2018 10:18 AM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	465		
2/25/2016	586		
5/11/2016	566		
8/16/2016	566		
11/17/2016	548		
2/23/2017	532		
6/7/2017	539		
8/24/2017	531		
12/20/2017	658	3.196	621.6



Background Data Summary (based on square transformation): Mean=1087101, Std. Dev.=257064, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8544, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Chloride Analysis Run 1/25/2018 12:41 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Chloride (mg/L) Analysis Run 1/25/2018 12:43 PM

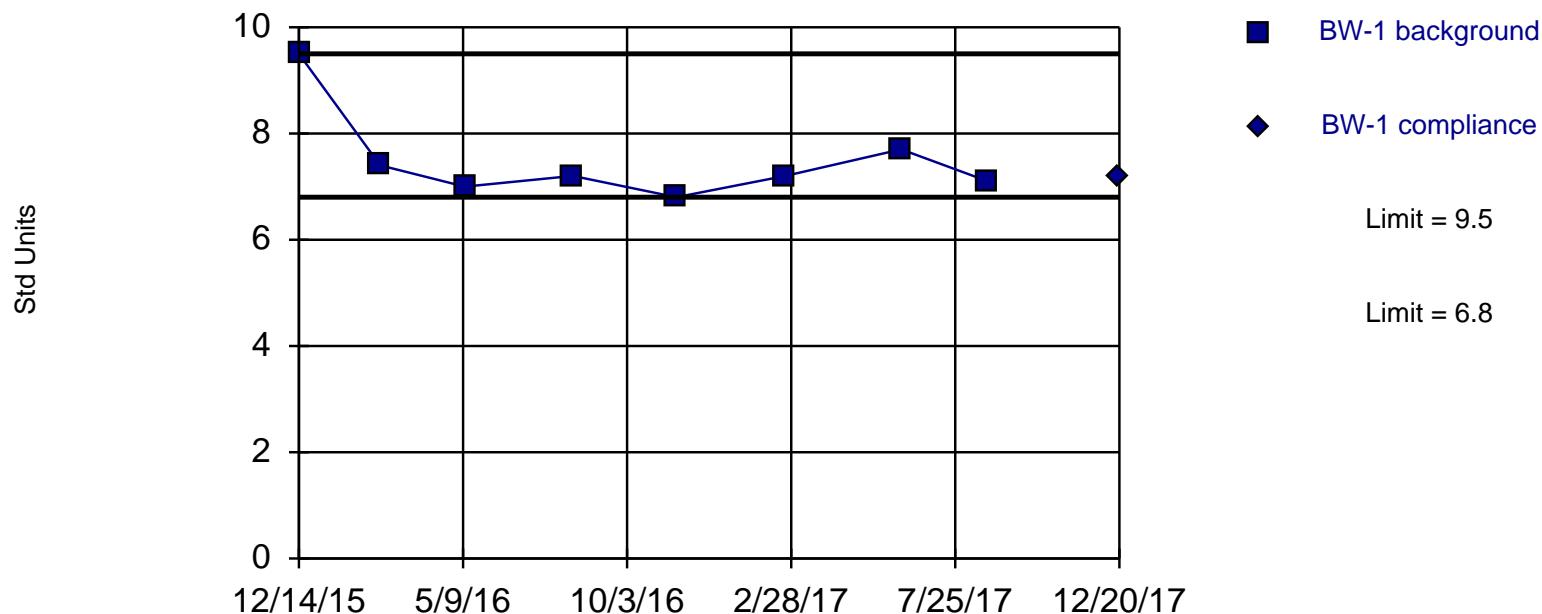
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1	BW-1	Square	Std. Mean	CUSUM
12/14/2015	727		528529		
2/25/2016	1050		1102500		
5/11/2016	1120		1254400		
8/16/2016	1130		1276900		
11/17/2016	991		982081		
2/23/2017	1080		1166400		
6/7/2017	1020		1040400		
8/24/2017	1160		1345600		
12/20/2017		1030	1060900	-0.1019	1043

Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limits are highest and lowest of 8 background values. Report alpha = 0.2222. Most recent point compared to limit.

Constituent: pH Analysis Run 1/25/2018 12:40 PM

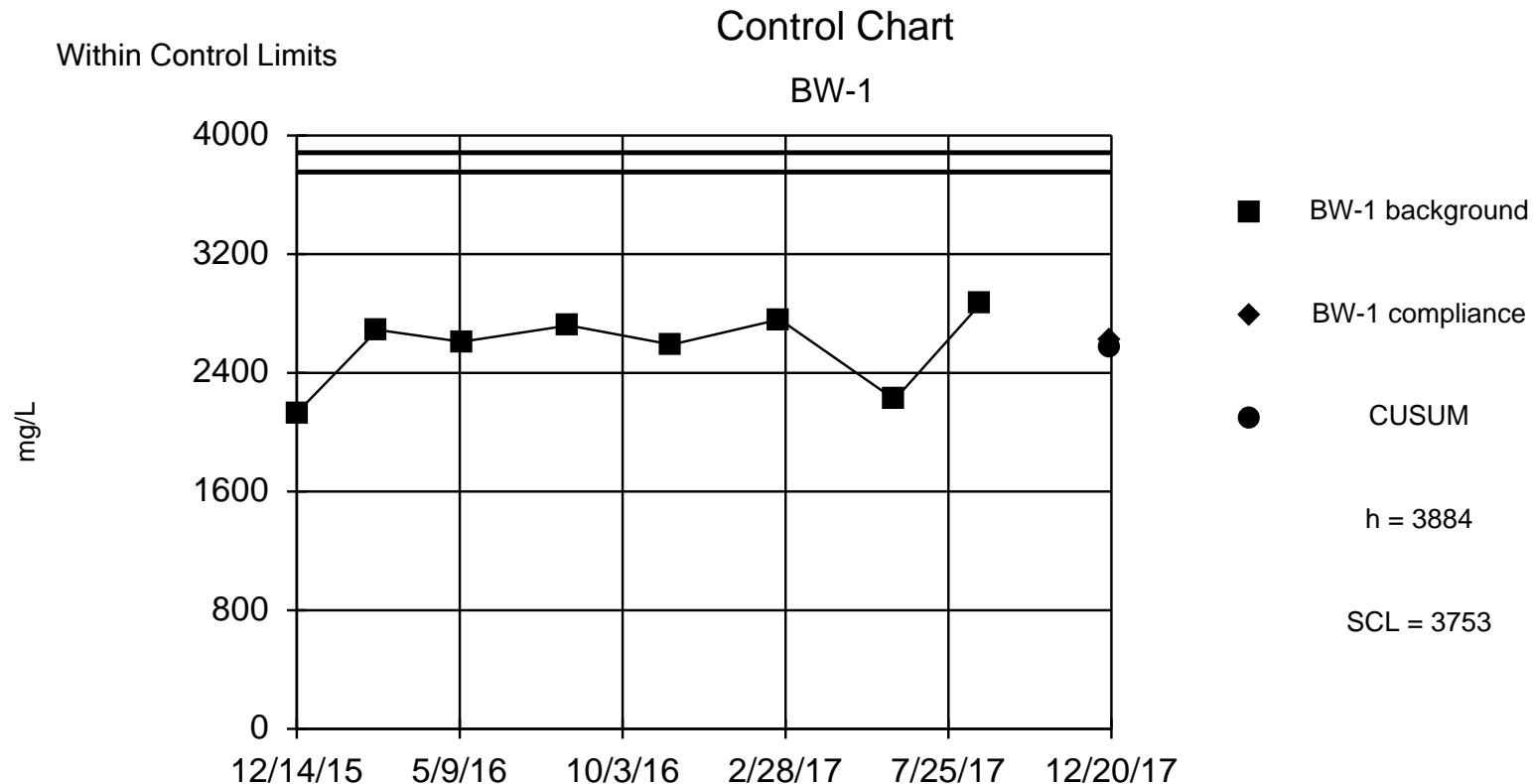
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Prediction Limit

Constituent: pH (Std Units) Analysis Run 1/25/2018 12:41 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1
12/14/2015	9.5
2/25/2016	7.4
5/11/2016	7
8/16/2016	7.2
11/17/2016	6.8
2/23/2017	7.2
6/7/2017	7.7
8/24/2017	7.1
12/20/2017	7.2



Background Data Summary: Mean=2574, Std. Dev.=262.1, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8672, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Sulfate Analysis Run 1/25/2018 12:41 PM

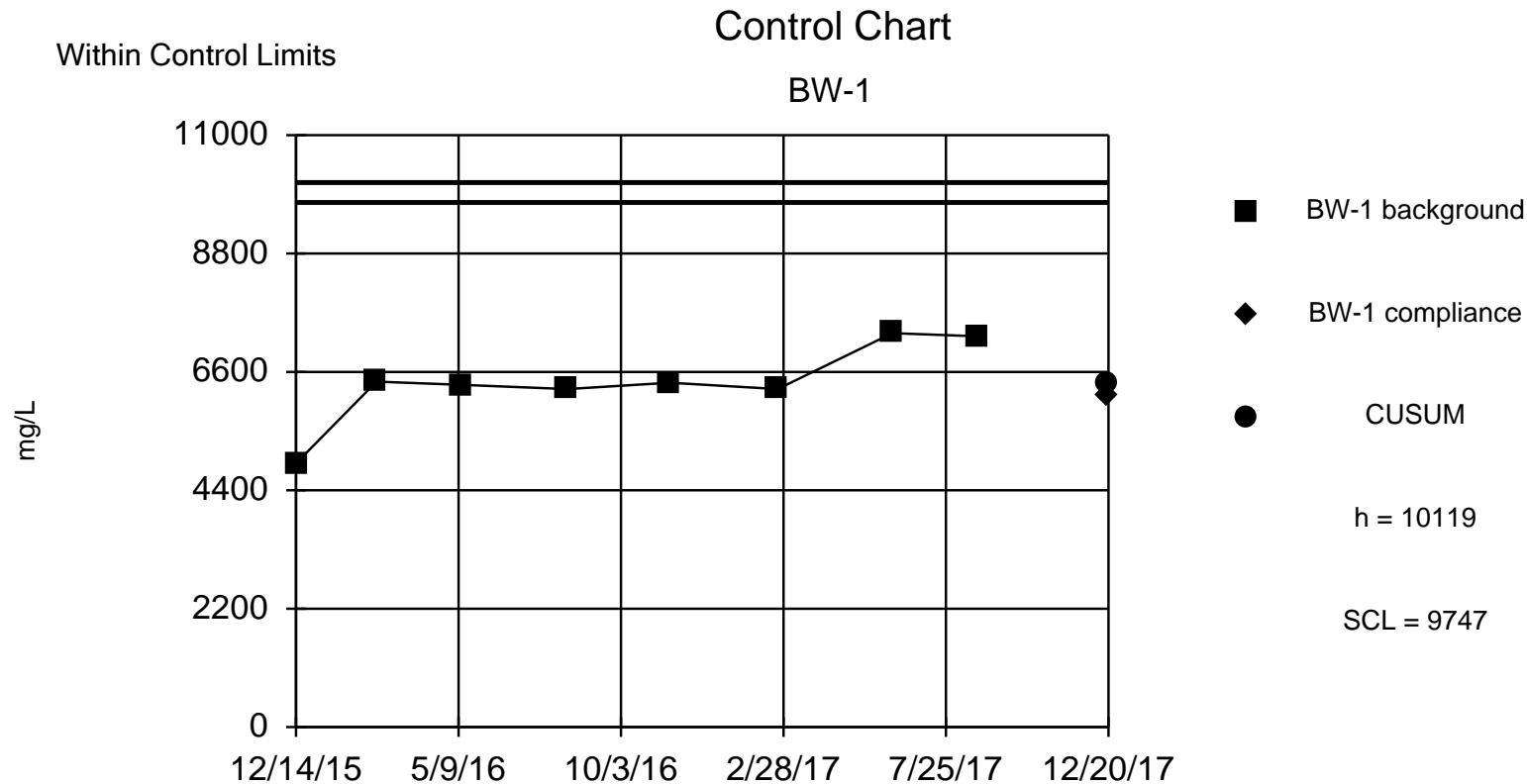
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Sulfate (mg/L) Analysis Run 1/25/2018 12:43 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	2130		
2/25/2016	2690		
5/11/2016	2610		
8/16/2016	2720		
11/17/2016	2590		
2/23/2017	2760		
6/7/2017	2220		
8/24/2017	2870		
12/20/2017	2620	0.1764	2574



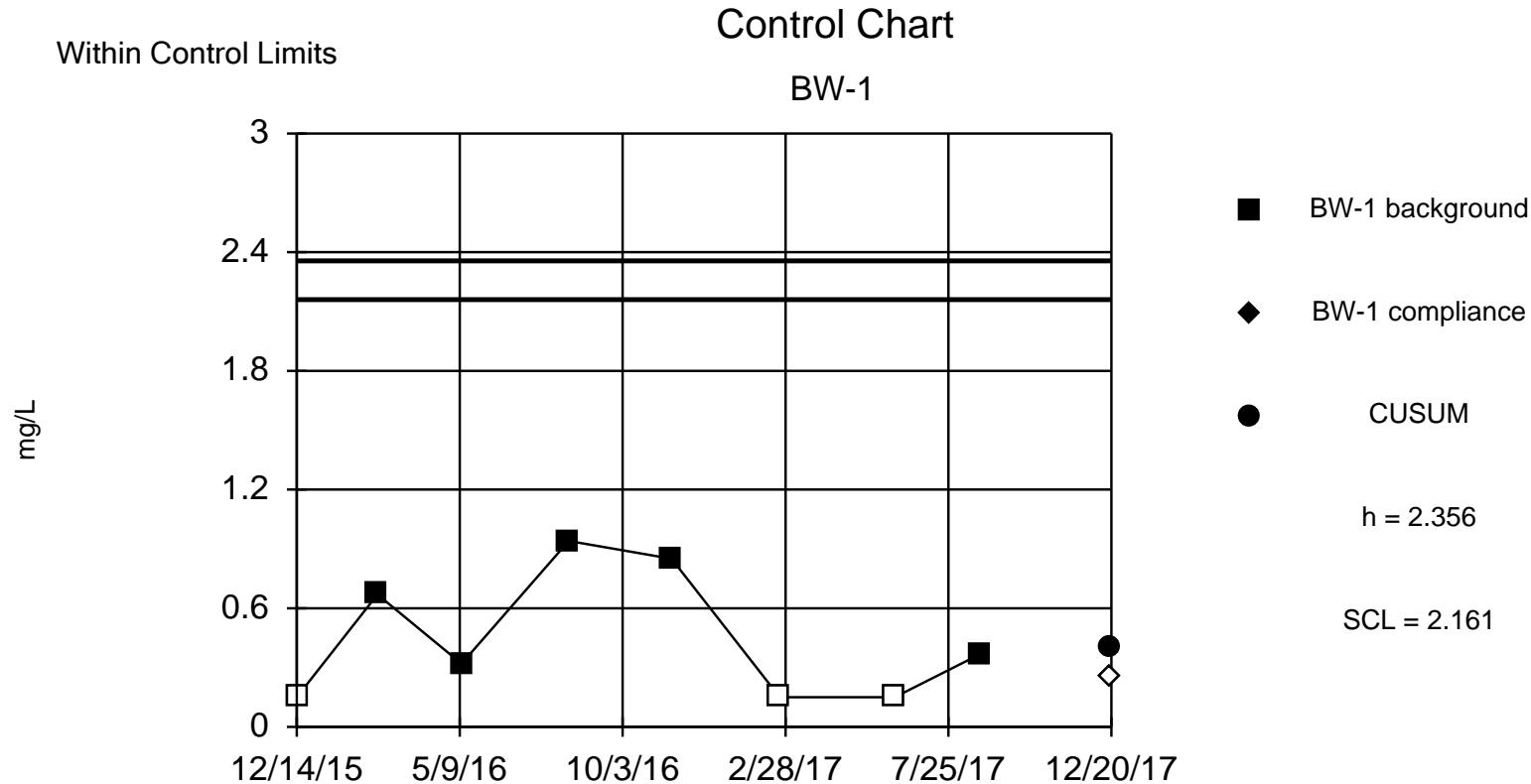
Background Data Summary: Mean=6403, Std. Dev.=743.2, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8391, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Total Dissolved Solids Analysis Run 1/25/2018 12:41 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/25/2018 12:43 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	4900		
2/25/2016	6420		
5/11/2016	6360		
8/16/2016	6280		
11/17/2016	6400		
2/23/2017	6280		
6/7/2017	7320		
8/24/2017	7260		
12/20/2017	6140	-0.3532	6403



Background Data Summary (after Cohen's Adjustment): Mean=0.4018, Std. Dev.=0.3908, n=8, 37.5% NDs.
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8478, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Fluoride Analysis Run 1/25/2018 12:41 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Fluoride (mg/L) Analysis Run 1/25/2018 12:43 PM

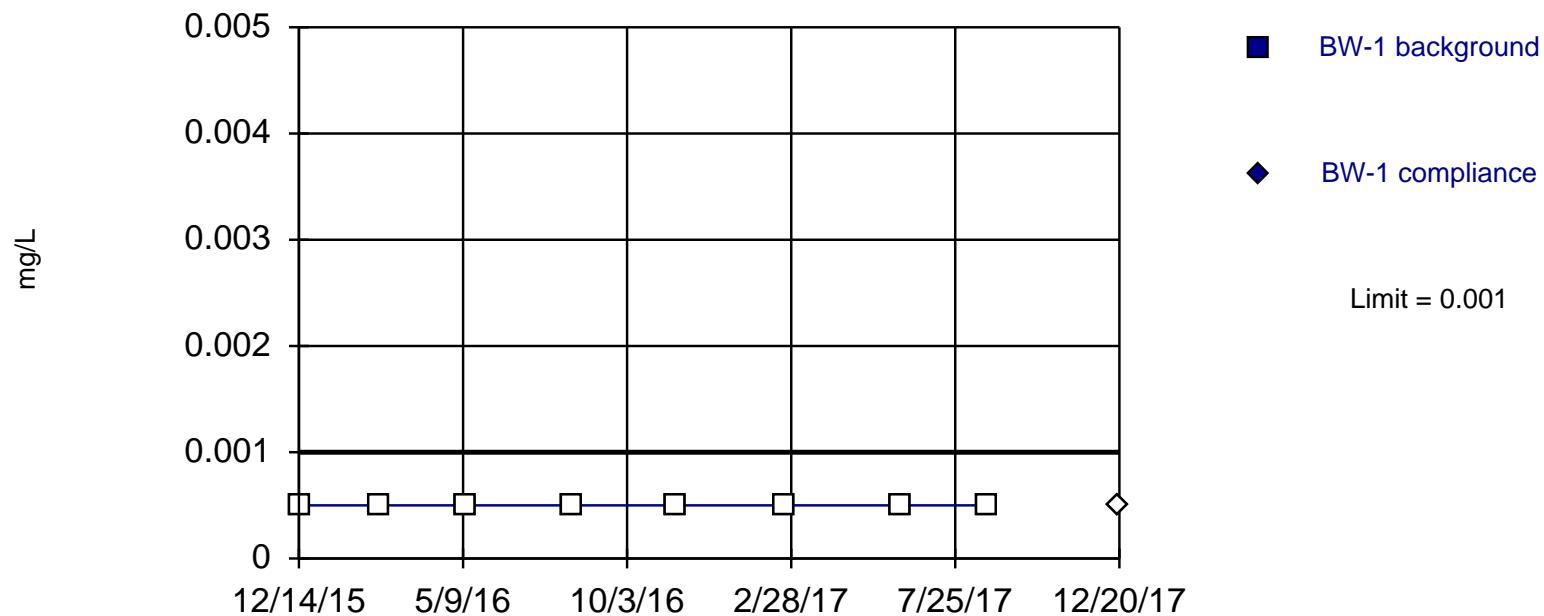
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	<0.3		
2/25/2016	0.67		
5/11/2016	0.32		
8/16/2016	0.94		
11/17/2016	0.85		
2/23/2017	<0.3		
6/7/2017	<0.3		
8/24/2017	0.37		
12/20/2017	<0.5	-0.3884	0.4018

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Antimony Analysis Run 1/25/2018 12:45 PM

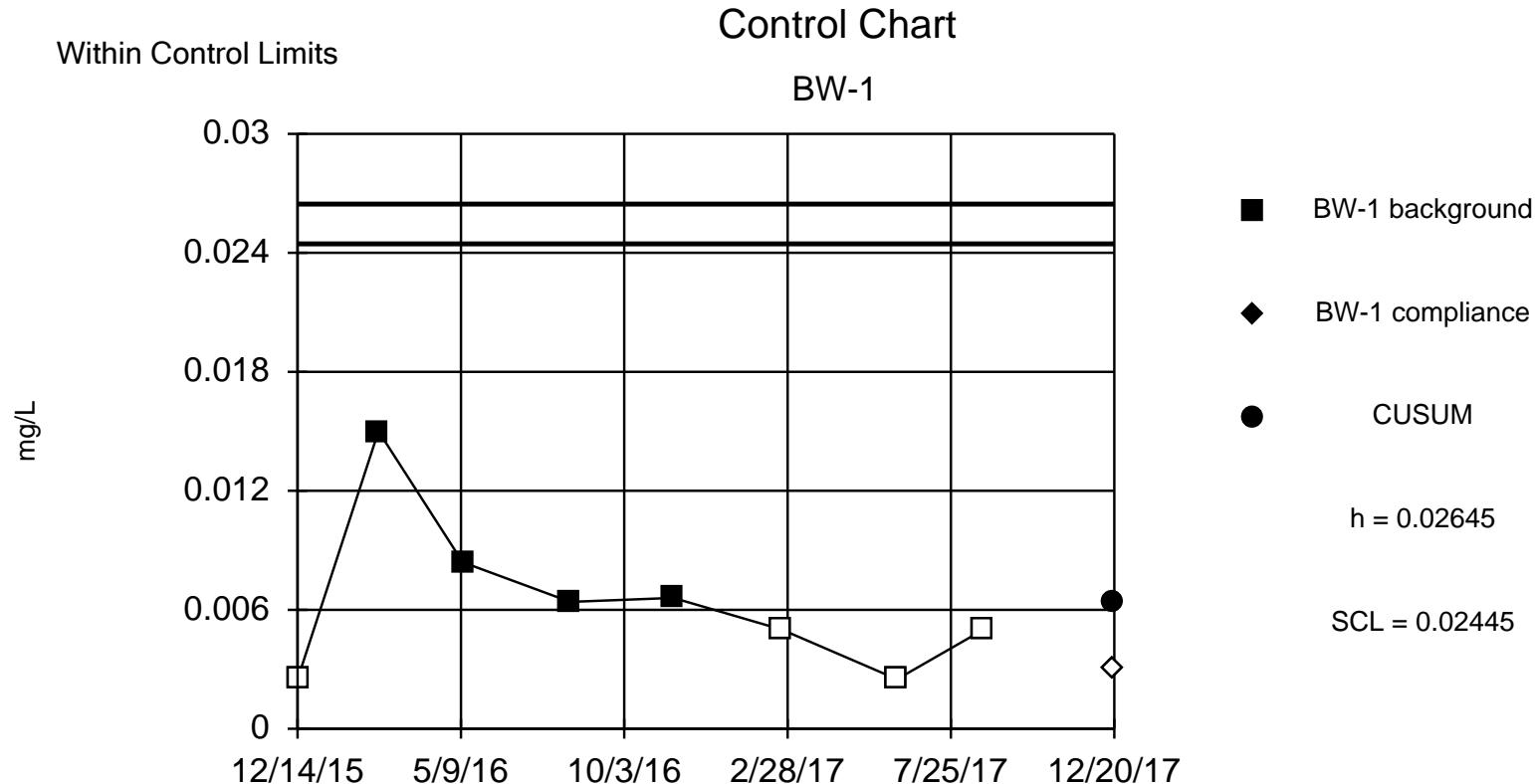
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Antimony (mg/L) Analysis Run 1/25/2018 12:51 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.001
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.001



Background Data Summary: Mean=0.006425, Std. Dev.=0.004006, n=8, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8531, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Arsenic Analysis Run 1/25/2018 12:45 PM

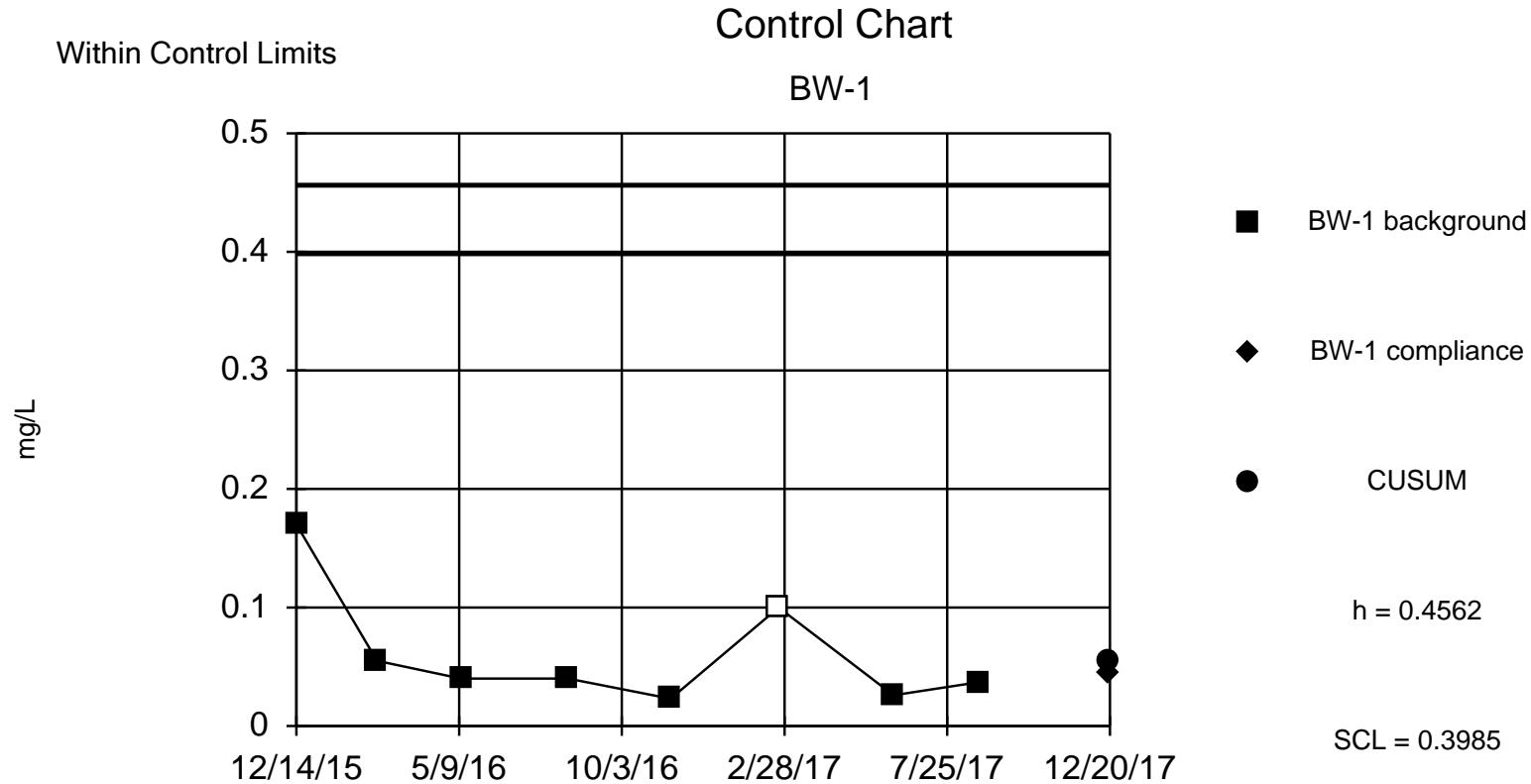
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Arsenic (mg/L) Analysis Run 1/25/2018 12:51 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	<0.005		
2/25/2016	0.015		
5/11/2016	0.0084		
8/16/2016	0.0064		
11/17/2016	0.0066		
2/23/2017	<0.01		
6/7/2017	<0.005		
8/24/2017	<0.01		
12/20/2017	<0.006	-0.855	0.006425



Background Data Summary (based on square root transformation): Mean=0.2335, Std. Dev.=0.08838, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8387, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Barium Analysis Run 1/25/2018 12:45 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Barium (mg/L) Analysis Run 1/25/2018 12:51 PM

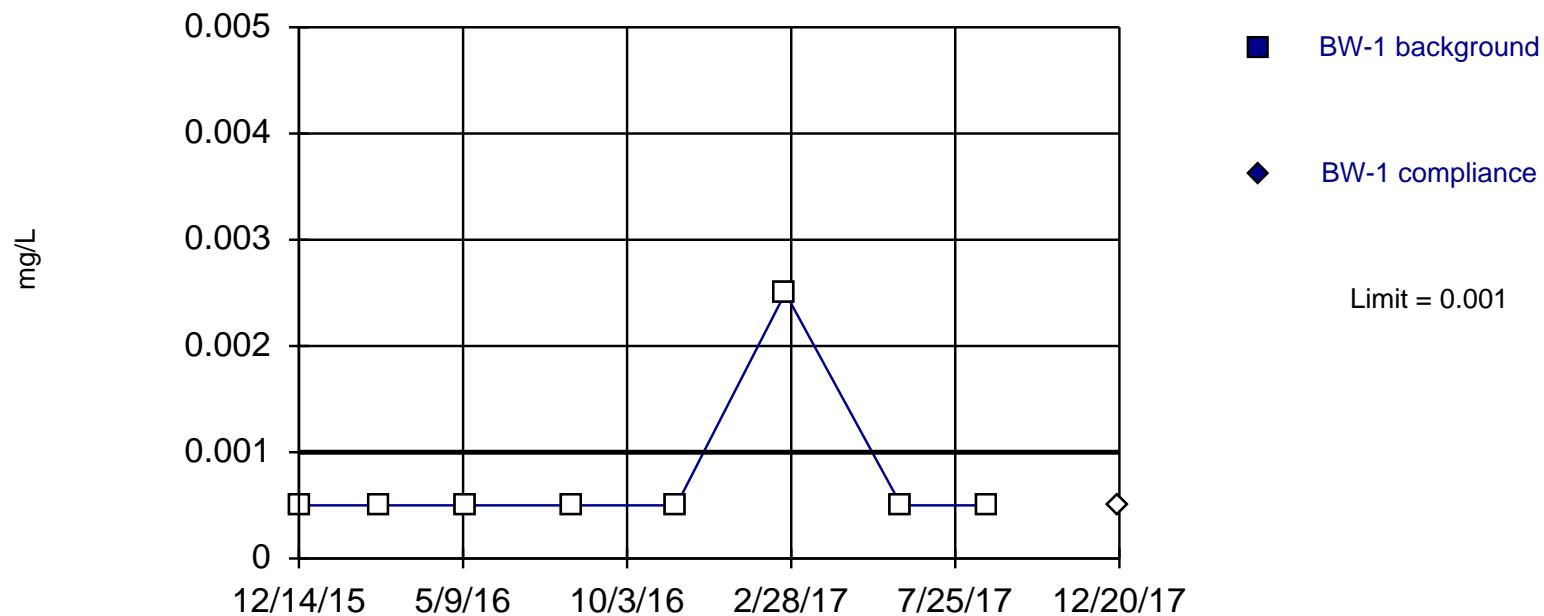
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1	BW-1	Square Root	Std. Mean	CUSUM
12/14/2015	0.17		0.4123		
2/25/2016	0.055		0.2345		
5/11/2016	0.04		0.2		
8/16/2016	0.04		0.2		
11/17/2016	0.023		0.1517		
2/23/2017	<0.2		0.3162		
6/7/2017	0.026		0.1612		
8/24/2017	0.037		0.1924		
12/20/2017		0.044	0.2098	-0.269	0.05452

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Beryllium Analysis Run 1/25/2018 12:45 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Beryllium (mg/L) Analysis Run 1/25/2018 12:51 PM

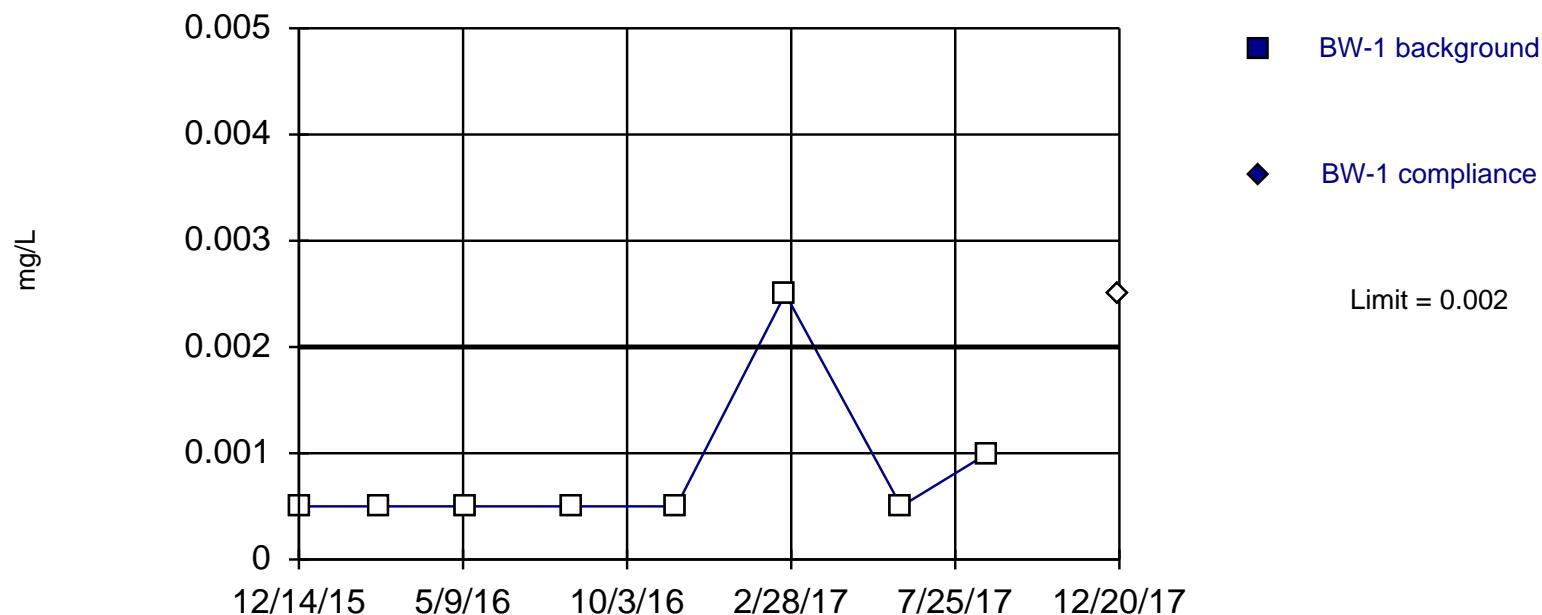
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.005
6/7/2017	<0.001
8/24/2017	<0.001
12/20/2017	<0.001

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Cadmium Analysis Run 1/25/2018 12:45 PM

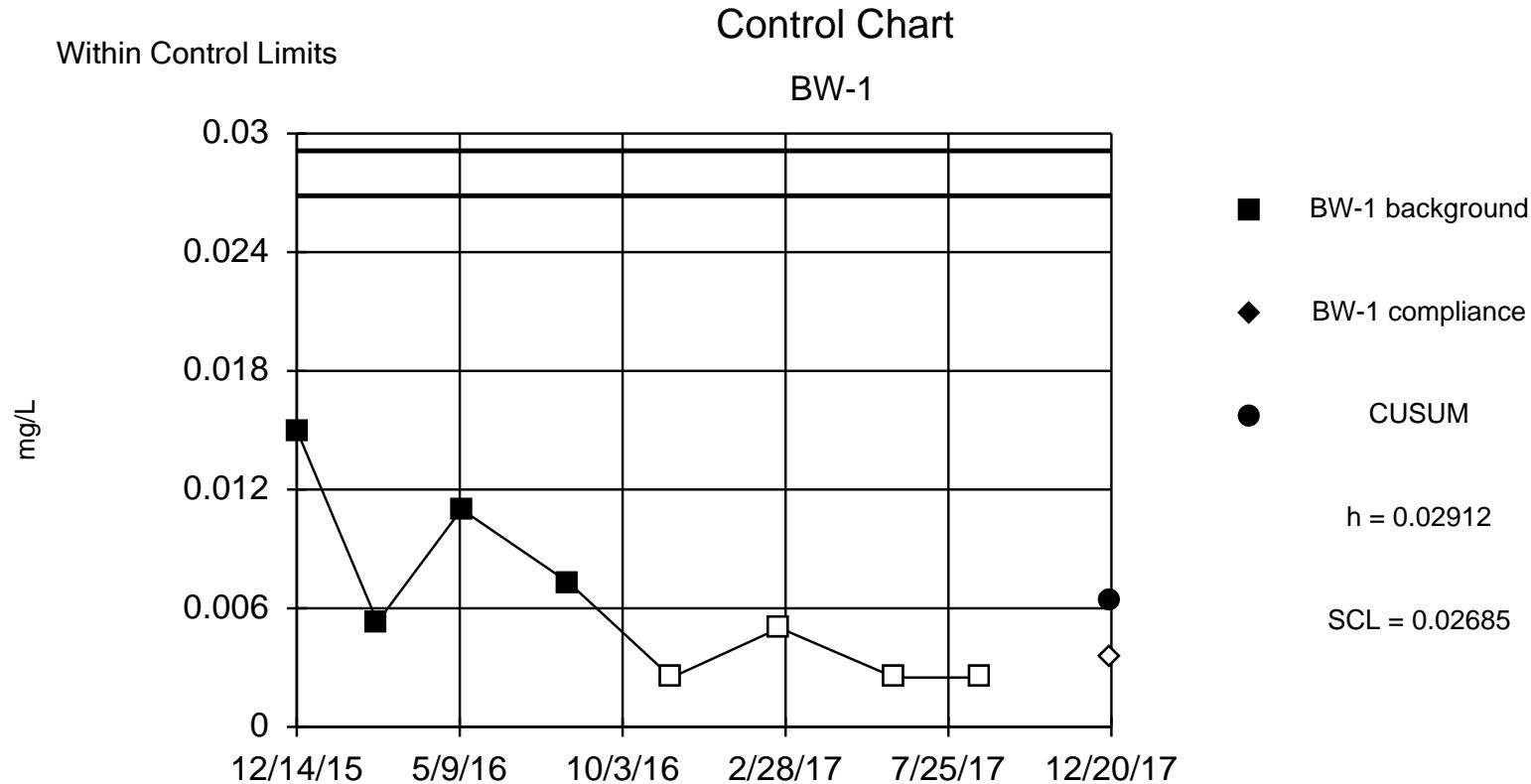
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Cadmium (mg/L) Analysis Run 1/25/2018 12:51 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1
12/14/2015	<0.001
2/25/2016	<0.001
5/11/2016	<0.001
8/16/2016	<0.001
11/17/2016	<0.001
2/23/2017	<0.005
6/7/2017	<0.001
8/24/2017	<0.002
12/20/2017	<0.005



Background Data Summary: Mean=0.006387, Std. Dev.=0.004547, n=8, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8525, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Chromium Analysis Run 1/25/2018 12:45 PM

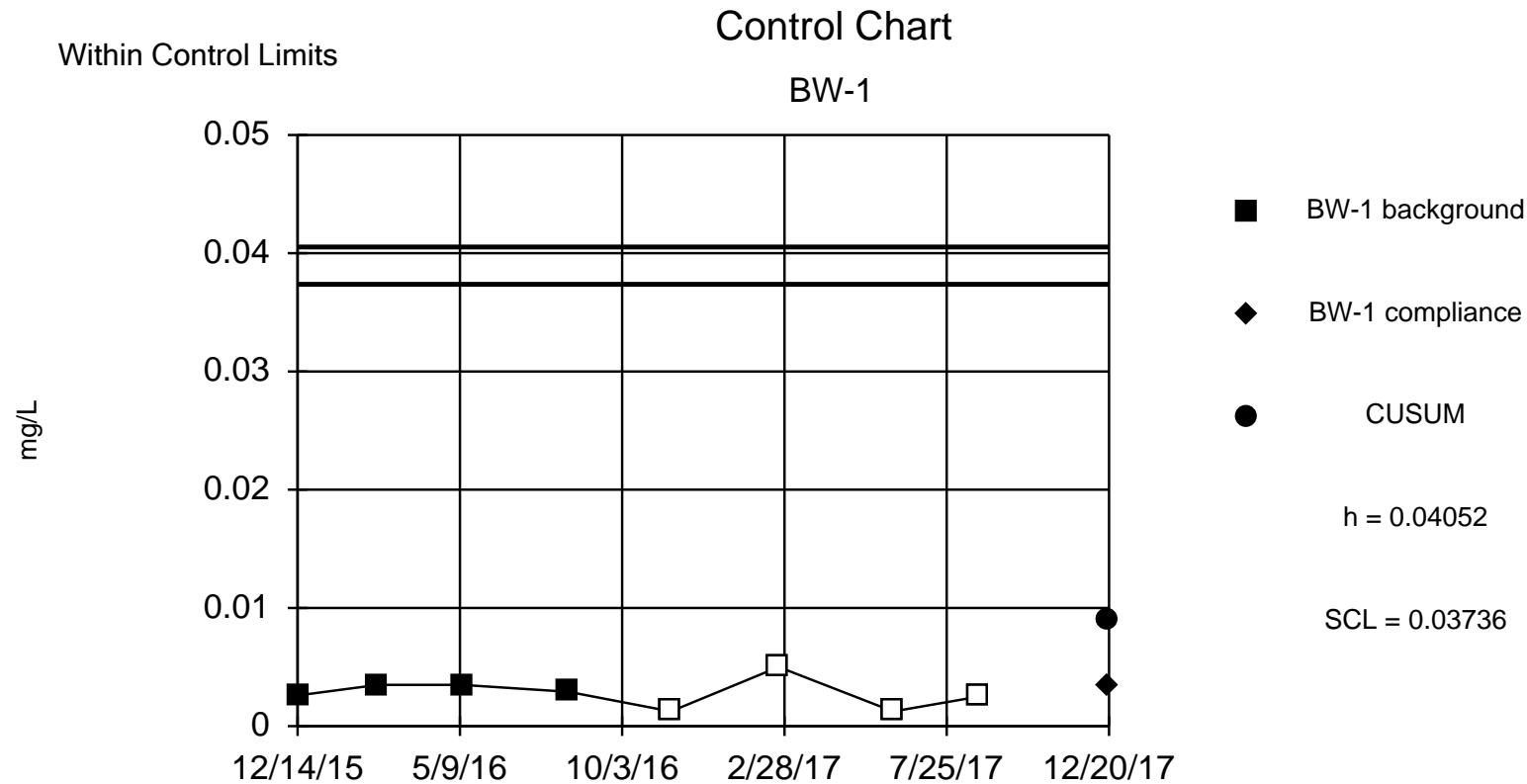
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Chromium (mg/L) Analysis Run 1/25/2018 12:51 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	0.015		
2/25/2016	0.0053		
5/11/2016	0.011		
8/16/2016	0.0073		
11/17/2016	<0.005		
2/23/2017	<0.01		
6/7/2017	<0.005		
8/24/2017	<0.005		
12/20/2017	<0.007	-0.635	0.006387



Background Data Summary (after Cohen's Adjustment): Mean=0.00891, Std. Dev.=0.006323, n=8, 50% NDs.
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9351, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Cobalt Analysis Run 1/25/2018 12:45 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Cobalt (mg/L) Analysis Run 1/25/2018 12:51 PM

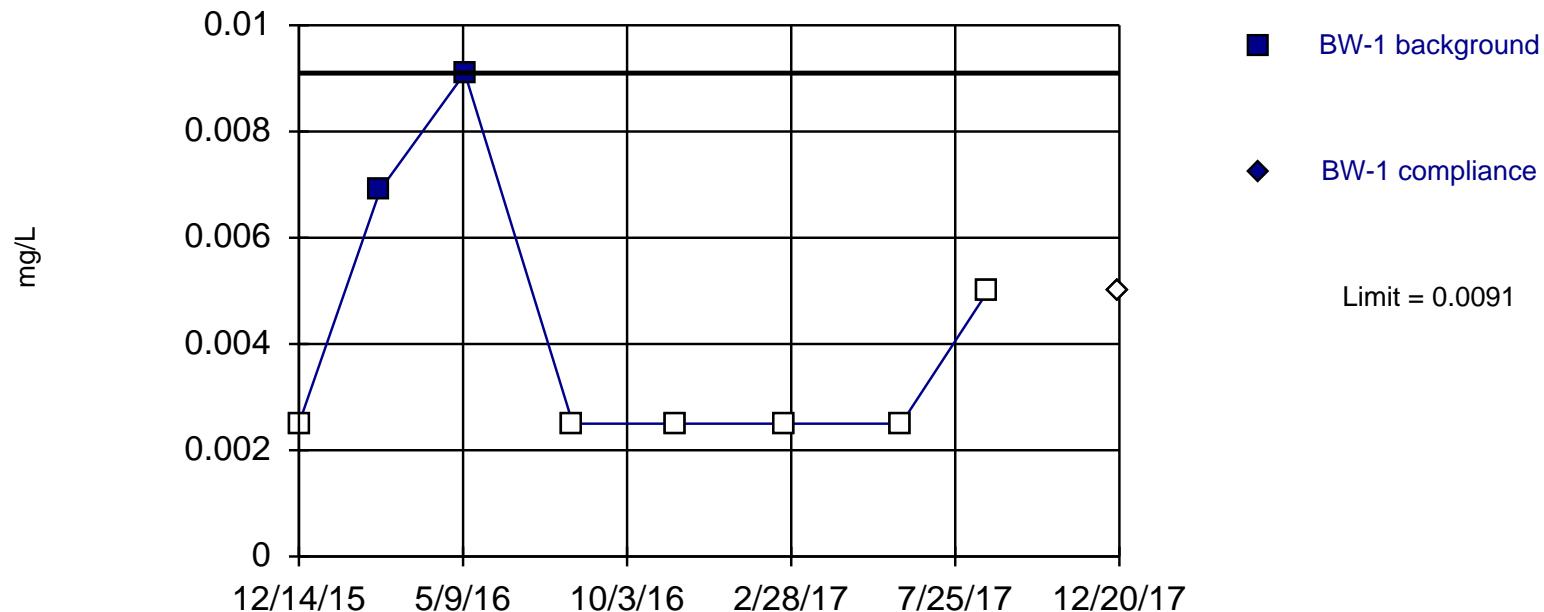
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	0.0026		
2/25/2016	0.0035		
5/11/2016	0.0035		
8/16/2016	0.0029		
11/17/2016	<0.0025		
2/23/2017	<0.01		
6/7/2017	<0.0025		
8/24/2017	<0.005		
12/20/2017	0.0034	-0.8715	0.00891

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 75% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Lead Analysis Run 1/25/2018 12:45 PM

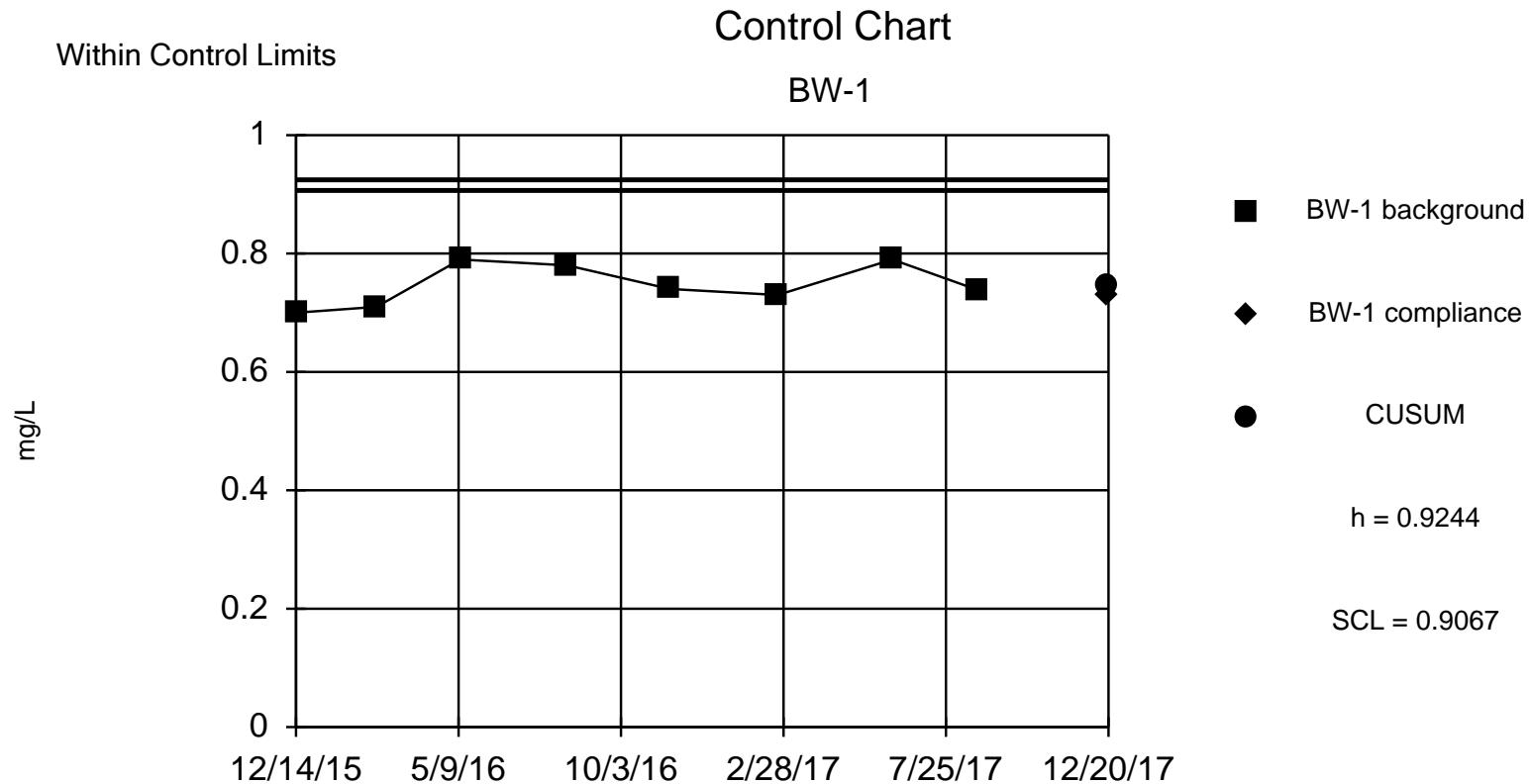
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Lead (mg/L) Analysis Run 1/25/2018 12:51 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1
12/14/2015	<0.005
2/25/2016	0.0069
5/11/2016	0.0091
8/16/2016	<0.005
11/17/2016	<0.005
2/23/2017	<0.005
6/7/2017	<0.005
8/24/2017	<0.01
12/20/2017	<0.01



Background Data Summary: Mean=0.7473, Std. Dev.=0.03542, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8939, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Lithium Analysis Run 1/25/2018 12:45 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Lithium (mg/L) Analysis Run 1/25/2018 12:51 PM

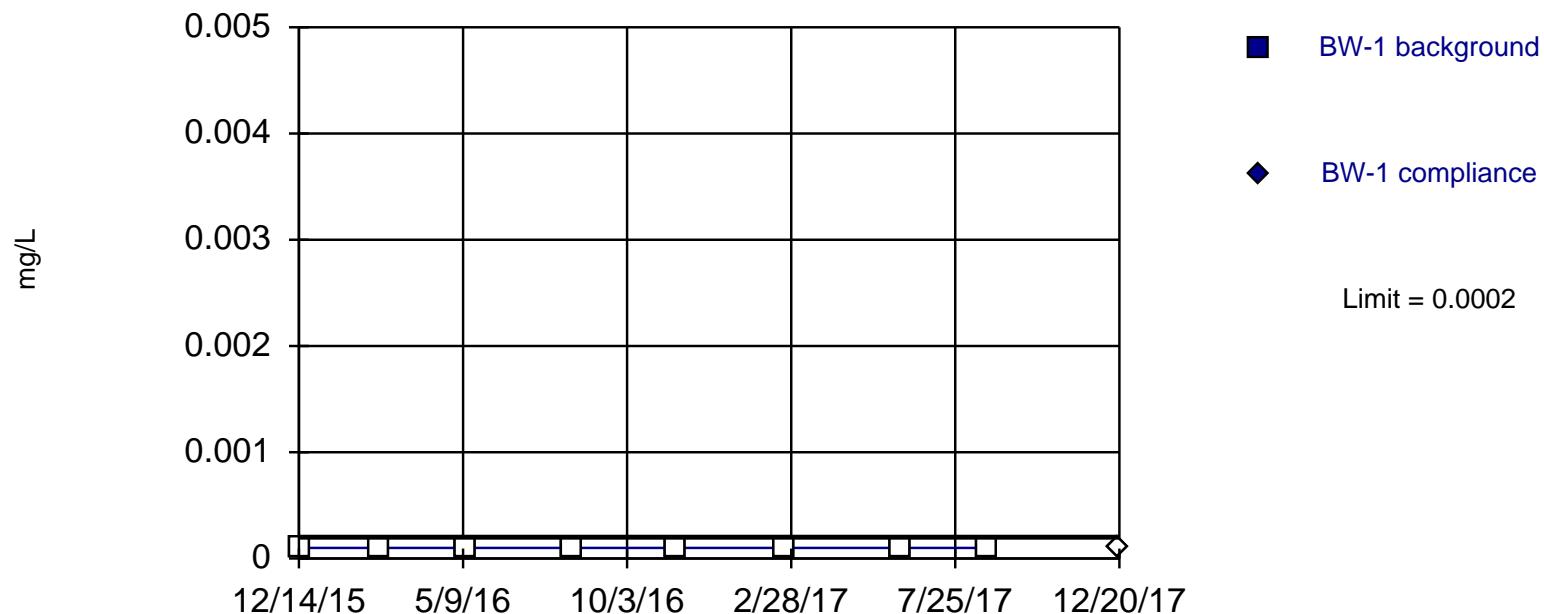
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	0.7		
2/25/2016	0.71		
5/11/2016	0.79		
8/16/2016	0.78		
11/17/2016	0.74		
2/23/2017	0.73		
6/7/2017	0.79		
8/24/2017	0.738		
12/20/2017	0.73	-0.487	0.7473

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Mercury Analysis Run 1/25/2018 12:45 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Mercury (mg/L) Analysis Run 1/25/2018 12:51 PM

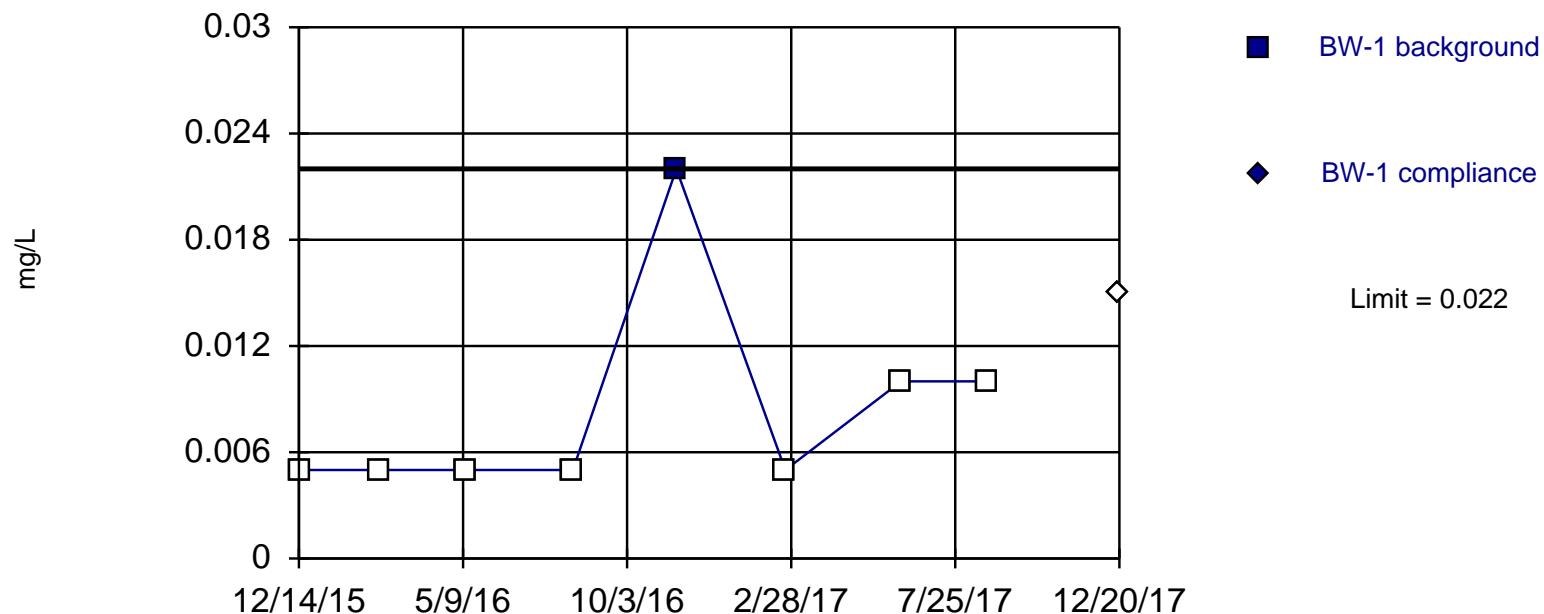
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1
12/14/2015	<0.0002
2/25/2016	<0.0002
5/11/2016	<0.0002
8/16/2016	<0.0002
11/17/2016	<0.0002
2/23/2017	<0.0002
6/7/2017	<0.0002
8/24/2017	<0.0002
12/20/2017	<0.0002

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Molybdenum Analysis Run 1/25/2018 12:45 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

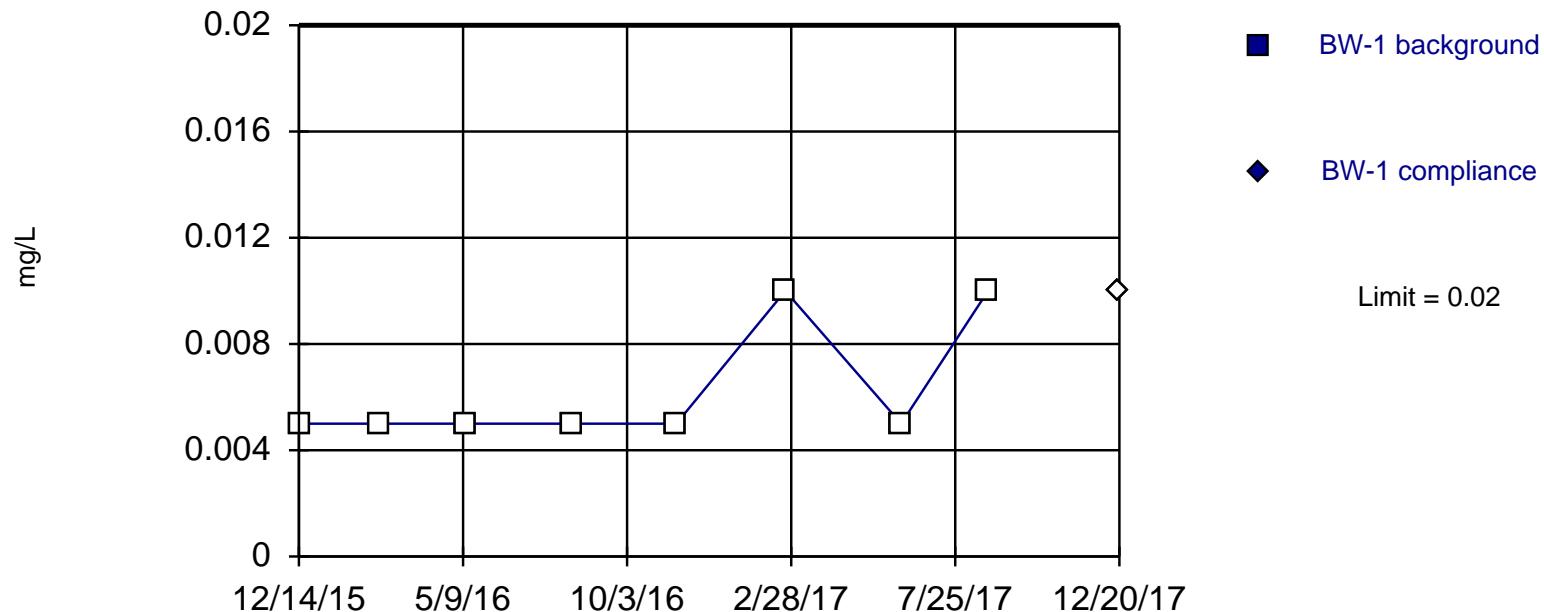
Constituent: Molybdenum (mg/L) Analysis Run 1/25/2018 12:51 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1
12/14/2015	<0.01
2/25/2016	<0.01
5/11/2016	<0.01
8/16/2016	<0.01
11/17/2016	0.022
2/23/2017	<0.01
6/7/2017	<0.02
8/24/2017	<0.02
12/20/2017	<0.03

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values ($n = 8$) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Selenium Analysis Run 1/25/2018 12:45 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Selenium (mg/L) Analysis Run 1/25/2018 12:51 PM

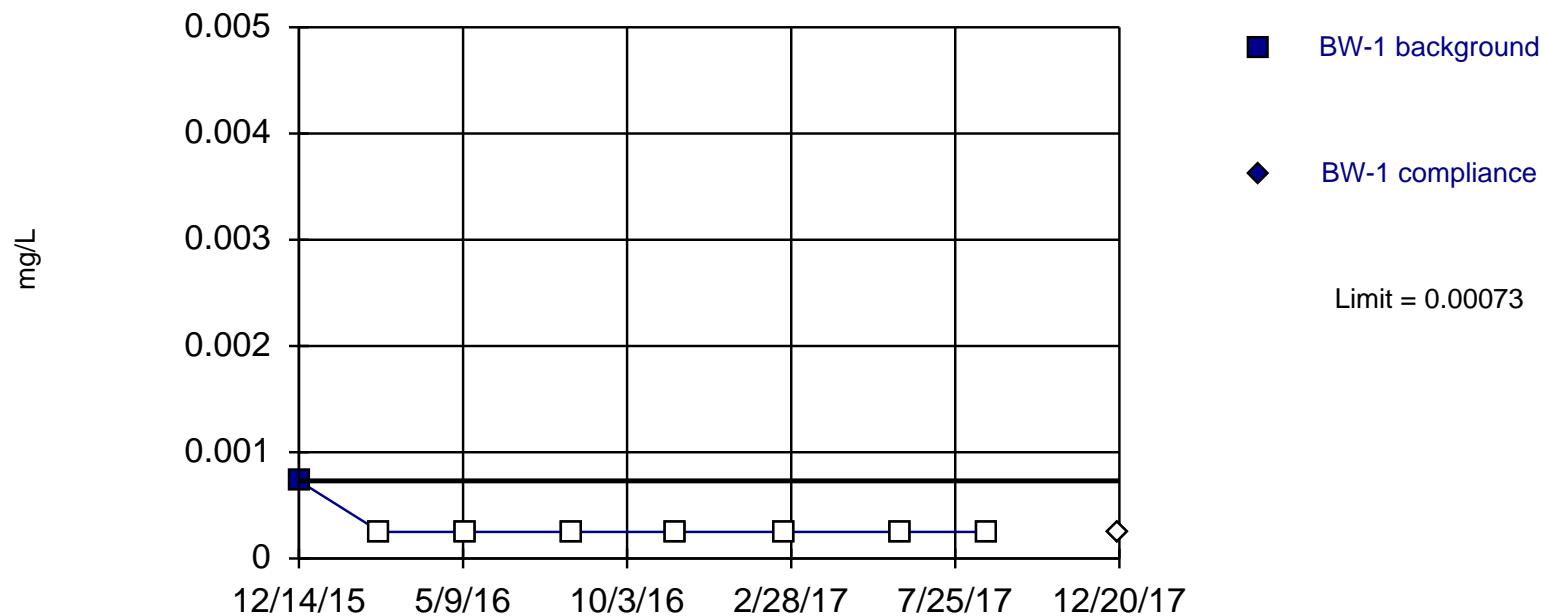
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

BW-1	BW-1
12/14/2015	<0.01
2/25/2016	<0.01
5/11/2016	<0.01
8/16/2016	<0.01
11/17/2016	<0.01
2/23/2017	<0.02
6/7/2017	<0.01
8/24/2017	<0.02
12/20/2017	<0.02

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Thallium Analysis Run 1/25/2018 12:45 PM

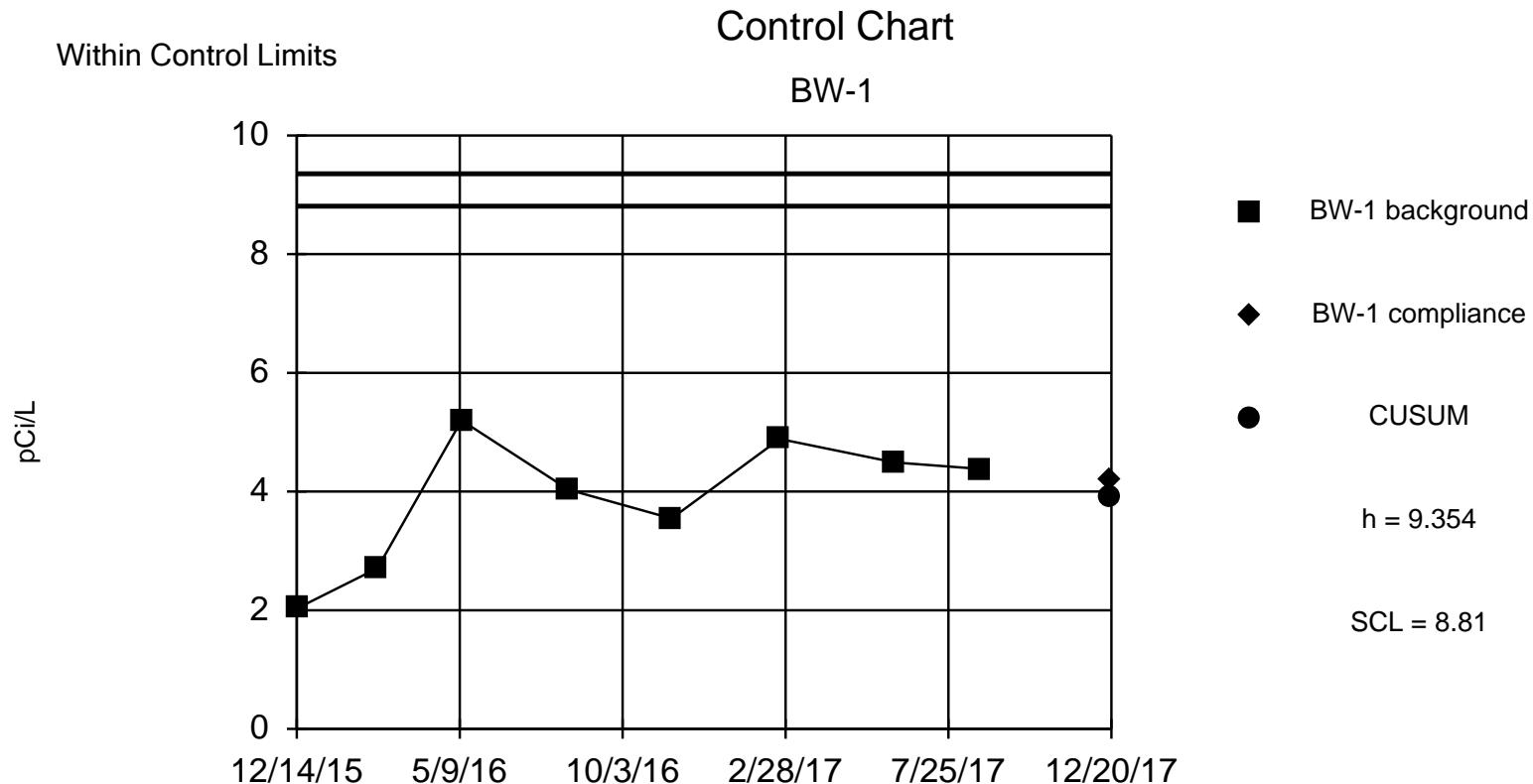
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart Alternate

Constituent: Thallium (mg/L) Analysis Run 1/25/2018 12:51 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1
12/14/2015	0.00073
2/25/2016	<0.0005
5/11/2016	<0.0005
8/16/2016	<0.0005
11/17/2016	<0.0005
2/23/2017	<0.0005
6/7/2017	<0.0005
8/24/2017	<0.0005
12/20/2017	<0.0005



Background Data Summary: Mean=3.909, Std. Dev.=1.089, n=8. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.939, critical = 0.818. Report alpha = 0.00205. Dates ending 8/24/2017 used for control stats. Standardized h=5, SCL=4.5.

Constituent: Combined Radium Analysis Run 1/25/2018 12:43 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Control Chart

Constituent: Combined Radium (pCi/L) Analysis Run 1/25/2018 12:44 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1	BW-1	Std. Mean	CUSUM
12/14/2015	2.03			
2/25/2016	2.707			
5/11/2016	5.2			
8/16/2016	4.03			
11/17/2016	3.545			
2/23/2017	4.886			
6/7/2017	4.49			
8/24/2017	4.38			
12/20/2017		4.2	0.2676	3.909

APPENDIX F
DECEMBER 2017 ALTERNATE SOURCE DEMONSTRATIONS:
1: FLUORIDE IN MW-1
2: BORON IN MW-3

SCS ENGINEERS

January 30, 2018
SCS Project 16215106.00

Mr. Darryl Sparks
Compliance Manager
NAES Corporation
2161 Rattlesnake Road
Riesel, Texas 76682

Subject: Sandy Creek Energy Station
McLennan County, Texas
2017 Annual Groundwater Monitoring and Corrective Action Report
Alternate Source Demonstration for Fluoride in MW-1

Dear Mr. Sparks:

On behalf of the Sandy Creek Energy Station (SCES), SCS Engineers (SCS) is submitting this Alternate Source Demonstration (ASD) in accordance with the site Groundwater Sampling and Analysis Plan (GWSAP) prepared by SCS, dated March 2, 2016, and Coal Combustion Residual Rule (CCR) 40 CFR §257.94(e)(2) for a fluoride detection in groundwater monitoring well MW-1. Fluoride was detected in MW-1 at a concentration of 1.1 mg/L during the December 2017 groundwater monitoring event. This ASD is being submitted to demonstrate that the fluoride detection is caused by a source other than the SCES landfill. In accordance with 40 CFR §257.94(e)(2), this ASD is being submitted within 90 days of detecting a statistically significant increase (SSI) above background values.

Project Background

SCES is a pulverized coal-fired electric generation facility which operates a landfill for disposal of dry scrubber ash and bottom ash generated during the coal combustion process at the facility. Incidental wastes generated during the operation of the facility may also be disposed in the landfill, as described in the initial registration notification to TCEQ and the most recent version of the Operations Plan for the facility. The landfill is currently comprised of two CCR disposal cells, Cells 1 and 2, which commenced receiving waste in early 2013 and October 2014, respectively. The approximate area of Cells 1 and 2 are 10.0 and 14.3 acres, respectively.

In accordance with 40 CFR §257 Appendix III and IV, the list of constituents for monitoring at SCES includes 18 inorganic compounds, total dissolved solids, radium-226, and radium-228.

Fluoride Detection at MW-1

Fluoride was detected in MW-1 during the December 2017 groundwater monitoring event at 1.1 mg/L. This laboratory result exceeded the intrawell statistical limit for fluoride at MW-1 (0.4 mg/L). Initial statistical analysis of fluoride in MW-1 included the use of a non-parametric

Mr. Darryl Sparks
January 30, 2017
Page 2

prediction limit using background fluoride data collected from only MW-1. This test is appropriate because the background data for fluoride in MW-1 are non-normally distributed. This introwell statistical limit is represented as the highest of the eight fluoride background values from MW-1.

The Texas Commission on Environmental Quality (TCEQ) Texas-Specific Soil Background Concentration (TSBC) for fluoride is 190 mg/kg (equivalent mg/L) in soil (see attached TCEQ TSBC guidance). Note that this naturally-occurring median fluoride concentration in soil is multiple orders of magnitude greater than the 1.1 mg/L concentration in water that was detected on December 20, 2017. Therefore, the fluoride detection in MW-1 is most likely a naturally-derived component of the site geology, which can result in a natural variation in groundwater quality.

Closing

SCS recommends that the facility remain in detection monitoring, in accordance with 40 CFR §257.94, as this ASD satisfies the 90-day demonstration period requirement outlined in 40 CFR §257.94(e)(2). Please contact Jim Lawrence at (817) 358-6106 if you have comments or require additional information.

Sincerely,



Doug Steen
Associate Professional
SCS ENGINEERS
TBPE Registration No. F-3407

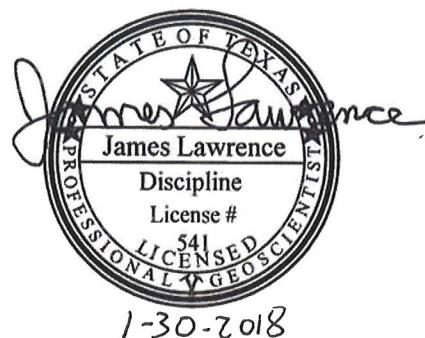


Brett DeVries, Ph.D., P.E.
Project Engineer
SCS ENGINEERS



James Lawrence, P.G.
Project Director
SCS ENGINEERS


Brett J. DeVries
128061
LICENCED PROFESSIONAL ENGINEER

 1/30/18

Attachment: TCEQ Texas-Specific Soil Background Concentrations Guidance

Texas-Specific Soil Background Concentrations milligrams per kilogram (mg/kg) ¹	
Metal	Median Background Concentration (mg/kg)
Aluminum	30,000
Antimony	1
Arsenic	5.9
Barium	300
Beryllium	1.5
Boron	30
Total Chromium	30
Cobalt	7
Copper	15
Fluoride	190
Iron	15,000
Lead	15
Manganese	300
Mercury	0.04
Nickel	10
Selenium	0.3
Strontium	100
Tin	0.9
Titanium	2,000
Thorium	9.3
Vanadium	50
Zinc	30

¹ Source: "Background Geochemistry of Some Rocks, Soils, Plants, and Vegetables in the Conterminous United States", by Jon J. Connor, Hansford T. Shacklette, et al., Geological Survey Professional Paper 574-F, US Geological Survey.

SCS ENGINEERS

January 30, 2018
SCS Project 16215106.00

Mr. Darryl Sparks
Compliance Manager
NAES Corporation
2161 Rattlesnake Road
Riesel, Texas 76682

Subject: Sandy Creek Energy Station
McLennan County, Texas
2017 Annual Groundwater Monitoring and Corrective Action Report
Alternate Source Demonstration for Boron in MW-3

Dear Mr. Sparks:

On behalf of the Sandy Creek Energy Station (SCES), SCS Engineers (SCS) is submitting this Alternate Source Demonstration (ASD) in accordance with the site Groundwater Sampling and Analysis Plan (GWSAP) prepared by SCS, dated March 2, 2016, and Coal Combustion Residual Rule (CCR) 40 CFR Part §257.94(e)(2) for a boron detection in groundwater monitoring well MW-3. Boron was detected in MW-3 at 1.3 mg/L during the December 2017 groundwater monitoring event. This ASD is being submitted to demonstrate that the boron detection is caused by a source other than the SCES landfill. In accordance with 40 CFR §257.94(e)(2), this ASD is being submitted within 90 days of detecting a statistically significant increase (SSI) above background values.

Project Background

SCES is a pulverized coal-fired electric generation facility which operates a landfill for disposal of dry scrubber ash and bottom ash generated during the coal combustion process at the facility. Incidental wastes generated during the operation of the facility may also be disposed in the landfill, as described in the initial registration notification to TCEQ and the most recent version of the Operations Plan for the facility. The landfill is currently comprised of two CCR disposal cells, Cells 1 and 2, which commenced receiving waste in early 2013 and October 2014, respectively. The approximate area of Cells 1 and 2 are 10.0 and 14.3 acres, respectively.

In accordance with 40 CFR §257 Appendix III and IV, the list of constituents for monitoring at SCES includes 18 inorganic compounds, total dissolved solids, radium-226, and radium-228.

Boron Detection at MW-3

Boron was detected in MW-3 during the December 2017 groundwater monitoring event at 1.3 mg/L. The Texas Commission on Environmental Quality (TCEQ) Texas-Specific Soil Background Concentration (TSBC) for boron is 30 mg/kg (equivalent mg/L) in soil (see attached

TCEQ TSBC guidance). Note that this naturally-occurring median boron concentration in soil is an order of magnitude greater than the 1.3 mg/L concentration in water that was detected on December 20, 2017.

Statistical Analysis

Initial statistical analysis of boron in MW-3 included the use of a non-parametric prediction limit using background boron data collected from only MW-3. This test is appropriate because the background data for boron in MW-3 are non-normally distributed. This introwell statistical limit is represented as the highest of the eight background values from MW-3 (see “Introwell Limit” in Table 1 below).

Since the December 2017 laboratory result for boron in MW-3 exceeded its introwell limit, additional statistical evaluation was performed in accordance with 40 CFR §257.94(e)(2). This additional analysis consisted of an interwell parametric prediction limit (see “Interwell Limit” in Table 1 below). This test is commonly used to provide a comparison between a detection in a downgradient monitoring well and a statistical limit derived from background data from one or more upgradient monitoring wells. If the detection falls below the interwell statistical limit, it can be inferred that the detection likely resulted from natural variations in groundwater quality at the site.

Table 1 – December 2017 Unconfirmed SSIs (mg/L)				
MW- ID	Constituent	Lab Result	Introwell Limit	Interwell Limit
MW-3	Boron	1.3	1.2	4.591

As a result of this analysis comparing upgradient to downgradient data, the statistical limit was raised above the December 2017 laboratory result for boron in MW-3. The boron appears to be coming from a non-landfill, upgradient source, so no further action is recommended. The boron detection in MW-1 is most likely a naturally-derived component of the site geology, which can result in a natural variation in groundwater quality.

Mr. Darryl Sparks
January 30, 2017
Page 3

Closing

Attached are the interwell statistical graphs and data, as well as the ANOVA calculations demonstrating a lack of significant spatial variation of the constituents between wells.

SCS recommends that the facility remain in detection monitoring, in accordance with 40 CFR §257.94, as this ASD satisfies the 90-day demonstration period requirement outlined in 40 CFR §257.94(e)(2). Please contact Jim Lawrence at (817) 358-6106 if you have comments or require additional information.

Sincerely,

Douglas P. Steen

Doug Steen
Associate Professional
SCS ENGINEERS
TBPE Registration No. F-3407

Brett DeVries

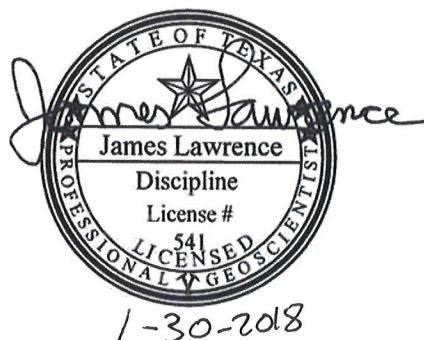
Brett DeVries, Ph.D., P.E.
Project Engineer
SCS ENGINEERS

James Lawrence

James Lawrence, P.G.
Project Director
SCS ENGINEERS



Brett DeVries 1/30/18



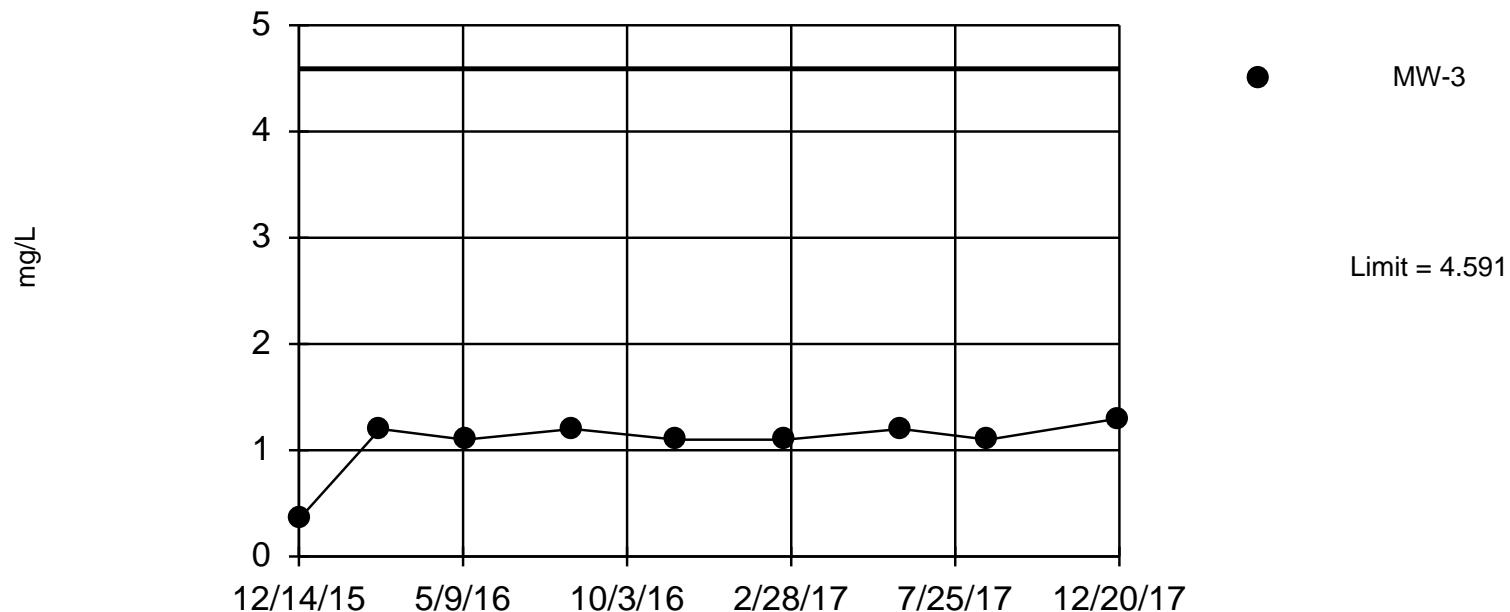
1-30-2018

Attachments: Interwell Statistical Graphs and Data
ANOVA Calculations and Data
TCEQ Texas-Specific Soil Background Concentrations Guidance

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=3.289, Std. Dev.=0.6642, n=9. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8656, critical = 0.829. Report alpha = 0.05. Most recent point compared to limit.

Constituent: Boron Analysis Run 1/25/2018 3:25 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 1/25/2018 3:31 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1 (bg)	MW-3
12/14/2015	1.8	0.35
2/25/2016	3.5	1.2
5/11/2016	4	1.1
8/16/2016	3.7	1.2
11/17/2016	2.8	1.1
2/23/2017	3.1	1.1
6/7/2017	3.8	1.2
8/24/2017	3.4	1.1
12/20/2017	3.5	1.3

Non-Parametric ANOVA

Constituent: Boron Analysis Run 1/25/2018 3:32 PM
Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

For observations made between 12/14/2015 and 12/20/2017, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 12.99

Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.

There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.

Kruskal-Wallis statistic (H) = 12.79

Adjusted Kruskal-Wallis statistic (H') = 12.99

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

Well	Difference	Contrast	Significant?
MW-3	-9	4.138	No

The critical (contrast) value was computed with 1 degree of freedom and a 5% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Shapiro Wilk normality test showed the residuals to be non-normal at the 0.05 alpha level.

Non-Parametric ANOVA

Constituent: Boron (mg/L) Analysis Run 1/25/2018 3:32 PM

Sandy Creek Energy Station Client: Sandy Creek Data: Sandy Creek GWdata (Sanitas)_1.22.18

	BW-1 (bg)	MW-3
12/14/2015	1.8	0.35
2/25/2016	3.5	1.2
5/11/2016	4	1.1
8/16/2016	3.7	1.2
11/17/2016	2.8	1.1
2/23/2017	3.1	1.1
6/7/2017	3.8	1.2
8/24/2017	3.4	1.1
12/20/2017	3.5	1.3

Texas-Specific Soil Background Concentrations milligrams per kilogram (mg/kg) ¹	
Metal	Median Background Concentration (mg/kg)
Aluminum	30,000
Antimony	1
Arsenic	5.9
Barium	300
Beryllium	1.5
Boron	30
Total Chromium	30
Cobalt	7
Copper	15
Fluoride	190
Iron	15,000
Lead	15
Manganese	300
Mercury	0.04
Nickel	10
Selenium	0.3
Strontium	100
Tin	0.9
Titanium	2,000
Thorium	9.3
Vanadium	50
Zinc	30

¹ Source: "Background Geochemistry of Some Rocks, Soils, Plants, and Vegetables in the Conterminous United States", by Jon J. Connor, Hansford T. Shacklette, et al., Geological Survey Professional Paper 574-F, US Geological Survey.
