# Annual Groundwater Monitoring Report

Southwestern Electric Power Company

Flint Creek Power Plant

Landfill CCR Management Unit

Gentry, Arkansas

**January 2020**

Prepared by:
American Electric Power Service Corporation
1 Riverside Plaza
Columbus, Ohio 43215

SOUTHWESTERN ELECTRIC POWER COMPANY℠

An AEP Company

BOUNDLESS ENERGY℠

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## I. Overview

This *Annual Groundwater Monitoring Report* (Report) has been prepared to report the status of activities for the preceding year for an existing CCR unit at Southwestern Electric Power Company's, a wholly-owned subsidiary of American Electric Power Company (AEP), Flint Creek Power Plant. The USEPA's CCR rules require that the Annual Groundwater Monitoring Report be posted to the operating record for the preceding year no later than January 31, 2020.

At the beginning of 2019 the landfill was in assessment monitoring. The landfill remained in assessment monitoring through the end of the year. No exceedances of a groundwater protection standard (GWPS) occurred during 2019.

In general, the following activities were completed:

- Groundwater samples were collected and analyzed for Appendix III and Appendix IV constituents, as specified in 40 CFR 257.94 or 95 *et seq.* and AEP's *Groundwater Sampling and Analysis Plan (2016)*;
- Groundwater data underwent various validation tests, including tests for completeness, valid values, transcription errors, and consistent units;
- The assessment monitoring events determined that no statistically significant levels (SSLs) above the groundwater protection standards existed.
- Groundwater Monitoring Statistical Evaluation Reports to evaluate groundwater data were prepared and certified in accordance with 40 CFR 257.93. The statistical process was guided by USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* ("Unified Guidance", USEPA, 2009).

The major components of this annual report, to the extent applicable at this time, are presented in sections that follow:

- A map, aerial photograph or a drawing showing the CCR management unit(s), all groundwater monitoring wells and monitoring well identification numbers;
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a statement as to why that happened;
- All of the monitoring data collected, including the rate and direction of groundwater flow, plus a summary showing the number of samples collected per monitoring well, the dates the samples were collected and whether the sample was collected as part of detection monitoring or assessment monitoring programs is included in Appendix I;
- A summary of any transition between monitoring programs or an alternate monitoring frequency, for example the date and circumstances for transitioning from detection

monitoring to assessment monitoring, in addition to identifying the constituents detected at a statistically significant increase over background concentrations.

- Other information required to be included in the annual report such as alternate source demonstration or assessment of corrective measures, if applicable.

In addition, this report summarizes key actions completed, and where applicable, describes any problems encountered and actions taken to resolve those problems. The report includes a projection of key activities for the upcoming year.

## II. Groundwater Monitoring Well Locations and Identification Numbers

The figure that follows depicts the PE-certified groundwater monitoring network, the monitoring well locations and their corresponding identification numbers.

| Landfill Monitoring Wells | |
|---|---|
| Up Gradient | Down Gradient |
| B-1B | B-2 |
| B-4 | B-6 |
| B-5 | B-9 |
| B-7A | B-10 |
| B-12 | B-11 |
| B-13 | |

## III. Monitoring Wells Installed or Decommissioned

There were no monitoring wells installed or decommissioned this year.

## IV. Groundwater Quality Data and Static Water Elevation Data, With Flow Rate and Direction and Discussion

Appendix I contains tables showing the groundwater quality. Static water elevation data from each monitoring event also are shown in Appendix I, along with the groundwater velocity, groundwater flow direction and potentiometric maps developed after each sampling event.

## V. Statistical Evaluation of 2019 Events

There were two groundwater monitoring events in 2019. Their statistical reports are included in Appendix II.

The first half 2019 sampling event occurred in March, 2019. There were no statistically significant levels (SSLs) above the groundwater protection standards identified.

The June 2019 sampling event was in furtherance of 257.95(b) which determines which constituents in Appendix IV (to 40 CFR 257) were detected. The results are in Appendix I.

The second half 2019 sampling event occurred in August, 2019. There were no SSLs above the groundwater protection standards identified.

## VI. Alternate Source Demonstration

There were no alternate source demonstrations during 2019.

## VII. Discussion About Transition Between Monitoring Requirements or Alternate Monitoring Frequency

There were no transitions between groundwater programs in 2019. The groundwater program started in assessment monitoring and ended in assessment monitoring.

## VIII. Other Information Required

No other information applies at this time.

## IX. Description of Any Problems Encountered in 2019 and Actions Taken

No problems were encountered this year.

## X. A Projection of Key Activities for the Upcoming Year

Key activities for next year include:

- Assessment monitoring sampling will be conducted;
- Evaluation of the assessment monitoring results from a statistical analysis viewpoint, looking for any SSLs above GWPS;
- Responding to any new data received in light of CCR rule requirements;
- Preparation of the next annual groundwater report.

# APPENDIX I

Tables follow, showing the groundwater monitoring data collected, the rate and direction of groundwater flow, and a summary showing the number of samples collected per monitoring well. The dates that the samples were collected also is shown.

**Monitoring Wells**
- Shallow
- Intermediate
- Deep

**Groundwater Elevation Contour**
- Shallow
- Shallow Flow Direction
- Intermediate
- Intermediate Flow Direction
- Deep
- Deep Flow Direction

**Notes**
- Monitoring well coordinates and water level data (collected on March 11-12, 2019) provided by AEP.
- Site features are based on information available in the Groundwater Monitoring Well Network Elevation (Terracon, 2016) provided by AEP.
- Locations of NE-5D, NE-7R, and NE-9 are approximate.
- Groundwater elevation units are feet above mean sea level.

200 100 0 200 Feet

# Potentiometric Surface Map March 2019

AEP Flint Creek Plant - Landfill
Gentry, Arkansas

Geosyntec consultants

Columbus, Ohio | 2019/12/13

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Flint Creek\Landfill\2019\AEP-Flint Creek_GW_Landfill_2019-03March.mxd. ARevezzo. 12/13/2019. CHA8423/01/08.

**Monitoring Wells**
- Shallow
- Intermediate
- Deep

**Groundwater Elevation Contour**
- Shallow
- Shallow Flow Direction
- Intermediate
- Intermediate Flow Direction
- Deep
- Deep Flow Direction

**Notes**
- Monitoring well coordinates and water level data (collected on June 10-11, 2019) provided by AEP.
- Site features are based on information available in the Groundwater Monitoring Well Network Elevation (Terracon, 2016) provided by AEP.
- Locations of NE-5D, NE-7R, and NE-9 are approximate.
- Groundwater elevation units are feet above mean sea level.

200 100 0 200
Feet

# Potentiometric Surface Map June 2019

AEP Flint Creek Plant - Landfill
Gentry, Arkansas

Geosyntec consultants

Columbus, Ohio | 2019/12/13

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Flint Creek\Landfill\2019\AEP-Flint Creek_GW_Landfill_2019-06June.mxd. ARevezzo. 12/13/2019. CHA8423/01/08.

**Monitoring Wells**
- Shallow
- Intermediate
- Deep

**Groundwater Elevation Contour**
- Intermediate
- Intermediate Flow Direction
- Deep
- Deep (Inferred)
- Deep Flow Direction

**Notes**
- Monitoring well coordinates and water level data (collected on August 27-28, 2019) provided by AEP.
- Site features are based on information available in the Groundwater Monitoring Well Network Elevation (Terracon, 2016) provided by AEP.
- Locations of NE-5D, NE-7R, and NE-9 are approximate.
- Groundwater elevation units are feet above mean sea level.

200 100 0 200 Feet

# Potentiometric Surface Map August 2019

AEP Flint Creek Plant - Landfill
Gentry, Arkansas

Geosyntec consultants

Columbus, Ohio | 2019/12/24

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Flint Creek\Landfill\2019\AEP-Flint Creek_GW_Landfill_2019-08August.mxd. ARevezzo. 12/24/2019. CHA8423/01/08.

**Table 1: Residence Time Calculation Summary**
**Flint Creek Landfill**

*Geosyntec Consultants, Inc.*

| CCR Management Unit | Monitoring Well | Well Diameter (inches) | 2019-03 | | 2019-06 | | 2019-08 | |
|---|---|---|---|---|---|---|---|---|
| | | | Groundwater Velocity (ft/year) | Groundwater Residence Time (days) | Groundwater Velocity (ft/year) | Groundwater Residence Time (days) | Groundwater Velocity (ft/year) | Groundwater Residence Time (days) |
| Landfill | B-1B [3] | 2.0 | 106 | 0.6 | 188 | 0.3 | 206 | 0.3 |
| | B-2 [2] | 2.0 | 69 | 0.9 | 62 | 1.0 | 70 | 0.9 |
| | B-4 [1] | 2.0 | 44 | 1.4 | 117 | 0.5 | 93 | 0.7 |
| | B-5 [3] | 2.0 | 32 | 1.9 | 98 | 0.6 | 82 | 0.7 |
| | B-6 [2] | 2.0 | 73 | 0.8 | 40 | 1.5 | 16 | 3.7 |
| | B-7A [3] | 2.0 | 79 | 0.8 | 309 | 0.2 | 72 | 0.8 |
| | B-9 [2] | 2.0 | NC | NC | NC | NC | 96 | 0.6 |
| | B-10 [2] | 2.0 | 53 | 1.1 | 110 | 0.6 | 34 | 1.8 |
| | B-11 [2] | 2.0 | 138 | 0.4 | 44 | 1.4 | 95 | 0.6 |
| | B-12 [1] | 2.0 | 96 | 0.6 | 306 | 0.2 | 233 | 0.3 |
| | B-13 [1] | 2.0 | 20 | 3.1 | 96 | 0.6 | 43 | 1.4 |

Notes:
[1] - Background Well
[2] - Downgradient Well
[3] - Crossgradient Well
NC - Not Calculated

**Table 1 - Groundwater Data Summary: B-1B**
**Flint Creek - Landfill**
**Appendix III Constituents**



| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.02 | 90.8 | 3 | 0.5955 J | 8.1 | 296 | 22 |
| 7/19/2016 | Background | 0.02 | 92.4 | 4 | 0.4424 J | 7.1 | 281 | 25 |
| 9/14/2016 | Background | 0.02 | 96.3 | 3 | 0.4087 J | 7.0 | 296 | 24 |
| 10/5/2016 | Background | 0.02 | 89.3 | 5 | 0.4557 J | 7.5 | 294 | 25 |
| 11/8/2016 | Background | 0.02 | 86.5 | 4 | <0.083 U | 7.2 | 270 | 24 |
| 1/24/2017 | Background | 0.02 | 85.9 | 2 | <0.083 U | 7.7 | 276 | 22 |
| 3/7/2017 | Background | 0.02 | 88.7 | 2 | <0.083 U | 7.4 | 272 | 23 |
| 4/26/2017 | Background | 0.02041 | 88.1 | 4 | 0.53 J | 6.5 | 268 | 23 |
| 5/16/2017 | Background | 0.01982 | 85.5 | 3 | 0.4551 J | 6.8 | 240 | 20 |
| 6/16/2017 | Background | 0.02962 | 85.1 | 4 | <0.083 U | 6.3 | 276 | 21 |
| 8/29/2017 | Detection | 0.0579 | 83.3 | 3 | 0.416 J | 7.9 | 264 | 20 |
| 3/26/2018 | Assessment | 0.01493 | 89.6 | 2 | 0.098 J | 7.5 | 268 | 22 |
| 8/28/2018 | Assessment | 0.026 | 87.6 | - - | - - | 7.3 | 288 | - - |
| 10/23/2018 | Assessment | - - | - - | 5.53 | 0.489 J | - - | - - | 14.8 |
| 3/12/2019 | Assessment | 0.02 J | 93.1 | 2.31 | 0.41 | 7.6 | 228 | 17.5 |
| 6/10/2019 | Assessment | 0.05 J | 92.4 | 2.31 | 0.49 | 6.6 | 266 | 20.7 |
| 8/27/2019 | Assessment | <0.02 U | 86.5 | 2 | 0.275 J | 7.4 | 312 | 20 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-1B**
**Flint Creek - Landfill**
**Appendix IV Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 112 | 0.0480724 J | <0.07 U | 0.801049 J | 0.441945 J | 3.583 | 0.5955 J | <0.68 U | 0.028 | 0.02301 J | 2.01197 J | <0.99 U | <0.86 U |
| 7/19/2016 | Background | <0.93 U | <1.05 U | 118 | 0.0361035 J | <0.07 U | 0.611765 J | 0.527203 J | - - | 0.4424 J | 1.03545 J | 0.028 | 0.01793 J | 0.869973 J | <0.99 U | <0.86 U |
| 9/14/2016 | Background | <0.93 U | <1.05 U | 125 | <0.02 U | <0.07 U | 1 | 0.454131 J | 8.375 | 0.4087 J | 0.999779 J | 0.028 | <0.005 U | 0.612698 J | <0.99 U | <0.86 U |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 122 | 0.0372394 J | <0.07 U | 0.984649 J | 0.750457 J | 8.79 | 0.4557 J | 1.03454 J | 0.041 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 11/8/2016 | Background | <0.93 U | <1.05 U | 131 | 0.033331 J | 0.0774505 J | 2 | 0.917319 J | 4.63 | <0.083 U | 1.03555 J | 0.027 | 0.00589 J | 0.297867 J | <0.99 U | <0.86 U |
| 1/24/2017 | Background | <0.93 U | 1.26762 J | 97 | 0.0223085 J | <0.07 U | 1 | 0.385362 J | 3.178 | <0.083 U | <0.68 U | 0.026 | 0.00757 J | 0.6452 J | <0.99 U | <0.86 U |
| 3/7/2017 | Background | <0.93 U | <1.05 U | 123 | <0.02 U | <0.07 U | <0.23 U | 0.325089 J | 3.604 | <0.083 U | <0.68 U | 0.034 | <0.005 U | 0.561767 J | <0.99 U | <0.86 U |
| 4/26/2017 | Background | 1.27 J | <1.05 U | 112 | 0.04 J | <0.07 U | 0.85 J | 0.49 J | 3.841 | 0.53 J | <0.68 U | 0.02658 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 5/16/2017 | Background | <0.93 U | <1.05 U | 118 | 0.03 J | <0.07 U | 0.3 J | 0.49 J | 1.448 | 0.4551 J | <0.68 U | 0.02701 | 0.009 J | <0.29 U | <0.99 U | <0.86 U |
| 6/16/2017 | Background | <0.93 U | 1.43 J | 123 | <0.02 U | <0.07 U | 0.33 J | 0.47 J | 5.15 | <0.083 U | <0.68 U | 0.02717 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/26/2018 | Assessment | <0.93 U | <1.05 U | 108 | <0.02 U | <0.07 U | 1.22 | 0.21 J | 4.485 | 0.098 J | 0.8 J | 0.0266 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 8/28/2018 | Assessment | 0.08 | 0.33 | 112 | 0.02 J | 0.07 | 0.263 | 0.102 | 6.51 | 0.489 J* | 0.247 | 0.0278 | <0.005 U | 1.17 | 0.04 J | 0.01 J |
| 3/12/2019 | Assessment | <0.1 U | 0.4 J | 112 | <0.1 U | <0.05 U | <0.2 U | <0.1 U | 3.924 | 0.41 | 1.25 | 0.0264 | <0.005 U | <2 U | <0.2 U | <0.5 U |
| 6/10/2019 | Assessment | 0.03 J | 0.62 | 112 | 0.02 J | 0.02 J | 0.368 | 0.051 | 5.96 | 0.49 | 0.530 | <0.02 U | <0.005 U | 0.8 J | <0.03 U | <0.1 U |
| 8/27/2019 | Assessment | 0.11 | 0.57 | 114 | <0.02 U | 0.06 | 0.278 | 0.05 J | 4.73 | 0.275 J | 0.395 | 0.0231 | <0.005 U | 1 J | <0.03 U | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*: Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-2**
**Flint Creek - Landfill**
**Appendix III Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 1.13 | 91.9 | 6 | <0.083 U | 7.0 | 1212 | 619 |
| 7/19/2016 | Background | 1.33 | 59.9 | 7 | 0.3361 J | 6.7 | 936 | 464 |
| 9/14/2016 | Background | 1.19 | 62.6 | 7 | <0.083 U | 6.6 | 1124 | 560 |
| 10/5/2016 | Background | 1.32 | 45.3 | 7 | <0.083 U | 5.9 | 741 | 339 |
| 11/8/2016 | Background | 1.82 | 27.5 | 6 | <0.083 U | 6.0 | 365 | 145 |
| 1/24/2017 | Background | 1.56 | 24 | 5 | <0.083 U | 5.8 | 296 | 119 |
| 3/7/2017 | Background | 1.04 | 32.1 | 5 | <0.083 U | 5.9 | 260 | 105 |
| 4/26/2017 | Background | 1.44 | 23.1 | 6 | <0.083 U | 6.3 | 400 | 179 |
| 5/16/2017 | Background | 1.33 | 20.7 | 6 | <0.083 U | 5.5 | 328 | 153 |
| 6/16/2017 | Background | 0.936 | 39.6 | 6 | <0.083 U | 5.9 | 278 | 109 |
| 8/29/2017 | Detection | 1.07 | 18 | 6 | <0.083 U | 6.0 | 270 | 116 |
| 12/21/2017 | Detection | 0.7 | - - | - - | - - | 5.9 | - - | - - |
| 3/26/2018 | Assessment | 0.851 | 15.3 | 4 | <0.083 U | 6.7 | 324 | 138 |
| 8/27/2018 | Assessment | 0.702 | 56.3 | - - | - - | 6.7 | 532 | - - |
| 10/23/2018 | Assessment | - - | - - | 10.8 | <0.083 U | - - | - - | 198 |
| 3/12/2019 | Assessment | 0.634 | 34.5 | 5.88 | 0.1 J | 6.9 | 376 | 129 |
| 6/11/2019 | Assessment | 0.697 | 14.2 | 4.16 | 0.06 J | 6.4 | 246 | 80.9 |
| 8/27/2019 | Assessment | 0.735 | 15.4 | 3 | <0.083 U | 5.9 | 230 | 65 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-2**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 94 | 0.131152 J | <0.07 U | 4 | 0.952324 J | 1.06 | <0.083 U | <0.68 U | 0.009 | 0.02106 J | 6 | 82 | <0.86 U |
| 7/19/2016 | Background | <0.93 U | <1.05 U | 114 | 0.297284 J | <0.07 U | 6 | 2.18888 J | - - | 0.3361 J | 1.98005 J | 0.005 | 0.00946 J | 2.74335 J | 50 | <0.86 U |
| 9/14/2016 | Background | 1.81571 J | 8 | 226 | 1 | 0.348046 J | 26 | 15 | 1.752 | <0.083 U | 13 | 0.021 | 0.027 | 2.59675 J | 49 | 0.98925 J |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 73 | 0.168987 J | <0.07 U | 5 | 1.57645 J | 4.1 | <0.083 U | 1.52736 J | 0.016 | <0.005 U | 0.783837 J | 35 | <0.86 U |
| 11/8/2016 | Background | 1.15186 J | 17 | 543 | 3 | 0.870406 J | 37 | 31 | 3.87 | <0.083 U | 26 | 0.027 | 0.05 | 2.69221 J | 13 | <0.86 U |
| 1/24/2017 | Background | 1.32054 J | 2.57288 J | 214 | 0.763757 J | <0.07 U | 10 | 6 | 1.408 | <0.083 U | 4.36086 J | 0.007 | 0.01252 J | 0.832511 J | 9 | <0.86 U |
| 3/7/2017 | Background | 6.00 | <1.05 U | 70 | 0.157872 J | <0.07 U | 2 | 0.632449 J | 1.372 | <0.083 U | <0.68 U | 0.005 | <0.005 U | 0.478127 J | 20 | <0.86 U |
| 4/26/2017 | Background | <0.93 U | 1.39 J | 97.47 | 0.22 J | 0.08 J | 3.44 | 1.24 J | 1.881 | <0.083 U | 1.32 J | 0.00242 | <0.005 U | 0.77 J | 9.94 | <0.86 U |
| 5/16/2017 | Background | 1.17 J | 1.77 J | 51.22 | 0.17 J | <0.07 U | 2.49 | 0.47 J | 1.429 | <0.083 U | 0.8 J | 0.00161 | <0.005 U | 0.34 J | 9.52 | <0.86 U |
| 6/16/2017 | Background | <0.93 U | 1.08 J | 79.45 | 0.17 J | 0.09 J | 3.76 | 1.67 J | 1.839 | <0.083 U | 0.8 J | 0.00287 | <0.005 U | 2.1 J | 20.57 | <0.86 U |
| 3/26/2018 | Assessment | 1.6 J | 1.44 J | 62.23 | 0.15 J | <0.07 U | 2.15 | 0.62 J | 2.018 | <0.083 U | <0.68 U | 0.0023 | <0.005 U | <0.29 U | 8.63 | 0.88 J |
| 8/27/2018 | Assessment | 0.02 J | 0.67 | 62.7 | 0.062 | 0.05 | 2.17 | 0.371 | 2.403 | <0.083 U* | 0.332 | 0.00172 | 0.005 J | 4.42 | 27.3 | 0.066 |
| 3/12/2019 | Assessment | <0.1 U | 0.4 J | 63.9 | 0.1 J | 0.06 J | 2.83 | 0.2 J | 1.93 | 0.1 J | 0.2 J | 0.00188 | <0.005 U | <2 U | 14.3 | <0.5 U |
| 6/11/2019 | Assessment | <0.02 U | 0.18 | 38.5 | 0.208 | 0.04 J | 1.57 | 0.069 | 0.959 | 0.06 J | <0.05 U | <0.02 U | <0.005 U | 0.4 J | 6.7 | <0.1 U |
| 8/27/2019 | Assessment | <0.02 U | 0.22 | 41.3 | 0.149 | 0.03 J | 1.75 | 0.105 | 0.888 | <0.083 U | 0.08 J | 0.00128 | <0.005 U | 0.5 J | 6.8 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-4**
**Flint Creek - Landfill**
**Appendix III Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.03 | 8.23 | 8 | <0.083 U | 7.0 | 92 | 14 |
| 7/19/2016 | Background | 0.03 | 8.86 | 9 | <0.083 U | 6.7 | 75 | 12 |
| 9/14/2016 | Background | 0.03 | 19.4 | 8 | <0.083 U | 6.8 | 128 | 8 |
| 10/5/2016 | Background | 0.02 | 8.22 | 10 | <0.083 U | 6.2 | 78 | 13 |
| 11/8/2016 | Background | 0.04 | 13.3 | 9 | <0.083 U | 6.7 | 72 | 10 |
| 1/24/2017 | Background | 0.04 | 23.6 | 8 | <0.083 U | 6.8 | 84 | 5 |
| 3/7/2017 | Background | 0.02 | 22.8 | 8 | <0.083 U | 7.1 | 52 | 5 |
| 4/26/2017 | Background | 0.0382 | 32.4 | 9 | <0.083 U | 6.9 | 86 | 8 |
| 5/16/2017 | Background | 0.03844 | 15.5 | 8 | <0.083 U | 7.2 | 88 | 10 |
| 6/16/2017 | Background | 0.0588 | 7.13 | 9 | <0.083 U | 7.4 | 76 | 11 |
| 8/29/2017 | Detection | 0.04762 | 5.5 | 8 | <0.083 U | 7.2 | 60 | 8 |
| 3/26/2018 | Assessment | 0.03141 | 6.06 | 5 | <0.083 U | 7.4 | 72 | 10 |
| 8/28/2018 | Assessment | 0.030 | 8.23 | - - | - - | 7.6 | 44 | - - |
| 10/23/2018 | Assessment | - - | - - | 9.61 | <0.083 U | - - | - - | 13.6 |
| 3/12/2019 | Assessment | 0.036 | 3.37 | 4.58 | 0.02 J | 7.5 | 68 | 12.1 |
| 6/11/2019 | Assessment | 0.07 J | 3.50 | 3.74 | 0.02 J | 7.5 | 60 | 13.4 |
| 8/28/2019 | Assessment | 0.056 | 2.92 | 3 | <0.083 U | 6.0 | 66 | 11 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-4**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 49 | 0.205178 J | <0.07 U | 1 | 0.36974 J | 0.734 | <0.083 U | <0.68 U | <0.00013 U | 0.01529 J | <0.29 U | <0.99 U | <0.86 U |
| 7/19/2016 | Background | <0.93 U | <1.05 U | 49 | 0.211526 J | <0.07 U | 1 | 0.15016 J | - - | <0.083 U | <0.68 U | 0.002 | 0.00738 J | <0.29 U | <0.99 U | <0.86 U |
| 9/14/2016 | Background | <0.93 U | <1.05 U | 65 | 0.037683 J | <0.07 U | 2 | 0.4142 J | 8.344 | <0.083 U | 1.16564 J | 0.001 | <0.005 U | <0.29 U | <0.99 U | 0.918935 J |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 71 | 0.439546 J | <0.07 U | 5 | 2.34157 J | 3.969 | <0.083 U | 1.65693 J | 0.009 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 11/8/2016 | Background | <0.93 U | 1.75787 J | 62 | 0.382027 J | 0.130549 J | 4 | 1.2283 J | 0.351 | <0.083 U | 0.943091 J | 0.003 | 0.00809 J | <0.29 U | <0.99 U | <0.86 U |
| 1/24/2017 | Background | 2.63622 J | <1.05 U | 60 | 0.210311 J | <0.07 U | 2 | 0.749001 J | 0.945 | <0.083 U | <0.68 U | 0.001 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/7/2017 | Background | 1.09461 J | <1.05 U | 51 | 0.24192 J | <0.07 U | 1 | 0.605358 J | 1.588 | <0.083 U | <0.68 U | 0.003 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 4/26/2017 | Background | <0.93 U | <1.05 U | 63.66 | 0.08 J | <0.07 U | 0.91 J | 0.28 J | 0.679 | <0.083 U | 0.87 J | 0.00083 J | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 5/16/2017 | Background | <0.93 U | <1.05 U | 70.02 | 0.09 J | <0.07 U | 0.99 J | <0.14 U | 2.89 | <0.083 U | <0.68 U | 0.00077 J | 0.005 J | <0.29 U | 1.11 J | <0.86 U |
| 6/16/2017 | Background | 4.52 J | 1.18 J | 49.29 | 0.22 J | 0.08 J | 0.82 J | 0.19 J | 3.373 | <0.083 U | <0.68 U | 0.00119 | <0.005 U | <0.29 U | <0.99 U | 0.9 J |
| 3/26/2018 | Assessment | 2.1 J | <1.05 U | 46.33 | 0.09 J | <0.07 U | 0.99 J | 0.18 J | 2.309 | <0.083 U | <0.68 U | 0.00114 | <0.005 U | <0.29 U | 1.94 J | <0.86 U |
| 8/28/2018 | Assessment | 0.01 J | 0.17 | 40.5 | 0.208 | 0.13 | 1.03 | 0.184 | 0.3669 | <0.083 U* | 0.184 | 0.00110 | <0.005 U | 0.07 J | 0.8 | 0.03 J |
| 3/12/2019 | Assessment | <0.1 U | <0.2 U | 34.3 | 0.2 J | 0.1 J | 1.26 | <0.1 U | 0.2946 | 0.02 J | <0.1 U | 0.00123 | <0.005 U | <2 U | 0.6 J | <0.5 U |
| 6/11/2019 | Assessment | <0.02 U | 0.06 J | 31.2 | 0.215 | 0.05 J | 1.03 | 0.04 J | 0.68 | 0.02 J | <0.05 U | <0.02 U | <0.005 U | <0.4 U | 0.7 | <0.1 U |
| 8/28/2019 | Assessment | <0.02 U | 0.06 J | 31.1 | 0.204 | 0.04 J | 1.11 | 0.084 | 1.053 | <0.083 U | <0.05 U | 0.000925 | <0.005 U | <0.4 U | 0.8 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-5**
**Flint Creek - Landfill**
**Appendix III Constituents**



| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.01 | 17.4 | 6 | <0.083 U | 5.1 | 424 | 189 |
| 7/19/2016 | Background | 0.01 | 16.2 | 7 | <0.083 U | 5.2 | 424 | 205 |
| 9/14/2016 | Background | 0.01 | 17.6 | 7 | <0.083 U | 6.4 | 372 | 187 |
| 10/5/2016 | Background | 0.01 | 18.7 | 12 | 0.2728 J | 6.5 | 404 | 197 |
| 11/8/2016 | Background | 0.02 | 15.9 | 9 | <0.083 U | 6.6 | 352.94 | 160 |
| 1/24/2017 | Background | 0.02 | 18 | 6 | <0.083 U | 5.6 | 404 | 212 |
| 3/7/2017 | Background | 0.02 | 16.9 | 6 | <0.083 U | 5.1 | 392 | 200 |
| 4/26/2017 | Background | 0.02255 | 17.6 | 7 | <0.083 U | 5.9 | 422 | 226 |
| 5/16/2017 | Background | 0.01833 | 18.3 | 7 | <0.083 U | 4.9 | 416 | 229 |
| 6/16/2017 | Background | 0.03663 | 17 | 8 | <0.083 U | 5.0 | 410 | 206 |
| 8/29/2017 | Detection | 0.03455 | 16.4 | 8 | <0.083 U | 5.4 | 376 | 199 |
| 3/28/2018 | Assessment | 0.01591 | 15.5 | 6 | <0.083 U | 5.4 | 372 | 169 |
| 8/28/2018 | Assessment | 0.014 | 16.5 | - - | - - | 5.5 | 396 | - - |
| 10/23/2018 | Assessment | - - | - - | 10 | <0.083 U | - - | - - | 216 |
| 3/12/2019 | Assessment | 0.01 J | 16.2 | 8.30 | 0.07 J | 5.3 | 372 | 205 |
| 6/11/2019 | Assessment | <0.04 U | 17.9 | 7.02 | 0.08 | 5.7 | 438 | 271 |
| 8/28/2019 | Assessment | <0.02 U | 15.9 | 6 | <0.083 U | 5.0 | 402 | 219 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-5**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 49 | 0.538281 J | 0.130546 J | 3 | 0.63546 J | 0.700 | <0.083 U | <0.68 U | 225069333E-04 | 0.035 | <0.29 U | 36 | 1.07783 J |
| 7/19/2016 | Background | <0.93 U | 1.09501 J | 53 | 0.578371 J | <0.07 U | 2 | 0.670288 J | - - | <0.083 U | 0.951208 J | 0.003 | 0.01341 J | <0.29 U | 37 | <0.86 U |
| 9/14/2016 | Background | <0.93 U | <1.05 U | 59 | 0.421905 J | 0.107531 J | 3 | 0.632453 J | 0.7219 | <0.083 U | <0.68 U | 0.003 | 0.01083 J | <0.29 U | 37 | <0.86 U |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 70 | 0.70802 J | 0.0937694 J | 6 | 2.24689 J | 4.38 | 0.2728 J | 2.22182 J | 0.014 | 0.049 | <0.29 U | 39 | <0.86 U |
| 11/8/2016 | Background | <0.93 U | <1.05 U | 64 | 0.556725 J | 1 | 4 | 0.96226 J | 0.673 | <0.083 U | <0.68 U | 0.003 | 0.02149 J | <0.29 U | 33 | <0.86 U |
| 1/24/2017 | Background | <0.93 U | <1.05 U | 60 | 0.634776 J | 0.136621 J | 5 | 1.12636 J | 1.222 | <0.083 U | <0.68 U | 0.003 | 0.053 | <0.29 U | 38 | 1.02071 J |
| 3/7/2017 | Background | <0.93 U | <1.05 U | 42 | 0.548248 J | <0.07 U | 3 | 0.601941 J | 0.557 | <0.083 U | <0.68 U | 0.002 | 0.0138 J | <0.29 U | 36 | <0.86 U |
| 4/26/2017 | Background | 1.24 J | 1.87 J | 36.3 | 0.56 J | 0.15 J | 3.27 | 0.92 J | 0.698 | <0.083 U | <0.68 U | 0.003 | 0.013 J | <0.29 U | 37.33 | <0.86 U |
| 5/16/2017 | Background | <0.93 U | 1.16 J | 38.38 | 0.65 J | 0.08 J | 3.63 | 0.84 J | 4.934 | <0.083 U | <0.68 U | 0.00348 | 0.013 J | <0.29 U | 39.1 | <0.86 U |
| 6/16/2017 | Background | <0.93 U | <1.05 U | 37.52 | 0.6 J | 0.07 J | 3.33 | 0.63 J | 8.709 | <0.083 U | <0.68 U | 0.00323 | 0.008 J | <0.29 U | 36.88 | <0.86 U |
| 3/28/2018 | Assessment | 4.41 J | <1.05 U | 42.4 | 0.46 J | 0.27 J | 2.38 | 0.63 J | 0.721 | <0.083 U | 0.74 J | 0.00263 | 0.015 J | <0.29 U | 35.97 | 1.16 J |
| 8/28/2018 | Assessment | 0.04 J | 0.88 | 45.0 | 0.525 | 0.19 | 3.01 | 0.414 | 1.501 | <0.083 U* | 0.482 | 0.00223 | 0.096 | 0.06 J | 38.7 | 0.070 |
| 3/12/2019 | Assessment | 0.2 J | 0.62 | 80.5 | 0.638 | 0.56 | 2.89 | 0.477 | 0.969 | 0.07 J | 0.833 | 0.00274 | 0.028 | <2 U | 39.2 | <0.5 U |
| 6/11/2019 | Assessment | <0.02 U | 0.67 | 26.0 | 0.376 | 0.18 | 3.00 | 0.349 | 1.27 | 0.08 | 0.203 | <0.02 U | 0.007 J | <0.4 U | 39 | <0.1 U |
| 8/28/2019 | Assessment | <0.02 U | 0.44 | 33.7 | 0.487 | 0.18 | 2.40 | 0.331 | 0.717 | <0.083 U | 0.1 J | 0.00215 | 0.006 J | <0.4 U | 37.5 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-6**
**Flint Creek - Landfill**
**Appendix III Constituents**



| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.05 | 36.9 | 6 | <0.083 U | 6.7 | 180 | 19 |
| 7/19/2016 | Background | 0.06 | 49.5 | 8 | <0.083 U | 7.2 | 208 | 24 |
| 9/14/2016 | Background | 0.06 | 52.3 | 8 | <0.083 U | 6.6 | 232 | 38 |
| 10/5/2016 | Background | 0.06 | 44.7 | 8 | <0.083 U | 7.0 | 220 | 29 |
| 11/8/2016 | Background | 0.06 | 40 | 7 | <0.083 U | 6.9 | 208 | 29 |
| 1/24/2017 | Background | 0.08 | 51.9 | 7 | <0.083 U | 7.0 | 244 | 34 |
| 3/7/2017 | Background | 0.06 | 43 | 6 | <0.083 U | 7.0 | 178 | 24 |
| 4/26/2017 | Background | 0.05207 | 56.5 | 8 | <0.083 U | 6.2 | 238 | 37 |
| 5/16/2017 | Background | 0.04277 | 48.6 | 7 | <0.083 U | 6.5 | 206 | 24 |
| 6/16/2017 | Background | 0.05859 | 53.8 | 8 | <0.083 U | 6.6 | 252 | 26 |
| 8/28/2017 | Detection | 0.06251 | 37 | 8 | 0.2066 J | 7.0 | 162 | 16 |
| 12/21/2017 | Detection | 0.06498 | - - | - - | - - | 7.0 | - - | - - |
| 3/26/2018 | Detection | 0.04773 | 34 | 6 | <0.083 U | 6.4 | 156 | 13 |
| 8/28/2018 | Detection | 0.050 | 34.6 | - - | - - | 6.4 | 144 | - - |
| 10/23/2018 | Assessment | - - | - - | 12.2 | <0.083 U | - - | - - | 24.6 |
| 3/12/2019 | Assessment | 0.037 | 41.9 | 8.16 | <0.04 U | 6.9 | 100 | 17.1 |
| 6/10/2019 | Assessment | 0.05 J | 49.7 | 7.78 | 0.03 J | 6.8 | 188 | 21.7 |
| 8/27/2019 | Assessment | 0.03 J | 44.8 | 6 | <0.083 U | 6.6 | 250 | 36 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-6**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 42 | 0.0329713 J | <0.07 U | 2 | 0.5336 J | 0.625 | <0.083 U | <0.68 U | 0.000846322 J | 0.0121 J | <0.29 U | 1.38371 J | <0.86 U |
| 7/19/2016 | Background | <0.93 U | <1.05 U | 60 | 0.169224 J | <0.07 U | 3 | 1.23508 J | - - | <0.083 U | 0.848543 J | 0.002 | 0.00953 J | 0.863908 J | 3.30254 J | <0.86 U |
| 9/14/2016 | Background | <0.93 U | <1.05 U | 65 | <0.02 U | <0.07 U | 4 | 1.26649 J | 1.556 | <0.083 U | 1.53065 J | 0.002 | <0.005 U | <0.29 U | 3.35098 J | <0.86 U |
| 10/5/2016 | Background | <0.93 U | 3.63583 J | 87 | 0.559451 J | 0.268209 J | 11 | 4.75063 J | 7.58 | <0.083 U | 4.70003 J | 0.016 | 0.01261 J | 0.732328 J | 3.04012 J | <0.86 U |
| 11/8/2016 | Background | <0.93 U | <1.05 U | 58 | 0.134729 J | 0.116659 J | 5 | 1.68272 J | 0.846 | <0.083 U | 1.07347 J | 0.002 | 0.01235 J | <0.29 U | 2.02161 J | <0.86 U |
| 1/24/2017 | Background | <0.93 U | <1.05 U | 76 | 0.216535 J | <0.07 U | 6 | 2.57434 J | 1.415 | <0.083 U | 1.31013 J | 0.003 | 0.00759 J | 0.868445 J | 1.16358 J | <0.86 U |
| 3/7/2017 | Background | <0.93 U | <1.05 U | 55 | 0.140509 J | <0.07 U | 4 | 1.95733 J | 0.705 | <0.083 U | 2.18218 J | 0.004 | 0.00738 J | 0.328653 J | 1.0391 J | <0.86 U |
| 4/26/2017 | Background | <0.93 U | 1.89 J | 75.05 | 0.26 J | 0.16 J | 6.35 | 2.74 J | 0.671 | <0.083 U | 2.44 J | 0.0038 | 0.008 J | 0.62 J | 4.5 J | <0.86 U |
| 5/16/2017 | Background | <0.93 U | 1.49 J | 59.86 | 0.12 J | <0.07 U | 3.12 | 1.16 J | 13.943 | <0.083 U | 1.16 J | 0.00182 | <0.005 U | 0.43 J | 1.04 J | <0.86 U |
| 6/16/2017 | Background | <0.93 U | 1.5 J | 65.93 | 0.16 J | <0.07 U | 4.2 | 1.58 J | 1.14 | <0.083 U | 1.03 J | 0.00238 | <0.005 U | 0.5 J | <0.99 U | 1.16 J |
| 3/26/2018 | Assessment | 1.45 J | 1.46 J | 56.88 | 0.1 J | 0.27 J | 4.42 | 1.8 J | 1.055 | <0.083 U | 2.42 J | 0.00281 | 0.005 J | 0.58 J | 2.87 J | 1.32 J |
| 8/28/2018 | Assessment | 0.01 J | 0.14 | 41.3 | 0.007 J | 0.02 J | 1.73 | 0.022 | 0.567 | <0.083 U* | 0.005 J | 0.000415 | 0.007 J | 0.54 | 1.7 | 0.03 J |
| 3/12/2019 | Assessment | <0.1 U | 0.61 | 48.3 | <0.1 U | <0.05 U | 2.32 | 0.597 | 0.571 | <0.04 U | 0.748 | 0.0009 J | <0.005 U | <2 U | 2.2 | <0.5 U |
| 6/10/2019 | Assessment | 0.08 J | 0.51 | 49.8 | 0.08 J | 0.08 J | 2.18 | 0.537 | 0.8101 | 0.03 J | 0.697 | <0.02 U | <0.005 U | <0.8 U | 2.4 | <0.2 U |
| 8/27/2019 | Assessment | 0.05 J | 0.36 | 48.6 | 0.04 J | 0.04 J | 1.96 | 0.387 | 0.347 | <0.083 U | 0.509 | 0.000518 | <0.005 U | <0.4 U | 2.4 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-7A**
**Flint Creek - Landfill**
**Appendix III Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.02 | 95.1 | 3 | <0.083 U | 6.7 | 320 | 29 |
| 7/19/2016 | Background | 0.02 | 98.1 | 4 | 0.3892 J | 7.2 | 314 | 34 |
| 9/14/2016 | Background | 0.02 | 100 | 4 | <0.083 U | 7.2 | 304 | 33 |
| 10/5/2016 | Background | 0.02 | 97.1 | 5 | 0.3235 J | 7.6 | 312 | 33 |
| 11/8/2016 | Background | 0.02 | 100 | 4 | <0.083 U | 7.5 | 332 | 32 |
| 1/24/2017 | Background | 0.02 | 102 | 3 | <0.083 U | 7.3 | 314 | 34 |
| 3/7/2017 | Background | 0.02 | 105 | 3 | <0.083 U | 7.1 | 296 | 33 |
| 4/26/2017 | Background | 0.01786 | 101 | 5 | <0.083 U | 7.0 | 298 | 34 |
| 5/16/2017 | Background | 0.01605 | 107 | 4 | <0.083 U | 6.9 | 306 | 35 |
| 6/16/2017 | Background | 0.03032 | 106 | 5 | <0.083 U | 6.8 | 320 | 35 |
| 8/28/2017 | Detection | 0.03116 | 102 | 5 | 0.2740 J | - - | 304 | 33 |
| 3/26/2018 | Detection | 0.01576 | 100 | 3 | <0.083 U | 7.1 | 300 | 33 |
| 8/28/2018 | Detection | 0.018 | 105 | - - | - - | 7.7 | 314 | - - |
| 10/23/2018 | Assessment | - - | - - | 7.28 | <0.083 U | - - | - - | 35.6 |
| 3/11/2019 | Assessment | 0.02 J | 99.6 | 3.43 | 0.24 | 7.5 | 336 | 30.7 |
| 6/10/2019 | Assessment | <0.04 U | 105 | 3.12 | 0.24 | 7.1 | 312 | 35.4 |
| 8/27/2019 | Assessment | <0.02 U | 102 | 2 | 0.144 J | 8.3 | 378 | 36 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-7A**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 60 | <0.02 U | <0.07 U | <0.23 U | 0.648714 J | 2.556 | <0.083 U | <0.68 U | 0.021 | 0.033 | 0.838425 J | <0.99 U | <0.86 U |
| 7/19/2016 | Background | <0.93 U | 1.33211 J | 60 | 0.0763658 J | <0.07 U | 0.240969 J | 0.345176 J | - - | 0.3892 J | 0.791157 J | 0.022 | 0.034 | 0.619545 J | <0.99 U | 1.98498 J |
| 9/14/2016 | Background | <0.93 U | <1.05 U | 69 | <0.02 U | <0.07 U | 0.354374 J | 0.39525 J | 3.54 | <0.083 U | <0.68 U | 0.021 | 0.00796 J | 0.476503 J | <0.99 U | <0.86 U |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 66 | <0.02 U | <0.07 U | <0.23 U | 0.842911 J | 7.97 | 0.3235 J | <0.68 U | 0.034 | <0.005 U | 0.68021 J | <0.99 U | <0.86 U |
| 11/8/2016 | Background | <0.93 U | 1.1401 J | 65 | <0.02 U | <0.07 U | 0.28162 J | 0.667484 J | 2.247 | <0.083 U | <0.68 U | 0.017 | 0.00705 J | <0.29 U | <0.99 U | <0.86 U |
| 1/24/2017 | Background | <0.93 U | <1.05 U | 65 | <0.02 U | <0.07 U | <0.23 U | 0.352624 J | 2.311 | <0.083 U | <0.68 U | 0.015 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/7/2017 | Background | <0.93 U | <1.05 U | 62 | <0.02 U | <0.07 U | 0.432618 J | 0.458003 J | 3.154 | <0.083 U | <0.68 U | 0.022 | 0.00621 J | <0.29 U | <0.99 U | <0.86 U |
| 4/26/2017 | Background | <0.93 U | <1.05 U | 68.64 | <0.02 U | <0.07 U | <0.23 U | 0.64 J | 1.934 | <0.083 U | <0.68 U | 0.01501 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 5/16/2017 | Background | <0.93 U | 1.25 J | 59.92 | <0.02 U | <0.07 U | 0.24 J | 0.56 J | 2.714 | <0.083 U | <0.68 U | 0.01509 | 0.008 J | <0.29 U | <0.99 U | <0.86 U |
| 6/16/2017 | Background | <0.93 U | <1.05 U | 56.32 | <0.02 U | <0.07 U | <0.23 U | 0.43 J | 3.072 | <0.083 U | 1.74 J | 0.01452 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/26/2018 | Assessment | 1.28 J | 1.85 J | 51.94 | <0.02 U | <0.07 U | <0.23 U | 0.24 J | 3.93 | <0.083 U | <0.68 U | 0.0191 | <0.005 U | 0.29 J | <0.99 U | <0.86 U |
| 8/28/2018 | Assessment | 0.02 J | 1.59 | 52.4 | 0.01 J | 0.03 | 0.071 | 0.400 | 2.861 | <0.083 U * | 0.156 | 0.0158 | <0.005 U | 0.63 | 0.04 J | 0.03 J |
| 3/11/2019 | Assessment | <0.1 U | 3.15 | 74.8 | <0.1 U | 0.05 J | 1.95 | 0.351 | 1.962 | 0.24 | 0.2 J | 0.0200 | <0.005 U | <2 U | <0.2 U | <0.5 U |
| 6/10/2019 | Assessment | 0.06 J | 2.35 | 42.9 | <0.02 U | 0.02 J | <0.04 U | 0.074 | 2.561 | 0.24 | 0.1 J | <0.02 U | <0.005 U | 0.5 J | <0.03 U | <0.1 U |
| 8/27/2019 | Assessment | 0.15 | 2.93 | 49.0 | <0.02 U | 0.03 J | 0.2 J | 0.134 | 1.853 | 0.144 J | 0.1 J | 0.0164 | <0.005 U | 0.6 J | 0.04 J | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-9**
**Flint Creek - Landfill**
**Appendix III Constituents**



| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.01 | 81 | 5 | <0.083 U | 7.2 | 234 | 14 |
| 7/19/2016 | Background | 0.00947041 J | 83 | 5 | 0.3556 J | 7.4 | 204 | 14 |
| 9/14/2016 | Background | 0.00711941 J | 99.6 | 7 | <0.083 U | 7.6 | 239 | 18 |
| 10/5/2016 | Background | 0.00768136 J | 98.6 | 8 | 0.1884 J | 7.4 | 246 | 21 |
| 11/8/2016 | Background | 0.01 | 94.3 | 6 | <0.083 U | 7.9 | 240 | 25 |
| 1/24/2017 | Background | 0.02 | 99.8 | 5 | <0.083 U | 6.6 | 234 | 19 |
| 3/7/2017 | Background | 0.01 | 88.5 | 6 | <0.083 U | 6.4 | 228 | 21 |
| 4/26/2017 | Background | 0.01036 | 87.7 | 6 | 0.31 J | 6.8 | 224 | 19 |
| 5/16/2017 | Background | 0.009500 J | 98.5 | 6 | <0.083 U | 7.5 | 198 | 21 |
| 6/16/2017 | Background | 0.02369 | 124 | 6 | <0.083 U | 7.0 | 270 | 22 |
| 8/28/2017 | Detection | 0.02463 | 106 | 6 | 0.2389 J | 7.2 | 224 | 25 |
| 3/28/2018 | Assessment | 0.00998 J | 86.1 | 6 | <0.083 U | 7.9 | 260 | 28 |
| 8/27/2018 | Assessment | 0.010 | 144 | - - | - - | 7.7 | 272 | - - |
| 10/23/2018 | Assessment | - - | - - | 7.22 | <0.083 U | - - | - - | 36.7 |
| 3/12/2019 | Assessment | 0.01 J | 97.3 | 3.68 | 0.1 J | 8.1 | 278 | 34.3 |
| 6/11/2019 | Assessment | <0.04 U | 99.7 | 3.69 | 0.13 | 7.7 | 248 | 37.6 |
| 8/27/2019 | Assessment | <0.02 U | 128 | 3 | <0.083 U | 7.2 | 310 | 37 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-9**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 128 | 0.0475927 J | <0.07 U | 2 | 0.648715 J | 0.25 | <0.083 U | <0.68 U | 0.005 | 0.01472 J | 0.871853 J | <0.99 U | 1.51586 J |
| 7/19/2016 | Background | <0.93 U | <1.05 U | 139 | 0.0706417 J | <0.07 U | 2 | 0.520418 J | - - | 0.3556 J | 0.756023 J | 0.003 | 0.01407 J | <0.29 U | <0.99 U | 1.04447 J |
| 9/14/2016 | Background | <0.93 U | <1.05 U | 143 | <0.02 U | <0.07 U | 3 | 1.03431 J | 3.039 | <0.083 U | <0.68 U | 0.002 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 135 | <0.02 U | <0.07 U | 4 | 1.7825 J | 0.893 | 0.1884 J | 0.693028 J | 0.016 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 11/8/2016 | Background | <0.93 U | <1.05 U | 136 | 0.0202009 J | <0.07 U | 3 | 1.48231 J | 0.569 | <0.083 U | <0.68 U | 0.003 | 0.00774 J | <0.29 U | <0.99 U | <0.86 U |
| 1/24/2017 | Background | <0.93 U | <1.05 U | 154 | 0.03324 J | <0.07 U | 3 | 1.21896 J | 0.618 | <0.083 U | <0.68 U | 0.003 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/7/2017 | Background | 1.39106 J | <1.05 U | 142 | <0.02 U | <0.07 U | 2 | 0.886686 J | 2.009 | <0.083 U | <0.68 U | 0.009 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 4/26/2017 | Background | <0.93 U | 1.13 J | 144 | <0.02 U | <0.07 U | 2.52 | 0.93 J | 0.989 | 0.31 J | 0.79 J | 0.00316 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 5/16/2017 | Background | <0.93 U | 1.68 J | 142 | 0.03 J | <0.07 U | 2.56 | 0.83 J | 9.472 | <0.083 U | <0.68 U | 0.00311 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 6/16/2017 | Background | <0.93 U | 1.11 J | 150 | 0.04 J | <0.07 U | 4.01 | 1.32 J | 1.795 | <0.083 U | <0.68 U | 0.00343 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/28/2018 | Assessment | <0.93 U | <1.05 U | 177 | <0.02 U | <0.07 U | 0.91 J | 0.36 J | 2.06 | <0.083 U | <0.68 U | 0.0041 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 8/27/2018 | Assessment | 0.11 | 1.29 | 139 | 0.034 | 0.06 | 1.74 | 2.33 | 1.12 | <0.083 U* | 1.08 | 0.00241 | <0.005 U | 0.54 | 0.8 | 0.04 J |
| 3/12/2019 | Assessment | <0.1 U | 0.85 | 175 | <0.1 U | <0.05 U | 0.6 J | 0.2 J | 0.629 | 0.1 J | 0.2 J | 0.00528 | <0.005 U | <2 U | <0.2 U | <0.5 U |
| 6/11/2019 | Assessment | <0.1 U | 0.90 | 166 | <0.1 U | <0.05 U | 1.11 | 0.2 J | 0.1572 | 0.13 | <0.2 U | <0.02 U | <0.005 U | 36.1 | 0.4 J | <0.5 U |
| 8/27/2019 | Assessment | 0.09 J | 1.67 | 188 | 0.02 J | 0.08 | 1.61 | 0.827 | 1.258 | <0.083 U | 0.509 | 0.00409 | <0.005 U | 0.4 J | 0.5 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-10**
**Flint Creek - Landfill**
**Appendix III Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.02 | 77.6 | 7 | <0.083 U | 8.4 | 275 | 30 |
| 7/19/2016 | Background | 0.01 | 82.5 | 8 | <0.083 U | 7.4 | 252 | 30 |
| 9/14/2016 | Background | 0.02 | 104 | 8 | <0.083 U | 7.3 | 275 | 31 |
| 10/5/2016 | Background | 0.02 | 82.9 | 9 | 0.2319 J | 7.0 | 308 | 39 |
| 11/8/2016 | Background | 0.03 | 116 | 8 | <0.083 U | 8.0 | 268 | 30 |
| 1/24/2017 | Background | 0.03 | 77.1 | 7 | <0.083 U | 7.1 | 276 | 33 |
| 3/7/2017 | Background | 0.02 | 84.8 | 6 | <0.083 U | 6.6 | 268 | 29 |
| 4/26/2017 | Background | 0.01728 | 77.4 | 8 | 0.3 J | 6.6 | 266 | 26 |
| 5/16/2017 | Background | 0.03169 | 80.6 | 8 | <0.083 U | 6.8 | 284 | 35 |
| 6/16/2017 | Background | 0.04007 | 75.6 | 9 | <0.083 U | 6.5 | 296 | 31 |
| 8/28/2017 | Detection | 0.0448 | 72.8 | 9 | 0.3304 J | 7.4 | 256 | 28 |
| 3/26/2018 | Assessment | 0.00862 J | 76.6 | 6 | <0.083 U | 8.0 | 244 | 25 |
| 8/27/2018 | Assessment | 0.028 | 64.4 | - - | - - | 7.6 | 254 | - - |
| 10/23/2018 | Assessment | - - | - - | 11.7 | <0.083 U | - - | - - | 26.4 |
| 3/12/2019 | Assessment | 0.028 | 72.4 | 9.68 | 0.1 J | 8.4 | 226 | 21.4 |
| 6/10/2019 | Assessment | <0.04 U | 80.4 | 9.24 | 0.11 | 7.4 | 260 | 26.1 |
| 8/27/2019 | Assessment | <0.02 U | 70.8 | 7 | <0.083 U | 7.3 | 268 | 26 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-10**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 77 | 0.0283721 J | <0.07 U | 2 | 0.567956 J | 0.3279 | <0.083 U | <0.68 U | 0.004 | 0.01767 J | 1.07659 J | <0.99 U | <0.86 U |
| 7/19/2016 | Background | <0.93 U | <1.05 U | 78 | 0.0513816 J | <0.07 U | 2 | 0.487304 J | - - | <0.083 U | <0.68 U | 0.002 | 0.02255 J | <0.29 U | <0.99 U | <0.86 U |
| 9/14/2016 | Background | <0.93 U | 1.73638 J | 102 | <0.02 U | <0.07 U | 16 | 1.45899 J | 0.625 | <0.083 U | 1.5658 J | 0.003 | <0.005 U | 0.405665 J | <0.99 U | <0.86 U |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 76 | <0.02 U | <0.07 U | 1 | 0.616894 J | 1.305 | 0.2319 J | <0.68 U | 0.016 | <0.005 U | 0.98229 J | <0.99 U | <0.86 U |
| 11/8/2016 | Background | <0.93 U | 6 | 103 | 0.350438 J | 0.413058 J | 37 | 5 | 1.066 | <0.083 U | 2.57815 J | 0.005 | 0.01543 J | 1.18188 J | <0.99 U | <0.86 U |
| 1/24/2017 | Background | <0.93 U | <1.05 U | 82 | 0.049146 J | <0.07 U | 1 | 1.02071 J | 0.618 | <0.083 U | <0.68 U | 0.003 | <0.005 U | 1.261 J | <0.99 U | <0.86 U |
| 3/7/2017 | Background | <0.93 U | <1.05 U | 77 | <0.02 U | <0.07 U | 2 | 0.814652 J | 1.119 | <0.083 U | <0.68 U | 0.01 | <0.005 U | 1.02218 J | <0.99 U | <0.86 U |
| 4/26/2017 | Background | <0.93 U | 1.5 J | 69.33 | <0.02 U | <0.07 U | 0.26 J | 0.65 J | 0.668 | 0.3 J | <0.68 U | 0.00287 | <0.005 U | 0.92 J | <0.99 U | <0.86 U |
| 5/16/2017 | Background | <0.93 U | <1.05 U | 82.92 | <0.02 U | <0.07 U | 0.59 J | 0.76 J | 1.294 | <0.083 U | <0.68 U | 0.00357 | <0.005 U | 1.55 J | <0.99 U | <0.86 U |
| 6/16/2017 | Background | <0.93 U | <1.05 U | 76.25 | <0.02 U | <0.07 U | 0.39 J | 1.17 J | 2.477 | <0.083 U | <0.68 U | 0.00358 | <0.005 U | 1.28 J | <0.99 U | <0.86 U |
| 3/26/2018 | Assessment | <0.93 U | <1.05 U | 81.96 | <0.02 U | <0.07 U | 1.37 | 0.44 J | 1.869 | <0.083 U | 1.12 J | 0.00156 | <0.005 U | 0.78 J | <0.99 U | 1.36 J |
| 8/27/2018 | Assessment | 0.10 | 2.80 | 74.8 | 0.02 J | 0.03 | 0.889 | 1.60 | 0.887 | <0.083 U* | 0.189 | 0.00308 | 0.005 J | 3.52 | 0.3 | 0.03 J |
| 3/12/2019 | Assessment | 0.1 J | 0.67 | 79.1 | <0.1 U | 0.05 J | 0.9 J | 0.299 | 0.860 | 0.1 J | 0.3 J | 0.00167 | <0.005 U | <2 U | 0.3 J | <0.5 U |
| 6/10/2019 | Assessment | 0.2 J | 0.3 J | 78.3 | <0.1 U | <0.05 U | 0.3 J | <0.1 U | 1.128 | 0.11 | <0.2 U | <0.02 U | <0.005 U | 10 J | 0.5 J | <0.5 U |
| 8/27/2019 | Assessment | 0.11 | 0.46 | 79.1 | <0.02 U | 0.02 J | 0.385 | 0.128 | 1.344 | <0.083 U | 0.05 J | 0.00169 | 0.016 J | 1 J | 0.4 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*: Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-11**
**Flint Creek - Landfill**
**Appendix III Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.171 | 10.5 | 4 | <0.083 U | 5.7 | 182 | 26 |
| 7/19/2016 | Background | 0.238 | 13.3 | 5 | <0.083 U | 6.2 | 144 | 41 |
| 9/14/2016 | Background | 0.207 | 14.7 | 6 | <0.083 U | 6.6 | 120 | 33 |
| 10/5/2016 | Background | 0.19 | 13 | 6 | <0.083 U | 6.4 | 156 | 36 |
| 11/8/2016 | Background | 0.188 | 11.3 | 5 | <0.083 U | 6.5 | 106 | 36 |
| 1/24/2017 | Background | 0.214 | 18.2 | 4 | <0.083 U | 6.1 | 128 | 39 |
| 3/7/2017 | Background | 0.199 | 12.6 | 3 | <0.083 U | 5.5 | 112 | 37 |
| 4/26/2017 | Background | 0.253 | 16.2 | 6 | <0.083 U | 5.9 | 130 | 45 |
| 5/16/2017 | Background | 0.453 | 13.6 | 6 | <0.083 U | 5.3 | 142 | 62 |
| 6/16/2017 | Background | 0.508 | 14.9 | 6 | <0.083 U | 5.4 | 184 | 60 |
| 8/28/2017 | Detection | 0.266 | 9.65 | 6 | <0.083 U | 5.3 | 108 | 43 |
| 12/21/2017 | Detection | 0.227 | - - | - - | - - | 6.7 | - - | - - |
| 3/28/2018 | Assessment | 0.465 | 12.2 | 4 | <0.083 U | 5.4 | 136 | 53 |
| 8/27/2018 | Assessment | 0.281 | 10.8 | - - | - - | 5.9 | 100 | - - |
| 10/23/2018 | Assessment | - - | - - | 6.93 | <0.083 U | - - | - - | 47.7 |
| 3/12/2019 | Assessment | 0.409 | 11.6 | 4.03 | 0.04 J | 5.8 | 104 | 44.9 |
| 6/10/2019 | Assessment | 0.548 | 17.0 | 3.73 | 0.04 J | 5.9 | 82 | 54.7 |
| 8/27/2019 | Assessment | 0.605 | 15.4 | 3 | <0.083 U | 5.8 | 138 | 59 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-11**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 139 | 0.899874 J | 1 | 13 | 3.28467 J | 1.311 | <0.083 U | 4.23401 J | 0.006 | 0.02458 J | 0.362121 J | <0.99 U | <0.86 U |
| 7/19/2016 | Background | <0.93 U | 7 | 187 | 2 | 2 | 22 | 6 | - - | <0.083 U | 9 | 0.018 | 0.02442 J | 0.590003 J | 1.89587 J | <0.86 U |
| 9/14/2016 | Background | <0.93 U | 32 | 494 | 6 | 4 | 108 | 25 | 8.05 | <0.083 U | 49 | 0.079 | 0.097 | 3.32649 J | <0.99 U | 1.00112 J |
| 10/5/2016 | Background | <0.93 U | 3.13751 J | 163 | 1 | 1 | 16 | 4.44532 J | 2.161 | <0.083 U | 6 | 0.02 | <0.005 U | 0.370625 J | 1.95476 J | <0.86 U |
| 11/8/2016 | Background | <0.93 U | <1.05 U | 99 | 0.259911 J | 0.649573 J | 2 | 0.824023 J | 0.874 | <0.083 U | <0.68 U | 0.004 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 1/24/2017 | Background | <0.93 U | <1.05 U | 121 | 0.136215 J | 0.418062 J | 2 | 0.286943 J | 1 | <0.083 U | <0.68 U | 0.003 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/7/2017 | Background | <0.93 U | <1.05 U | 97 | 0.249082 J | 0.477646 J | 2 | 0.554259 J | 12.993 | <0.083 U | <0.68 U | 0.003 | <0.005 U | <0.29 U | 2.72028 J | <0.86 U |
| 4/26/2017 | Background | <0.93 U | <1.05 U | 138 | 0.38 J | 0.56 J | 5.16 | 1.24 J | 0.512 | <0.083 U | 0.83 J | 0.00566 | <0.005 U | <0.29 U | 1.52 J | <0.86 U |
| 5/16/2017 | Background | <0.93 U | 1.16 J | 129 | 0.39 J | 0.15 J | 3.27 | 0.97 J | 0.911 | <0.083 U | <0.68 U | 0.00329 | <0.005 U | <0.29 U | 2.68 J | <0.86 U |
| 6/16/2017 | Background | <0.93 U | <1.05 U | 127 | 0.41 J | 0.13 J | 3.67 | 1.08 J | 2.655 | <0.083 U | 1.23 J | 0.00334 | <0.005 U | <0.29 U | 1.15 J | <0.86 U |
| 3/28/2018 | Assessment | 4.89 J | <1.05 U | 124 | 0.34 J | 0.16 J | 0.99 J | 0.48 J | 1.183 | <0.083 U | 1 J | 0.00181 | <0.005 U | <0.29 U | 4.37 J | <0.86 U |
| 8/27/2018 | Assessment | 0.01 J | 0.25 | 94.9 | 0.365 | 0.15 | 1.36 | 0.159 | 1.551 | <0.083 U* | 0.097 | 0.00255 | <0.005 U | 0.08 J | 2.4 | 0.03 J |
| 3/12/2019 | Assessment | <0.1 U | 0.90 | 119 | 0.622 | 0.1 J | 1.95 | 0.372 | 0.451 | 0.04 J | 0.935 | 0.00221 | <0.005 U | <2 U | 3.5 | <0.5 U |
| 6/10/2019 | Assessment | <0.04 U | 0.36 | 111 | 0.316 | 0.08 J | 0.884 | 0.162 | 1.121 | 0.04 J | 0.2 J | 0.03 J | <0.005 U | <0.8 U | 3.1 | <0.2 U |
| 8/27/2019 | Assessment | <0.02 U | 0.55 | 131 | 0.317 | 0.10 | 1.36 | 0.256 | 0.455 | <0.083 U | 0.416 | 0.0013 | <0.005 U | <0.4 U | 4.1 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-12**
**Flint Creek - Landfill**
**Appendix III Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.02 | 63 | 10 | <0.083 U | 8.2 | 280 | 19 |
| 7/19/2016 | Background | 0.02 | 61.1 | 10 | <0.083 U | 7.6 | 216 | 15 |
| 9/14/2016 | Background | 0.02 | 70.5 | 11 | <0.083 U | 7.1 | 236 | 14 |
| 10/5/2016 | Background | 0.02 | 69.2 | 12 | 0.1908 J | 7.0 | 271 | 12 |
| 11/8/2016 | Background | 0.03 | 66.7 | 12 | <0.083 U | 6.9 | 308 | 14 |
| 1/24/2017 | Background | 0.02 | 67.1 | 9 | <0.083 U | 6.7 | 268 | 9 |
| 3/7/2017 | Background | 0.02 | 68.1 | 9 | <0.083 U | 6.3 | 248 | 11 |
| 4/26/2017 | Background | 0.02379 | 59.4 | 9 | <0.083 U | 6.4 | 282 | 10 |
| 5/16/2017 | Background | 0.023 | 61.5 | 10 | <0.083 U | 6.4 | 236 | 10 |
| 6/16/2017 | Background | 0.0347 | 59.4 | 10 | <0.083 U | 6.6 | 252 | 9 |
| 8/29/2017 | Detection | 0.03061 | 72 | 10 | <0.083 U | 7.2 | 248 | 12 |
| 3/26/2018 | Detection | 0.02876 | 56.2 | 7 | <0.083 U | 7.8 | 176 | 6 |
| 8/28/2018 | Detection | 0.016 | 56.4 | - - | - - | 7.9 | 258 | - - |
| 10/23/2018 | Assessment | - - | - - | 13.2 | <0.083 U | - - | - - | 9.16 |
| 3/11/2019 | Assessment | 0.02 J | 58.0 | 11 | 0.06 J | 8.5 | 254 | 5.0 |
| 6/10/2019 | Assessment | 0.04 J | 60.9 | 10.6 | 0.06 J | 7.2 | 244 | 7.0 |
| 8/27/2019 | Assessment | <0.02 U | 59.6 | 8 | <0.083 U | 6.9 | 252 | 9 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-12**
**Flint Creek - Landfill**
**Appendix IV Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 62 | 0.020013 J | <0.07 U | 0.98147 J | 3.36185 J | 0.28188 | <0.083 U | 0.779741 J | 0.000759267 J | 0.01713 J | 2.94917 J | <0.99 U | <0.86 U |
| 7/19/2016 | Background | <0.93 U | <1.05 U | 61 | 0.0839166 J | <0.07 U | 2 | 2.84565 J | - - | <0.083 U | 1.17408 J | 0.001 | 0.0216 J | 3.86821 J | <0.99 U | <0.86 U |
| 9/14/2016 | Background | <0.93 U | <1.05 U | 70 | <0.02 U | <0.07 U | 2 | 2.53407 J | 1.953 | <0.083 U | 0.716221 J | 0.000874536 J | <0.005 U | 3.27157 J | <0.99 U | <0.86 U |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 67 | <0.02 U | <0.07 U | 0.86698 J | 2.31495 J | 1.666 | 0.1908 J | <0.68 U | 0.014 | <0.005 U | 2.00891 J | <0.99 U | <0.86 U |
| 11/8/2016 | Background | <0.93 U | 8 | 123 | 1 | 0.465087 J | 22 | 23 | 1.743 | <0.083 U | 15 | 0.011 | 0.039 | 4.65502 J | <0.99 U | <0.86 U |
| 1/24/2017 | Background | <0.93 U | <1.05 U | 63 | <0.02 U | <0.07 U | 0.446889 J | 1.76121 J | 1.357 | <0.083 U | <0.68 U | 0.000559654 J | <0.005 U | 1.1441 J | <0.99 U | <0.86 U |
| 3/7/2017 | Background | <0.93 U | <1.05 U | 59 | <0.02 U | <0.07 U | 1 | 1.61975 J | 2.97 | <0.083 U | 0.903447 J | 0.006 | <0.005 U | 2.06812 J | <0.99 U | <0.86 U |
| 4/26/2017 | Background | 1.92 J | 1.23 J | 53.73 | 0.02 J | <0.07 U | 0.65 J | 1.34 J | 0.908 | <0.083 U | <0.68 U | 0.00106 | 0.006 J | 0.69 J | <0.99 U | <0.86 U |
| 5/16/2017 | Background | <0.93 U | 1.65 J | 59.7 | 0.07 J | <0.07 U | 1.57 | 1.95 J | 0.6398 | <0.083 U | 0.77 J | 0.00132 | <0.005 U | 0.58 J | <0.99 U | <0.86 U |
| 6/16/2017 | Background | <0.93 U | <1.05 U | 56.66 | <0.02 U | <0.07 U | 0.63 J | 1.3 J | 2.635 | <0.083 U | <0.68 U | 0.00085 J | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/26/2018 | Assessment | 1.15 J | <1.05 U | 50.7 | <0.02 U | <0.07 U | 1.06 | 1.85 J | 0.867 | <0.083 U | <0.68 U | 0.00069 J | <0.005 U | 1.13 J | <0.99 U | 0.96 J |
| 8/28/2018 | Assessment | 0.15 | 0.43 | 48.8 | 0.042 | 0.03 | 0.993 | 2.51 | 0.891 | <0.083 U* | 0.535 | 0.000702 | <0.005 U | 1.11 | 0.4 | 0.03 J |
| 3/11/2019 | Assessment | <0.1 U | 0.3 J | 51.6 | <0.1 U | <0.05 U | 1.09 | 3.35 | 0.777 | 0.06 J | 0.5 J | 0.0008 J | <0.005 U | <2 U | 0.3 J | <0.5 U |
| 6/10/2019 | Assessment | 0.1 J | 0.29 | 54.2 | <0.04 U | 0.03 J | 0.585 | 2.49 | 0.5134 | 0.06 J | 0.3 | <0.02 U | <0.005 U | <0.8 U | 0.2 J | <0.2 U |
| 8/27/2019 | Assessment | 0.24 | 1.20 | 60.8 | 0.150 | 0.08 | 2.04 | 11.2 | 1.111 | <0.083 U | 2.65 | 0.00176 | 0.006 J | 0.4 J | 1.4 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*: Sample collected on 10/23/2018

**Table 1 - Groundwater Data Summary: B-13**
**Flint Creek - Landfill**
**Appendix III Constituents**

*Geosyntec Consultants, Inc.*

| Collection Date | Monitoring Program | Boron | Calcium | Chloride | Fluoride | pH | Total Dissolved Solids | Sulfate |
|---|---|---|---|---|---|---|---|---|
| | | mg/L | mg/L | mg/L | mg/L | SU | mg/L | mg/L |
| 5/24/2016 | Background | 0.02 | 15.1 | 4 | <0.083 U | 6.9 | 108 | 20 |
| 7/19/2016 | Background | 0.03 | 14.7 | 3 | <0.083 U | 5.9 | 88 | 23 |
| 9/13/2016 | Background | 0.02 | 13 | 4 | <0.083 U | 5.1 | 68 | 18 |
| 10/5/2016 | Background | 0.02 | 13.6 | 5 | <0.083 U | 5.2 | 80 | 20 |
| 11/8/2016 | Background | 0.01 | 4.07 | 4 | 0.2121 J | 5.4 | 52 | 7 |
| 1/24/2017 | Background | 0.01 | 4.26 | 3 | <0.083 U | 6.2 | 44 | 7 |
| 3/7/2017 | Background | 0.02 | 10.1 | 3 | <0.083 U | 4.8 | 64 | 16 |
| 4/26/2017 | Background | 0.02539 | 15 | 4 | <0.083 U | 5.3 | 82 | 27 |
| 5/16/2017 | Background | 0.03198 | 20.1 | 4 | <0.083 U | 5.7 | 60 | 33 |
| 6/16/2017 | Background | 0.04236 | 20.2 | 5 | <0.083 U | 5.2 | 114 | 31 |
| 8/28/2017 | Detection | 0.02674 | 12.7 | 4 | <0.083 U | 5.0 | 72 | 22 |
| 3/28/2018 | Assessment | 0.02271 | 14.8 | 2 | <0.083 U | 7.5 | 80 | 23 |
| 8/27/2018 | Assessment | 0.016 | 12.4 | - - | - - | 5.1 | 58 | - - |
| 10/22/2018 | Detection | - - | - - | 3.6 | <0.083 U | - - | - - | 21.1 |
| 3/12/2019 | Assessment | 0.02 J | 13.5 | 1.92 | 0.02 J | 7.1 | 82 | 21.3 |
| 6/10/2019 | Assessment | <0.04 U | 19.7 | 3.05 | 0.02 J | 6.9 | 98 | 20.7 |
| 8/28/2019 | Assessment | <0.02 U | 10.2 | 1 | <0.083 U | 5.4 | 64 | 18 |

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

**Table 1 - Groundwater Data Summary: B-13**
**Flint Creek - Landfill**
**Appendix IV Constituents**

| Collection Date | Monitoring Program | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Combined Radium | Fluoride | Lead | Lithium | Mercury | Molybdenum | Selenium | Thallium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | pCi/L | mg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| 5/24/2016 | Background | <0.93 U | <1.05 U | 53 | 0.122524 J | 0.107623 J | 2 | 1.81817 J | 0.4473 | <0.083 U | <0.68 U | <0.00013 U | 0.02179 J | <0.29 U | <0.99 U | <0.86 U |
| 7/19/2016 | Background | <0.93 U | <1.05 U | 60 | 0.224239 J | <0.07 U | 4 | 1.60103 J | - - | <0.083 U | 1.35024 J | 0.002 | 0.01382 J | <0.29 U | <0.99 U | <0.86 U |
| 9/13/2016 | Background | <0.93 U | <1.05 U | 54 | <0.02 U | <0.07 U | 3 | 1.45223 J | 1.939 | <0.083 U | <0.68 U | 0.002 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 10/5/2016 | Background | <0.93 U | <1.05 U | 61 | 0.237762 J | <0.07 U | 5 | 2.78529 J | 0.829 | <0.083 U | 1.81371 J | 0.011 | <0.005 U | 0.539075 J | <0.99 U | <0.86 U |
| 11/8/2016 | Background | <0.93 U | <1.05 U | 32 | 0.28466 J | 0.256467 J | 4 | 1.50224 J | 0.3576 | 0.2121 J | 1.58806 J | 0.002 | 0.00767 J | <0.29 U | <0.99 U | <0.86 U |
| 1/24/2017 | Background | <0.93 U | <1.05 U | 36 | 0.29327 J | <0.07 U | 3 | 1.48125 J | 0.733 | <0.083 U | <0.68 U | 0.002 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/7/2017 | Background | <0.93 U | <1.05 U | 44 | 0.142049 J | <0.07 U | 2 | 0.769644 J | 0.841 | <0.083 U | <0.68 U | 0.002 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 4/26/2017 | Background | <0.93 U | 1.92 J | 66.22 | 0.22 J | 0.1 J | 4.05 | 1.94 J | 0.844 | <0.083 U | 1.02 J | 0.00252 | 0.021 J | <0.29 U | 1.68 J | <0.86 U |
| 5/16/2017 | Background | <0.93 U | <1.05 U | 71.99 | 0.13 J | <0.07 U | 2.26 | 0.99 J | 0.918 | <0.083 U | <0.68 U | 0.00133 | <0.005 U | <0.29 U | 1.38 J | <0.86 U |
| 6/16/2017 | Background | <0.93 U | <1.05 U | 72.45 | 0.12 J | <0.07 U | 2.61 | 1.26 J | 2.577 | <0.083 U | <0.68 U | 0.00151 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 3/28/2018 | Assessment | <0.93 U | <1.05 U | 56.76 | <0.02 U | <0.07 U | 1.45 | 0.53 J | 0.92 | <0.083 U | <0.68 U | 0.00101 | <0.005 U | <0.29 U | <0.99 U | <0.86 U |
| 8/27/2018 | Assessment | 0.02 J | 0.13 | 48.3 | 0.113 | 0.05 | 0.611 | 0.210 | 0.530 | <0.083 U* | 0.149 | 0.000775 | <0.005 U | 0.08 J | 0.5 | 0.02 J |
| 3/12/2019 | Assessment | <0.1 U | 0.62 | 55.4 | 0.2 J | 0.08 J | 1.76 | 1.08 | 0.882 | 0.02 J | 1.51 | 0.00115 | <0.005 U | <2 U | 0.8 J | <0.5 U |
| 6/10/2019 | Assessment | <0.02 U | 0.07 J | 55.1 | 0.05 J | 0.04 J | 0.379 | 0.03 J | 0.461 | 0.02 J | <0.05 U | <0.02 U | <0.005 U | <0.4 U | 0.5 | <0.1 U |
| 8/28/2019 | Assessment | <0.02 U | 0.17 | 47.1 | 0.151 | 0.05 J | 0.818 | 0.272 | 0.862 | <0.083 U | 0.221 | 0.000814 | <0.005 U | <0.4 U | 0.4 | <0.1 U |

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter
*: Sample collected on 10/22/2018

## APPENDIX II

Where applicable, show in this appendix the results from statistical analyses, and a description of the statistical analysis method chosen. These statistical analyses are to be conducted separately for each constituent in each monitoring well.

# STATISTICAL ANALYSIS SUMMARY
# LANDFILL
# Flint Creek Plant
# Gentry, Arkansas

*Submitted to*

1 Riverside Plaza
Columbus, Ohio 43215-2372

*Submitted by*

Geosyntec consultants

engineers | scientists | innovators

941 Chatham Lane
Suite 103
Columbus, Ohio 43221

July 12, 2019

CHA8473

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## LIST OF ATTACHMENTS

Attachment A Certification by Qualified Professional Engineer
Attachment B Statistical Analysis Output

## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AEP | American Electric Power |
| ASD | Alternative Source Demonstration |
| CCR | Coal Combustion Residuals |
| CCV | Continuing Calibration Verification |
| CFR | Code of Federal Regulations |
| GWPS | Groundwater Protection Standard |
| LCL | Lower Confidence Limit |
| LF | Landfill |
| LFB | Laboratory Fortified Blanks |
| LRB | Laboratory Reagent Blanks |
| MCL | Maximum Contaminant Level |
| NELAP | National Environmental Laboratory Accreditation Program |
| QA | Quality Assurance |
| QC | Quality Control |
| RSL | Regional Screening Level |
| SSI | Statistically Significant Increase |
| SSL | Statistically Significant Level |
| TDS | Total Dissolved Solids |
| UPL | Upper Prediction Limit |
| USEPA | United States Environmental Protection Agency |
| UTL | Upper Tolerance Limit |

# SECTION 1

# EXECUTIVE SUMMARY

In accordance with the United States Environmental Protection Agency's (USEPA's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (40 CFR 257.90-257.98, "CCR rule"), groundwater monitoring has been conducted at the Landfill (LF), an existing CCR unit at the Flint Creek Power Plant located in Gentry, Arkansas.

Based on detection monitoring conducted in 2017 and 2018, a statistically significant increase (SSI) over background was concluded for boron at the LF. An alternative source was not identified at the time, so two assessment monitoring events were conducted at the LF in 2018, in accordance with 40 CFR 257.95. No SSLs were identified during these events and the unit remained in assessment monitoring. A semi-annual assessment monitoring event was also completed in March 2019, with the results of the March 2019 event documented in this report.

Groundwater data underwent several validation tests, including those for completeness, sample tracking accuracy, transcription errors, and consistent use of measurement units. No data quality issues were identified which would impact the usability of the data.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. Groundwater protection standards (GWPSs) were re-established for the Appendix IV parameters. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether Appendix IV parameters were present at a statistically significant level (SSL) above the GWPS. No SSLs were identified, but Appendix III concentrations for boron, calcium, chloride, and sulfate remained above background. Thus, either the unit will remain in assessment monitoring or an alternative source demonstration (ASD) will be conducted to evaluate if the unit can return to detection monitoring. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

# SECTION 2

# LANDFILL EVALUATION

## 2.1 Data Validation & QA/QC

During the assessment monitoring program, one set of samples was collected for analysis from each upgradient and downgradient well to meet the requirements of 40 CFR 257.95(d)(1). Samples from the March 2019 semi-annual sampling event were analyzed for the Appendix III and Appendix IV parameters. A summary of data collected during this assessment monitoring event may be found in Table 1.

Chemical analysis was completed by an analytical laboratory certified by the National Environmental Laboratory Accreditation Program (NELAP). Quality assurance and quality control (QA/QC) samples completed by the analytical laboratory included the use of laboratory reagent blanks (LRBs), continuing calibration verification (CCV) samples, and laboratory fortified blanks (LFBs).

The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location identification and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the Sanitas™ v.9.6.14 statistics software. The export file was checked against the analytical data for transcription errors and completeness. No QA/QC issues were noted which would impact data usability.

## 2.2 Statistical Analysis

Statistical analyses for the LF were conducted in accordance with the January 2017 *Statistical Analysis Plan* (AEP, 2017), except where noted below. Time series plots and results for all completed statistical tests are provided in Attachment B.

The data obtained to meet the requirements of 40 CFR 257.95(d)(1) were screened for potential outliers. No outliers were identified.

### 2.2.1 Establishment of GWPSs

A GWPS was established for each Appendix IV parameter in accordance with 40 CFR 257.95(h) and the *Statistical Analysis Plan* (AEP, 2017). The established GWPS was determined to be the greater value of the background concentration and the maximum contaminant level (MCL) or risk-based level specified in 40 CFR 257.95(h)(2) for each Appendix IV parameter. To determine background concentrations, an upper tolerance limit (UTL) was calculated using pooled data from the background wells collected during the background monitoring and assessment monitoring events. Generally, tolerance limits were calculated parametrically with 95% coverage and 95% confidence. Non-parametric tolerance limits were calculated for arsenic, barium, beryllium,

cadmium, chromium, lead, lithium, mercury, molybdenum, and selenium due to apparent non-normal distributions and for antimony, fluoride, and thallium due to high non-detect frequencies. Tolerance limits and the final GWPSs are summarized in Table 2.

### 2.2.2 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV parameter at each compliance well. Confidence limits were generally calculated parametrically ($\alpha = 0.01$); however, non-parametric confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the non-detect frequency was too high). An SSL was concluded if the lower confidence limit (LCL) exceeded the GWPS (i.e., if the entire confidence interval exceeded the GWPS). Calculated confidence limits are shown in Attachment B.

No SSLs were identified at the Flint Creek LF.

### 2.2.3 Evaluation of Potential Appendix III SSIs

The CCR rule allows CCR units to move from assessment monitoring to detection monitoring if all Appendix III and Appendix IV parameters were at or below background levels for two consecutive sampling events [40 CFR 257.95(e)]. Since no Appendix IV SSLs were identified, Appendix III results were analyzed to assess whether concentrations of Appendix III parameters at the compliance wells exceeded background concentrations.

Prediction limits were calculated for the Appendix III parameters to represent background values. As described in the January 2018 *Statistical Analysis Summary* report (Geosyntec, 2018), intrawell tests were used to evaluate potential SSIs for calcium, chloride, fluoride, pH, sulfate, and total dissolved solids (TDS), whereas an interwell test was used to evaluate potential SSIs for boron.

Prediction limits for the interwell tests were recalculated using data collected during the March 2019 assessment monitoring event. Eight data points (i.e., one sample from eight background wells) were added to the background dataset for each interwell test. New data were tested for outliers prior to being added to the background dataset. The updated prediction limits were calculated for a one-of-two retesting procedure, as during detection monitoring. The values of the updated prediction limits were similar to the values of the prediction limits calculated during detection monitoring. The revised interwell prediction limits were used to evaluate potential SSIs for boron.

For the intrawell tests, limited data made it possible to add only one data point (i.e., one sample from each compliance well) to each background dataset. Because one sample result is insufficient to compare against the existing background dataset, the prediction limits were not updated for the intrawell tests at this time. The intrawell prediction limits calculated during detection monitoring were used to evaluate potential SSIs for calcium, chloride, fluoride, pH, sulfate, and TDS.

Data collected during the March 2019 assessment monitoring event from each compliance well were compared to the prediction limits to evaluate results above background values. The results

from this event and the prediction limits are summarized in Table 3. The following exceedances of the upper prediction limits (UPLs) were noted:

- Boron concentrations exceeded the interwell UPL of 0.0588 mg/L at B-2 (0.634 mg/L) and B-11 (0.409 mg/L)
- The reported sulfate concentration at B-9 exceeded the intrawell UPL of 27.9 mg/L (34.3 mg/L).

Based on these results, concentrations of Appendix III parameters exceeded background levels at compliance wells at the Flint Creek LF during assessment monitoring. As a result, the Flint Creek LF CCR unit will remain in assessment monitoring.

## 2.3 Conclusions

A semi-annual assessment monitoring event was conducted in accordance with the CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that impacted data usability. A review of outliers identified no potential outliers in the March 2019 data. GWPSs were re-established for the Appendix IV parameters. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval exceeded the GWPS. No SSLs were identified.

The Appendix III results were evaluated to assess whether concentrations of Appendix III parameters exceeded background levels. Interwell tests were used to evaluate potential SSIs for boron, and intrawell tests were used to evaluate potential SSIs for calcium, chloride, fluoride, pH, sulfate, and TDS. The prediction limits for the interwell tests were updated with additional data collected from the background wells. Prediction limits were recalculated using a one-of-two retesting procedure. The prediction limits calculated during detection monitoring were used for the intrawell tests. During the most recent sampling event, boron and sulfate results exceeded background levels.

Based on this evaluation, either the Flint Creek LF CCR unit will remain in assessment monitoring or an ASD will be conducted to evaluate if the unit can return to detection monitoring.

# SECTION 3

# REFERENCES

American Electric Power (AEP). 2017. Statistical Analysis Plan – Flint Creek Plant. January 2017.

Geosyntec Consultants (Geosyntec). 2018. Statistical Analysis Summary – Landfill, Flint Creek Plant, Gentry, Arkansas. January 3, 2018.

United States Environmental Protection Agency (USEPA). 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance. EPA 530/R-09-007. March 2009.

# TABLES

**Table 1 - Groundwater Data Summary**
**Flint Creek - Landfill**

*Geosyntec Consultants*

| Parameter | Unit | B-1B | B-2 | B-4 | B-5 | B-6 | B-7A | B-9 | B-10 | B-11 | B-12 | B-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3/12/2019 | 3/12/2019 | 3/12/2019 | 3/12/2019 | 3/12/2019 | 3/11/2019 | 3/12/2019 | 3/12/2019 | 3/12/2019 | 3/11/2019 | 3/12/2019 |
| Antimony | µg/L | 0.500 U | 0.500 U | 0.500 U | 0.200 J | 0.500 U | 0.500 U | 0.500 U | 0.100 J | 0.500 U | 0.500 U | 0.500 U |
| Arsenic | µg/L | 0.400 J | 0.400 J | 0.500 U | 0.620 | 0.610 | 3.15 | 0.850 | 0.670 | 0.900 | 0.300 J | 0.620 |
| Barium | µg/L | 112 | 63.9 | 34.3 | 80.5 | 48.3 | 74.8 | 175 | 79.1 | 119 | 51.6 | 55.4 |
| Beryllium | µg/L | 0.500 U | 0.100 J | 0.200 J | 0.638 | 0.500 U | 0.500 U | 0.500 U | 0.500 U | 0.622 | 0.500 U | 0.200 J |
| Boron | mg/L | 0.0200 J | 0.634 | 0.0360 | 0.0100 J | 0.0370 | 0.0200 J | 0.0100 J | 0.0280 | 0.409 | 0.0200 J | 0.0200 J |
| Cadmium | µg/L | 0.200 U | 0.0600 J | 0.100 J | 0.560 | 0.200 U | 0.0500 J | 0.200 U | 0.0500 J | 0.100 J | 0.200 U | 0.0800 J |
| Calcium | mg/L | 93.1 | 34.5 | 3.37 | 16.2 | 41.9 | 99.6 | 97.3 | 72.4 | 11.6 | 58.0 | 13.5 |
| Chloride | mg/L | 2.31 | 5.88 | 4.58 | 8.30 | 8.16 | 3.43 | 3.68 | 9.68 | 4.03 | 11.0 | 1.92 |
| Chromium | µg/L | 1.00 U | 2.83 | 1.26 | 2.89 | 2.32 | 1.95 | 0.600 J | 0.900 J | 1.95 | 1.09 | 1.76 |
| Cobalt | µg/L | 0.200 U | 0.200 J | 0.200 U | 0.477 | 0.597 | 0.351 | 0.200 J | 0.299 | 0.372 | 3.35 | 1.08 |
| Combined Radium | pCi/L | 3.92 | 1.93 | 0.295 | 0.969 | 0.571 | 1.96 | 0.629 | 0.860 | 0.451 | 0.777 | 0.882 |
| Fluoride | mg/L | 0.410 | 0.100 J | 0.0200 J | 0.0700 J | 0.200 U | 0.240 | 0.100 J | 0.100 J | 0.0400 J | 0.0600 J | 0.0200 J |
| Lead | µg/L | 1.25 | 0.200 J | 0.500 U | 0.833 | 0.748 | 0.200 J | 0.200 J | 0.300 J | 0.935 | 0.500 J | 1.51 |
| Lithium | mg/L | 0.0264 | 0.00188 | 0.00123 | 0.00274 | 0.000900 J | 0.0200 | 0.00528 | 0.00167 | 0.00221 | 0.000800 J | 0.00115 |
| Mercury | mg/L | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000280 | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000250 U |
| Molybdenum | µg/L | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U | 10.0 U |
| Selenium | µg/L | 1.00 U | 14.3 | 0.600 J | 39.2 | 2.20 | 1.00 U | 1.00 U | 0.300 J | 3.50 | 0.300 J | 0.800 J |
| Total Dissolved Solids | mg/L | 228 | 376 | 68.0 | 372 | 100 | 336 | 278 | 226 | 104 | 254 | 82.0 |
| Sulfate | mg/L | 17.5 | 129 | 12.1 | 205 | 17.1 | 30.7 | 34.3 | 21.4 | 44.9 | 5.00 | 21.3 |
| Thallium | µg/L | 2.00 U | 2.00 U | 2.00 U | 2.00 U | 2.00 U | 2.00 U | 2.00 U | 2.00 U | 2.00 U | 2.00 U | 2.00 U |
| pH | SU | 7.63 | 6.92 | 7.47 | 5.31 | 6.93 | 7.46 | 8.11 | 8.35 | 5.79 | 8.52 | 7.05 |

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. For statistical analysis, parameters which were not detected were replaced with the reporting limit.
J: Estimated value. Parameter was detected in concentrations below the reporting limit.

**Table 2: Groundwater Protection Standards**
**Flint Creek Plant - Landfill**

*Geosyntec Consultants, Inc.*

| Constituent Name | MCL | CCR Rule-Specified | Background Limit |
|---|---|---|---|
| Antimony, Total (mg/L) | 0.006 | | 0.0045 |
| Arsenic, Total (mg/L) | 0.01 | | 0.008 |
| Barium, Total (mg/L) | 2 | | 0.13 |
| Beryllium, Total (mg/L) | 0.004 | | 0.001 |
| Cadmium, Total (mg/L) | 0.005 | | 0.001 |
| Chromium, Total (mg/L) | 0.1 | | 0.0083 |
| Cobalt, Total (mg/L) | n/a | 0.006 | 0.0029 |
| Combined Radium, Total (pCi/L) | 5 | | 7.81 |
| Fluoride, Total (mg/L) | 4 | | 1 |
| Lead, Total (mg/L) | n/a | 0.015 | 0.015 |
| Lithium, Total (mg/L) | n/a | 0.04 | 0.041 |
| Mercury, Total (mg/L) | 0.002 | | 0.000096 |
| Molybdenum, Total (mg/L) | n/a | 0.1 | 0.01 |
| Selenium, Total (mg/L) | 0.05 | | 0.039 |
| Thallium, Total (mg/L) | 0.002 | | 0.002 |

Notes:
Grey cell indicates calculated UTL is higher than MCL.
MCL = Maximum Contaminant Level
RSL = Regional Screening Level
Calculated UTL (Upper Tolerance Limit) represents site-specific background values.
The higher of the calculated UTL or MCL/Rule-Specified Level is used as the GWPS.

**Table 3: Appendix III Data Summary**
**Flint Creek Plant - Landfill**

| Parameter | Units | Description | B-1B | B-2 | B-5 | B-6 | B-7A | B-9 | B-10 | B-11 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3/12/2019 | 3/12/2019 | 3/12/2019 | 3/12/2019 | 3/11/2019 | 3/12/2019 | 3/12/2019 | 3/12/2019 |
| Boron | mg/L | Interwell Background Value (UPL) | 0.0588 | | | | | | | |
| | | Detection Monitoring Result | 0.0200 | **0.634** | 0.0100 | 0.0370 | 0.0200 | 0.0100 | 0.0280 | **0.409** |
| Calcium | mg/L | Intrawell Background Value (UPL) | 97.6 | 99.2 | 19.6 | 63.5 | 111 | 126 | 116 | 19.5 |
| | | Detection Monitoring Result | 93.1 | 34.5 | 16.2 | 41.9 | 99.6 | 97.3 | 72.4 | 11.6 |
| Chloride | mg/L | Intrawell Background Value (UPL) | 5.79 | 7.93 | 12.3 | 9.10 | 6.02 | 8.34 | 10.1 | 7.83 |
| | | Detection Monitoring Result | 2.31 | 5.88 | 8.30 | 8.16 | 3.43 | 3.68 | 9.68 | 4.03 |
| Fluoride | mg/L | Intrawell Background Value (UPL) | 0.651 | 1.00 | 1.00 | 0.200 | 1.00 | 1.00 | 1.00 | 1.00 |
| | | Detection Monitoring Result | 0.410 | 0.100 | 0.0700 | 0.0400 | 0.240 | 0.100 | 0.100 | 0.0400 |
| pH | SU | Intrawell Background Value (UPL) | 8.5 | 7.3 | 7.3 | 7.5 | 7.9 | 8.4 | 8.8 | 7.1 |
| | | Intrawell Background Value (LPL) | 5.8 | 5.0 | 4.0 | 6.0 | 6.4 | 6.0 | 5.6 | 4.8 |
| | | Detection Monitoring Result | 7.6 | 6.9 | 5.3 | 6.9 | 7.5 | 8.1 | 8.4 | 5.8 |
| Sulfate | mg/L | Intrawell Background Value (UPL) | 27.0 | 776 | 251 | 43.9 | 37.5 | 27.9 | 40.2 | 69.8 |
| | | Detection Monitoring Result | 17.5 | 129 | 205 | 17.1 | 30.7 | **34.3** | 21.4 | 44.9 |
| Total Dissolved Solids | mg/L | Intrawell Background Value (UPL) | 319 | 1522 | 461 | 280 | 339 | 283 | 316 | 207 |
| | | Detection Monitoring Result | 228 | 376 | 372 | 100 | 336 | 278 | 226 | 104 |

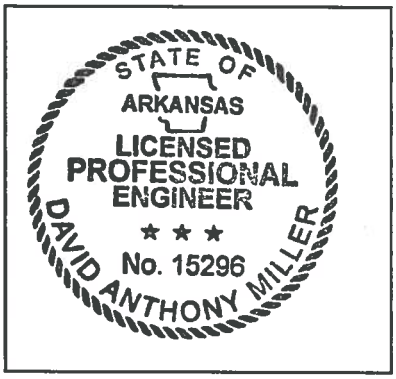
Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
**Bold values exceed the background value.**
Background values are shaded gray.

# ATTACHMENT A

# Certification by Qualified Professional Engineer

**Certification by Qualified Professional Engineer**

I certify that the selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Flint Creek Landfill CCR management area and that the requirements of 40 CFR 257.93(f) have been met.




DAVID ANTHONY MILLER

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature

| 15296 | ARKANSAS | 07.12.19 |
|---|---|---|
| License Number | Licensing State | Date |

# ATTACHMENT B

## Statistical Analysis Output

GROUNDWATER STATS CONSULTING

July 10, 2019

Geosyntec Consultants
Attn: Ms. Allison Kreinberg
941 Chatham Lane, #103
Columbus, OH 43221

Re: Flint Creek Landfill
Assessment Monitoring Event – Spring 2019

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis of the groundwater data for the Spring 2019 sample event for American Electric Power Inc.'s Flint Creek Landfill. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

Sampling began at the site for the CCR program in 2016. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Upgradient wells:** B-1B, B-4, B-5, B-7A, B-12, and B-13; and
- **Downgradient wells:** B-2, B-6, B-9, B-10, and B-11.

Data were sent electronically, and the statistical analysis was conducted according to the Statistical Analysis Plan and screening evaluation prepared by GSC and approved by Dr. Kirk Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to GSC. The statistical analysis was reviewed by Dr. Jim Loftis, professor emeritus of Civil and Environmental Engineering at Colorado State University and Senior Advisor to Groundwater Stats Consulting.

The CCR program consists of the following constituents:

- **Appendix III** (Detection Monitoring) **-** boron, calcium, chloride, fluoride, pH, sulfate, and TDS;
- **Appendix IV** (Assessment Monitoring) **–** antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium.

Time series plots for Appendix III and IV parameters are provided for all wells and constituents; and are used to evaluate concentrations over the entire record (Figure A). Values previously flagged during the screening as outliers may be seen in a lighter font and disconnected symbol on the time series graphs. A summary of flagged values follows this letter (Figure B).

**Evaluation of Appendix III Parameters**

Interwell prediction limits combined with a 1-of-2 verification strategy were constructed for boron; and intrawell prediction limits combined with a 1-of-2 verification strategy were constructed for calcium, chloride, fluoride, pH, sulfate and TDS (Figure C & D, respectively). The statistical method selected for each parameter was determined based on the results of the evaluation performed in December 2017; and all proposed background data were screened for outliers and trends at that time. The findings of those reports were submitted with that analysis.

Interwell prediction limits utilize all upgradient well data for construction of statistical limits. During each sample event, upgradient well data are screened for any newly suspected outliers or obvious trending patterns using time series plots. All values flagged as outliers may be seen on the Outlier Summary report following this letter. No obvious trending patterns were observed in the upgradient wells.

Intrawell prediction limits utilize the background data set that was originally screened in 2017. As recommended in the EPA Unified Guidance (2009), the background data set will be tested for the purpose of updating statistical limits using the Mann-Whitney two-sample test when an additional four to eight measurements are available.

In the event of an initial exceedance of compliance well data, the 1-of-2 resample plan allows for collection of one additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified, and further research would be required to identify the cause of

the exceedance (i.e. impact from the site, natural variation, or an off-site source). If the resample falls within the statistical limit, the initial exceedance is considered a false positive result, and, therefore, no further action is necessary. Prediction limit exceedances were noted for boron in downgradient wells B-2 and B-11; pH, which exceeded its upper limit in upgradient well B-12; and sulfate in downgradient well B-9. The results of those findings may be found in the Prediction Limit Summary tables following this letter.

When a statistically significant increase is identified, the data are further evaluated using the Sen's Slope/Mann Kendall trend test to determine whether concentrations are statistically increasing, decreasing, or stable (Figure E). Upgradient wells are included in the trend analyses to identify whether similar patterns exist upgradient of the site which is an indication of natural variability in groundwater unrelated to practices at the site.

No statistically significant trends were noted in downgradient wells except for statistically significant increasing trends for boron in well B-11 and sulfate in well B-9. A statistically significant increasing trend was identified for pH in upgradient well B-4; and statistically significant decreasing trends were noted for sulfate in upgradient wells B-12 and B-1B. A Trend Test summary table follows this letter.

**Evaluation of Appendix IV Parameters**

Parametric tolerance limits were used to calculate background limits from all available pooled upgradient well data for Appendix IV parameters with a target of 95% confidence and 95% coverage to determine the Alternate Contaminant Level (ACL) (Figure F). Background data are screened for outliers and extreme trending patterns that would lead to artificially elevated statistical limits. Any flagged values may be seen on the Outlier Summary following this letter. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. These limits were compared to the Maximum Contaminant Levels (MCLs) and CCR-Rule specified levels in the Groundwater Protection Standard (GWPS) table following this letter to determine the highest limit for use as the GWPS in the Confidence Interval comparisons (Figure G).

Confidence intervals were then constructed on downgradient wells for each of the Appendix IV parameters using the highest limit of the MCL, CCR-Rule specified level, or ACL as discussed above (Figure H). Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. No confidence intervals exceedances were found. A summary of the confidence interval results follows this letter.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Flint Creek Landfill. If you have any questions or comments, please feel free to contact me.

For Groundwater Stats Consulting,

Kristina L. Rayner
Groundwater Statistician

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

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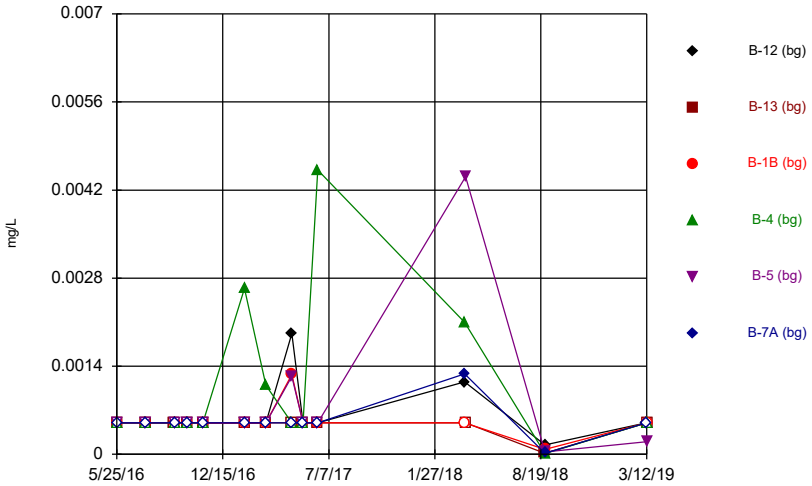


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Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
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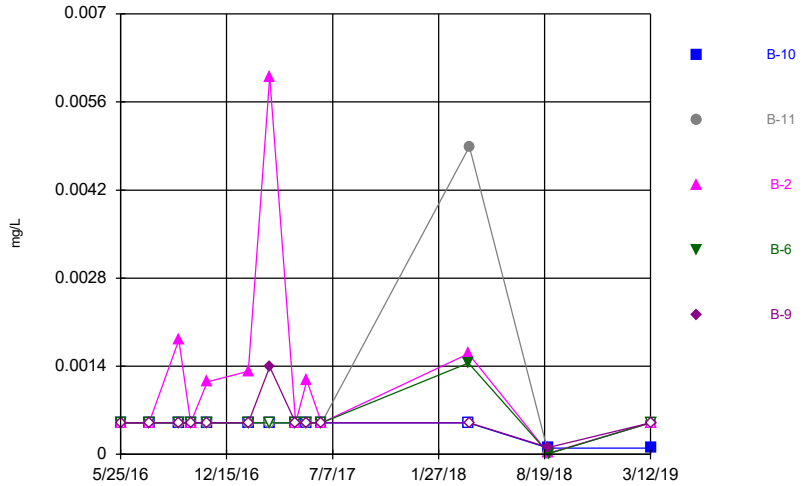


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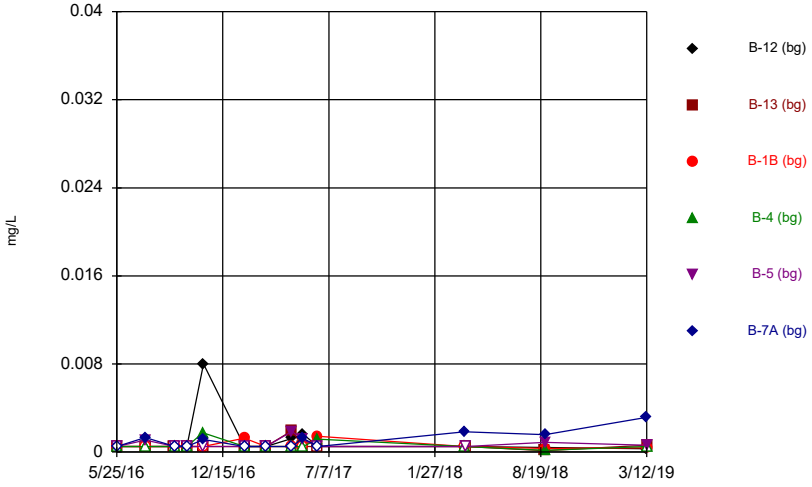


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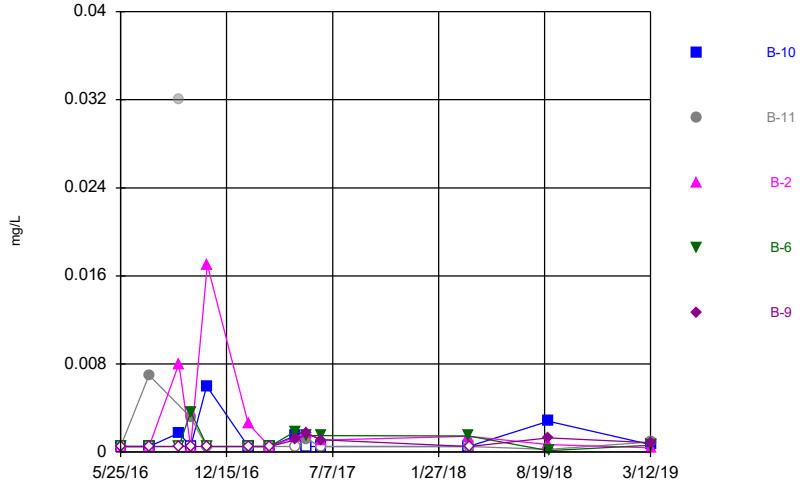


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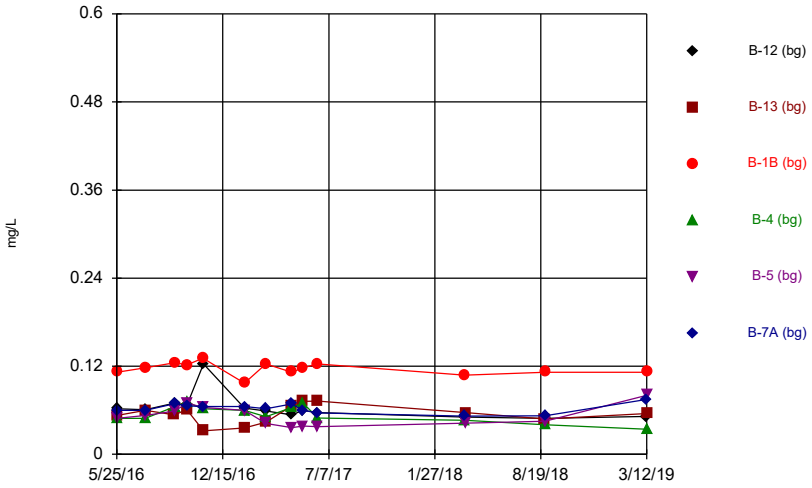


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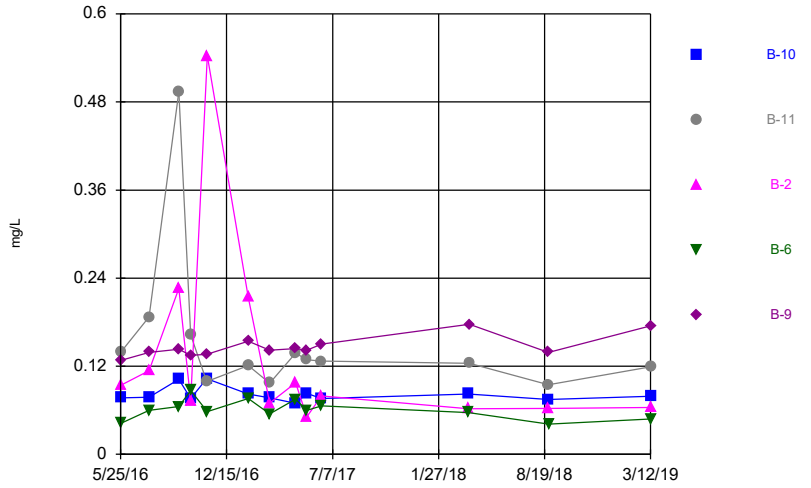


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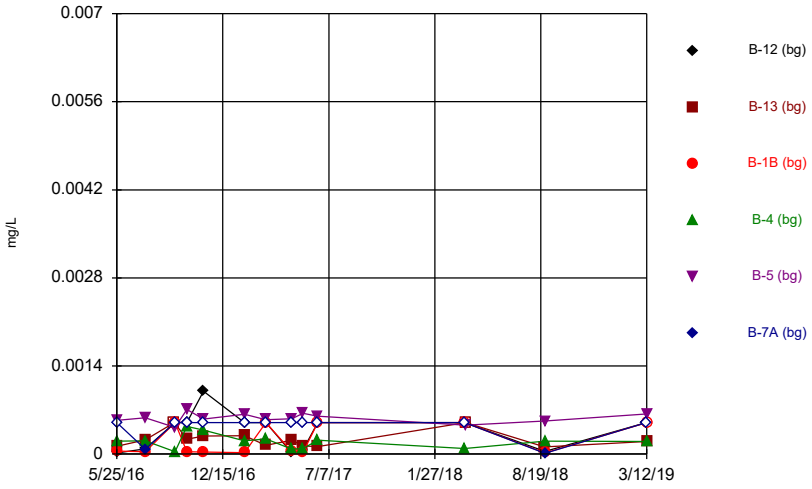


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Hollow symbols indicate censored values.

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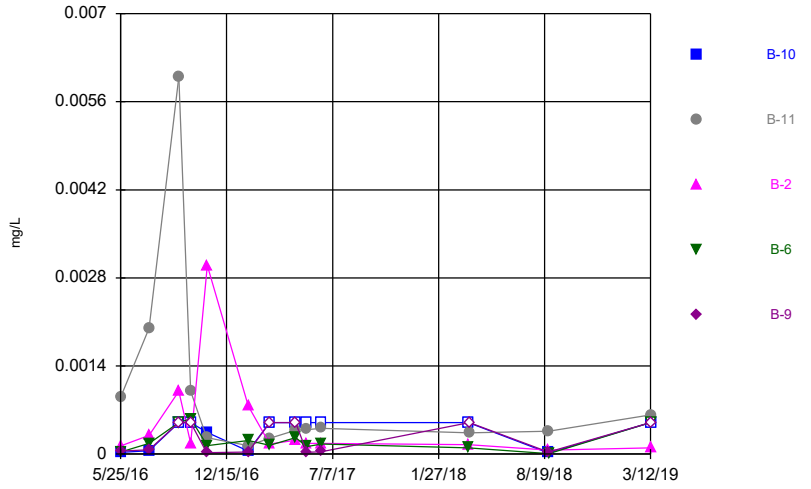


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Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

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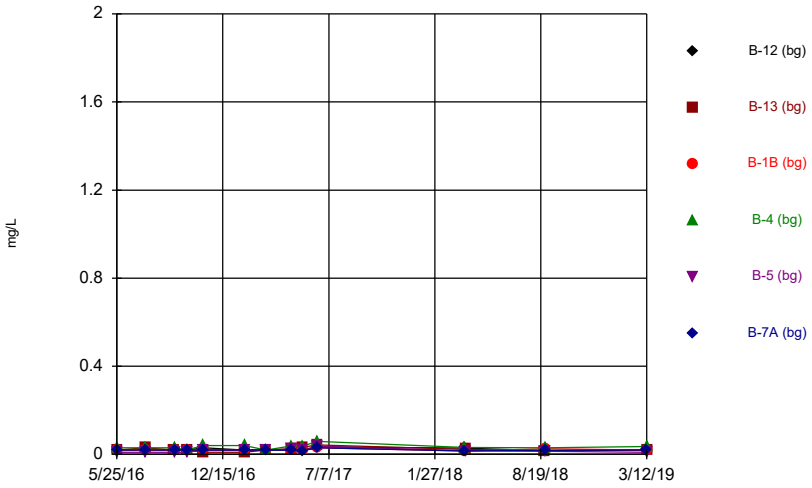


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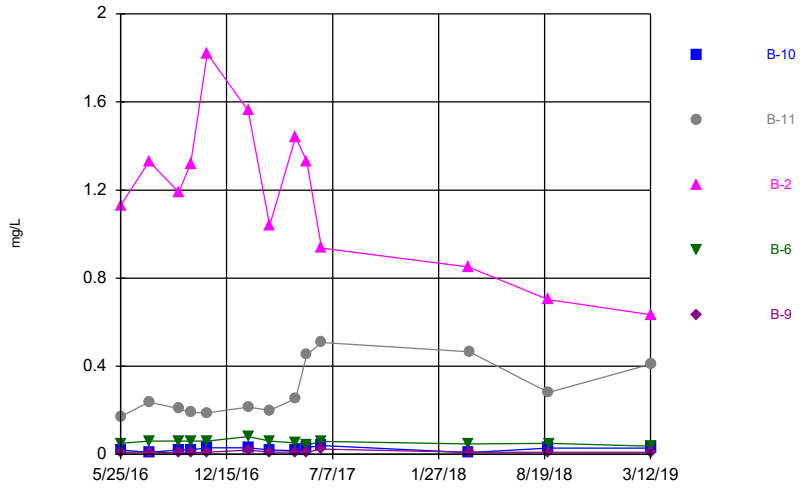


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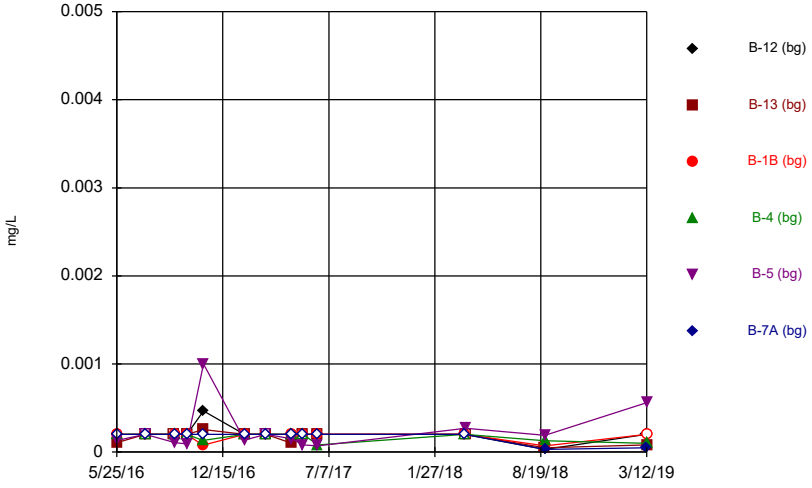


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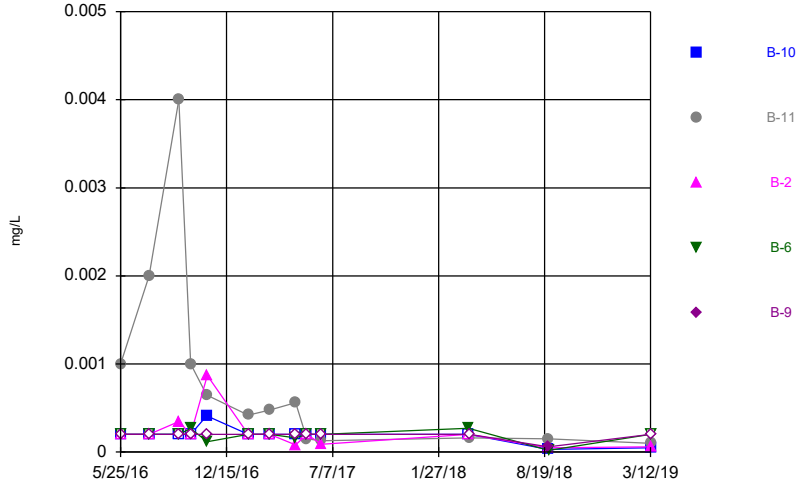


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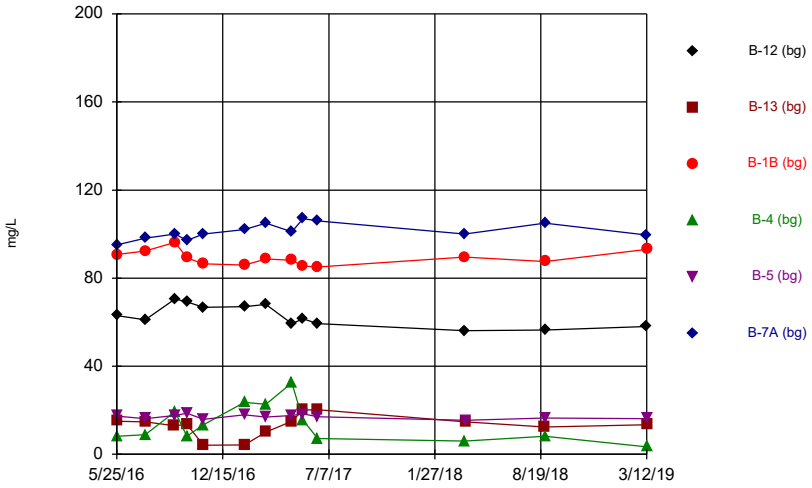


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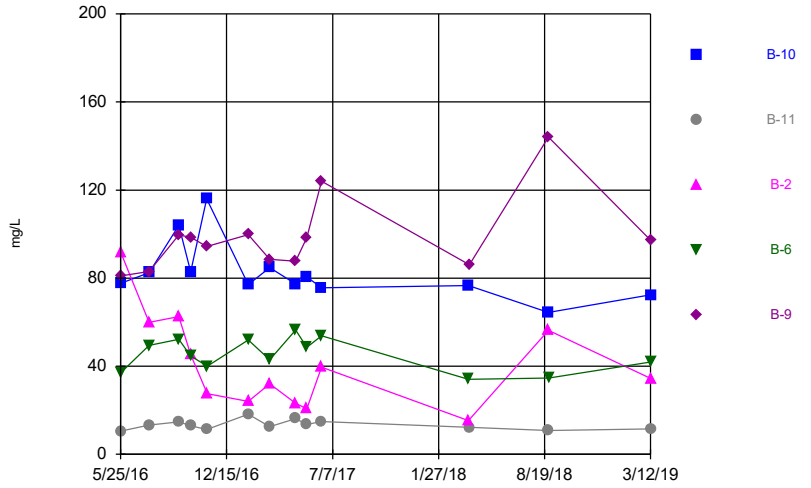
Time Series

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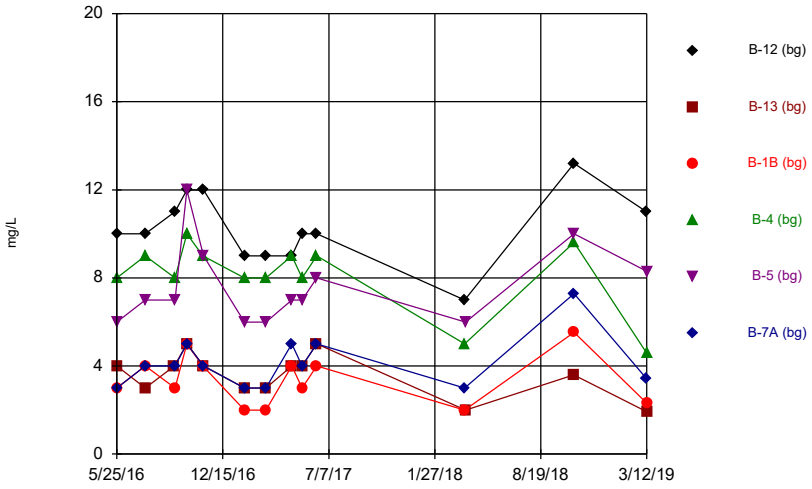


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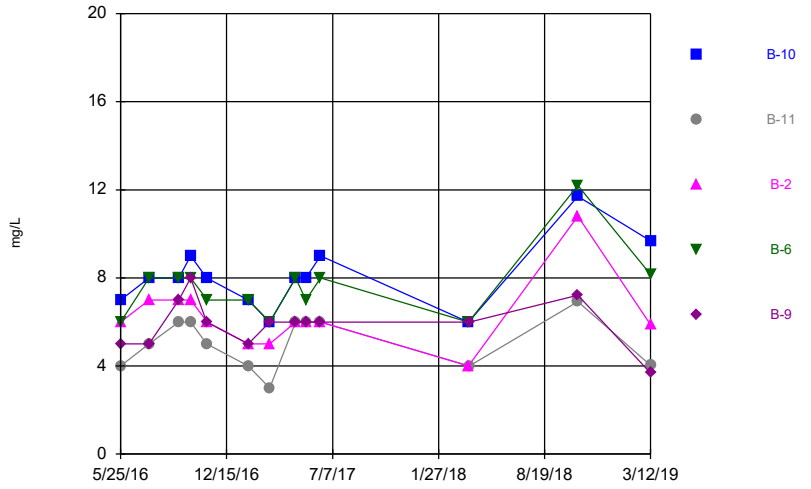
Time Series

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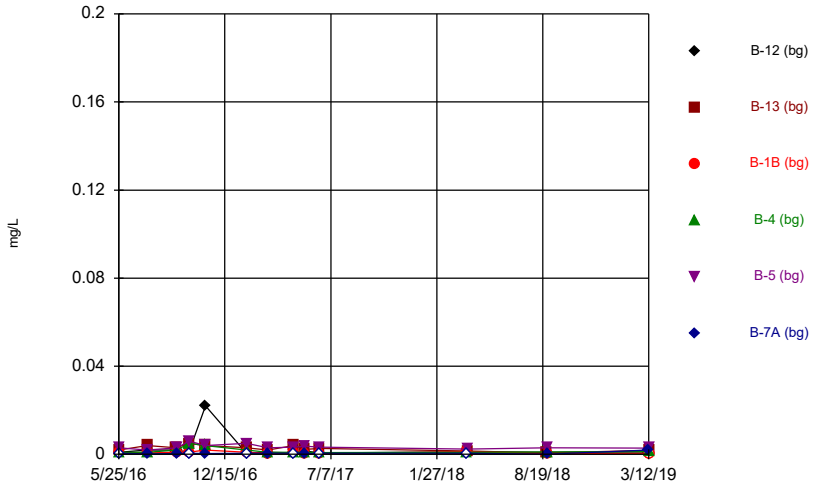


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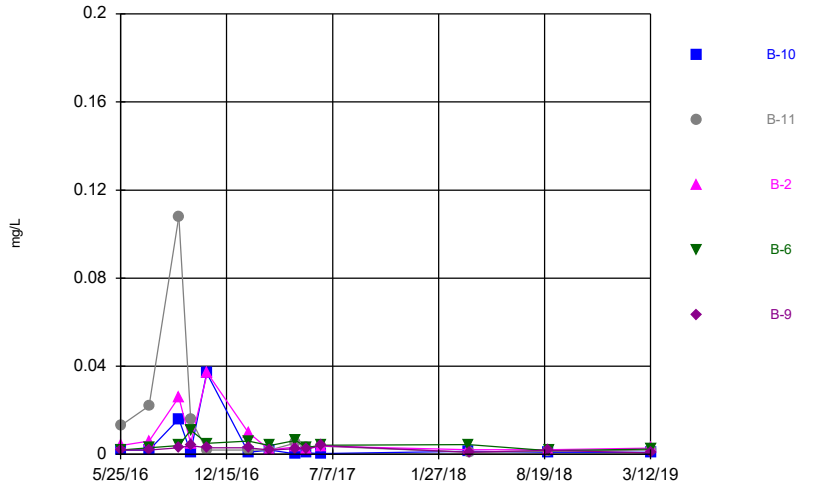
Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

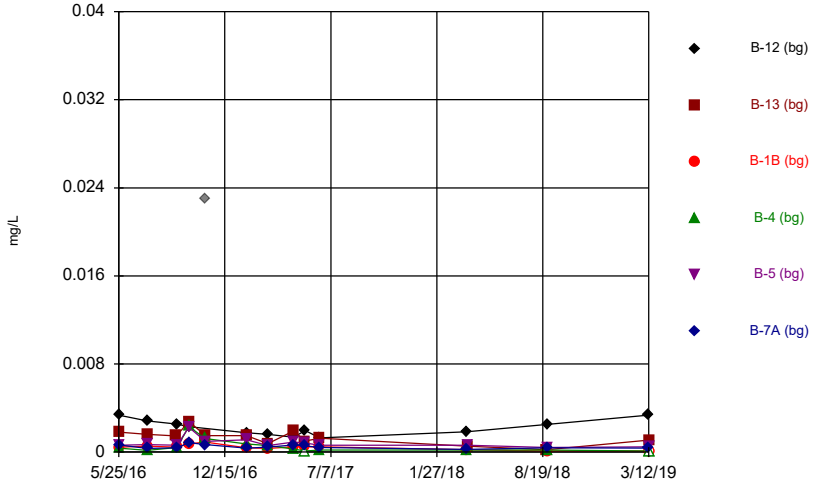
Time Series




Constituent: Chromium, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

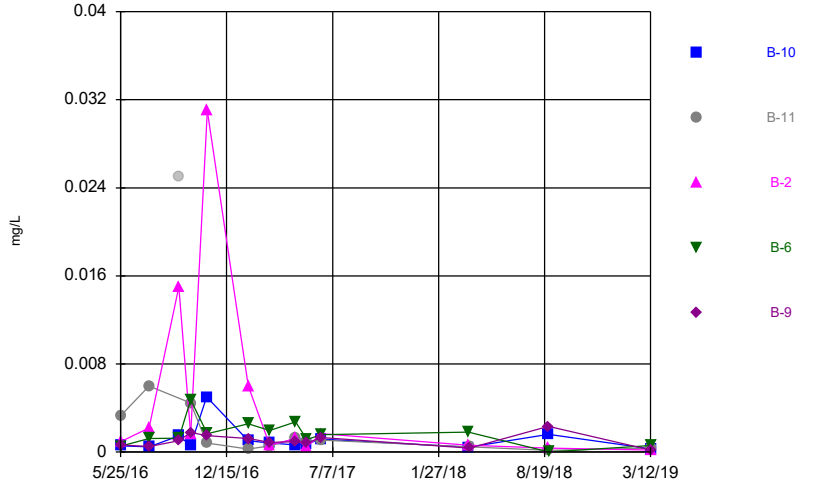
Time Series




Constituent: Cobalt, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

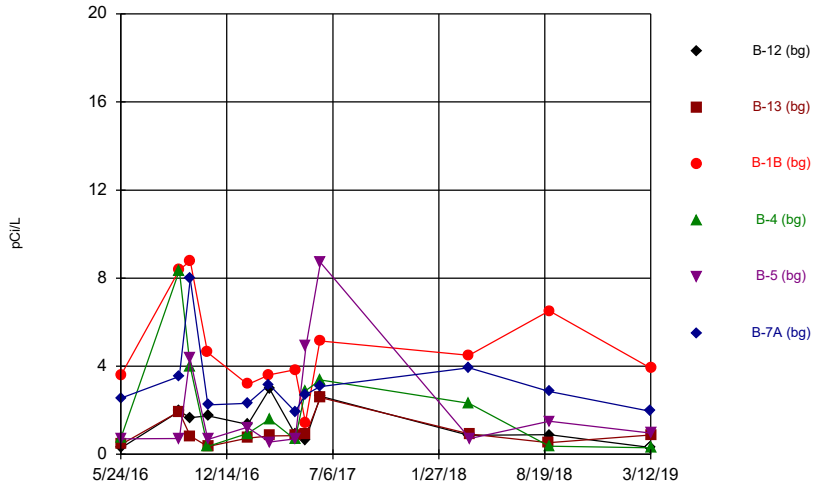
Time Series




Constituent: Cobalt, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

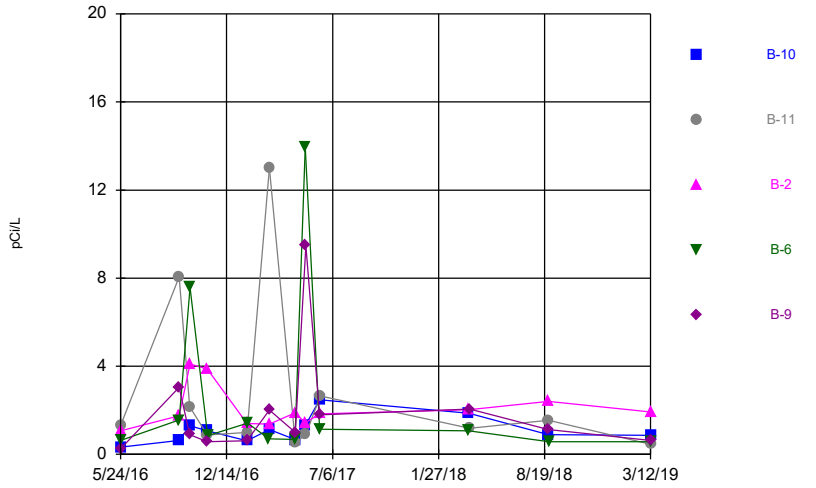
## Time Series




Constituent: Combined Radium 226 + 228 Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

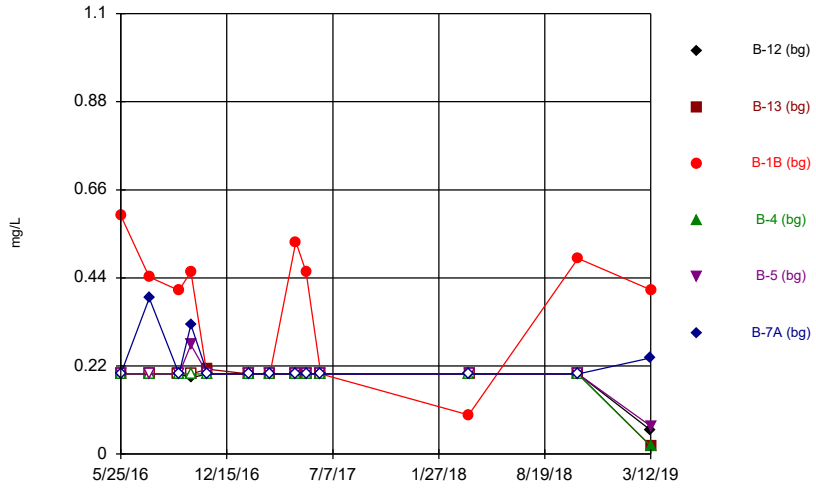
## Time Series




Constituent: Combined Radium 226 + 228 Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

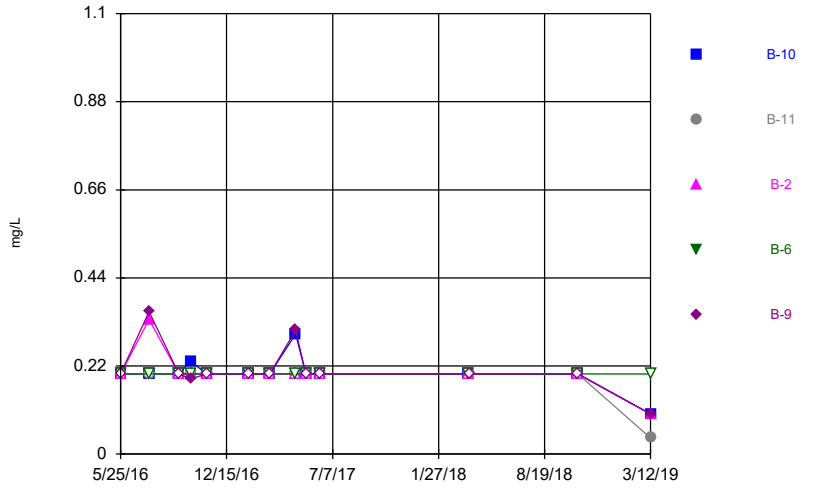
## Time Series




Constituent: Fluoride, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

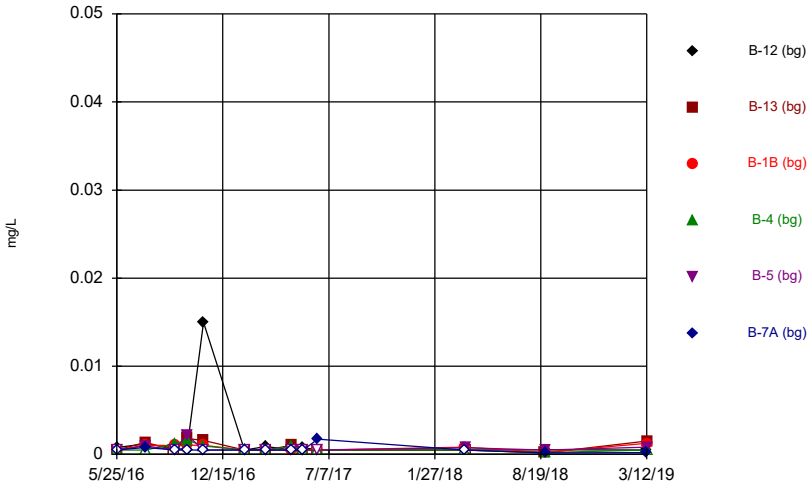
## Time Series




Constituent: Fluoride, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

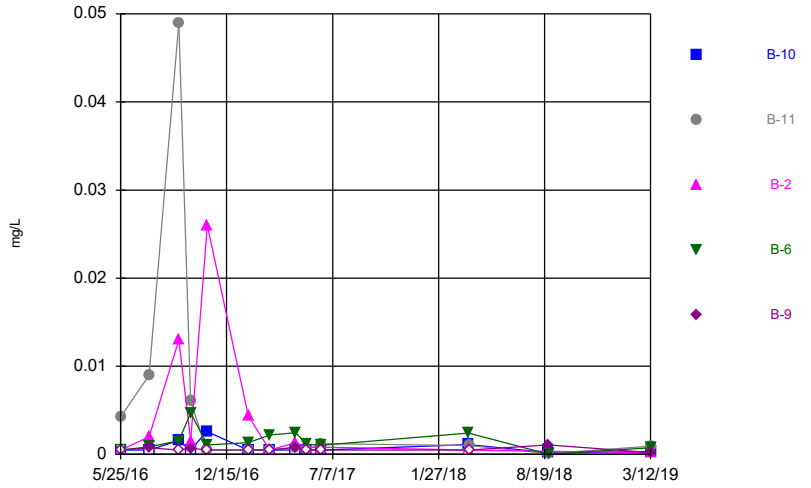
## Time Series




Constituent: Lead, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

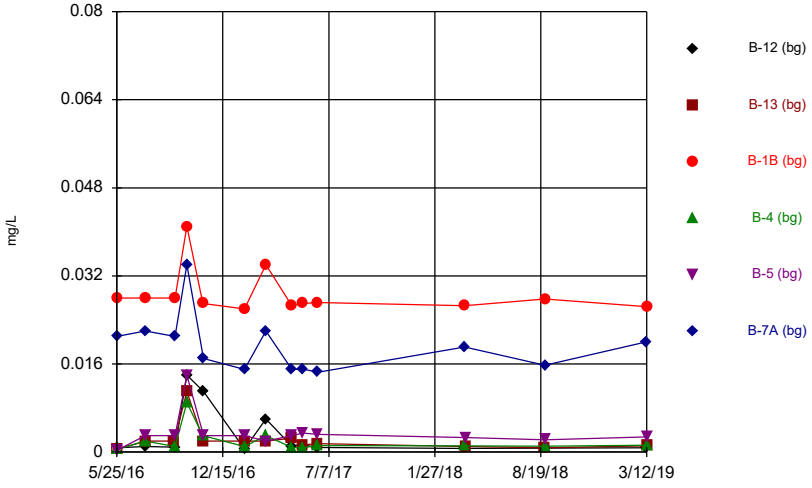
## Time Series




Constituent: Lead, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

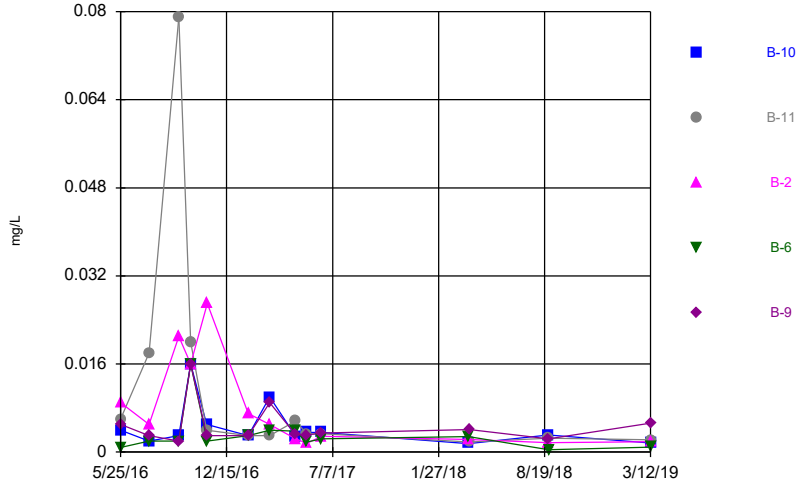
## Time Series




Constituent: Lithium, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

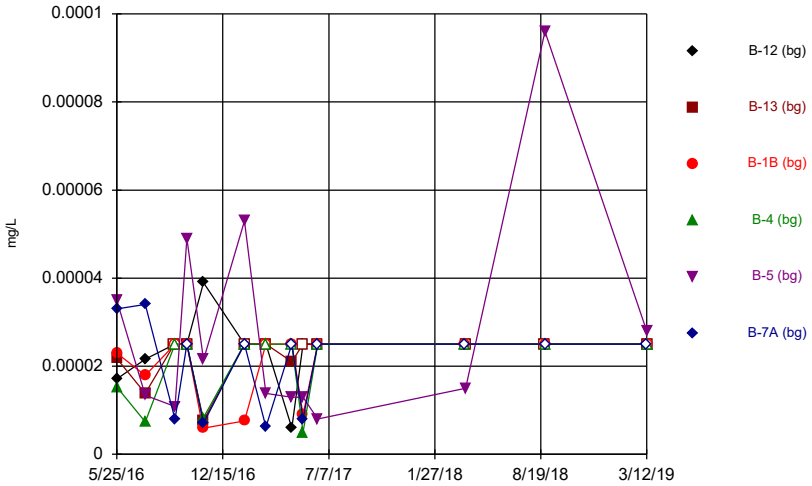
## Time Series




Constituent: Lithium, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

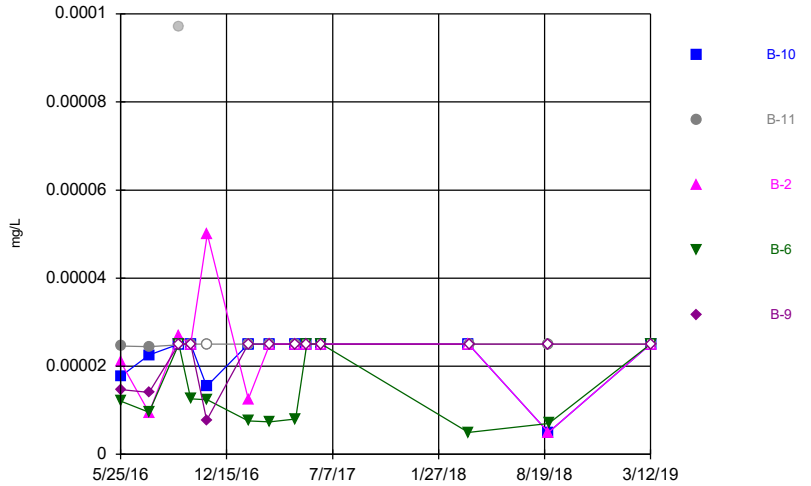
Time Series




Constituent: Mercury, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

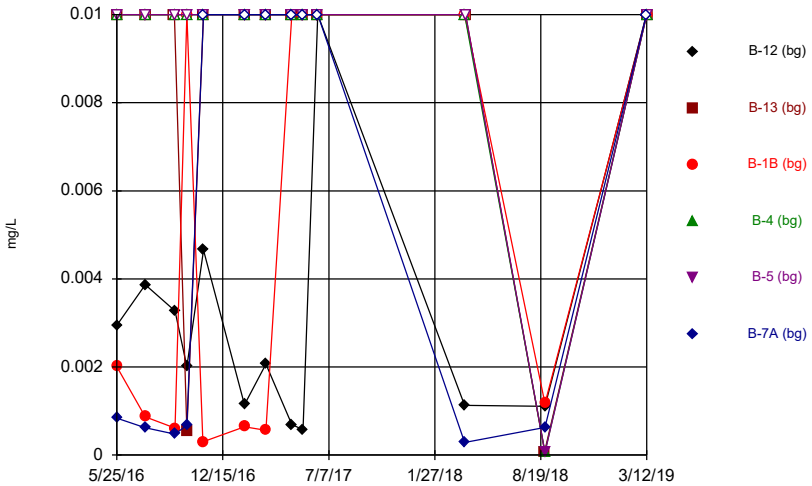
Time Series




Constituent: Mercury, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

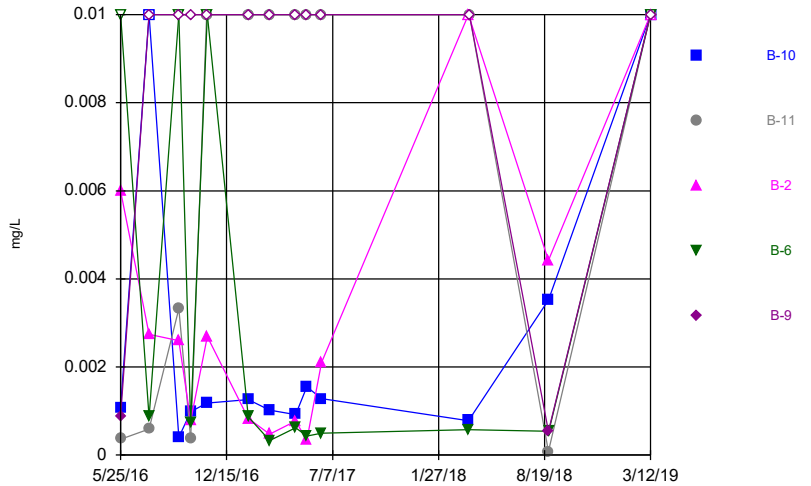
Time Series




Constituent: Molybdenum, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

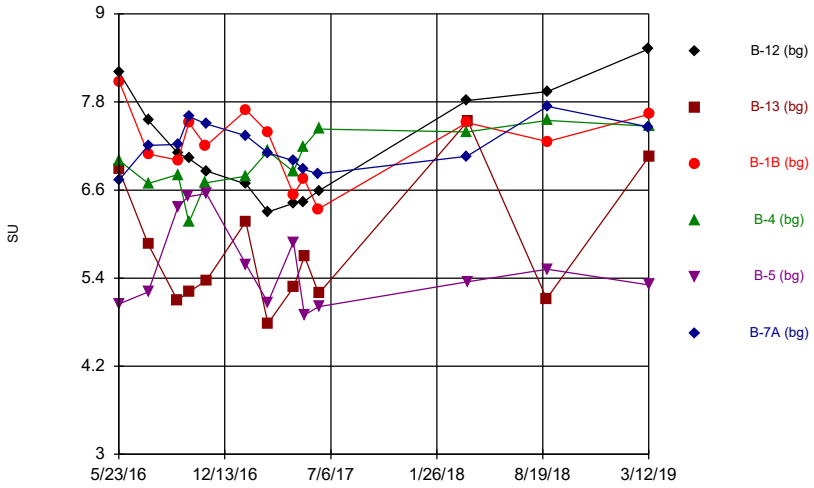
Time Series




Constituent: Molybdenum, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

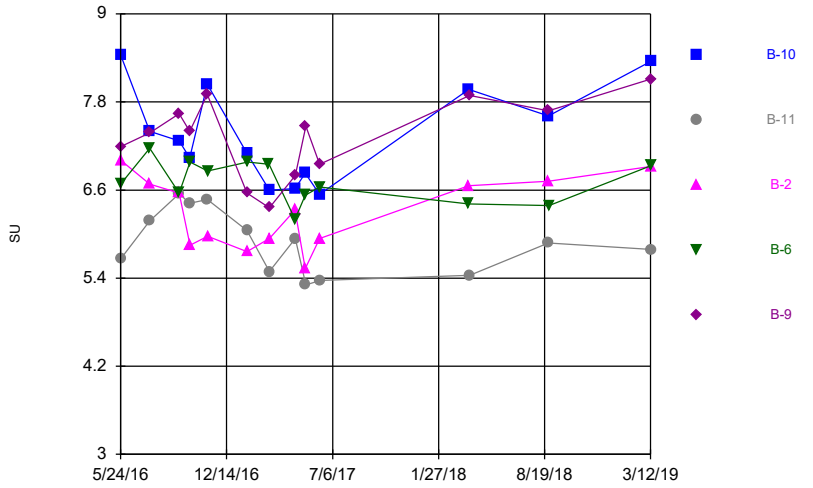
## Time Series




Constituent: pH, field Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

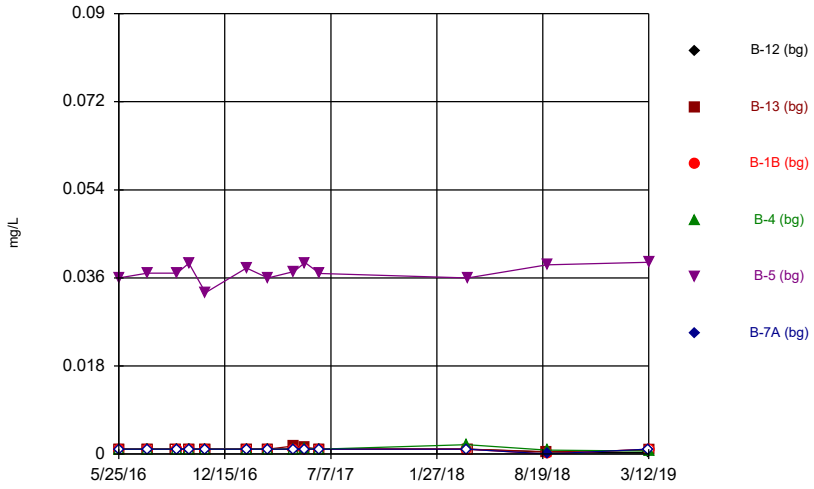
## Time Series




Constituent: pH, field Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

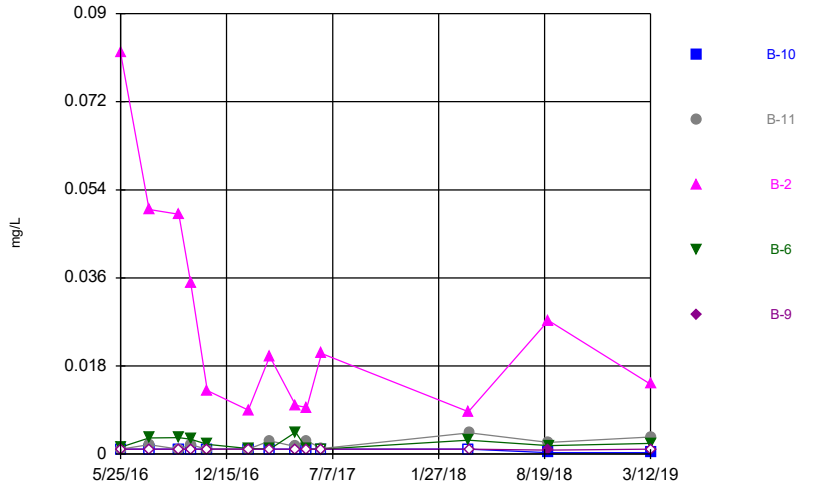
## Time Series




Constituent: Selenium, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

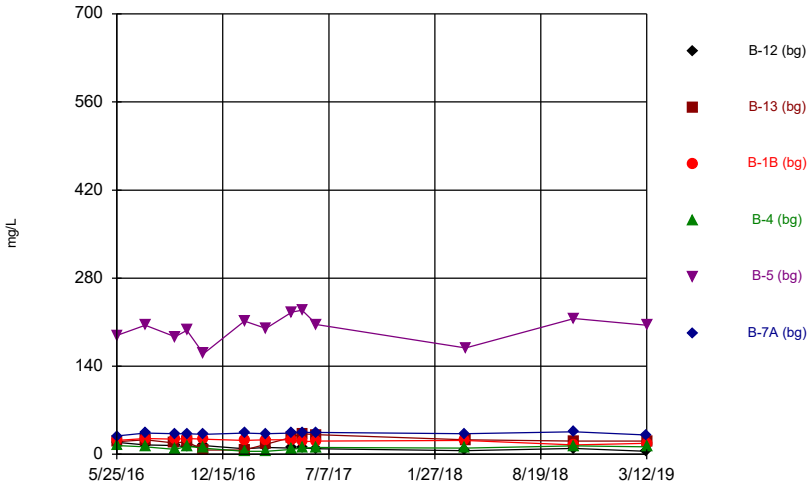
## Time Series




Constituent: Selenium, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

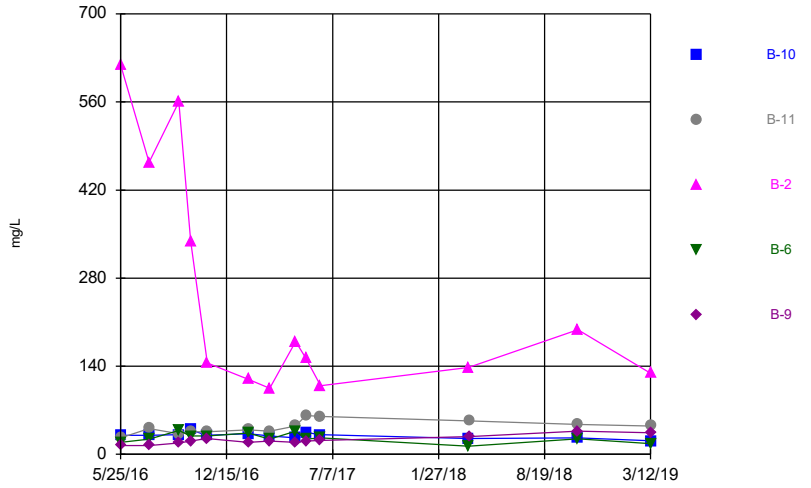
Time Series




Constituent: Sulfate, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

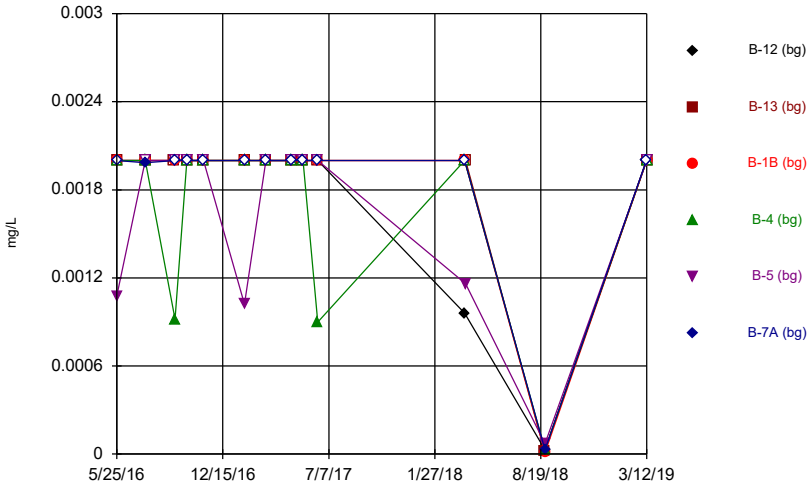
Time Series




Constituent: Sulfate, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

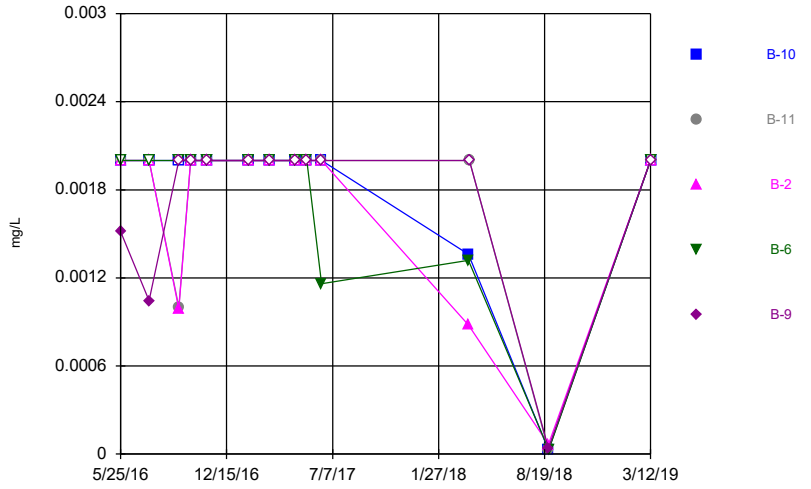
Time Series




Constituent: Thallium, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

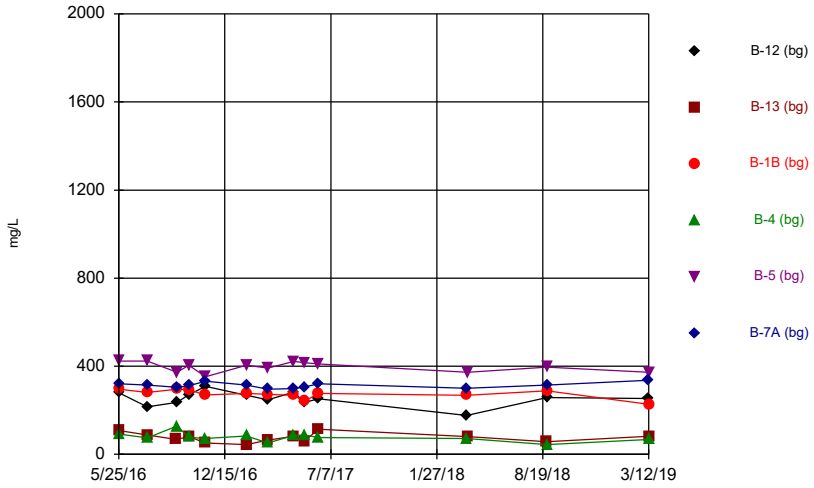
Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series




Constituent: Thallium, total Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

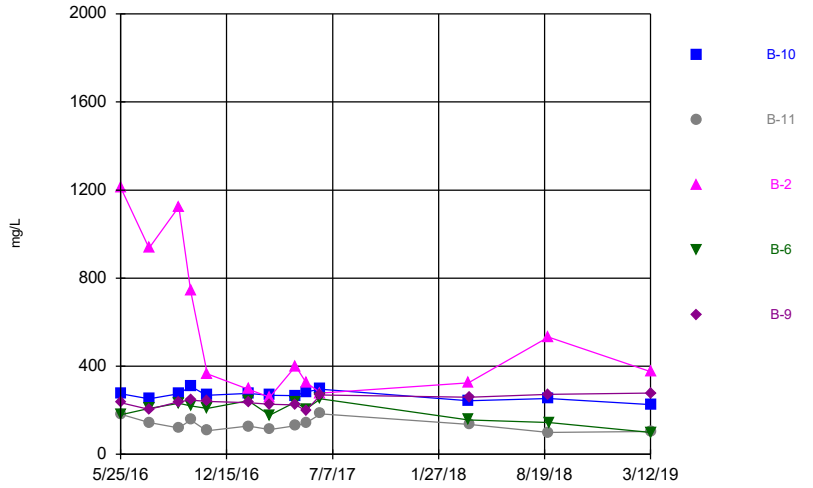
Time Series




Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series




Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 3:12 PM View: Descriptive
Flint LF Client: Geosyntec Data: Flint Creek LF

# Outlier Summary

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 3:11 PM

| | B-11 Arsenic, total (mg/L) | B-12 Cobalt, total (mg/L) | B-11 Cobalt, total (mg/L) | B-11 Mercury, total (mg/L) |
|---|---|---|---|---|
| 9/14/2016 | 0.032 (o) | | 0.025 (o) | 9.7E-05 (o) |
| 11/8/2016 | | 0.023 (o) | | |

# Interwell Prediction Limit Summary - Significant Results

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 2:48 PM

| Constituent | Well | Upper Lim. | Date | Observ. | Sig. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Boron, total (mg/L)** | **B-11** | **0.0588** | **3/12/2019** | **0.409** | **Yes** | **78** | **n/a** | **n/a** | **0** | **n/a** | **n/a** | **0.000317** | **NP Inter (normality) 1 of 2** |
| **Boron, total (mg/L)** | **B-2** | **0.0588** | **3/12/2019** | **0.634** | **Yes** | **78** | **n/a** | **n/a** | **0** | **n/a** | **n/a** | **0.000317** | **NP Inter (normality) 1 of 2** |

# Interwell Prediction Limit Summary - All Results

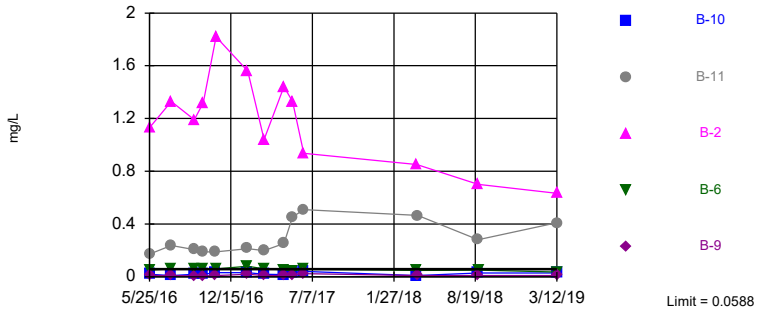
Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 2:48 PM

| Constituent | Well | Upper Lim. | Date | Observ. | Sig. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron, total (mg/L) | B-10 | 0.0588 | 3/12/2019 | 0.028 | No | 78 | n/a | n/a | 0 | n/a | n/a | 0.000317 | NP Inter (normality) 1 of 2 |
| **Boron, total (mg/L)** | **B-11** | **0.0588** | **3/12/2019** | **0.409** | **Yes** | **78** | **n/a** | **n/a** | **0** | **n/a** | **n/a** | **0.000317** | **NP Inter (normality) 1 of 2** |
| **Boron, total (mg/L)** | **B-2** | **0.0588** | **3/12/2019** | **0.634** | **Yes** | **78** | **n/a** | **n/a** | **0** | **n/a** | **n/a** | **0.000317** | **NP Inter (normality) 1 of 2** |
| Boron, total (mg/L) | B-6 | 0.0588 | 3/12/2019 | 0.037 | No | 78 | n/a | n/a | 0 | n/a | n/a | 0.000317 | NP Inter (normality) 1 of 2 |
| Boron, total (mg/L) | B-9 | 0.0588 | 3/12/2019 | 0.01 | No | 78 | n/a | n/a | 0 | n/a | n/a | 0.000317 | NP Inter (normality) 1 of 2 |

Exceeds Limit: B-11, B-2

## Prediction Limit

Interwell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 78 background values. Annual per-constituent alpha = 0.003165. Individual comparison alpha = 0.000317 (1 of 2). Comparing 5 points to limit.

Constituent: Boron, total Analysis Run 7/8/2019 2:45 PM View: PLs - Interwell

Flint LF Client: Geosyntec Data: Flint Creek LF

# Interwell Prediction Limit Summary - Significant Results

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 2:48 PM

| Constituent | Well | Upper Lim. | Date | Observ. | Sig. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Boron, total (mg/L)** | **B-11** | **0.0588** | **3/12/2019** | **0.409** | **Yes** | **78** | **n/a** | **n/a** | **0** | **n/a** | **n/a** | **0.000317** | **NP Inter (normality) 1 of 2** |
| **Boron, total (mg/L)** | **B-2** | **0.0588** | **3/12/2019** | **0.634** | **Yes** | **78** | **n/a** | **n/a** | **0** | **n/a** | **n/a** | **0.000317** | **NP Inter (normality) 1 of 2** |

# Interwell Prediction Limit Summary - Significant Results

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 2:48 PM

| Constituent | Well | Upper Lim. | Date | Observ. | Sig. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Boron, total (mg/L)** | **B-11** | **0.0588** | **3/12/2019** | **0.409** | **Yes** | **78** | **n/a** | **n/a** | **0** | **n/a** | **n/a** | **0.000317** | **NP Inter (normality) 1 of 2** |
| **Boron, total (mg/L)** | **B-2** | **0.0588** | **3/12/2019** | **0.634** | **Yes** | **78** | **n/a** | **n/a** | **0** | **n/a** | **n/a** | **0.000317** | **NP Inter (normality) 1 of 2** |

# Intrawell Prediction Limit Summary - Significant Results

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 2:55 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Date | Observ. | Sig. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **pH, field (SU)** | **B-12** | **8.375** | **5.459** | **3/11/2019** | **8.52** | **Yes** | **10** | **6.917** | **0.5883** | **0** | **None** | **No** | **0.000752** | Param 1 of 2 |
| **Sulfate, total (mg/L)** | **B-9** | **27.92** | **n/a** | **3/12/2019** | **34.3** | **Yes** | **10** | **19.4** | **3.438** | **0** | **None** | **No** | **0.001504** | Param 1 of 2 |

# Intrawell Prediction Limit Summary - All Results

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 2:55 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Date | Observ. | Sig. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calcium, total (mg/L) | B-12 | 74.96 | n/a | 3/11/2019 | 58 | No | 10 | 64.6 | 4.182 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-13 | 26.8 | n/a | 3/12/2019 | 13.5 | No | 10 | 13.01 | 5.562 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-1B | 97.61 | n/a | 3/12/2019 | 93.1 | No | 10 | 88.86 | 3.531 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-4 | 36.88 | n/a | 3/12/2019 | 3.37 | No | 10 | 15.94 | 8.45 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-5 | 19.55 | n/a | 3/12/2019 | 16.2 | No | 10 | 17.36 | 0.8834 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-7A | 110.8 | n/a | 3/11/2019 | 99.6 | No | 10 | 101.1 | 3.919 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-10 | 116 | n/a | 3/12/2019 | 72.4 | No | 10 | n/a | n/a | 0 | n/a | n/a | 0.01476 | NP (normality) 1 of 2 |
| Calcium, total (mg/L) | B-11 | 19.47 | n/a | 3/12/2019 | 11.6 | No | 10 | 13.83 | 2.276 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-2 | 99.24 | n/a | 3/12/2019 | 34.5 | No | 10 | 42.67 | 22.83 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-6 | 63.49 | n/a | 3/12/2019 | 41.9 | No | 10 | 47.72 | 6.364 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Calcium, total (mg/L) | B-9 | 125.8 | n/a | 3/12/2019 | 97.3 | No | 10 | 95.5 | 12.22 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-12 | 13.01 | n/a | 3/11/2019 | 11 | No | 10 | 10.2 | 1.135 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-13 | 5.728 | n/a | 3/12/2019 | 1.92 | No | 10 | 3.9 | 0.7379 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-1B | 5.794 | n/a | 3/12/2019 | 2.31 | No | 10 | 3.4 | 0.9661 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-4 | 10.39 | n/a | 3/12/2019 | 4.58 | No | 10 | 2.93 | 0.1179 | 0 | None | sqrt(x) | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-5 | 12.25 | n/a | 3/12/2019 | 8.3 | No | 10 | 2.722 | 0.3136 | 0 | None | sqrt(x) | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-7A | 6.023 | n/a | 3/11/2019 | 3.43 | No | 10 | 4 | 0.8165 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-10 | 10.08 | n/a | 3/12/2019 | 9.68 | No | 10 | 7.8 | 0.9189 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-11 | 7.827 | n/a | 3/12/2019 | 4.03 | No | 10 | 5.1 | 1.101 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-2 | 7.928 | n/a | 3/12/2019 | 5.88 | No | 10 | 6.1 | 0.7379 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-6 | 9.099 | n/a | 3/12/2019 | 8.16 | No | 10 | 53.9 | 11.66 | 0 | None | x^2 | 0.001504 | Param 1 of 2 |
| Chloride, total (mg/L) | B-9 | 8.336 | n/a | 3/12/2019 | 3.68 | No | 10 | 6 | 0.9428 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Fluoride, total (mg/L) | B-12 | 1 | n/a | 3/11/2019 | 0.06 | No | 10 | n/a | n/a | 90 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-13 | 1 | n/a | 3/12/2019 | 0.02 | No | 10 | n/a | n/a | 90 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-1B | 0.6512 | n/a | 3/12/2019 | 0.41 | No | 10 | -0.7395 | 0.1253 | 40 | Kaplan-Meier | ln(x) | 0.001504 | Param 1 of 2 |
| Fluoride, total (mg/L) | B-4 | 1 | n/a | 3/12/2019 | 0.02 | No | 10 | n/a | n/a | 100 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-5 | 1 | n/a | 3/12/2019 | 0.07 | No | 10 | n/a | n/a | 90 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-7A | 1 | n/a | 3/11/2019 | 0.24 | No | 10 | n/a | n/a | 80 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-10 | 1 | n/a | 3/12/2019 | 0.1 | No | 10 | n/a | n/a | 80 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-11 | 1 | n/a | 3/12/2019 | 0.04 | No | 10 | n/a | n/a | 100 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-2 | 1 | n/a | 3/12/2019 | 0.1 | No | 10 | n/a | n/a | 90 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-6 | 0.2 | n/a | 3/12/2019 | 0.2ND | No | 10 | n/a | n/a | 100 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-9 | 1 | n/a | 3/12/2019 | 0.1 | No | 10 | n/a | n/a | 70 | n/a | n/a | 0.01476 | NP (NDs) 1 of 2 |
| **pH, field (SU)** | **B-12** | **8.375** | **5.459** | **3/11/2019** | **8.52** | **Yes** | **10** | **6.917** | **0.5883** | **0** | **None** | **No** | **0.000752** | Param 1 of 2 |
| pH, field (SU) | B-13 | 7.081 | 4.027 | 3/12/2019 | 7.05 | No | 10 | 5.554 | 0.6162 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-1B | 8.477 | 5.845 | 3/12/2019 | 7.63 | No | 10 | 7.161 | 0.531 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-4 | 7.732 | 6.018 | 3/12/2019 | 7.47 | No | 10 | 6.875 | 0.3458 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-5 | 7.263 | 3.967 | 3/12/2019 | 5.31 | No | 10 | 5.615 | 0.6649 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-7A | 7.854 | 6.43 | 3/11/2019 | 7.46 | No | 10 | 7.142 | 0.2873 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-10 | 8.753 | 5.623 | 3/12/2019 | 8.35 | No | 10 | 7.188 | 0.6317 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-11 | 7.099 | 4.789 | 3/12/2019 | 5.79 | No | 10 | 5.944 | 0.4661 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-2 | 7.316 | 4.998 | 3/12/2019 | 6.92 | No | 10 | 6.157 | 0.4676 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-6 | 7.465 | 6.045 | 3/12/2019 | 6.93 | No | 10 | 6.755 | 0.2864 | 0 | None | No | 0.000752 | Param 1 of 2 |
| pH, field (SU) | B-9 | 8.377 | 5.953 | 3/12/2019 | 8.11 | No | 10 | 7.165 | 0.4893 | 0 | None | No | 0.000752 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-12 | 20.23 | n/a | 3/11/2019 | 5 | No | 10 | 12.3 | 3.199 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-13 | 42.14 | n/a | 3/12/2019 | 21.3 | No | 10 | 20.2 | 8.854 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-1B | 27.02 | n/a | 3/12/2019 | 17.5 | No | 10 | 22.9 | 1.663 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-4 | 17.28 | n/a | 3/12/2019 | 12.1 | No | 10 | 9.6 | 3.098 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-5 | 250.7 | n/a | 3/12/2019 | 205 | No | 10 | 201.1 | 20.02 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-7A | 37.54 | n/a | 3/11/2019 | 30.7 | No | 10 | 33.2 | 1.751 | 0 | None | No | 0.001504 | Param 1 of 2 |

# Intrawell Prediction Limit Summary - All Results

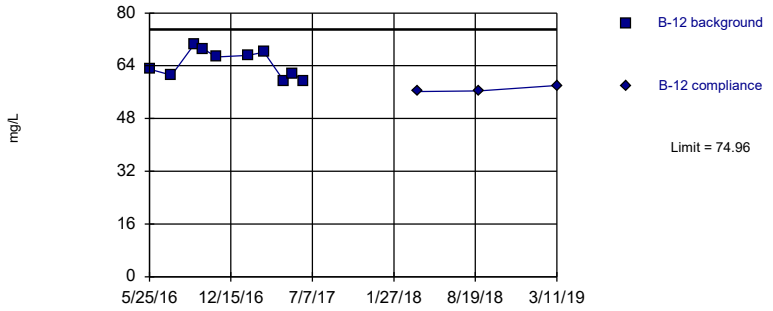
Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 2:55 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Date | Observ. | Sig. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate, total (mg/L) | B-10 | 40.23 | n/a | 3/12/2019 | 21.4 | No | 10 | 31.4 | 3.565 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-11 | 69.81 | n/a | 3/12/2019 | 44.9 | No | 10 | 41.5 | 11.42 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-2 | 775.5 | n/a | 3/12/2019 | 129 | No | 10 | 279.2 | 200.3 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Sulfate, total (mg/L) | B-6 | 43.86 | n/a | 3/12/2019 | 17.1 | No | 10 | 28.4 | 6.24 | 0 | None | No | 0.001504 | Param 1 of 2 |
| **Sulfate, total (mg/L)** | **B-9** | **27.92** | **n/a** | **3/12/2019** | **34.3** | **Yes** | **10** | **19.4** | **3.438** | **0** | **None** | **No** | **0.001504** | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-12 | 327.1 | n/a | 3/11/2019 | 254 | No | 10 | 259.7 | 27.22 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-13 | 132.8 | n/a | 3/12/2019 | 82 | No | 10 | 76 | 22.92 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-1B | 318.6 | n/a | 3/12/2019 | 228 | No | 10 | 276.9 | 16.84 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-4 | 131 | n/a | 3/12/2019 | 68 | No | 10 | 83.1 | 19.32 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-5 | 460.8 | n/a | 3/12/2019 | 372 | No | 10 | 402.1 | 23.67 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-7A | 338.8 | n/a | 3/11/2019 | 336 | No | 10 | 311.6 | 10.99 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-10 | 316.3 | n/a | 3/12/2019 | 226 | No | 10 | 276.8 | 15.94 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-11 | 207.3 | n/a | 3/12/2019 | 104 | No | 10 | 140.4 | 26.99 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-2 | 1522 | n/a | 3/12/2019 | 376 | No | 10 | 594 | 374.5 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-6 | 279.5 | n/a | 3/12/2019 | 100 | No | 10 | 216.6 | 25.39 | 0 | None | No | 0.001504 | Param 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-9 | 282.5 | n/a | 3/12/2019 | 278 | No | 10 | 231.7 | 20.49 | 0 | None | No | 0.001504 | Param 1 of 2 |

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=64.6, Std. Dev.=4.182, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9039, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

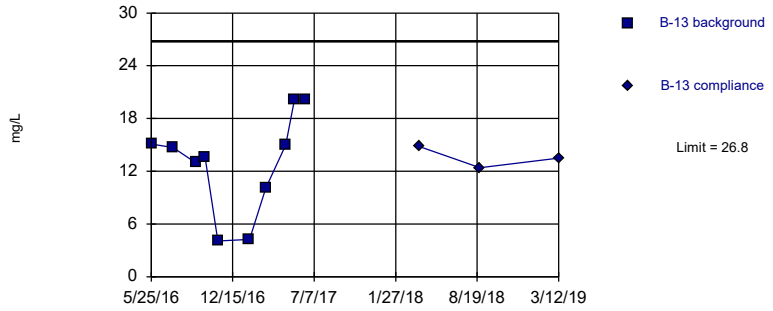
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=13.01, Std. Dev.=5.562, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8998, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

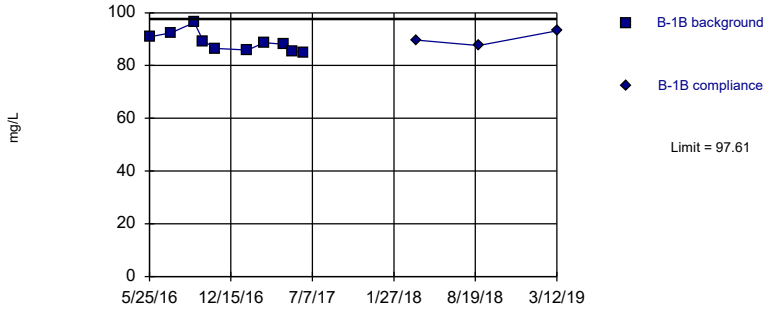
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=88.86, Std. Dev.=3.531, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9117, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

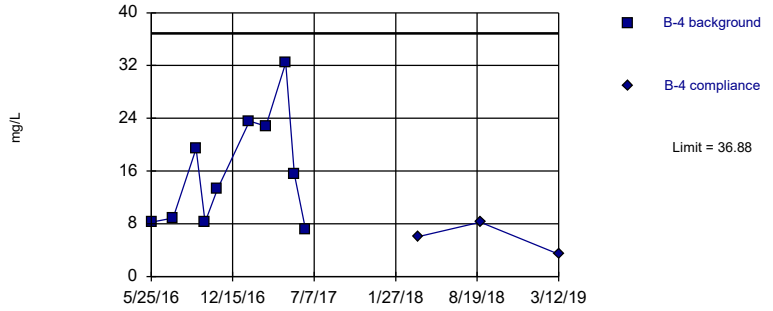
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=15.94, Std. Dev.=8.45, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.901, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

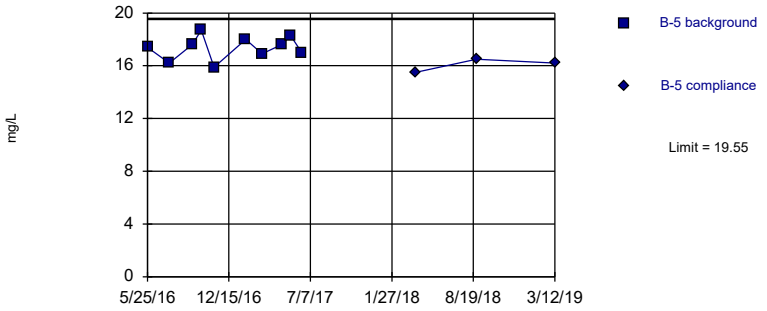
Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=17.36, Std. Dev.=0.8834, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9735, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

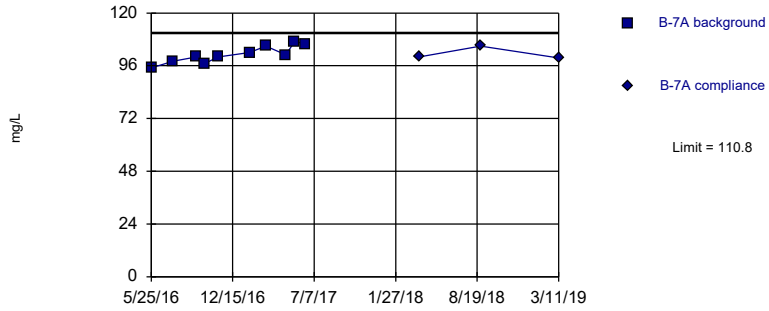
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=101.1, Std. Dev.=3.919, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9599, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

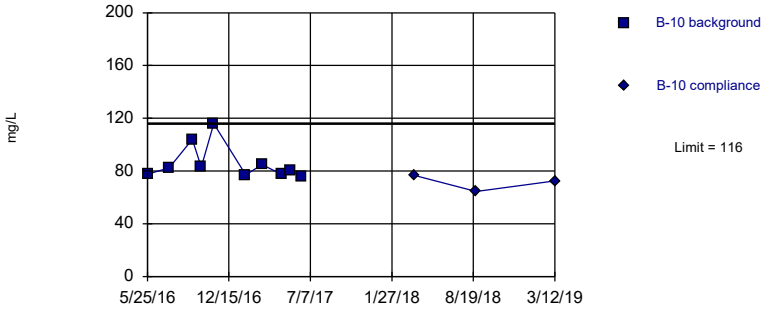
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## 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 0.01 alpha level. Limit is highest of 10 background values. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

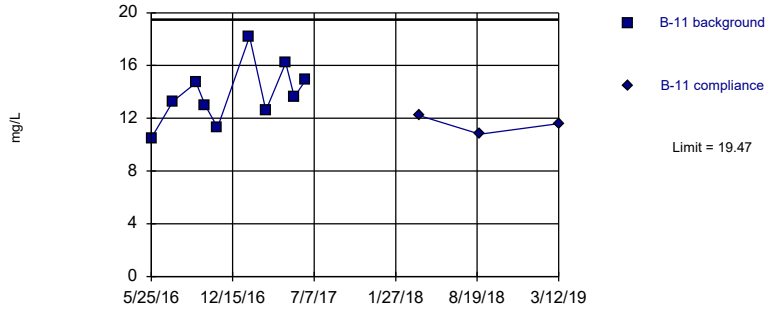
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=13.83, Std. Dev.=2.276, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9752, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

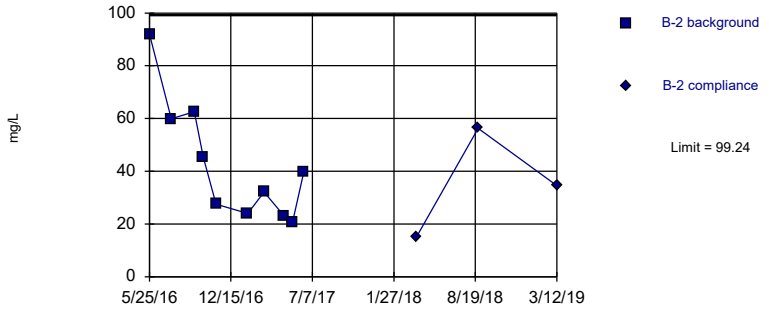
Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=42.67, Std. Dev.=22.83, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.874, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

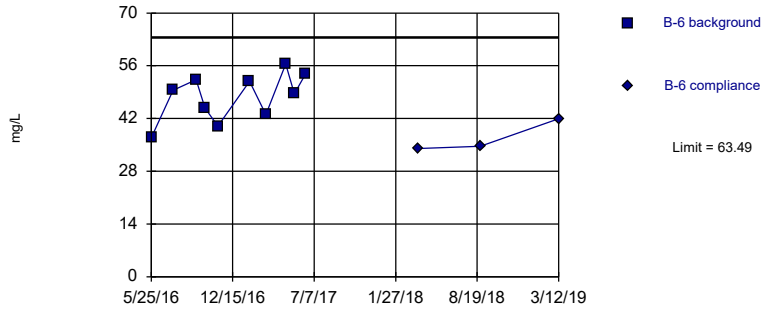
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=47.72, Std. Dev.=6.364, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9592, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

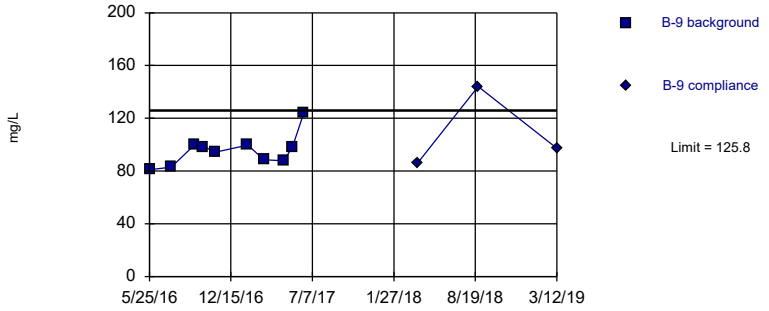
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=95.5, Std. Dev.=12.22, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8682, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Calcium, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

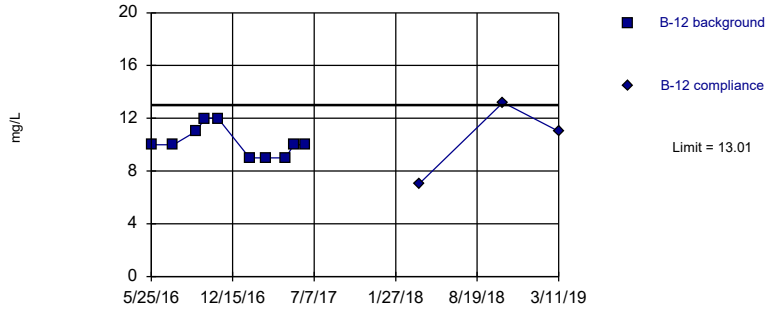
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=10.2, Std. Dev.=1.135, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8485, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

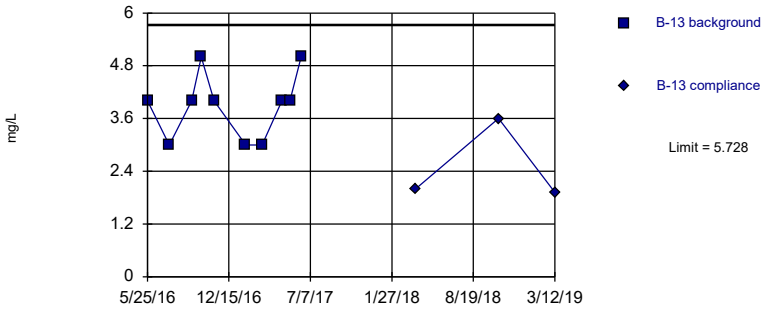
Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=3.9, Std. Dev.=0.7379, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8328, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

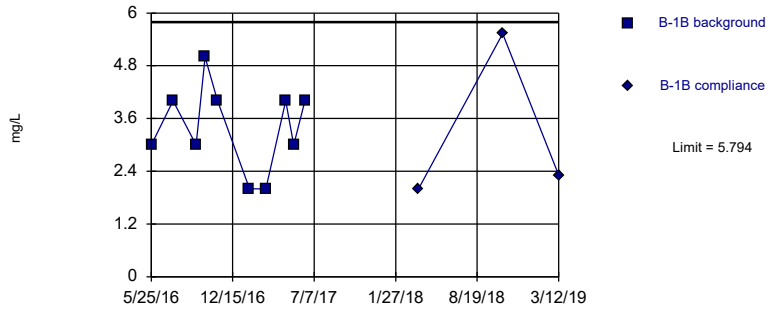
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=3.4, Std. Dev.=0.9661, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9044, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

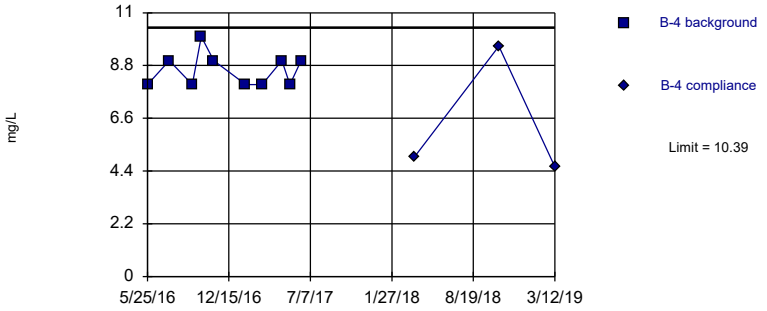
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary (based on square root transformation): Mean=2.93, Std. Dev.=0.1179, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7811, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

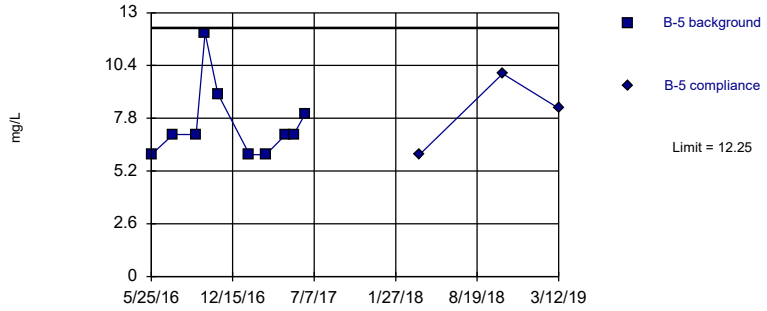
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary (based on square root transformation): Mean=2.722, Std. Dev.=0.3136, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8057, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

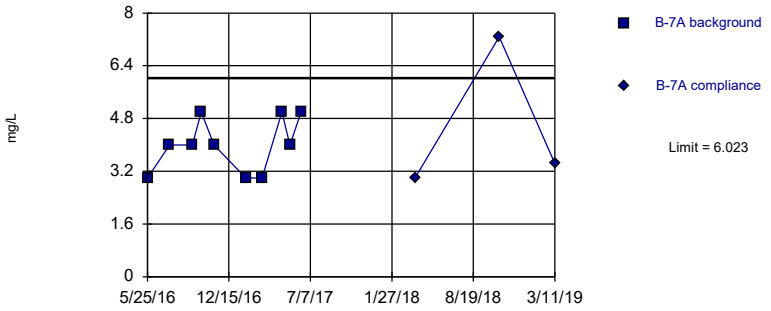
Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=4, Std. Dev.=0.8165, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8319, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

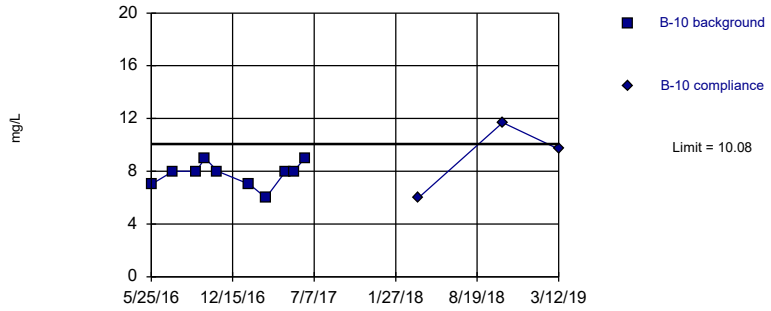
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=7.8, Std. Dev.=0.9189, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8854, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

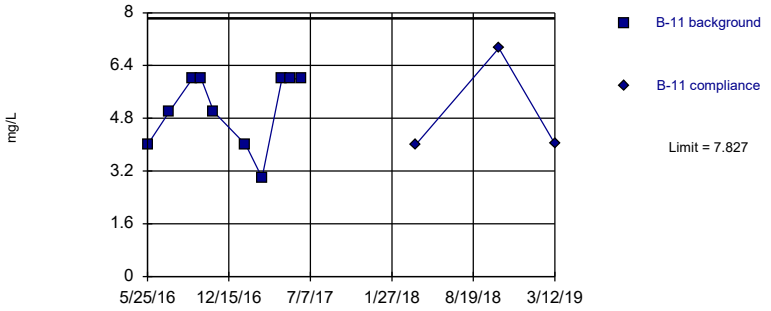
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=5.1, Std. Dev.=1.101, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8095, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

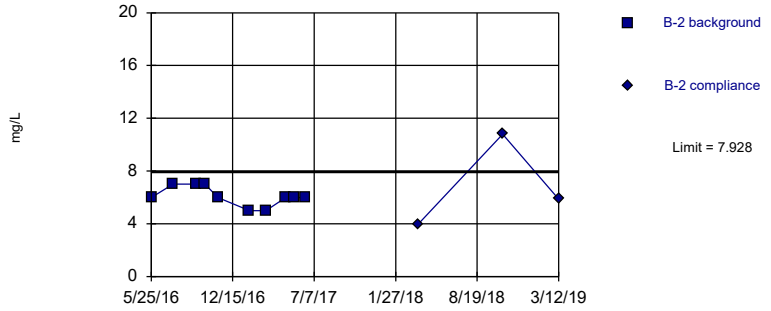
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=6.1, Std. Dev.=0.7379, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8328, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

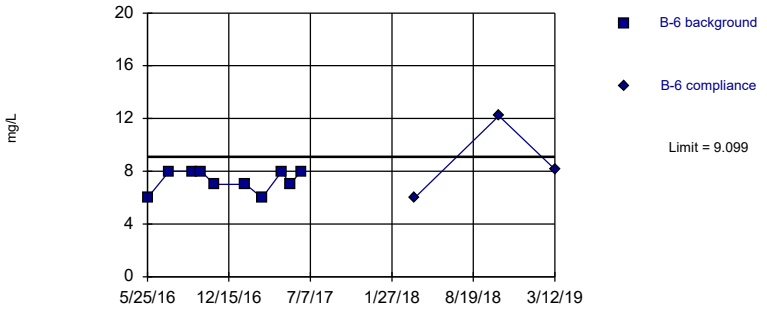
Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary (based on square transformation): Mean=53.9, Std. Dev.=11.66, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7823, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

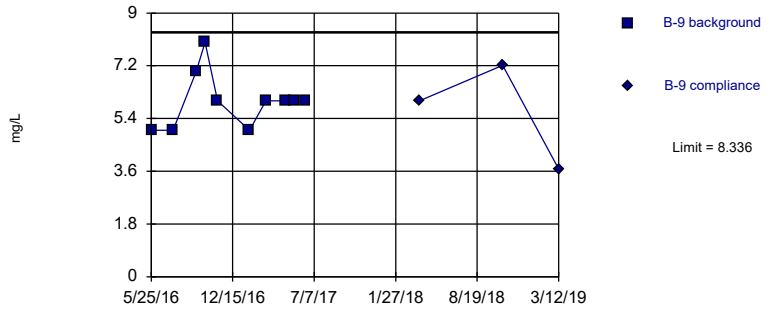
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=6, Std. Dev.=0.9428, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8411, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Chloride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

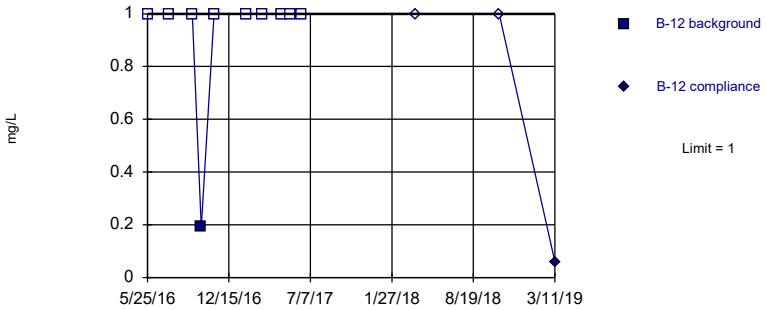
Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 90% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

Constituent: Fluoride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

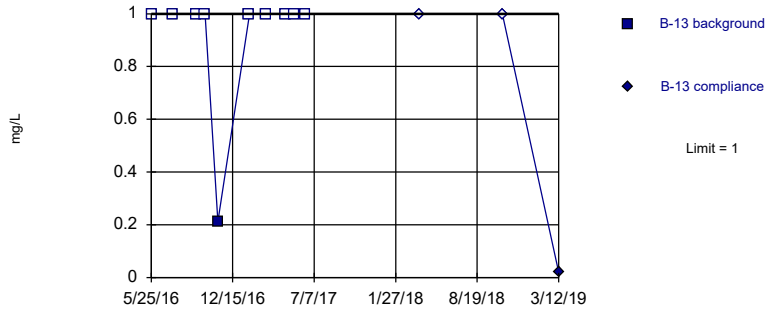
Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 90% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

Constituent: Fluoride, total Analysis Run 7/8/2019 2:49 PM View: PLs - Intrawell

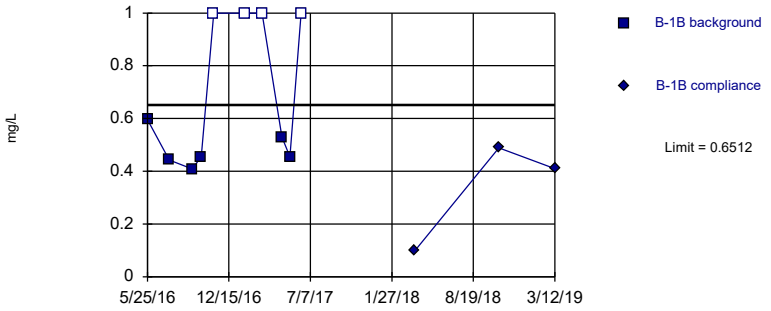
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-0.7395, Std. Dev.=0.1253, n=10, 40% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7858, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

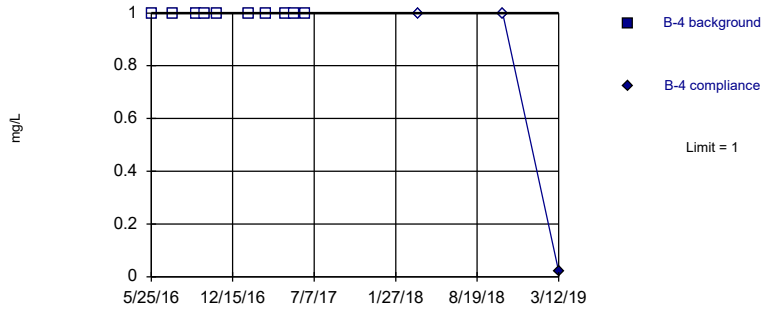
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

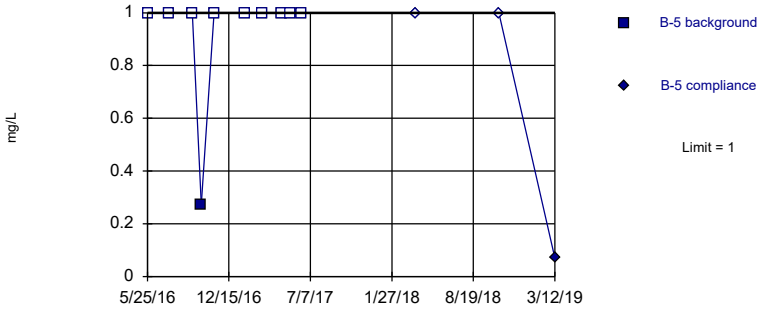
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 90% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

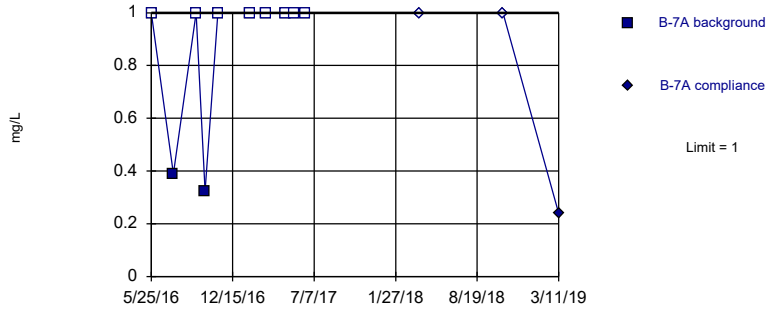
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 80% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

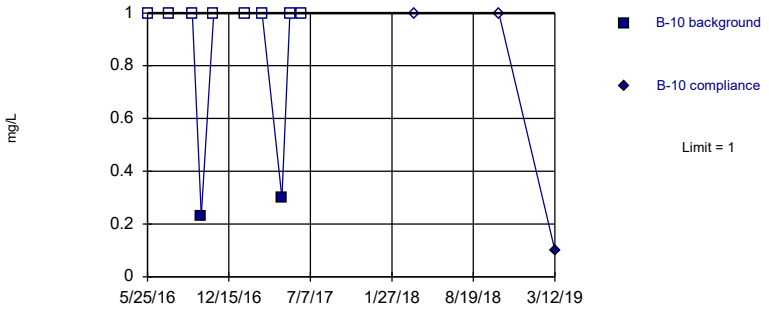
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 80% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

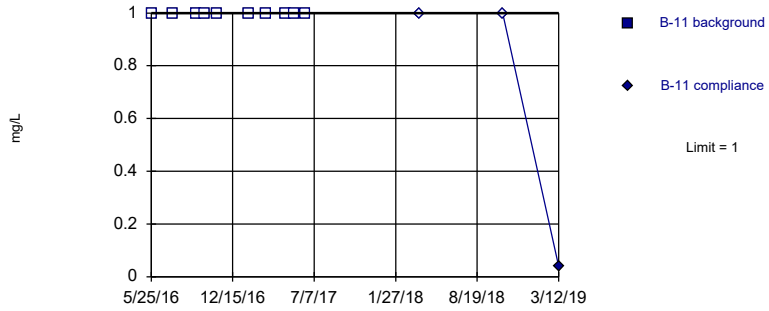
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

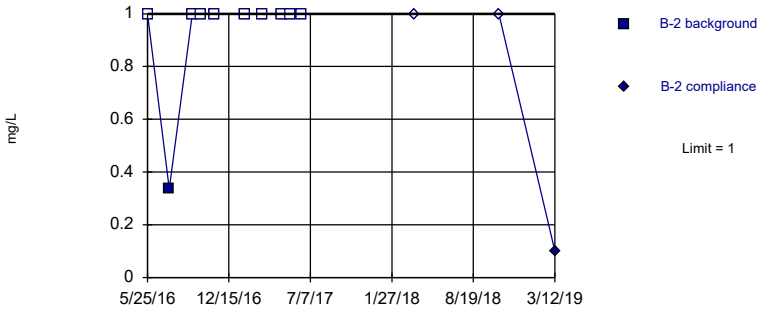
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 90% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

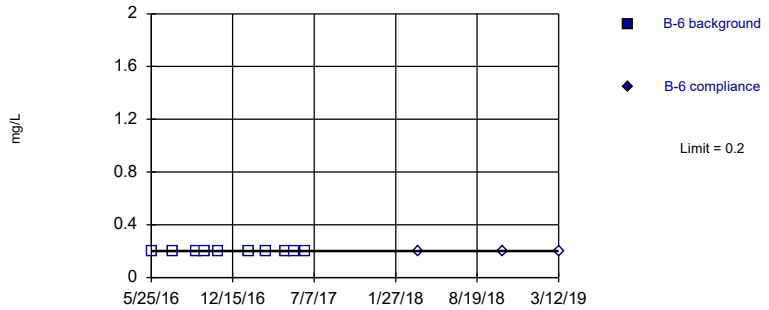
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

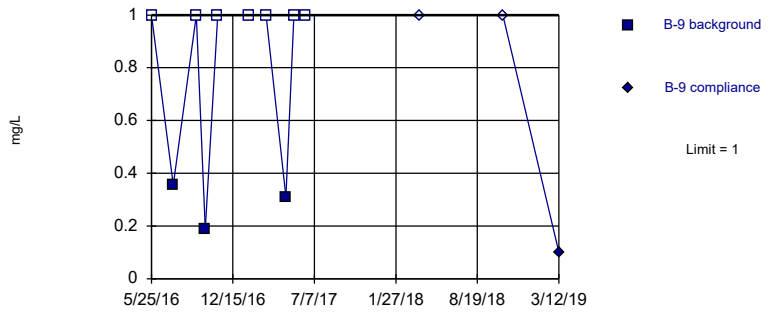
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Hollow symbols indicate censored values.

Within Limit

## Prediction Limit

Intrawell Non-parametric




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 70% NDs. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2).

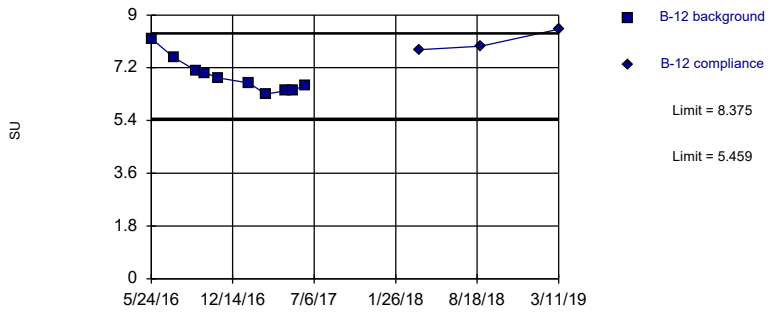
Constituent: Fluoride, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF



Exceeds Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=6.917, Std. Dev.=0.5883, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8897, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

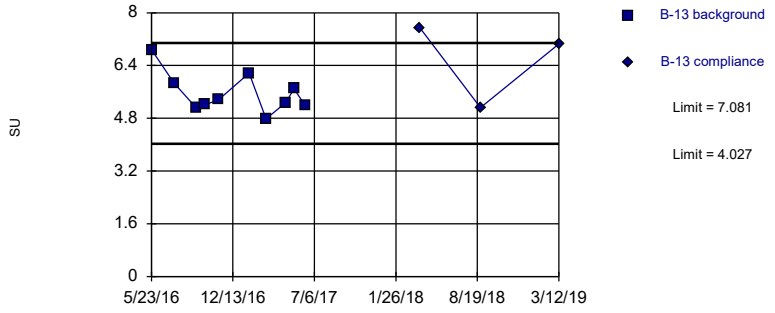
Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF



Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=5.554, Std. Dev.=0.6162, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9108, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

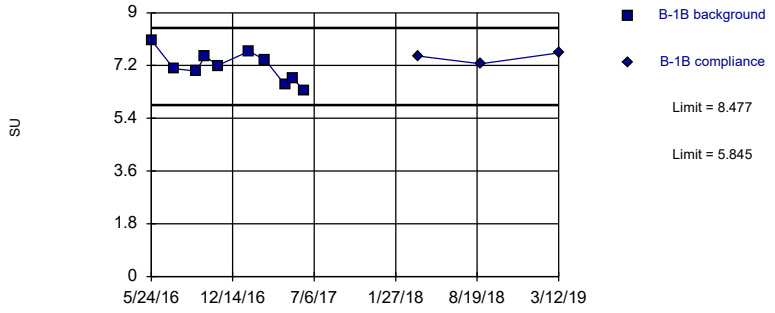
Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF



Within Limits

## Prediction Limit

Intrawell Parametric



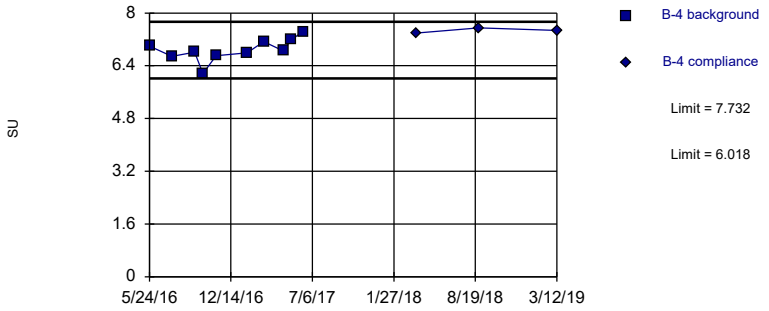

Background Data Summary: Mean=7.161, Std. Dev.=0.531, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.99, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell
Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=6.875, Std. Dev.=0.3458, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9532, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

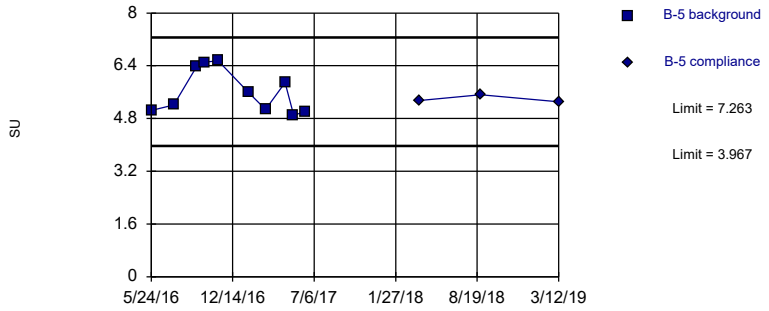
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=5.615, Std. Dev.=0.6649, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8497, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

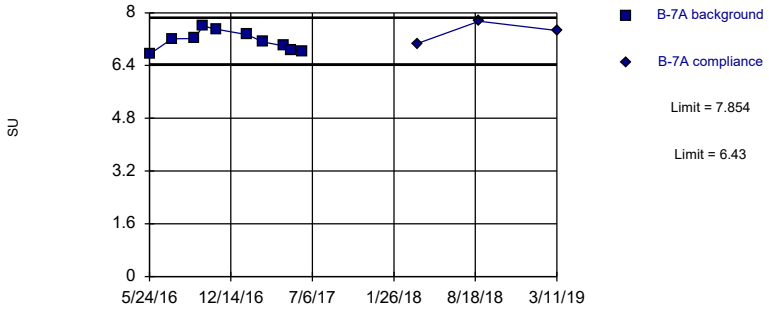
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=7.142, Std. Dev.=0.2873, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.965, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

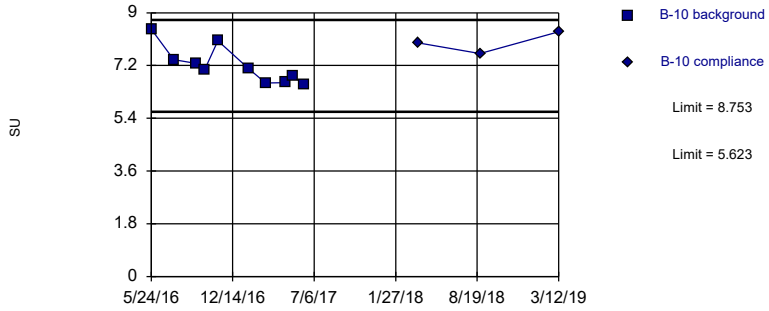
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=7.188, Std. Dev.=0.6317, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8898, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

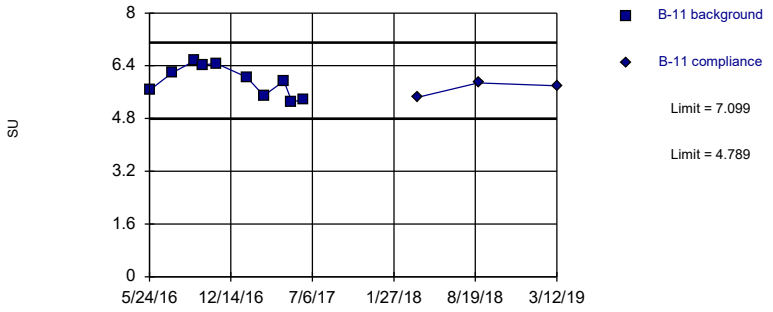
Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=5.944, Std. Dev.=0.4661, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9193, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

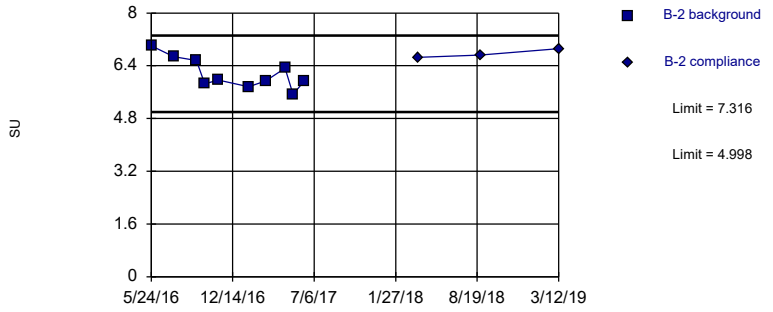
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=6.157, Std. Dev.=0.4676, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9305, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

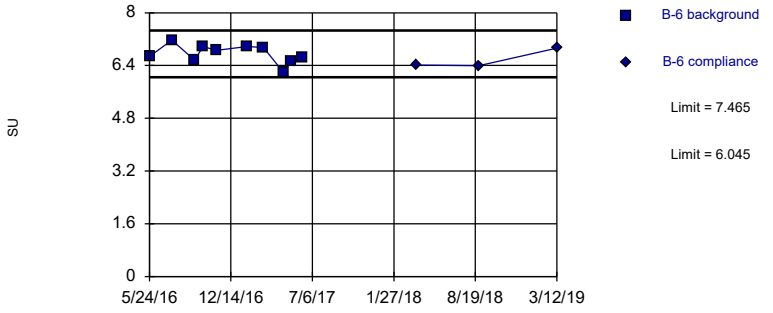
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=6.755, Std. Dev.=0.2864, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9556, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

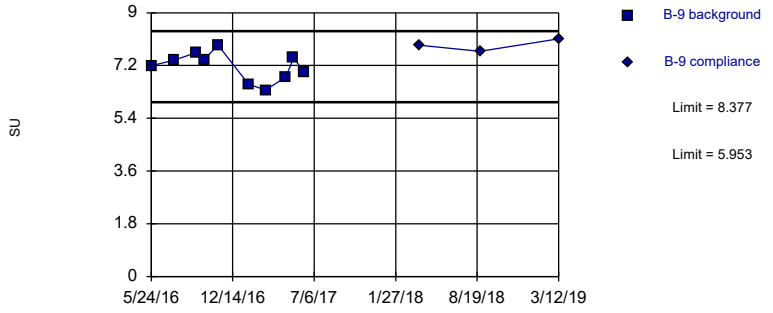
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limits

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=7.165, Std. Dev.=0.4893, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9696, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

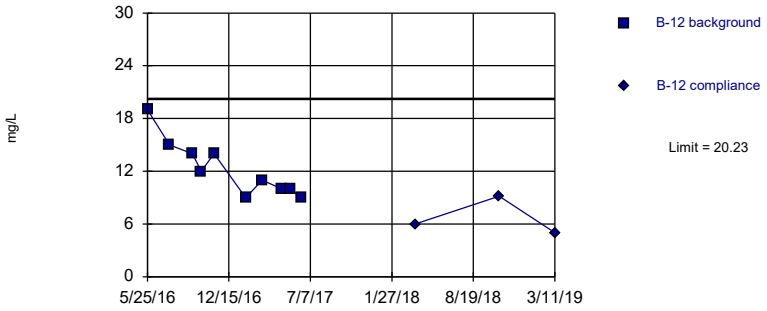
Constituent: pH, field Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=12.3, Std. Dev.=3.199, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.899, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

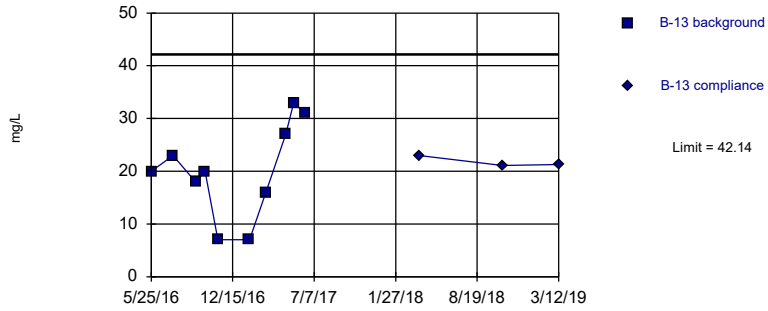
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=20.2, Std. Dev.=8.854, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9424, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

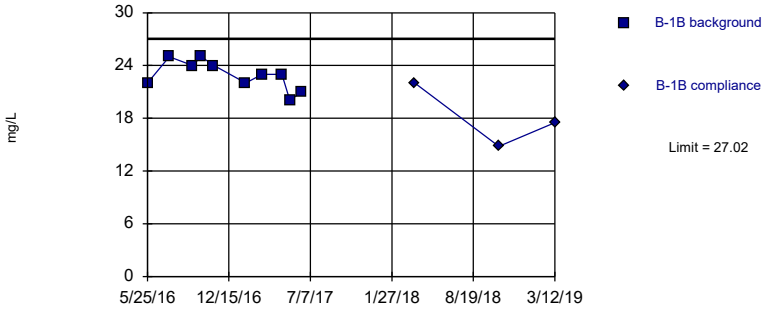
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=22.9, Std. Dev.=1.663, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9481, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

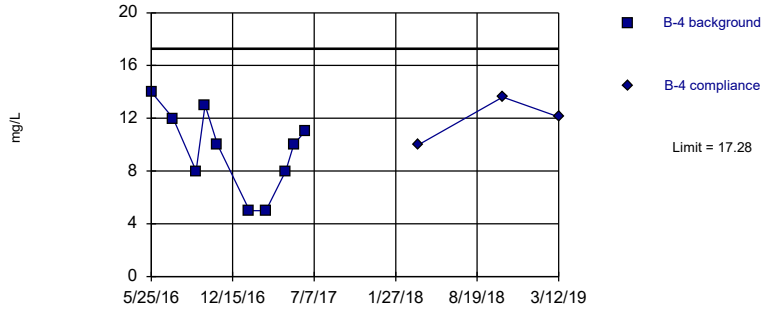
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=9.6, Std. Dev.=3.098, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.942, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

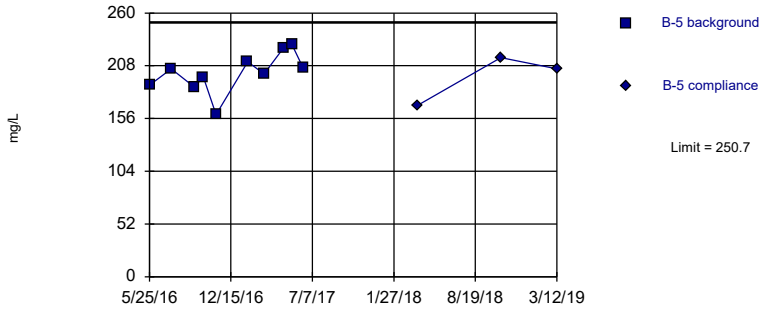
Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=201.1, Std. Dev.=20.02, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9535, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

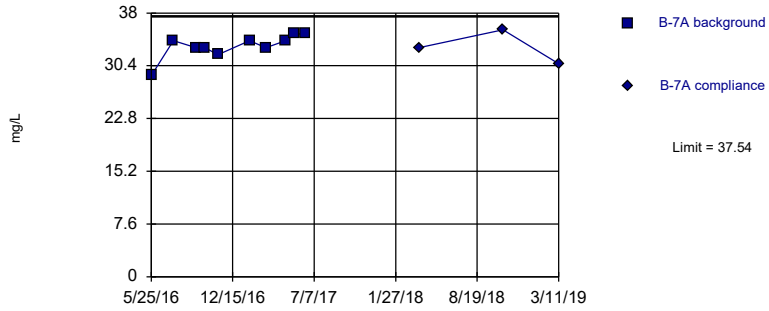
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=33.2, Std. Dev.=1.751, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8373, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

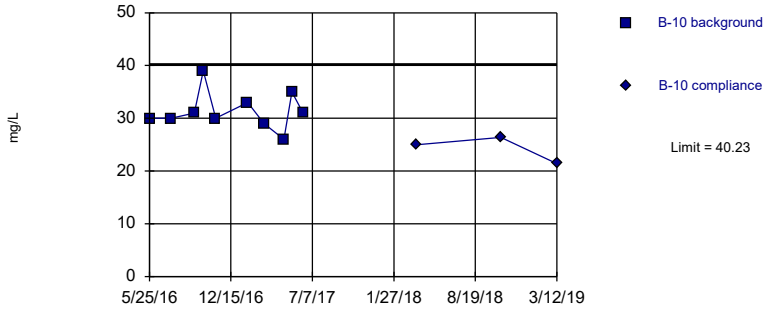
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=31.4, Std. Dev.=3.565, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9166, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

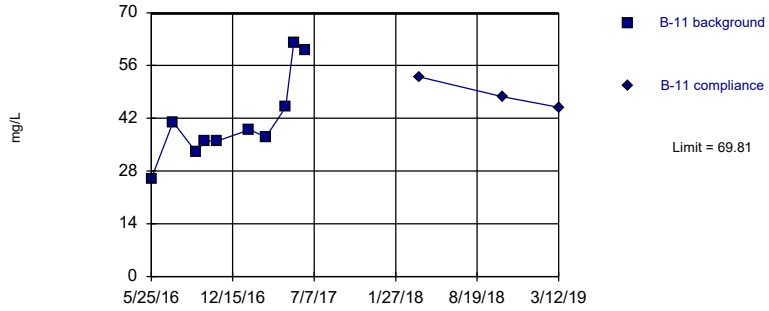
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=41.5, Std. Dev.=11.42, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8809, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

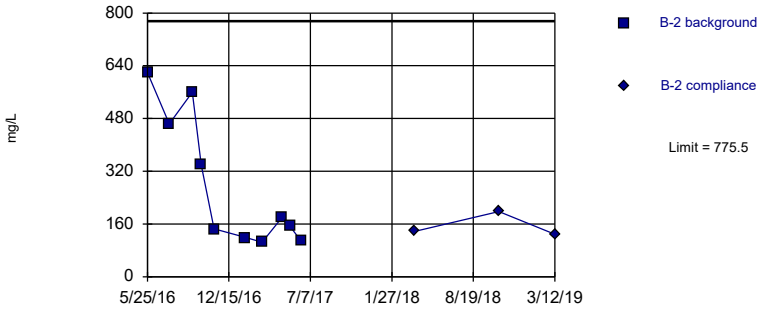
Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=279.2, Std. Dev.=200.3, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8139, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

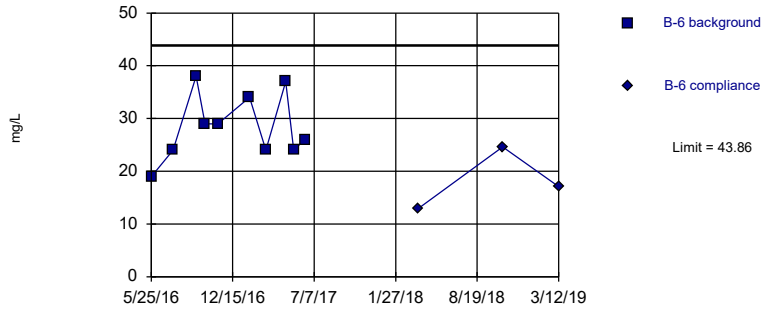
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=28.4, Std. Dev.=6.24, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9303, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

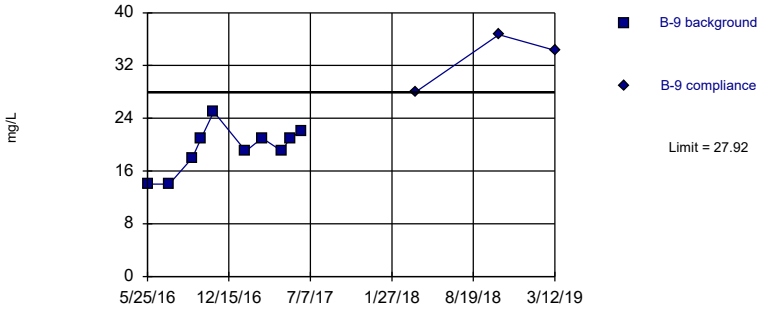
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Exceeds Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=19.4, Std. Dev.=3.438, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9235, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Sulfate, total Analysis Run 7/8/2019 2:50 PM View: PLs - Intrawell

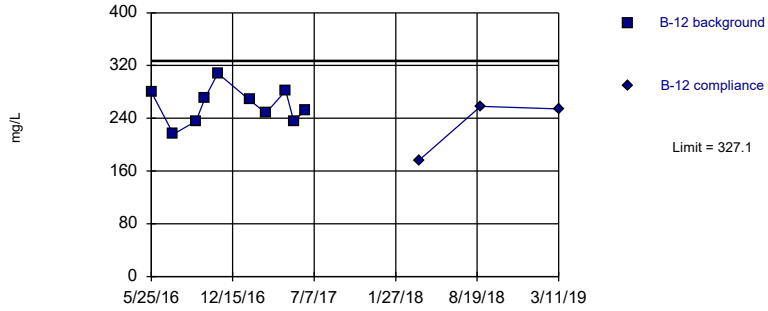
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=259.7, Std. Dev.=27.22, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9794, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

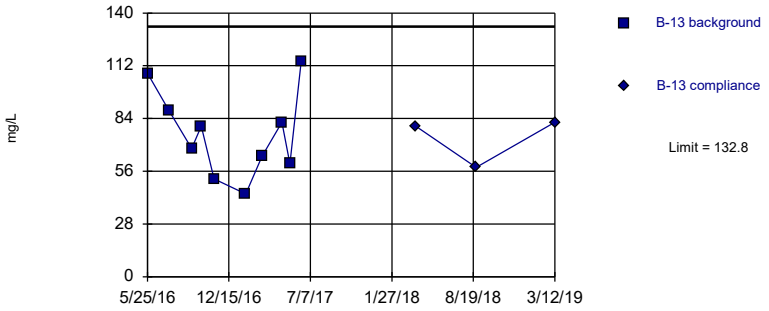
Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=76, Std. Dev.=22.92, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9574, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

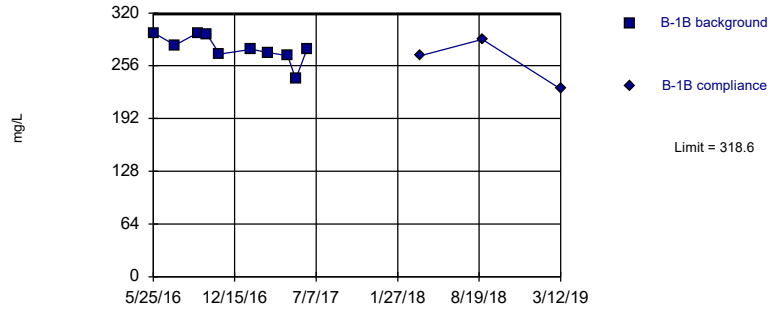
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=276.9, Std. Dev.=16.84, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8873, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

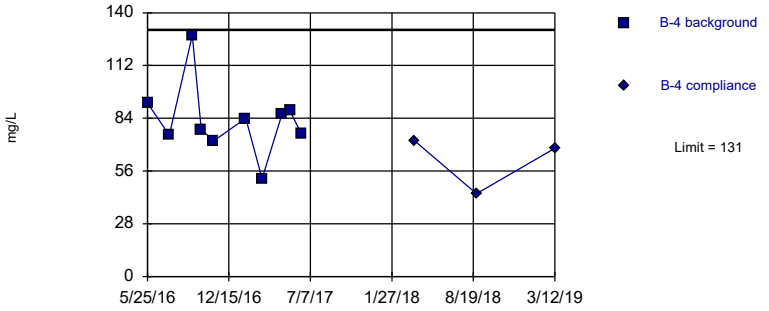
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=83.1, Std. Dev.=19.32, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.882, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

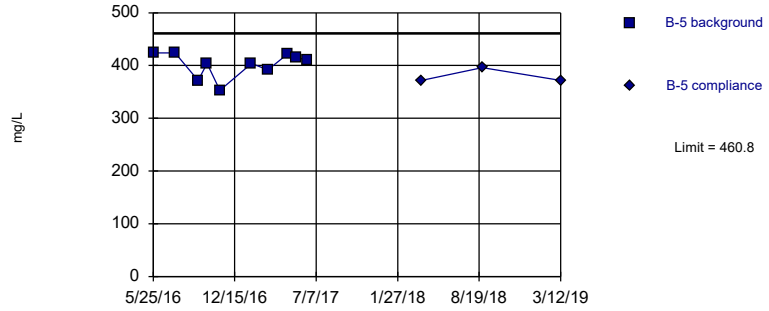
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=402.1, Std. Dev.=23.67, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8645, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

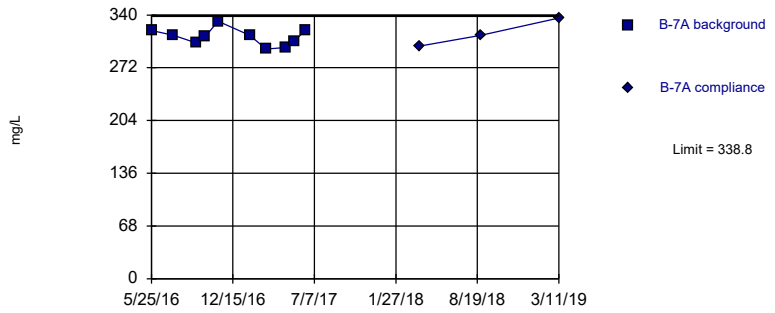
Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=311.6, Std. Dev.=10.99, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9654, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

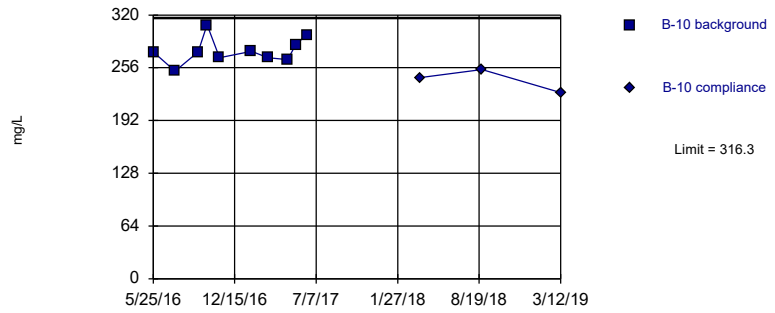
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=276.8, Std. Dev.=15.94, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9418, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

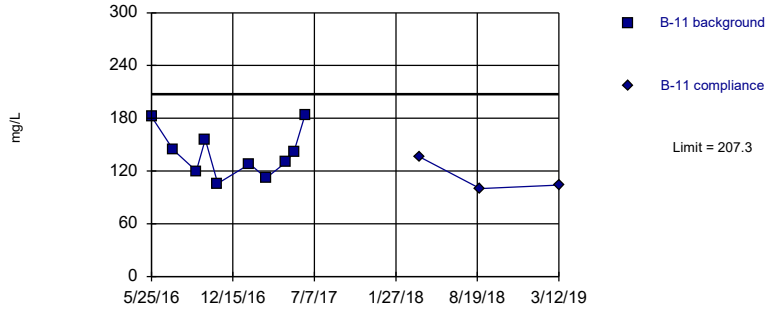
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=140.4, Std. Dev.=26.99, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9264, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

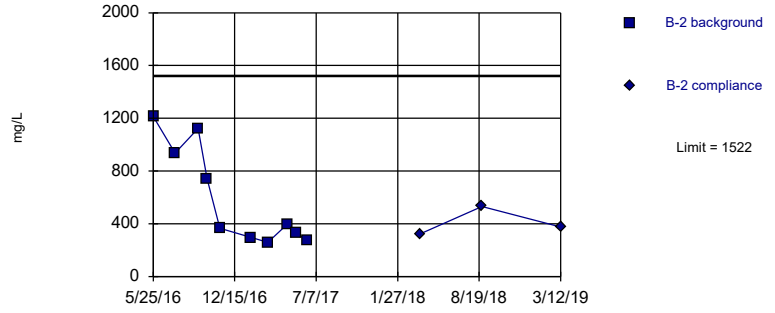
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=594, Std. Dev.=374.5, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.814, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

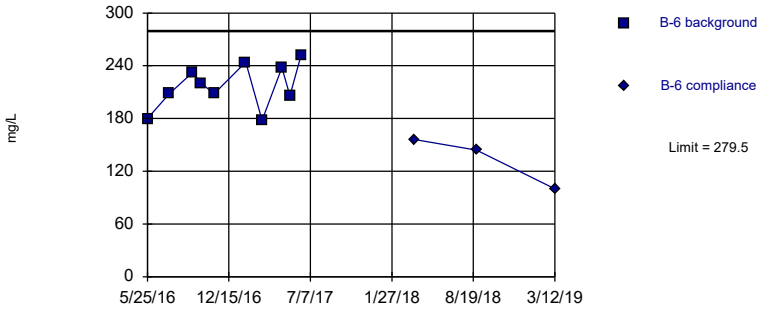
Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=216.6, Std. Dev.=25.39, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9389, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

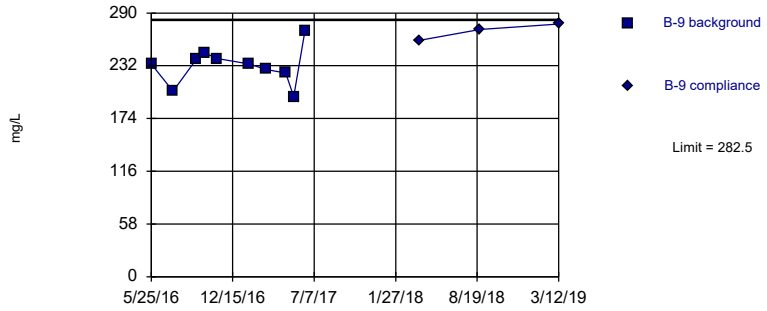
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

Within Limit

## Prediction Limit

Intrawell Parametric




Background Data Summary: Mean=231.7, Std. Dev.=20.49, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9497, critical = 0.781. Kappa = 2.478 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504.

Constituent: Total Dissolved Solids [TDS] Analysis Run 7/8/2019 2:51 PM View: PLs - Intrawell

Flint LF Client: Geosyntec Data: Flint Creek LF

# Trend Test Summary Table - Significant Results

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 3:02 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Boron, total (mg/L)** | **B-11** | **0.08416** | **44** | **43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |
| **pH, field (SU)** | **B-4 (bg)** | **0.3533** | **52** | **43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |
| **Sulfate, total (mg/L)** | **B-12 (bg)** | **-4.887** | **-61** | **-43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |
| **Sulfate, total (mg/L)** | **B-1B (bg)** | **-2.804** | **-46** | **-43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |
| **Sulfate, total (mg/L)** | **B-9** | **7.365** | **55** | **43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |

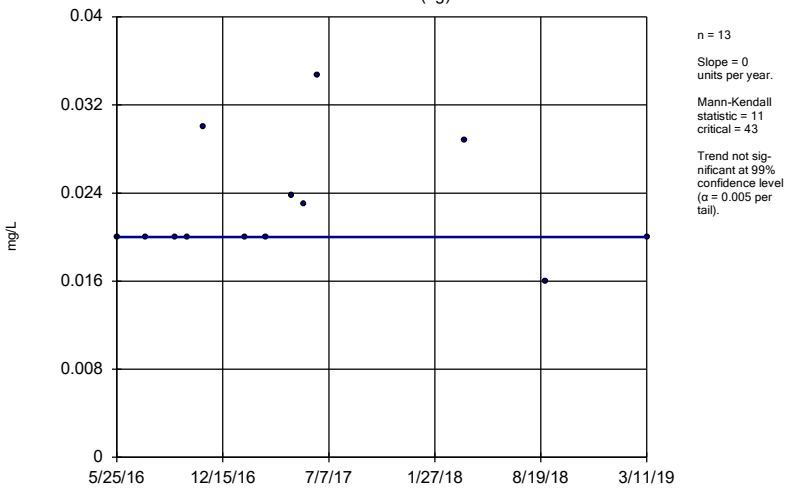
# Trend Test Summary Table - All Results

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 3:02 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron, total (mg/L) | B-12 (bg) | 0 | 11 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-13 (bg) | 0 | 7 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-1B (bg) | 0 | 6 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-4 (bg) | 0.00153 | 14 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-5 (bg) | 0.001833 | 15 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-7A (bg) | 0 | -18 | -43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| **Boron, total (mg/L)** | **B-11** | **0.08416** | **44** | **43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |
| Boron, total (mg/L) | B-2 | -0.2566 | -35 | -43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| pH, field (SU) | B-12 (bg) | -0.2207 | -4 | -43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| pH, field (SU) | B-13 (bg) | 0.03545 | 2 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| pH, field (SU) | B-1B (bg) | -0.1414 | -7 | -43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| **pH, field (SU)** | **B-4 (bg)** | **0.3533** | **52** | **43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |
| pH, field (SU) | B-5 (bg) | -0.1788 | -10 | -43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| pH, field (SU) | B-7A (bg) | 0.06024 | 2 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| **Sulfate, total (mg/L)** | **B-12 (bg)** | **-4.887** | **-61** | **-43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |
| Sulfate, total (mg/L) | B-13 (bg) | 1.55 | 17 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| **Sulfate, total (mg/L)** | **B-1B (bg)** | **-2.804** | **-46** | **-43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |
| Sulfate, total (mg/L) | B-4 (bg) | 0 | 3 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| Sulfate, total (mg/L) | B-5 (bg) | 8.328 | 21 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| Sulfate, total (mg/L) | B-7A (bg) | 0.9966 | 22 | 43 | No | 13 | 0 | n/a | n/a | 0.01 | NP |
| **Sulfate, total (mg/L)** | **B-9** | **7.365** | **55** | **43** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.01** | **NP** |

## Sen's Slope Estimator

B-12 (bg)




n = 13

Slope = 0 units per year.

Mann-Kendall statistic = 11 critical = 43

Trend not significant at 99% confidence level (α = 0.005 per tail).

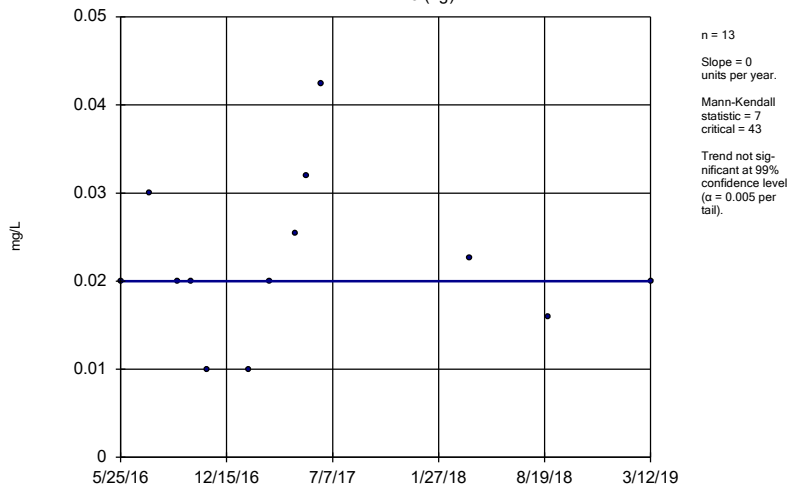
Constituent: Boron, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-13 (bg)




n = 13

Slope = 0 units per year.

Mann-Kendall statistic = 7 critical = 43

Trend not significant at 99% confidence level (α = 0.005 per tail).

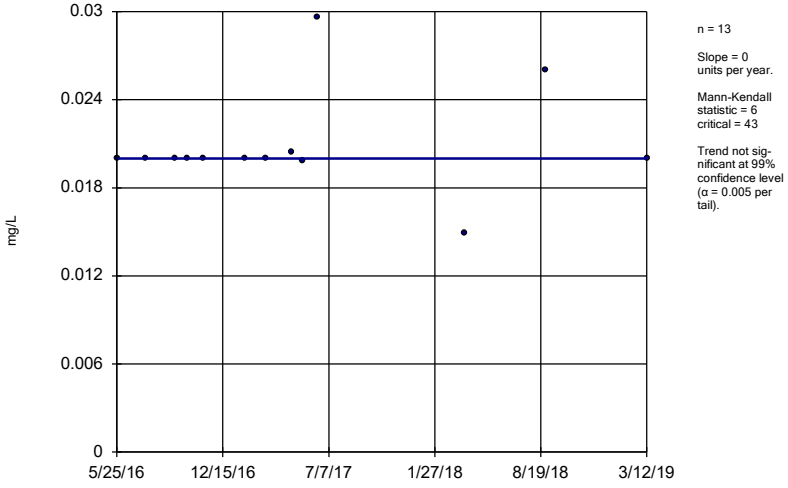
Constituent: Boron, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-1B (bg)




n = 13

Slope = 0 units per year.

Mann-Kendall statistic = 6 critical = 43

Trend not significant at 99% confidence level (α = 0.005 per tail).

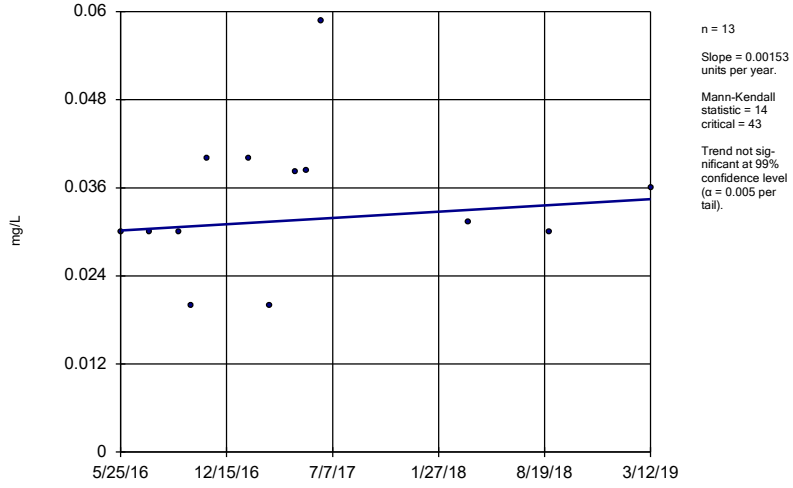
Constituent: Boron, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-4 (bg)




n = 13

Slope = 0.00153 units per year.

Mann-Kendall statistic = 14 critical = 43

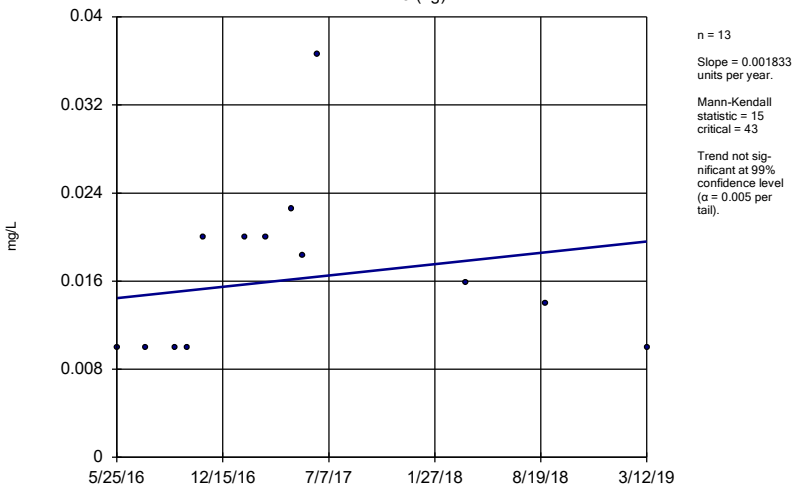
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

## Sen's Slope Estimator

B-5 (bg)




n = 13

Slope = 0.001833 units per year.

Mann-Kendall statistic = 15 critical = 43

Trend not significant at 99% confidence level (α = 0.005 per tail).

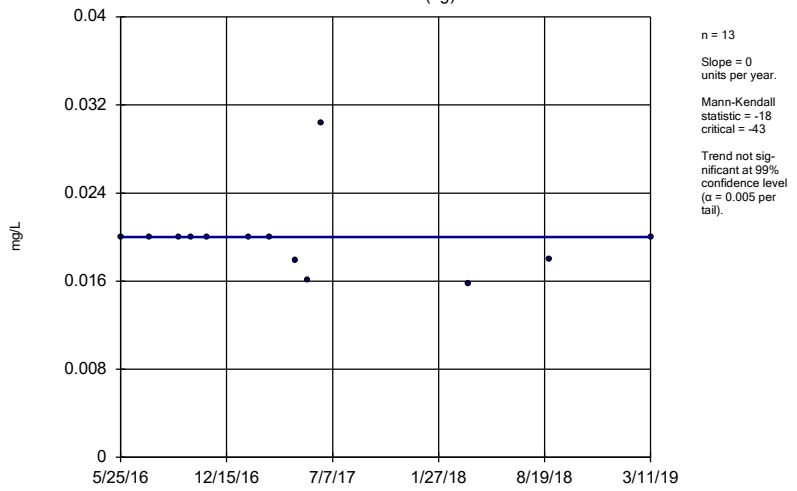
Constituent: Boron, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-7A (bg)




n = 13

Slope = 0 units per year.

Mann-Kendall statistic = -18 critical = -43

Trend not significant at 99% confidence level (α = 0.005 per tail).

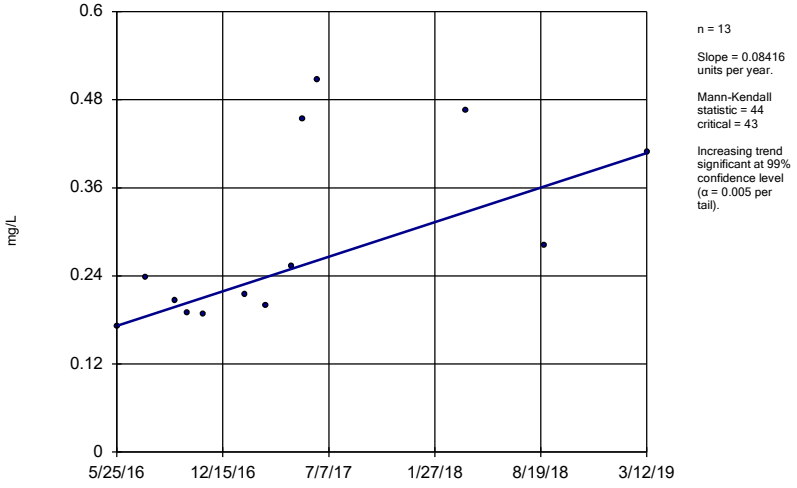
Constituent: Boron, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-11




n = 13

Slope = 0.08416 units per year.

Mann-Kendall statistic = 44 critical = 43

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

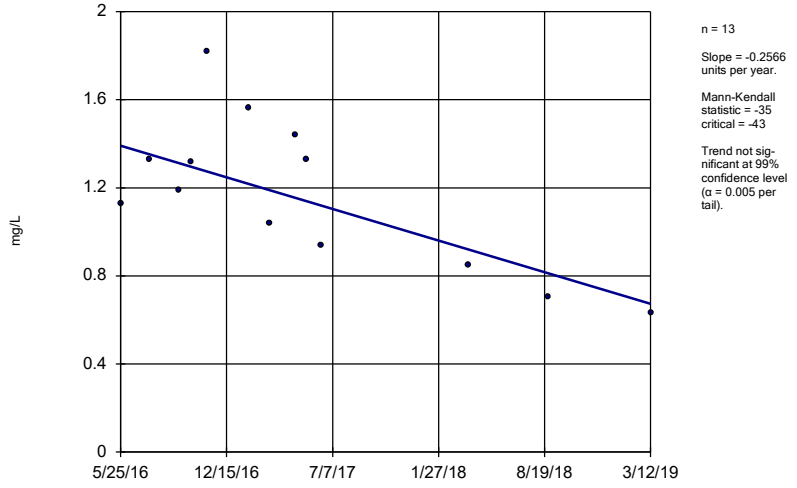
Constituent: Boron, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-2




n = 13

Slope = -0.2566 units per year.

Mann-Kendall statistic = -35 critical = -43

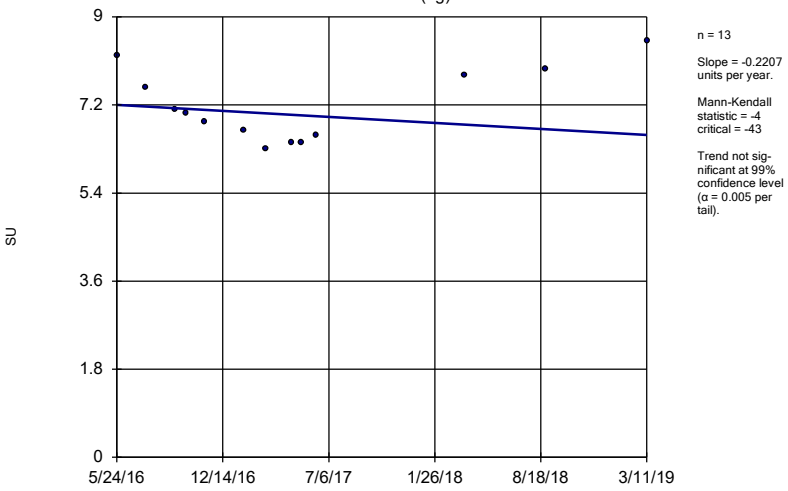
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

## Sen's Slope Estimator

B-12 (bg)




n = 13

Slope = -0.2207 units per year.

Mann-Kendall statistic = -4
critical = -43

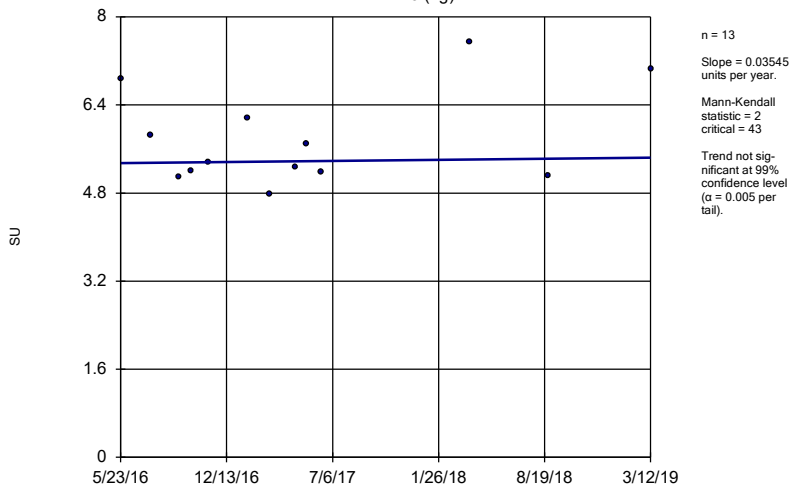
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH, field Analysis Run 7/8/2019 3:00 PM View: Trend Tests
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-13 (bg)




n = 13

Slope = 0.03545 units per year.

Mann-Kendall statistic = 2
critical = 43

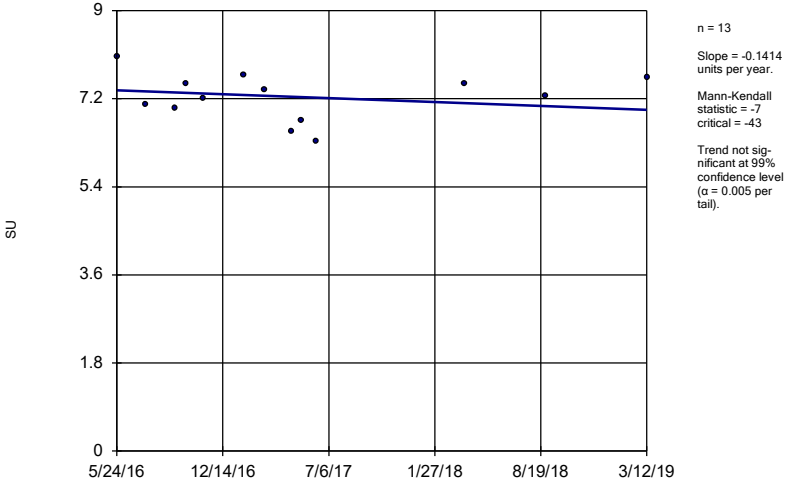
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH, field Analysis Run 7/8/2019 3:00 PM View: Trend Tests
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-1B (bg)




n = 13

Slope = -0.1414 units per year.

Mann-Kendall statistic = -7
critical = -43

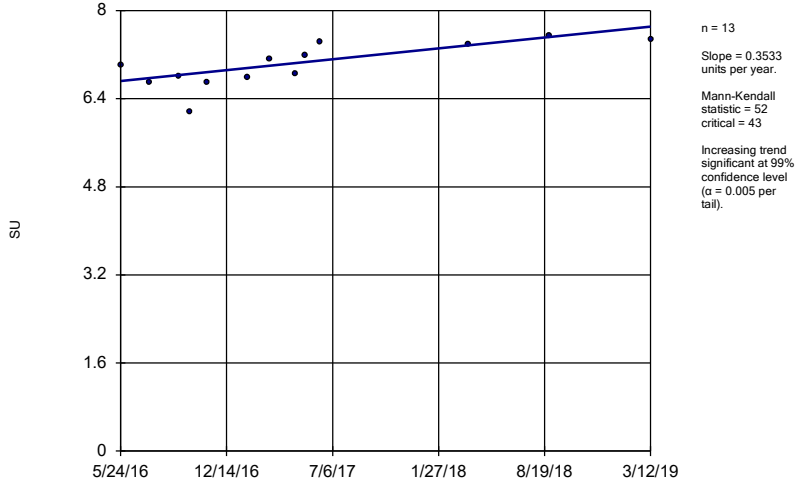
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH, field Analysis Run 7/8/2019 3:00 PM View: Trend Tests
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-4 (bg)




n = 13

Slope = 0.3533 units per year.

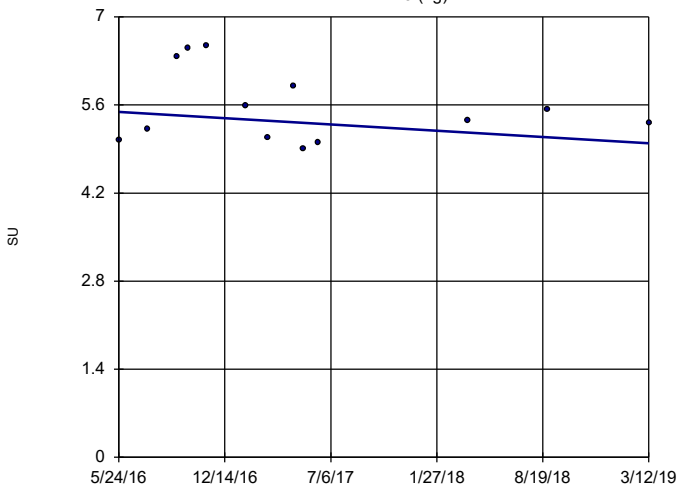
Mann-Kendall statistic = 52
critical = 43

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH, field Analysis Run 7/8/2019 3:00 PM View: Trend Tests
Flint LF Client: Geosyntec Data: Flint Creek LF

## Sen's Slope Estimator

B-5 (bg)




n = 13

Slope = -0.1788 units per year.

Mann-Kendall statistic = -10 critical = -43

Trend not significant at 99% confidence level (α = 0.005 per tail).

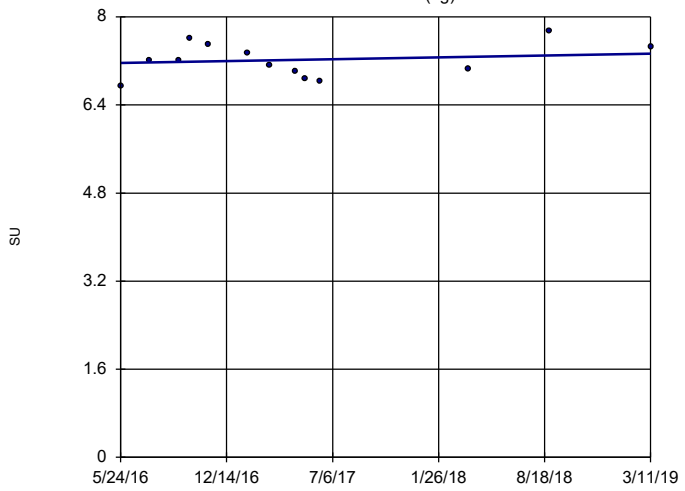
Constituent: pH, field Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-7A (bg)




n = 13

Slope = 0.06024 units per year.

Mann-Kendall statistic = 2 critical = 43

Trend not significant at 99% confidence level (α = 0.005 per tail).

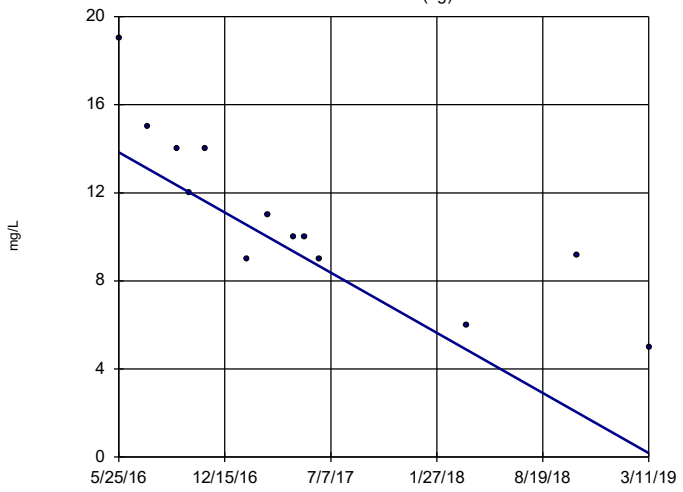
Constituent: pH, field Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-12 (bg)




n = 13

Slope = -4.887 units per year.

Mann-Kendall statistic = -61 critical = -43

Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

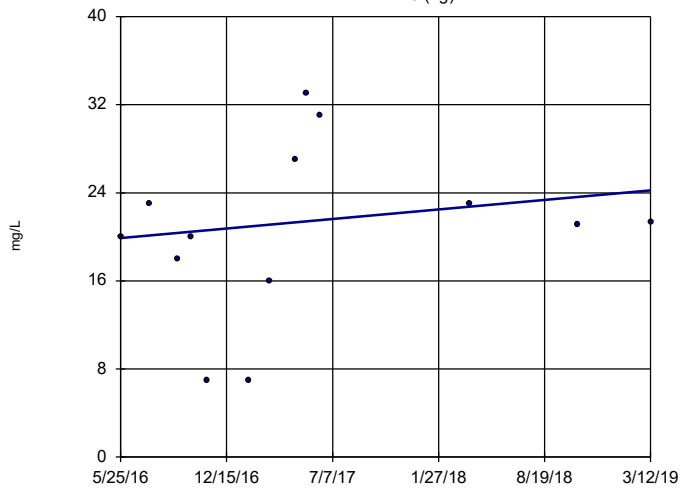
Constituent: Sulfate, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-13 (bg)




n = 13

Slope = 1.55 units per year.

Mann-Kendall statistic = 17 critical = 43

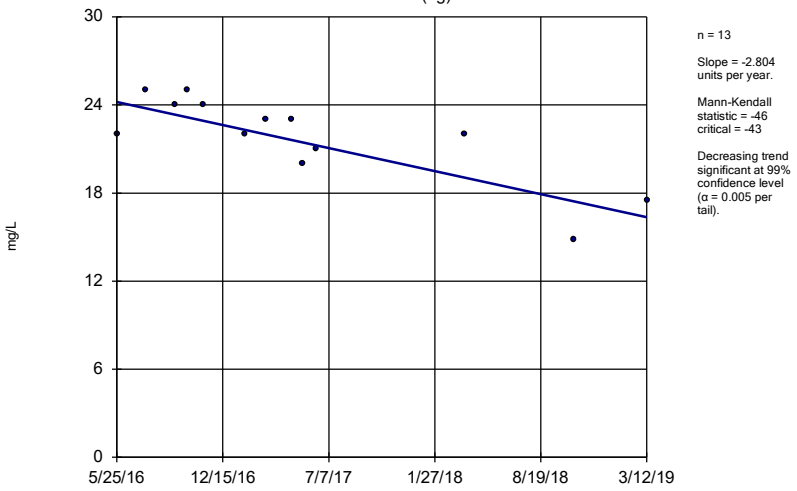
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

## Sen's Slope Estimator

B-1B (bg)




n = 13

Slope = -2.804 units per year.

Mann-Kendall statistic = -46 critical = -43

Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

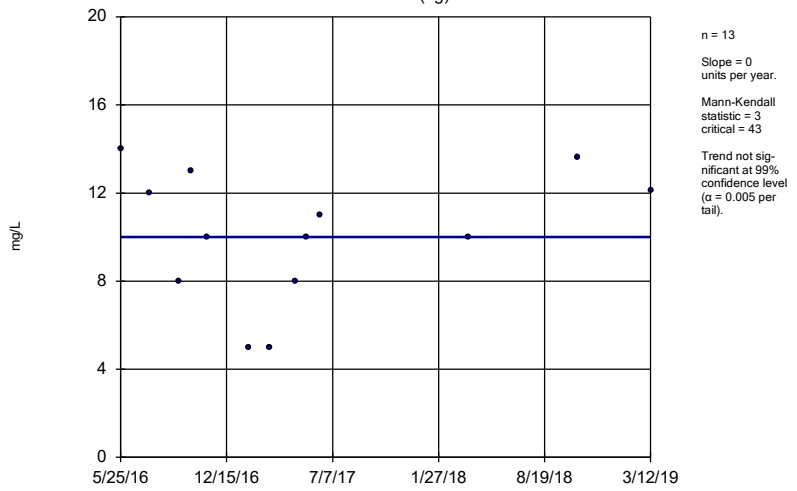
Constituent: Sulfate, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-4 (bg)




n = 13

Slope = 0 units per year.

Mann-Kendall statistic = 3 critical = 43

Trend not significant at 99% confidence level (α = 0.005 per tail).

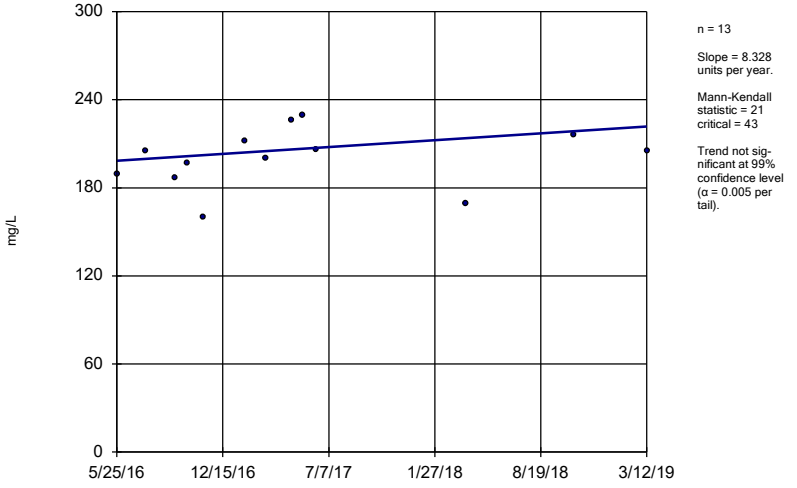
Constituent: Sulfate, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-5 (bg)




n = 13

Slope = 8.328 units per year.

Mann-Kendall statistic = 21 critical = 43

Trend not significant at 99% confidence level (α = 0.005 per tail).

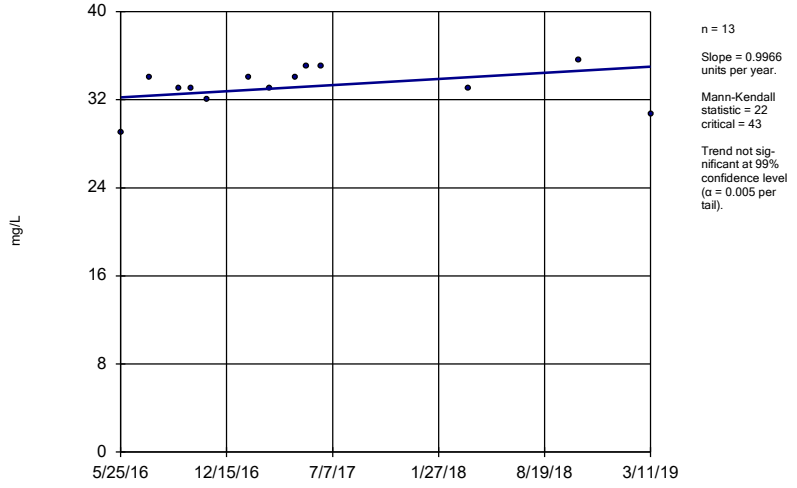
Constituent: Sulfate, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-7A (bg)




n = 13

Slope = 0.9966 units per year.

Mann-Kendall statistic = 22 critical = 43

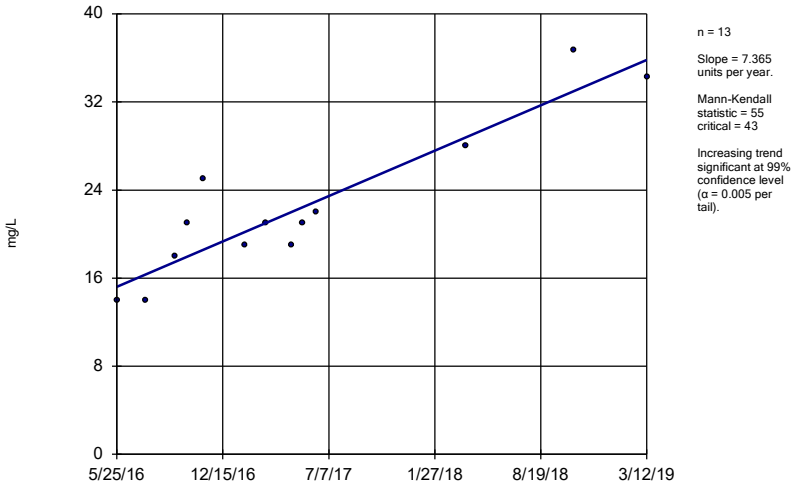
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate, total Analysis Run 7/8/2019 3:00 PM View: Trend Tests

Flint LF Client: Geosyntec Data: Flint Creek LF

## Sen's Slope Estimator

B-9




n = 13

Slope = 7.365 units per year.

Mann-Kendall statistic = 55
critical = 43

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate, total  Analysis Run 7/8/2019 3:01 PM  View: Trend Tests

Flint LF  Client: Geosyntec  Data: Flint Creek LF

# Tolerance Limit Summary Table

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 3:07 PM

| Constituent | Well | Upper Lim. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony, total (mg/L) | n/a | 0.00452 | 78 | n/a | n/a | 78.21 | n/a | n/a | 0.0183 | NP Inter(NDs) |
| Arsenic, total (mg/L) | n/a | 0.008 | 78 | n/a | n/a | 66.67 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Barium, total (mg/L) | n/a | 0.131 | 78 | n/a | n/a | 0 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Beryllium, total (mg/L) | n/a | 0.001 | 78 | n/a | n/a | 32.05 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Cadmium, total (mg/L) | n/a | 0.001 | 78 | n/a | n/a | 66.67 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Chromium, total (mg/L) | n/a | 0.008261 | 78 | -6.684 | 0.9602 | 10.26 | None | ln(x) | 0.05 | Inter |
| Cobalt, total (mg/L) | n/a | 0.002944 | 77 | 0.0914 | 0.02638 | 3.896 | None | x^(1/3) | 0.05 | Inter |
| Combined Radium 226 + 228 (pCi/L) | n/a | 7.81 | 72 | 1.237 | 0.3773 | 1.389 | None | x^(1/3) | 0.05 | Inter |
| Fluoride, total (mg/L) | n/a | 1 | 78 | n/a | n/a | 75.64 | n/a | n/a | 0.0183 | NP Inter(NDs) |
| Lead, total (mg/L) | n/a | 0.015 | 78 | n/a | n/a | 55.13 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Lithium, total (mg/L) | n/a | 0.041 | 78 | n/a | n/a | 2.564 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Mercury, total (mg/L) | n/a | 0.000096 | 78 | n/a | n/a | 53.85 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Molybdenum, total (mg/L) | n/a | 0.01 | 78 | n/a | n/a | 64.1 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Selenium, total (mg/L) | n/a | 0.0392 | 78 | n/a | n/a | 67.95 | n/a | n/a | 0.0183 | NP Inter(normality) |
| Thallium, total (mg/L) | n/a | 0.002 | 78 | n/a | n/a | 83.33 | n/a | n/a | 0.0183 | NP Inter(NDs) |

# Confidence Interval Summary Table - All Results (No Significant)

Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 3:09 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Compliance | Lower Compl. | Sig. | N | %NDs | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony, total (mg/L) | B-10 | 0.0005 | 0.0001 | 0.006 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Antimony, total (mg/L) | B-11 | 0.00489 | 0.00001 | 0.006 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Antimony, total (mg/L) | B-2 | 0.001816 | 0.00002 | 0.006 | n/a | No | 13 | 46.15 | No | 0.01 | NP (Cohens/xfrm) |
| Antimony, total (mg/L) | B-6 | 0.00145 | 0.00001 | 0.006 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Antimony, total (mg/L) | B-9 | 0.001391 | 0.00011 | 0.006 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Arsenic, total (mg/L) | B-10 | 0.006 | 0.0015 | 0.01 | n/a | No | 13 | 61.54 | No | 0.01 | NP (normality) |
| Arsenic, total (mg/L) | B-11 | 0.007 | 0.0009 | 0.01 | n/a | No | 12 | 58.33 | No | 0.01 | NP (normality) |
| Arsenic, total (mg/L) | B-2 | 0.008 | 0.00067 | 0.01 | n/a | No | 13 | 30.77 | No | 0.01 | NP (Cohens/xfrm) |
| Arsenic, total (mg/L) | B-6 | 0.005 | 0.00061 | 0.01 | n/a | No | 13 | 46.15 | No | 0.01 | NP (normality) |
| Arsenic, total (mg/L) | B-9 | 0.005 | 0.00111 | 0.01 | n/a | No | 13 | 61.54 | No | 0.01 | NP (normality) |
| Barium, total (mg/L) | B-10 | 0.102 | 0.0748 | 2 | n/a | No | 13 | 0 | No | 0.01 | NP (normality) |
| Barium, total (mg/L) | B-11 | 0.187 | 0.097 | 2 | n/a | No | 13 | 0 | No | 0.01 | NP (normality) |
| Barium, total (mg/L) | B-2 | 0.226 | 0.0622 | 2 | n/a | No | 13 | 0 | No | 0.01 | NP (normality) |
| Barium, total (mg/L) | B-6 | 0.07066 | 0.05093 | 2 | n/a | No | 13 | 0 | No | 0.01 | Param. |
| Barium, total (mg/L) | B-9 | 0.1565 | 0.1359 | 2 | n/a | No | 13 | 0 | ln(x) | 0.01 | Param. |
| Beryllium, total (mg/L) | B-10 | 0.0005 | 0.0000284 | 0.004 | n/a | No | 13 | 61.54 | No | 0.01 | NP (normality) |
| Beryllium, total (mg/L) | B-11 | 0.001157 | 0.0002637 | 0.004 | n/a | No | 13 | 0 | ln(x) | 0.01 | Param. |
| Beryllium, total (mg/L) | B-2 | 0.000548 | 0.0001131 | 0.004 | n/a | No | 13 | 0 | ln(x) | 0.01 | Param. |
| Beryllium, total (mg/L) | B-6 | 0.0005 | 0.000033 | 0.004 | n/a | No | 13 | 15.38 | No | 0.01 | NP (Cohens/xfrm) |
| Beryllium, total (mg/L) | B-9 | 0.0005 | 0.00003 | 0.004 | n/a | No | 13 | 46.15 | No | 0.01 | NP (normality) |
| Cadmium, total (mg/L) | B-10 | 0.0004131 | 0.00005 | 0.005 | n/a | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Cadmium, total (mg/L) | B-11 | 0.00121 | 0.0001868 | 0.005 | n/a | No | 13 | 0 | x^(1/3) | 0.01 | Param. |
| Cadmium, total (mg/L) | B-2 | 0.000348 | 0.00006 | 0.005 | n/a | No | 13 | 53.85 | No | 0.01 | NP (Cohens/xfrm) |
| Cadmium, total (mg/L) | B-6 | 0.0002682 | 0.0001167 | 0.005 | n/a | No | 13 | 61.54 | No | 0.01 | NP (normality) |
| Cadmium, total (mg/L) | B-9 | 0.0002 | 0.00006 | 0.005 | n/a | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Chromium, total (mg/L) | B-10 | 0.016 | 0.00039 | 0.1 | n/a | No | 13 | 0 | No | 0.01 | NP (normality) |
| Chromium, total (mg/L) | B-11 | 0.01299 | 0.001744 | 0.1 | n/a | No | 13 | 0 | ln(x) | 0.01 | Param. |
| Chromium, total (mg/L) | B-2 | 0.026 | 0.00215 | 0.1 | n/a | No | 13 | 0 | No | 0.01 | NP (normality) |
| Chromium, total (mg/L) | B-6 | 0.005905 | 0.002674 | 0.1 | n/a | No | 13 | 0 | sqrt(x) | 0.01 | Param. |
| Chromium, total (mg/L) | B-9 | 0.003174 | 0.001647 | 0.1 | n/a | No | 13 | 0 | No | 0.01 | Param. |
| Cobalt, total (mg/L) | B-10 | 0.001452 | 0.0005007 | 0.006 | n/a | No | 13 | 0 | ln(x) | 0.01 | Param. |
| Cobalt, total (mg/L) | B-11 | 0.002662 | 0.0003617 | 0.006 | n/a | No | 12 | 0 | sqrt(x) | 0.01 | Param. |
| Cobalt, total (mg/L) | B-2 | 0.004551 | 0.0005169 | 0.006 | n/a | No | 13 | 0 | ln(x) | 0.01 | Param. |
| Cobalt, total (mg/L) | B-6 | 0.002578 | 0.000791 | 0.006 | n/a | No | 13 | 0 | No | 0.01 | Param. |
| Cobalt, total (mg/L) | B-9 | 0.001481 | 0.0006023 | 0.006 | n/a | No | 13 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-10 | 1.561 | 0.6251 | 7.81 | n/a | No | 12 | 0 | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-11 | 3.524 | 0.7191 | 7.81 | n/a | No | 12 | 0 | ln(x) | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-2 | 2.736 | 1.385 | 7.81 | n/a | No | 12 | 0 | sqrt(x) | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-6 | 7.58 | 0.571 | 7.81 | n/a | No | 12 | 0 | No | 0.01 | NP (normality) |
| Combined Radium 226 + 228 (pCi/L) | B-9 | 2.915 | 0.5473 | 7.81 | n/a | No | 12 | 0 | x^(1/3) | 0.01 | Param. |
| Fluoride, total (mg/L) | B-10 | 0.2319 | 0.1 | 4 | n/a | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Fluoride, total (mg/L) | B-11 | 0.2 | 0.04 | 4 | n/a | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Fluoride, total (mg/L) | B-2 | 0.3361 | 0.1 | 4 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Fluoride, total (mg/L) | B-6 | 0.2 | 0.2 | 4 | n/a | No | 13 | 100 | No | 0.01 | NP (NDs) |
| Fluoride, total (mg/L) | B-9 | 0.31 | 0.1884 | 4 | n/a | No | 13 | 69.23 | No | 0.01 | NP (normality) |
| Lead, total (mg/L) | B-10 | 0.005 | 0.0003 | 0.015 | n/a | No | 13 | 61.54 | No | 0.01 | NP (normality) |
| Lead, total (mg/L) | B-11 | 0.009 | 0.00083 | 0.015 | n/a | No | 13 | 30.77 | No | 0.01 | NP (Cohens/xfrm) |
| Lead, total (mg/L) | B-2 | 0.013 | 0.000332 | 0.015 | n/a | No | 13 | 23.08 | No | 0.01 | NP (Cohens/xfrm) |
| Lead, total (mg/L) | B-6 | 0.002822 | 0.0007021 | 0.015 | n/a | No | 13 | 7.692 | sqrt(x) | 0.01 | Param. |
| Lead, total (mg/L) | B-9 | 0.005 | 0.000693 | 0.015 | n/a | No | 13 | 61.54 | No | 0.01 | NP (normality) |
| Lithium, total (mg/L) | B-10 | 0.005861 | 0.002209 | 0.041 | n/a | No | 13 | 0 | ln(x) | 0.01 | Param. |
| Lithium, total (mg/L) | B-11 | 0.02 | 0.00221 | 0.041 | n/a | No | 13 | 0 | No | 0.01 | NP (normality) |
| Lithium, total (mg/L) | B-2 | 0.01156 | 0.002384 | 0.041 | n/a | No | 13 | 0 | x^(1/3) | 0.01 | Param. |
| Lithium, total (mg/L) | B-6 | 0.00416 | 0.001123 | 0.041 | n/a | No | 13 | 0 | ln(x) | 0.01 | Param. |
| Lithium, total (mg/L) | B-9 | 0.009 | 0.00241 | 0.041 | n/a | No | 13 | 0 | No | 0.01 | NP (normality) |

# Confidence Interval Summary Table - All Results (No Significant)

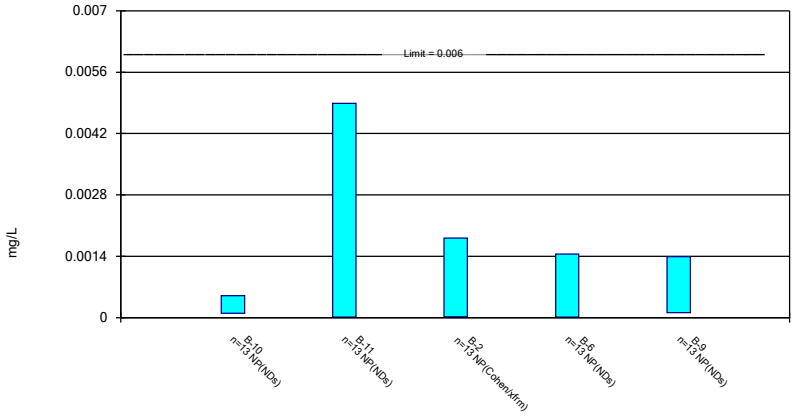


Flint LF Client: Geosyntec Data: Flint Creek LF Printed 7/8/2019, 3:09 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Compliance | Lower Compl. | Sig. | N | %NDs | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury, total (mg/L) | B-10 | 0.000025 | 0.00001543 | 0.002 | n/a | No | 13 | 69.23 | No | 0.01 | NP (normality) |
| Mercury, total (mg/L) | B-11 | 0.000025 | 0.00002458 | 0.002 | n/a | No | 12 | 83.33 | No | 0.01 | NP (NDs) |
| Mercury, total (mg/L) | B-2 | 0.000027 | 0.00000946 | 0.002 | n/a | No | 13 | 53.85 | No | 0.01 | NP (normality) |
| Mercury, total (mg/L) | B-6 | 0.000025 | 0.000007 | 0.002 | n/a | No | 13 | 30.77 | No | 0.01 | NP (Cohens/xfrm) |
| Mercury, total (mg/L) | B-9 | 0.000025 | 0.00001407 | 0.002 | n/a | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Molybdenum, total (mg/L) | B-10 | 0.00352 | 0.00078 | 0.1 | n/a | No | 13 | 15.38 | No | 0.01 | NP (normality) |
| Molybdenum, total (mg/L) | B-11 | 0.01 | 0.0003621 | 0.1 | n/a | No | 13 | 61.54 | No | 0.01 | NP (normality) |
| Molybdenum, total (mg/L) | B-2 | 0.006 | 0.0004781 | 0.1 | n/a | No | 13 | 15.38 | No | 0.01 | NP (Cohens/xfrm) |
| Molybdenum, total (mg/L) | B-6 | 0.01 | 0.00043 | 0.1 | n/a | No | 13 | 30.77 | No | 0.01 | NP (normality) |
| Molybdenum, total (mg/L) | B-9 | 0.01 | 0.0008719 | 0.1 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Selenium, total (mg/L) | B-10 | 0.001 | 0.0003 | 0.05 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Selenium, total (mg/L) | B-11 | 0.002803 | 0.0006577 | 0.05 | n/a | No | 13 | 30.77 | No | 0.01 | Param. |
| Selenium, total (mg/L) | B-2 | 0.03926 | 0.01157 | 0.05 | n/a | No | 13 | 0 | sqrt(x) | 0.01 | Param. |
| Selenium, total (mg/L) | B-6 | 0.003036 | 0.001366 | 0.05 | n/a | No | 13 | 7.692 | No | 0.01 | Param. |
| Selenium, total (mg/L) | B-9 | 0.001 | 0.0008 | 0.05 | n/a | No | 13 | 92.31 | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-10 | 0.002 | 0.00136 | 0.002 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-11 | 0.002 | 0.001001 | 0.002 | n/a | No | 13 | 84.62 | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-2 | 0.002 | 0.00088 | 0.002 | n/a | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-6 | 0.002 | 0.00116 | 0.002 | n/a | No | 13 | 76.92 | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-9 | 0.002 | 0.001044 | 0.002 | n/a | No | 13 | 76.92 | No | 0.01 | NP (NDs) |

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

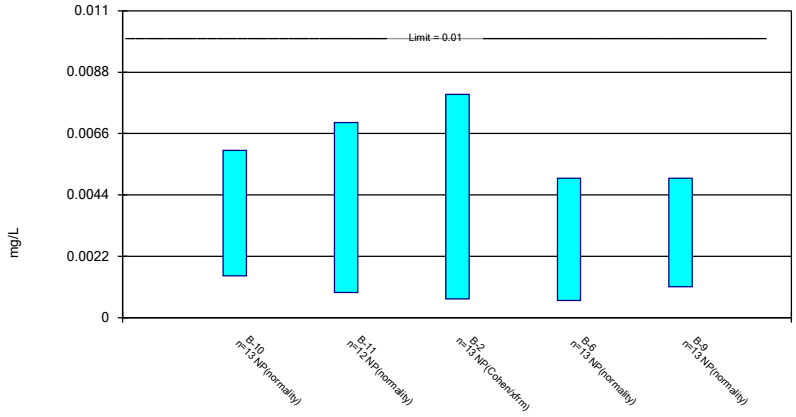



Constituent: Antimony, total Analysis Run 7/8/2019 3:08 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

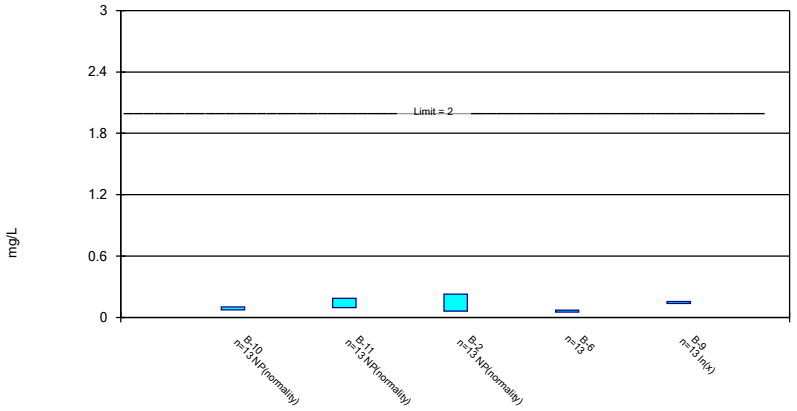



Constituent: Arsenic, total Analysis Run 7/8/2019 3:08 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

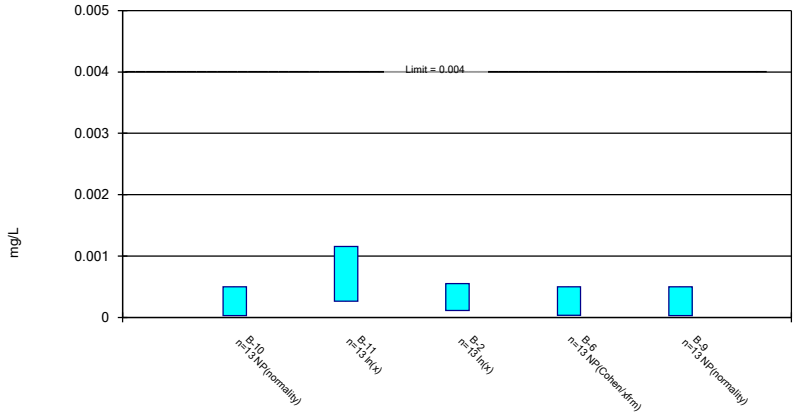



Constituent: Barium, total Analysis Run 7/8/2019 3:08 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.18 Sanitas software utilized by Groundwater Stats Consulting. UG

## Parametric and Non-Parametric (NP) Confidence Interval

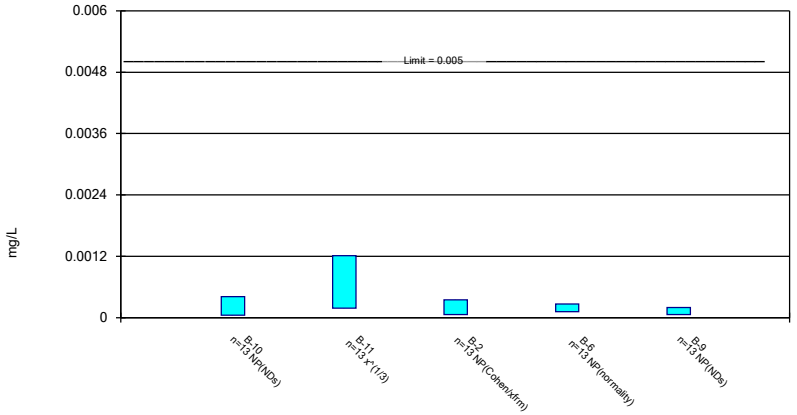
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.




Constituent: Beryllium, total Analysis Run 7/8/2019 3:08 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

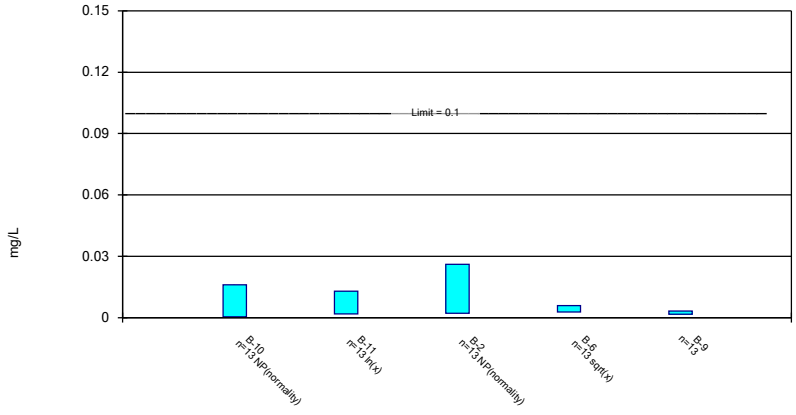



Constituent: Cadmium, total Analysis Run 7/8/2019 3:08 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

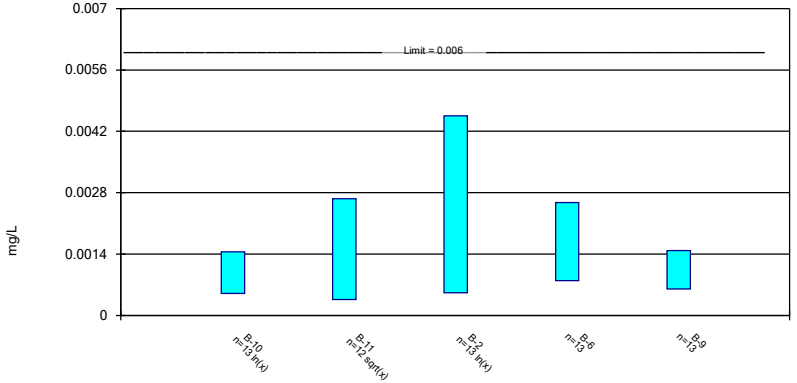



Constituent: Chromium, total Analysis Run 7/8/2019 3:08 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF



## Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

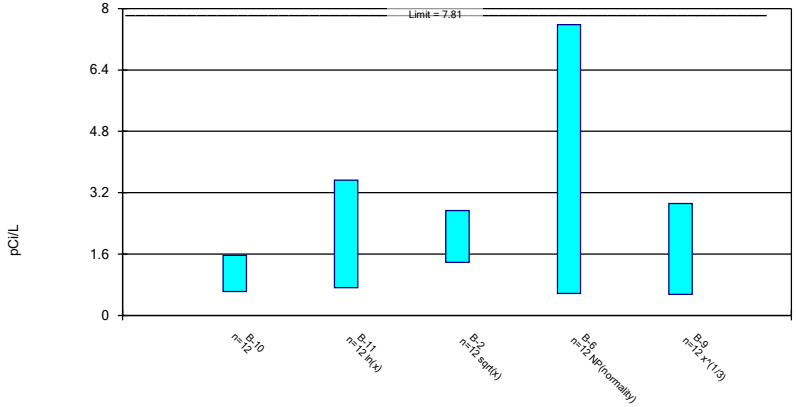



Constituent: Cobalt, total Analysis Run 7/8/2019 3:08 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF



## Parametric and Non-Parametric (NP) Confidence Interval

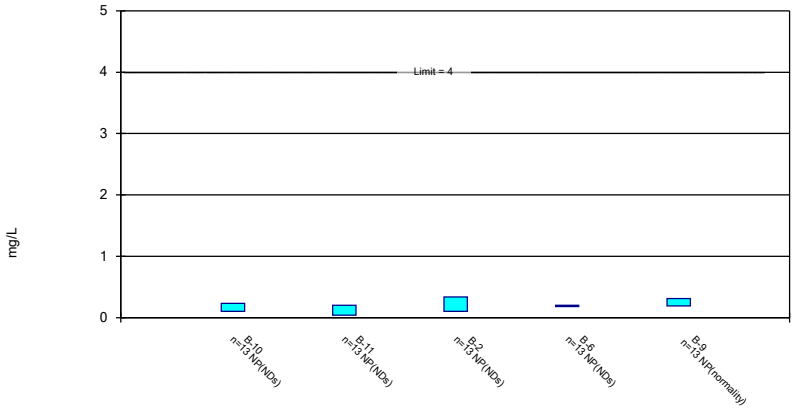
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.




Constituent: Combined Radium 226 + 228 Analysis Run 7/8/2019 3:08 PM View: Confidence Intervals - A
Flint LF Client: Geosyntec Data: Flint Creek LF

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

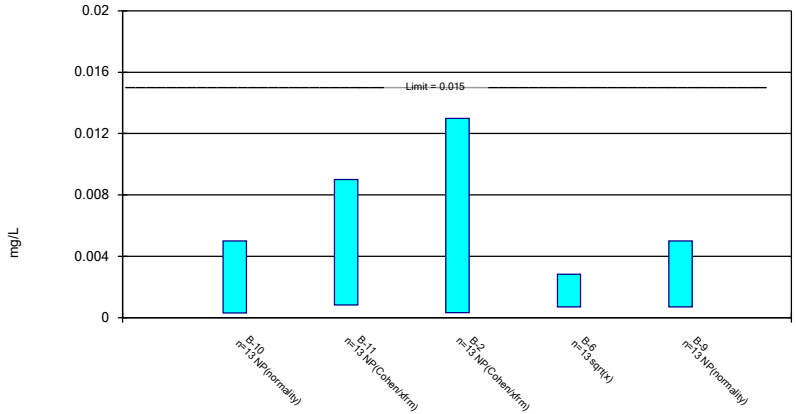



Constituent: Fluoride, total Analysis Run 7/8/2019 3:09 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

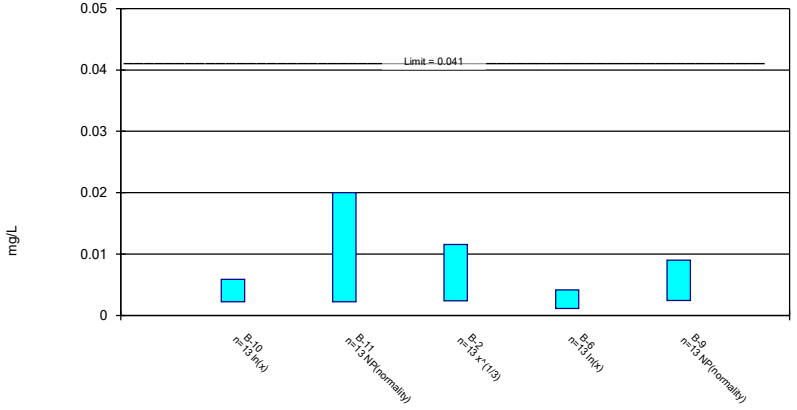



Constituent: Lead, total Analysis Run 7/8/2019 3:09 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

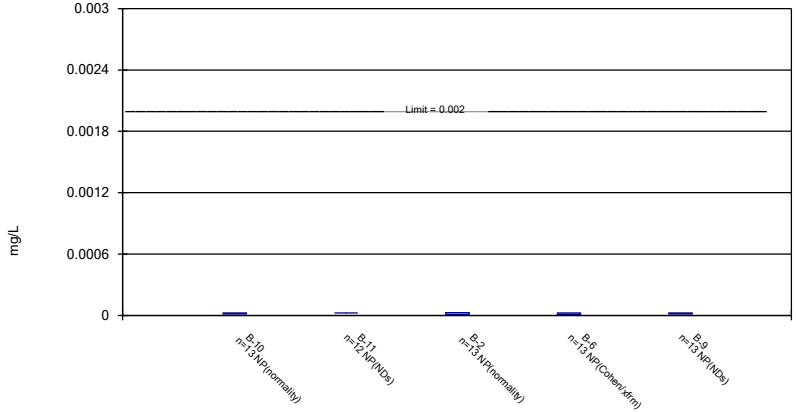



Constituent: Lithium, total Analysis Run 7/8/2019 3:09 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF



## Non-Parametric Confidence Interval

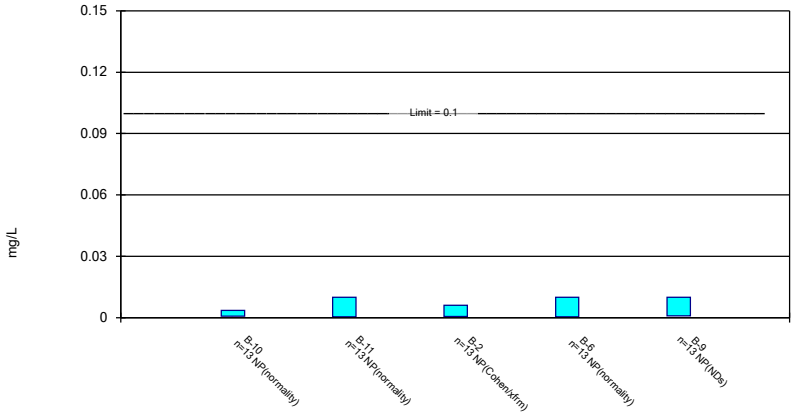
Compliance Limit is not exceeded. Per-well alpha = 0.01.




Constituent: Mercury, total Analysis Run 7/8/2019 3:09 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

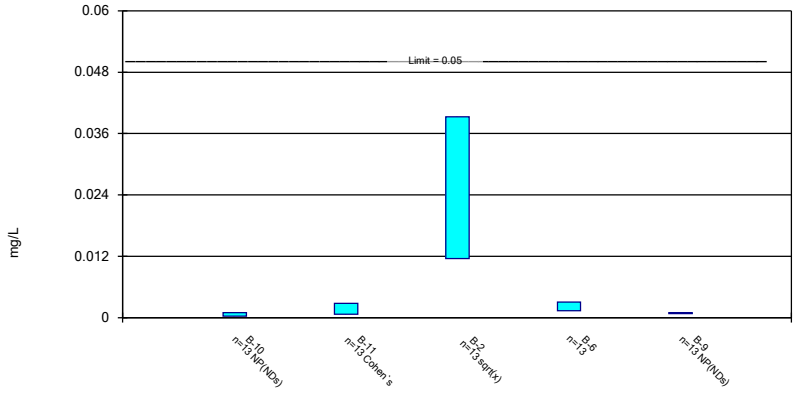



Constituent: Molybdenum, total Analysis Run 7/8/2019 3:09 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

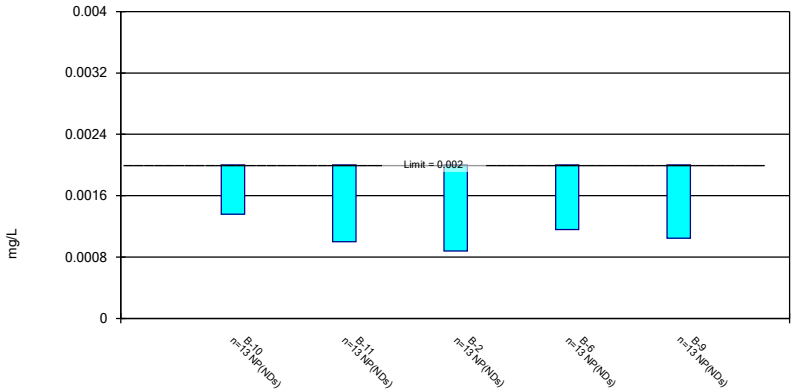



Constituent: Selenium, total Analysis Run 7/8/2019 3:09 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF



## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.




Constituent: Thallium, total Analysis Run 7/8/2019 3:09 PM View: Confidence Intervals - App IV
Flint LF Client: Geosyntec Data: Flint Creek LF

# STATISTICAL ANALYSIS SUMMARY
# LANDFILL
# Flint Creek Plant
# Gentry, Arkansas

*Submitted to*

1 Riverside Plaza
Columbus, Ohio 43215-2372

*Submitted by*

Geosyntec consultants

engineers | scientists | innovators

941 Chatham Lane
Suite 103
Columbus, Ohio 43221

December 24, 2019

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## LIST OF ATTACHMENTS

Attachment A Certification by Qualified Professional Engineer
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## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AEP | American Electric Power |
| ASD | Alternative Source Demonstration |
| CCR | Coal Combustion Residuals |
| CCV | Continuing Calibration Verification |
| CFR | Code of Federal Regulations |
| GWPS | Groundwater Protection Standard |
| LCL | Lower Confidence Limit |
| LF | Landfill |
| LFB | Laboratory Fortified Blanks |
| LRB | Laboratory Reagent Blanks |
| MCL | Maximum Contaminant Level |
| NELAP | National Environmental Laboratory Accreditation Program |
| QA | Quality Assurance |
| QC | Quality Control |
| SSI | Statistically Significant Increase |
| SSL | Statistically Significant Level |
| SU | Standard Units |
| TDS | Total Dissolved Solids |
| UPL | Upper Prediction Limit |
| USEPA | United States Environmental Protection Agency |
| UTL | Upper Tolerance Limit |

# SECTION 1

# EXECUTIVE SUMMARY

In accordance with the United States Environmental Protection Agency's (USEPA's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (40 CFR 257.90-257.98, "CCR rule"), groundwater monitoring has been conducted at the Landfill (LF), an existing CCR unit at the Flint Creek Power Plant located in Gentry, Arkansas.

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were concluded for boron at the LF. An alternative source was not identified at the time, so the LF has been in assessment monitoring since. During the most recent assessment monitoring event, completed in March 2019, no SSLs were identified during these events, and the unit remained in assessment monitoring. Two assessment monitoring events were conducted at the LF in June 2019 and August 2019, in accordance with 40 CFR 257.95. The results of these assessment events are documented in this report.

Groundwater data underwent several validation tests, including those for completeness, sample tracking accuracy, transcription errors, and consistent use of measurement units. No data quality issues were identified which would impact the usability of the data.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. Groundwater protection standards (GWPSs) were re-established for the Appendix IV parameters. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether Appendix IV parameters were present at a statistically significant level (SSL) above the GWPS. No SSLs were identified. Prediction limits were calculated for Appendix III parameters. When compared to the revised prediction limits, concentrations for boron, pH, sulfate, and TDS remained above background. Thus, either the unit will remain in assessment monitoring or an alternative source demonstration (ASD) will be conducted to evaluate if the unit can return to detection monitoring. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

# SECTION 2

# LANDFILL EVALUATION

## 2.1 Data Validation & QA/QC

During the assessment monitoring program, two sets of samples were collected for analysis from each upgradient and downgradient well to meet the requirements of 40 CFR 257.95(b) (June 2019) and 257.95(d)(1) (August 2019). Samples from both sampling events were analyzed for the Appendix III and Appendix IV parameters. A summary of data collected during these assessment monitoring events may be found in Table 1.

Chemical analysis was completed by an analytical laboratory certified by the National Environmental Laboratory Accreditation Program (NELAP). Quality assurance and quality control (QA/QC) samples completed by the analytical laboratory included the use of laboratory reagent blanks (LRBs), continuing calibration verification (CCV) samples, and laboratory fortified blanks (LFBs).

The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location identification and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the Sanitas™ v.9.6.23 statistics software. The export file was checked against the analytical data for transcription errors and completeness. No QA/QC issues were noted which would impact data usability.

## 2.2 Statistical Analysis

Statistical analyses for the LF were conducted in accordance with the January 2017 *Statistical Analysis Plan* (AEP, 2017), except where noted below. Time series plots and results for all completed statistical tests are provided in Attachment B.

The data obtained in June and August 2019 were screened for potential outliers. Outliers were identified for lithium in the June 2019 data, including non-detect values where the reporting limit of 0.100 mg/L was used. This value represents a significant increase from previous reporting limits for lithium.

### 2.2.1 Establishment of GWPSs

A GWPS was established for each Appendix IV parameter in accordance with 40 CFR 257.95(h) and the *Statistical Analysis Plan* (AEP, 2017). The established GWPS was determined to be the greater value of the background concentration and the maximum contaminant level (MCL) or risk-based level specified in 40 CFR 257.95(h)(2) for each Appendix IV parameter. To determine background concentrations, an upper tolerance limit (UTL) was calculated using pooled data from the background wells collected during the background monitoring and assessment monitoring

events. Generally, tolerance limits were calculated parametrically with 95% coverage and 95% confidence. Non-parametric tolerance limits were calculated for antimony, arsenic, barium, beryllium, cadmium, fluoride, lead, lithium, mercury, molybdenum, and selenium due to apparent non-normal distributions and for thallium due to a high non-detect frequency. Tolerance limits and the final GWPSs are summarized in Table 2.

### 2.2.2 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV parameter at each compliance well. Confidence limits were generally calculated parametrically ($\alpha = 0.01$); however, non-parametric confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the non-detect frequency was too high). An SSL was concluded if the lower confidence limit (LCL) exceeded the GWPS (i.e., if the entire confidence interval exceeded the GWPS). Calculated confidence limits are shown in Attachment B.

No SSLs were identified at the Flint Creek LF.

### 2.2.3 Establishment of Appendix III Prediction Limits

Upper prediction limits (UPLs) were previously established for all Appendix III parameters following the background monitoring period (Geosyntec, 2018). Intrawell tests were used to evaluate potential SSIs for calcium, chloride, fluoride, pH, sulfate, and total dissolved solids (TDS), whereas an interwell test was used to evaluate potential SSIs for boron. While interwell prediction limits have been updated periodically during the assessment monitoring period as sufficient data became available, this represents the first update to the background dataset for parameters evaluated using intrawell tests.

Mann-Whitney (Wilcoxon rank-sum) tests were performed to determine whether the newer data are affected by a release from the LF. Because the interwell Appendix III limits and the Appendix IV GWPSs are based on data from upgradient wells which we would not expect to have been impacted by a release, these tests were used for intrawell Appendix III tests only. Mann-Whitney tests were used to compare the medians of historical data (May 2016-June 2017) to the new compliance samples (August 2017-March 2019) for calcium, chloride, fluoride, pH, sulfate, and TDS. Results were evaluated to determine if the medians of the two groups were similar at the 99% confidence level. Where no significant difference was found, the new compliance data were added to the background dataset. Where a statistically significant difference was found between the medians of the two groups, the data were reviewed to evaluate the cause of the difference and to determine if adding newer data to the background dataset, replacing the background dataset with the newer data, or continuing to use the existing background dataset was most appropriate. If the differences appeared to have been caused by a release, then the previous background dataset continued to be used.

The complete Mann-Whitney test results and a summary of the significant findings can be found in Appendix B. Significant differences were found between the two groups for calcium at B-10, sulfate at B-9 and B-10, and TDS at B-6 and B-10. However, when the entire records were

evaluated using the time series graphs, more recent concentrations appeared only slightly different from historical measurements. For this reason, combined with the limited data available at this time, all background data sets were updated through March 2019.

After the revised background set was established, a parametric or non-parametric analysis was selected based on the distribution of the data and the frequency of non-detect data. Estimated results less than the practical quantitation limit (PQL) – i.e., "J-flagged" data – were considered detections and the estimated results were used in the statistical analyses. Non-parametric analyses were selected for datasets with at least 50% non-detect data or datasets that could not be normalized. Parametric analyses were selected for datasets (either transformed or untransformed) that passed the Shapiro-Wilk / Shapiro-Francía test for normality. The Kaplan-Meier non-detect adjustment was applied to datasets with between 15% and 50% non-detect data. For datasets with fewer than 15% non-detect data, non-detect data were replaced with one half of the PQL. The selected analysis (i.e., parametric or non-parametric) and transformation (where applicable) for each background dataset are shown in Attachment B.

UPLs were updated using all the historical data through March 2019 to represent background values. LPLs were also updated for pH. The updated prediction limits are summarized in Table 3. Intrawell tests continued to be used to evaluate potential SSIs for calcium, chloride, fluoride, pH, sulfate, and TDS, whereas an interwell test continued to be used to evaluate potential SSIs for boron. The UPLs were calculated for a one-of-two retesting procedure; i.e., if at least one sample in a series of two does not exceed the UPL, then it can be concluded that an SSI has not occurred. In practice, where the initial result did not exceed the UPL, a second sample was not collected. The retesting procedures allowed achieving an acceptably high statistical power to detect changes at downgradient wells for constituents evaluated using intrawell prediction limits.

### 2.2.4 Evaluation of Potential Appendix III SSIs

The CCR rule allows CCR units to move from assessment monitoring to detection monitoring if all Appendix III and Appendix IV parameters were at or below background levels for two consecutive sampling events [40 CFR 257.95(e)]. Since no Appendix IV SSLs were identified, Appendix III results were analyzed to assess whether concentrations of Appendix III parameters at the compliance wells exceeded background concentrations.

Data collected during the June 2019 and August 2019 assessment monitoring events from each compliance well were compared to the prediction limits to evaluate results above background values. The results from this event and the prediction limits are summarized in Table 4. The following exceedances of the UPLs were noted:

- Boron concentrations exceeded the interwell UPL of 0.059 mg/L at B-11 (0.548 mg/L and 0.605 mg/L) and B-2 (6.97 mg/L and 0.735 mg/L). While boron was not detected at B-5, B-6, B-7, B-9, or B-10 during the June 2019 event, the reporting limit of 0.100 mg/L was above the interwell UPL.

- The pH measurement exceeded the intrawell UPL of 7.9 SU at B-7 (8.3 SU).
- The sulfate concentration exceeded the intrawell UPL of 243 mg/L at B-5 (271 mg/L).
- TDS concentrations exceeded the intrawell UPL of 339 mg/L at B-7 (378 mg/L) and the intrawell UPL of 293 mg/L at B-9 (310 mg/L).

Based on these results, concentrations of Appendix III parameters exceeded background levels at compliance wells at the Flint Creek LF during assessment monitoring. As a result, the Flint Creek LF CCR unit will remain in assessment monitoring.

## 2.3 Conclusions

A semi-annual assessment monitoring event was conducted in accordance with the CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that impacted data usability. A review of outliers identified outliers for lithium in the June 2019 data. GWPSs were re-established for the Appendix IV parameters. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval exceeded the GWPS. No SSLs were identified.

Revised prediction limits were calculated for Appendix III parameters. Intrawell tests continued to be used to evaluate potential SSIs for calcium, chloride, fluoride, pH, sulfate, and total dissolved solids (TDS), whereas an interwell test continued to be used to evaluate potential SSIs for boron. Prediction limits were recalculated using a one-of-two retesting procedure. The Appendix III results were evaluated to assess whether concentrations of Appendix III parameters exceeded background levels. Boron, pH, sulfate, and TDS results exceeded background levels.

Based on this evaluation, either the Flint Creek LF CCR unit will remain in assessment monitoring or an ASD will be conducted to evaluate if the unit can return to detection monitoring.

# SECTION 3

# REFERENCES

American Electric Power (AEP). 2017. Statistical Analysis Plan – Flint Creek Plant. January 2017.

Geosyntec Consultants (Geosyntec). 2018. Statistical Analysis Summary – Landfill, Flint Creek Plant, Gentry, Arkansas. January 15, 2018.

# TABLES

**Table 1 - Groundwater Data Summary**
**Flint Creek - Landfill**

*Geosyntec Consultants, Inc.*

| Component | Unit | B-1B | | B-2 | | B-4 | | B-5 | | B-6 | | B-7A | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6/10/2019 | 8/27/2019 | 6/11/2019 | 8/27/2019 | 6/11/2019 | 8/28/2019 | 6/11/2019 | 8/28/2019 | 6/10/2019 | 8/27/2019 | 6/10/2019 | 8/27/2019 |
| Antimony | µg/L | 0.0300 J | 0.110 | 0.100 U | 0.100 U | 0.100 U | 0.100 U | 0.100 U | 0.100 U | 0.0800 J | 0.0500 J | 0.0600 J | 0.150 |
| Arsenic | µg/L | 0.620 | 0.570 | 0.180 | 0.220 | 0.0600 J | 0.0600 J | 0.670 | 0.440 | 0.510 | 0.360 | 2.35 | 2.93 |
| Barium | µg/L | 112 | 114 | 38.5 | 41.3 | 31.2 | 31.1 | 26.0 | 33.7 | 49.8 | 48.6 | 42.9 | 49.0 |
| Beryllium | µg/L | 0.0200 J | 0.100 U | 0.208 | 0.149 | 0.215 | 0.204 | 0.376 | 0.487 | 0.0800 J | 0.0400 J | 0.100 U | 0.100 U |
| Boron | mg/L | 0.0500 J | 0.0500 U | 0.697 | 0.735 | 0.0700 J | 0.0560 | 0.100 U | 0.0500 U | 0.0500 J | 0.0300 J | 0.100 U | 0.0500 U |
| Cadmium | µg/L | 0.0200 J | 0.0600 | 0.0400 J | 0.0300 J | 0.0500 J | 0.0400 J | 0.180 | 0.180 | 0.0800 J | 0.0400 J | 0.0200 J | 0.0300 J |
| Calcium | mg/L | 92.4 | 86.5 | 14.2 | 15.4 | 3.50 | 2.92 | 17.9 | 15.9 | 49.7 | 44.8 | 105 | 102 |
| Chloride | mg/L | 2.31 | 2.00 | 4.16 | 3.00 | 3.74 | 3.00 | 7.02 | 6.00 | 7.78 | 6.00 | 3.12 | 2.00 |
| Chromium | µg/L | 0.368 | 0.278 | 1.57 | 1.75 | 1.03 | 1.11 | 3.00 | 2.40 | 2.18 | 1.96 | 0.200 U | 0.200 J |
| Cobalt | µg/L | 0.0510 | 0.0500 J | 0.0690 | 0.105 | 0.0400 J | 0.0840 | 0.349 | 0.331 | 0.537 | 0.387 | 0.0740 | 0.134 |
| Combined Radium | pCi/L | 5.96 | 4.73 | 0.959 | 0.888 | 0.680 | 1.05 | 1.27 | 0.717 | 0.810 | 0.347 | 2.56 | 1.85 |
| Fluoride | mg/L | 0.490 | 0.275 J | 0.0600 J | 1.00 U | 0.0200 J | 1.00 U | 0.0800 | 1.00 U | 0.0300 J | 1.00 U | 0.240 | 0.144 J |
| Lead | µg/L | 0.530 | 0.395 | 0.200 U | 0.0800 J | 0.200 U | 0.200 U | 0.203 | 0.100 J | 0.697 | 0.509 | 0.100 J | 0.100 J |
| Lithium | mg/L | 0.100 U | 0.0231 | 0.100 U | 0.00128 | 0.100 U | 0.000925 | 0.100 U | 0.00215 | 0.100 U | 0.000518 | 0.100 U | 0.0164 |
| Mercury | mg/L | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.00000700 J | 0.00000600 J | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000250 U |
| Molybdenum | µg/L | 0.800 J | 1.00 J | 0.400 J | 0.500 J | 2.00 U | 2.00 U | 2.00 U | 2.00 U | 4.00 U | 2.00 U | 0.500 J | 0.600 J |
| Selenium | µg/L | 0.200 U | 0.200 U | 6.70 | 6.80 | 0.700 | 0.800 | 39.0 | 37.5 | 2.40 | 2.40 | 0.200 U | 0.0400 J |
| Total Dissolved Solids | mg/L | 266 | 312 | 246 | 230 | 60.0 | 66.0 | 438 | 402 | 188 | 250 | 312 | 378 |
| Sulfate | mg/L | 20.7 | 20.0 | 80.9 | 65.0 | 13.4 | 11.0 | 271 | 219 | 21.7 | 36.0 | 35.4 | 36.0 |
| Thallium | µg/L | 0.500 U | 0.500 U | 0.500 U | 0.500 U | 0.500 U | 0.500 U | 0.500 U | 0.500 U | 1.00 U | 0.500 U | 0.500 U | 0.500 U |
| pH | SU | 6.58 | 7.42 | 6.36 | 5.94 | 7.48 | 5.96 | 5.69 | 5.00 | 6.78 | 6.60 | 7.09 | 8.30 |

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Parameter was not present in concentrations above the method detection limit and is reported as the reporting limit
J: Estimated value. Parameter was detected in concentrations below the reporting limit

**Table 1 - Groundwater Data Summary**
**Flint Creek - Landfill**

*Geosyntec Consultants, Inc.*

| Component | Unit | B-9 | | B-10 | | B-11 | | B-12 | | B-13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6/11/2019 | 8/27/2019 | 6/10/2019 | 8/27/2019 | 6/10/2019 | 8/27/2019 | 6/10/2019 | 8/27/2019 | 6/10/2019 | 8/28/2019 |
| Antimony | µg/L | 0.500 U | 0.0900 J | 0.200 J | 0.110 | 0.200 U | 0.100 U | 0.100 J | 0.240 | 0.100 U | 0.100 U |
| Arsenic | µg/L | 0.900 | 1.67 | 0.300 J | 0.460 | 0.360 | 0.550 | 0.290 | 1.20 | 0.0700 J | 0.170 |
| Barium | µg/L | 166 | 188 | 78.3 | 79.1 | 111 | 131 | 54.2 | 60.8 | 55.1 | 47.1 |
| Beryllium | µg/L | 0.500 U | 0.0200 J | 0.500 U | 0.100 U | 0.316 | 0.317 | 0.200 U | 0.150 | 0.0500 J | 0.151 |
| Boron | mg/L | 0.100 U | 0.0500 U | 0.100 U | 0.0500 U | 0.548 | 0.605 | 0.0400 J | 0.0500 U | 0.100 U | 0.0500 U |
| Cadmium | µg/L | 0.200 U | 0.0800 | 0.200 U | 0.0200 J | 0.0800 J | 0.100 | 0.0300 J | 0.0800 | 0.0400 J | 0.0500 J |
| Calcium | mg/L | 99.7 | 128 | 80.4 | 70.8 | 17.0 | 15.4 | 60.9 | 59.6 | 19.7 | 10.2 |
| Chloride | mg/L | 3.69 | 3.00 | 9.24 | 7.00 | 3.73 | 3.00 | 10.6 | 8.00 | 3.05 | 1.00 |
| Chromium | µg/L | 1.11 | 1.61 | 0.300 J | 0.385 | 0.884 | 1.36 | 0.585 | 2.04 | 0.379 | 0.818 |
| Cobalt | µg/L | 0.200 J | 0.827 | 0.200 U | 0.128 | 0.162 | 0.256 | 2.49 | 11.2 | 0.0300 J | 0.272 |
| Combined Radium | pCi/L | 0.157 | 1.26 | 1.13 | 1.34 | 1.12 | 0.455 | 0.513 | 1.11 | 0.461 | 0.862 |
| Fluoride | mg/L | 0.130 | 1.00 U | 0.110 | 1.00 U | 0.0400 J | 1.00 U | 0.0600 J | 1.00 U | 0.0200 J | 1.00 U |
| Lead | µg/L | 1.00 U | 0.509 | 1.00 U | 0.0500 J | 0.200 J | 0.416 | 0.300 | 2.65 | 0.200 U | 0.221 |
| Lithium | mg/L | 0.100 U | 0.00409 | 0.100 U | 0.00169 | 0.0300 J | 0.00130 | 0.100 U | 0.00176 | 0.100 U | 0.000814 |
| Mercury | mg/L | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.0000160 J | 0.0000250 U | 0.0000250 U | 0.0000250 U | 0.00000600 J | 0.0000250 U | 0.0000250 U |
| Molybdenum | µg/L | 36.1 | 0.400 J | 10.0 J | 1.00 J | 4.00 U | 2.00 U | 4.00 U | 0.400 J | 2.00 U | 2.00 U |
| Selenium | µg/L | 0.400 J | 0.500 | 0.500 J | 0.400 | 3.10 | 4.10 | 0.200 J | 1.40 | 0.500 | 0.400 |
| Total Dissolved Solids | mg/L | 248 | 310 | 260 | 268 | 82.0 | 138 | 244 | 252 | 98.0 | 64.0 |
| Sulfate | mg/L | 37.6 | 37.0 | 26.1 | 26.0 | 54.7 | 59.0 | 7.00 | 9.00 | 20.7 | 18.0 |
| Thallium | µg/L | 2.00 U | 0.500 U | 2.00 U | 0.500 U | 1.00 U | 0.500 U | 1.00 U | 0.500 U | 0.500 U | 0.500 U |
| pH | SU | 7.71 | 7.18 | 7.35 | 7.31 | 5.92 | 5.76 | 7.18 | 6.88 | 6.94 | 5.41 |

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Parameter was not present in concentrations above the method detection limit and is reported as the reporting limit
J: Estimated value. Parameter was detected in concentrations below the reporting limit

**Table 2: Groundwater Protection Standards**
**Flint Creek Plant - Landfill**

*Geosyntec Consultants, Inc.*

| Constituent Name | MCL | CCR Rule-Specified | Calculated UTL |
|---|---|---|---|
| Antimony, Total (mg/L) | 0.006 | | 0.005 |
| Arsenic, Total (mg/L) | 0.01 | | 0.008 |
| Barium, Total (mg/L) | 2 | | 0.13 |
| Beryllium, Total (mg/L) | 0.004 | | 0.001 |
| Cadmium, Total (mg/L) | 0.005 | | 0.001 |
| Chromium, Total (mg/L) | 0.1 | | 0.0051 |
| Cobalt, Total (mg/L) | n/a | 0.006 | 0.0052 |
| Combined Radium, Total (pCi/L) | 5 | | 9.42 |
| Fluoride, Total (mg/L) | 4 | | 1 |
| Lead, Total (mg/L) | n/a | 0.015 | 0.005 |
| Lithium, Total (mg/L) | n/a | 0.04 | 0.05 |
| Mercury, Total (mg/L) | 0.002 | | 0.000096 |
| Molybdenum, Total (mg/L) | n/a | 0.1 | 0.01 |
| Selenium, Total (mg/L) | 0.05 | | 0.039 |
| Thallium, Total (mg/L) | 0.002 | | 0.002 |

Notes:
Grey cell indicates calculated UTL is higher than MCL or CCR Rule-specified value.
MCL = Maximum Contaminant Level
Calculated UTL (Upper Tolerance Limit) represents site-specific background values.
The higher of the calculated UTL or MCL/Rule-Specified Level is used as the GWPS.

**Table 3: Revised Prediction Limits**
**Flint Creek - Landfill**

*Geosyntec Consultants, Inc.*

| Parameter | Unit | Description | B-10 | B-11 | B-1B | B-2 | B-5 | B-6 | B-7 | B-9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Boron | mg/L | Interwell Background Value (UPL) | 0.0588 | | | | | | | |
| Calcium | mg/L | Intrawell Background Value (UPL) | 112 | 18.3 | 96.7 | 88.0 | 19.2 | 61.5 | 109 | 137 |
| Chloride | mg/L | Intrawell Background Value (UPL) | 11.5 | 7.73 | 5.84 | 9.83 | 11.6 | 12.2 | 6.87 | 8.31 |
| Fluoride | mg/L | Intrawell Background Value (UPL) | 1.00 | 1.00 | 0.707 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| pH | SU | Intrawell Background Value (UPL) | 8.8 | 7.0 | 8.4 | 7.3 | 6.8 | 7.4 | 7.9 | 8.5 |
| | | Intrawell Background Value (LPL) | 5.9 | 4.8 | 6.2 | 5.2 | 4.3 | 6.1 | 6.5 | 6.2 |
| Sulfate | mg/L | Intrawell Background Value (UPL) | 39.4 | 65.7 | 28.1 | 803 | 243 | 42.3 | 37.1 | 37.6 |
| Total Dissolved Solids | mg/L | Intrawell Background Value (UPL) | 315 | 193 | 317 | 1409 | 447 | 292 | 339 | 293 |

Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit

# Table 4: Appendix III Data Summary
# Flint Creek - Landfill

*Geosyntec Consultants, Inc.*

| Parameter | Unit | Description | B-10 | | B-11 | | B-1B | | B-2 | | B-5 | | B-6 | | B-7 | | B-9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 6/10/2019 | 8/27/2019 | 6/10/2019 | 8/27/2019 | 6/10/2019 | 8/27/2019 | 6/11/2019 | 8/27/2019 | 6/11/2019 | 8/28/2019 | 6/10/2019 | 8/27/2019 | 6/10/2019 | 8/27/2019 | 6/11/2019 | 8/27/2019 |
| Boron | mg/L | Interwell Background Value (UPL) | 0.0588 | | | | | | | | | | | | | | | |
| | | Detection Monitoring Result | **0.100** | 0.0200 | **0.548** | **0.605** | 0.0500 | 0.0200 | **0.697** | **0.735** | **0.100** | 0.0200 | 0.0500 | 0.0300 | **0.100** | 0.0200 | **0.100** | 0.0200 |
| Calcium | mg/L | Intrawell Background Value (UPL) | 112 | | 18.3 | | 96.7 | | 88.0 | | 19.2 | | 61.5 | | 109 | | 137 | |
| | | Detection Monitoring Result | 80.4 | 70.8 | 17.0 | 15.4 | 92.4 | 86.5 | 14.2 | 15.4 | 17.9 | 15.9 | 49.7 | 44.8 | 105 | 102 | 99.7 | 128 |
| Chloride | mg/L | Intrawell Background Value (UPL) | 11.5 | | 7.73 | | 5.84 | | 9.83 | | 11.6 | | 12.2 | | 6.87 | | 8.31 | |
| | | Detection Monitoring Result | 9.24 | 7.00 | 3.73 | 3.00 | 2.31 | 2.00 | 4.16 | 3.00 | 7.02 | 6.00 | 7.78 | 6.00 | 3.12 | 2.00 | 3.69 | 3.00 |
| Fluoride | mg/L | Intrawell Background Value (UPL) | 1.00 | | 1.00 | | 0.707 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | | Detection Monitoring Result | 0.110 | 0.0830 | 0.0400 | 0.0830 | 0.490 | 0.275 | 0.0600 | 0.0830 | 0.0800 | 0.0380 | 0.0300 | 0.0830 | 0.240 | 0.144 | 0.130 | 0.0830 |
| pH | SU | Intrawell Background Value (UPL) | 8.8 | | 7.0 | | 8.4 | | 7.3 | | 6.8 | | 7.4 | | 7.9 | | 8.5 | |
| | | Intrawell Background Value (LPL) | 5.9 | | 4.8 | | 6.2 | | 5.2 | | 4.3 | | 6.1 | | 6.5 | | 6.2 | |
| | | Detection Monitoring Result | 7.4 | 7.3 | 5.9 | 5.8 | 6.6 | 7.4 | 6.4 | 5.9 | 5.7 | 5.0 | 6.8 | 6.6 | 7.1 | **8.3** | 7.7 | 7.2 |
| Sulfate | mg/L | Intrawell Background Value (UPL) | 39.4 | | 65.7 | | 28.1 | | 803 | | 243 | | 42.3 | | 37.1 | | 37.6 | |
| | | Detection Monitoring Result | 26.1 | 26.0 | 54.7 | 59.0 | 20.7 | 20.0 | 80.9 | 65.0 | **271** | 219 | 21.7 | 36.0 | 35.4 | 36.0 | 37.6 | 37.0 |
| Total Dissolved Solids | mg/L | Intrawell Background Value (UPL) | 315 | | 193 | | 317 | | 1409 | | 447 | | 292 | | 339 | | 293 | |
| | | Detection Monitoring Result | 260 | 268 | 82.0 | 138 | 266 | 312 | 246 | 230 | 438 | 402 | 188 | 250 | 312 | **378** | 248 | **310** |

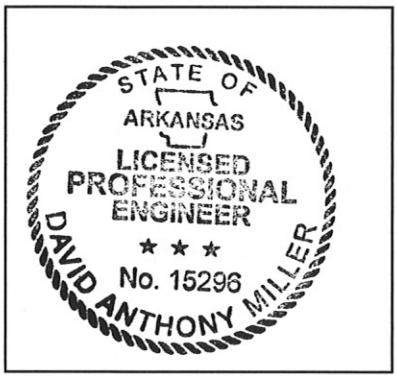
Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
**Bold values exceed the background value.**
Background values are shaded gray.

# ATTACHMENT A

# Certification by Qualified Professional Engineer

**Certification by Qualified Professional Engineer**

I certify that the selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Flint Creek Landfill CCR management area and that the requirements of 40 CFR 257.93(f) have been met.




DAVID ANTHONY MILLER

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature

| 15296 | ARKANSAS | 01.03.20 |
|---|---|---|
| License Number | Licensing State | Date |

# ATTACHMENT B

## Statistical Analysis Output

GROUNDWATER STATS CONSULTING

December 24, 2019

Geosyntec Consultants
Attn: Ms. Allison Kreinberg
941 Chatham Lane, #103
Columbus, OH 43221

Re: Flint Creek Landfill - Assessment Monitoring & Background Update 2019

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide statistical analysis and background update of 2019 groundwater data for American Electric Power Inc.'s Flint Creek Landfill. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

Sampling began at the site for the CCR program in 2016. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

- **Upgradient wells:** B-1B, B-4, B-5, B-7A, B-12, and B-13; and
- **Downgradient wells:** B-2, B-6, B-9, B-10, and B-11.

Data were sent electronically, and the report was reviewed by Dr. Kirk Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to GSC. The statistical analysis was conducted according to the Statistical Analysis Plan and screening evaluation prepared by GSC and approved by Dr. Cameron.

The CCR program consists of the following constituents:

- **Appendix III** (Detection Monitoring) **-** boron, calcium, chloride, fluoride, pH, sulfate, and TDS;

- **Appendix IV** (Assessment Monitoring) **–** antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium.

Time series plots for Appendix III and IV parameters are provided for all wells and are used to evaluate concentrations over time as well as for the purpose of updating statistical limits (Figure A). Additionally, box plots are included for all constituents at upgradient and downgradient wells (Figure B). Values in background which have been flagged as outliers may be seen in a lighter font and as a disconnected symbol on the graph. A summary of these values follows this letter (Figure C). The time series plots are used to initially screen for suspected outliers and trends, while the box plots provide visual representation of variation within individual wells and between all wells.

During the background screening conducted in December 2017 data at all wells were evaluated for the following: 1) outliers; 2) trends; 3) most appropriate statistical method for Appendix III parameters based on site characteristics of groundwater data upgradient of the facility; and 4) eligibility of downgradient wells when intrawell statistical methods are recommended. Power curves were provided to demonstrate that the selected statistical methods for Appendix III parameters comply with the USEPA Unified Guidance recommendations as discussed below.

**Summary of Statistical Method:**

1) Intrawell prediction limits, combined with a 1-of-2 resample plan for calcium, chloride, fluoride, pH, sulfate and TDS;
2) Interwell prediction limits, combined with a 1-of-2 resample plan for boron.

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are nondetects, a nonparametric test is utilized. While the false positive rate associated with the parametric limits is based on an annual 10% as recommended by the EPA Unified Guidance (2009), the false positive rate associated with the nonparametric limits is dependent upon the available background sample size, number of future comparisons, and verification resample plan. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (US EPA, 2009), data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).

- When data contain <15% nondetects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for nondetects is the practical quantification limit (PQL) as reported by the laboratory.
- When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric prediction limits are used on data containing greater than 50% nondetects.

**Summary of Background Screening Conducted in November 2017**

Outlier Evaluation

Time series plots were used to identify suspected outliers, or extreme values that would result in limits that are not conservative from a regulatory perspective, in proposed background data. Suspected outliers at all wells for Appendix III and Appendix IV parameters were formally tested using Tukey's box plot method and, when identified, flagged in the computer database with "o" and deselected prior to construction of statistical limits.

Tukey's outlier test noted a few outliers as may be seen on the Outlier Summary Table and accompanying graphs. Any values flagged as outliers are plotted in a lighter font on the time series graph. A substitution of the most recent reporting limit was applied when varying detection limits existed in data.

No true seasonal patterns were observed on the time series plots for any of the detected data; therefore, no deseasonalizing adjustments were made to the data. When seasonal patterns are observed, data may be deseasonalized so that the resulting limits will correctly account for the seasonality as a predictable pattern rather than random variation or a release.

While trends may be visual, a quantification of the trend and its significance is needed. The Sen's Slope/Mann Kendall trend test was used to evaluate all data at each well to identify statistically significant increasing or decreasing trends. In the absence of suspected contamination, significant trending data are typically not included as part of the background data used for construction of prediction limits. This step serves to eliminate the trend and, thus, reduce variation in background. When statistically

significant decreasing trends are present, earlier data are evaluated to determine whether earlier concentration levels are significantly different than current reported concentrations and will be deselected as necessary. When the historical records of data are truncated for the reasons above, a summary report will be provided to show the date ranges used in construction of the statistical limits.

The results of the trend analyses showed several statistically significant decreasing trends and one increasing trend for calcium in an upgradient well, as may be seen on the Trend Test Summary Table that accompanies the trend tests. These trends were relatively low in magnitude when compared to average concentrations; therefore, no adjustments were made to the data sets.

Appendix III – Determination of Spatial Variation

The Analysis of Variance (ANOVA) was used to statistically evaluate differences in average concentrations among upgradient wells, which assists in identifying the most appropriate statistical approach. Interwell tests, which compare downgradient well data to statistical limits constructed from pooled upgradient well data, are appropriate when average concentrations are similar across upgradient wells. Intrawell tests, which compare compliance data from a single well to screened historical data within the same well, are appropriate when upgradient wells exhibit spatial variation; when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective; and when downgradient water quality is unimpacted compared to upgradient water quality for the same parameter.

The ANOVA identified variation for all Appendix III parameters; therefore, these data were further evaluated as described for the appropriateness of intrawell testing to accommodate the groundwater quality. A summary table of the ANOVA results was included with the reports.

Appendix III - Statistical Limits

Intrawell limits constructed from carefully screened background data from within each well serve to provide statistical limits that are conservative (i.e. lower) from a regulatory perspective, and that will rapidly identify a change in more recent compliance data from within a given well. When natural variability is present, interwell prediction limits which pool upgradient well data to construct a single limit for each constituent are not recommended for comparison of all downgradient wells. Intrawell prediction limits which use historical data from within a given well to construct limits for the same well are,

however, recommended because they remove the element of variation across wells and eliminate the chance of mistaking natural spatial variation for a release from the facility. Prior to performing intrawell prediction limits, several steps are required to reasonably demonstrate downgradient water quality does not have existing impacts from the practices of the facility.

Exploratory data analysis was used as a general comparison of concentrations in downgradient wells for all Appendix III parameters recommended for intrawell analyses to concentrations reported in upgradient wells. Upper tolerance limits are used in conjunction with confidence intervals to determine whether the estimated averages in downgradient wells are higher than observed levels upgradient of the facility. The upper tolerance limits were constructed to represent the extreme upper range of possible background levels at the site.

In cases where downgradient average concentrations are higher than observed concentrations upgradient for a given constituent, an independent study and hydrogeological investigation would be required to identify local geochemical conditions and expected groundwater quality for the region to justify an intrawell approach. Such an assessment is beyond the scope of services provided by Groundwater Stats Consulting. When there is not an obvious explanation for observed concentration differences in downgradient wells relative to reported concentrations in upgradient wells, interwell prediction limits will initially be selected for the statistical method until further evidence shows that concentrations are due to natural variation rather than a result of the facility.

Parametric tolerance limits were constructed with a target of 99% confidence and 95% coverage using pooled upgradient well data for each of the Appendix III parameters. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. As more data are collected, the background population is better represented and the confidence and coverage levels increase.

Confidence intervals were constructed on downgradient wells for each of the Appendix III parameters, using the tolerance limits discussed above, to determine intrawell eligibility. When the entire confidence interval is above a background standard for a given parameter, interwell methods are initially recommended as the statistical method. Therefore, only parameters with confidence intervals which did not exceed background standards are eligible for intrawell prediction limits.

Confidence intervals for the above parameters were found to be within their respective background limit for all Appendix III parameters with the exception of boron. Therefore,

intrawell methods are recommended for calcium, chloride, fluoride, pH, sulfate and TDS; and interwell methods are recommended initially for boron. As mentioned earlier, if a demonstration supports natural variation in groundwater, intrawell methods will be considered for all parameters.

All available data through June 2017 at each well were used to establish intrawell background limits based on a 1-of-2 resample plan that will be used for future comparisons. Interwell prediction limits, combined with a 1-of-2 resample plan, were constructed from upgradient wells for boron. Downgradient measurements are compared to these background limits during each subsequent semi-annual sampling event.

Natural systems continuously evolve due to physical changes made to the environment. Examples include capping a landfill, paving areas near a well, or lining a drainage channel to prevent erosion. Periodic updating of background statistical limits will be necessary to accommodate these types of changes In the interwell case, newer data will be included in background during each event after careful screening for any new outliers or changes in concentrations. In the intrawell case, data for all wells and constituents are re-evaluated when a minimum of 4 new data points are available to determine whether earlier concentrations are representative of present-day groundwater quality. In some cases, the earlier portion of data are deselected prior to construction of limits in order to provide sensitive limits that will rapidly detect changes in groundwater quality. Even though the data are excluded from the calculation, the values will continue to be reported and shown in tables and graphs.

In the event of an initial exceedance of compliance well data, the 1-of-2 resample plan allows for collection of an additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified and further research would be required to identify the cause of the exceedance (i.e. impact from the site, natural variation, or an off-site source). If the resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, no further action is necessary.

**Appendix III Background Update – November 2019**

Prior to updating background data, samples are re-evaluated for all wells for parameters tested with intrawell analyses (calcium, chloride, fluoride, pH, sulfate and TDS), and for combined upgradient well data for parameters tested with interwell analyses (boron) using Tukey's outlier test and visual screening for all historical data through June 2019

samples (Figure C). When Tukey's outlier test detects an outlier for the most recent sample, it will not be flagged in the event that the data precede a trend that is more representative of current concentrations. No outliers were identified for the Appendix III parameters during this screening. A summary of Tukey's test results and flagged outliers follows this letter.

For constituents requiring intrawell prediction limits, the Mann-Whitney (Wilcoxon Rank Sum) test was used to compare the medians of historical data through June 2017 to the new compliance samples at each well through March 2019 to evaluate whether the groups are statistically different at the 99% confidence level, in which case background data may be updated with compliance data (Figure D).

The following well/constituent pairs were noted to have statistically significant lower medians in the more recent set of measurements when compared to background data: calcium, sulfate and TDS in downgradient well B-10 and TDS in downgradient well B-6. A statistically significant difference was noted for sulfate in downgradient well B-9 which had a higher median in more recent data compared to the historical data. Typically, when the test concludes that the medians of the two groups are significantly different, particularly in the downgradient wells, the background are not updated to include the newer data but will be reconsidered in the future.

However, when the entire records were evaluated using the time series graphs, more recent concentrations appeared only slightly different from historical measurements. In the case of sulfate in well B-9, more recent measurements are similar to those reported upgradient of the facility indicating natural variability in groundwater. It was noted that earlier measurements for sulfate and TDS at well B-2 were higher than those reported currently. Because these measurements represent pre-waste data, they are currently retained in the records. For these reasons, combined with the limited data available at this time, all background data sets were updated through March 2019. All data will be re-evaluated during the next background update and, if it is determined that historical measurements are no longer representative of recent measurements, records will be adjusted at that time. In cases where concentrations are increasing in a downgradient well but similar patterns are not occurring in at least one upgradient well, further investigation would be required prior to updating the data set with more recent measurements. A summary of these results follows this letter and the test results are included with the Mann Whitney test section at the end of this report.

Intrawell prediction limits using all historical data through March 2019, combined with a 1-of-2 resample plan, were constructed for calcium, chloride, fluoride, pH, sulfate and TDS (Figure E).

For boron, which is tested using interwell prediction limits, the Sen's Slope/Mann-Kendall trend test was used on upgradient wells to determine whether concentrations are statistically increasing, decreasing or stable (Figure F). No statistically significant increasing or decreasing trends were noted. As more data are collected, all upgradient well data will be re-evaluated for possible deselection of earlier measurements if they no longer represent present-day groundwater quality conditions. A summary of those results is included with the trend tests.

Interwell prediction limits, combined with a 1-of-2 resample plan, were updated using all available data from upgradient wells for the same time period for boron (Figure G). Interwell prediction limits pool upgradient well data to establish a background limit for an individual constituent. A summary table of the updated limits may be found following this letter in the Prediction Limit Summary Tables.

**Evaluation of Appendix IV Parameters**

Parametric tolerance limits were used to calculate background limits from all available pooled upgradient well data for Appendix IV parameters with a target of 95% confidence and 95% coverage to determine the Alternate Contaminant Level (ACL) (Figure H). All are screened for outliers and extreme trending patterns that would lead to artificially elevated statistical limits. It was noted that several constituents had higher reported concentrations in several wells during the September and November 2016 events which appear to be either a laboratory or sampling issue. Therefore, these values were flagged as outliers since they do not represent the population within these wells. Additionally, several reporting limits for the metals are significantly lower beginning in March 2019 than those reported historically. No adjustment was made at this time; however, all data will be re-evaluated during the next background update to determine whether a substitution of the most recent reporting limit is required. For lithium, the reporting limit during the June 2019 event increased from a historical limit of 0.001 mg/L to 0.1 mg/L. Therefore, this value was flagged in all wells as it appears to be related to laboratory or sampling practices. A summary of Tukey's test results and flagged outliers follows this letter.

Any flagged values may be seen on the Outlier Summary following this letter. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. These limits were compared to the Maximum

Contaminant Levels (MCLs) and CCR-Rule specified levels in the Groundwater Protection Standard (GWPS) table following this letter to determine the highest limit for use as the GWPS in the Confidence Interval comparisons (Figure I).

Confidence intervals were then constructed on downgradient wells for each of the Appendix IV parameters using the highest limit of the MCL, CCR-Rule specified level, or ACL as discussed above (Figure J). Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. No confidence intervals exceedances were found. A summary of the confidence interval results follows this letter.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Flint Creek Landfill. If you have any questions or comments, please feel free to contact me.

For Groundwater Stats Consulting,

Kristina L. Rayner
Groundwater Statistician

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

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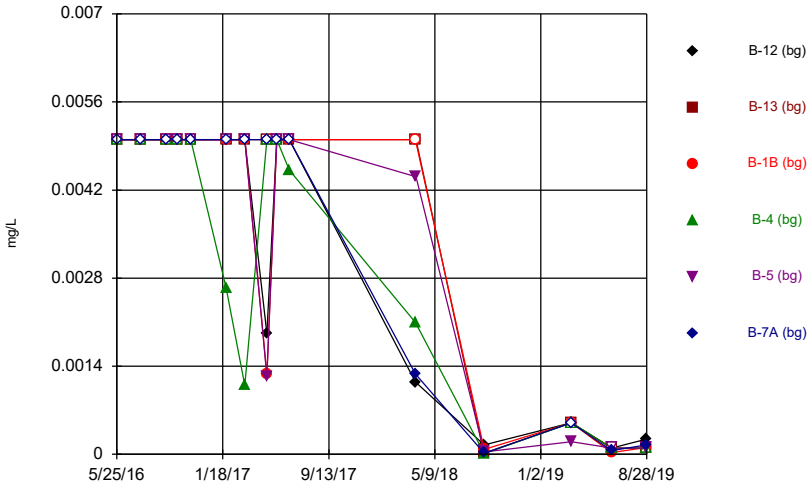


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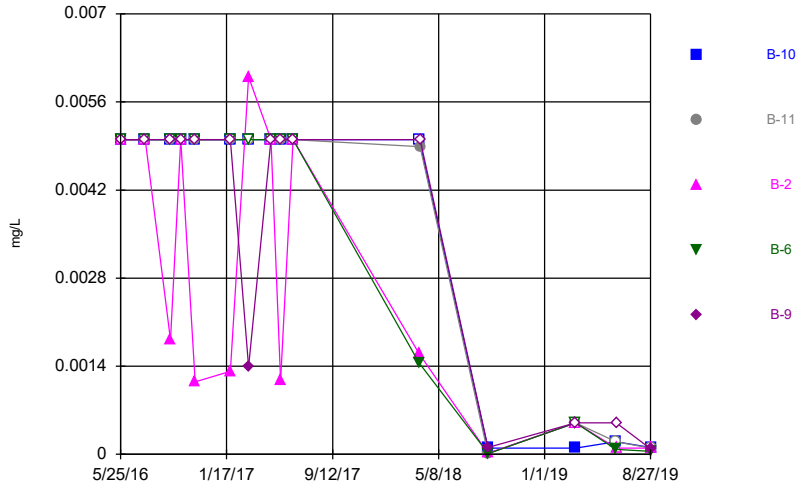


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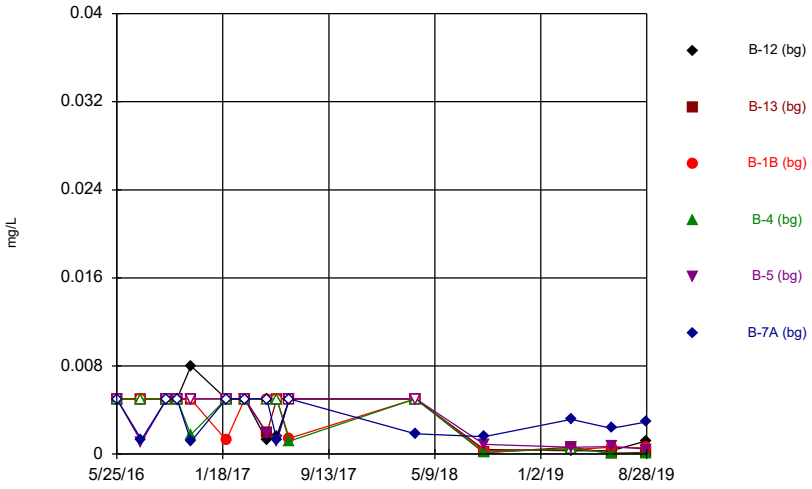


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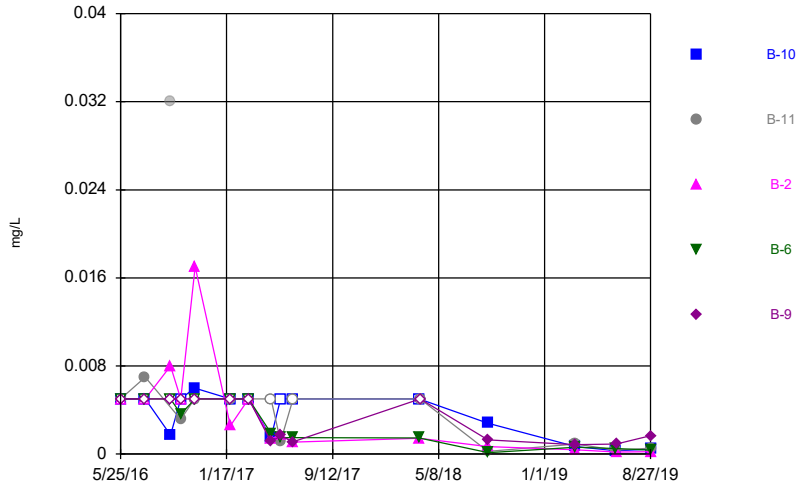


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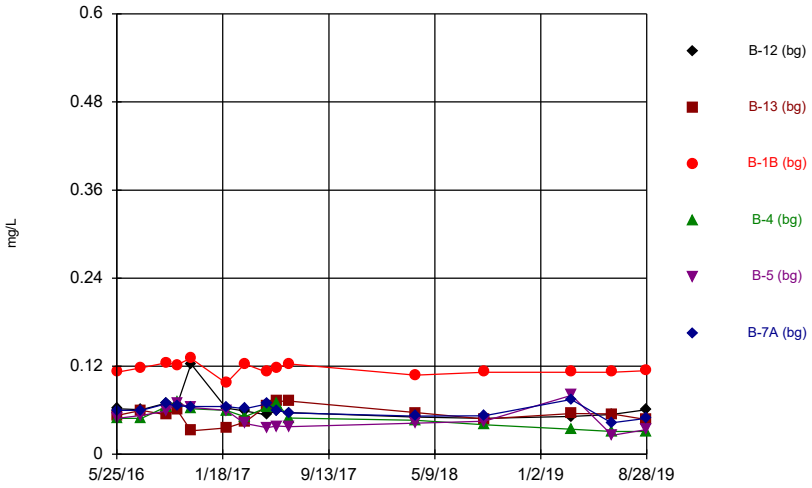


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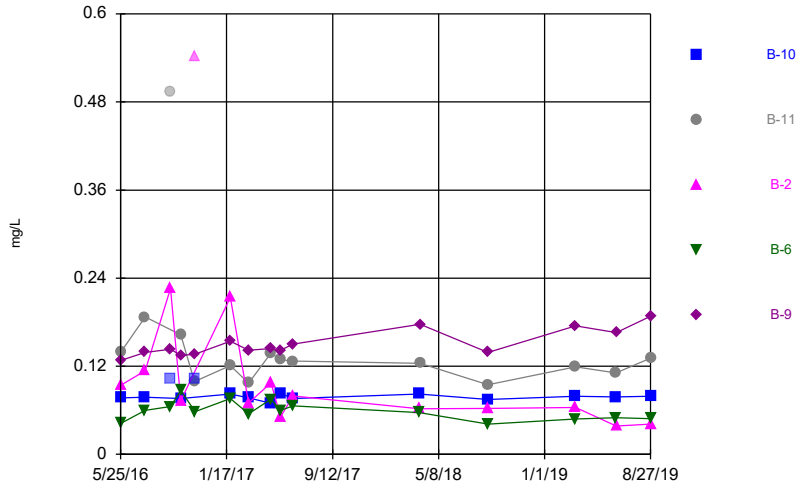


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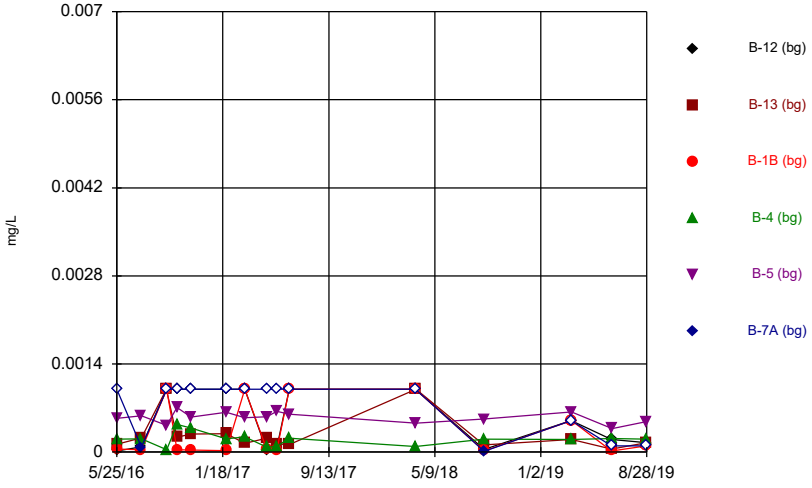


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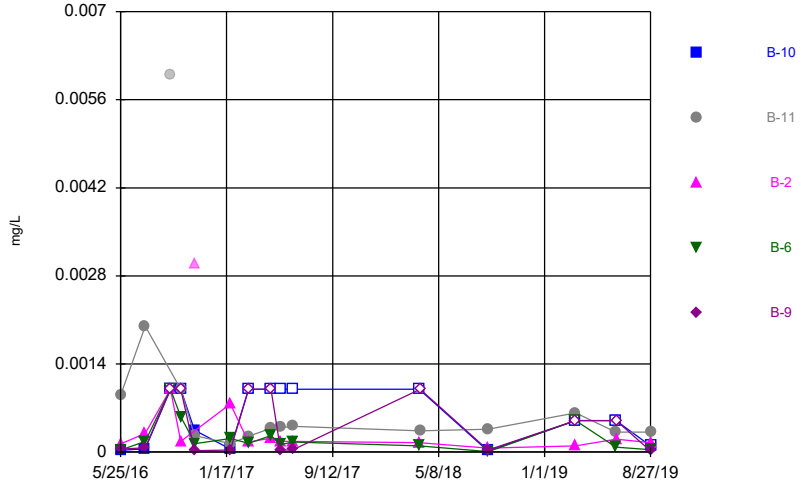


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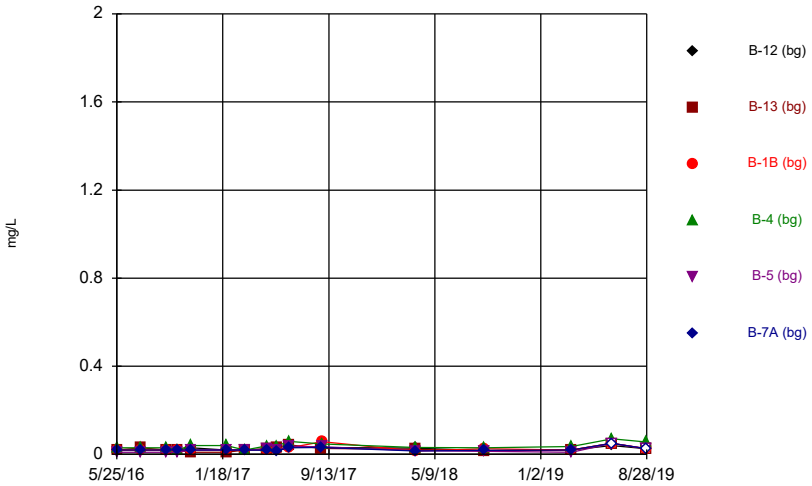


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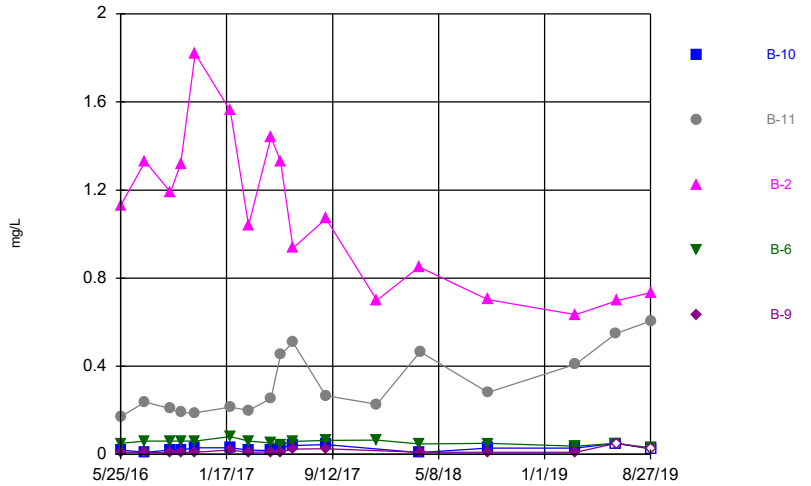


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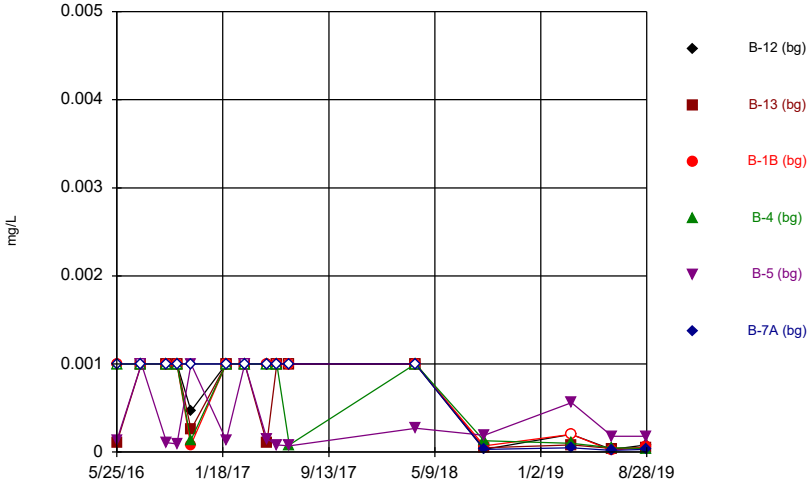


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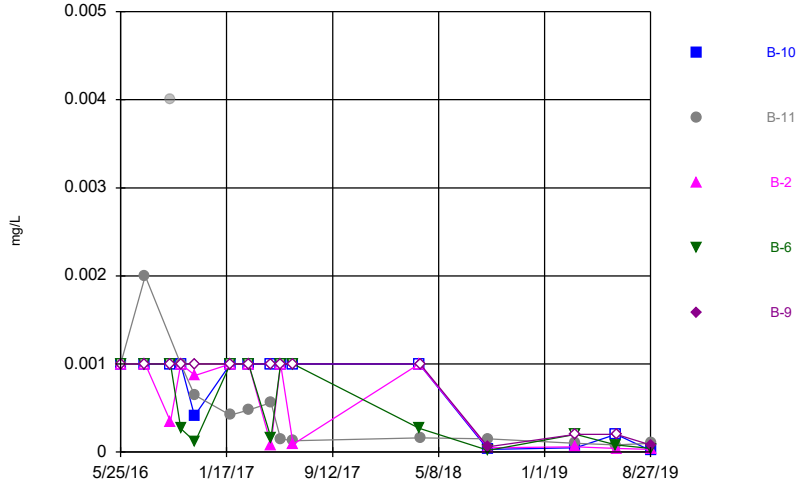


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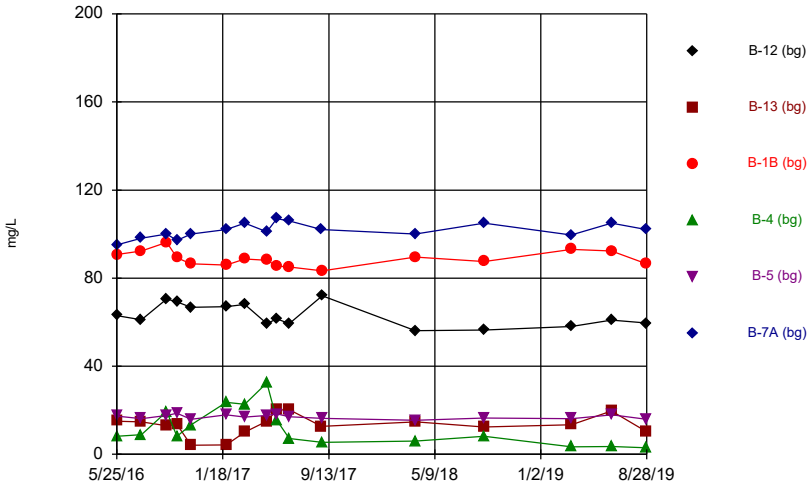
Time Series

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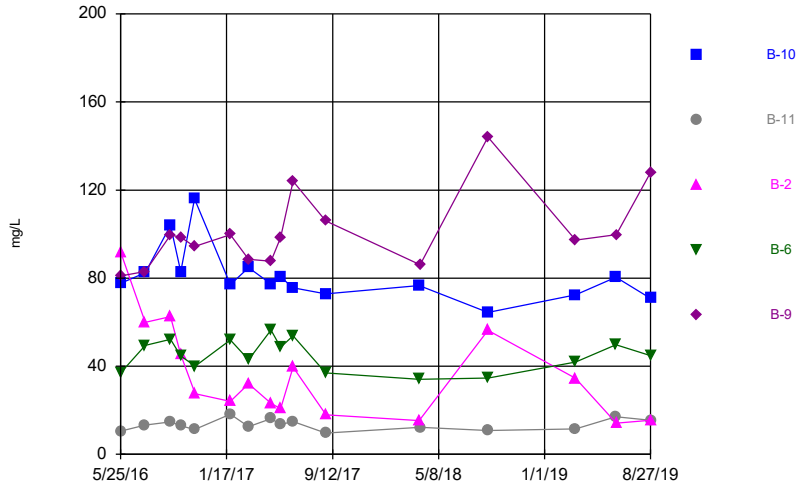
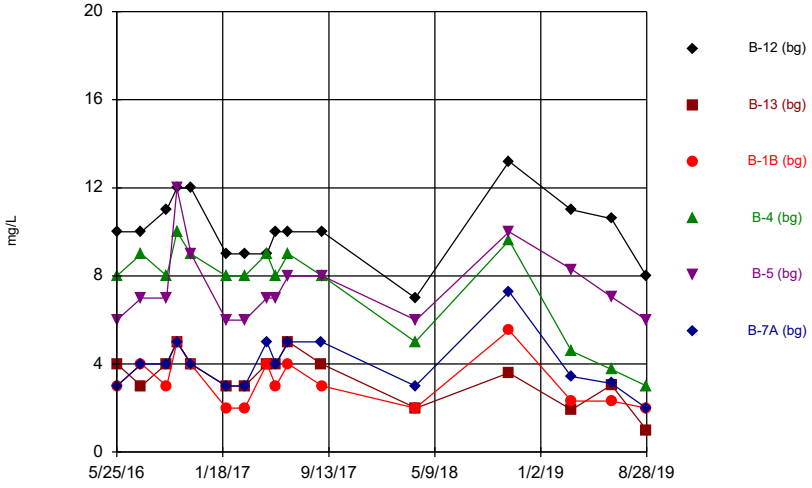
Time Series




Constituent: Calcium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

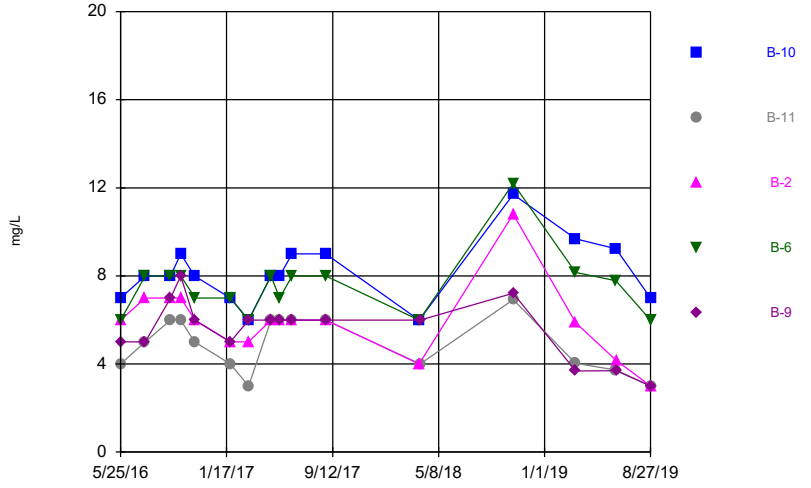
Time Series




Constituent: Chloride, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

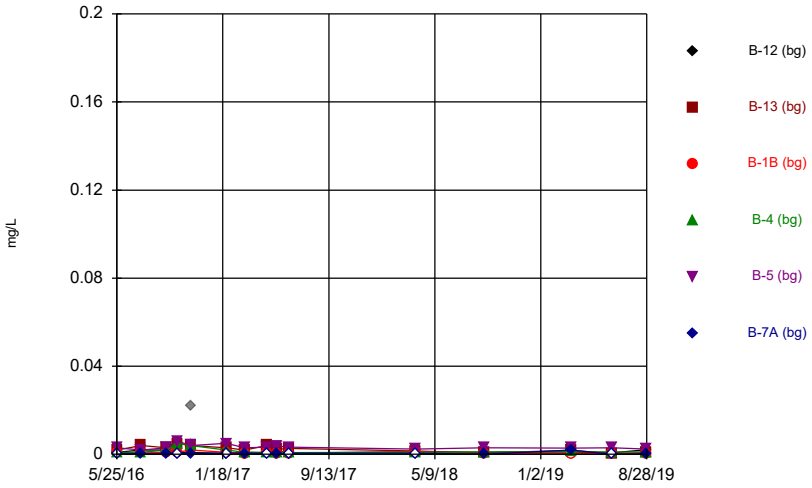
Time Series




Constituent: Chloride, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

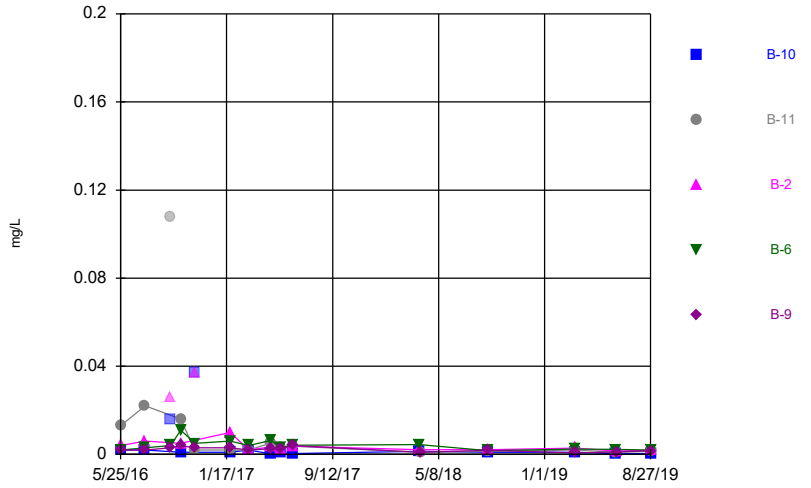
Time Series




Constituent: Chromium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

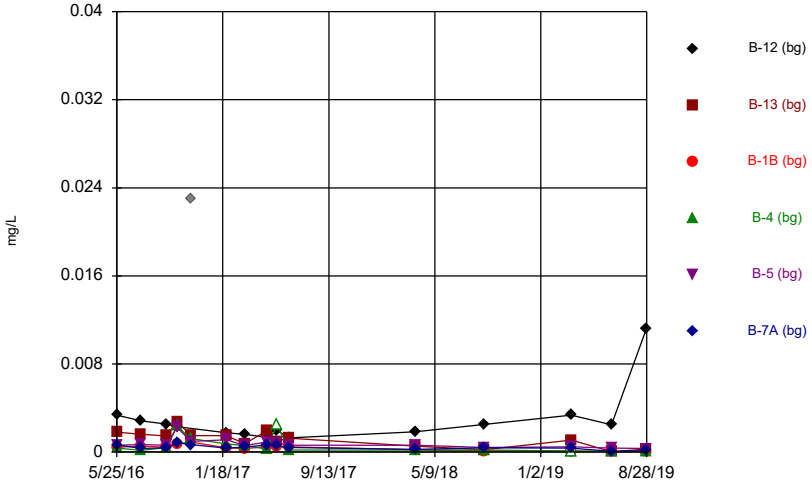
Time Series




Constituent: Chromium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

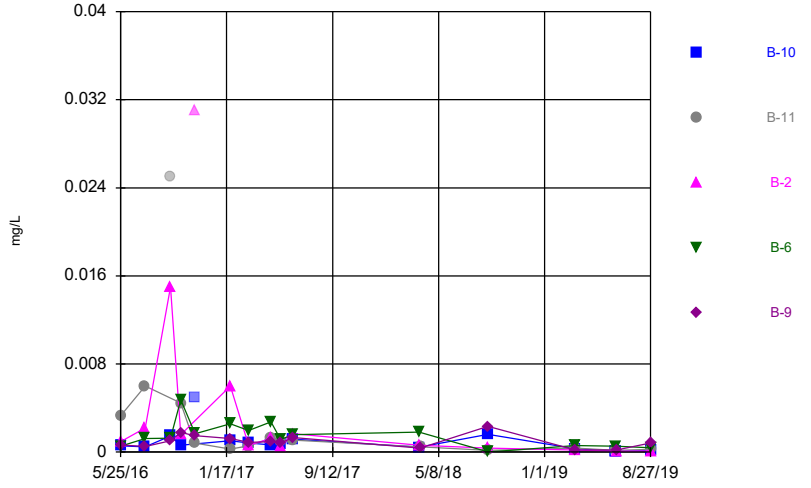
Time Series




Constituent: Cobalt, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

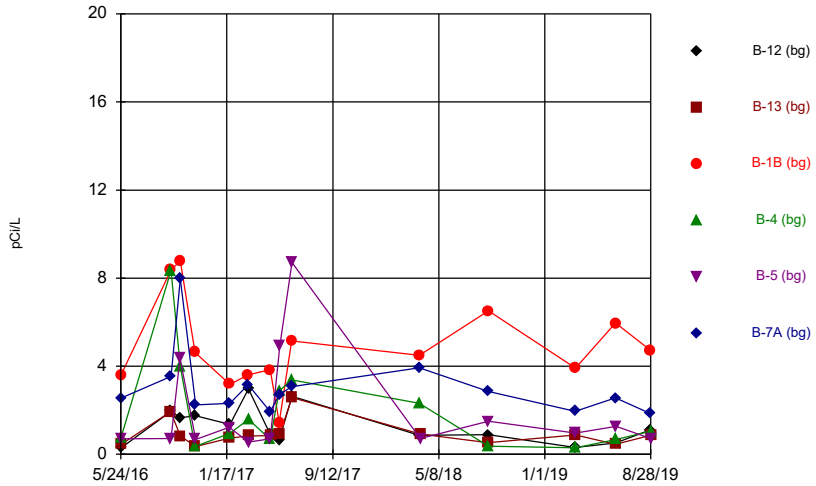
Time Series




Constituent: Cobalt, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

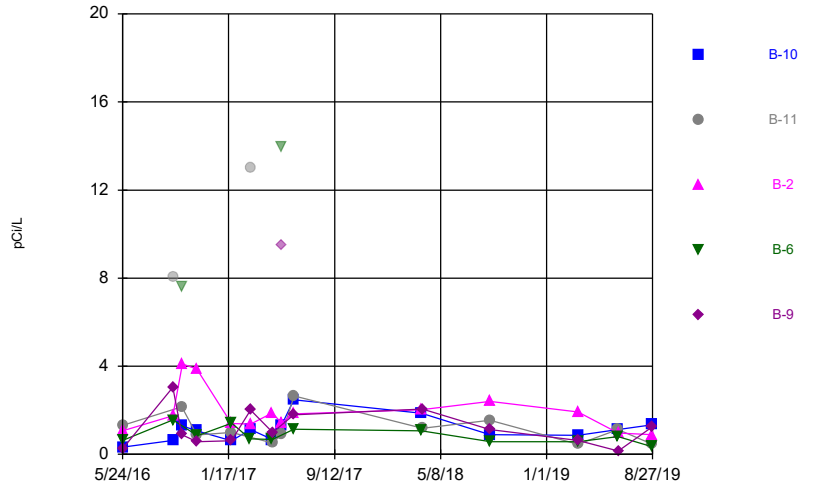
## Time Series




Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

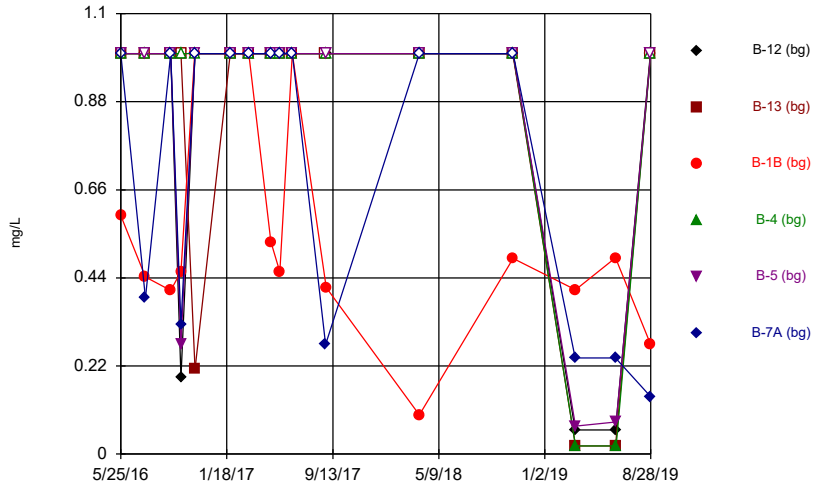
## Time Series




Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

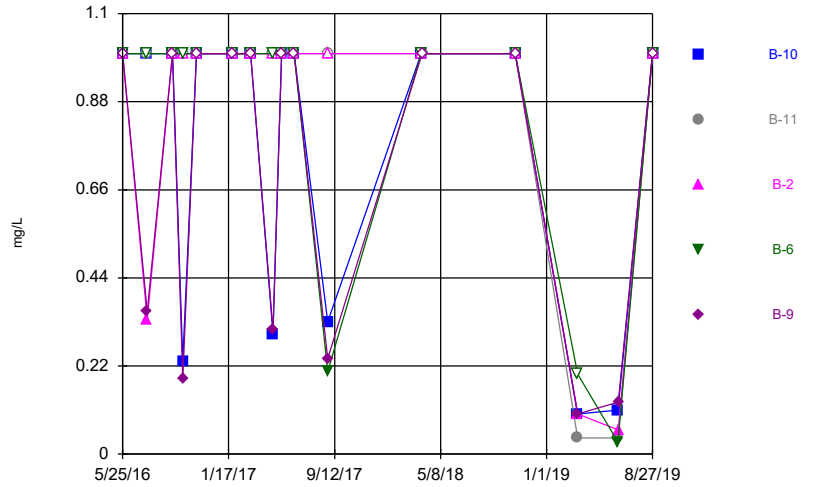
## Time Series




Constituent: Fluoride, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

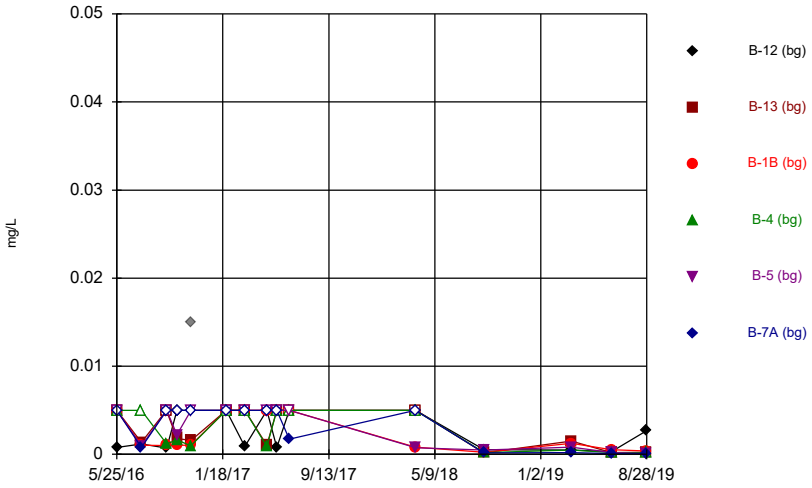
## Time Series




Constituent: Fluoride, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

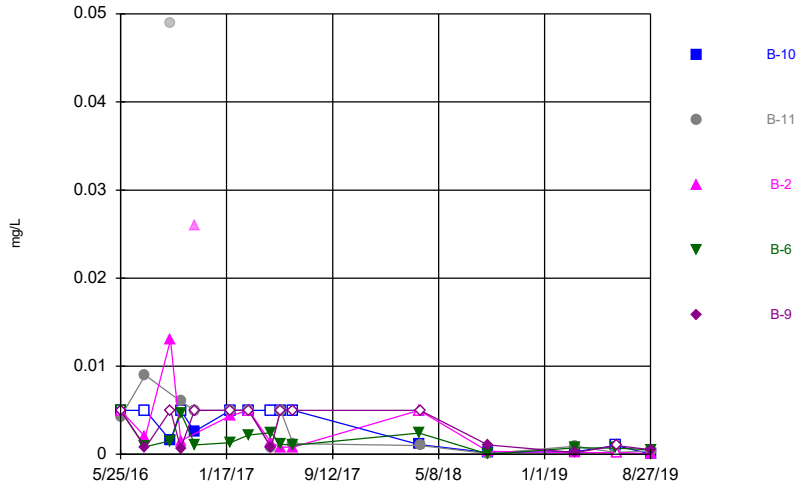
## Time Series




Constituent: Lead, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

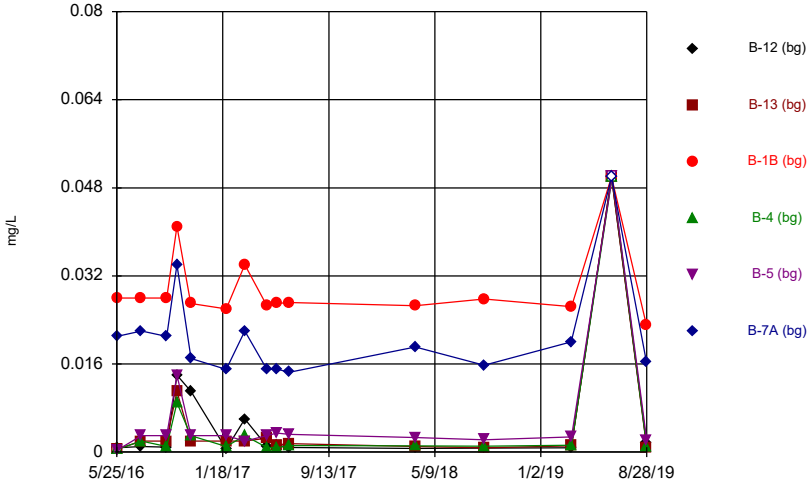
## Time Series




Constituent: Lead, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

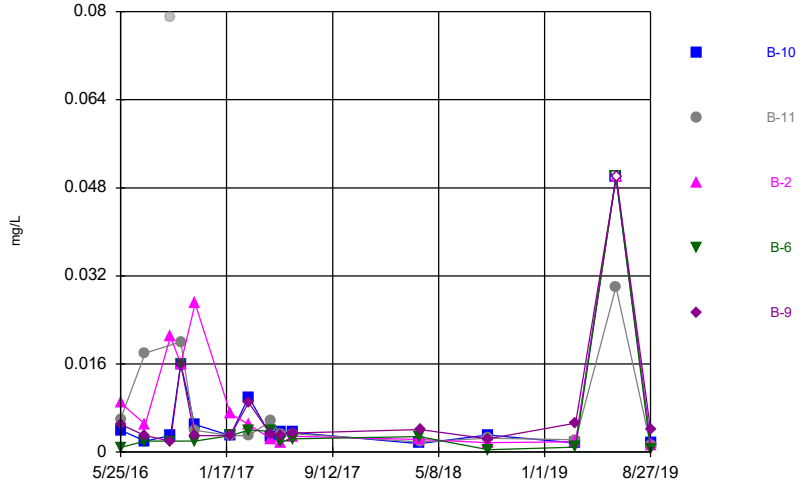
## Time Series




Constituent: Lithium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

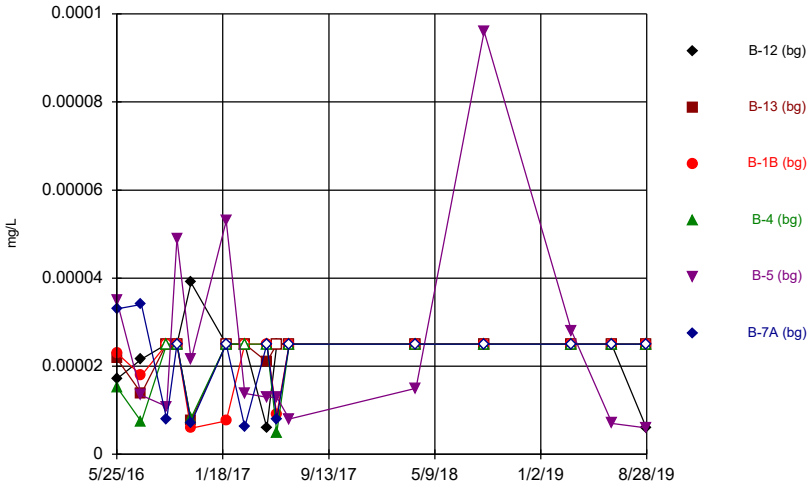
## Time Series




Constituent: Lithium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

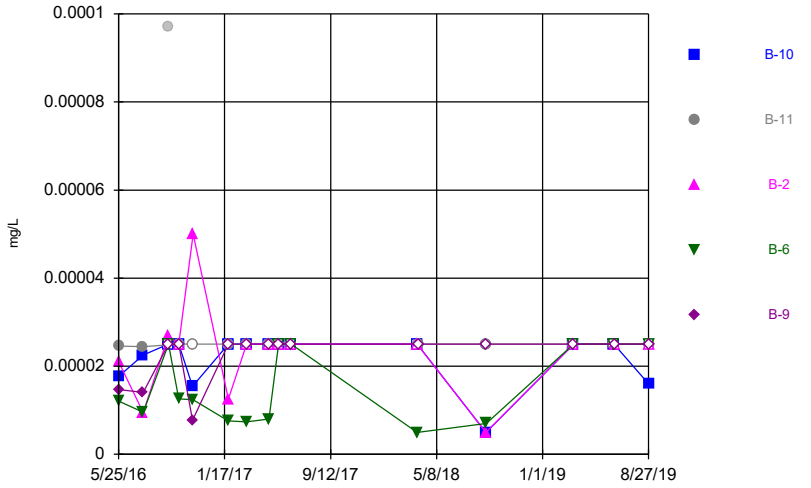
## Time Series




Constituent: Mercury, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

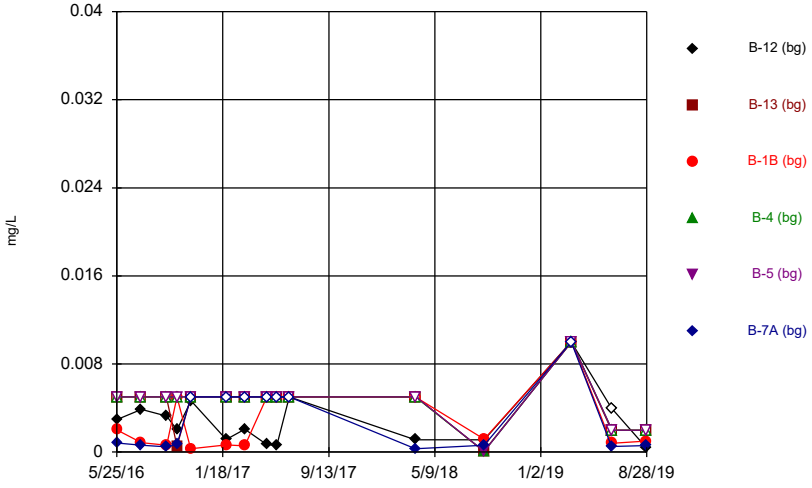
## Time Series




Constituent: Mercury, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

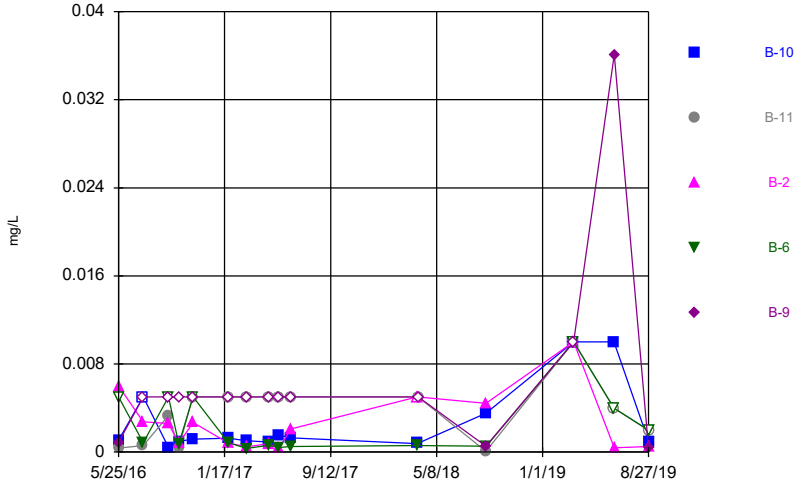
## Time Series




Constituent: Molybdenum, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

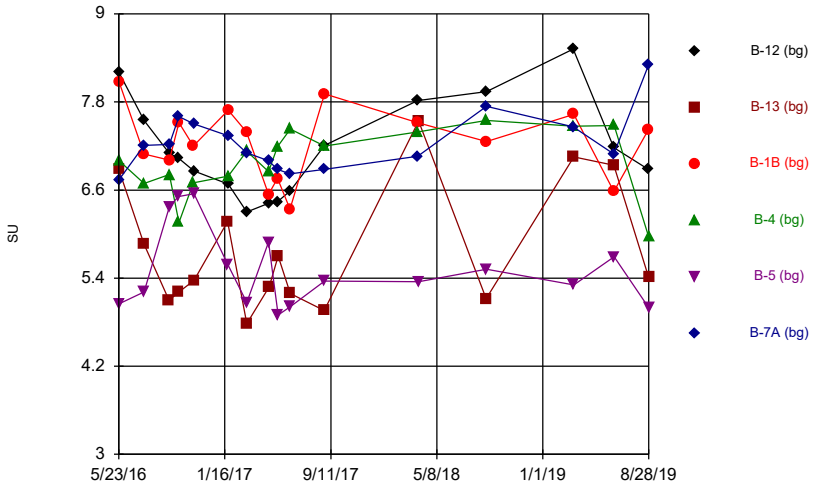
## Time Series




Constituent: Molybdenum, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

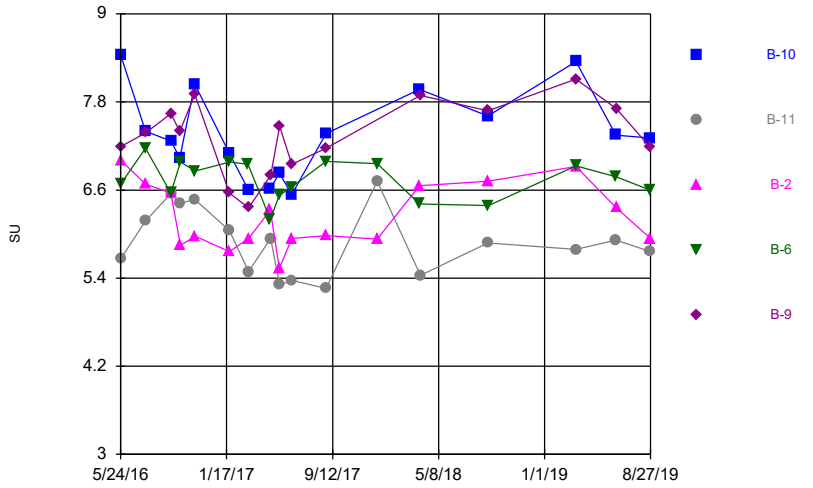
## Time Series




Constituent: pH, field Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

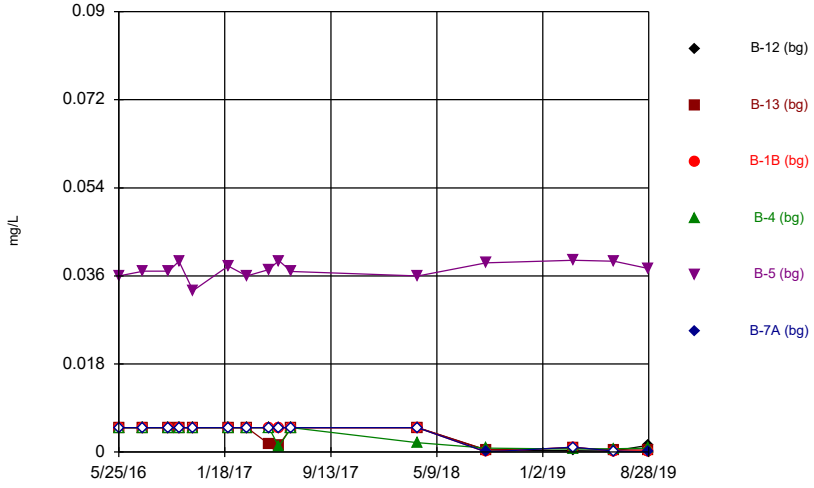
## Time Series




Constituent: pH, field Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

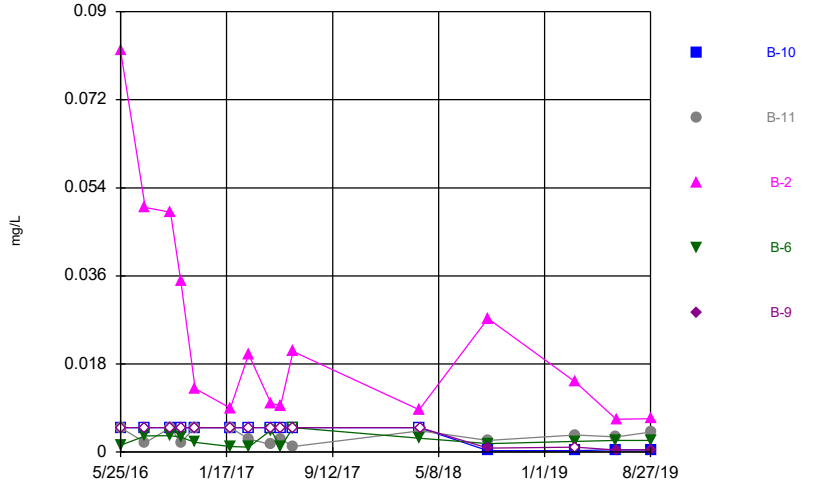
## Time Series




Constituent: Selenium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

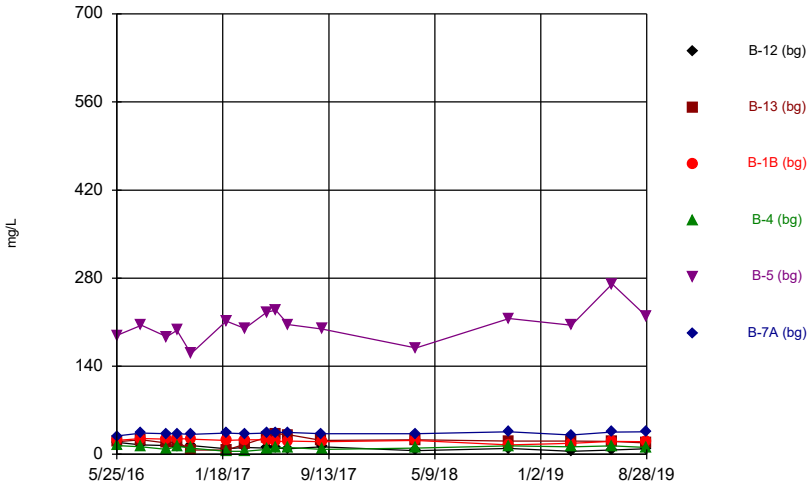
## Time Series




Constituent: Selenium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

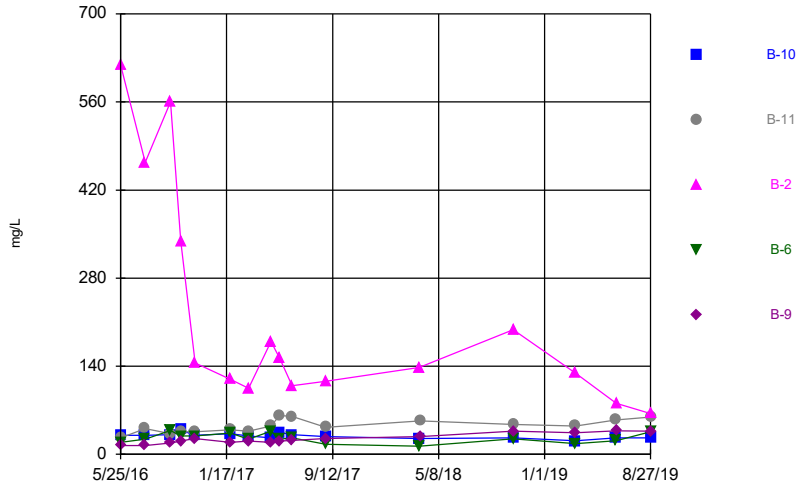
## Time Series




Constituent: Sulfate, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

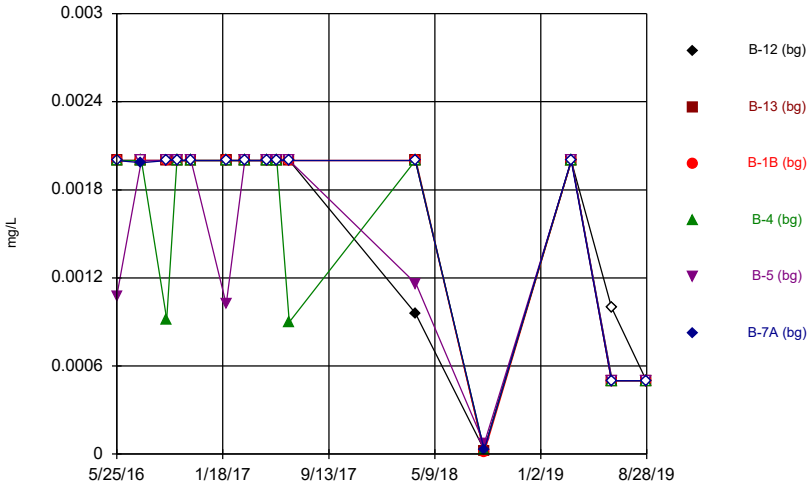
## Time Series




Constituent: Sulfate, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

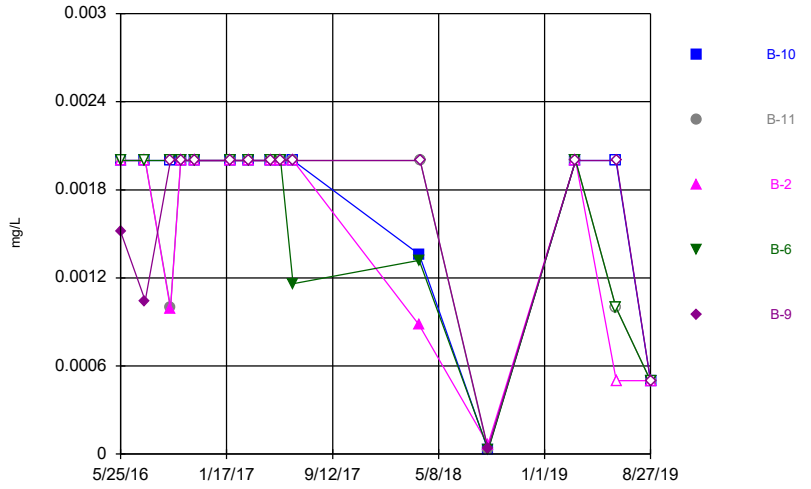
## Time Series




Constituent: Thallium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

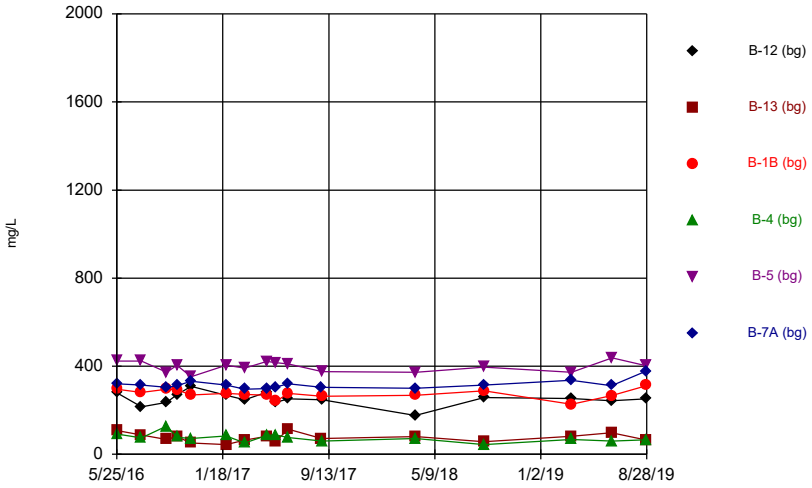
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Time Series




Constituent: Thallium, total Analysis Run 12/8/2019 11:48 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

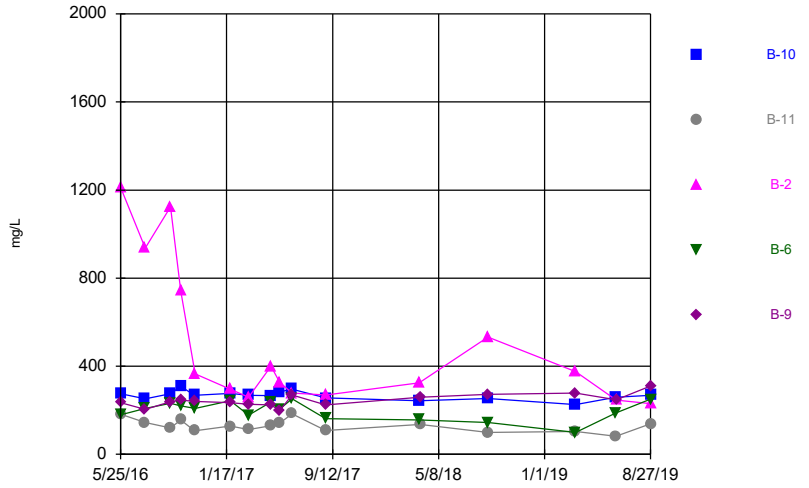
Time Series




Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 11:49 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

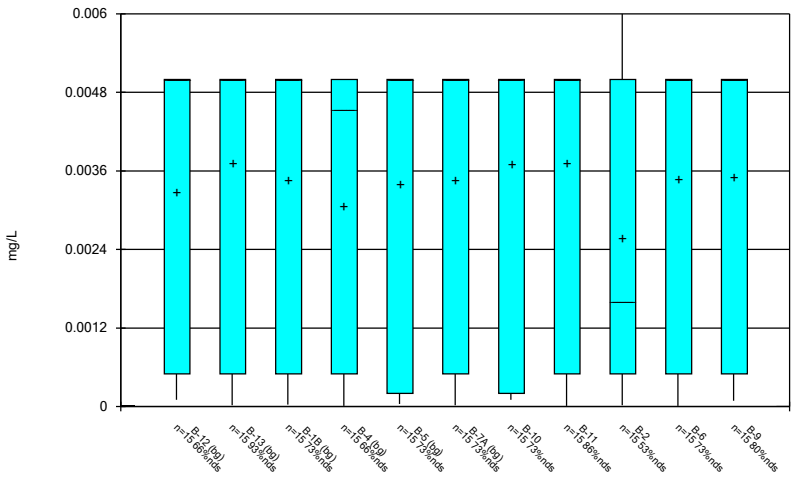
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series




Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 11:49 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

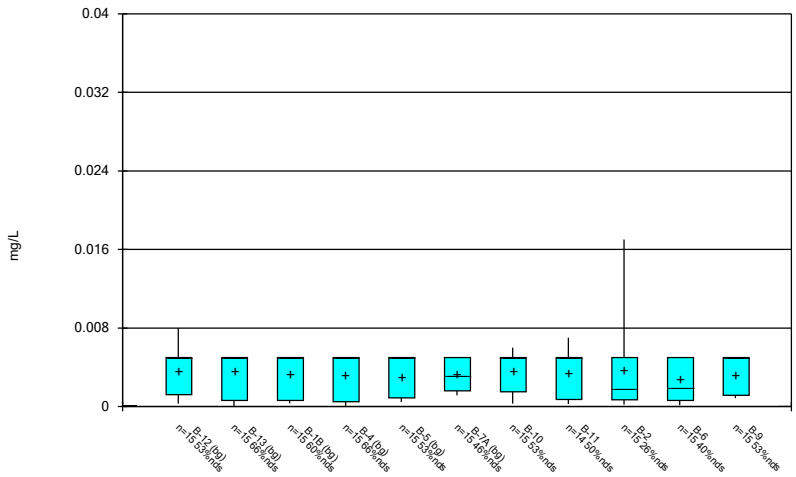
## Box & Whiskers Plot




Constituent: Antimony, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

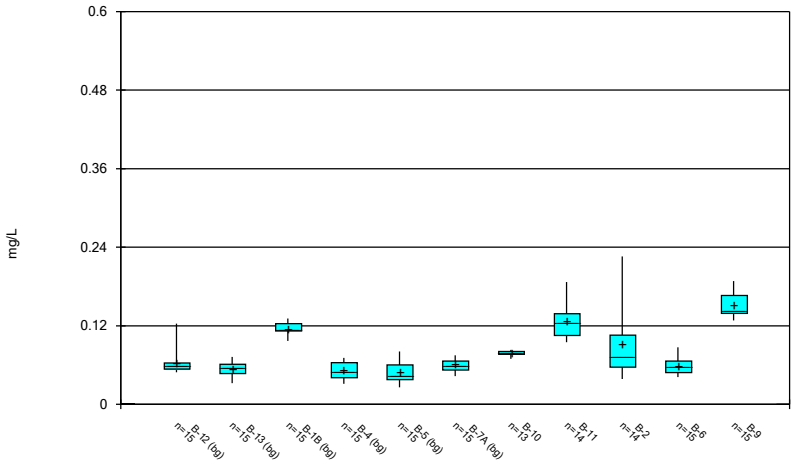
## Box & Whiskers Plot




Constituent: Arsenic, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

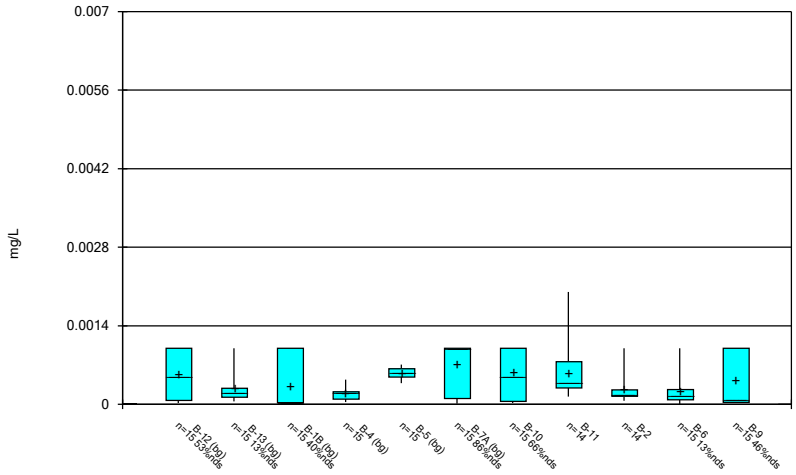
## Box & Whiskers Plot




Constituent: Barium, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

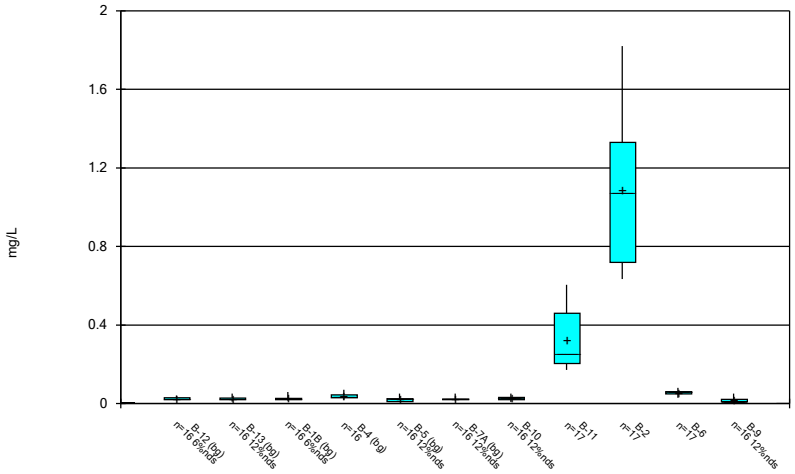
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Box & Whiskers Plot




Constituent: Beryllium, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

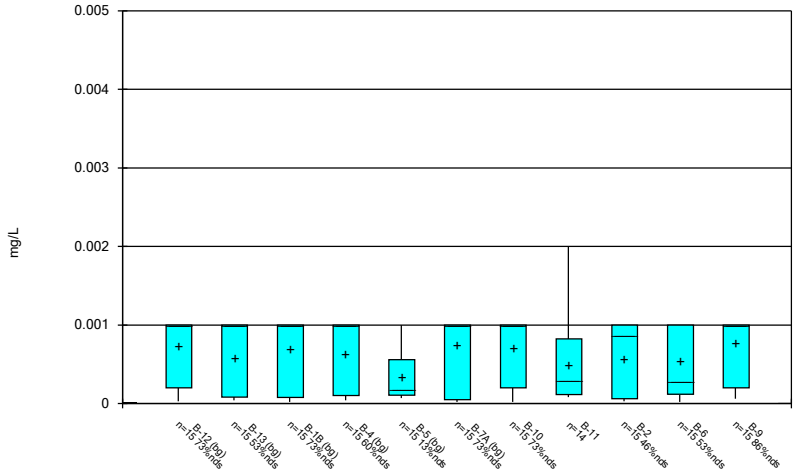
## Box & Whiskers Plot




Constituent: Boron, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

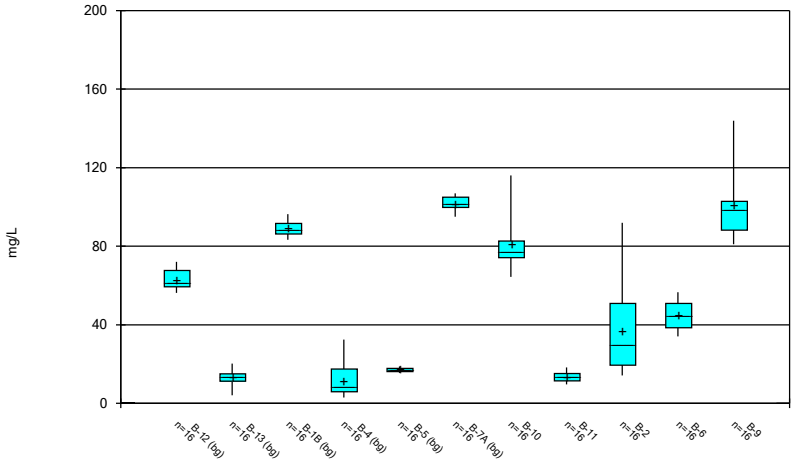
## Box & Whiskers Plot




Constituent: Cadmium, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

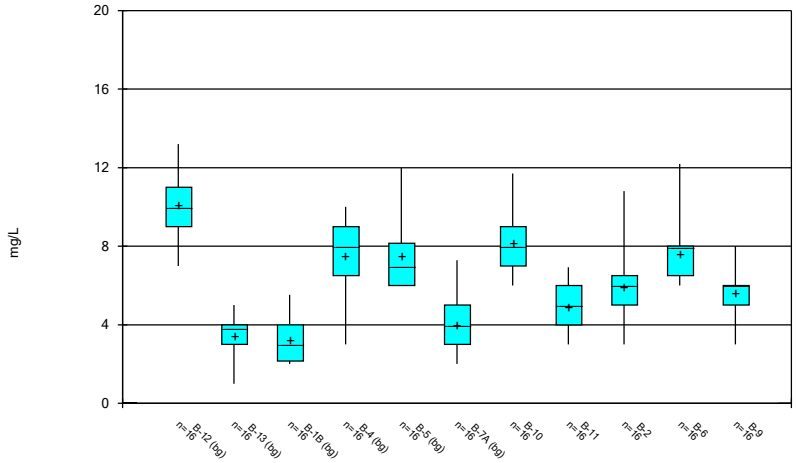
## Box & Whiskers Plot




Constituent: Calcium, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

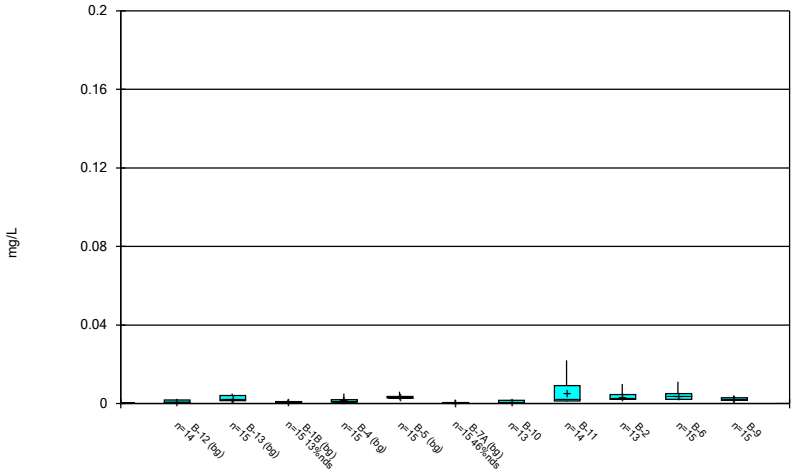
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Box & Whiskers Plot




Constituent: Chloride, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

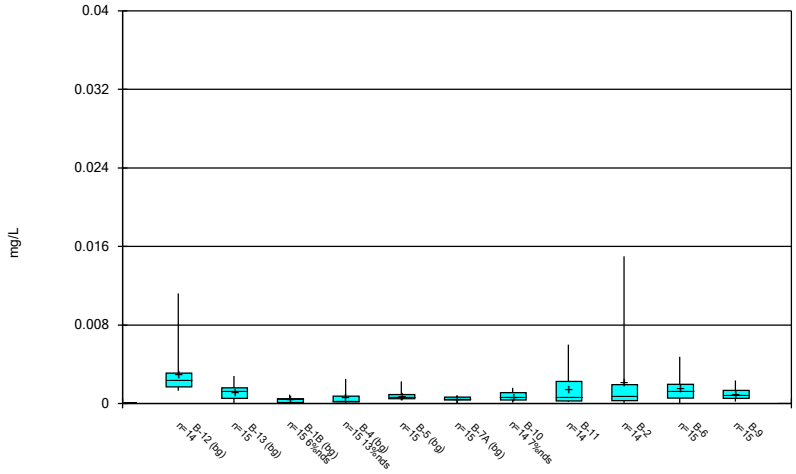
## Box & Whiskers Plot




Constituent: Chromium, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

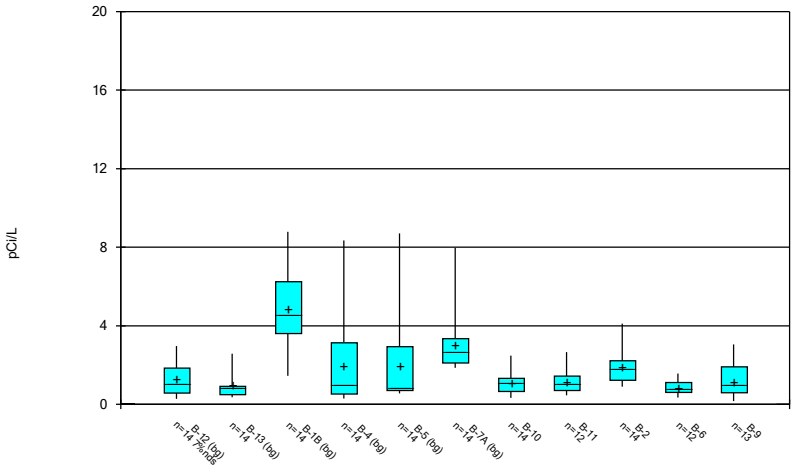
## Box & Whiskers Plot




Constituent: Cobalt, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

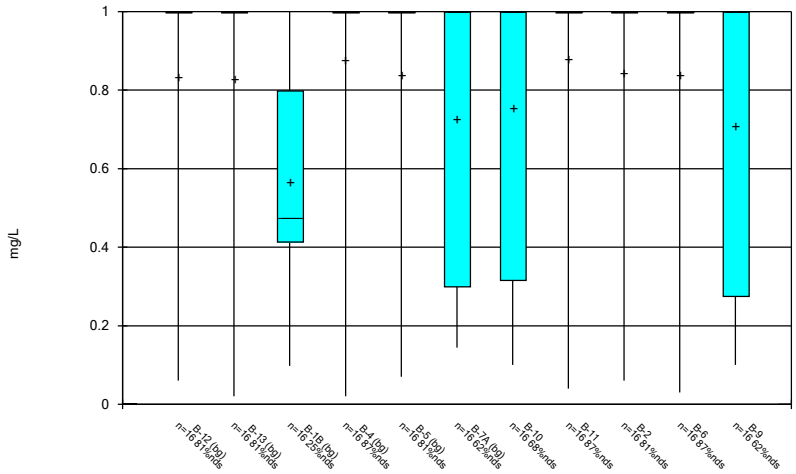
## Box & Whiskers Plot




Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

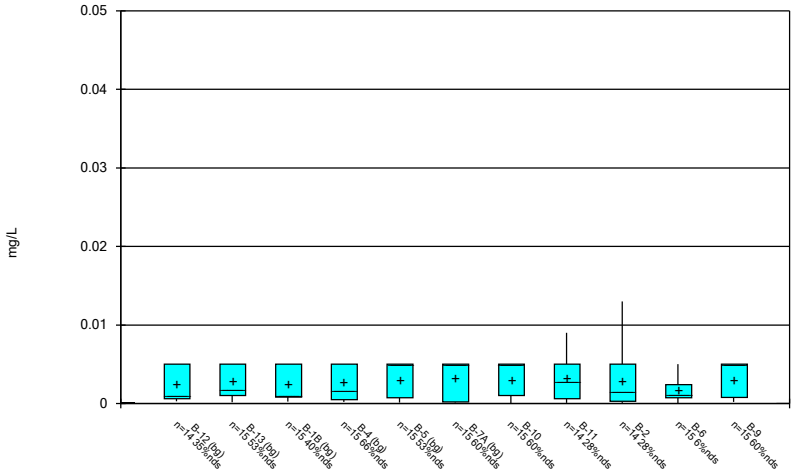
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Box & Whiskers Plot




Constituent: Fluoride, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

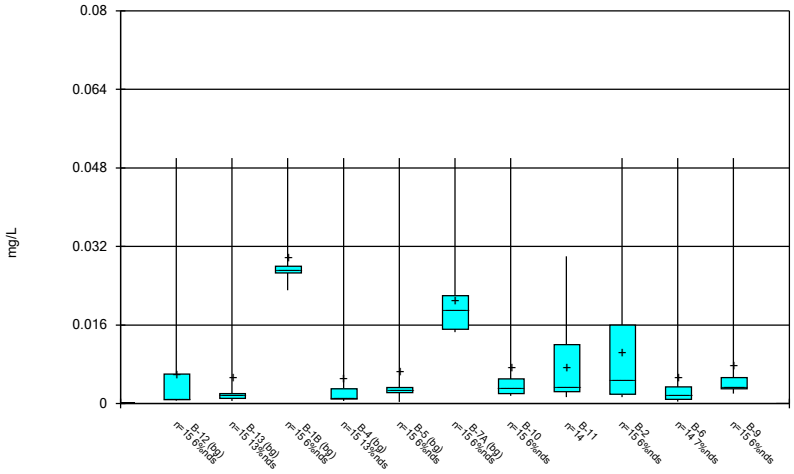
## Box & Whiskers Plot




Constituent: Lead, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

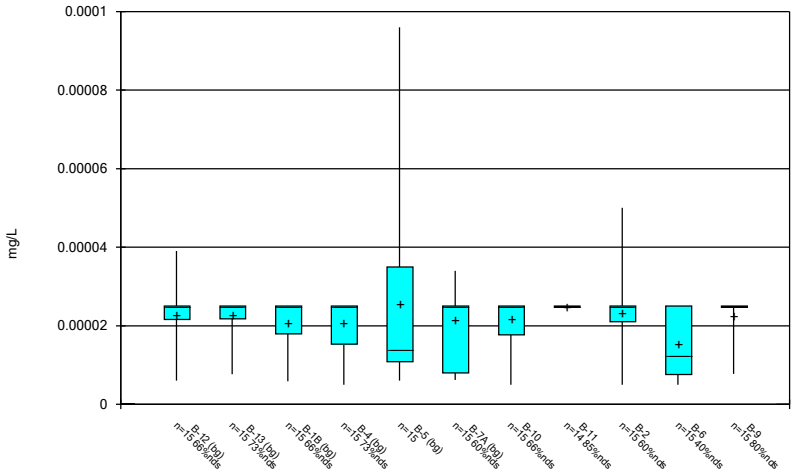
## Box & Whiskers Plot




Constituent: Lithium, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

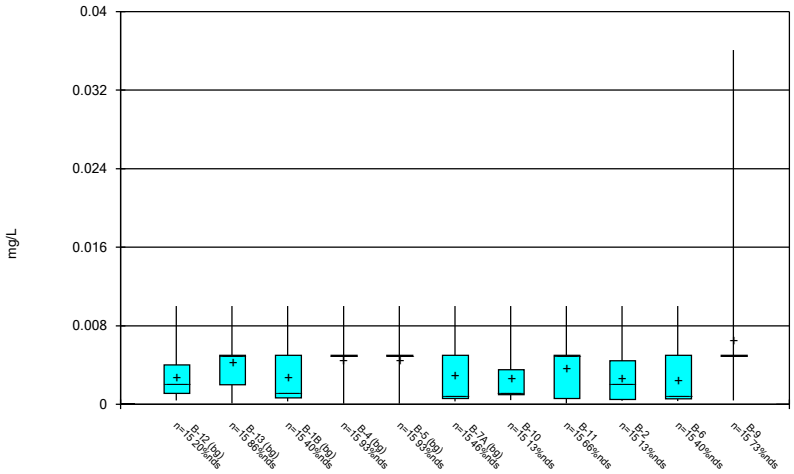
## Box & Whiskers Plot




Constituent: Mercury, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

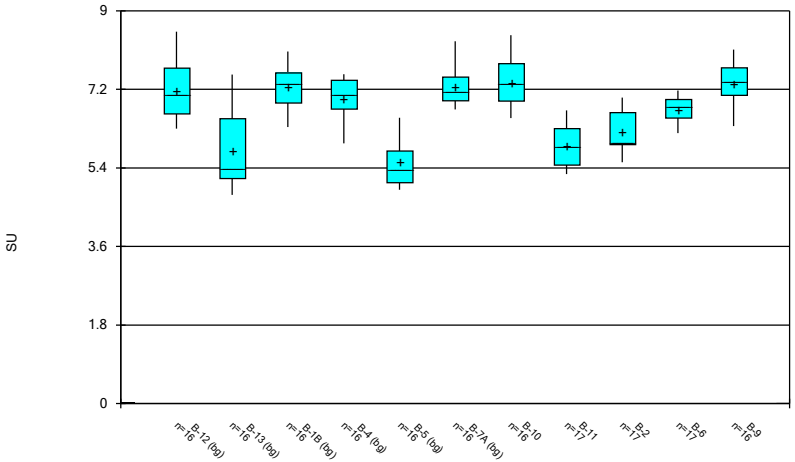
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Box & Whiskers Plot




Constituent: Molybdenum, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

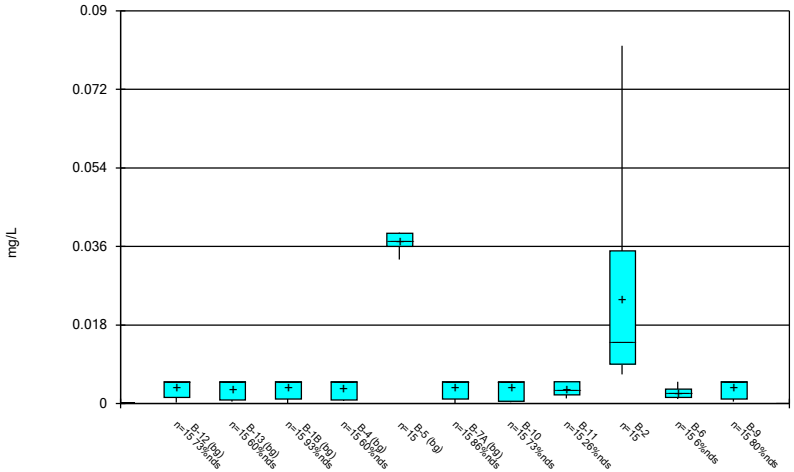
## Box & Whiskers Plot




Constituent: pH, field Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

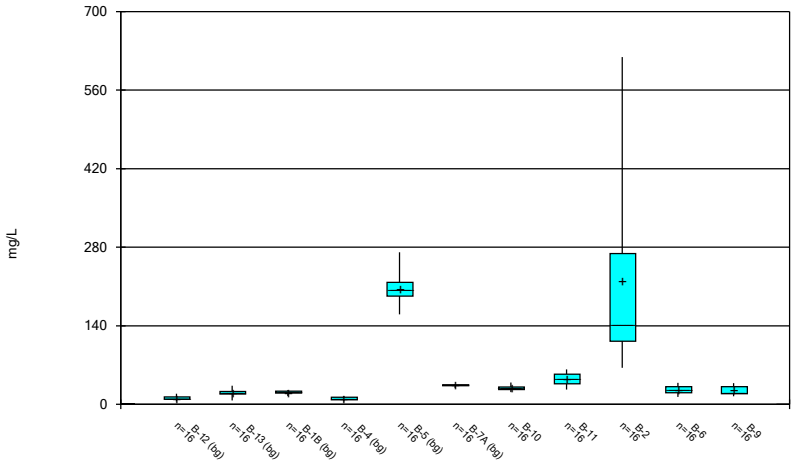
## Box & Whiskers Plot




Constituent: Selenium, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

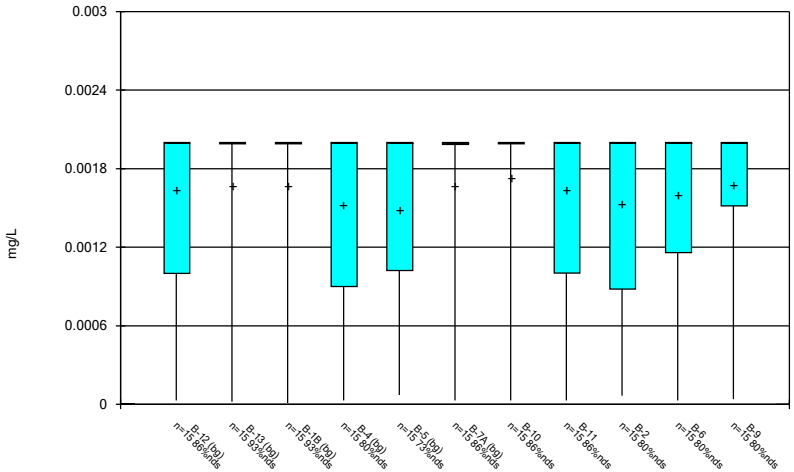
## Box & Whiskers Plot




Constituent: Sulfate, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

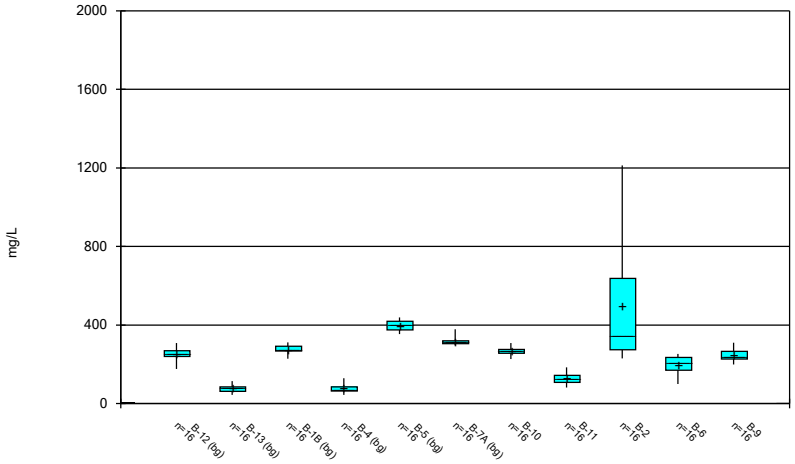
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Box & Whiskers Plot




Constituent: Thallium, total Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Box & Whiskers Plot




Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 11:50 AM View: Descriptive
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

# Outlier Summary

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 4:03 PM

| | B-11 Arsenic, total (mg/L) | B-10 Barium, total (mg/L) | B-11 Barium, total (mg/L) | B-2 Barium, total (mg/L) | B-11 Beryllium, total (mg/L) | B-2 Beryllium, total (mg/L) | B-11 Cadmium, total (mg/L) | B-12 Chromium, total (mg/L) | B-10 Chromium, total (mg/L) | B-11 Chromium, total (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9/14/2016 | 0.032 (o) | 0.102 (o) | 0.494 (o) | | 0.006 (o) | | 0.004 (o) | | 0.016 (o) | 0.108 (o) |
| 10/5/2016 | | | | | | | | | | |
| 10/7/2016 | | | | | | | | | | |
| 11/7/2016 | | 0.103 (o) | | | | | | | 0.037 (o) | |
| 11/8/2016 | | | | 0.543 (o) | | 0.003 (o) | | 0.022 (o) | | |
| 3/7/2017 | | | | | | | | | | |
| 5/15/2017 | | | | | | | | | | |
| 5/16/2017 | | | | | | | | | | |
| 6/10/2019 | | | | | | | | | | |
| 6/11/2019 | | | | | | | | | | |

| | B-2 Chromium, total (mg/L) | B-12 Cobalt, total (mg/L) | B-10 Cobalt, total (mg/L) | B-11 Cobalt, total (mg/L) | B-2 Cobalt, total (mg/L) | B-11 Combined Radium 226 + 228 (pCi/L) | B-6 Combined Radium 226 + 228 (pCi/L) | B-9 Combined Radium 226 + 228 (pCi/L) | B-12 Lead, total (mg/L) | B-11 Lead, total (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9/14/2016 | 0.026 (o) | | | 0.025 (o) | | 8.05 (o) | | | | 0.049 (o) |
| 10/5/2016 | | | | | | | 7.58 (o) | | | |
| 10/7/2016 | | | | | | | | | | |
| 11/7/2016 | | | 0.005 (o) | | | | | | | |
| 11/8/2016 | 0.037 (o) | 0.023 (o) | | | 0.031 (o) | | | | 0.015 (o) | |
| 3/7/2017 | | | | | | 12.993 (o) | | | | |
| 5/15/2017 | | | | | | | 13.943 (o) | | | |
| 5/16/2017 | | | | | | | | 9.472 (o) | | |
| 6/10/2019 | | | | | | | | | | |
| 6/11/2019 | | | | | | | | | | |

| | B-2 Lead, total (mg/L) | B-12 Lithium, total (mg/L) | B-13 Lithium, total (mg/L) | B-1B Lithium, total (mg/L) | B-4 Lithium, total (mg/L) | B-5 Lithium, total (mg/L) | B-7A Lithium, total (mg/L) | B-10 Lithium, total (mg/L) | B-11 Lithium, total (mg/L) | B-2 Lithium, total (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9/14/2016 | | | | | | | | | 0.079 (o) | |
| 10/5/2016 | | | | | | | | | | |
| 10/7/2016 | | | | | | | | | | |
| 11/7/2016 | | | | | | | | | | |
| 11/8/2016 | 0.026 (o) | | | | | | | | | |
| 3/7/2017 | | | | | | | | | | |
| 5/15/2017 | | | | | | | | | | |
| 5/16/2017 | | | | | | | | | | |
| 6/10/2019 | | <0.1 (o) | <0.1 (o) | <0.1 (o) | | | <0.1 (o) | <0.1 (o) | | |
| 6/11/2019 | | | | | <0.1 (o) | <0.1 (o) | | | | <0.1 (o) |

# Outlier Summary

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 4:03 PM

| | B-6 Lithium, total (mg/L) | B-9 Lithium, total (mg/L) | B-11 Mercury, total (mg/L) |
|---|---|---|---|
| 9/14/2016 | | | 9.7E-05 (o) |
| 10/5/2016 | | | |
| 10/7/2016 | 0.016 (o) | | |
| 11/7/2016 | | | |
| 11/8/2016 | | | |
| 3/7/2017 | | | |
| 5/15/2017 | | | |
| 5/16/2017 | | | |
| 6/10/2019 | <0.1 (o) | | |
| 6/11/2019 | | <0.1 (o) | |

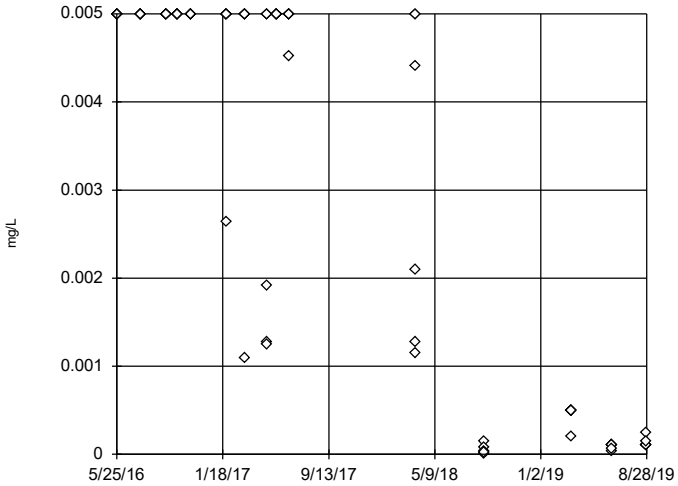
# Outlier Analysis - Upgradient Wells

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 8:54 AM

| Constituent | Well | Outlier | Value(s) | Date(s) | Method | N | Mean | Std. Dev. | Distribution | Normality Test |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony, total (mg/L) | B-12,B-13,B-1B,B-... | n/a | n/a | n/a w/combined bg | NP | 90 | 0.003399 | 0.002182 | unknown | ShapiroFrancia |
| Arsenic, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.003352 | 0.002093 | x^(1/3) | ShapiroFrancia |
| Barium, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.06563 | 0.02628 | ln(x) | ShapiroFrancia |
| Beryllium, total (mg/L) | B-12,B-13,B-1B,B-... | n/a | n/a | n/a w/combined bg | NP | 90 | 0.0004374 | 0.000376 | unknown | ShapiroFrancia |
| Boron, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 96 | 0.02597 | 0.01193 | ln(x) | ShapiroFrancia |
| Cadmium, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.0006192 | 0.0004441 | ln(x) | ShapiroFrancia |
| Chromium, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.001853 | 0.002537 | ln(x) | ShapiroFrancia |
| Cobalt, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.00127 | 0.002686 | ln(x) | ShapiroFrancia |
| Combined Radium 226 + 228 (pCi/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 84 | 2.348 | 2.13 | ln(x) | ShapiroFrancia |
| Lead, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.002921 | 0.002495 | ln(x) | ShapiroFrancia |
| Lithium, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.01234 | 0.01467 | ln(x) | ShapiroFrancia |
| **Mercury, total (mg/L)** | **B-12,B-13,B-1B,B-...** | **Yes** | **0.000096** | **n/a w/combined bg** | **NP** | **90** | **0.0000223** | **0.0000119** | **x^(1/3)** | **ShapiroFrancia** |
| Molybdenum, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.003703 | 0.002569 | sqrt(x) | ShapiroFrancia |
| **Selenium, total (mg/L)** | **B-12,B-13,B-1B,B-...** | **Yes** | **0.00004,0.00004** | **n/a w/combined bg** | **NP** | **90** | **0.009233** | **0.01278** | **ln(x)** | **ShapiroFrancia** |
| Thallium, total (mg/L) | B-12,B-13,B-1B,B-... | No | n/a | n/a w/combined bg | NP | 90 | 0.001608 | 0.0006799 | normal | ShapiroFrancia |

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

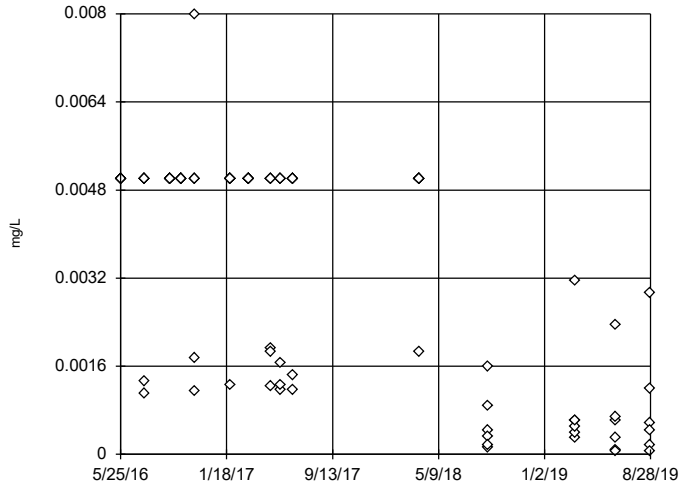
Constituent: Antimony, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.04979, low cutoff = -0.0007662, based on IQR multiplier of 3.

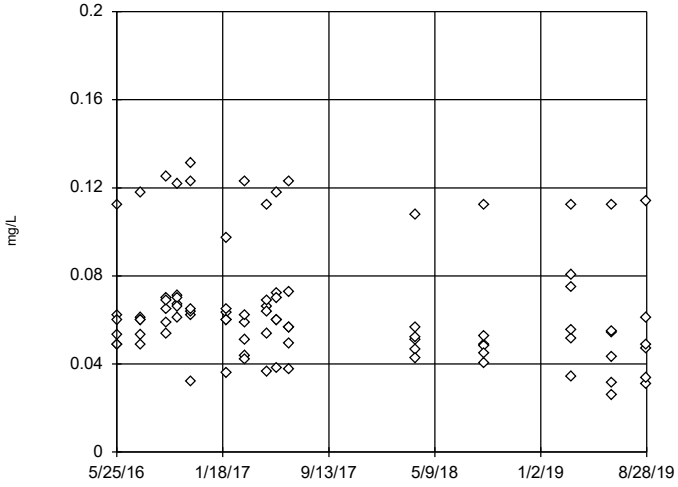
Constituent: Arsenic, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.2042, low cutoff = 0.0168, based on IQR multiplier of 3.

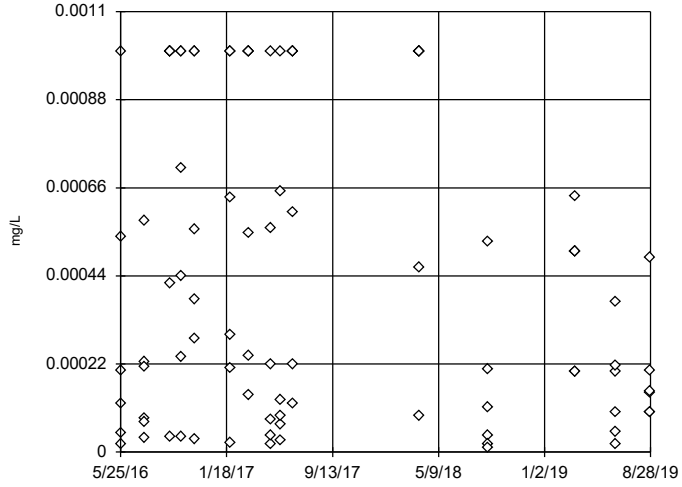
Constituent: Barium, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

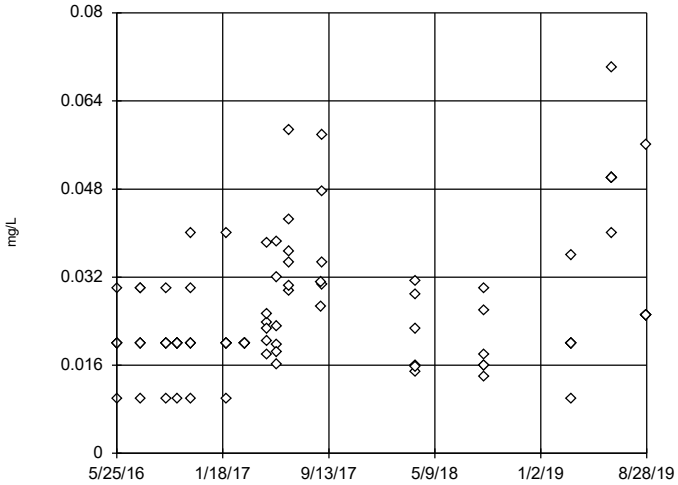
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Beryllium, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 96

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.1034, low cutoff = 0.005832, based on IQR multiplier of 3.

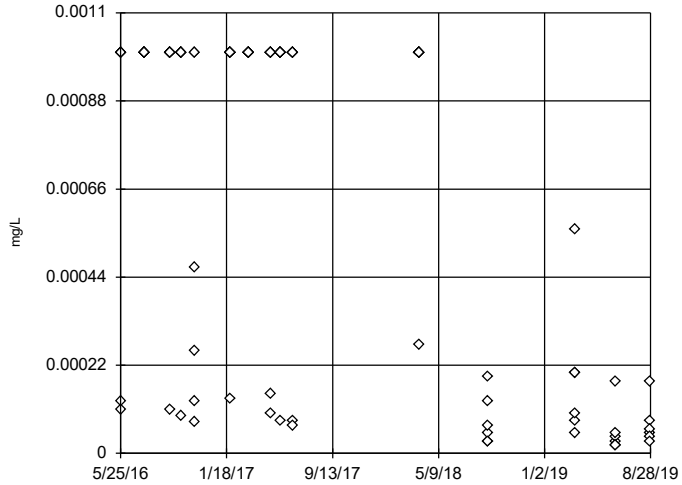
Constituent: Boron, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1, low cutoff = 1.0e-7, based on IQR multiplier of 3.

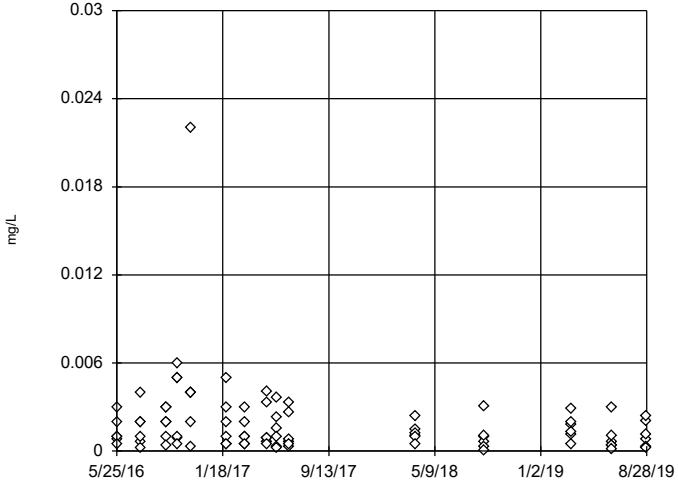
Constituent: Cadmium, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.3139, low cutoff = 0.000003987, based on IQR multiplier of 3.

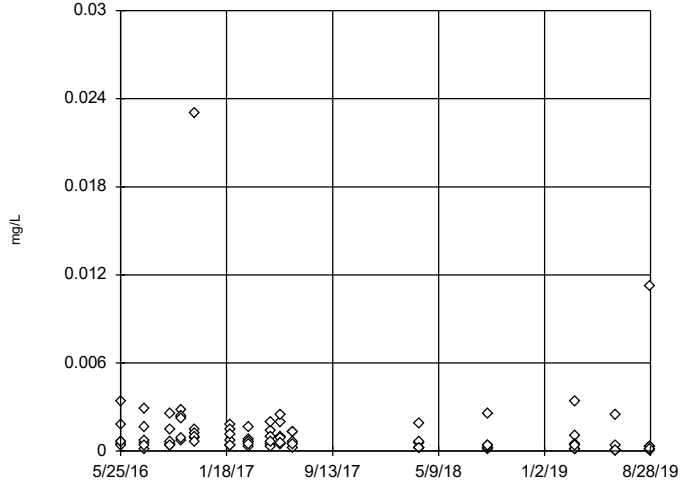
Constituent: Chromium, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

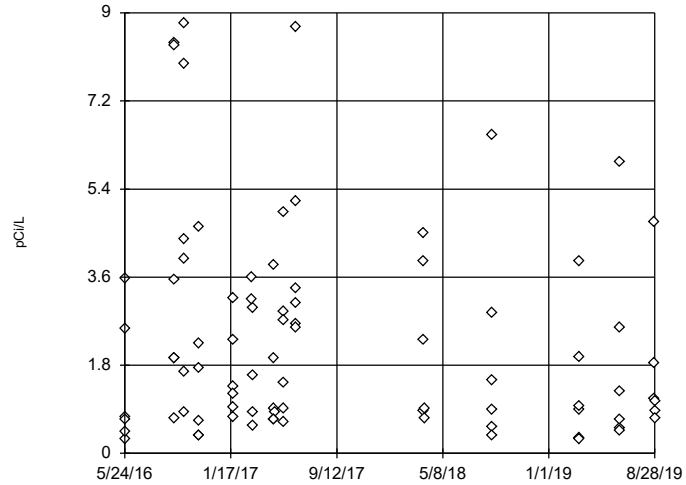
High cutoff = 0.1107, low cutoff = 0.0000046, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 84

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

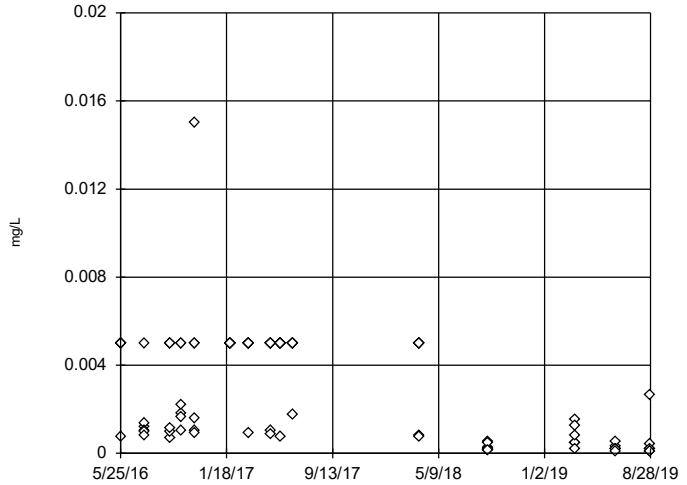
High cutoff = 291.2, low cutoff = 0.008248, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradi
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

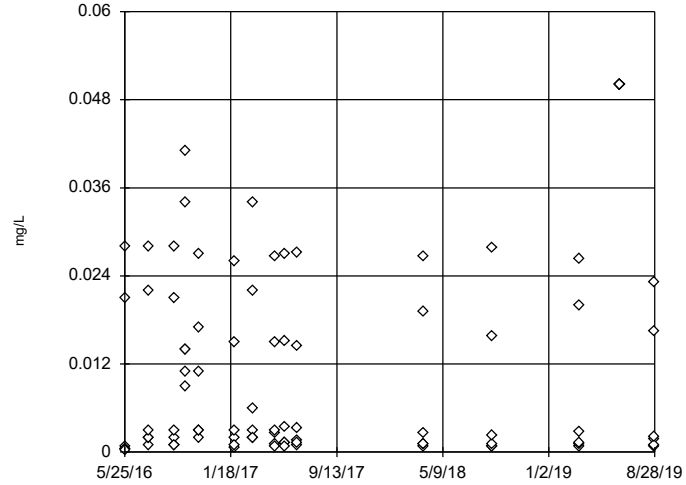
High cutoff = 1.453, low cutoff = 0.000002597, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

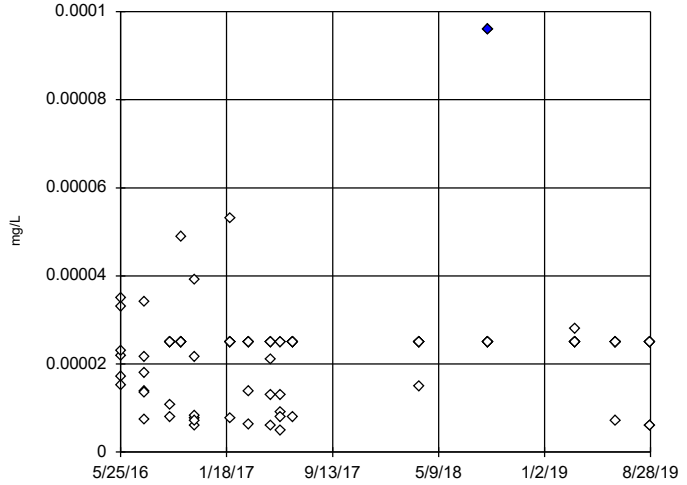
High cutoff = 156.1, low cutoff = 1.6e-7, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

Outlier is drawn as solid. Tukey's method selected by user.

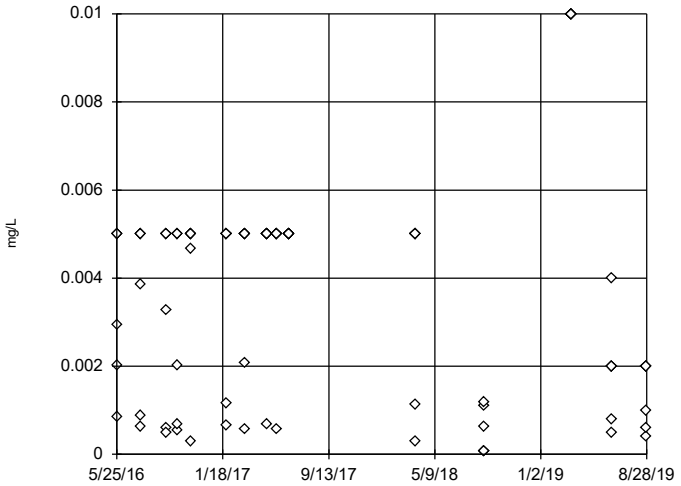
Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.00008502, low cutoff = 8.8e-7, based on IQR multiplier of 3.

Constituent: Mercury, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found.
Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

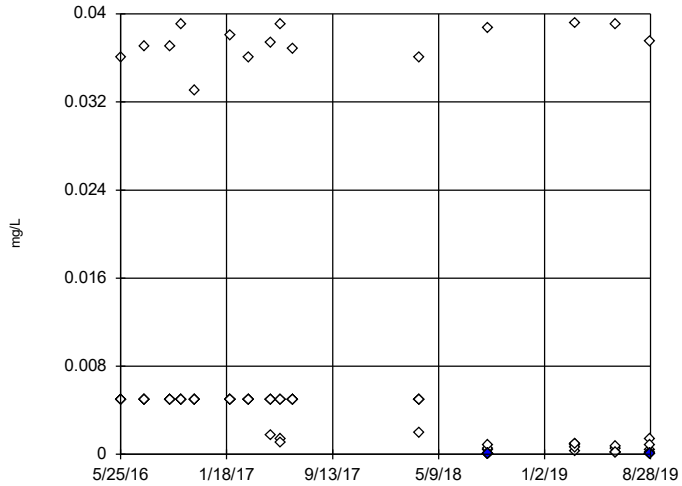
High cutoff = 0.03439,
low cutoff = -0.006766,
based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

Outliers are drawn as solid.
Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

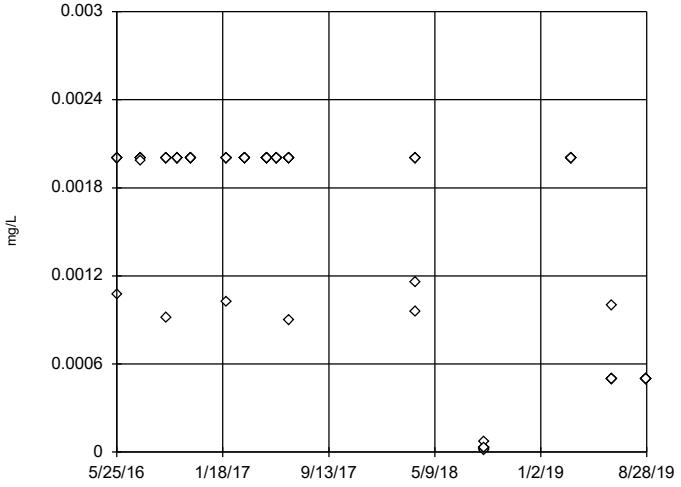
High cutoff = 0.1733,
low cutoff = 0.00004426,
based on IQR multiplier of 3.

Constituent: Selenium, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

B-12,B-13,B-1B,B-4,B-5,B-7A




n = 90

No outliers found.
Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.004852,
low cutoff = -0.001803,
based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 12/8/2019 8:53 AM View: Outlier Tests - Upgradient
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

# Outlier Analysis - Appendix III All Results (No Significant)

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 9:32 AM

| Constituent | Well | Outlier | Value(s) | Date(s) | Method | N | Mean | Std. Dev. | Distribution | Normality Test |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium, total (mg/L) | B-12 (bg) | No | n/a | n/a | NP | 14 | 63.47 | 5.376 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-13 (bg) | No | n/a | n/a | NP | 14 | 13.11 | 4.659 | x^2 | ShapiroWilk |
| Calcium, total (mg/L) | B-1B (bg) | No | n/a | n/a | NP | 14 | 88.73 | 3.541 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-4 (bg) | No | n/a | n/a | NP | 14 | 13.04 | 8.545 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-5 (bg) | No | n/a | n/a | NP | 14 | 17.01 | 0.9534 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-7A (bg) | No | n/a | n/a | NP | 14 | 101.3 | 3.479 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-10 | No | n/a | n/a | NP | 14 | 81.76 | 13.22 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-11 | No | n/a | n/a | NP | 14 | 13.04 | 2.356 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-2 | No | n/a | n/a | NP | 14 | 39.34 | 21.74 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-6 | No | n/a | n/a | NP | 14 | 44.62 | 7.541 | normal | ShapiroWilk |
| Calcium, total (mg/L) | B-9 | No | n/a | n/a | NP | 14 | 99.17 | 16.89 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-12 (bg) | No | n/a | n/a | NP | 14 | 10.23 | 1.557 | normal | ShapiroWilk |
| Chloride, total (mg/L) | B-13 (bg) | No | n/a | n/a | NP | 14 | 3.609 | 0.934 | x^2 | ShapiroWilk |
| Chloride, total (mg/L) | B-1B (bg) | No | n/a | n/a | NP | 14 | 3.346 | 1.116 | sqrt(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-4 (bg) | No | n/a | n/a | NP | 14 | 8.085 | 1.549 | x^4 | ShapiroWilk |
| Chloride, total (mg/L) | B-5 (bg) | No | n/a | n/a | NP | 14 | 7.664 | 1.743 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-7A (bg) | No | n/a | n/a | NP | 14 | 4.194 | 1.195 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-10 | No | n/a | n/a | NP | 14 | 8.17 | 1.496 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-11 | No | n/a | n/a | NP | 14 | 5.14 | 1.157 | x^2 | ShapiroWilk |
| Chloride, total (mg/L) | B-2 | No | n/a | n/a | NP | 14 | 6.263 | 1.546 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-6 | No | n/a | n/a | NP | 14 | 7.669 | 1.547 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-9 | No | n/a | n/a | NP | 14 | 5.921 | 1.066 | normal | ShapiroWilk |
| Fluoride, total (mg/L) | B-12 (bg) | n/a | n/a | n/a | NP | 14 | 0.8751 | 0.3186 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-13 (bg) | n/a | n/a | n/a | NP | 14 | 0.8737 | 0.3232 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-1B (bg) | No | n/a | n/a | NP | 14 | 0.5929 | 0.2885 | sqrt(x) | ShapiroWilk |
| Fluoride, total (mg/L) | B-4 (bg) | n/a | n/a | n/a | NP | 14 | 0.93 | 0.2619 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-5 (bg) | n/a | n/a | n/a | NP | 14 | 0.8816 | 0.3035 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-7A (bg) | No | n/a | n/a | NP | 14 | 0.8019 | 0.3265 | ln(x) | ShapiroWilk |
| Fluoride, total (mg/L) | B-10 | No | n/a | n/a | NP | 14 | 0.783 | 0.3594 | ln(x) | ShapiroWilk |
| Fluoride, total (mg/L) | B-11 | n/a | n/a | n/a | NP | 14 | 0.9314 | 0.2566 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-2 | n/a | n/a | n/a | NP | 14 | 0.8883 | 0.2877 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-6 | n/a | n/a | n/a | NP | 14 | 0.8862 | 0.2893 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-9 | No | n/a | n/a | NP | 14 | 0.7281 | 0.3827 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-12 (bg) | No | n/a | n/a | NP | 14 | 7.19 | 0.7119 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-13 (bg) | No | n/a | n/a | NP | 14 | 5.729 | 0.8643 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-1B (bg) | No | n/a | n/a | NP | 14 | 7.281 | 0.5005 | x^4 | ShapiroWilk |
| pH, field (SU) | B-4 (bg) | No | n/a | n/a | NP | 14 | 7.026 | 0.3862 | x^5 | ShapiroWilk |
| pH, field (SU) | B-5 (bg) | No | n/a | n/a | NP | 14 | 5.549 | 0.5654 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-7A (bg) | No | n/a | n/a | NP | 14 | 7.183 | 0.3105 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-10 | No | n/a | n/a | NP | 14 | 7.37 | 0.6385 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-11 | No | n/a | n/a | NP | 15 | 5.902 | 0.4841 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-2 | No | n/a | n/a | NP | 15 | 6.252 | 0.4681 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-6 | No | n/a | n/a | NP | 15 | 6.749 | 0.2825 | x^6 | ShapiroWilk |
| pH, field (SU) | B-9 | No | n/a | n/a | NP | 14 | 7.321 | 0.5186 | x^4 | ShapiroWilk |
| Sulfate, total (mg/L) | B-12 (bg) | No | n/a | n/a | NP | 14 | 11.08 | 3.662 | sqrt(x) | ShapiroWilk |
| Sulfate, total (mg/L) | B-13 (bg) | No | n/a | n/a | NP | 14 | 20.67 | 7.419 | x^2 | ShapiroWilk |
| Sulfate, total (mg/L) | B-1B (bg) | No | n/a | n/a | NP | 14 | 21.66 | 2.876 | x^4 | ShapiroWilk |
| Sulfate, total (mg/L) | B-4 (bg) | No | n/a | n/a | NP | 14 | 9.979 | 2.9 | x^2 | ShapiroWilk |
| Sulfate, total (mg/L) | B-5 (bg) | No | n/a | n/a | NP | 14 | 200 | 19.34 | x^3 | ShapiroWilk |
| Sulfate, total (mg/L) | B-7A (bg) | No | n/a | n/a | NP | 14 | 33.16 | 1.747 | x^6 | ShapiroWilk |
| Sulfate, total (mg/L) | B-10 | No | n/a | n/a | NP | 14 | 29.63 | 4.368 | x^(1/3) | ShapiroWilk |
| Sulfate, total (mg/L) | B-11 | No | n/a | n/a | NP | 14 | 43.11 | 10.09 | ln(x) | ShapiroWilk |
| Sulfate, total (mg/L) | B-2 | No | n/a | n/a | NP | 14 | 240.9 | 178.9 | ln(x) | ShapiroWilk |
| Sulfate, total (mg/L) | B-6 | No | n/a | n/a | NP | 14 | 25.34 | 7.606 | sqrt(x) | ShapiroWilk |
| Sulfate, total (mg/L) | B-9 | No | n/a | n/a | NP | 14 | 22.71 | 6.675 | ln(x) | ShapiroWilk |

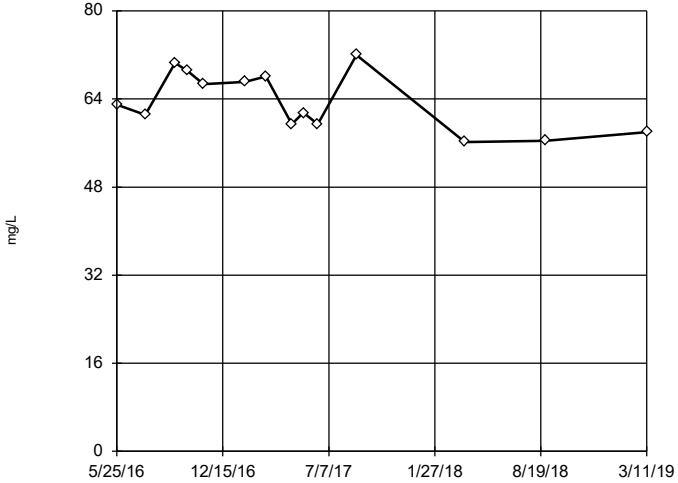
# Outlier Analysis - Appendix III All Results (No Significant)

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 9:32 AM

| Constituent | Well | Outlier | Value(s) | Date(s) | Method | N | Mean | Std. Dev. | Distribution | Normality Test |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids [TDS] (mg/L) | B-12 (bg) | No | n/a | n/a | NP | 14 | 252.4 | 31.73 | x^3 | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-13 (bg) | No | n/a | n/a | NP | 14 | 75.14 | 19.83 | ln(x) | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-1B (bg) | No | n/a | n/a | NP | 14 | 272.6 | 19.73 | x^6 | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-4 (bg) | No | n/a | n/a | NP | 14 | 76.79 | 20.03 | ln(x) | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-5 (bg) | No | n/a | n/a | NP | 14 | 395.5 | 23.14 | x^4 | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-7A (bg) | No | n/a | n/a | NP | 14 | 312.1 | 12.01 | ln(x) | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-10 | No | n/a | n/a | NP | 14 | 267.7 | 21.01 | normal | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-11 | No | n/a | n/a | NP | 14 | 132.3 | 27.26 | ln(x) | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-2 | No | n/a | n/a | NP | 14 | 531.6 | 332.5 | ln(x) | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-6 | No | n/a | n/a | NP | 14 | 194.9 | 43.59 | x^2 | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-9 | No | n/a | n/a | NP | 14 | 239.4 | 24.16 | sqrt(x) | ShapiroWilk |

## Tukey's Outlier Screening

B-12 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 109.8, low cutoff = 36.69, based on IQR multiplier of 3.

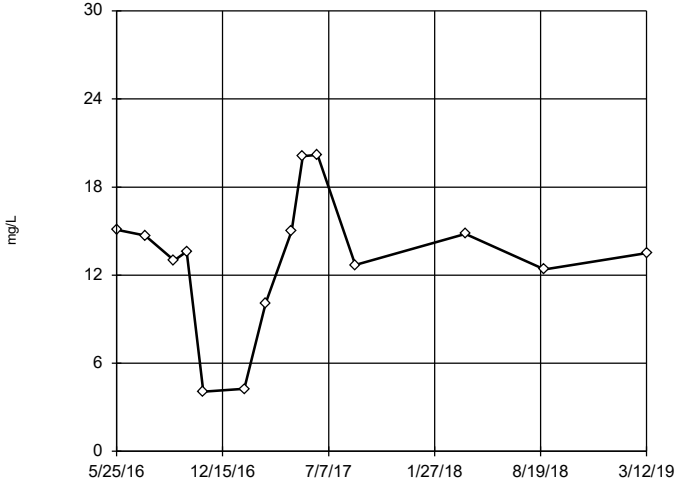
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-13 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 22.86, low cutoff = -12.96, based on IQR multiplier of 3.

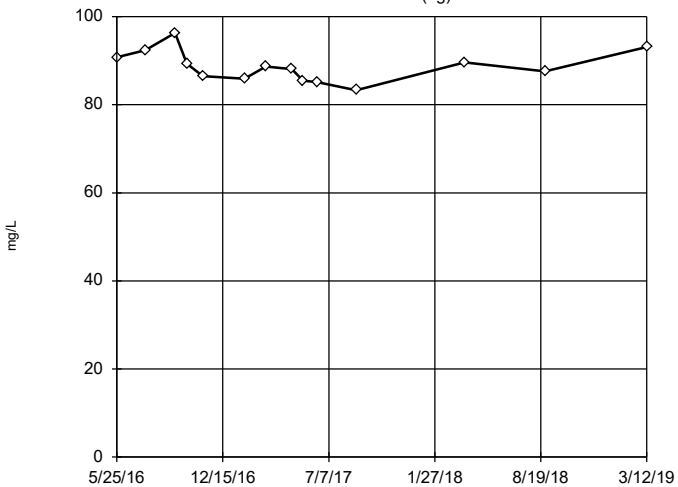
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-1B (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 111.8, low cutoff = 70.19, based on IQR multiplier of 3.

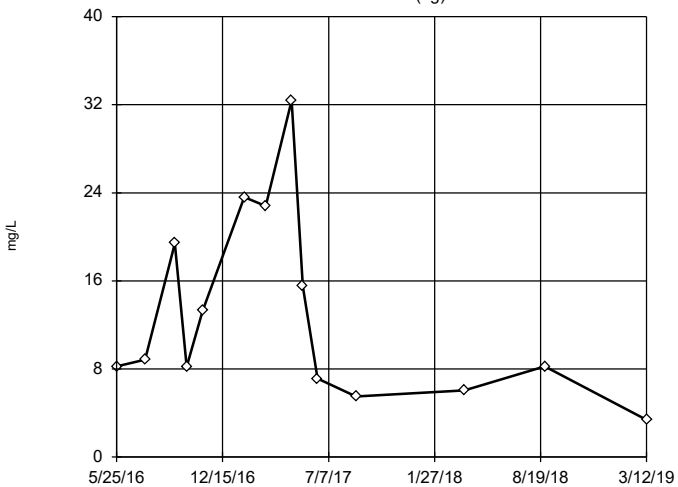
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-4 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

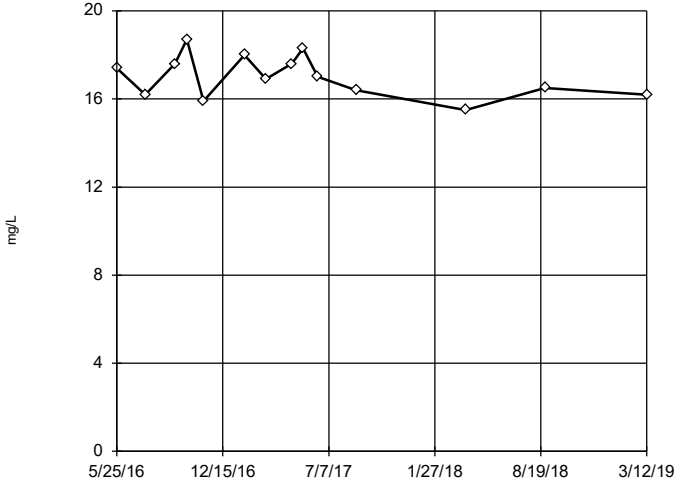
High cutoff = 688.9, low cutoff = 0.2007, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-5 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 23.61, low cutoff = 12.21, based on IQR multiplier of 3.

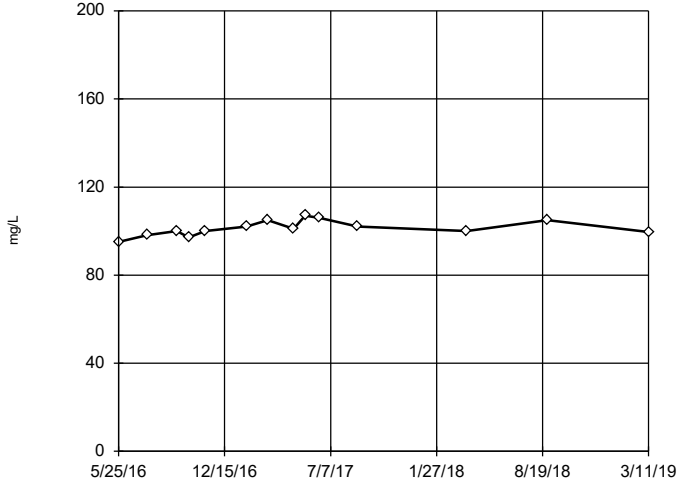
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-7A (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 125.9, low cutoff = 82.47, based on IQR multiplier of 3.

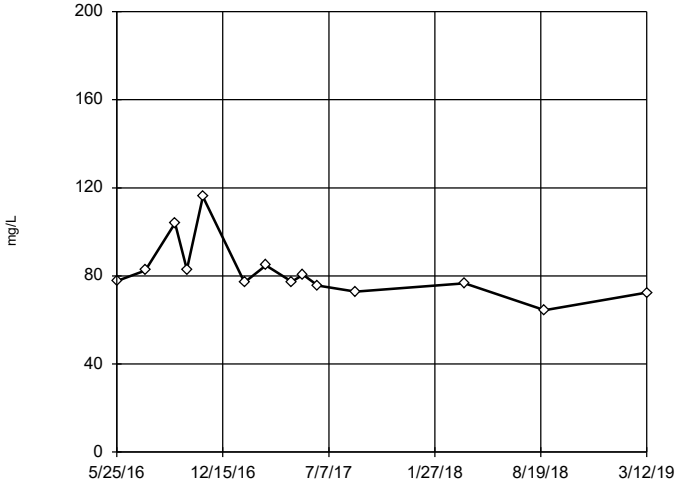
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 121, low cutoff = 51.39, based on IQR multiplier of 3.

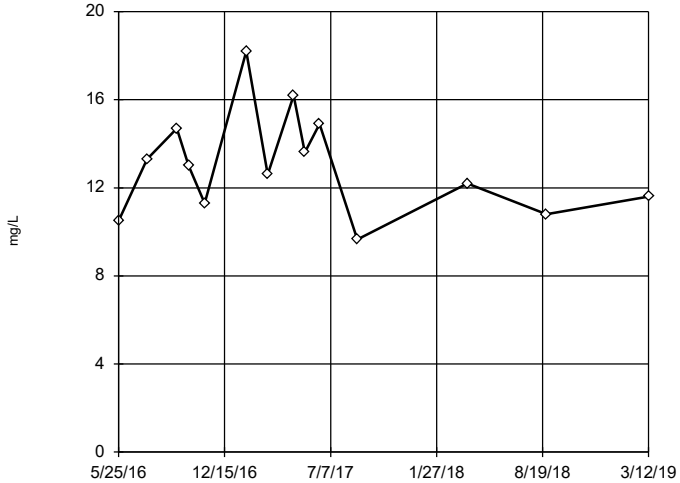
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

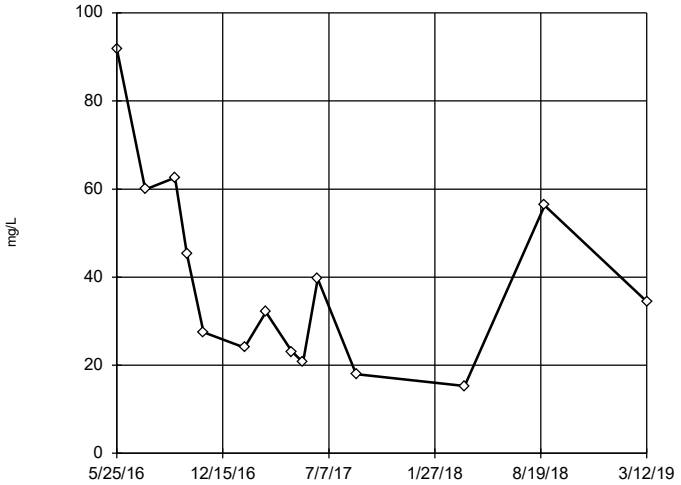
High cutoff = 35.58, low cutoff = 4.595, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-2




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1088, low cutoff = 1.168, based on IQR multiplier of 3.

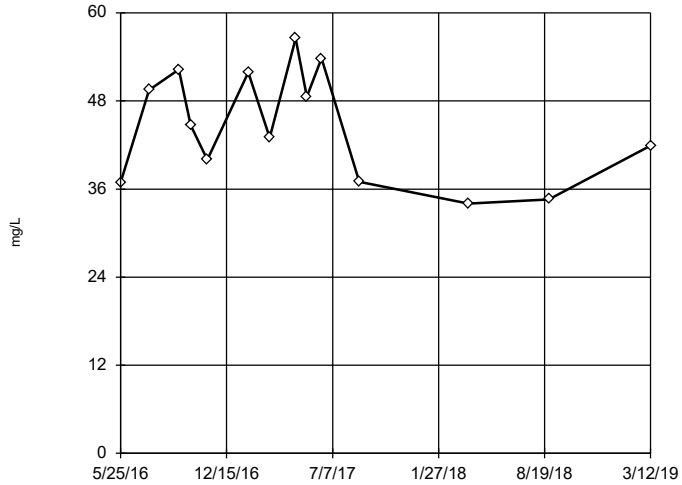
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 14

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 97.55, low cutoff = -8.5, based on IQR multiplier of 3.

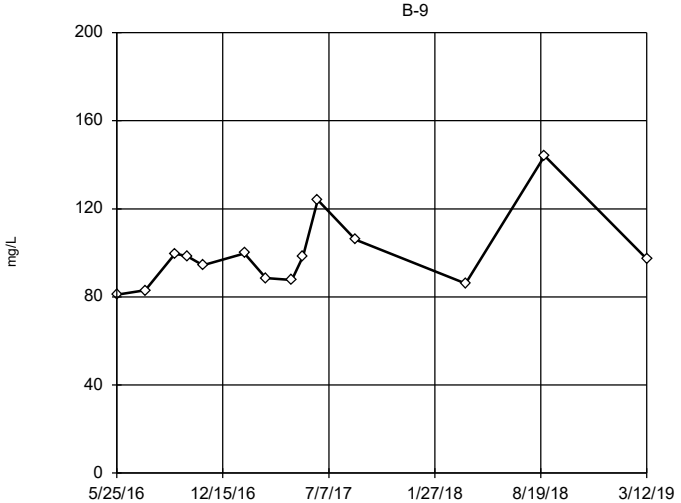
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 170.6, low cutoff = 52.4, based on IQR multiplier of 3.

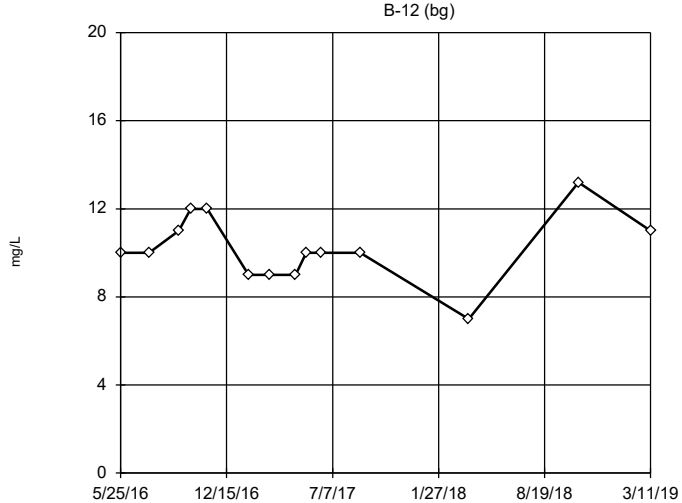
Constituent: Calcium, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-12 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

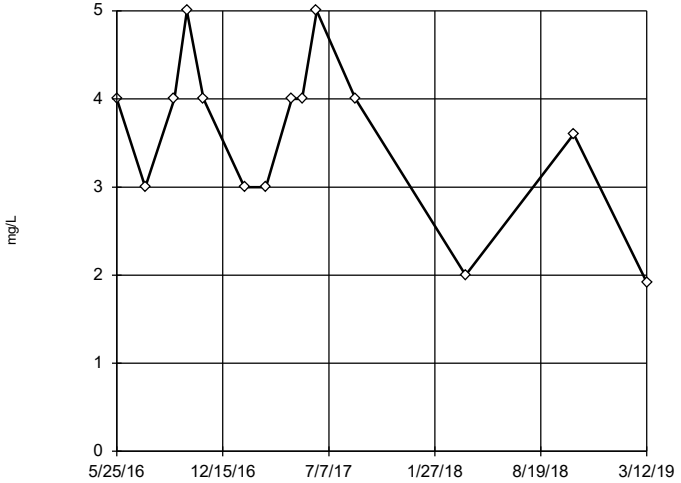
High cutoff = 19, low cutoff = 1.5, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-13 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.083, low cutoff = -3.464, based on IQR multiplier of 3.

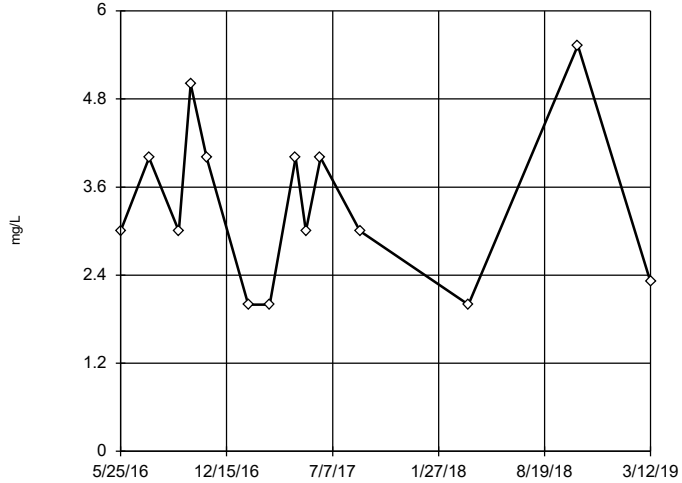
Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-1B (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 12.95, low cutoff = -0.01738, based on IQR multiplier of 3.

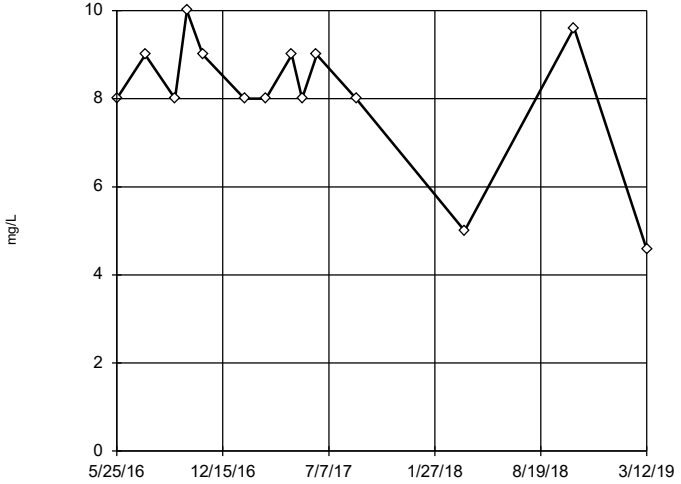
Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-4 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 10.87, low cutoff = -7.579, based on IQR multiplier of 3.

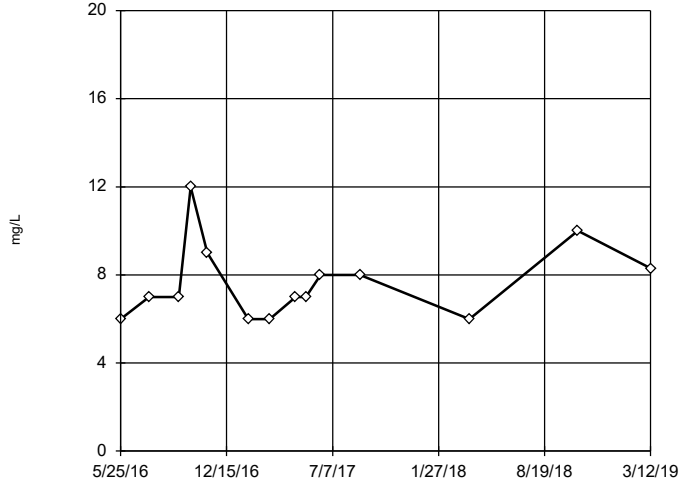
Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-5 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

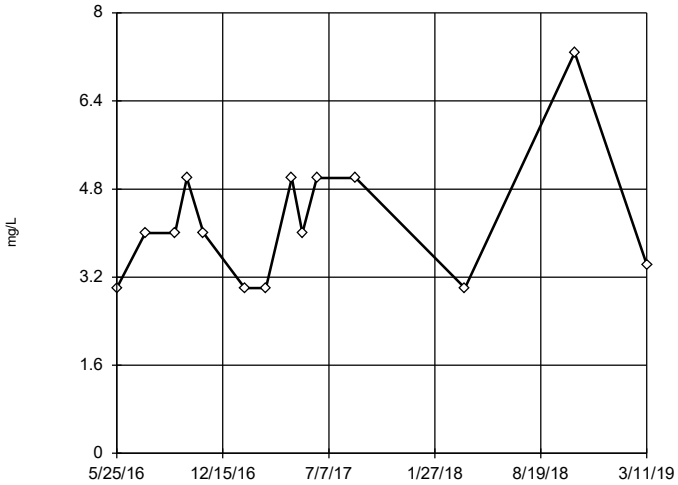
High cutoff = 25.83, low cutoff = 2.007, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-7A (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 23.15, low cutoff = 0.648, based on IQR multiplier of 3.

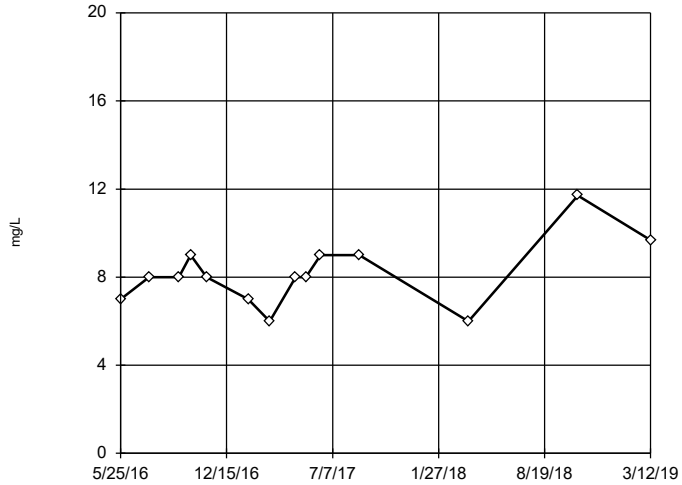
Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 19.13, low cutoff = 3.294, based on IQR multiplier of 3.

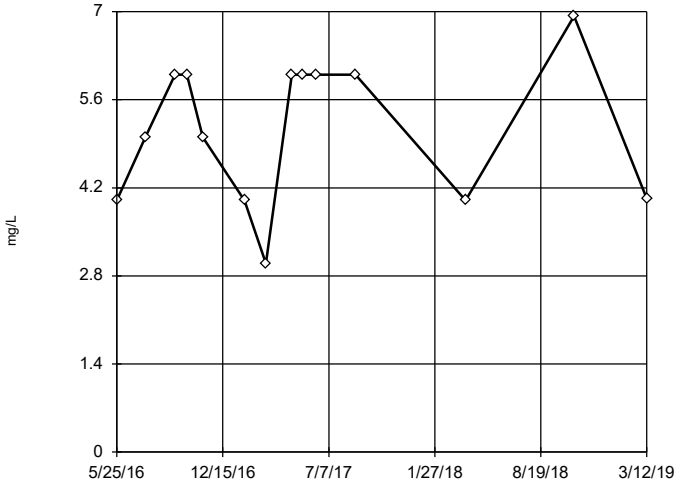
Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 14

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.798, low cutoff = -6.633, based on IQR multiplier of 3.

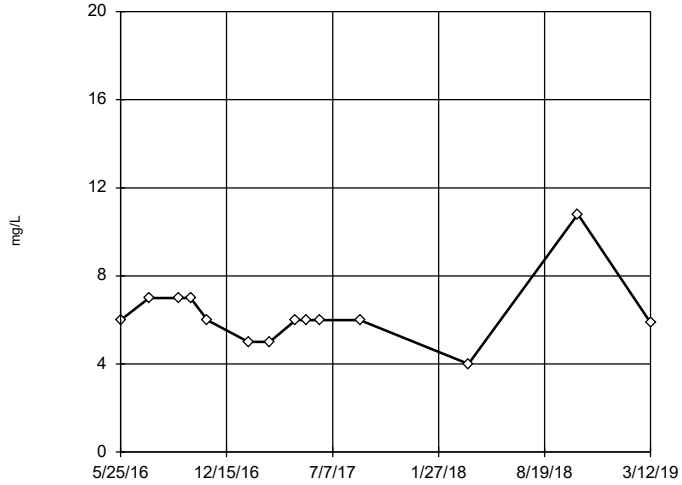
Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

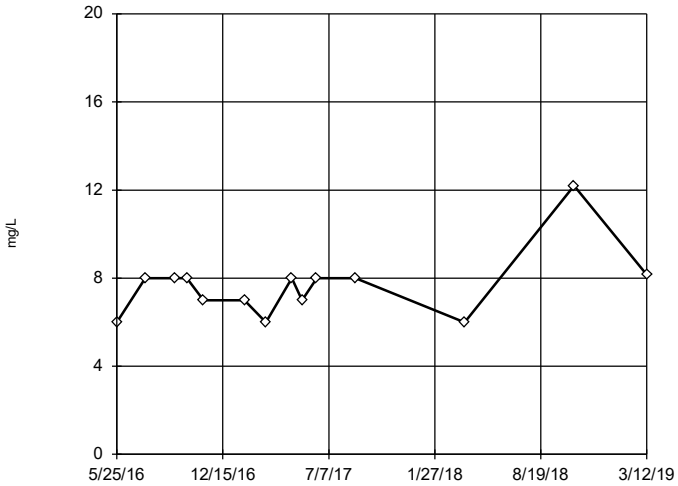
High cutoff = 15.06, low cutoff = 2.52, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-6




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 15.05, low cutoff = 3.445, based on IQR multiplier of 3.

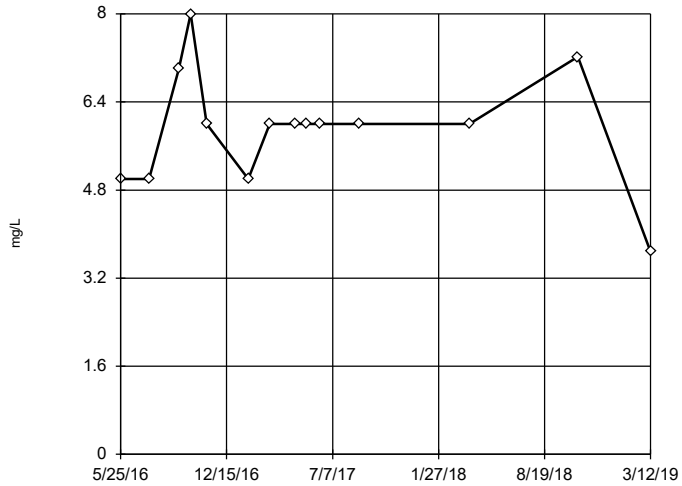
Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 14

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 11, low cutoff = 0.5, based on IQR multiplier of 3.

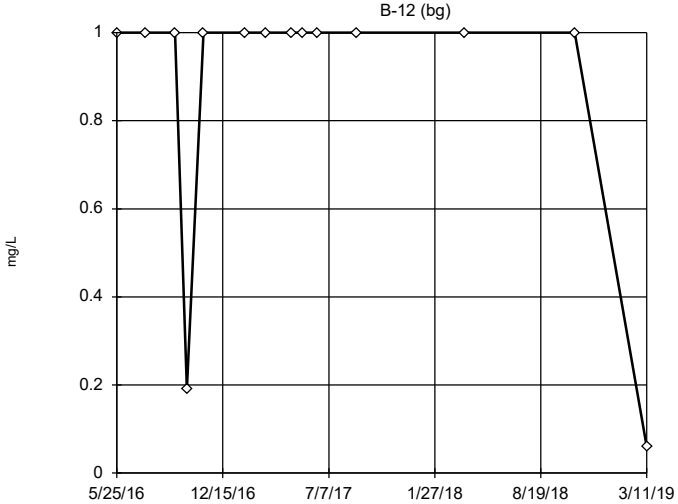
Constituent: Chloride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-12 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

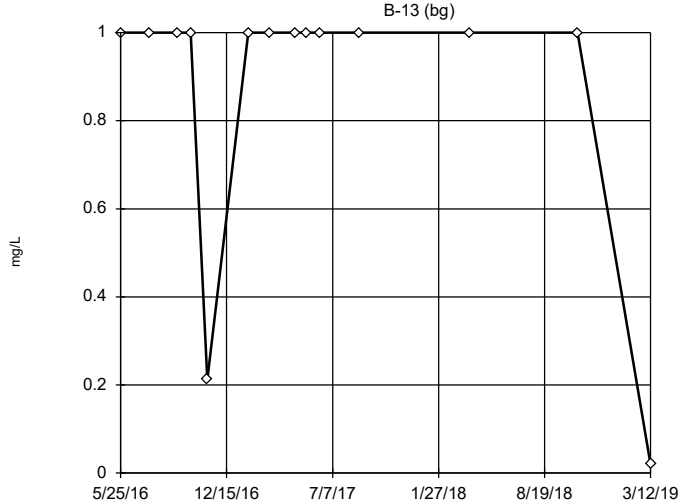
Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-13 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

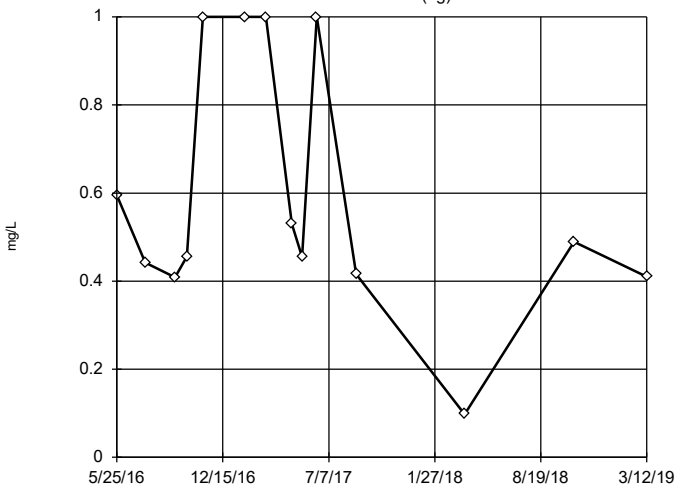
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-1B (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 4.293, low cutoff = -0.1844, based on IQR multiplier of 3.

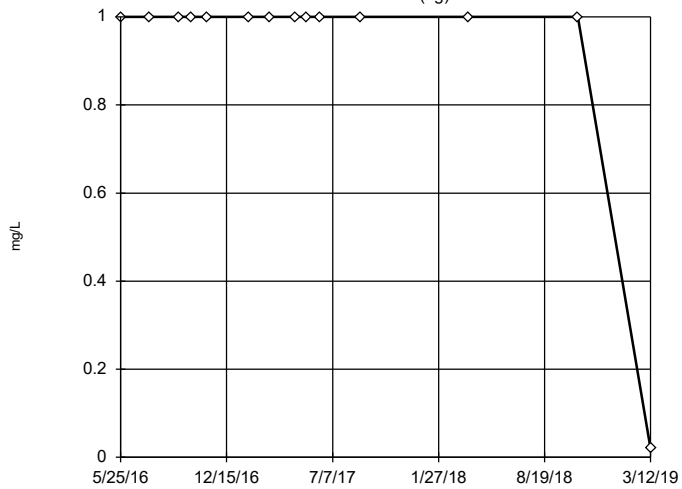
Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-4 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

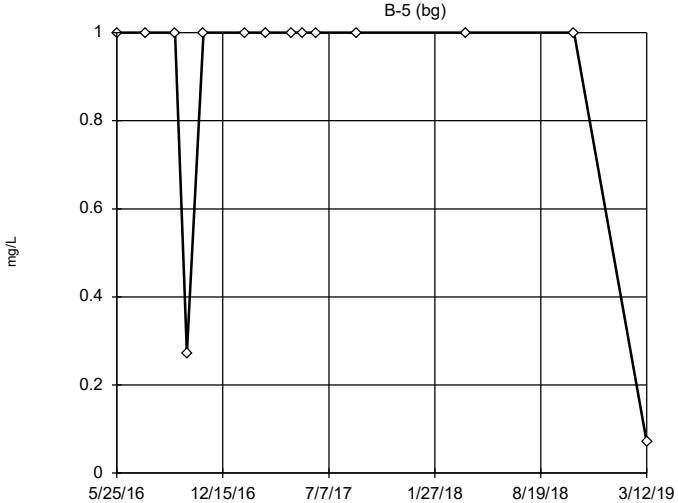
Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-5 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

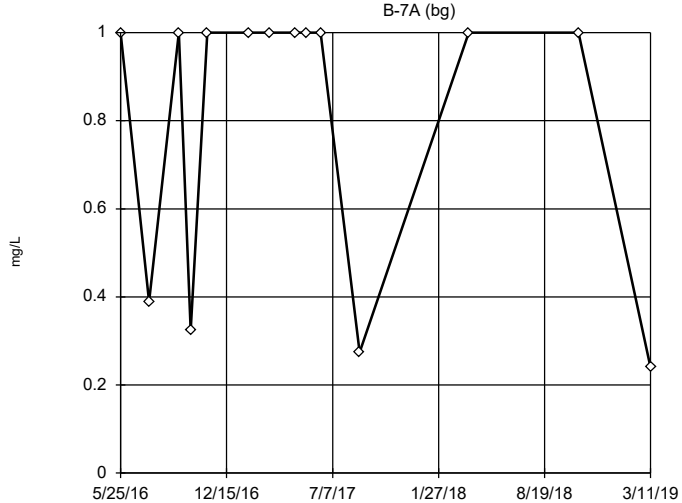
Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-7A (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

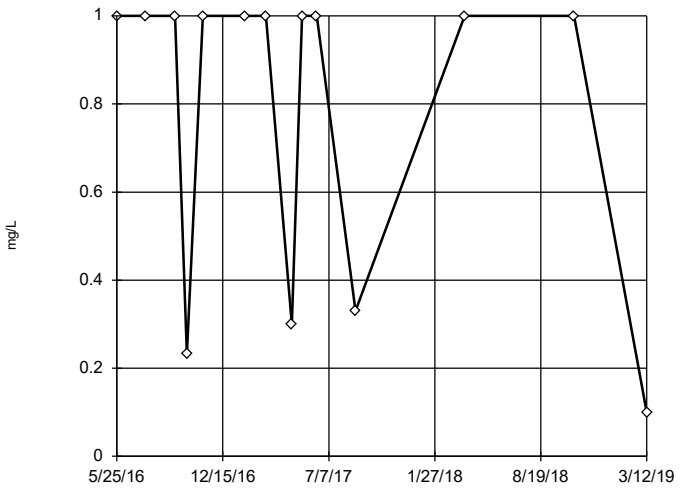
High cutoff = 22.38, low cutoff = 0.01585, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Tukey's Outlier Screening

B-10




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 32.04, low cutoff = 0.009825, based on IQR multiplier of 3.

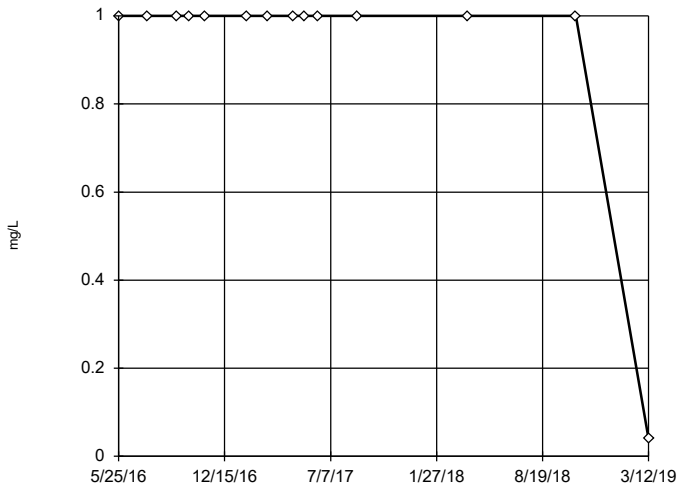
Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

B-11




n = 14

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

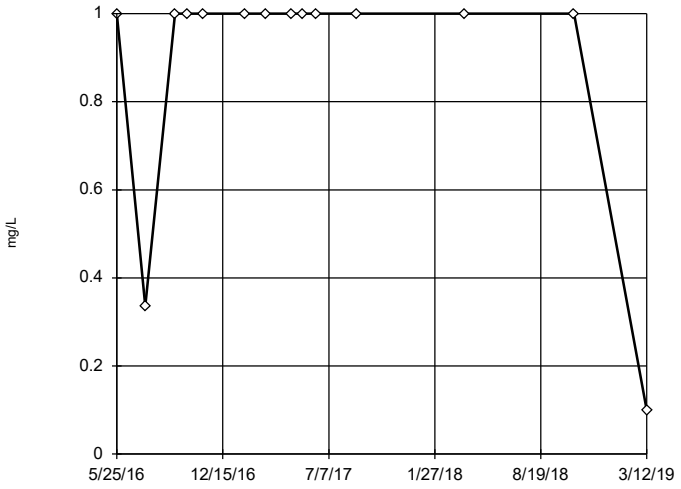
Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

B-2




n = 14

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal.

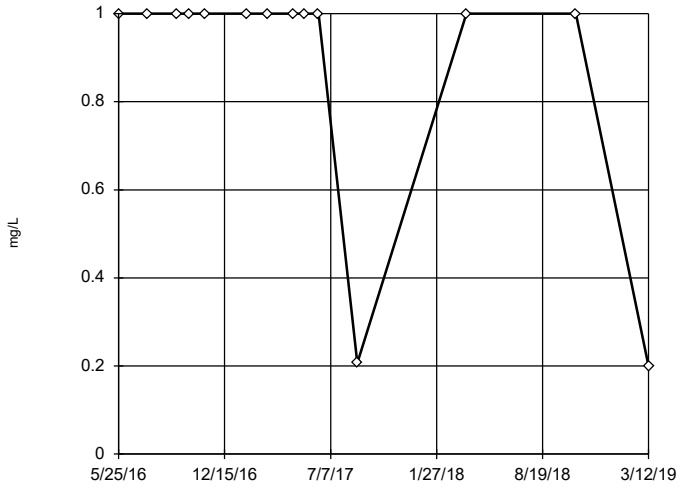
Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

B-6




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

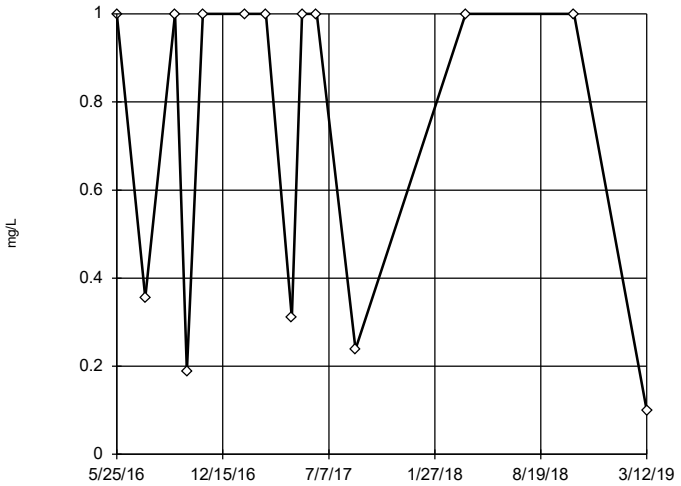
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-9




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 49.62, low cutoff = 0.005485, based on IQR multiplier of 3.

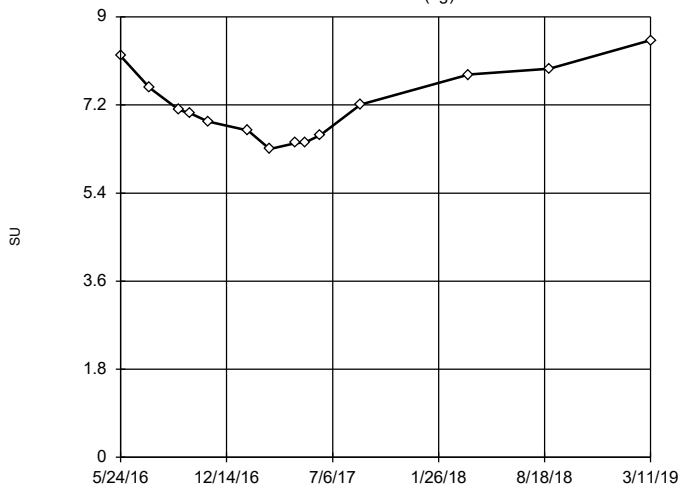
Constituent: Fluoride, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-12 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 13.94, low cutoff = 3.681, based on IQR multiplier of 3.

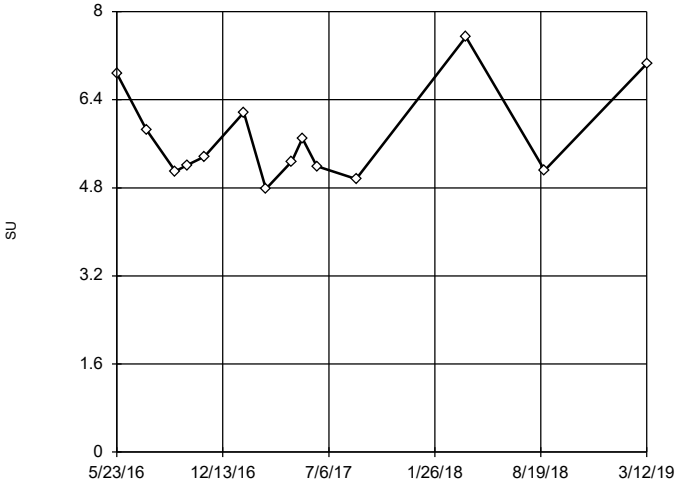
Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-13 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 13.5, low cutoff = 2.465, based on IQR multiplier of 3.

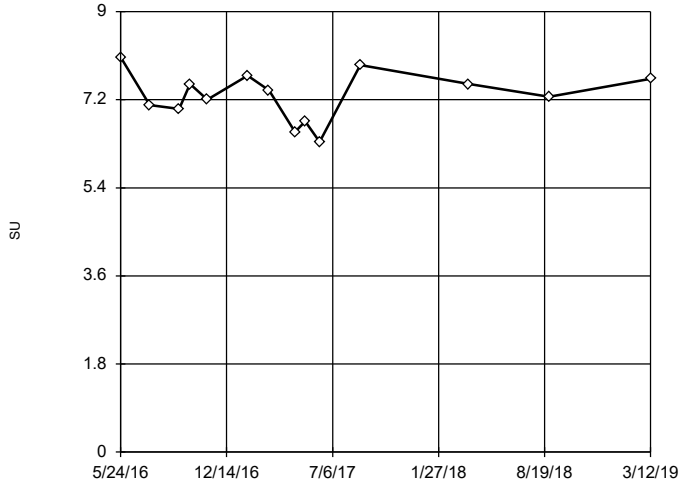
Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-1B (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

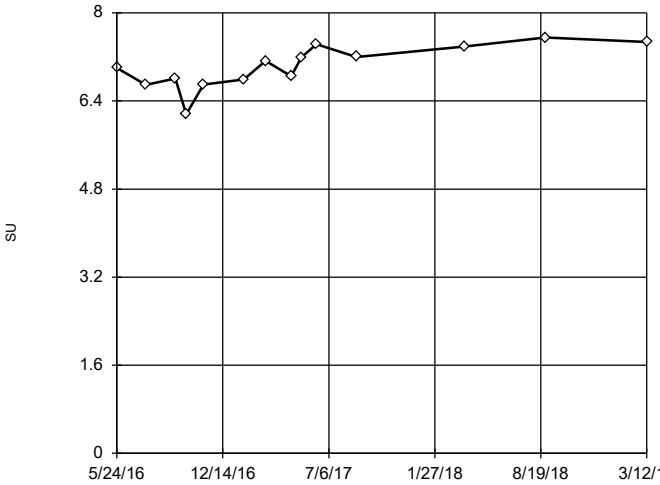
High cutoff = 9.153, low cutoff = -6.031, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-4 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.615, low cutoff = -6.449, based on IQR multiplier of 3.

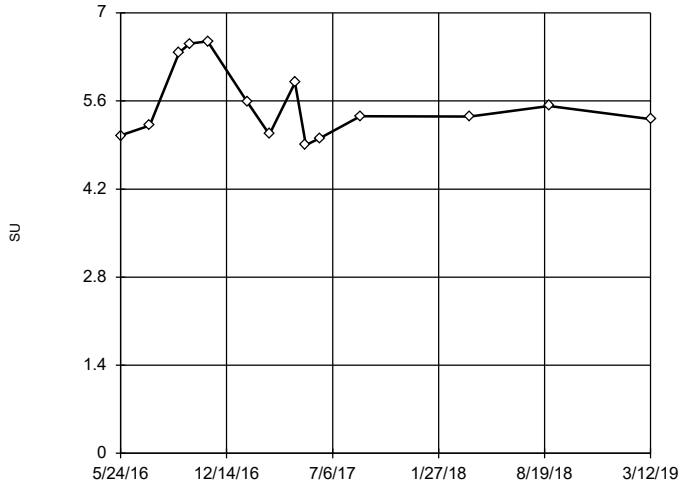
Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-5 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 10.87, low cutoff = 2.852, based on IQR multiplier of 3.

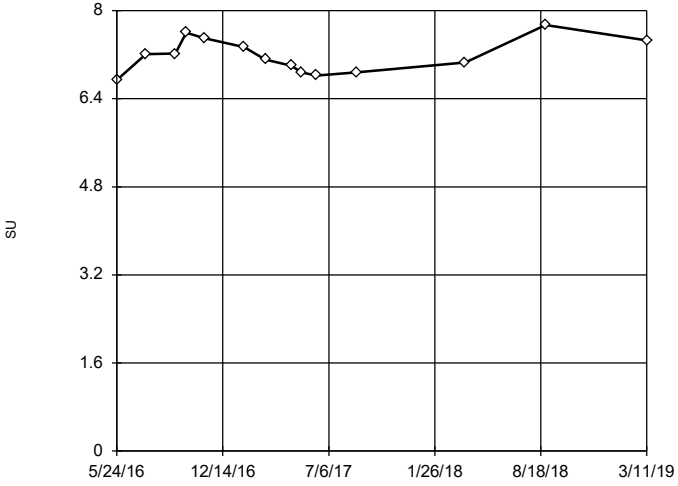
Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-7A (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.612, low cutoff = 5.354, based on IQR multiplier of 3.

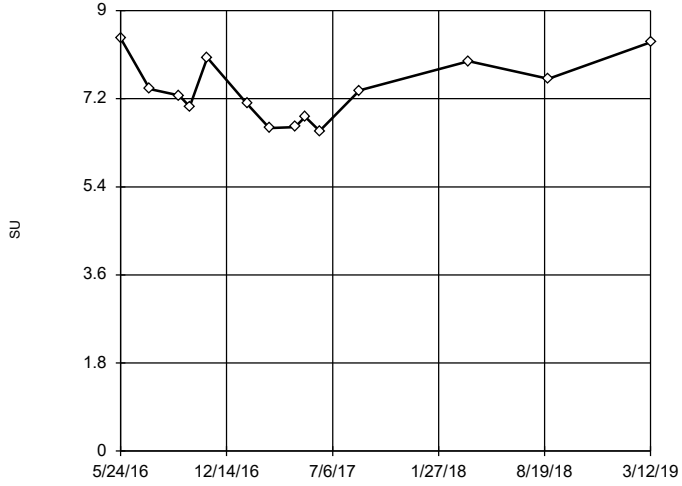
Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

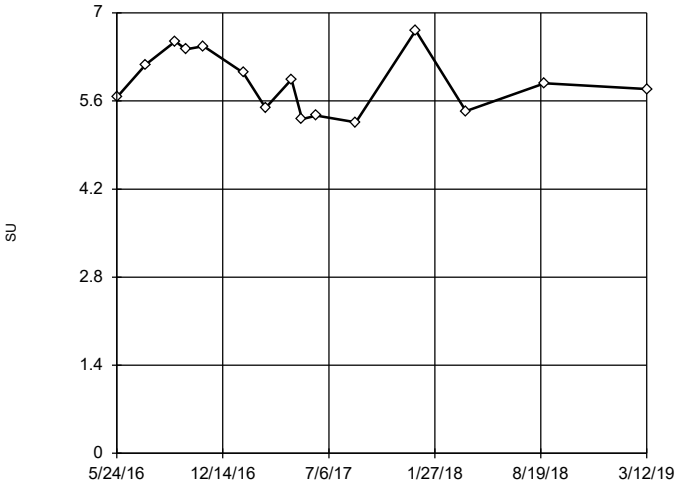
High cutoff = 13.51, low cutoff = 3.986, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

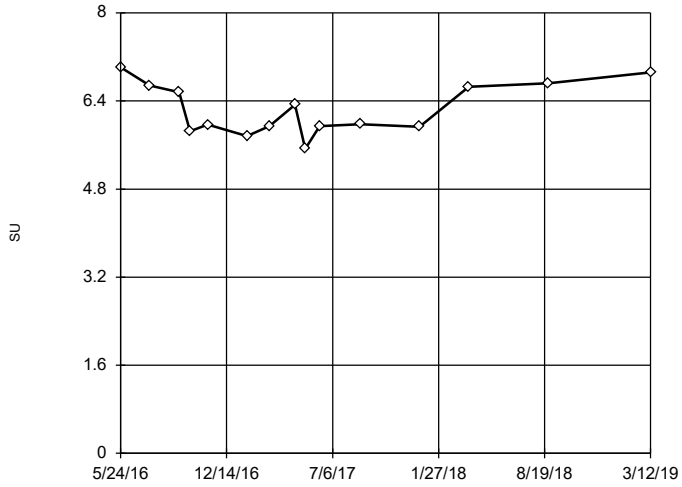
High cutoff = 10.55, low cutoff = 3.31, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

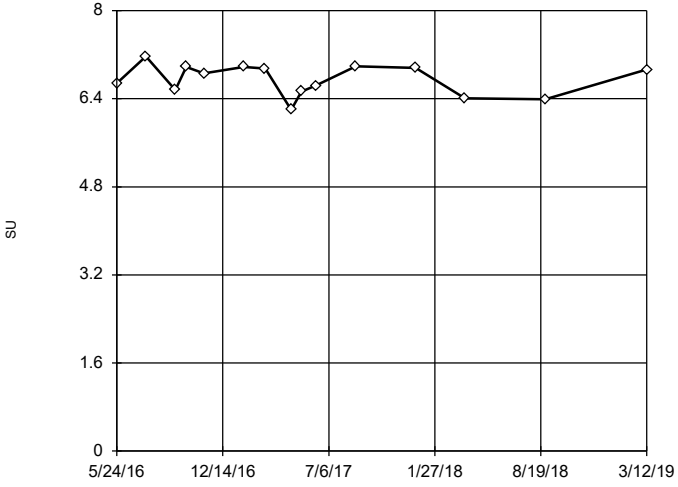
High cutoff = 9.549, low cutoff = 4.148, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

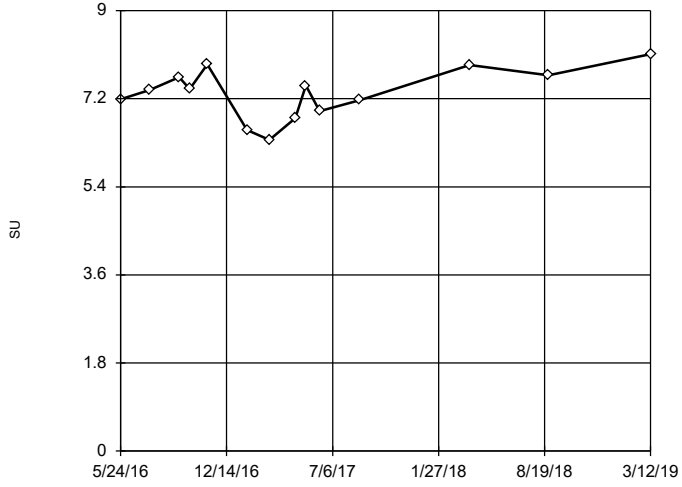
High cutoff = 7.827, low cutoff = -5.768, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 14

No outliers found. Tukey's method selected by user.

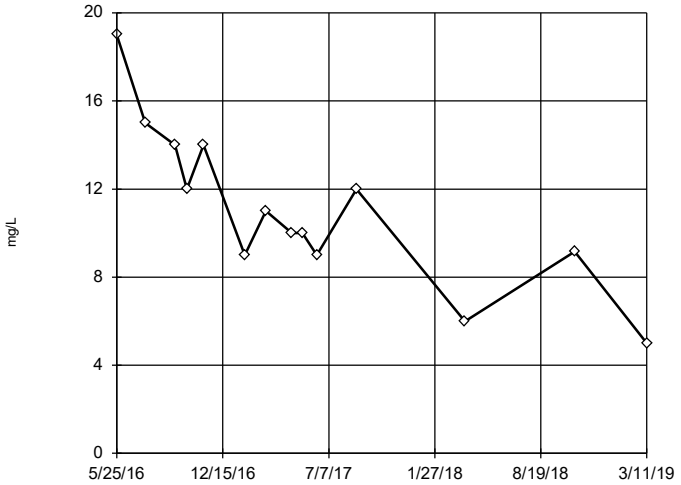
Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.458, low cutoff = -6.76, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-12 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 35.6, low cutoff = 0.6007, based on IQR multiplier of 3.

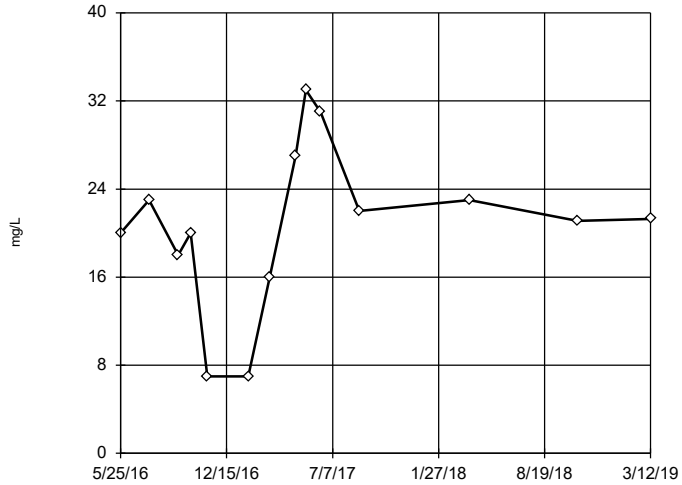
Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-13 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 40.57, low cutoff = -26.96, based on IQR multiplier of 3.

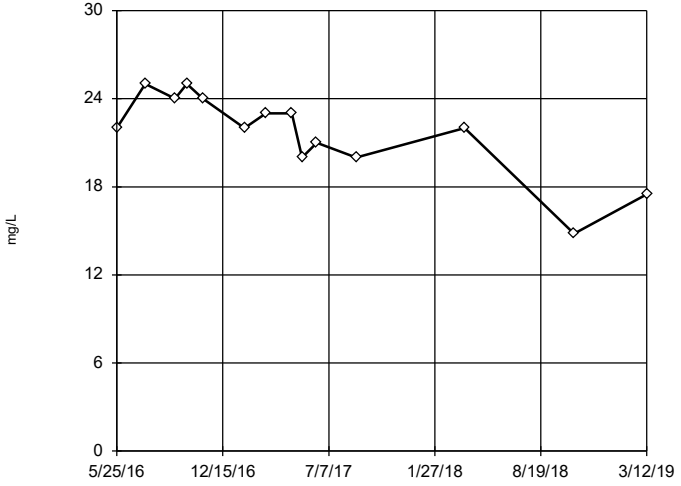
Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-1B (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 30.34, low cutoff = -24.42, based on IQR multiplier of 3.

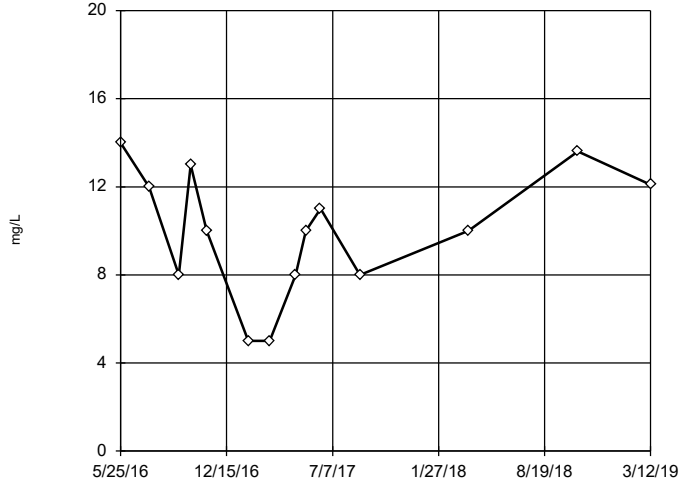
Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-4 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

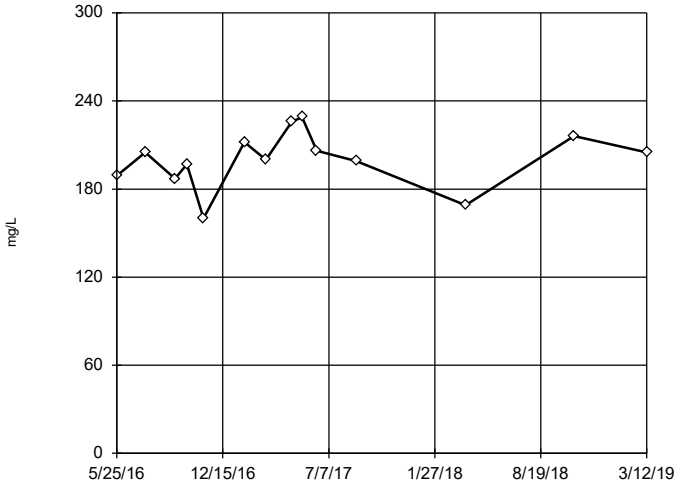
High cutoff = 20.95, low cutoff = -14.73, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-5 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 268.1, low cutoff = -141.4, based on IQR multiplier of 3.

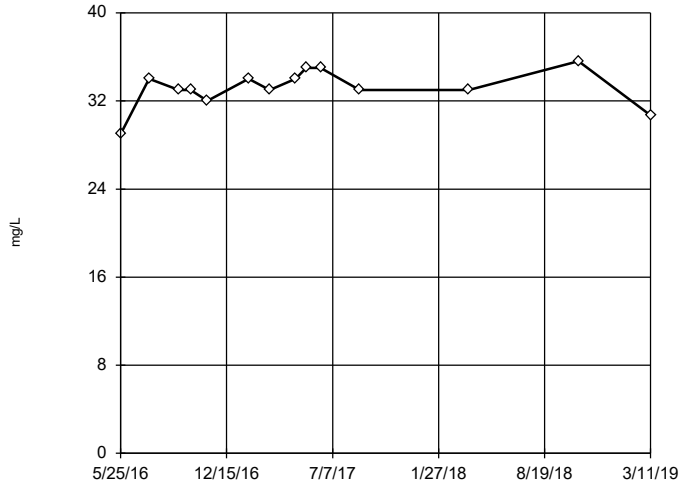
Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-7A (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 38.42, low cutoff = -26.47, based on IQR multiplier of 3.

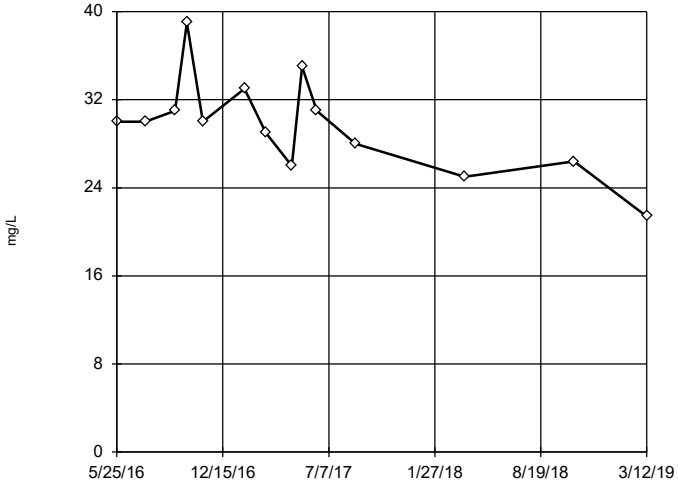
Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 14

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 54.34, low cutoff = 13.09, based on IQR multiplier of 3.

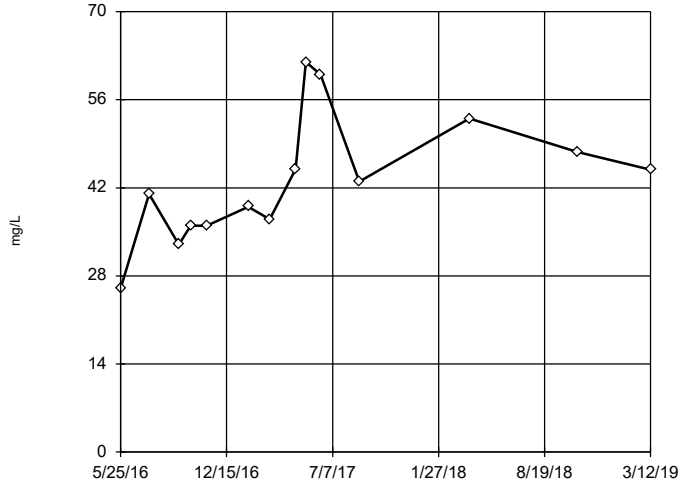
Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

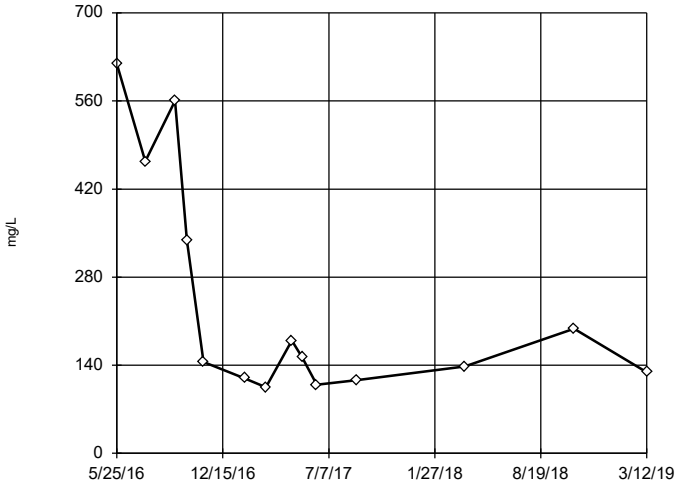
High cutoff = 137, low cutoff = 13.21, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-2




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

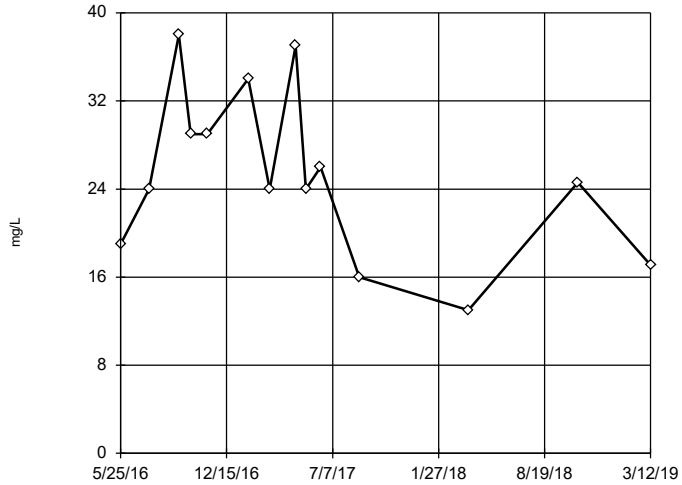
High cutoff = 15256, low cutoff = 3.054, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 14

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

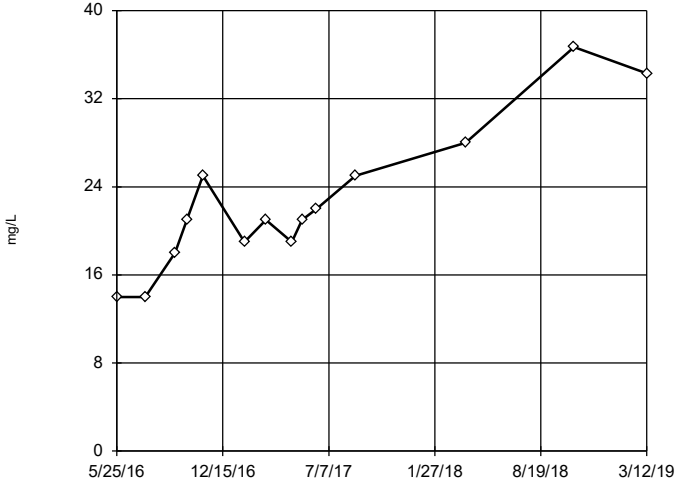
High cutoff = 93.92, low cutoff = 0.02691, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

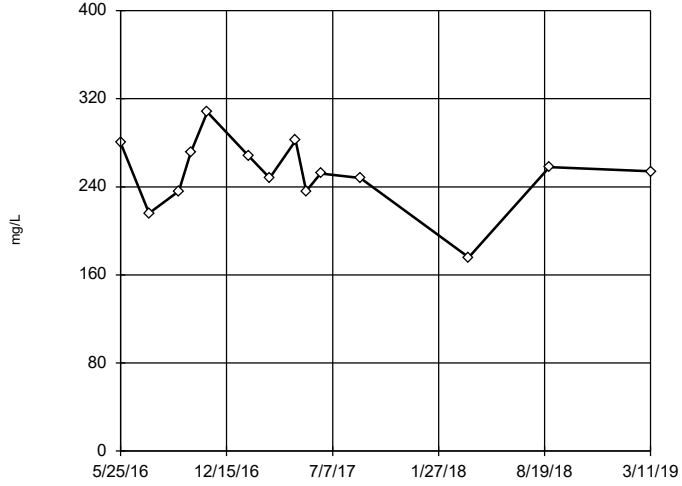
High cutoff = 77.47, low cutoff = 6.315, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-12 (bg)




n = 14

No outliers found. Tukey's method selected by user.

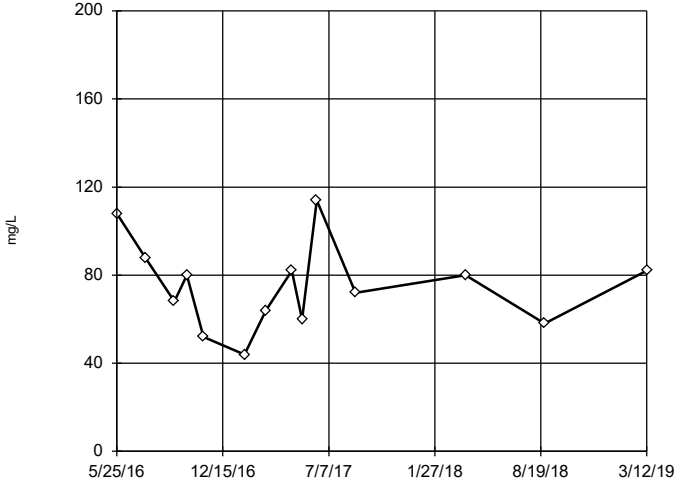
Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 353.8, low cutoff = -216.9, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-13 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 253.6, low cutoff = 19.76, based on IQR multiplier of 3.

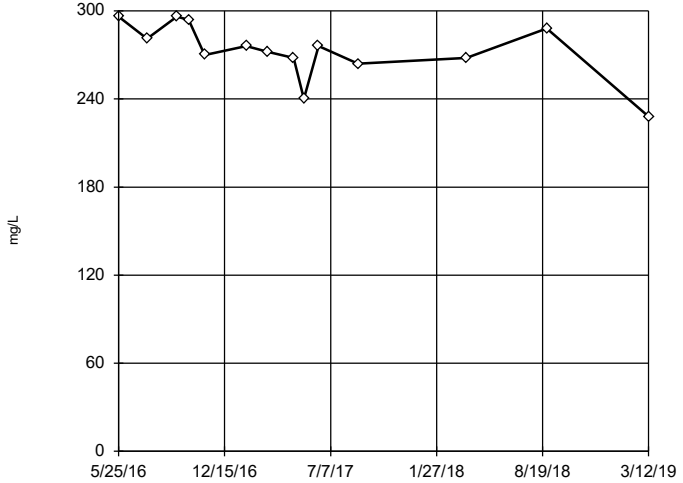
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-1B (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 333.2, low cutoff = -272.2, based on IQR multiplier of 3.

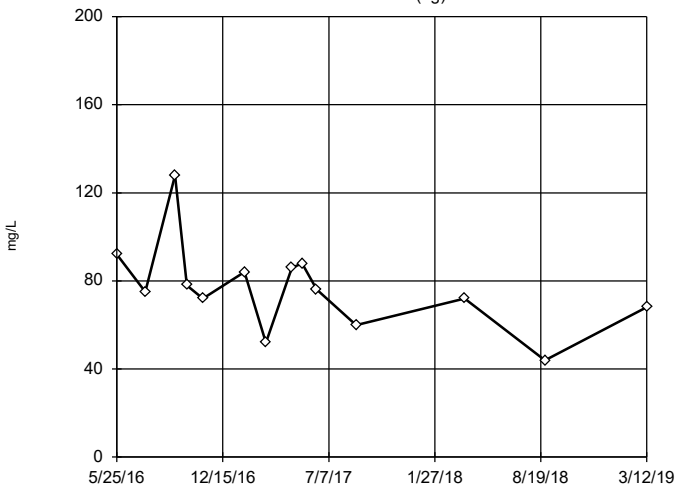
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-4 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 219.8, low cutoff = 25.28, based on IQR multiplier of 3.

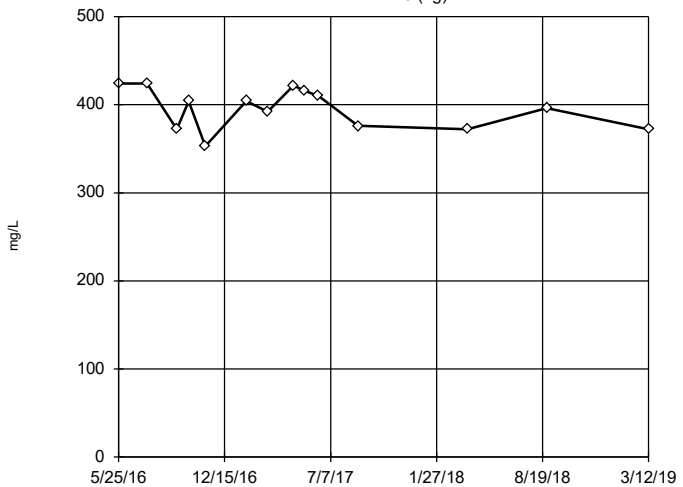
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:28 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-5 (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

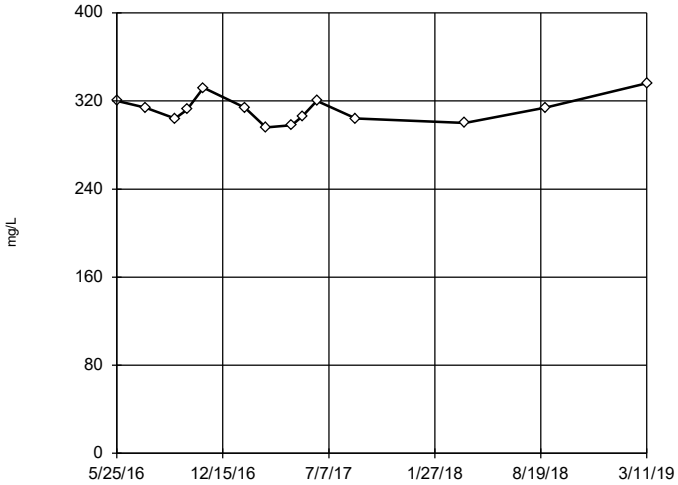
High cutoff = 506.6, low cutoff = -355.1, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:29 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-7A (bg)




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 380.7, low cutoff = 253.8, based on IQR multiplier of 3.

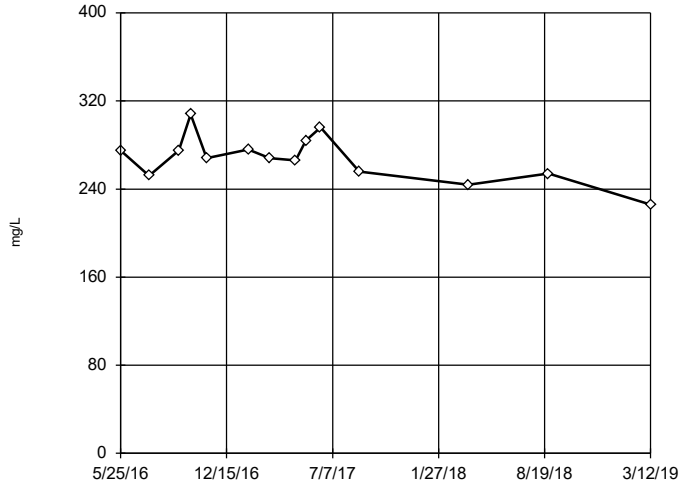
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:29 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 14

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 361, low cutoff = 172, based on IQR multiplier of 3.

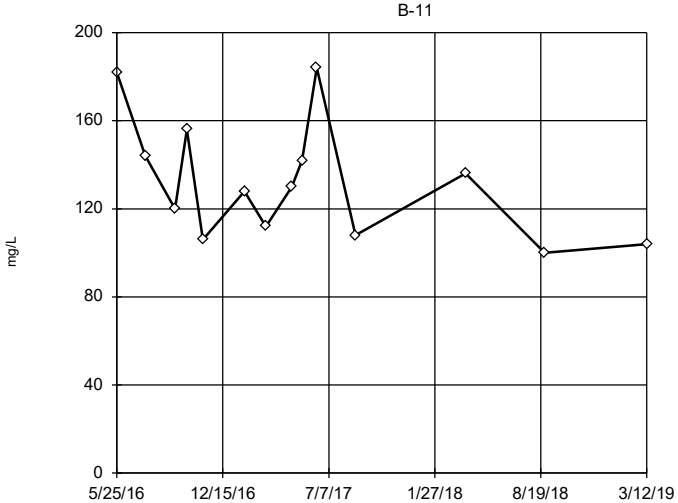
Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:29 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 412, low cutoff = 38.92, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:29 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2

n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

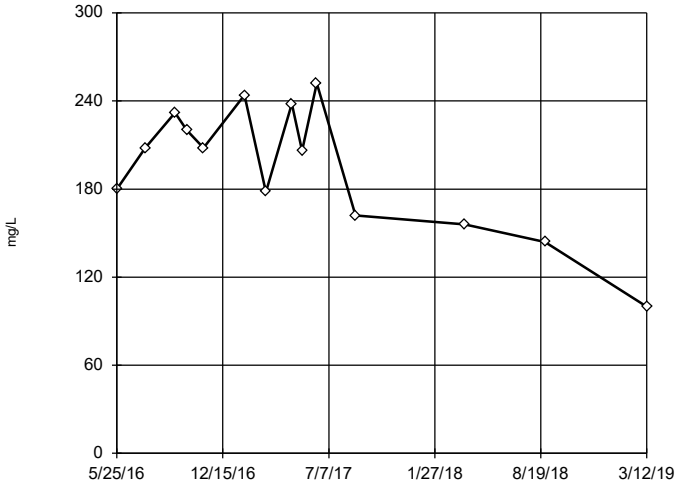
High cutoff = 20379, low cutoff = 11.72, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:29 AM View: Outlier Tests - App III

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-6




n = 14

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

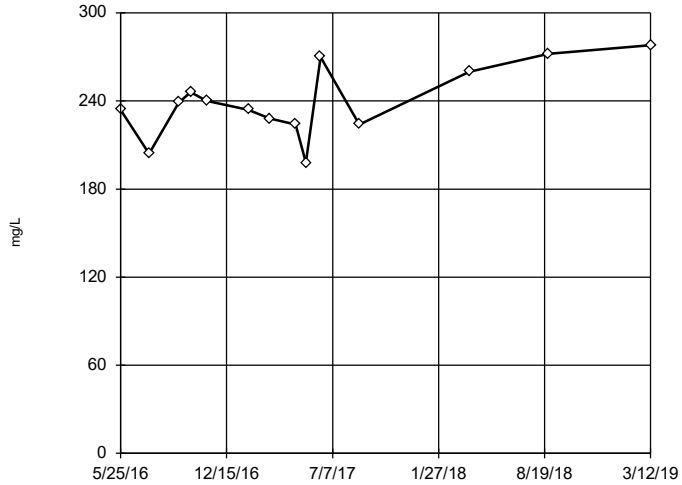
High cutoff = 380.9, low cutoff = -254.1, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:29 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

B-9




n = 14

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 408.5, low cutoff = 121.7, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:29 AM View: Outlier Tests - App III
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

# Outlier Analysis - Downgradient Wells Appendix IV - Significant Results

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 9:16 AM

| Constituent | Well | Outlier | Value(s) | Date(s) | Method | N | Mean | Std. Dev. | Distribution | Normality Test |
|---|---|---|---|---|---|---|---|---|---|---|
| **Barium, total (mg/L)** | **B-10** | **Yes** | **0.102,0.103** | **9/14/2016,11/7/2016** | **NP** | **15** | **0.08112** | **0.00929** | **ln(x)** | **ShapiroWilk** |
| **Barium, total (mg/L)** | **B-11** | **Yes** | **0.494** | **9/14/2016** | **NP** | **15** | **0.1516** | **0.09779** | **ln(x)** | **ShapiroWilk** |
| **Beryllium, total (mg/L)** | **B-2** | **Yes** | **0.003** | **11/8/2016** | **NP** | **15** | **0.0004499** | **0.0007519** | **ln(x)** | **ShapiroWilk** |
| **Calcium, total (mg/L)** | **B-10** | **Yes** | **116** | **11/7/2016** | **NP** | **16** | **80.99** | **12.61** | **ln(x)** | **ShapiroWilk** |
| **Lithium, total (mg/L)** | **B-9** | **Yes** | **0.05** | **6/11/2019** | **NP** | **15** | **0.007772** | **0.01221** | **ln(x)** | **ShapiroWilk** |
| **Mercury, total (mg/L)** | **B-2** | **Yes** | **0.00000946,0.00005,0.000005** | **7/19/2016,11/8/2016,8/27/2018** | **NP** | **15** | **0.0000233** | **0.00001** | **sqrt(x)** | **ShapiroWilk** |

# Outlier Analysis - Downgradient Wells Appendix IV - All Results

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 9:16 AM

| Constituent | Well | Outlier | Value(s) | Date(s) | Method | N | Mean | Std. Dev. | Distribution | Normality Test |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.003701 | 0.00223 | ln(x) | ShapiroWilk |
| Antimony, total (mg/L) | B-11 | n/a | n/a | n/a | NP | 15 | 0.003713 | 0.002194 | unknown | ShapiroWilk |
| Antimony, total (mg/L) | B-2 | n/a | n/a | n/a | NP | 15 | 0.002585 | 0.002257 | unknown | ShapiroWilk |
| Antimony, total (mg/L) | B-6 | n/a | n/a | n/a | NP | 15 | 0.003473 | 0.002259 | unknown | ShapiroWilk |
| Antimony, total (mg/L) | B-9 | n/a | n/a | n/a | NP | 15 | 0.003506 | 0.002205 | unknown | ShapiroWilk |
| Arsenic, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.003564 | 0.002058 | x^3 | ShapiroWilk |
| Arsenic, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.005357 | 0.0077 | ln(x) | ShapiroWilk |
| Arsenic, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.003648 | 0.004383 | ln(x) | ShapiroWilk |
| Arsenic, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.002773 | 0.00205 | x^(1/3) | ShapiroWilk |
| Arsenic, total (mg/L) | B-9 | No | n/a | n/a | NP | 15 | 0.003242 | 0.001958 | ln(x) | ShapiroWilk |
| **Barium, total (mg/L)** | **B-10** | **Yes** | **0.102,0.103** | **9/14/2016,11/7/2016** | **NP** | **15** | **0.08112** | **0.00929** | **ln(x)** | **ShapiroWilk** |
| **Barium, total (mg/L)** | **B-11** | **Yes** | **0.494** | **9/14/2016** | **NP** | **15** | **0.1516** | **0.09779** | **ln(x)** | **ShapiroWilk** |
| Barium, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.122 | 0.1292 | ln(x) | ShapiroWilk |
| Barium, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.05925 | 0.01295 | ln(x) | ShapiroWilk |
| Barium, total (mg/L) | B-9 | No | n/a | n/a | NP | 15 | 0.1505 | 0.01778 | ln(x) | ShapiroWilk |
| Beryllium, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.0005733 | 0.0004399 | x^(1/3) | ShapiroWilk |
| Beryllium, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.0009123 | 0.001483 | ln(x) | ShapiroWilk |
| **Beryllium, total (mg/L)** | **B-2** | **Yes** | **0.003** | **11/8/2016** | **NP** | **15** | **0.0004499** | **0.0007519** | **ln(x)** | **ShapiroWilk** |
| Beryllium, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.0002347 | 0.0002642 | x^(1/3) | ShapiroWilk |
| Beryllium, total (mg/L) | B-9 | No | n/a | n/a | NP | 15 | 0.0004197 | 0.0004528 | ln(x) | ShapiroWilk |
| Boron, total (mg/L) | B-10 | No | n/a | n/a | NP | 16 | 0.02647 | 0.01148 | sqrt(x) | ShapiroWilk |
| Boron, total (mg/L) | B-11 | No | n/a | n/a | NP | 17 | 0.3189 | 0.1446 | ln(x) | ShapiroWilk |
| Boron, total (mg/L) | B-2 | No | n/a | n/a | NP | 17 | 1.087 | 0.3474 | sqrt(x) | ShapiroWilk |
| Boron, total (mg/L) | B-6 | No | n/a | n/a | NP | 17 | 0.05445 | 0.01159 | normal | ShapiroWilk |
| Boron, total (mg/L) | B-9 | No | n/a | n/a | NP | 16 | 0.01546 | 0.01114 | ln(x) | ShapiroWilk |
| Cadmium, total (mg/L) | B-10 | n/a | n/a | n/a | NP | 15 | 0.0007142 | 0.0004279 | unknown | ShapiroWilk |
| Cadmium, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.0007317 | 0.001043 | ln(x) | ShapiroWilk |
| Cadmium, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.0005712 | 0.0004635 | ln(x) | ShapiroWilk |
| Cadmium, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.0005437 | 0.0004471 | ln(x) | ShapiroWilk |
| Cadmium, total (mg/L) | B-9 | n/a | n/a | n/a | NP | 15 | 0.0007693 | 0.0003975 | unknown | ShapiroWilk |
| **Calcium, total (mg/L)** | **B-10** | **Yes** | **116** | **11/7/2016** | **NP** | **16** | **80.99** | **12.61** | **ln(x)** | **ShapiroWilk** |
| Calcium, total (mg/L) | B-11 | No | n/a | n/a | NP | 16 | 13.43 | 2.462 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-2 | No | n/a | n/a | NP | 16 | 36.28 | 21.91 | ln(x) | ShapiroWilk |
| Calcium, total (mg/L) | B-6 | No | n/a | n/a | NP | 16 | 44.95 | 7.134 | x^2 | ShapiroWilk |
| Calcium, total (mg/L) | B-9 | No | n/a | n/a | NP | 16 | 101 | 17.3 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-10 | No | n/a | n/a | NP | 16 | 8.164 | 1.452 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-11 | No | n/a | n/a | NP | 16 | 4.918 | 1.243 | normal | ShapiroWilk |
| Chloride, total (mg/L) | B-2 | No | n/a | n/a | NP | 16 | 5.928 | 1.72 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-6 | No | n/a | n/a | NP | 16 | 7.571 | 1.501 | ln(x) | ShapiroWilk |
| Chloride, total (mg/L) | B-9 | No | n/a | n/a | NP | 16 | 5.599 | 1.333 | x^2 | ShapiroWilk |
| Chromium, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.004406 | 0.009828 | ln(x) | ShapiroWilk |
| Chromium, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.01224 | 0.02725 | ln(x) | ShapiroWilk |
| Chromium, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.007344 | 0.01025 | ln(x) | ShapiroWilk |
| Chromium, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.004085 | 0.002403 | ln(x) | ShapiroWilk |
| Chromium, total (mg/L) | B-9 | No | n/a | n/a | NP | 15 | 0.002271 | 0.001024 | sqrt(x) | ShapiroWilk |
| Cobalt, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.001008 | 0.001189 | ln(x) | ShapiroWilk |
| Cobalt, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.003008 | 0.006331 | ln(x) | ShapiroWilk |
| Cobalt, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.00414 | 0.008361 | ln(x) | ShapiroWilk |
| Cobalt, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.001522 | 0.001193 | sqrt(x) | ShapiroWilk |
| Cobalt, total (mg/L) | B-9 | No | n/a | n/a | NP | 15 | 0.0009714 | 0.00059 | sqrt(x) | ShapiroWilk |
| Combined Radium 226 + 228 (pCi/L) | B-10 | No | n/a | n/a | NP | 14 | 1.113 | 0.5527 | x^(1/3) | ShapiroWilk |
| Combined Radium 226 + 228 (pCi/L) | B-11 | No | n/a | n/a | NP | 14 | 2.516 | 3.581 | ln(x) | ShapiroWilk |
| Combined Radium 226 + 228 (pCi/L) | B-2 | No | n/a | n/a | NP | 14 | 1.922 | 0.9752 | ln(x) | ShapiroWilk |
| Combined Radium 226 + 228 (pCi/L) | B-6 | No | n/a | n/a | NP | 14 | 2.274 | 3.821 | ln(x) | ShapiroWilk |
| Combined Radium 226 + 228 (pCi/L) | B-9 | No | n/a | n/a | NP | 14 | 1.776 | 2.355 | ln(x) | ShapiroWilk |

# Outlier Analysis - Downgradient Wells Appendix IV - All Results

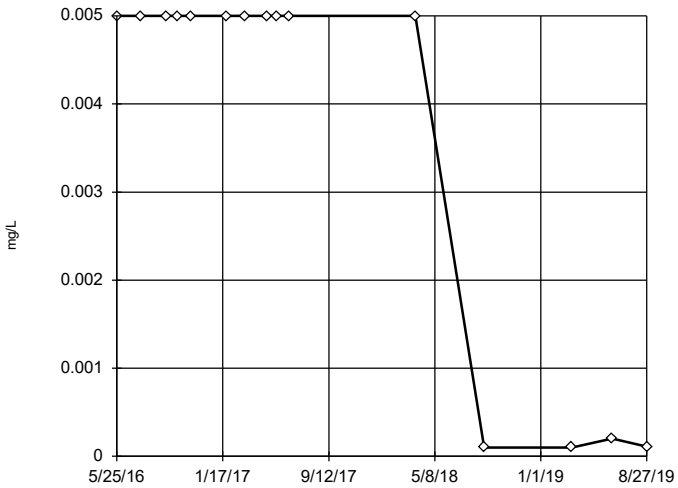


Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 9:16 AM

| Constituent | Well | Outlier | Value(s) | Date(s) | Method | N | Mean | Std. Dev. | Distribution | Normality Test |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride, total (mg/L) | B-10 | No | n/a | n/a | NP | 16 | 0.7545 | 0.38 | ln(x) | ShapiroWilk |
| Fluoride, total (mg/L) | B-11 | n/a | n/a | n/a | NP | 16 | 0.88 | 0.3279 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-2 | n/a | n/a | n/a | NP | 16 | 0.8435 | 0.3408 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-6 | n/a | n/a | n/a | NP | 16 | 0.8398 | 0.3464 | unknown | ShapiroWilk |
| Fluoride, total (mg/L) | B-9 | No | n/a | n/a | NP | 16 | 0.7077 | 0.394 | ln(x) | ShapiroWilk |
| Lead, total (mg/L) | B-10 | n/a | n/a | n/a | NP | 15 | 0.00312 | 0.002162 | unknown | ShapiroWilk |
| Lead, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.006196 | 0.01214 | ln(x) | ShapiroWilk |
| Lead, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.004373 | 0.006874 | ln(x) | ShapiroWilk |
| Lead, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.00171 | 0.00145 | sqrt(x) | ShapiroWilk |
| Lead, total (mg/L) | B-9 | No | n/a | n/a | NP | 15 | 0.003002 | 0.00222 | ln(x) | ShapiroWilk |
| Lithium, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.007401 | 0.01239 | ln(x) | ShapiroWilk |
| Lithium, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.01221 | 0.0203 | ln(x) | ShapiroWilk |
| Lithium, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.01027 | 0.01351 | ln(x) | ShapiroWilk |
| Lithium, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.006166 | 0.01269 | ln(x) | ShapiroWilk |
| **Lithium, total (mg/L)** | **B-9** | **Yes** | **0.05** | **6/11/2019** | **NP** | **15** | **0.007772** | **0.01221** | **ln(x)** | **ShapiroWilk** |
| Mercury, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.0000217 | 0.00000583 | x^2 | ShapiroWilk |
| Mercury, total (mg/L) | B-11 | n/a | n/a | n/a | NP | 15 | 0.0000297 | 0.0000186 | unknown | ShapiroWilk |
| **Mercury, total (mg/L)** | **B-2** | **Yes** | **0.00000946,0.00005,0.000005** | **7/19/2016,11/8/2016,8/27/2018** | **NP** | **15** | **0.0000233** | **0.00001** | **sqrt(x)** | **ShapiroWilk** |
| Mercury, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.0000154 | 0.00000834 | ln(x) | ShapiroWilk |
| Mercury, total (mg/L) | B-9 | n/a | n/a | n/a | NP | 15 | 0.0000224 | 0.00000506 | unknown | ShapiroWilk |
| Molybdenum, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.002665 | 0.003203 | ln(x) | ShapiroWilk |
| Molybdenum, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.003715 | 0.002668 | sqrt(x) | ShapiroWilk |
| Molybdenum, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.002644 | 0.002729 | ln(x) | ShapiroWilk |
| Molybdenum, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.002431 | 0.002802 | ln(x) | ShapiroWilk |
| Molybdenum, total (mg/L) | B-9 | n/a | n/a | n/a | NP | 15 | 0.006527 | 0.008516 | unknown | ShapiroWilk |
| pH, field (SU) | B-10 | No | n/a | n/a | NP | 16 | 7.365 | 0.5946 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-11 | No | n/a | n/a | NP | 17 | 5.895 | 0.4542 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-2 | No | n/a | n/a | NP | 17 | 6.24 | 0.4454 | ln(x) | ShapiroWilk |
| pH, field (SU) | B-6 | No | n/a | n/a | NP | 17 | 6.742 | 0.2669 | x^6 | ShapiroWilk |
| pH, field (SU) | B-9 | No | n/a | n/a | NP | 16 | 7.337 | 0.4942 | x^4 | ShapiroWilk |
| Selenium, total (mg/L) | B-10 | No | n/a | n/a | NP | 15 | 0.003767 | 0.002118 | ln(x) | ShapiroWilk |
| Selenium, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.003293 | 0.001377 | x^(1/3) | ShapiroWilk |
| Selenium, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.02412 | 0.02155 | ln(x) | ShapiroWilk |
| Selenium, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.002494 | 0.001205 | x^(1/3) | ShapiroWilk |
| Selenium, total (mg/L) | B-9 | n/a | n/a | n/a | NP | 15 | 0.003847 | 0.001984 | unknown | ShapiroWilk |
| Sulfate, total (mg/L) | B-10 | No | n/a | n/a | NP | 16 | 29.18 | 4.246 | ln(x) | ShapiroWilk |
| Sulfate, total (mg/L) | B-11 | No | n/a | n/a | NP | 16 | 44.83 | 10.53 | x^(1/3) | ShapiroWilk |
| Sulfate, total (mg/L) | B-2 | No | n/a | n/a | NP | 16 | 219.9 | 176.2 | ln(x) | ShapiroWilk |
| Sulfate, total (mg/L) | B-6 | No | n/a | n/a | NP | 16 | 25.78 | 7.641 | sqrt(x) | ShapiroWilk |
| Sulfate, total (mg/L) | B-9 | No | n/a | n/a | NP | 16 | 24.54 | 7.965 | ln(x) | ShapiroWilk |
| Thallium, total (mg/L) | B-10 | n/a | n/a | n/a | NP | 15 | 0.001726 | 0.0006219 | unknown | ShapiroWilk |
| Thallium, total (mg/L) | B-11 | No | n/a | n/a | NP | 15 | 0.001635 | 0.000662 | normal | ShapiroWilk |
| Thallium, total (mg/L) | B-2 | No | n/a | n/a | NP | 15 | 0.001529 | 0.0007166 | sqrt(x) | ShapiroWilk |
| Thallium, total (mg/L) | B-6 | No | n/a | n/a | NP | 15 | 0.001601 | 0.0006496 | normal | ShapiroWilk |
| Thallium, total (mg/L) | B-9 | No | n/a | n/a | NP | 15 | 0.001673 | 0.0006346 | x^2 | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-10 | No | n/a | n/a | NP | 16 | 267.3 | 19.66 | sqrt(x) | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-11 | No | n/a | n/a | NP | 16 | 129.5 | 28.4 | ln(x) | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-2 | No | n/a | n/a | NP | 16 | 494.9 | 325.4 | ln(x) | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-6 | No | n/a | n/a | NP | 16 | 197.9 | 42.93 | x^2 | ShapiroWilk |
| Total Dissolved Solids [TDS] (mg/L) | B-9 | No | n/a | n/a | NP | 16 | 244.3 | 28.59 | ln(x) | ShapiroWilk |

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

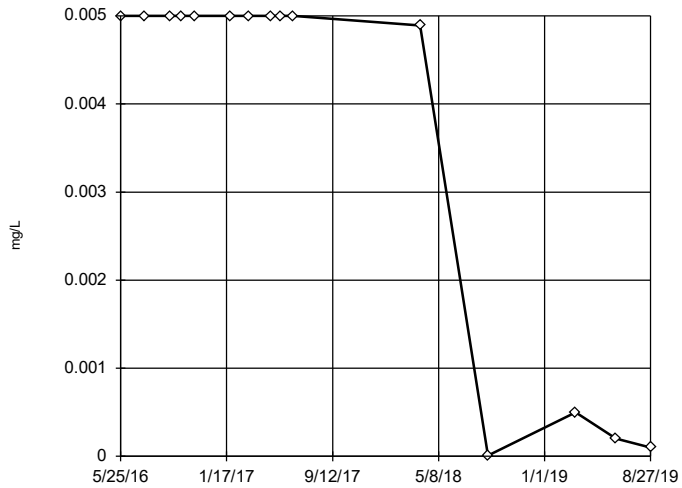
High cutoff = 78.12, low cutoff = 1.3e-8, based on IQR multiplier of 3.

Constituent: Antimony, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

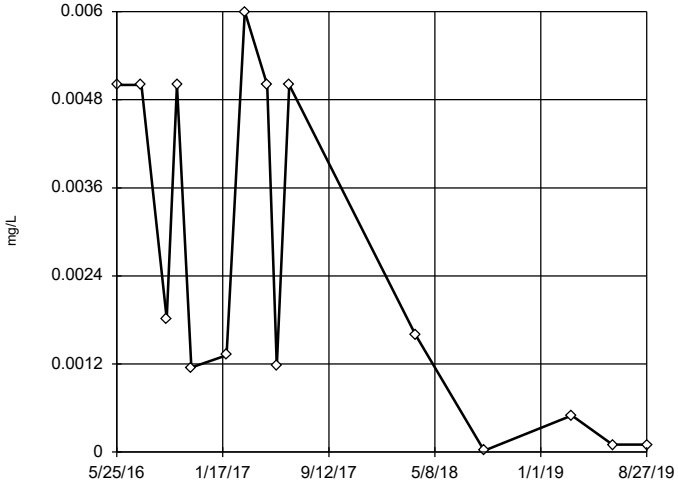
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Antimony, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

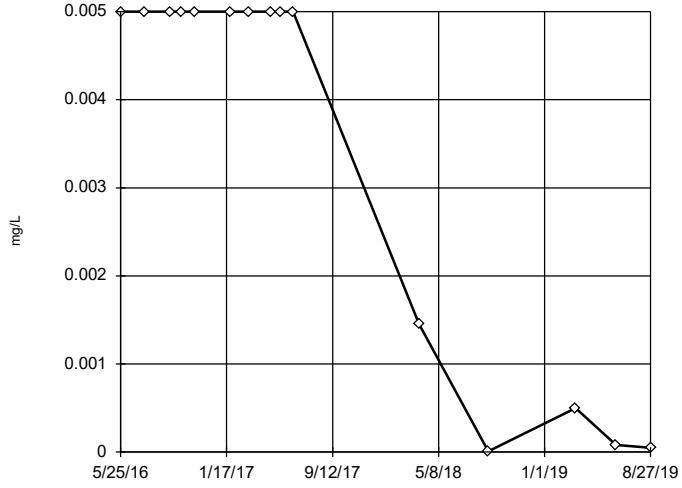
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Antimony, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

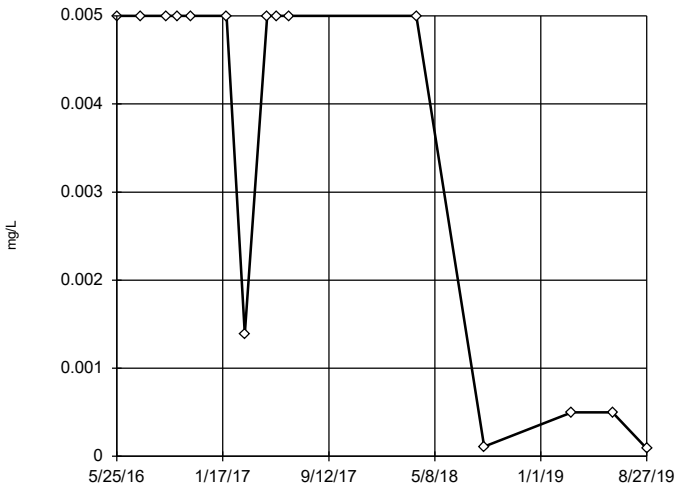
Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Antimony, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

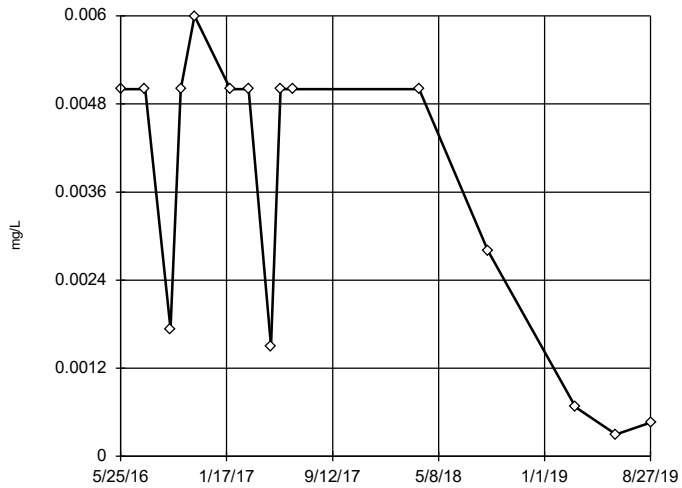
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Antimony, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

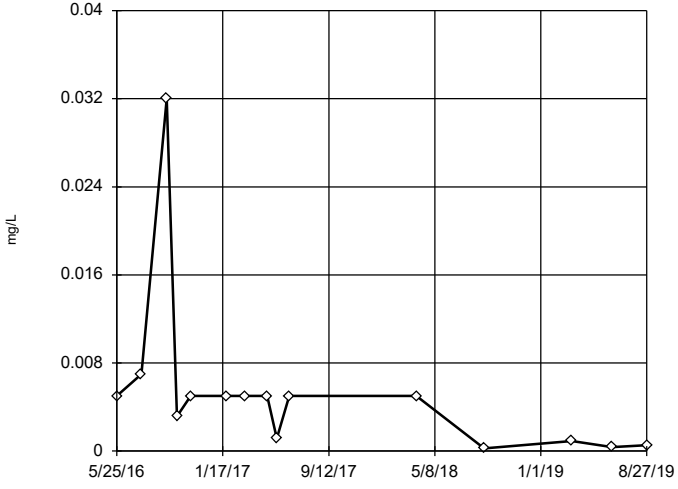
High cutoff = 0.007883, low cutoff = -0.007124, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

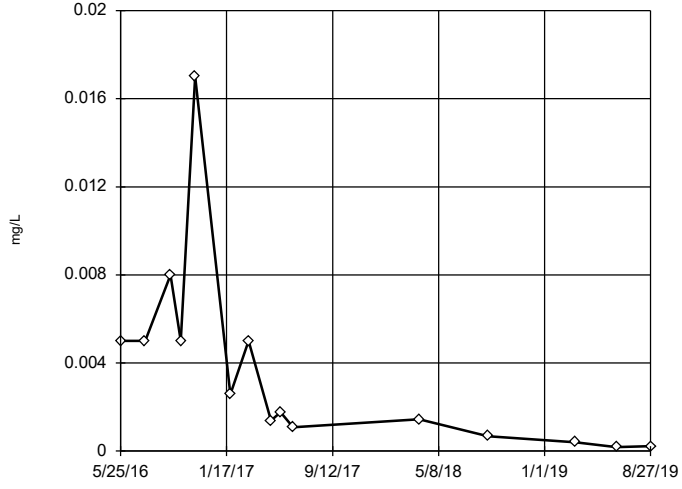
High cutoff = 0.8573, low cutoff = 0.000005249, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

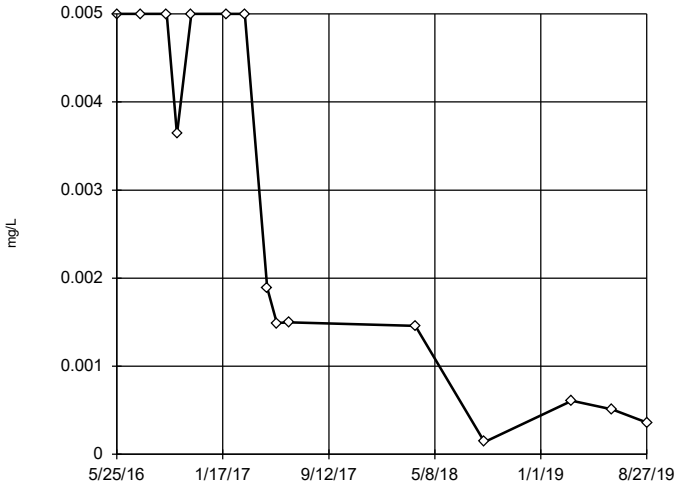
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.078, low cutoff = 0.000001612, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-6




n = 15

No outliers found.
Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

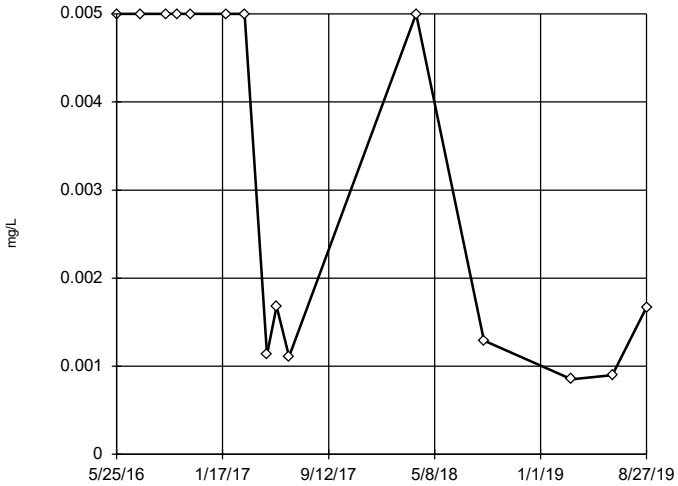
High cutoff = 0.07926, low cutoff = -0.005246, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found.
Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

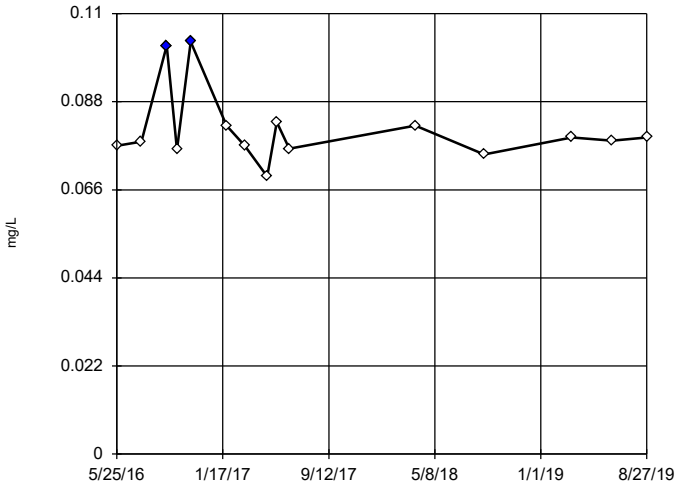
High cutoff = 0.4332, low cutoff = 0.00001304, based on IQR multiplier of 3.

Constituent: Arsenic, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

Outliers are drawn as solid.
Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

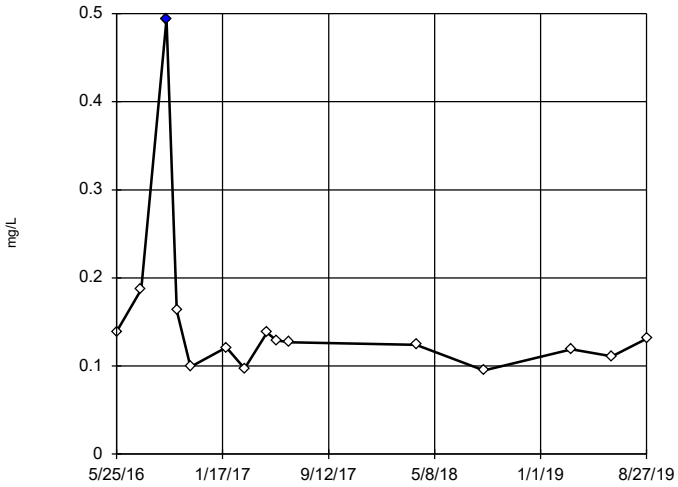
High cutoff = 0.102, low cutoff = 0.06131, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

Outlier is drawn as solid.
Tukey's method selected by user.

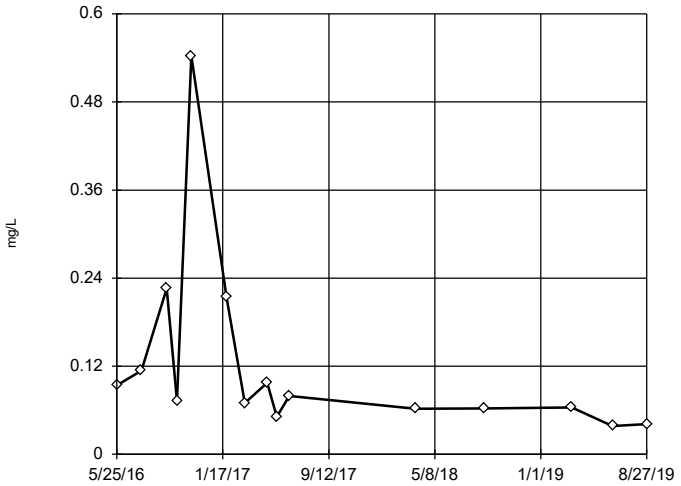
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.273, low cutoff = 0.05653, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

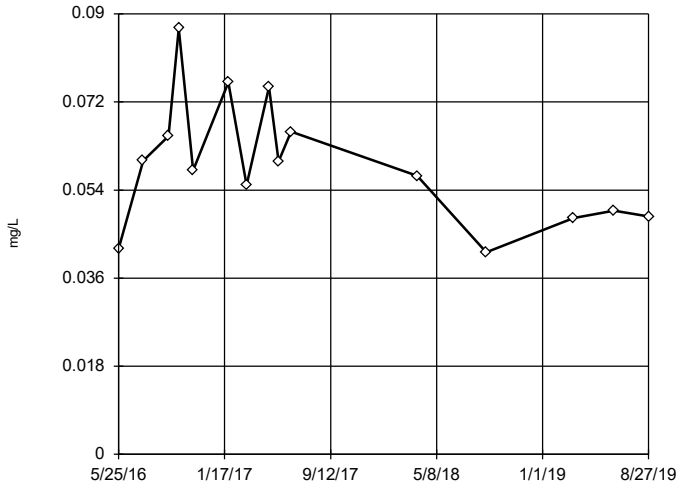
High cutoff = 0.7019, low cutoff = 0.0101, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

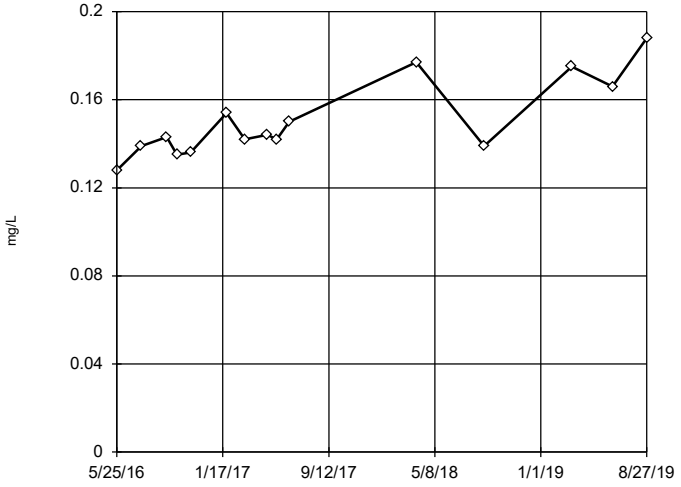
High cutoff = 0.1646, low cutoff = 0.01947, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

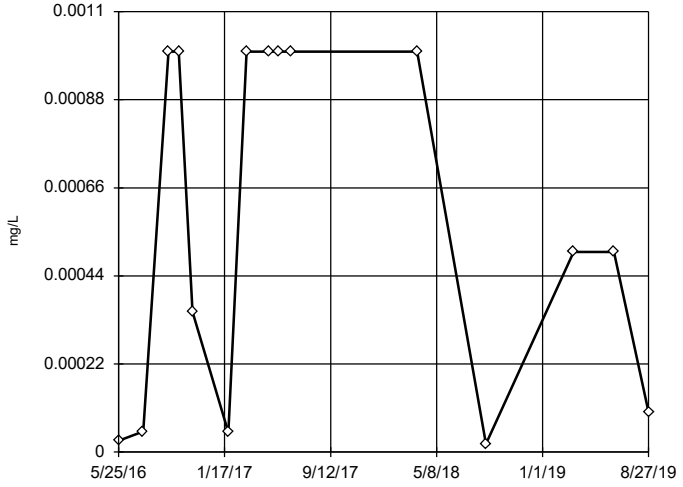
High cutoff = 0.2827, low cutoff = 0.08161, based on IQR multiplier of 3.

Constituent: Barium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

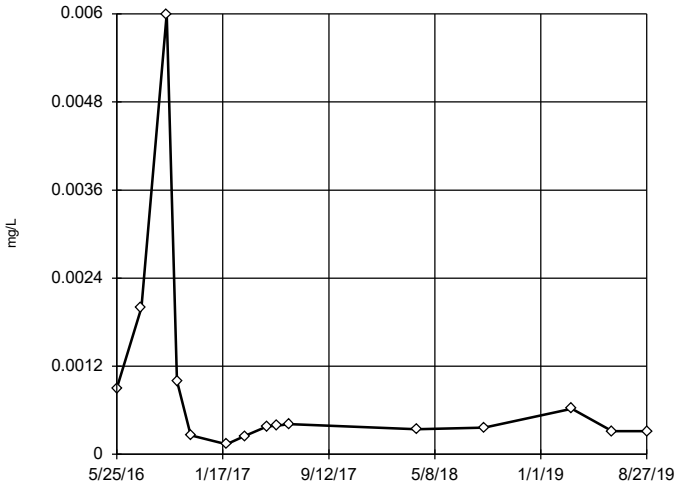
Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.024, low cutoff = -0.003462, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

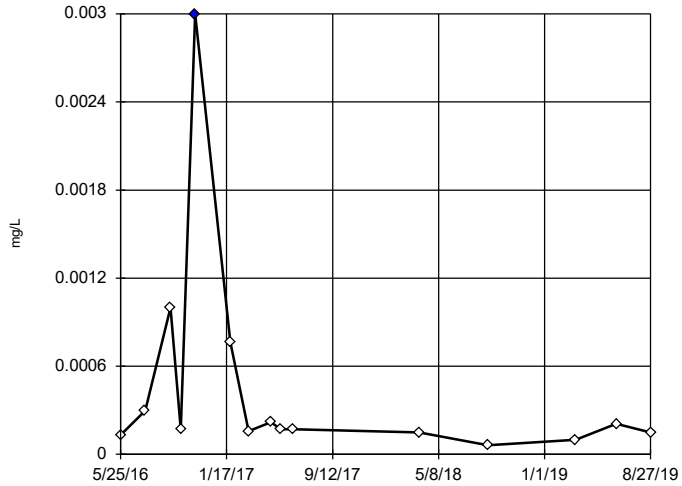
High cutoff = 0.02078, low cutoff = 0.00001368, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

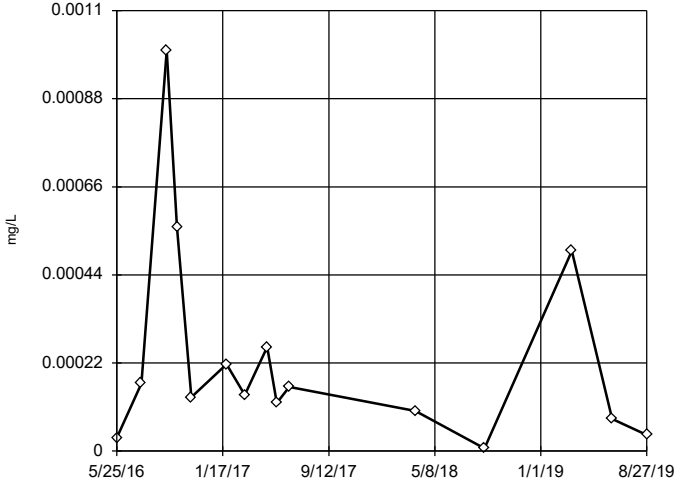
High cutoff = 0.002361, low cutoff = 0.00001876, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

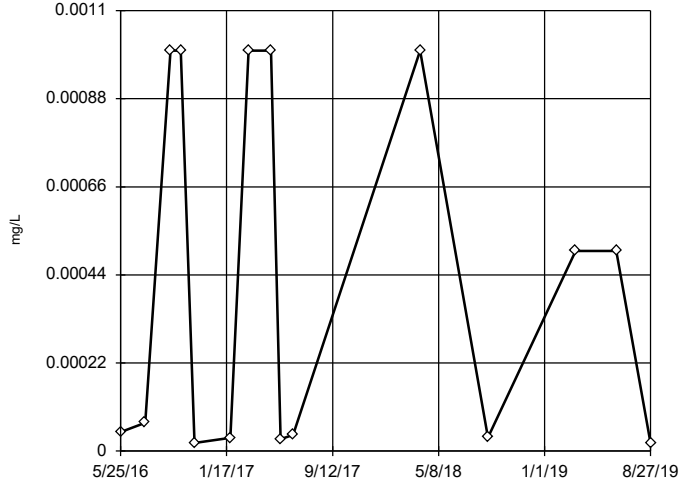
High cutoff = 0.002002, low cutoff = -0.00000699, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

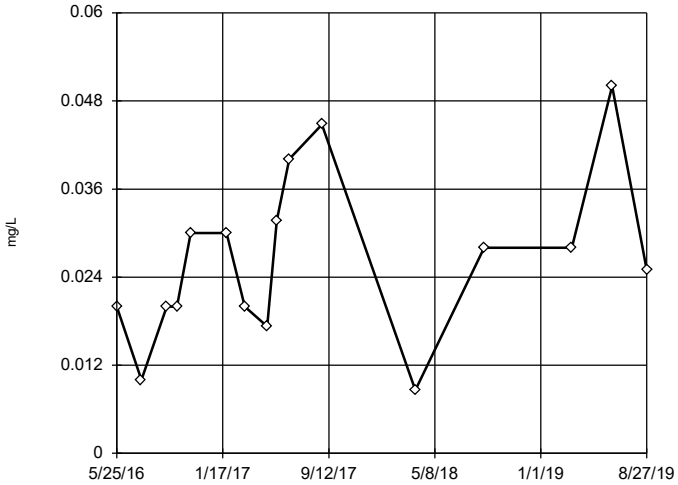
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 27.23, low cutoff = 1.2e-9, based on IQR multiplier of 3.

Constituent: Beryllium, total Analysis Run 12/8/2019 9:05 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-10




n = 16

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

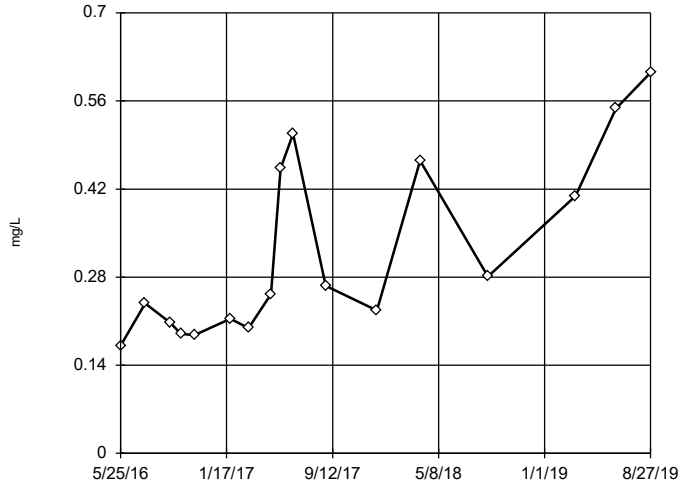
High cutoff = 0.07738, low cutoff = 0.00151, based on IQR multiplier of 3.

Constituent: Boron, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 17

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

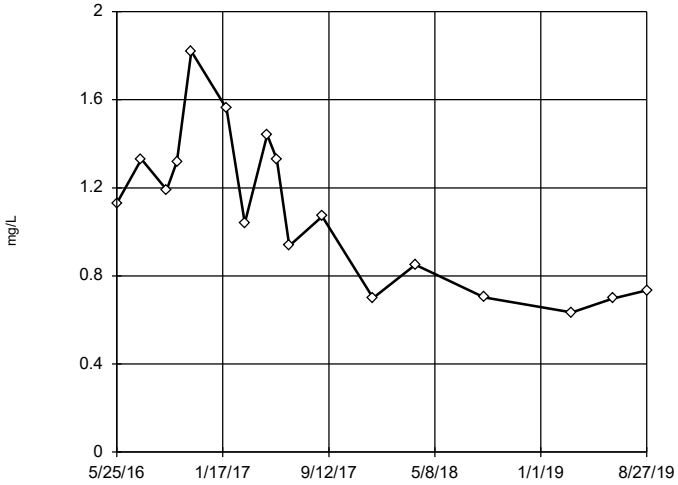
High cutoff = 5.307, low cutoff = 0.01755, based on IQR multiplier of 3.

Constituent: Boron, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 17

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

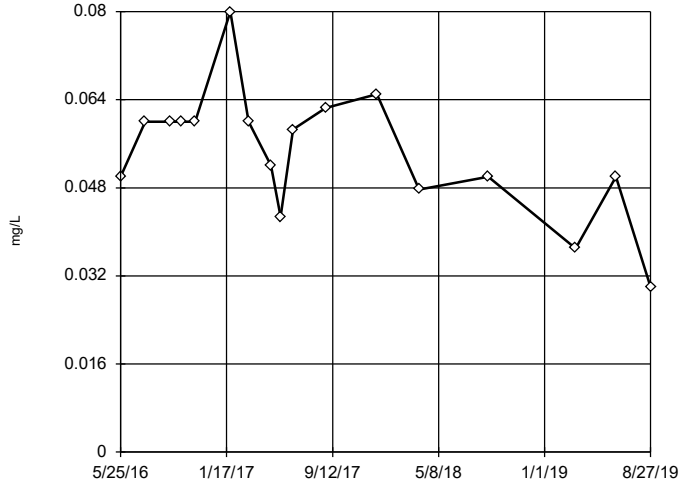
High cutoff = 4.286, low cutoff = -0.004819, based on IQR multiplier of 3.

Constituent: Boron, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 17

No outliers found. Tukey's method selected by user.

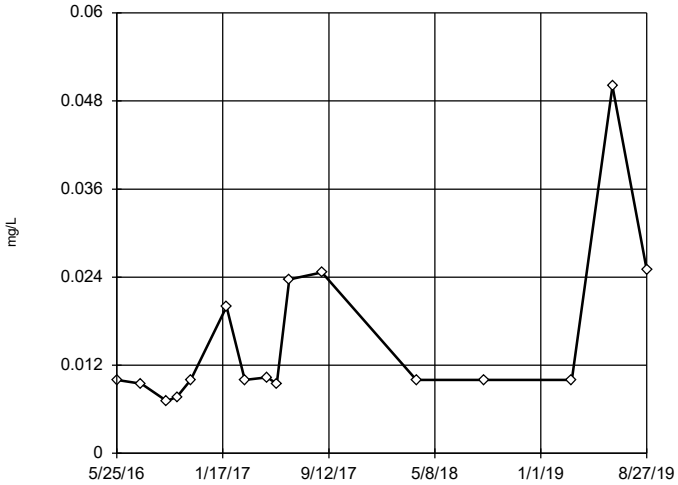
Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.09345, low cutoff = 0.0154, based on IQR multiplier of 3.

Constituent: Boron, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-9




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

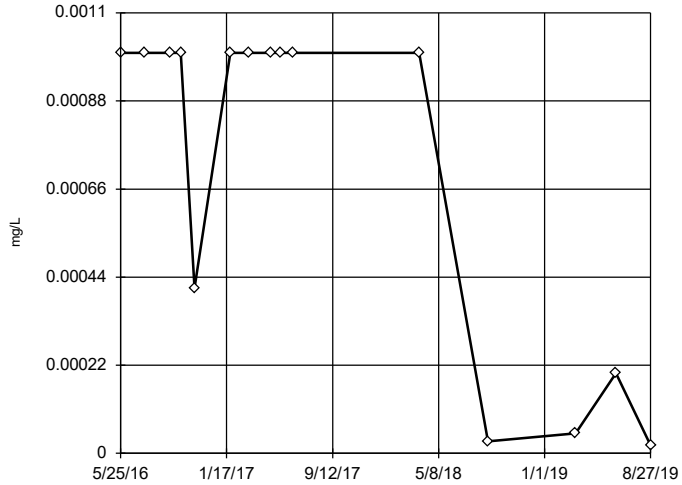
High cutoff = 0.2432, low cutoff = 0.0008716, based on IQR multiplier of 3.

Constituent: Boron, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

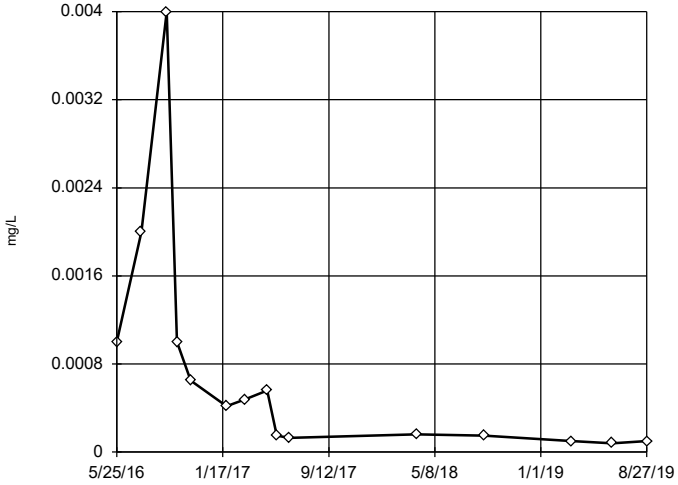
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Cadmium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

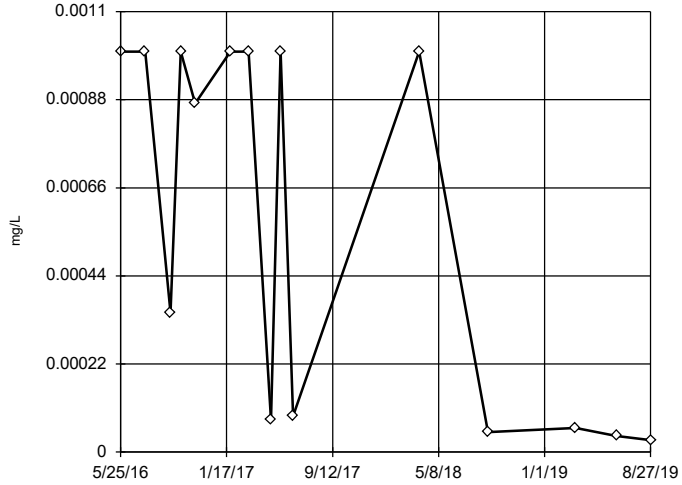
High cutoff = 0.4552, low cutoff = 2.9e-7, based on IQR multiplier of 3.

Constituent: Cadmium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

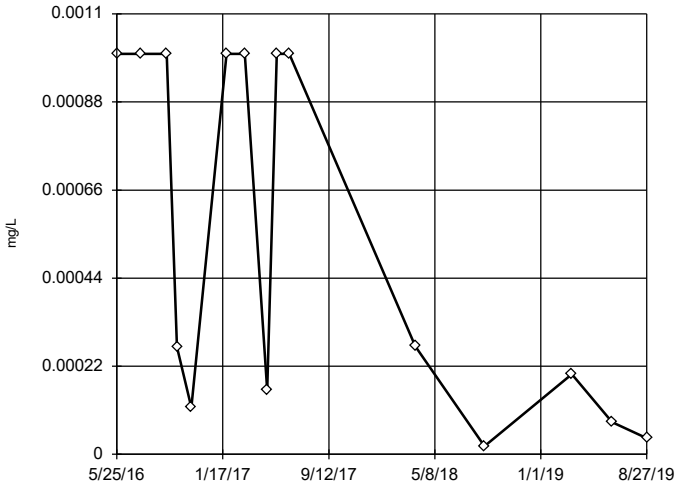
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 4.63, low cutoff = 1.3e-8, based on IQR multiplier of 3.

Constituent: Cadmium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

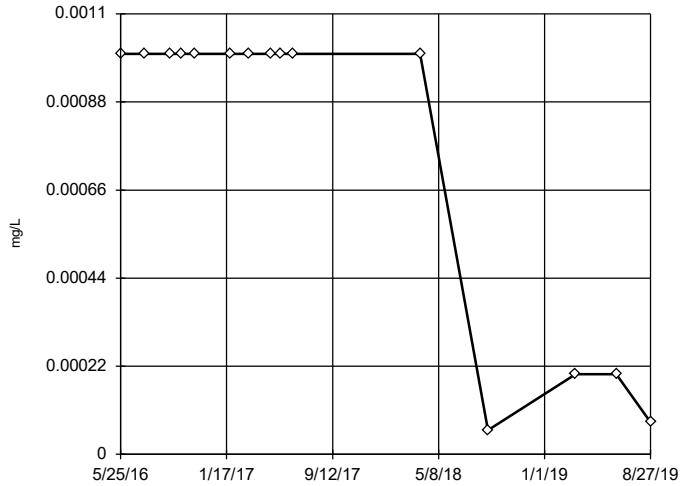
High cutoff = 0.6299, low cutoff = 1.9e-7, based on IQR multiplier of 3.

Constituent: Cadmium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

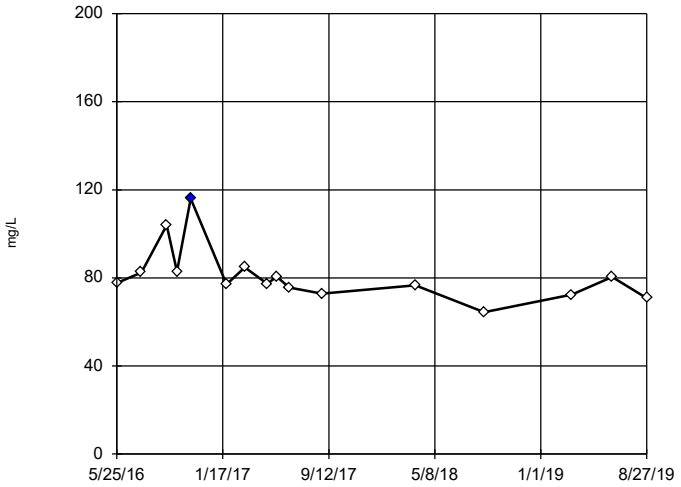
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Cadmium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 16

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

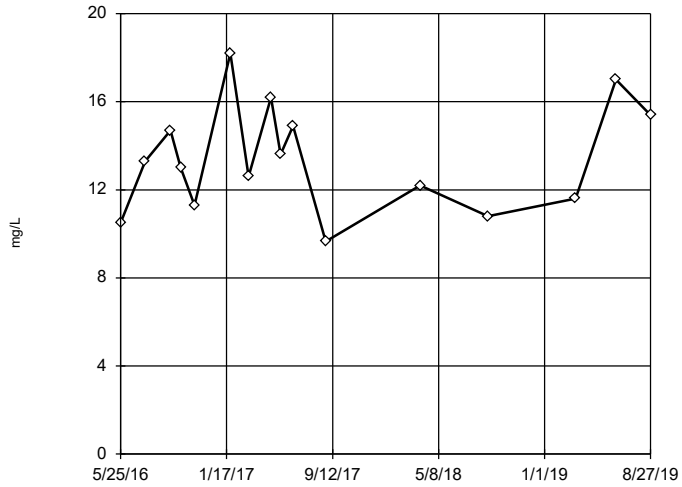
High cutoff = 114.6, low cutoff = 53.55, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 16

No outliers found. Tukey's method selected by user.

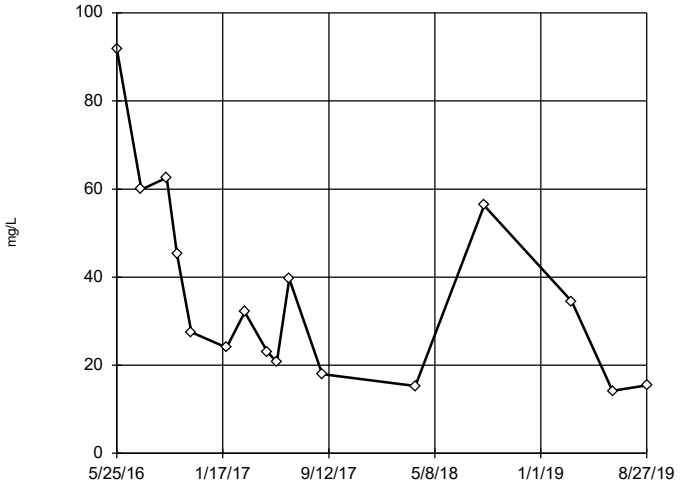
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 35.08, low cutoff = 4.943, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-2




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

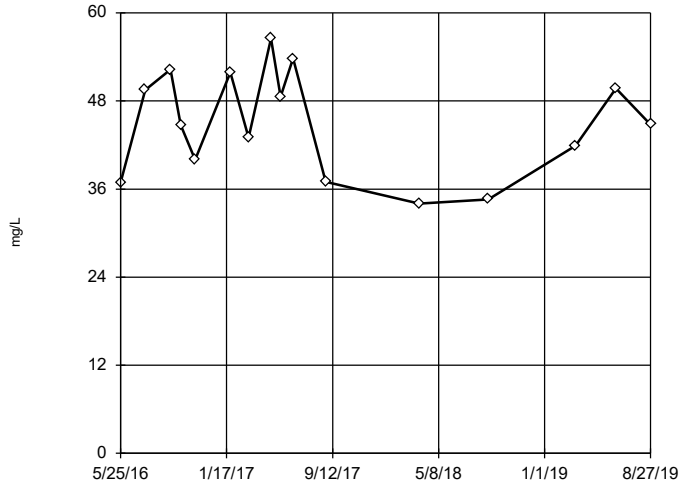
High cutoff = 904.4, low cutoff = 1.078, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 16

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

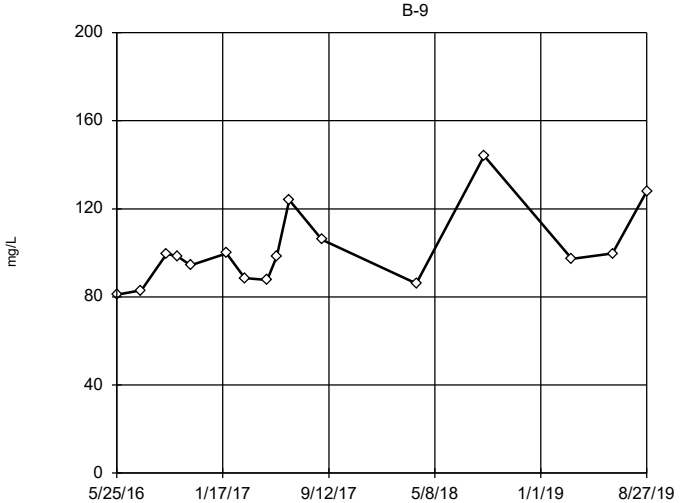
High cutoff = 76.64, low cutoff = -42.52, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

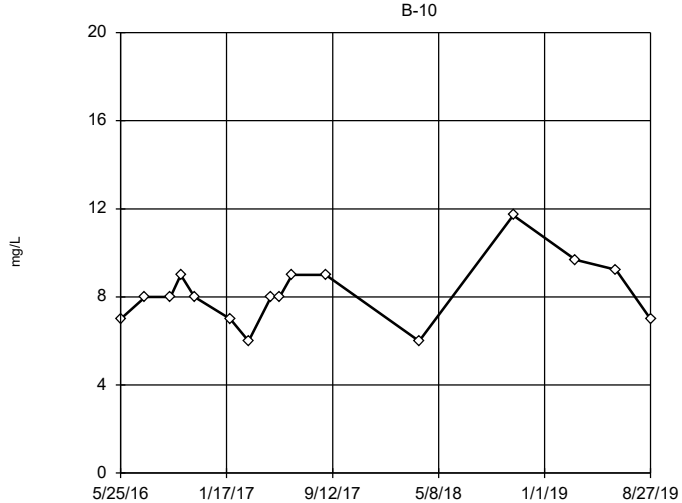
High cutoff = 163.7, low cutoff = 55.36, based on IQR multiplier of 3.

Constituent: Calcium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 16

No outliers found. Tukey's method selected by user.

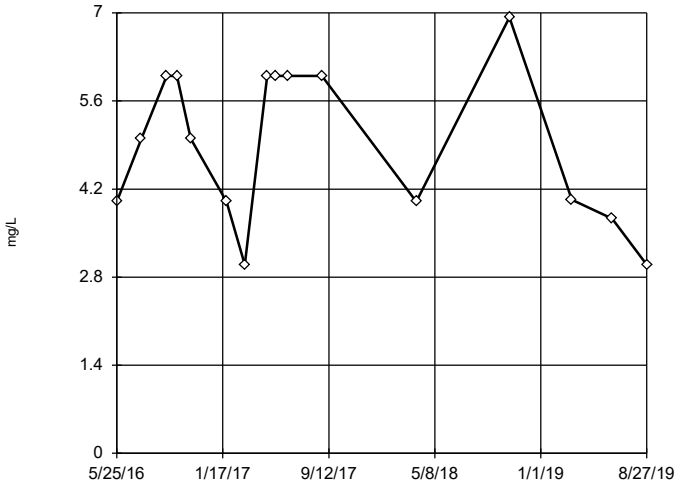
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 19.13, low cutoff = 3.294, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-11




n = 16

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

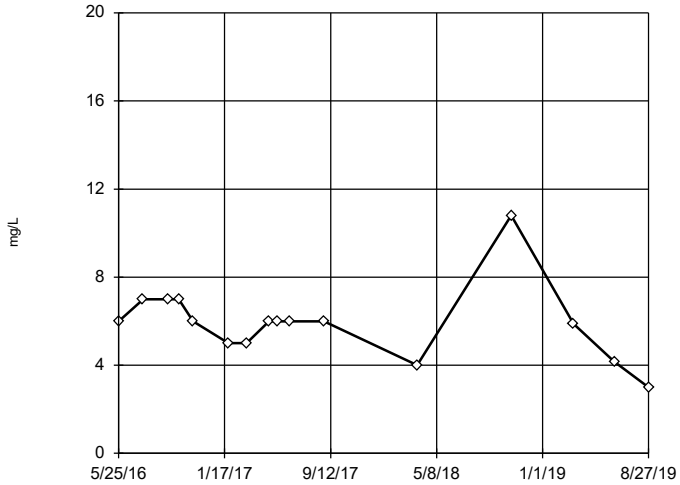
High cutoff = 12, low cutoff = -2, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

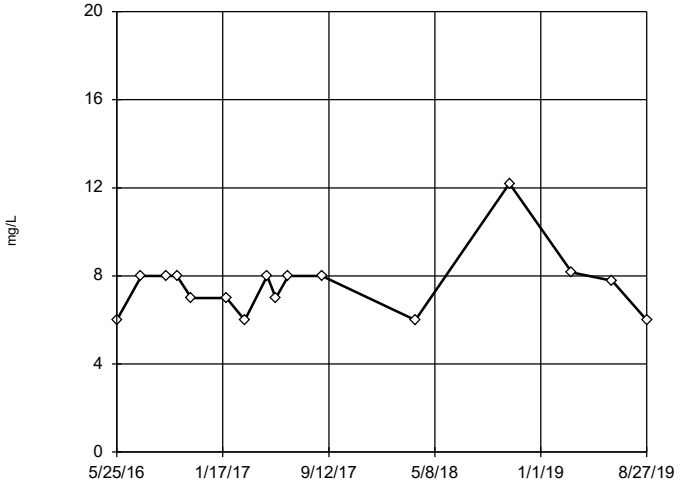
High cutoff = 14.11, low cutoff = 2.296, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

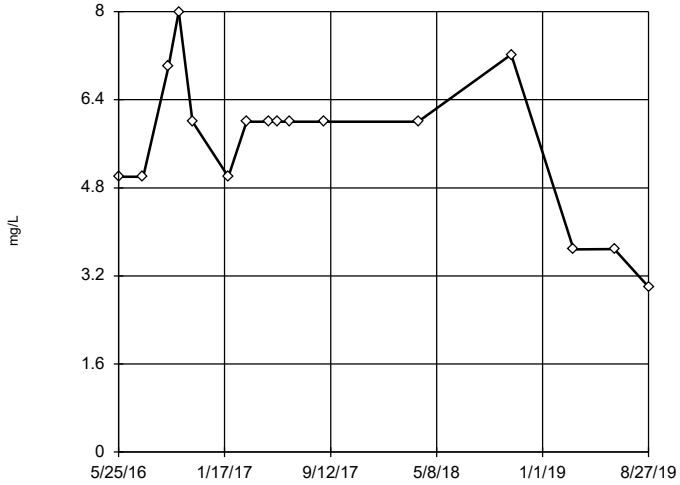
High cutoff = 15.05, low cutoff = 3.445, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 16

No outliers found. Tukey's method selected by user.

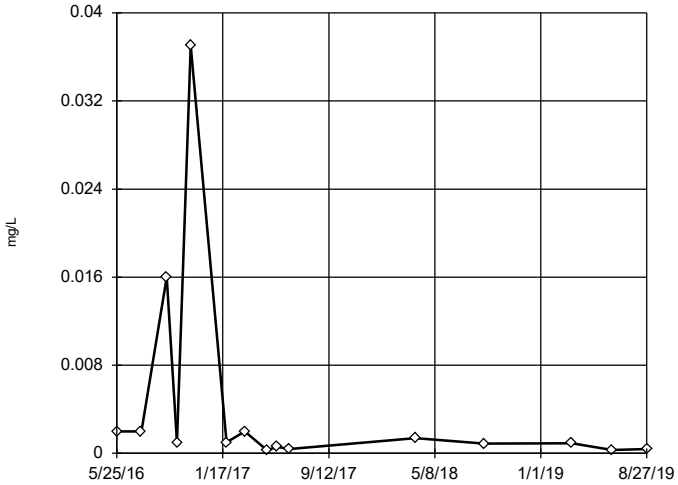
Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.307, low cutoff = -2.828, based on IQR multiplier of 3.

Constituent: Chloride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

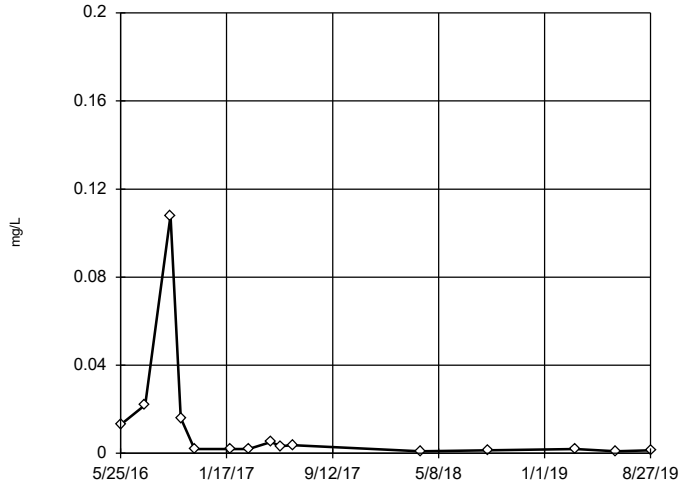
High cutoff = 0.2697, low cutoff = 0.000002892, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App I
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

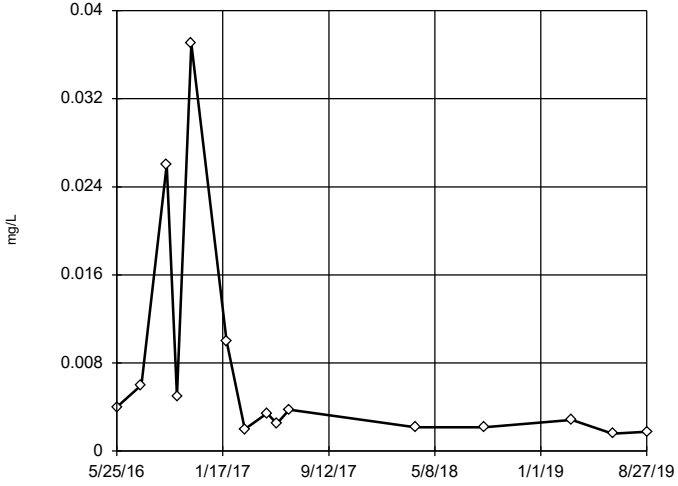
High cutoff = 11.35, low cutoff = 0.000001557, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App I
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

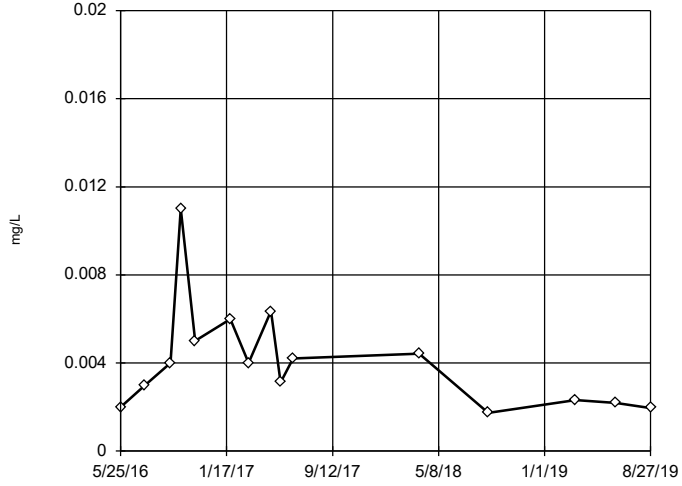
High cutoff = 0.1304, low cutoff = 0.00009892, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App I
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

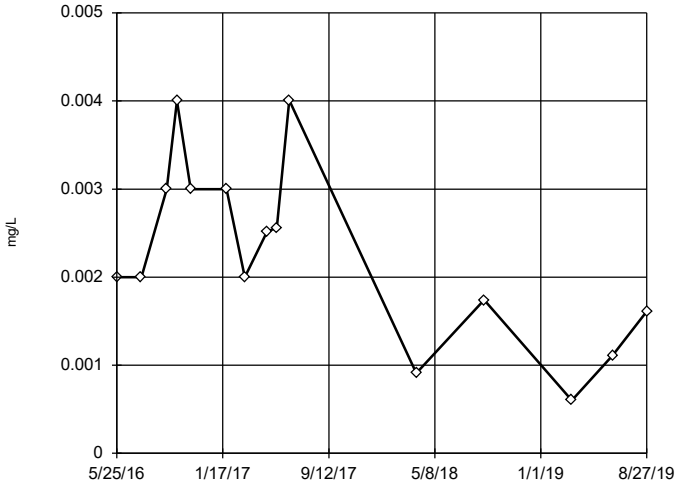
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.06033, low cutoff = 0.0001807, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App I
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

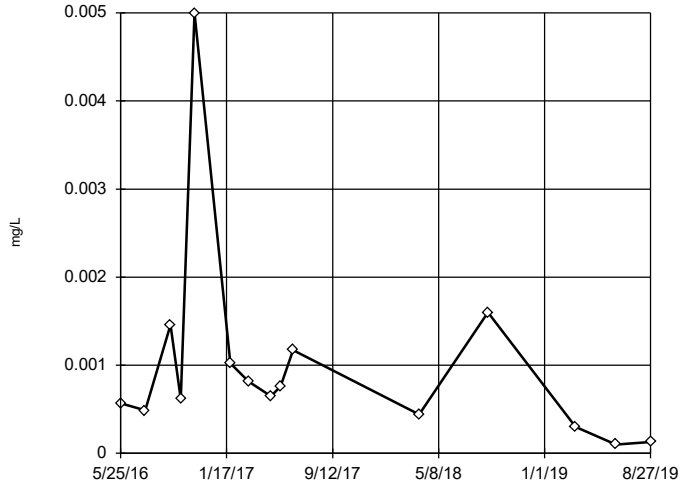
High cutoff = 0.009745, low cutoff = -0.00001457, based on IQR multiplier of 3.

Constituent: Chromium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App I
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

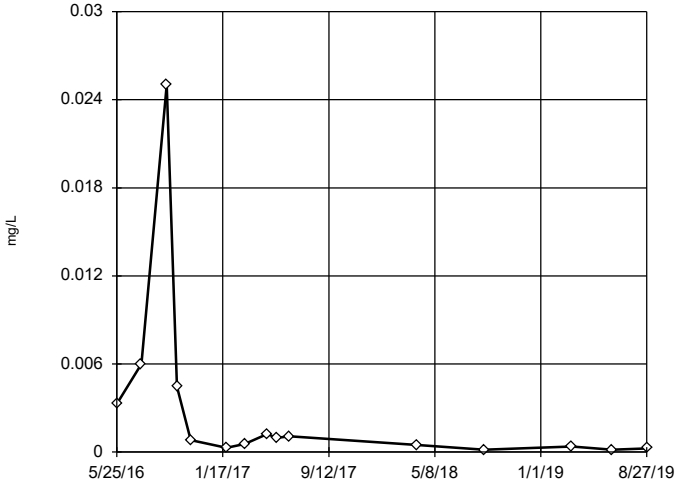
High cutoff = 0.022, low cutoff = 0.0000234, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

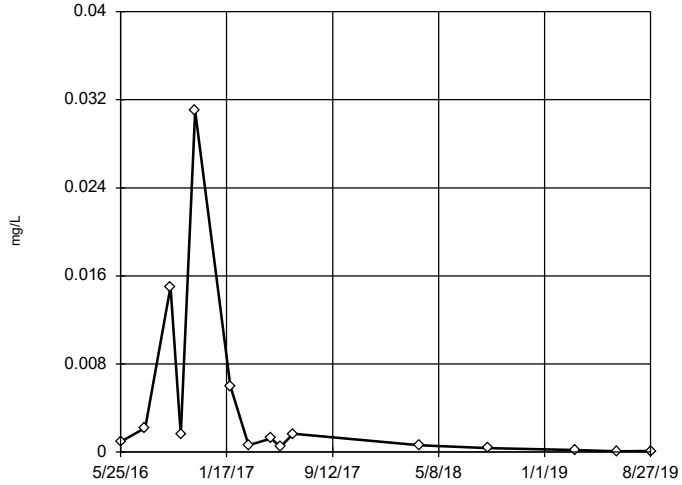
High cutoff = 4.927, low cutoff = 1.9e-7, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

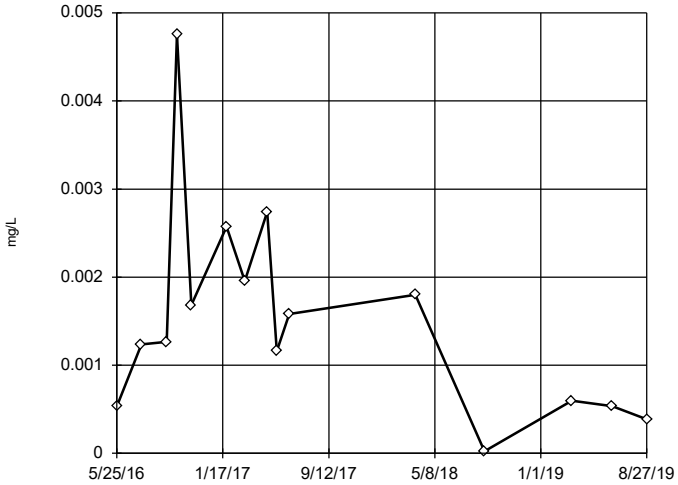
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.4495, low cutoff = 0.000001806, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

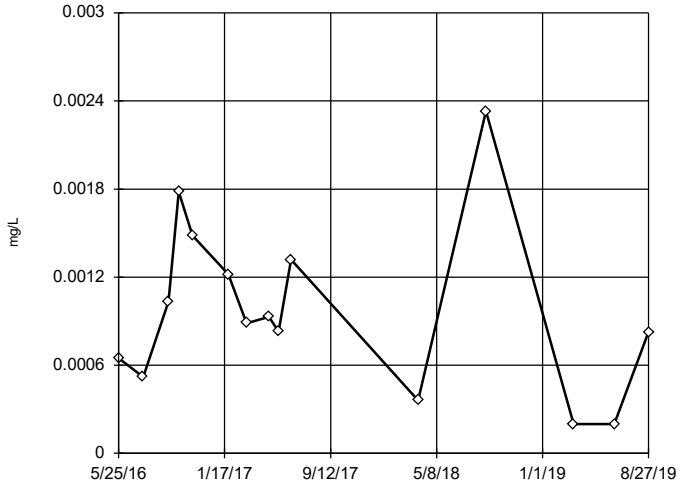
High cutoff = 0.01154, low cutoff = -0.001603, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

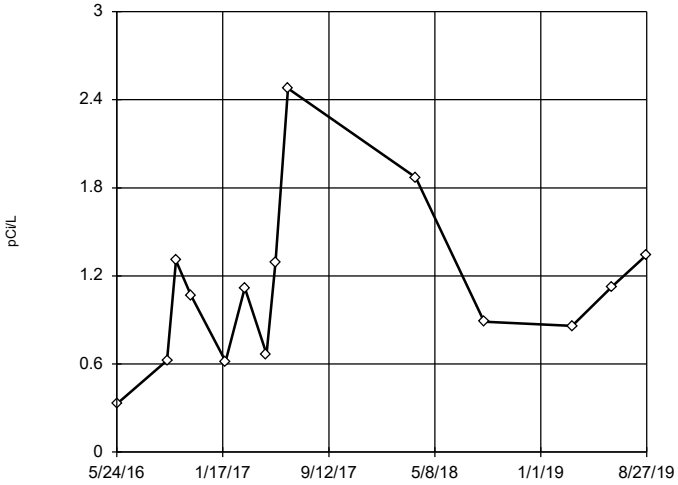
High cutoff = 0.005912, low cutoff = -0.0003149, based on IQR multiplier of 3.

Constituent: Cobalt, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 14

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

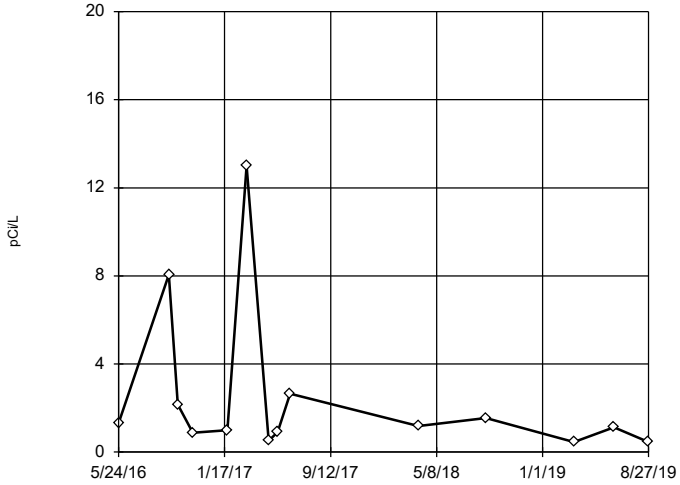
High cutoff = 5.822, low cutoff = 0.004392, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 14

No outliers found. Tukey's method selected by user.

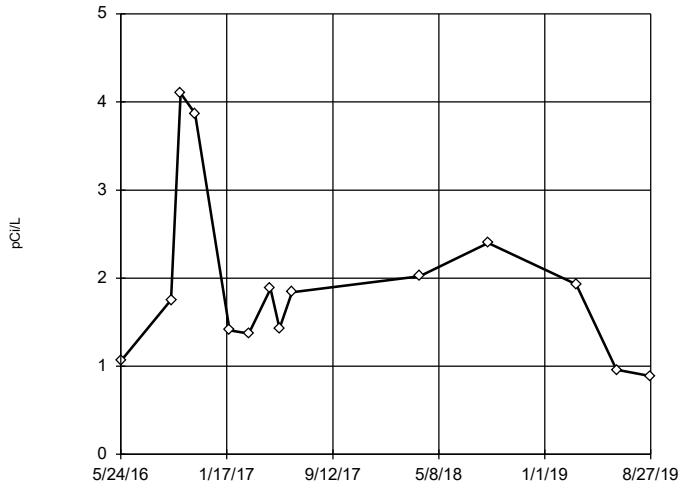
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 110, low cutoff = 0.01457, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-2




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

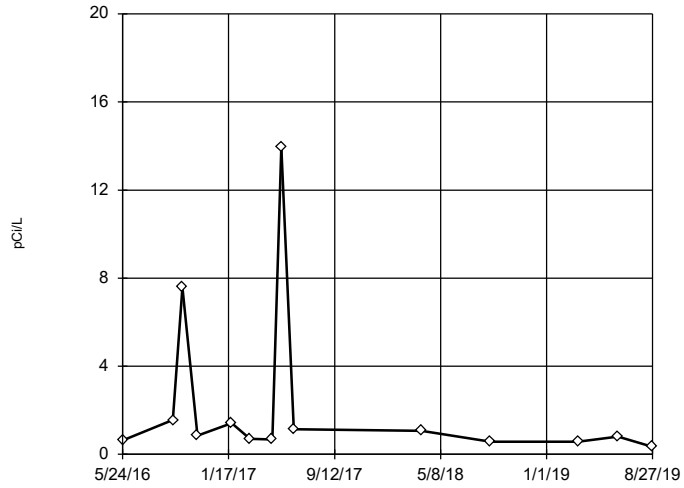
High cutoff = 13.4, low cutoff = 0.1981, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

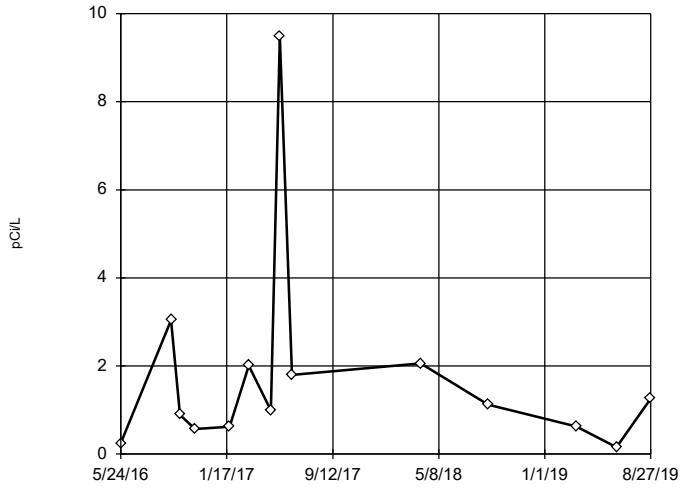
High cutoff = 22.74, low cutoff = 0.03898, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 14

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

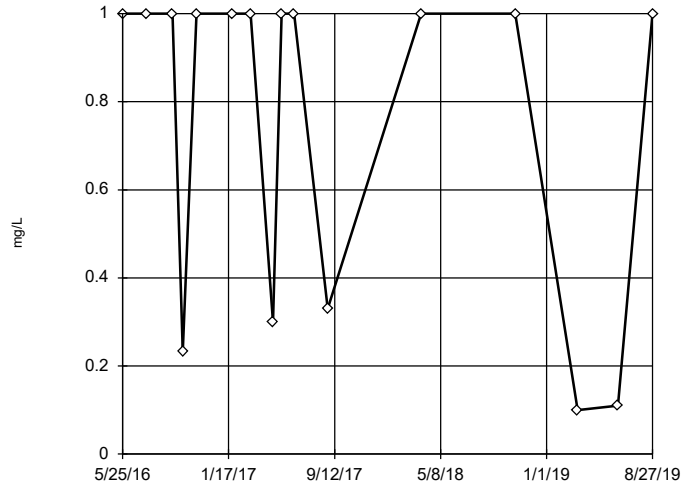
High cutoff = 82.14, low cutoff = 0.01469, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 16

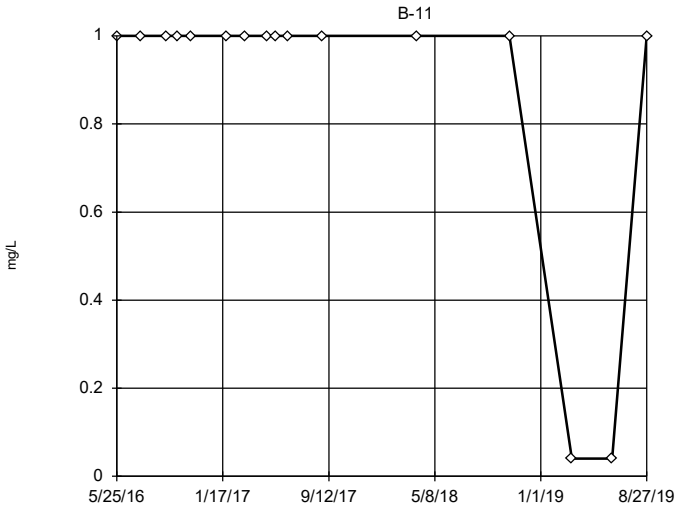
No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 32.04, low cutoff = 0.009825, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Tukey's Outlier Screening




n = 16

No outliers found. Tukey's method selected by user.

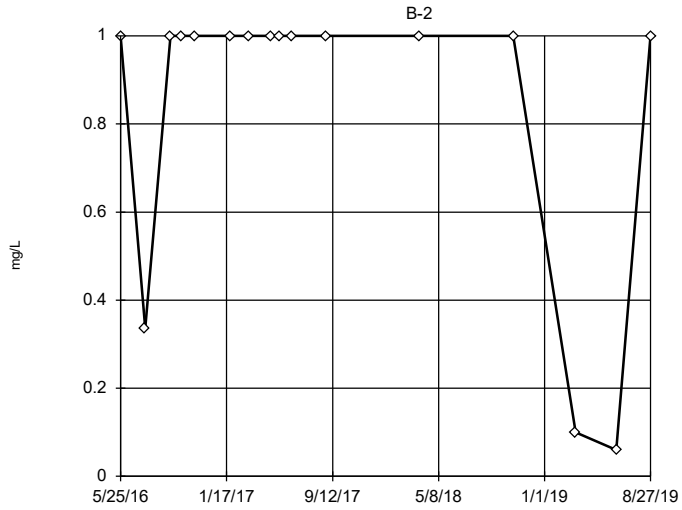
Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Fluoride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening




n = 16

No outliers found. Tukey's method selected by user.

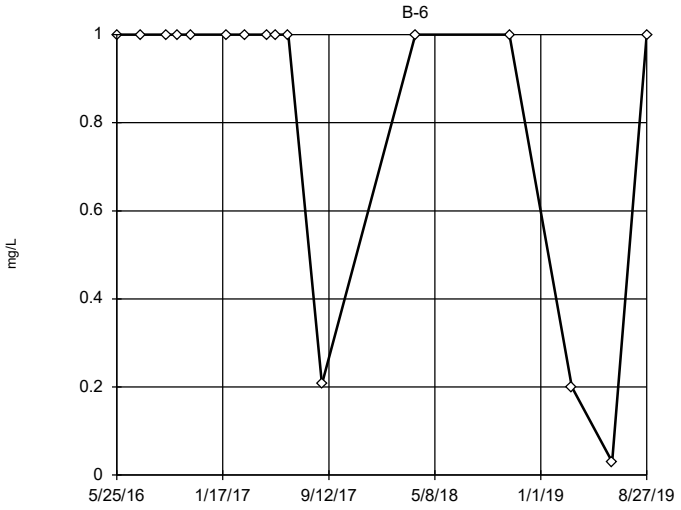
Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Fluoride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening




n = 16

No outliers found. Tukey's method selected by user.

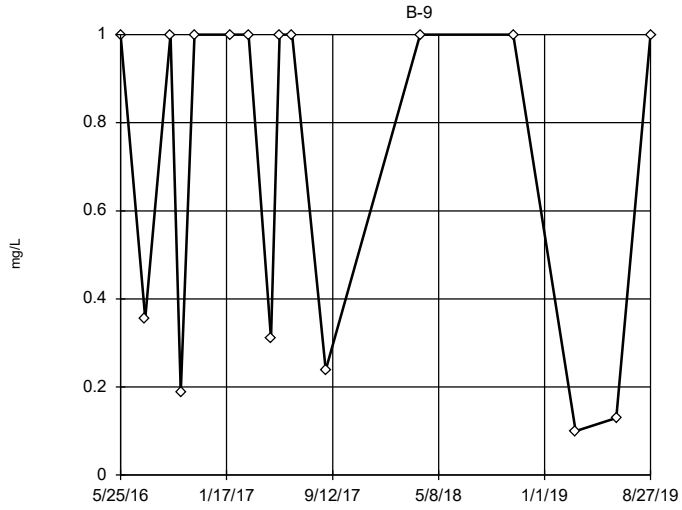
Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Fluoride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening




n = 16

No outliers found. Tukey's method selected by user.

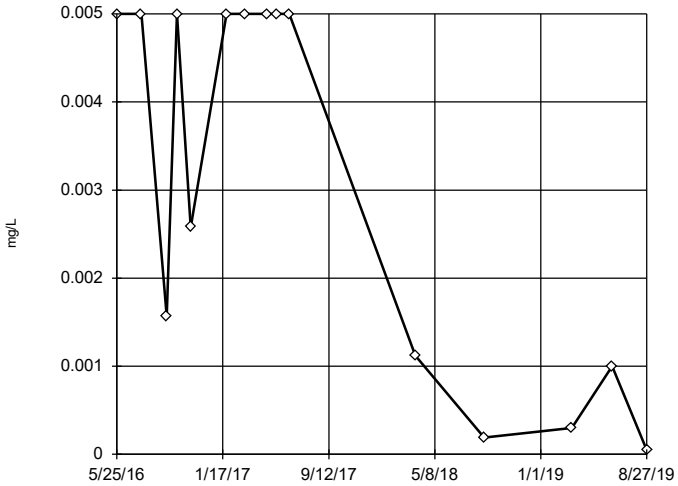
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 49.62, low cutoff = 0.005485, based on IQR multiplier of 3.

Constituent: Fluoride, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

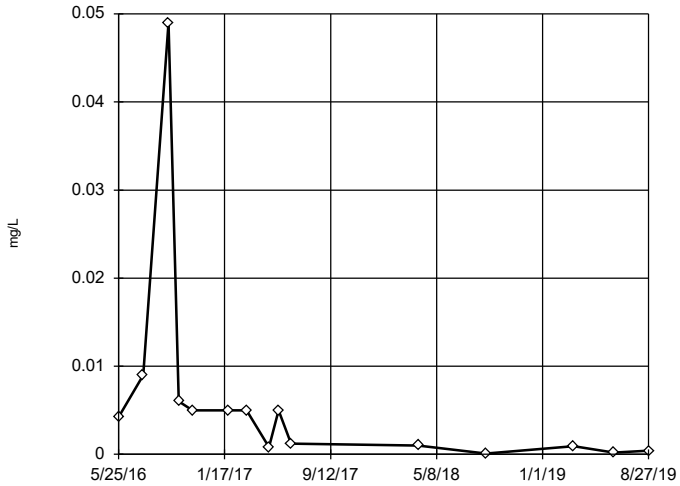
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Lead, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

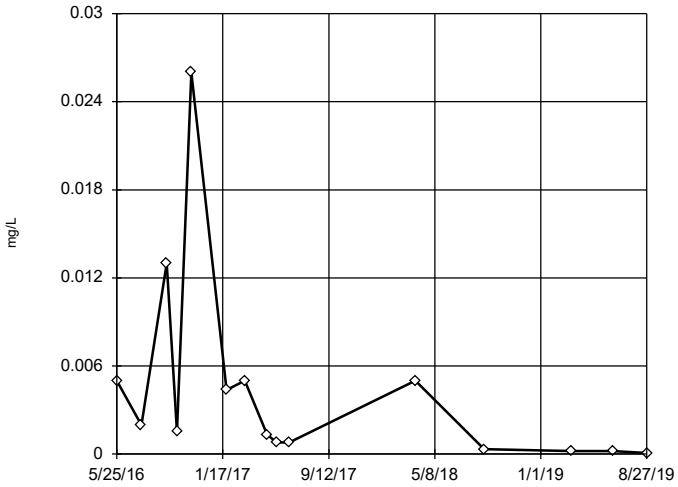
High cutoff = 1.093, low cutoff = 0.000003797, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

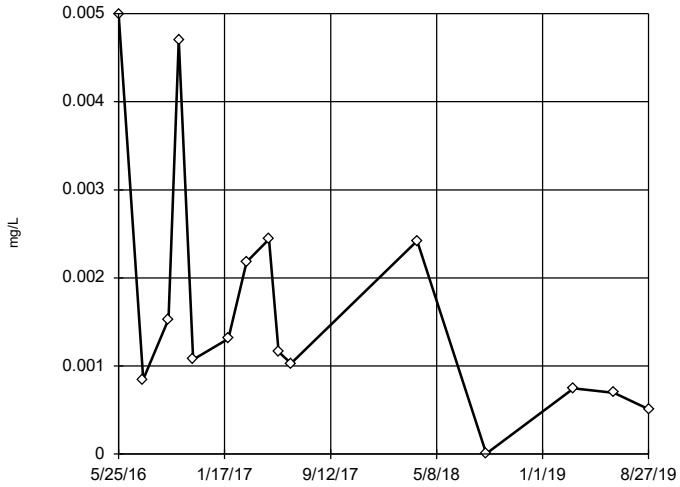
High cutoff = 17.08, low cutoff = 9.7e-8, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

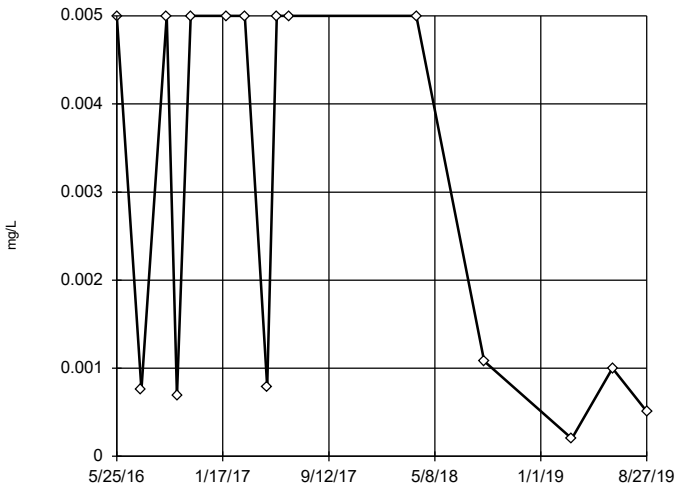
Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.01316, low cutoff = -0.001458, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

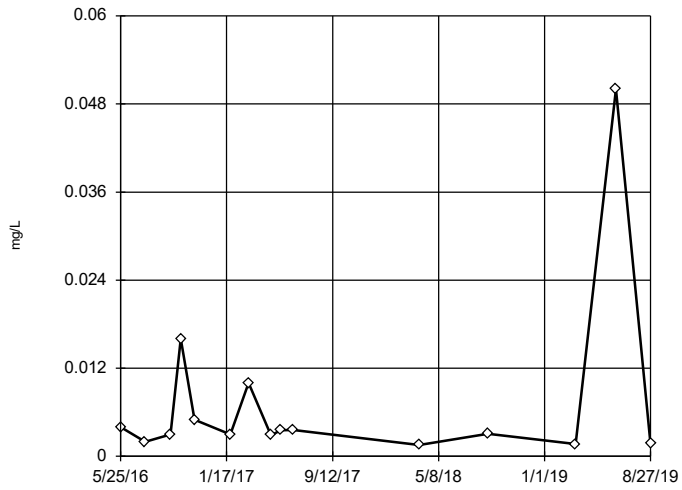
High cutoff = 1.446, low cutoff = 0.000002614, based on IQR multiplier of 3.

Constituent: Lead, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

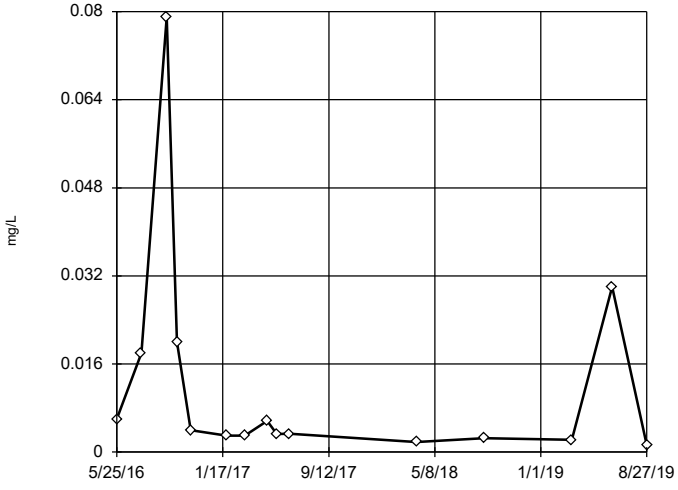
High cutoff = 0.07813, low cutoff = 0.000128, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

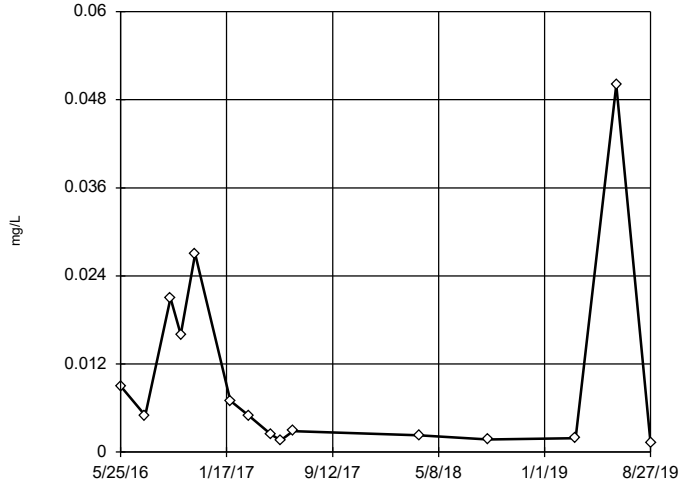
High cutoff = 6.331, low cutoff = 0.00000725, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

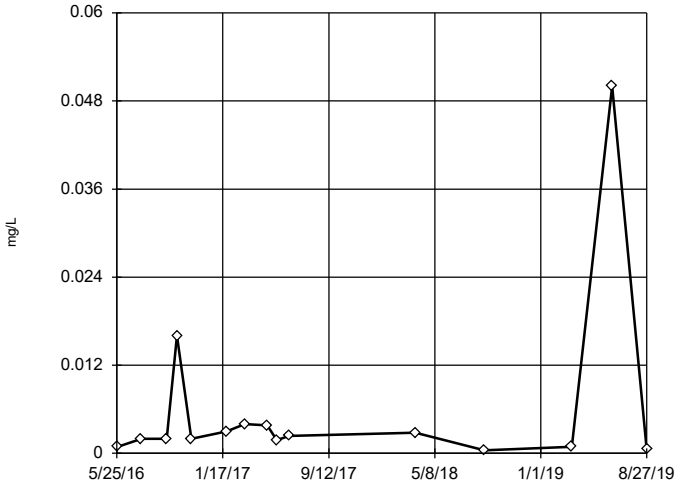
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.863, low cutoff = 0.00000305, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

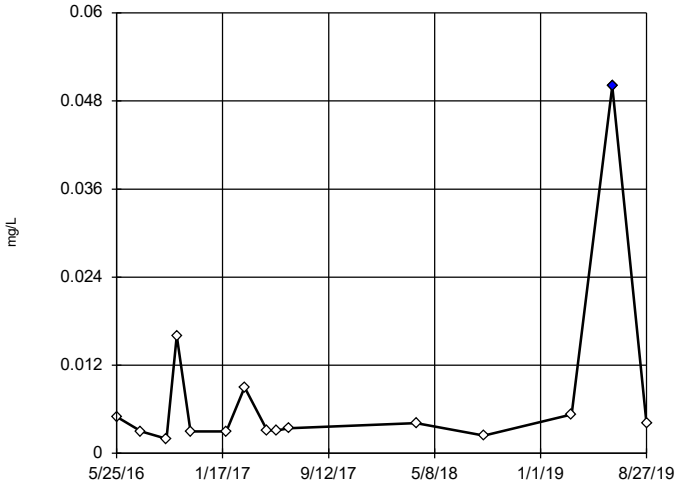
High cutoff = 0.286, low cutoff = 0.00001196, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

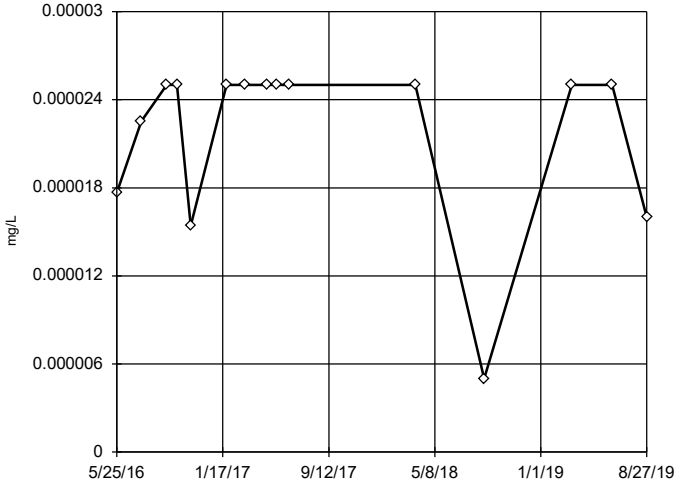
High cutoff = 0.02879, low cutoff = 0.0005503, based on IQR multiplier of 3.

Constituent: Lithium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

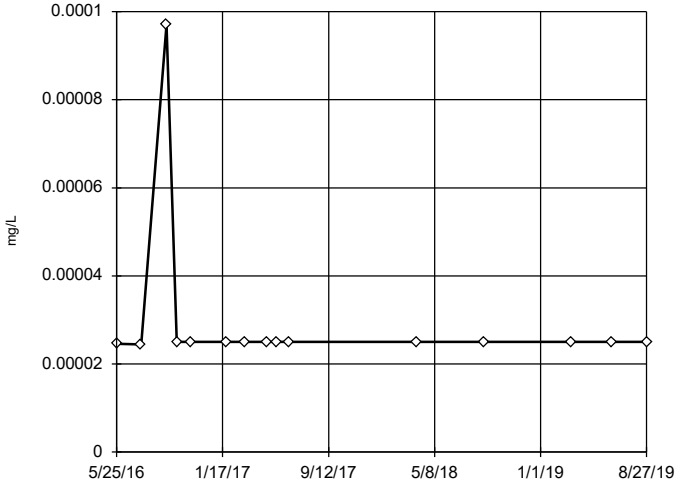
High cutoff = 0.00003954, low cutoff = -0.00002502, based on IQR multiplier of 3.

Constituent: Mercury, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

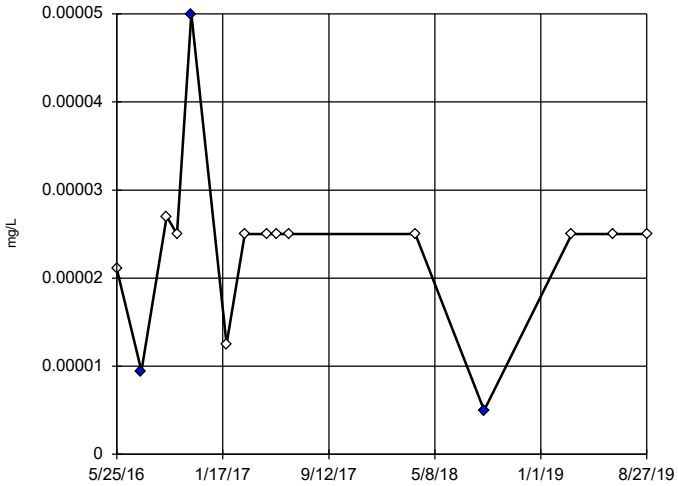
Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-2




n = 15

Outliers are drawn as solid.
Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

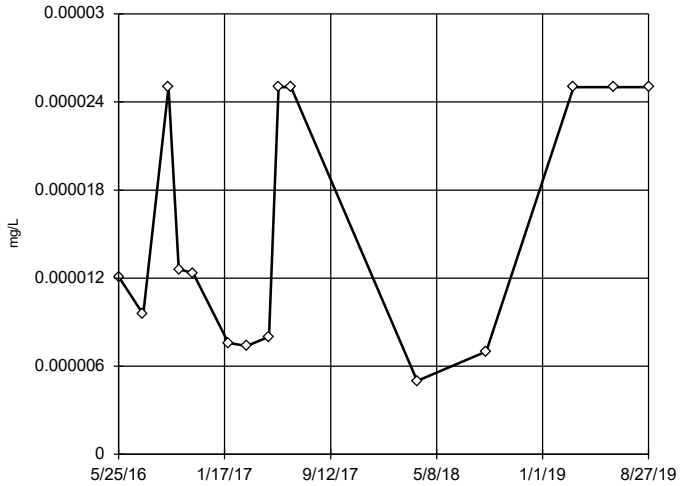
High cutoff = 0.00003885, low cutoff = 0.00001127, based on IQR multiplier of 3.

Constituent: Mercury, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found.
Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

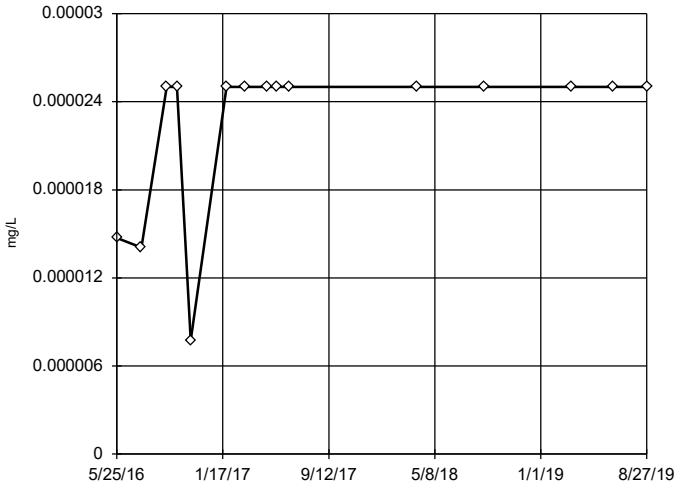
High cutoff = 0.0008934, low cutoff = 2.1e-7, based on IQR multiplier of 3.

Constituent: Mercury, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found.
Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

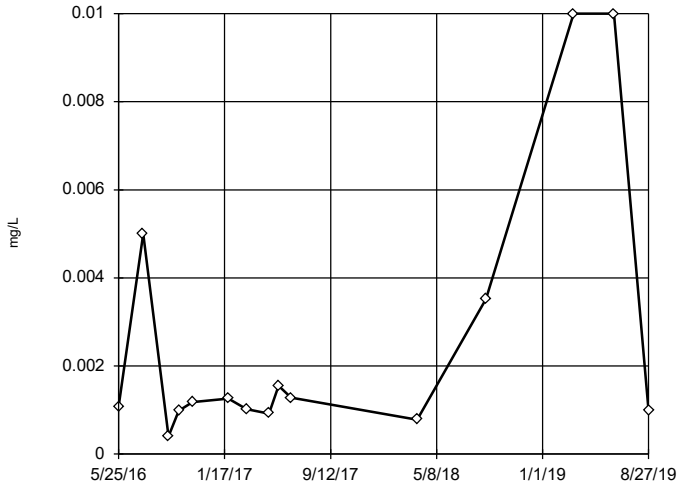
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found.
Tukey's method selected by user.

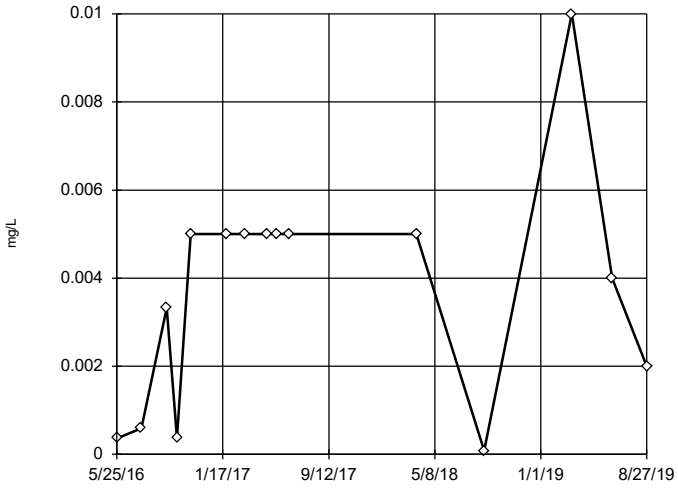
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.162, low cutoff = 0.00002135, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

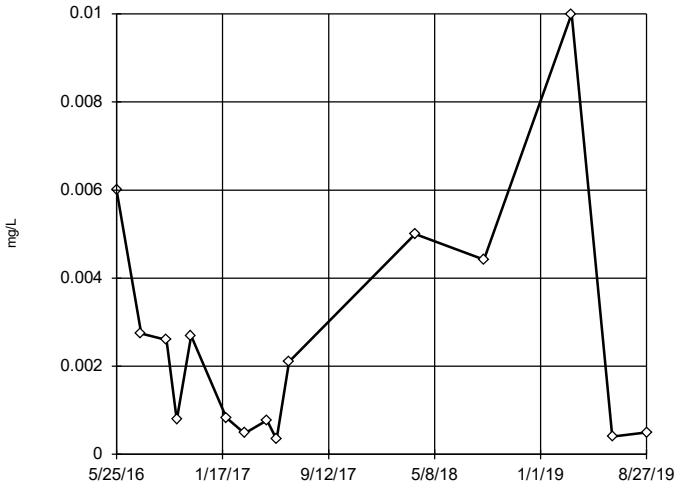
High cutoff = 0.04409, low cutoff = -0.01322, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

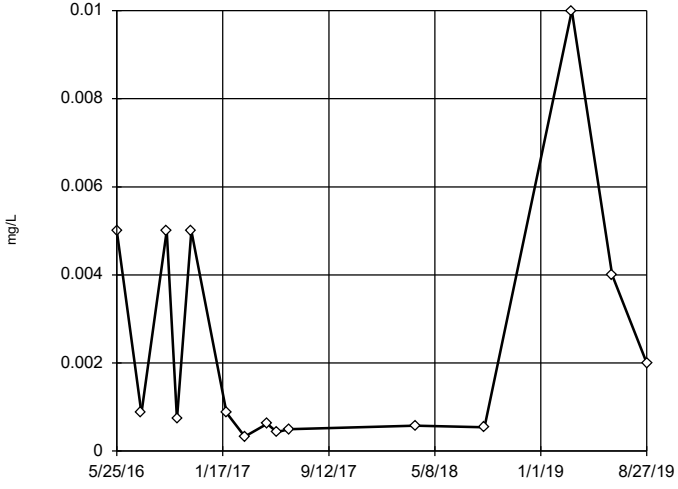
High cutoff = 3.053, low cutoff = 7.2e-7, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

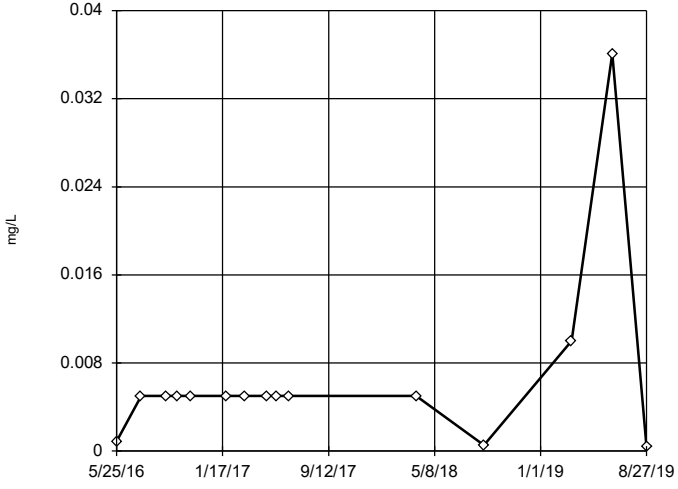
High cutoff = 3.969, low cutoff = 6.8e-7, based on IQR multiplier of 3.

Constituent: Molybdenum, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

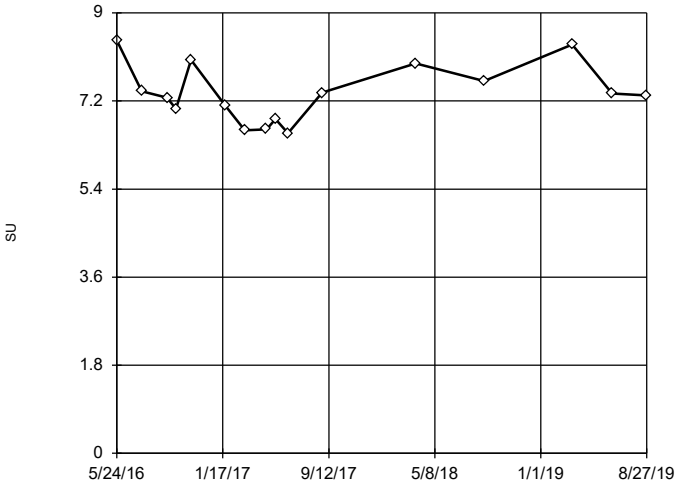
Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-10




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

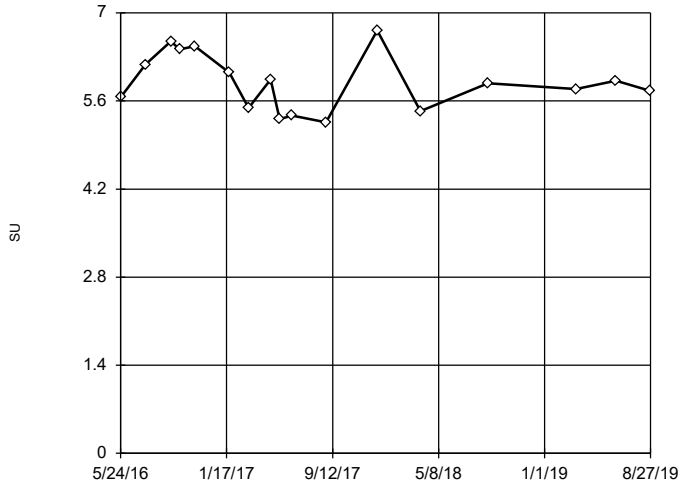
High cutoff = 11.03, low cutoff = 4.895, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 17

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

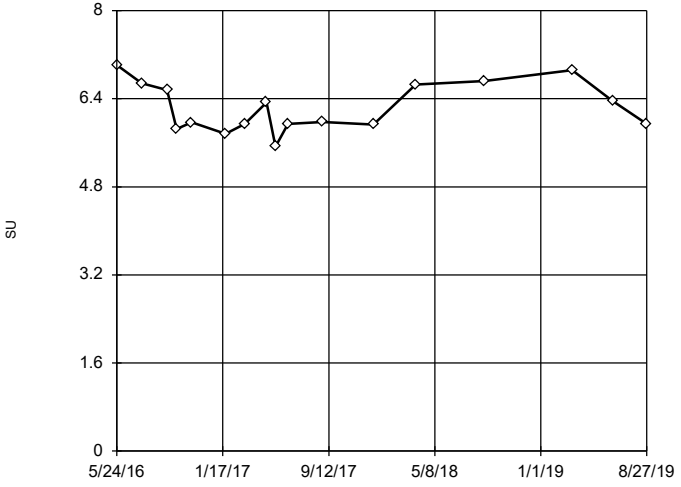
High cutoff = 9.645, low cutoff = 3.569, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 17

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

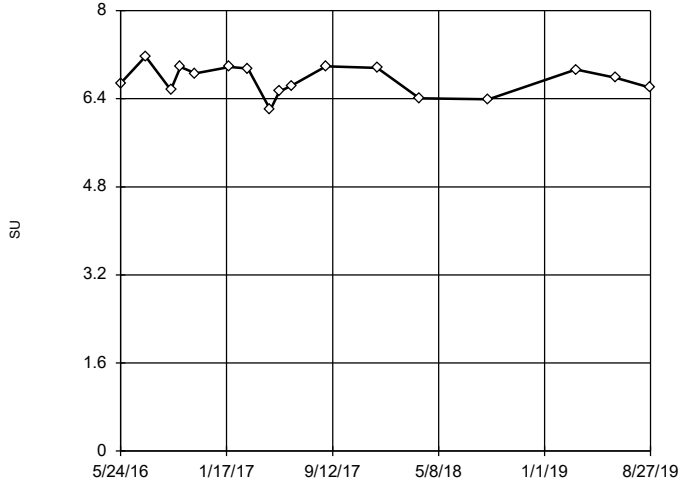
High cutoff = 9.468, low cutoff = 4.181, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 17

No outliers found. Tukey's method selected by user.

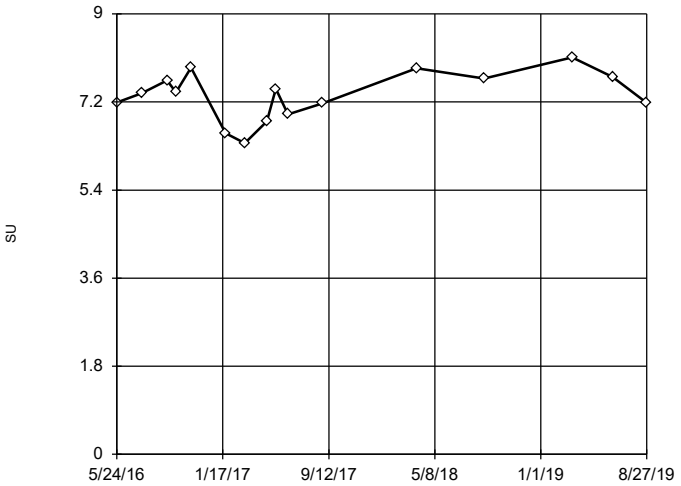
Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 7.786, low cutoff = -5.56, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-9




n = 16

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

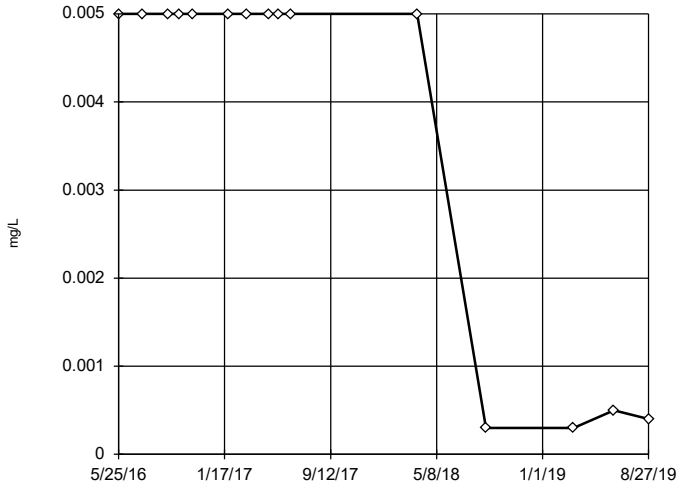
High cutoff = 9, low cutoff = -4.879, based on IQR multiplier of 3.

Constituent: pH, field Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

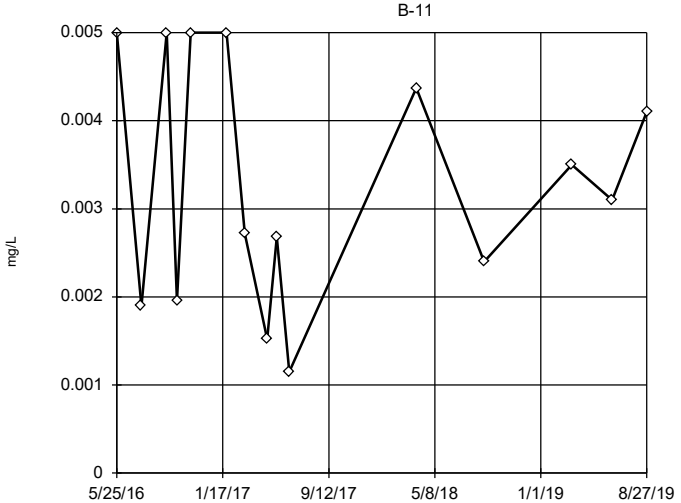
High cutoff = 5, low cutoff = 5.0e-7, based on IQR multiplier of 3.

Constituent: Selenium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

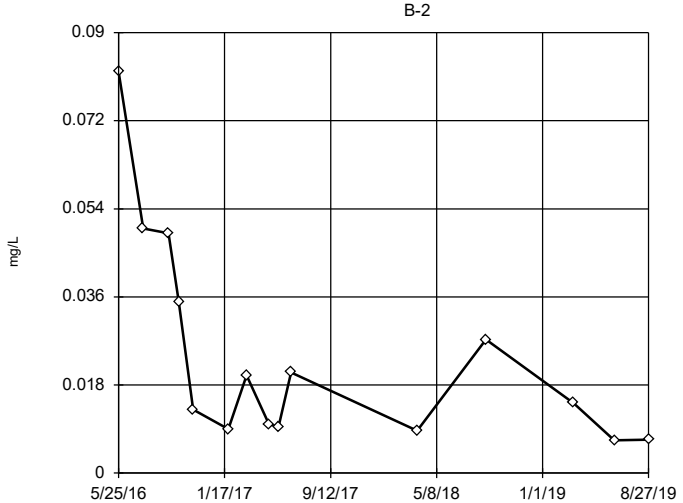
High cutoff = 0.02947, low cutoff = -0.000002123, based on IQR multiplier of 3.

Constituent: Selenium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

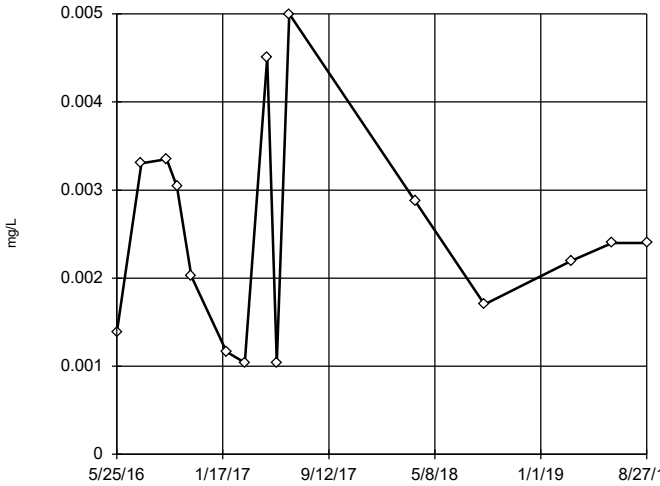
Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.058, low cutoff = 0.000153, based on IQR multiplier of 3.

Constituent: Selenium, total Analysis Run 12/8/2019 9:06 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

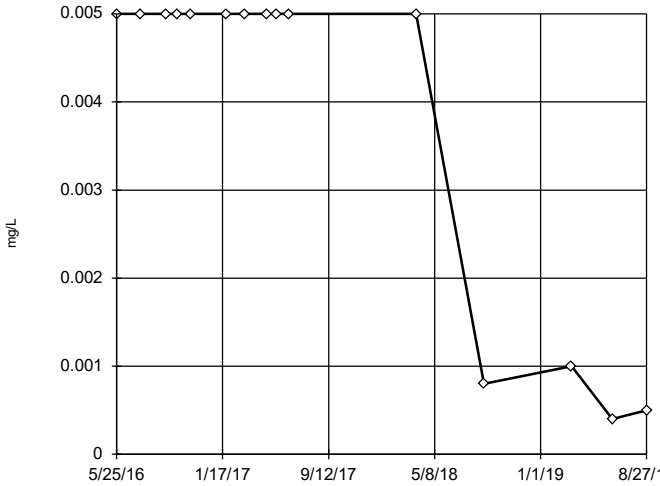
High cutoff = 0.01786, low cutoff = -1.1e-9, based on IQR multiplier of 3.

Constituent: Selenium, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

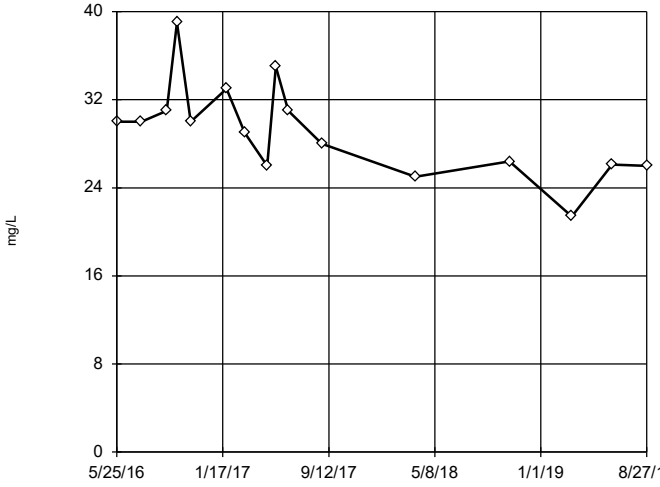
The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Selenium, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

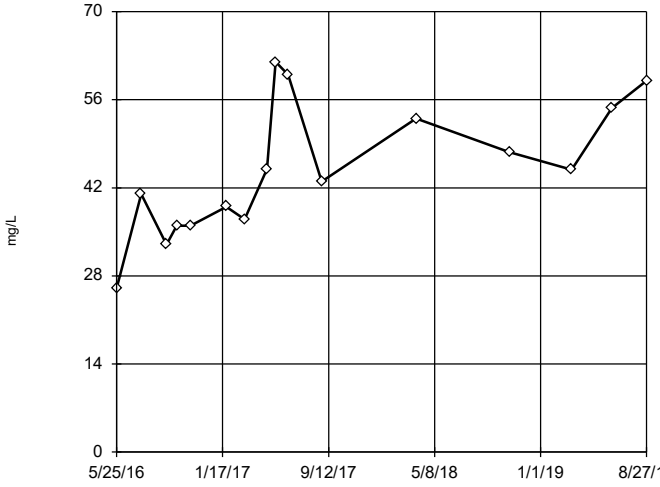
High cutoff = 52.24, low cutoff = 15.46, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 16

No outliers found. Tukey's method selected by user.

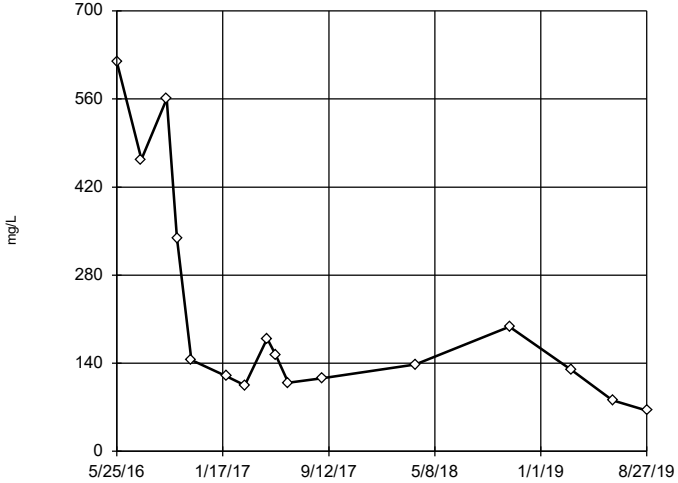
Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 136.9, low cutoff = 7.299, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-2




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

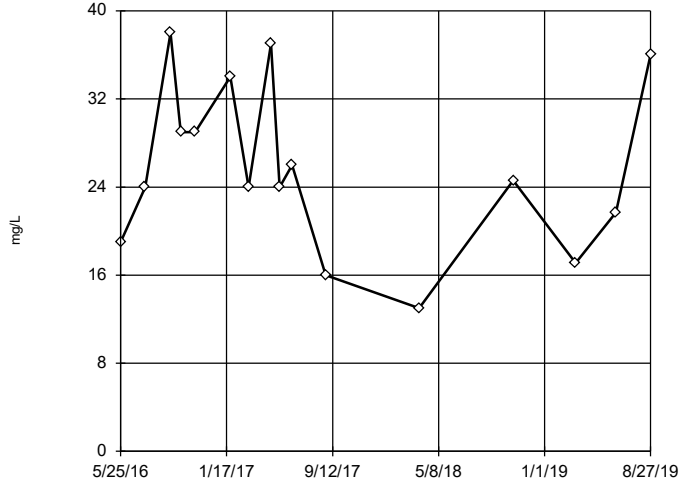
High cutoff = 3169, low cutoff = 9.193, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 16

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 79.32, low cutoff = 1.465, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9

n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

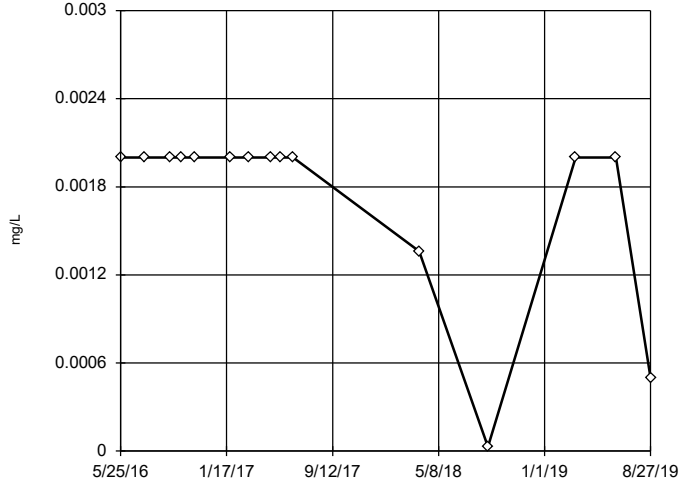
High cutoff = 134.5, low cutoff = 4.379, based on IQR multiplier of 3.

Constituent: Sulfate, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-10




n = 15

No outliers found. Tukey's method selected by user.

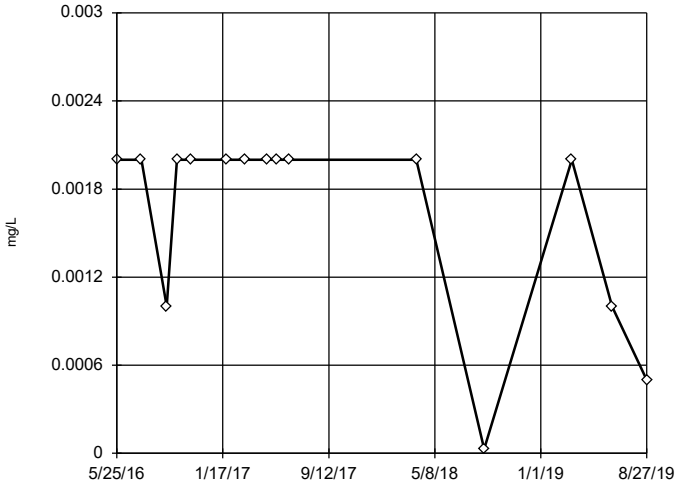
Data were square transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-11




n = 15

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

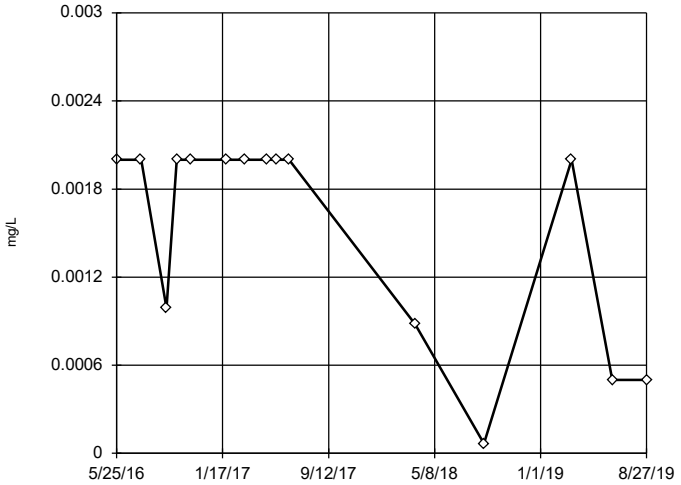
High cutoff = 0.004997, low cutoff = -0.001996, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 15

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

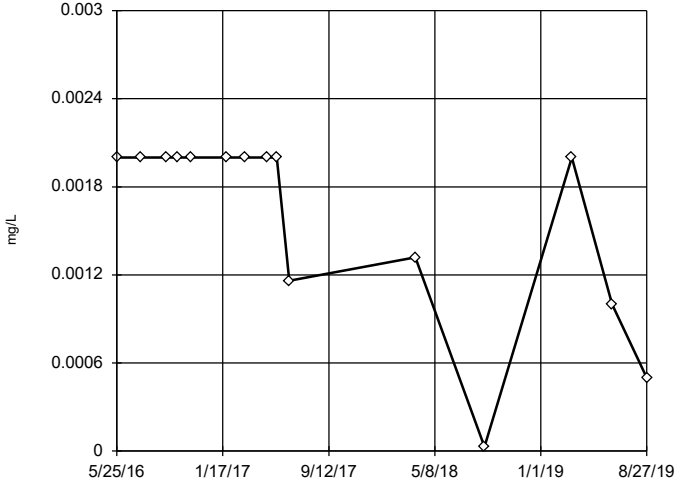
High cutoff = 0.00808, low cutoff = -0.0002404, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 15

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

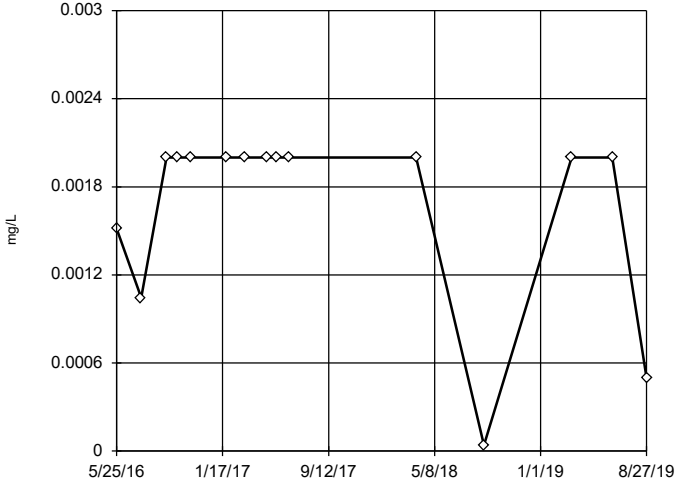
High cutoff = 0.00452, low cutoff = -0.00136, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-9




n = 15

No outliers found. Tukey's method selected by user.

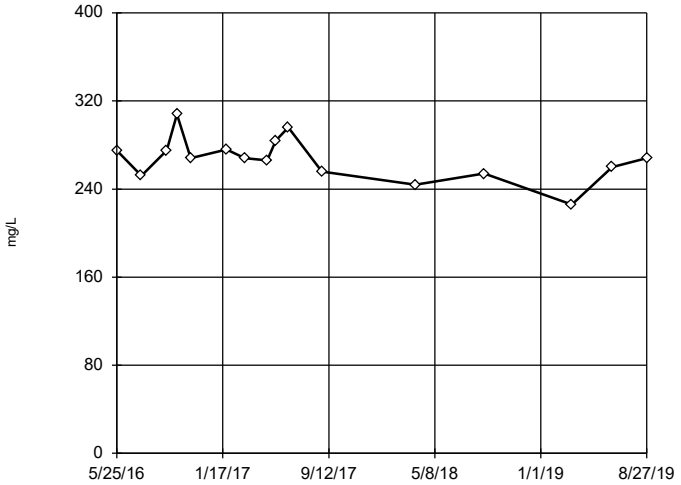
Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.003018, low cutoff = -0.001676, based on IQR multiplier of 3.

Constituent: Thallium, total Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgradient - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-10




n = 16

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

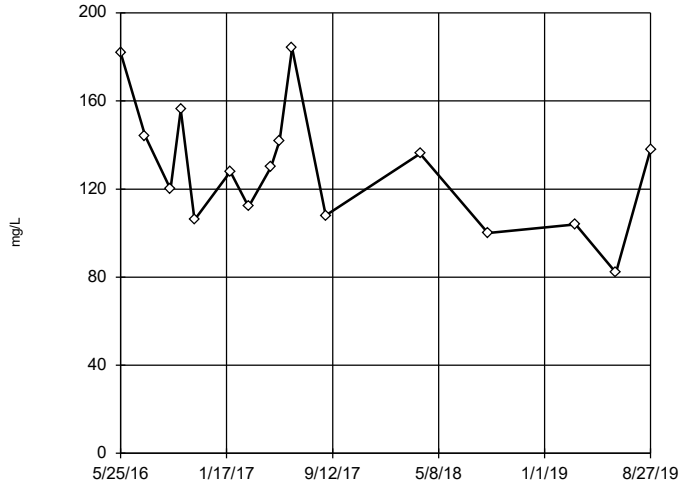
High cutoff = 341.8, low cutoff = 198.3, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-11




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

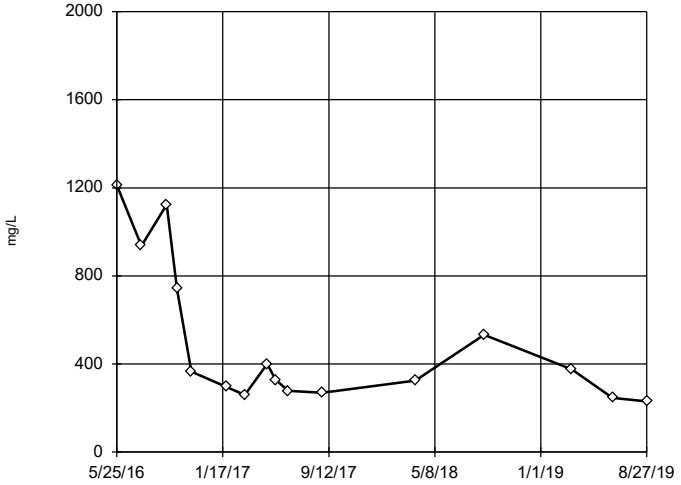
High cutoff = 341.4, low cutoff = 44.82, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-2




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

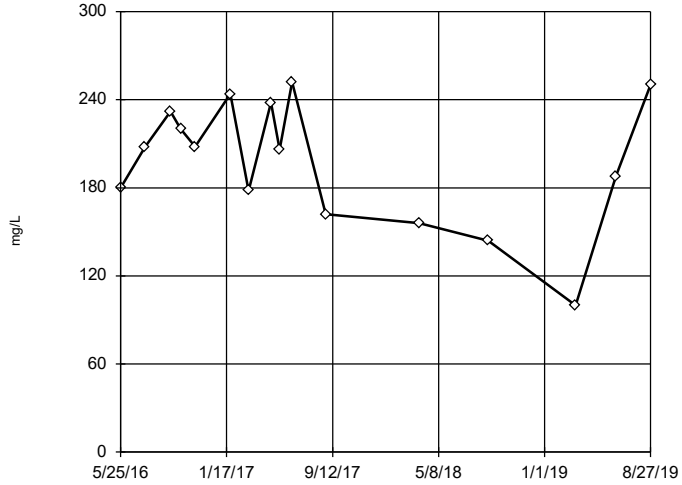
High cutoff = 7557, low cutoff = 22.76, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Tukey's Outlier Screening

B-6




n = 16

No outliers found. Tukey's method selected by user.

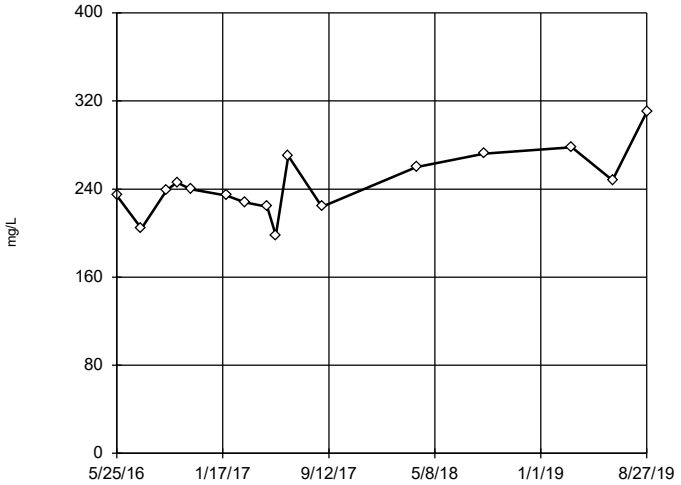
Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 366.1, low cutoff = -223.3, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Tukey's Outlier Screening

B-9




n = 16

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 427, low cutoff = 140.2, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:07 AM View: Outlier Tests - Downgra
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

# Mann-Whitney - Significant Results

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 9:35 AM

| Constituent | Well | Calc. | 0.01 | Sig. | Method |
|---|---|---|---|---|---|
| **Calcium, total (mg/L)** | **B-10** | **-2.758** | **Yes** | **Yes** | **Mann-W** |
| **Sulfate, total (mg/L)** | **B-10** | **-2.631** | **Yes** | **Yes** | **Mann-W** |
| **Sulfate, total (mg/L)** | **B-9** | **2.708** | **Yes** | **Yes** | **Mann-W** |
| **Total Dissolved Solids [TDS] (mg/L)** | **B-10** | **-2.622** | **Yes** | **Yes** | **Mann-W** |
| **Total Dissolved Solids [TDS] (mg/L)** | **B-6** | **-2.902** | **Yes** | **Yes** | **Mann-W** |

# Mann-Whitney - All Results

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 9:35 AM

| Constituent | Well | Calc. | 0.01 | Sig. | Method |
|---|---|---|---|---|---|
| Calcium, total (mg/L) | B-12 (bg) | -1.487 | No | No | Mann-W |
| Calcium, total (mg/L) | B-13 (bg) | -0.6364 | No | No | Mann-W |
| Calcium, total (mg/L) | B-1B (bg) | -0.07071 | No | No | Mann-W |
| Calcium, total (mg/L) | B-4 (bg) | -2.548 | No | No | Mann-W |
| Calcium, total (mg/L) | B-5 (bg) | -2.126 | No | No | Mann-W |
| Calcium, total (mg/L) | B-7A (bg) | 0.07118 | No | No | Mann-W |
| **Calcium, total (mg/L)** | **B-10** | **-2.758** | **Yes** | **Yes** | **Mann-W** |
| Calcium, total (mg/L) | B-11 | -2.192 | No | No | Mann-W |
| Calcium, total (mg/L) | B-2 | -1.202 | No | No | Mann-W |
| Calcium, total (mg/L) | B-6 | -2.475 | No | No | Mann-W |
| Calcium, total (mg/L) | B-9 | 0.7778 | No | No | Mann-W |
| Chloride, total (mg/L) | B-12 (bg) | 0.2913 | No | No | Mann-W |
| Chloride, total (mg/L) | B-13 (bg) | -1.777 | No | No | Mann-W |
| Chloride, total (mg/L) | B-1B (bg) | -0.5812 | No | No | Mann-W |
| Chloride, total (mg/L) | B-4 (bg) | -1.341 | No | No | Mann-W |
| Chloride, total (mg/L) | B-5 (bg) | 0.7964 | No | No | Mann-W |
| Chloride, total (mg/L) | B-7A (bg) | 0.3658 | No | No | Mann-W |
| Chloride, total (mg/L) | B-10 | 1.311 | No | No | Mann-W |
| Chloride, total (mg/L) | B-11 | 0.2962 | No | No | Mann-W |
| Chloride, total (mg/L) | B-2 | -0.5923 | No | No | Mann-W |
| Chloride, total (mg/L) | B-6 | 1.189 | No | No | Mann-W |
| Chloride, total (mg/L) | B-9 | -0.07589 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-12 (bg) | -0.9282 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-13 (bg) | -0.9282 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-1B (bg) | -2.074 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-4 (bg) | -1.739 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-5 (bg) | -0.9282 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-7A (bg) | -1.506 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-10 | -1.151 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-11 | -1.739 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-2 | -0.9282 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-6 | -2.437 | No | No | Mann-W |
| Fluoride, total (mg/L) | B-9 | -1.071 | No | No | Mann-W |
| pH, field (SU) | B-12 (bg) | 2.192 | No | No | Mann-W |
| pH, field (SU) | B-13 (bg) | 0.3536 | No | No | Mann-W |
| pH, field (SU) | B-1B (bg) | 1.416 | No | No | Mann-W |
| pH, field (SU) | B-4 (bg) | 2.475 | No | No | Mann-W |
| pH, field (SU) | B-5 (bg) | -0.07071 | No | No | Mann-W |
| pH, field (SU) | B-7A (bg) | 0.5663 | No | No | Mann-W |
| pH, field (SU) | B-10 | 1.626 | No | No | Mann-W |
| pH, field (SU) | B-11 | -0.6736 | No | No | Mann-W |
| pH, field (SU) | B-2 | 1.165 | No | No | Mann-W |
| pH, field (SU) | B-6 | -0.1839 | No | No | Mann-W |
| pH, field (SU) | B-9 | 1.626 | No | No | Mann-W |
| Sulfate, total (mg/L) | B-12 (bg) | -1.847 | No | No | Mann-W |
| Sulfate, total (mg/L) | B-13 (bg) | 0.5676 | No | No | Mann-W |
| Sulfate, total (mg/L) | B-1B (bg) | -2.426 | No | No | Mann-W |
| Sulfate, total (mg/L) | B-4 (bg) | 0.6428 | No | No | Mann-W |
| Sulfate, total (mg/L) | B-5 (bg) | -0.2832 | No | No | Mann-W |
| Sulfate, total (mg/L) | B-7A (bg) | -0.3637 | No | No | Mann-W |
| **Sulfate, total (mg/L)** | **B-10** | **-2.631** | **Yes** | **Yes** | **Mann-W** |
| Sulfate, total (mg/L) | B-11 | 1.345 | No | No | Mann-W |
| Sulfate, total (mg/L) | B-2 | -0.9192 | No | No | Mann-W |
| Sulfate, total (mg/L) | B-6 | -2.346 | No | No | Mann-W |
| **Sulfate, total (mg/L)** | **B-9** | **2.708** | **Yes** | **Yes** | **Mann-W** |

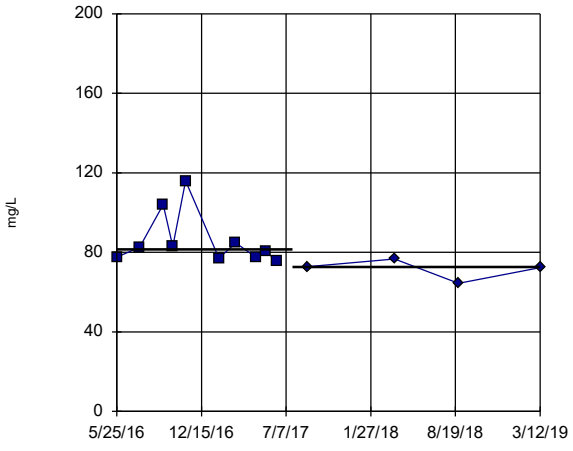
# Mann-Whitney - All Results

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 9:35 AM

| Constituent | Well | Calc. | 0.01 | Sig. | Method |
|---|---|---|---|---|---|
| Total Dissolved Solids [TDS] (mg/L) | B-12 (bg) | -0.9921 | No | No | Mann-W |
| Total Dissolved Solids [TDS] (mg/L) | B-13 (bg) | -0.2126 | No | No | Mann-W |
| Total Dissolved Solids [TDS] (mg/L) | B-1B (bg) | -1.561 | No | No | Mann-W |
| Total Dissolved Solids [TDS] (mg/L) | B-4 (bg) | -2.407 | No | No | Mann-W |
| Total Dissolved Solids [TDS] (mg/L) | B-5 (bg) | -1.78 | No | No | Mann-W |
| Total Dissolved Solids [TDS] (mg/L) | B-7A (bg) | 0 | No | No | Mann-W |
| **Total Dissolved Solids [TDS] (mg/L)** | **B-10** | **-2.622** | **Yes** | **Yes** | **Mann-W** |
| Total Dissolved Solids [TDS] (mg/L) | B-11 | -2.051 | No | No | Mann-W |
| Total Dissolved Solids [TDS] (mg/L) | B-2 | -0.7778 | No | No | Mann-W |
| **Total Dissolved Solids [TDS] (mg/L)** | **B-6** | **-2.902** | **Yes** | **Yes** | **Mann-W** |
| Total Dissolved Solids [TDS] (mg/L) | B-9 | 1.559 | No | No | Mann-W |

## Mann-Whitney (Wilcoxon Rank Sum)

B-10




B-10 background

B-10 compliance

background median = 81.55

compliance median = 72.6

Z = -2.758 (two-tail)

| Alpha | Table | Sig. |
|---|---|---|
| 0.2 | 1.282 | Yes |
| 0.1 | 1.645 | Yes |
| 0.05 | 1.96 | Yes |
| 0.02 | 2.326 | Yes |
| 0.01 | 2.576 | Yes |

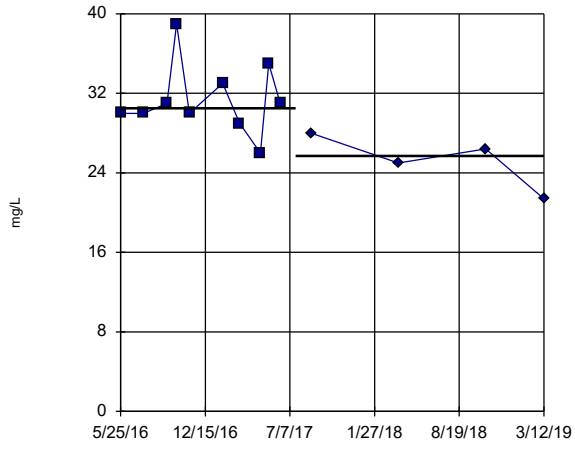
Constituent: Calcium, total Analysis Run 12/8/2019 9:34 AM View: Mann Whitney

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Mann-Whitney (Wilcoxon Rank Sum)

B-10




B-10 background

B-10 compliance

background median = 30.5

compliance median = 25.7

Z = -2.631 (two-tail)

| Alpha | Table | Sig. |
|---|---|---|
| 0.2 | 1.282 | Yes |
| 0.1 | 1.645 | Yes |
| 0.05 | 1.96 | Yes |
| 0.02 | 2.326 | Yes |
| 0.01 | 2.576 | Yes |

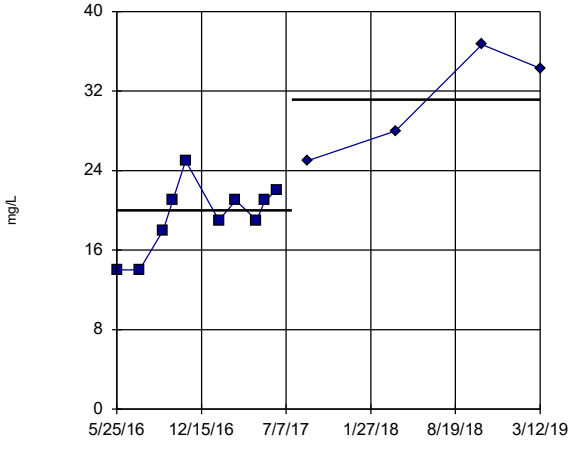
Constituent: Sulfate, total Analysis Run 12/8/2019 9:34 AM View: Mann Whitney

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Mann-Whitney (Wilcoxon Rank Sum)

B-9




B-9 background

B-9 compliance

background median = 20

compliance median = 31.15

Z = 2.708 (two-tail)

| Alpha | Table | Sig. |
|---|---|---|
| 0.2 | 1.282 | Yes |
| 0.1 | 1.645 | Yes |
| 0.05 | 1.96 | Yes |
| 0.02 | 2.326 | Yes |
| 0.01 | 2.576 | Yes |

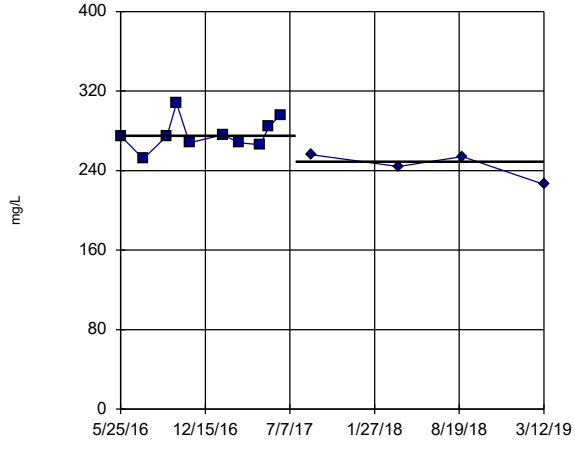
Constituent: Sulfate, total Analysis Run 12/8/2019 9:34 AM View: Mann Whitney

Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Mann-Whitney (Wilcoxon Rank Sum)

B-10




B-10 background

B-10 compliance

background median = 275

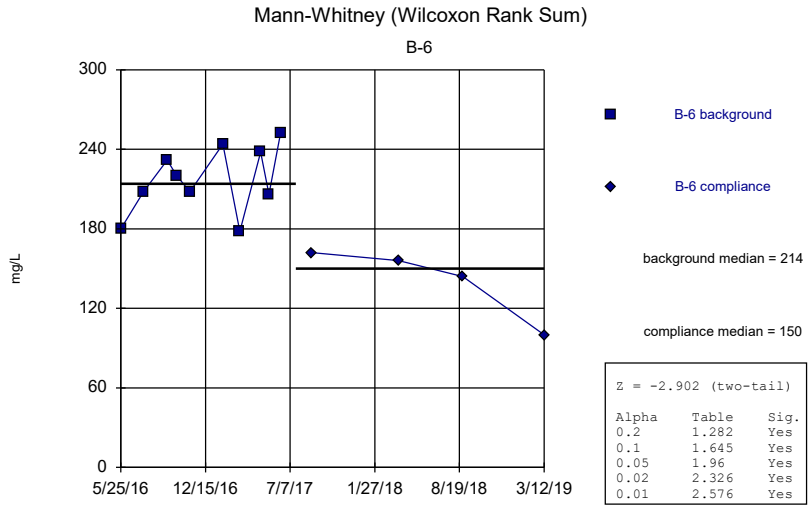
compliance median = 249

Z = -2.622 (two-tail)

| Alpha | Table | Sig. |
|---|---|---|
| 0.2 | 1.282 | Yes |
| 0.1 | 1.645 | Yes |
| 0.05 | 1.96 | Yes |
| 0.02 | 2.326 | Yes |
| 0.01 | 2.576 | Yes |

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:34 AM View: Mann Whitney

Flint Creek LF Client: Geosyntec Data: Flint Creek LF




Constituent: Total Dissolved Solids [TDS] Analysis Run 12/8/2019 9:34 AM View: Mann Whitney
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

# Intrawell Prediction Limit Summary

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/24/2019, 9:43 AM

| Constituent | Well | Upper Lim. | Lower Lim. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Calcium, total (mg/L) | B-12 | 75.49 | n/a | 14 | 63.47 | 5.376 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-13 | 23.53 | n/a | 14 | 13.11 | 4.659 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-1B | 96.65 | n/a | 14 | 88.73 | 3.541 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-4 | 32.15 | n/a | 14 | 13.04 | 8.545 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-5 | 19.15 | n/a | 14 | 17.01 | 0.9534 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-7A | 109.1 | n/a | 14 | 101.3 | 3.479 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-10 | 111.9 | n/a | 14 | 9.017 | 0.6971 | 0 | None | sqrt(x) | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-11 | 18.31 | n/a | 14 | 13.04 | 2.356 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-2 | 87.96 | n/a | 14 | 39.34 | 21.74 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-6 | 61.48 | n/a | 14 | 44.62 | 7.541 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Calcium, total (mg/L) | B-9 | 136.9 | n/a | 14 | 99.17 | 16.89 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-12 | 13.71 | n/a | 14 | 10.23 | 1.557 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-13 | 5.697 | n/a | 14 | 3.609 | 0.934 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-1B | 5.842 | n/a | 14 | 3.346 | 1.116 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-4 | 10.83 | n/a | 14 | 67.59 | 22.27 | 0 | None | x^2 | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-5 | 11.56 | n/a | 14 | 7.664 | 1.743 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-7A | 6.865 | n/a | 14 | 4.194 | 1.195 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-10 | 11.52 | n/a | 14 | 8.17 | 1.496 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-11 | 7.726 | n/a | 14 | 5.14 | 1.157 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-2 | 9.825 | n/a | 14 | 2.487 | 0.2896 | 0 | None | sqrt(x) | 0.001504 | Param Intra 1 of 2 |
| Chloride, total (mg/L) | B-6 | 12.2 | n/a | 14 | n/a | n/a | 0 | n/a | n/a | 0.008612 | NP Intra (normality) 1 of 2 |
| Chloride, total (mg/L) | B-9 | 8.306 | n/a | 14 | 5.921 | 1.066 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Fluoride, total (mg/L) | B-12 | 1 | n/a | 14 | n/a | n/a | 85.71 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-13 | 1 | n/a | 14 | n/a | n/a | 85.71 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-1B | 0.7071 | n/a | 14 | 0.43 | 0.1239 | 28.57 | Kaplan-Meier | No | 0.001504 | Param Intra 1 of 2 |
| Fluoride, total (mg/L) | B-4 | 1 | n/a | 14 | n/a | n/a | 92.86 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-5 | 1 | n/a | 14 | n/a | n/a | 85.71 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-7A | 1 | n/a | 14 | n/a | n/a | 71.43 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-10 | 1 | n/a | 14 | n/a | n/a | 71.43 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-11 | 1 | n/a | 14 | n/a | n/a | 92.86 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-2 | 1 | n/a | 14 | n/a | n/a | 85.71 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-6 | 0.2066 | n/a | 14 | n/a | n/a | 92.86 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| Fluoride, total (mg/L) | B-9 | 1 | n/a | 14 | n/a | n/a | 64.29 | n/a | n/a | 0.008612 | NP Intra (NDs) 1 of 2 |
| pH, field (SU) | B-12 | 8.782 | 5.598 | 14 | 7.19 | 0.7119 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-13 | 7.662 | 3.797 | 14 | 5.729 | 0.8643 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-1B | 8.4 | 6.162 | 14 | 7.281 | 0.5005 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-4 | 7.889 | 6.162 | 14 | 7.026 | 0.3862 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-5 | 6.814 | 4.285 | 14 | 5.549 | 0.5654 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-7A | 7.877 | 6.488 | 14 | 7.183 | 0.3105 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-10 | 8.798 | 5.942 | 14 | 7.37 | 0.6385 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-11 | 6.964 | 4.84 | 15 | 5.902 | 0.4841 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-2 | 7.278 | 5.226 | 15 | 6.252 | 0.4681 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-6 | 7.368 | 6.129 | 15 | 6.749 | 0.2825 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| pH, field (SU) | B-9 | 8.481 | 6.162 | 14 | 7.321 | 0.5186 | 0 | None | No | 0.000752 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-12 | 19.27 | n/a | 14 | 11.08 | 3.662 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-13 | 37.26 | n/a | 14 | 20.67 | 7.419 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-1B | 28.09 | n/a | 14 | 21.66 | 2.876 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-4 | 16.46 | n/a | 14 | 9.979 | 2.9 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-5 | 243.3 | n/a | 14 | 200 | 19.34 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-7A | 37.07 | n/a | 14 | 33.16 | 1.747 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |

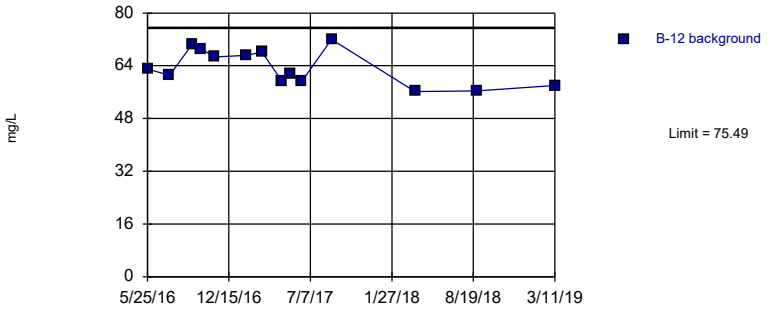
# Intrawell Prediction Limit Summary

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/24/2019, 9:43 AM

| Constituent | Well | Upper Lim. | Lower Lim. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate, total (mg/L) | B-10 | 39.39 | n/a | 14 | 29.63 | 4.368 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-11 | 65.67 | n/a | 14 | 43.11 | 10.09 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-2 | 803 | n/a | 14 | 5.276 | 0.6315 | 0 | None | ln(x) | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-6 | 42.34 | n/a | 14 | 25.34 | 7.606 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Sulfate, total (mg/L) | B-9 | 37.64 | n/a | 14 | 22.71 | 6.675 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-12 | 323.3 | n/a | 14 | 252.4 | 31.73 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-13 | 119.5 | n/a | 14 | 75.14 | 19.83 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-1B | 316.8 | n/a | 14 | 272.6 | 19.73 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-4 | 121.6 | n/a | 14 | 76.79 | 20.03 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-5 | 447.2 | n/a | 14 | 395.5 | 23.14 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-7A | 339 | n/a | 14 | 312.1 | 12.01 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-10 | 314.7 | n/a | 14 | 267.7 | 21.01 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-11 | 193.2 | n/a | 14 | 132.3 | 27.26 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-2 | 1409 | n/a | 14 | 7.823 | 1.515 | 0 | None | x^(1/3) | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-6 | 292.3 | n/a | 14 | 194.9 | 43.59 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |
| Total Dissolved Solids [TDS] (mg/L) | B-9 | 293.4 | n/a | 14 | 239.4 | 24.16 | 0 | None | No | 0.001504 | Param Intra 1 of 2 |

## Prediction Limit

Intrawell Parametric, B-12 (bg)



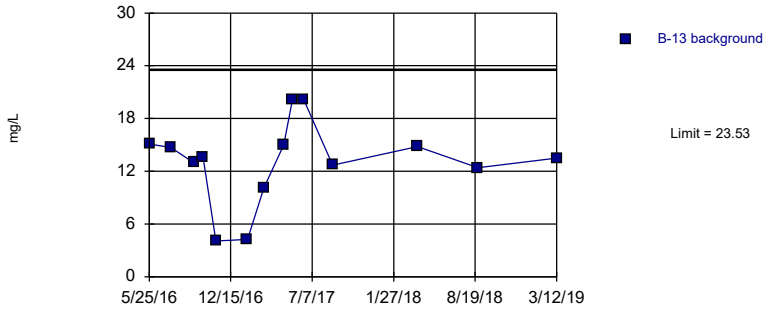

Background Data Summary: Mean=63.47, Std. Dev.=5.376, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9304, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-13 (bg)



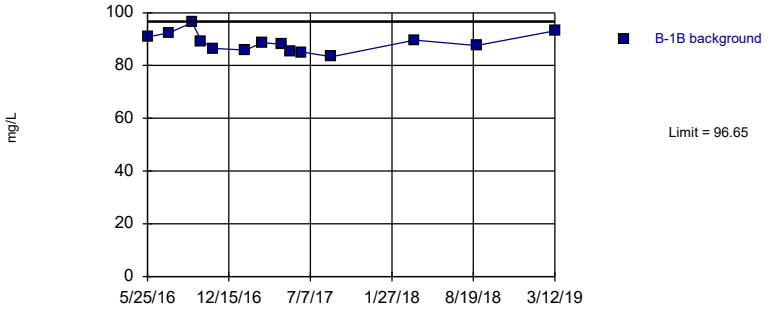

Background Data Summary: Mean=13.11, Std. Dev.=4.659, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8857, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-1B (bg)



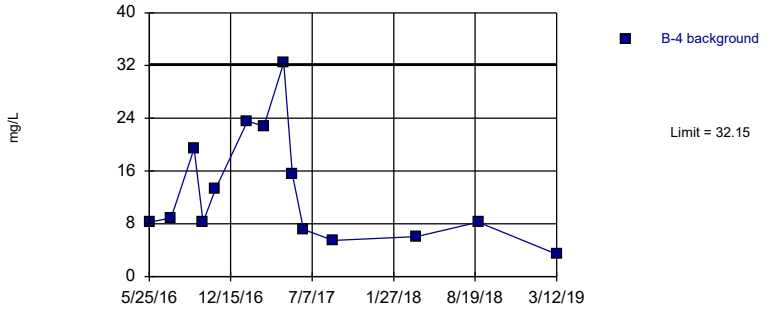

Background Data Summary: Mean=88.73, Std. Dev.=3.541, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9715, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-4 (bg)

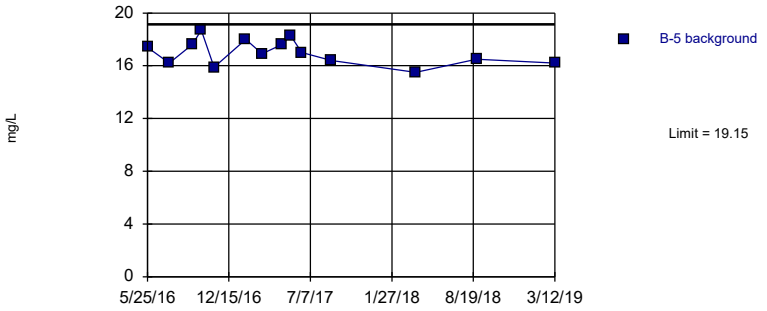



Background Data Summary: Mean=13.04, Std. Dev.=8.545, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8778, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-5 (bg)



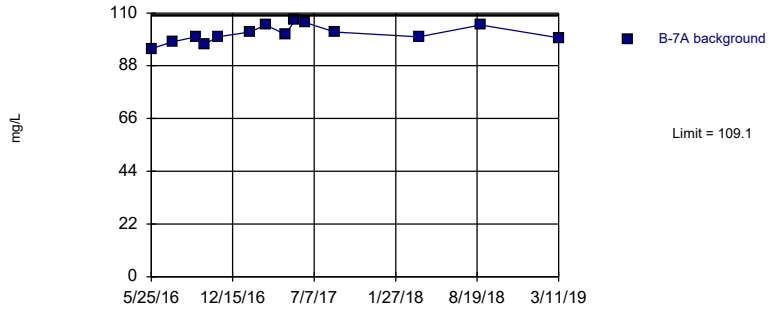

Background Data Summary: Mean=17.01, Std. Dev.=0.9534, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9715, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-7A (bg)



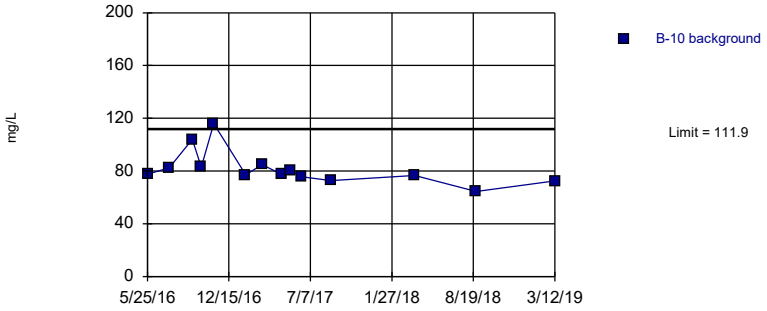

Background Data Summary: Mean=101.3, Std. Dev.=3.479, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9601, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-10



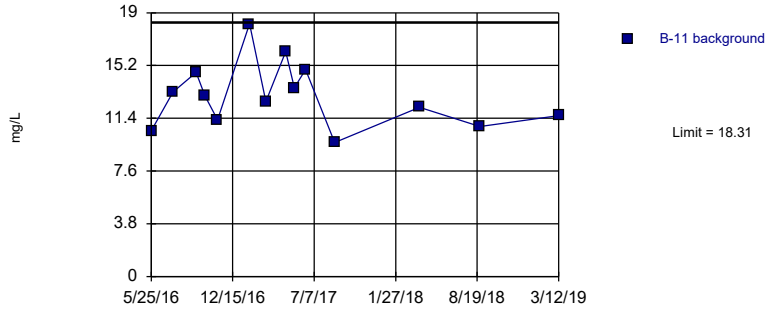

Background Data Summary (based on square root transformation): Mean=9.017, Std. Dev.=0.6971, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8359, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-11

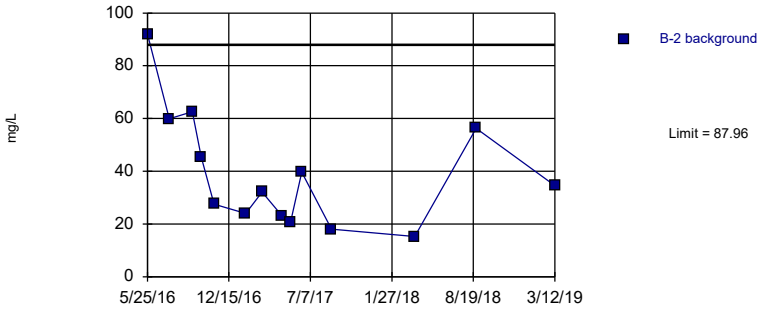



Background Data Summary: Mean=13.04, Std. Dev.=2.356, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9637, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-2



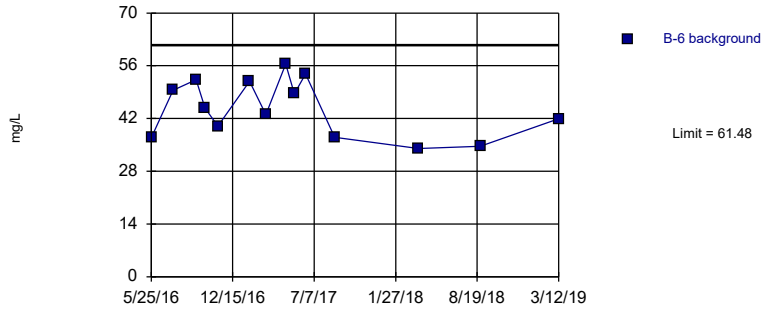

Background Data Summary: Mean=39.34, Std. Dev.=21.74, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8965, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-6



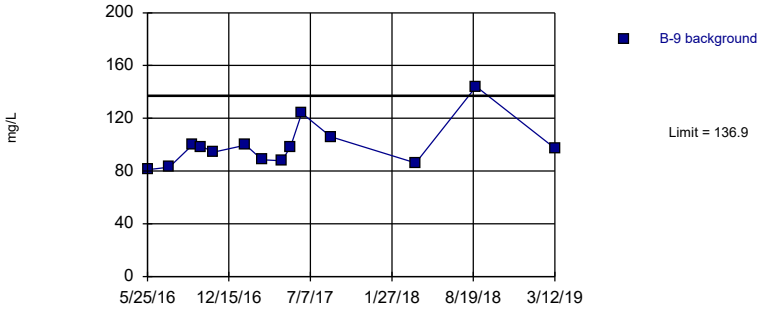

Background Data Summary: Mean=44.62, Std. Dev.=7.541, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9402, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-9



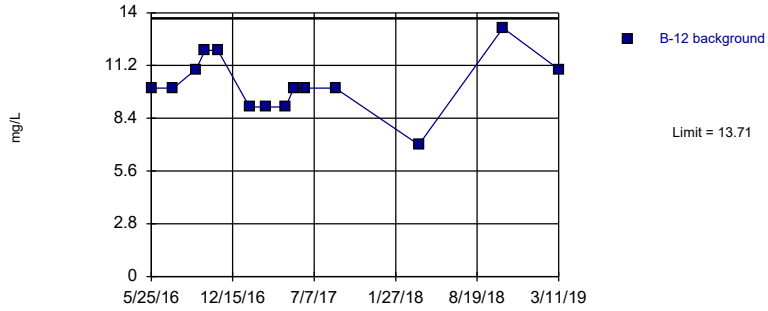

Background Data Summary: Mean=99.17, Std. Dev.=16.89, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8298, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-12 (bg)

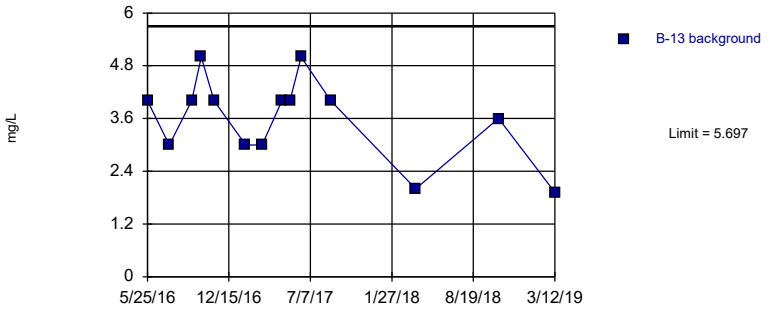



Background Data Summary: Mean=10.23, Std. Dev.=1.557, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9508, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-13 (bg)



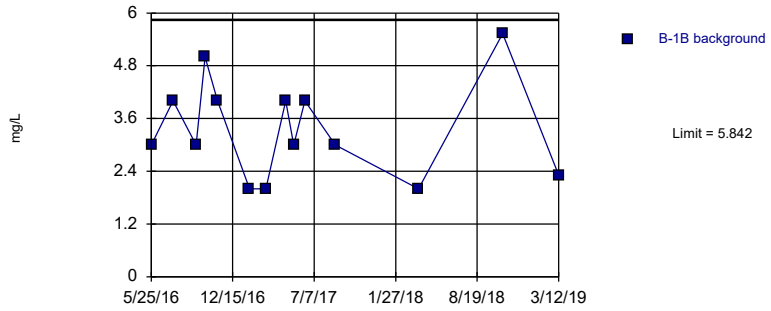

Background Data Summary: Mean=3.609, Std. Dev.=0.934, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8984, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-1B (bg)



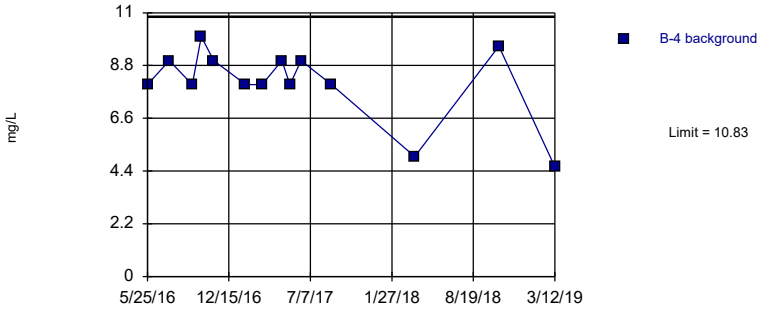

Background Data Summary: Mean=3.346, Std. Dev.=1.116, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9111, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-4 (bg)



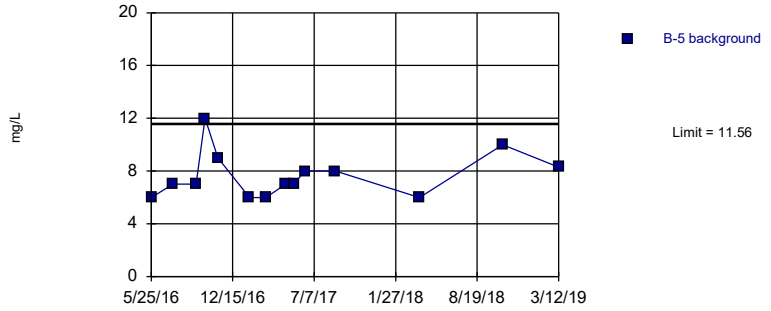

Background Data Summary (based on square transformation): Mean=67.59, Std. Dev.=22.27, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8593, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-5 (bg)

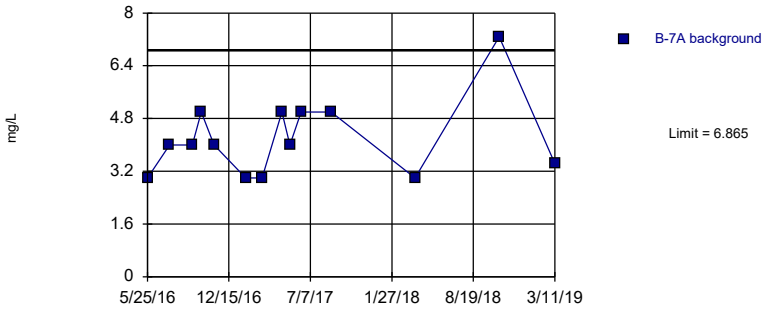



Background Data Summary: Mean=7.664, Std. Dev.=1.743, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8593, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-7A (bg)



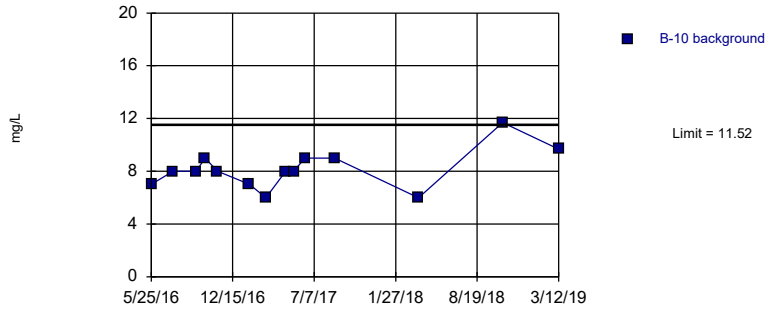

Background Data Summary: Mean=4.194, Std. Dev.=1.195, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8442, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-10



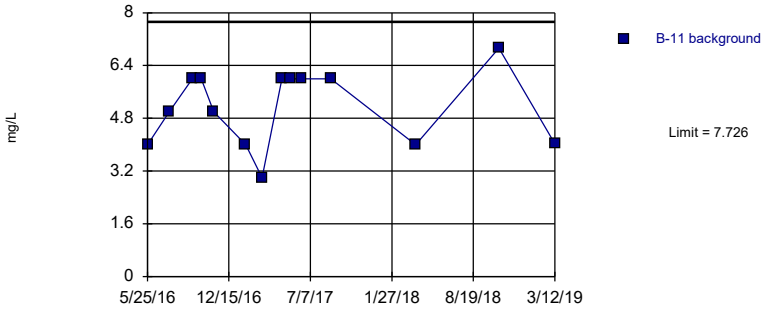

Background Data Summary: Mean=8.17, Std. Dev.=1.496, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9256, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-11



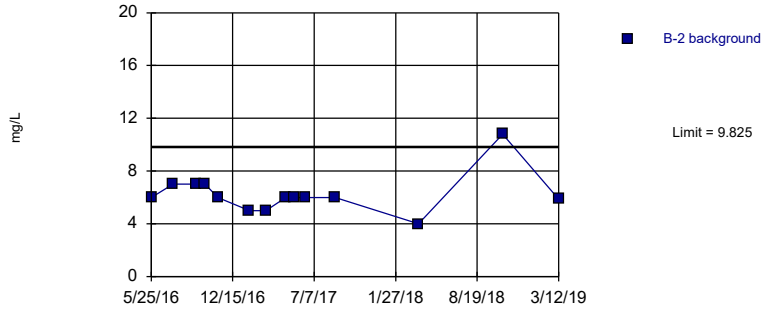

Background Data Summary: Mean=5.14, Std. Dev.=1.157, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8838, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-2

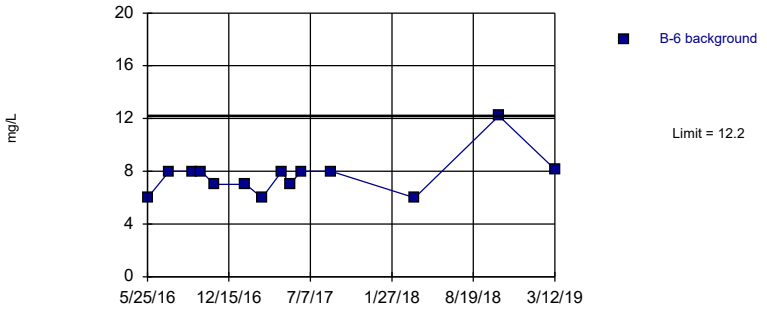



Background Data Summary (based on square root transformation): Mean=2.487, Std. Dev.=0.2896, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8315, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Non-parametric, B-6



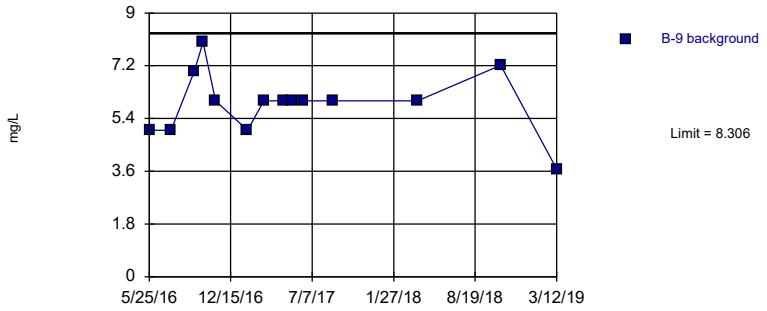

Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 14 background values. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-9



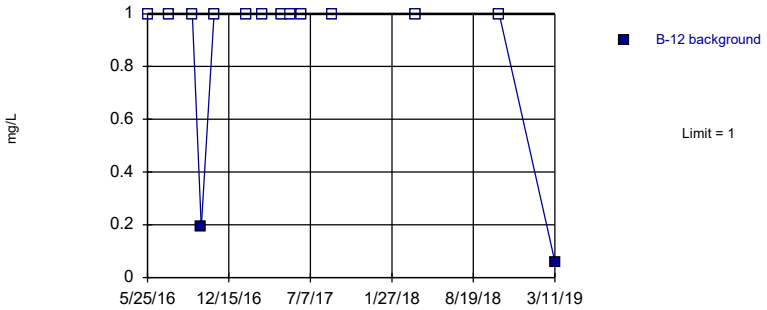

Background Data Summary: Mean=5.921, Std. Dev.=1.066, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9146, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-12 (bg)



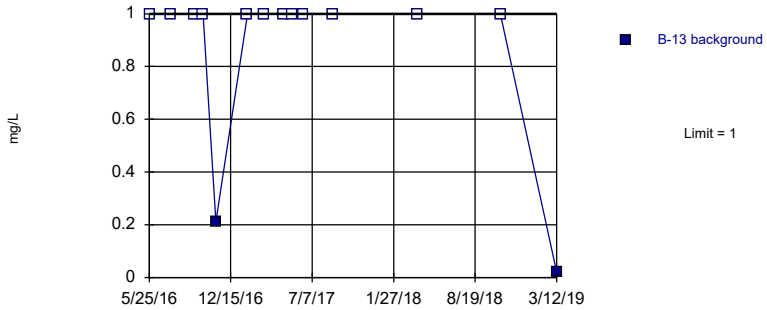

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 85.71% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-13 (bg)



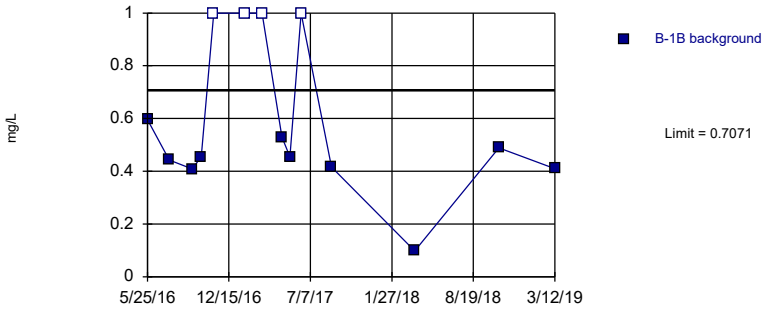

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 85.71% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Parametric, B-1B (bg)



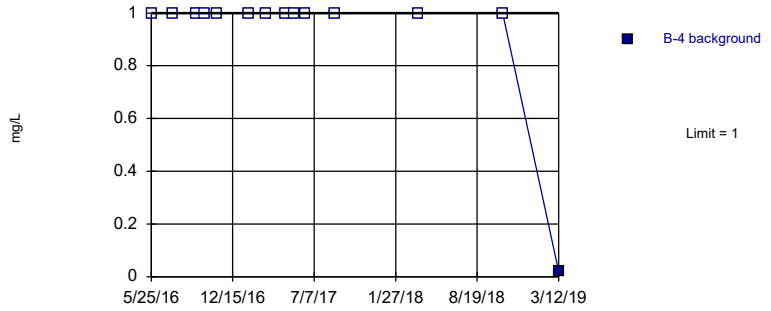

Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.43, Std. Dev.=0.1239, n=14, 28.57% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8263, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-4 (bg)



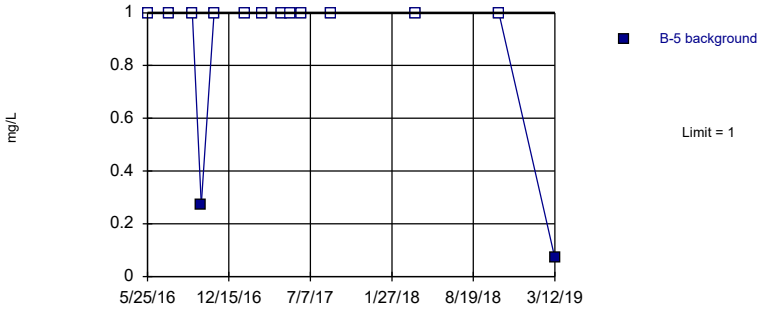

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 92.86% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-5 (bg)



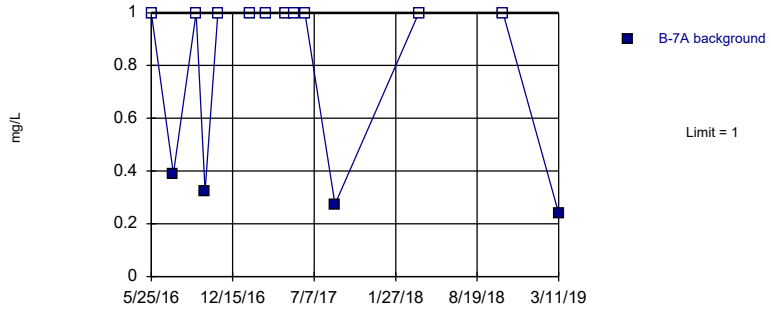

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 85.71% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-7A (bg)



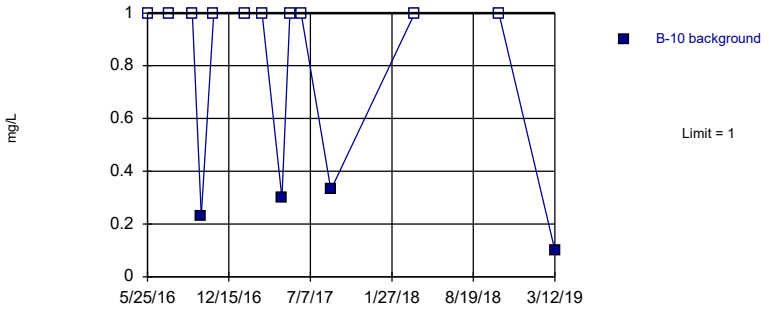

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 71.43% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-10



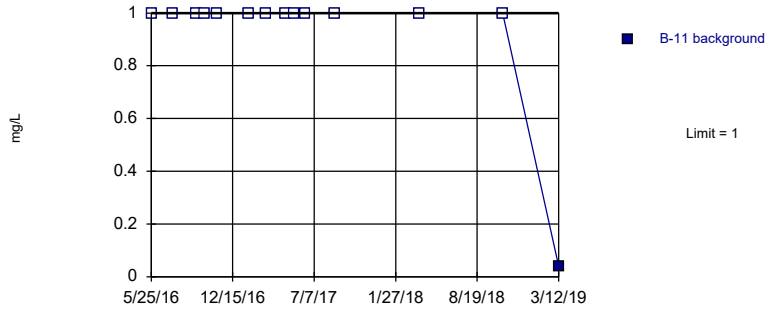

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 71.43% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-11



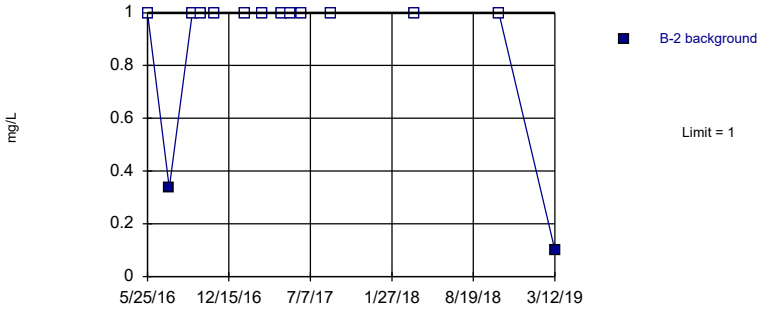

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 92.86% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-2



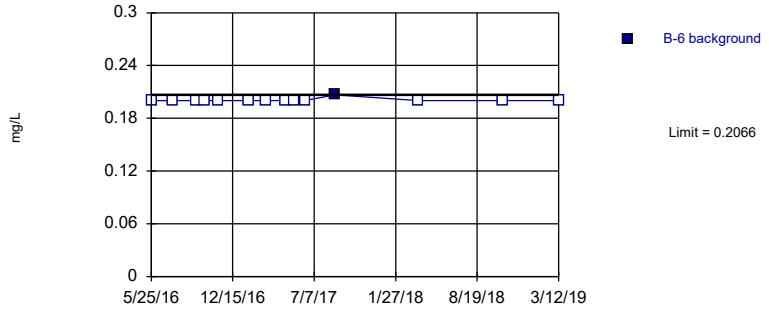

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 85.71% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-6



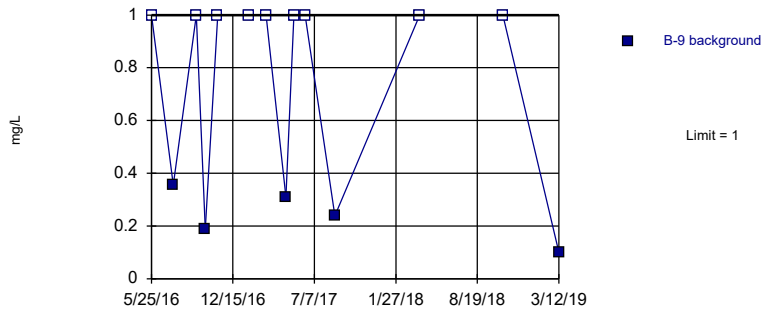

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 92.86% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Hollow symbols indicate censored values.

## Prediction Limit

Intrawell Non-parametric, B-9



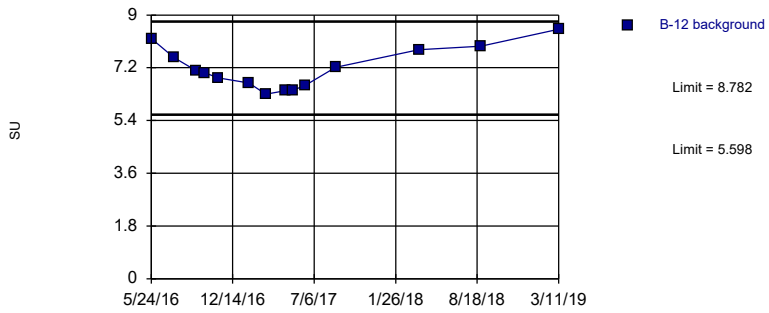

Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 64.29% NDs. Well-constituent pair annual alpha = 0.01715. Individual comparison alpha = 0.008612 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-12 (bg)



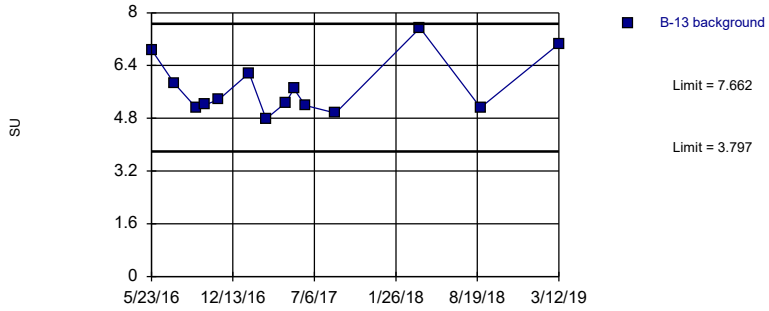

Background Data Summary: Mean=7.19, Std. Dev.=0.7119, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.935, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-13 (bg)



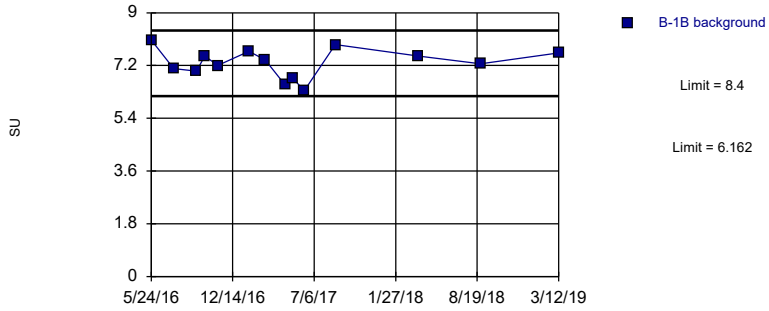

Background Data Summary: Mean=5.729, Std. Dev.=0.8643, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8605, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-1B (bg)

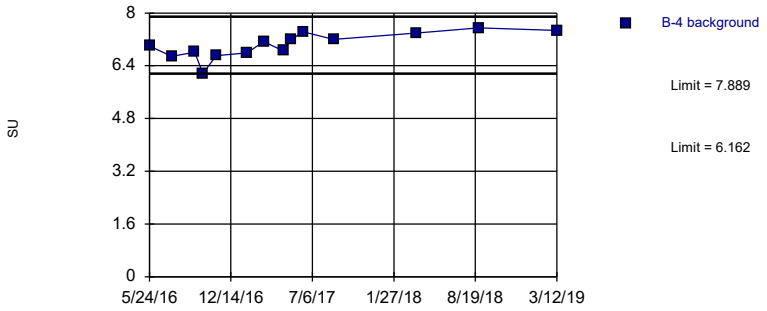



Background Data Summary: Mean=7.281, Std. Dev.=0.5005, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9765, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-4 (bg)



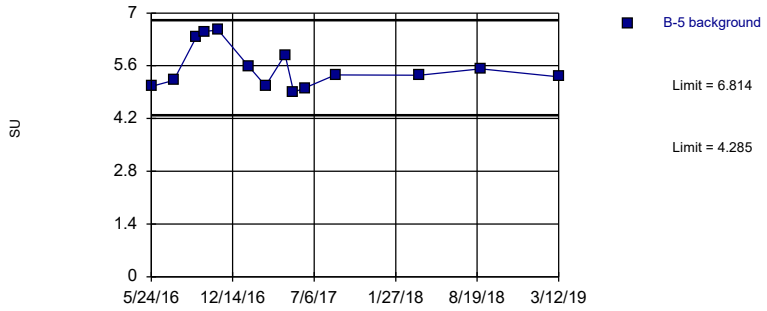

Background Data Summary: Mean=7.026, Std. Dev.=0.3862, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9438, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:39 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-5 (bg)



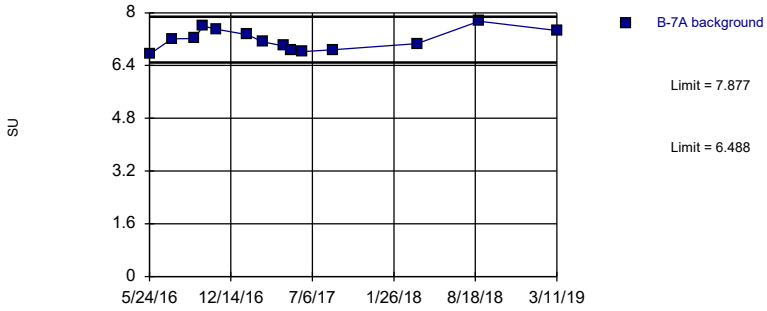

Background Data Summary: Mean=5.549, Std. Dev.=0.5654, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8679, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-7A (bg)



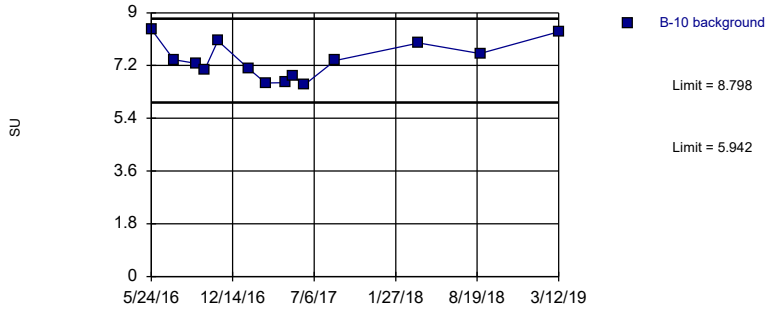

Background Data Summary: Mean=7.183, Std. Dev.=0.3105, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9601, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-10

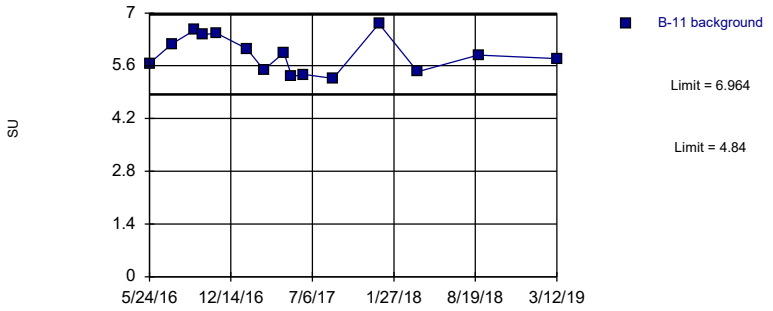



Background Data Summary: Mean=7.37, Std. Dev.=0.6385, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9365, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-11



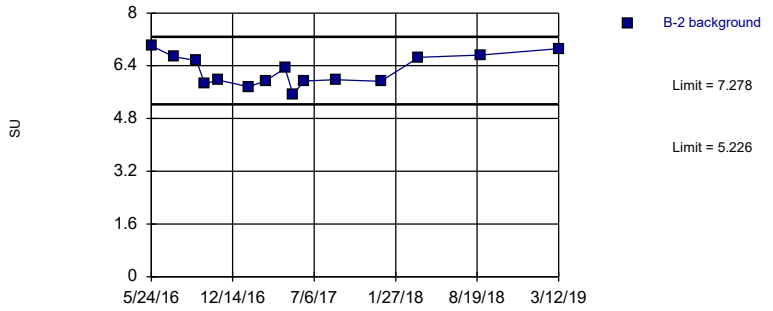

Background Data Summary: Mean=5.902, Std. Dev.=0.4841, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9382, critical = 0.835. Kappa = 2.193 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-2



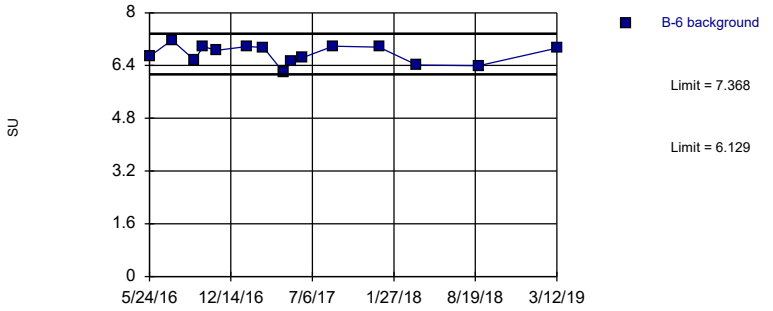

Background Data Summary: Mean=6.252, Std. Dev.=0.4681, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9105, critical = 0.835. Kappa = 2.193 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-6



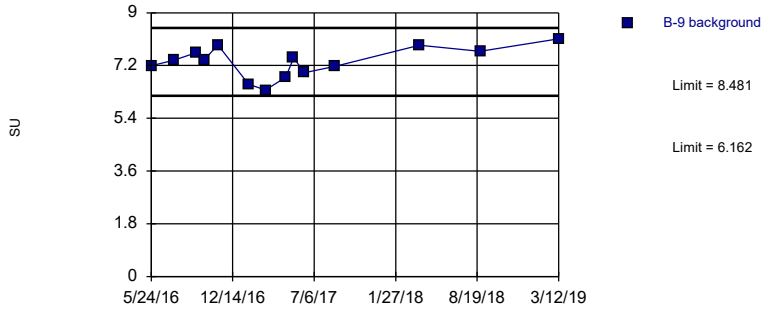

Background Data Summary: Mean=6.749, Std. Dev.=0.2825, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9252, critical = 0.835. Kappa = 2.193 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-9

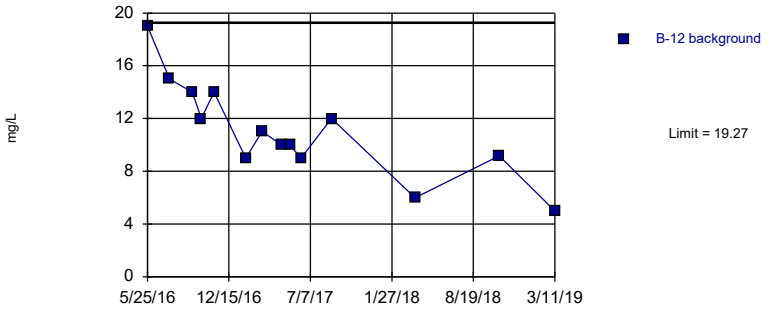



Background Data Summary: Mean=7.321, Std. Dev.=0.5186, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9709, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: pH, field Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-12 (bg)



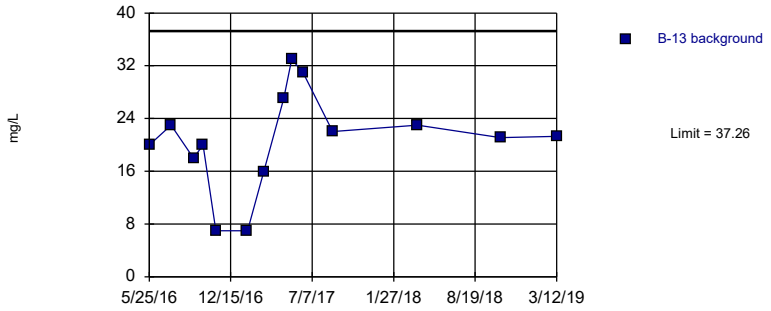

Background Data Summary: Mean=11.08, Std. Dev.=3.662, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9682, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-13 (bg)



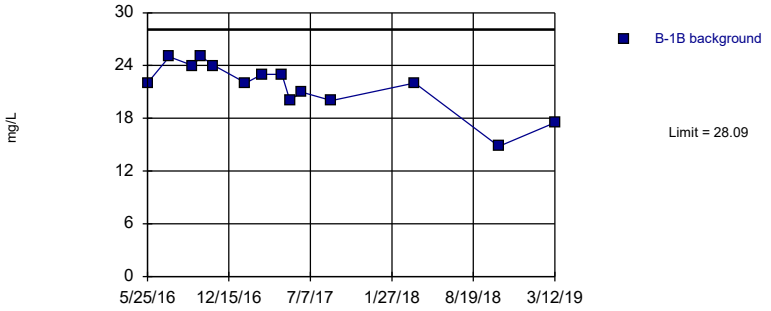

Background Data Summary: Mean=20.67, Std. Dev.=7.419, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9262, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-1B (bg)



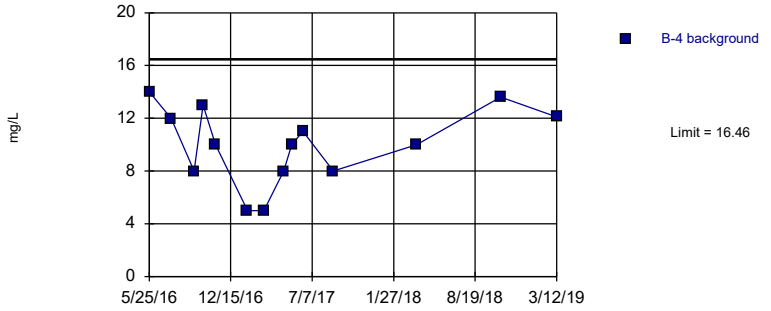

Background Data Summary: Mean=21.66, Std. Dev.=2.876, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9061, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-4 (bg)

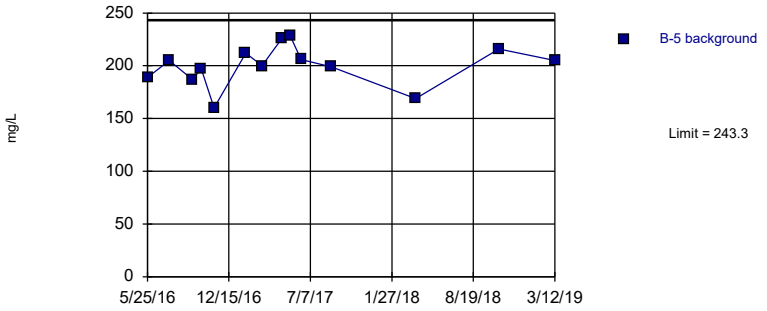



Background Data Summary: Mean=9.979, Std. Dev.=2.9, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9359, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-5 (bg)



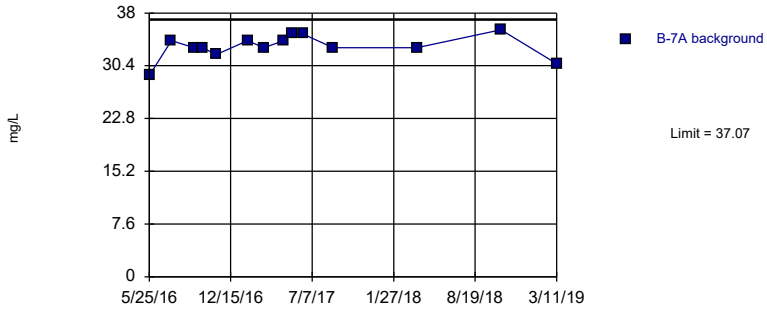

Background Data Summary: Mean=200, Std. Dev.=19.34, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9533, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-7A (bg)



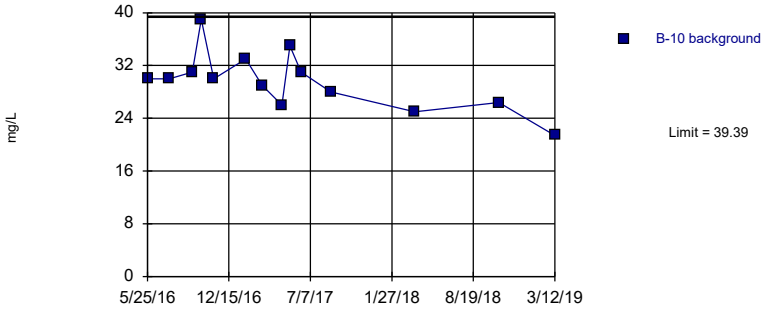

Background Data Summary: Mean=33.16, Std. Dev.=1.747, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9096, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-10



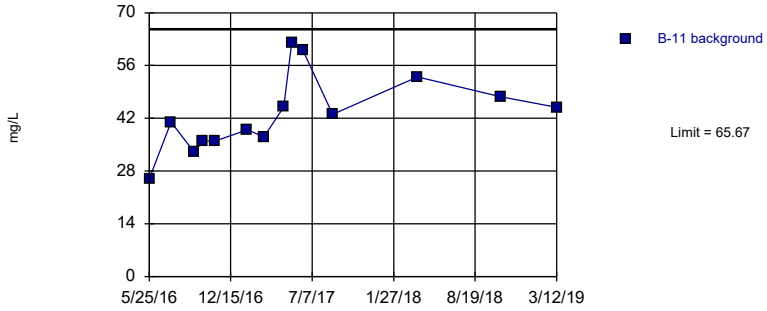

Background Data Summary: Mean=29.63, Std. Dev.=4.368, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9757, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-11

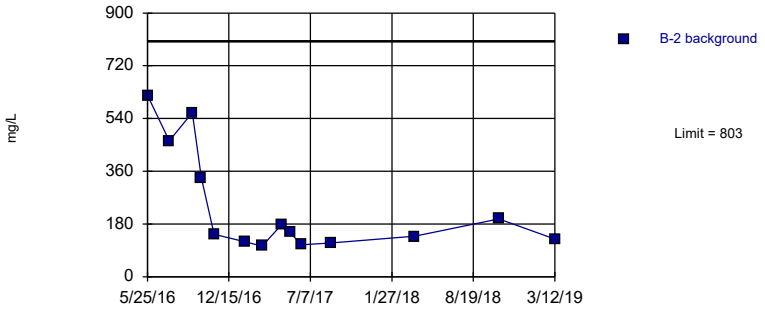



Background Data Summary: Mean=43.11, Std. Dev.=10.09, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9595, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-2



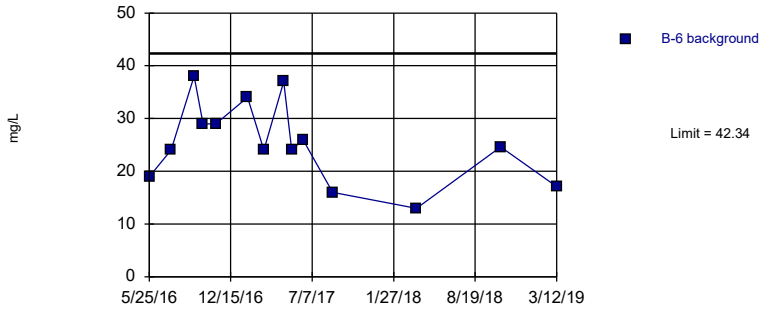

Background Data Summary (based on natural log transformation): Mean=5.276, Std. Dev.=0.6315, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8327, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-6



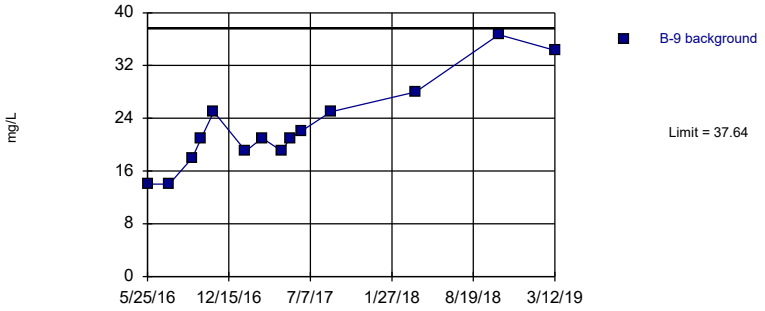

Background Data Summary: Mean=25.34, Std. Dev.=7.606, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9576, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-9



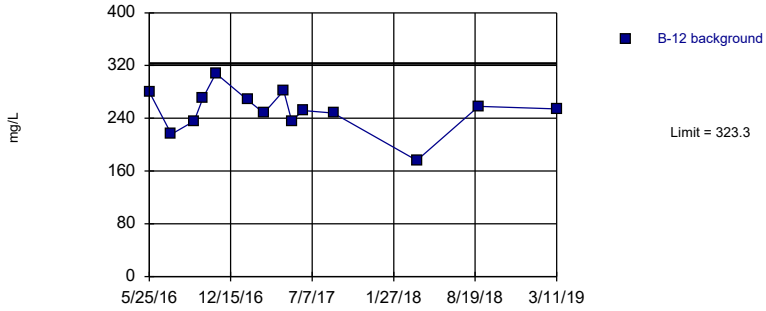

Background Data Summary: Mean=22.71, Std. Dev.=6.675, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9143, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Prediction Limit

Intrawell Parametric, B-12 (bg)

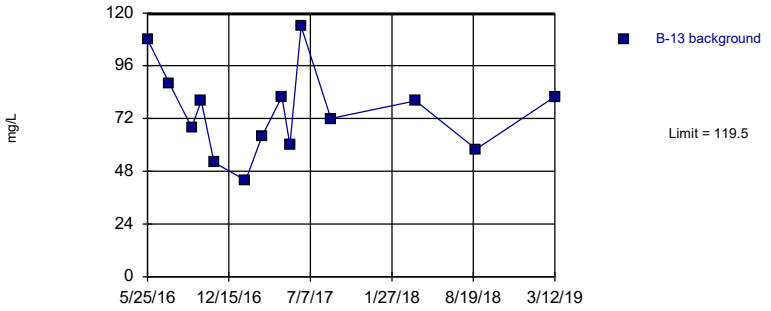



Background Data Summary: Mean=252.4, Std. Dev.=31.73, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9513, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-13 (bg)



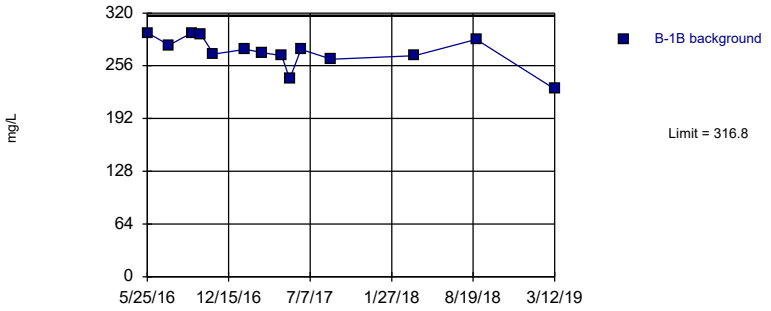

Background Data Summary: Mean=75.14, Std. Dev.=19.83, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9584, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-1B (bg)



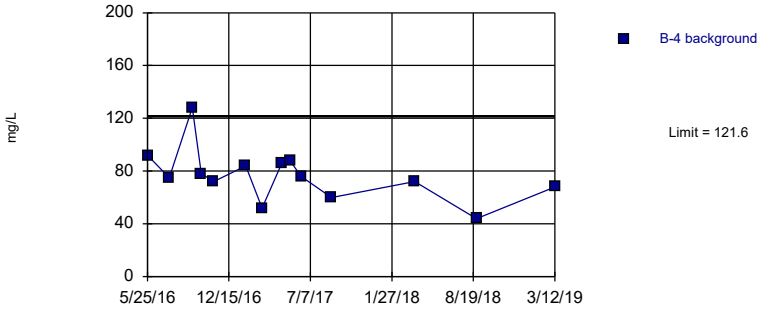

Background Data Summary: Mean=272.6, Std. Dev.=19.73, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8983, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-4 (bg)



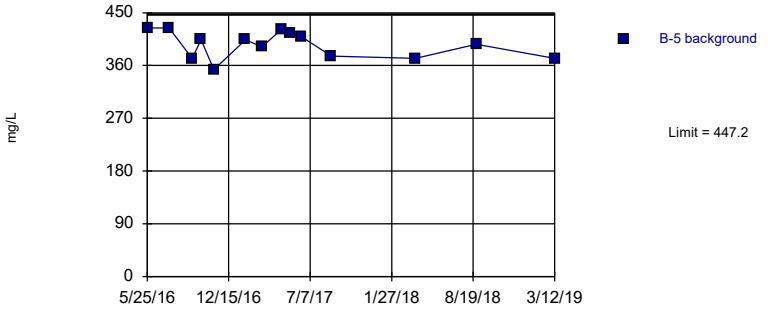

Background Data Summary: Mean=76.79, Std. Dev.=20.03, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9249, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-5 (bg)

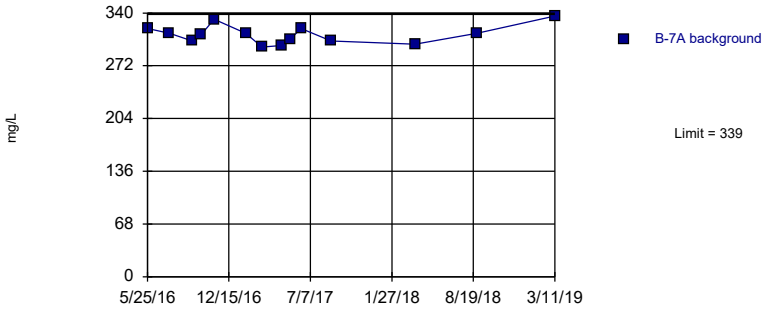



Background Data Summary: Mean=395.5, Std. Dev.=23.14, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.921, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-7A (bg)



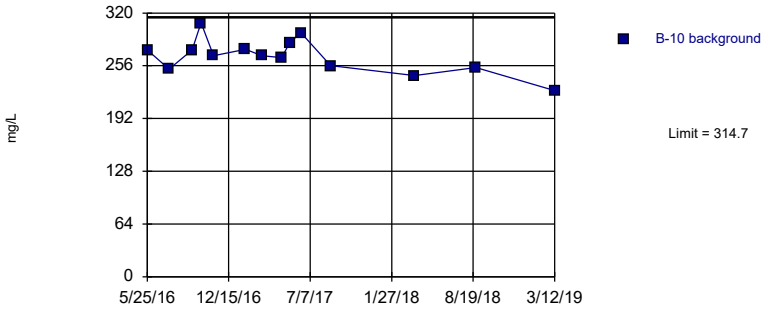

Background Data Summary: Mean=312.1, Std. Dev.=12.01, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9386, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-10



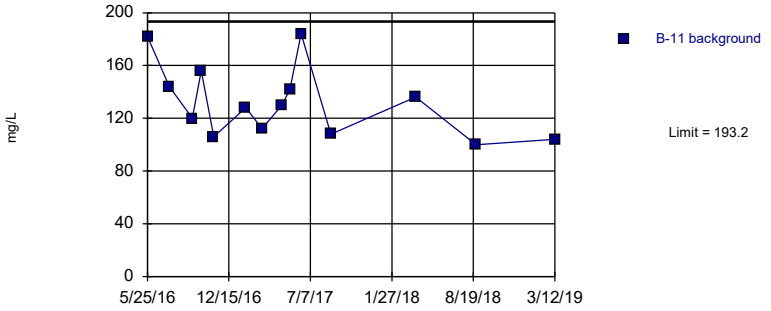

Background Data Summary: Mean=267.7, Std. Dev.=21.01, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.984, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-11



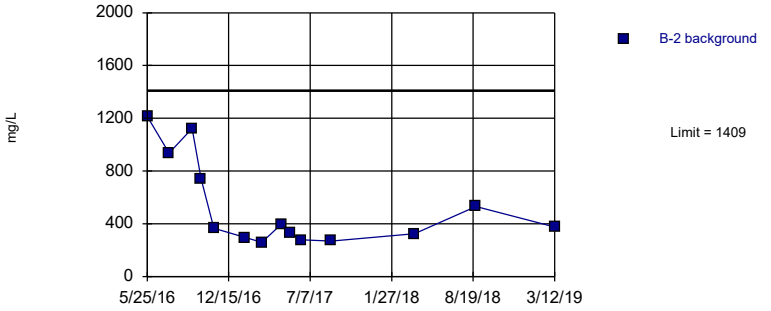

Background Data Summary: Mean=132.3, Std. Dev.=27.26, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9087, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-2

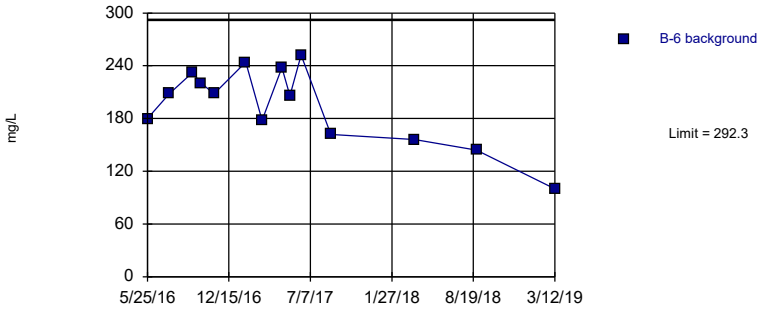



Background Data Summary (based on cube root transformation): Mean=7.823, Std. Dev.=1.515, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8281, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Prediction Limit

Intrawell Parametric, B-6



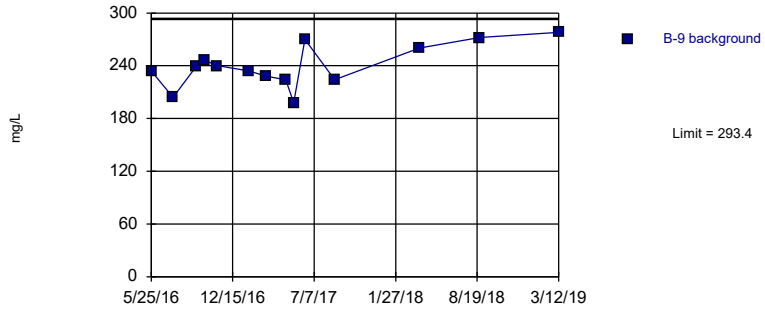

Background Data Summary: Mean=194.9, Std. Dev.=43.59, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9486, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Prediction Limit

Intrawell Parametric, B-9




Background Data Summary: Mean=239.4, Std. Dev.=24.16, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9559, critical = 0.825. Kappa = 2.236 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.001504. Assumes 1 future value.

Constituent: Total Dissolved Solids [TDS] Analysis Run 12/24/2019 9:40 AM View: PLs - Intrawell
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

# Trend Test Summary Table - All Results

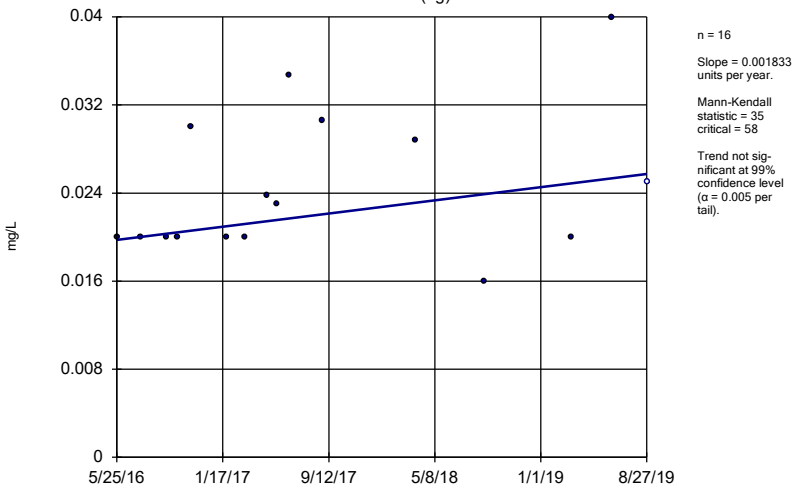
Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 12:02 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron, total (mg/L) | B-12 (bg) | 0.001833 | 35 | 58 | No | 16 | 6.25 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-13 (bg) | 0.001928 | 25 | 58 | No | 16 | 12.5 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-1B (bg) | 0.0004874 | 32 | 58 | No | 16 | 6.25 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-4 (bg) | 0.007867 | 44 | 58 | No | 16 | 0 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-5 (bg) | 0.004951 | 43 | 58 | No | 16 | 12.5 | n/a | n/a | 0.01 | NP |
| Boron, total (mg/L) | B-7A (bg) | 0 | 12 | 58 | No | 16 | 12.5 | n/a | n/a | 0.01 | NP |

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Sen's Slope Estimator

B-12 (bg)




n = 16

Slope = 0.001833 units per year.

Mann-Kendall statistic = 35
critical = 58

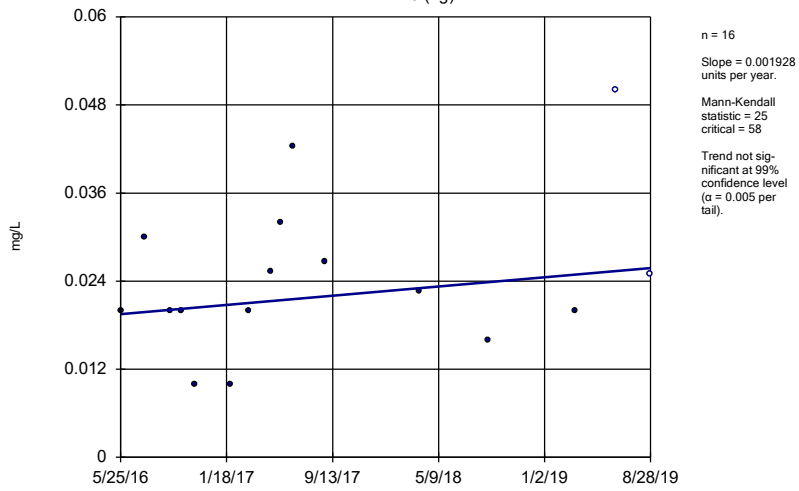
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 12/8/2019 12:02 PM View: Trend Tests
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Sen's Slope Estimator

B-13 (bg)




n = 16

Slope = 0.001928 units per year.

Mann-Kendall statistic = 25
critical = 58

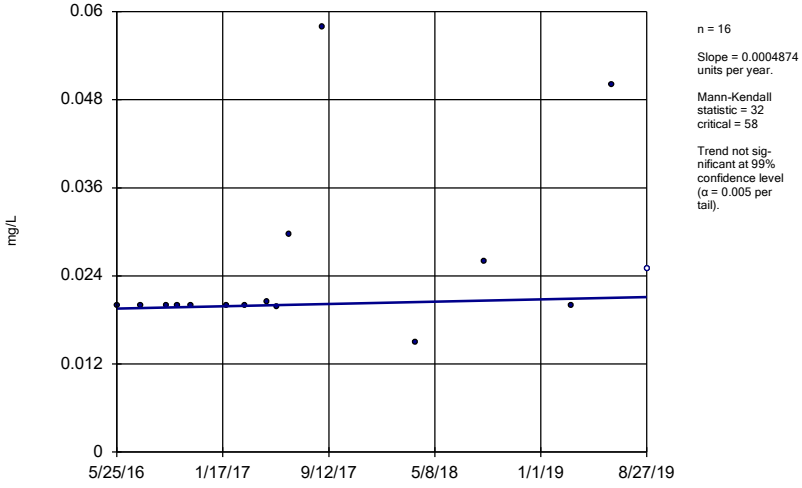
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 12/8/2019 12:02 PM View: Trend Tests
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Sen's Slope Estimator

B-1B (bg)




n = 16

Slope = 0.0004874 units per year.

Mann-Kendall statistic = 32
critical = 58

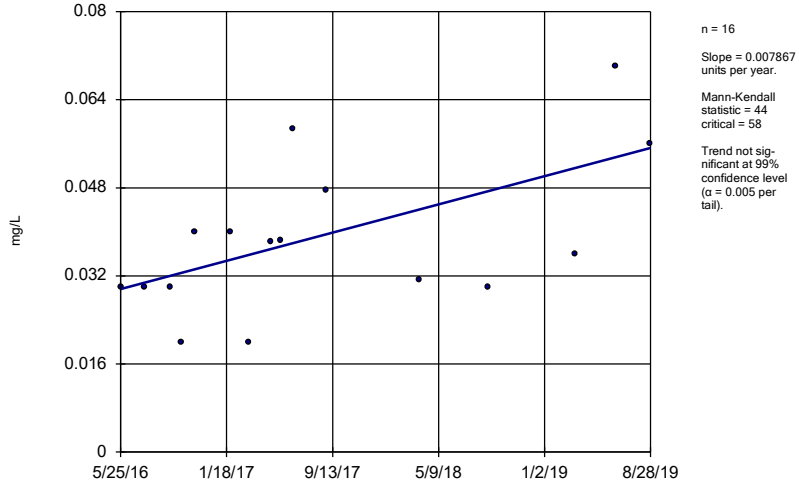
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 12/8/2019 12:02 PM View: Trend Tests
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Sen's Slope Estimator

B-4 (bg)




n = 16

Slope = 0.007867 units per year.

Mann-Kendall statistic = 44
critical = 58

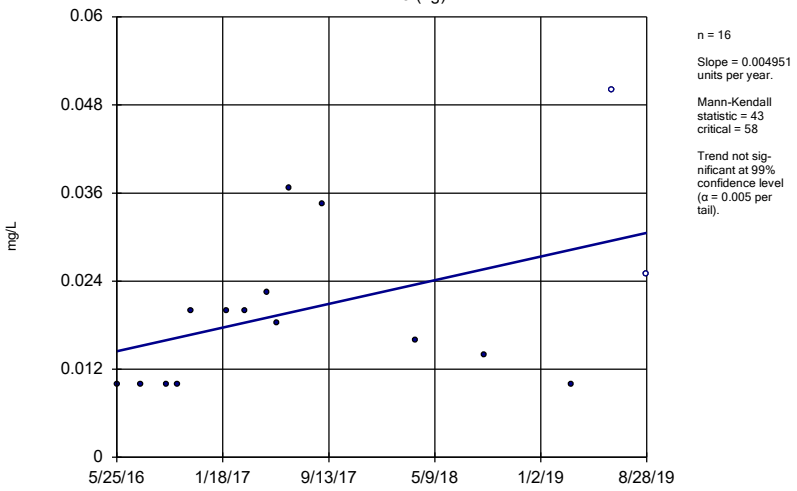
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total Analysis Run 12/8/2019 12:02 PM View: Trend Tests
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Sen's Slope Estimator

B-5 (bg)




n = 16

Slope = 0.004951 units per year.

Mann-Kendall statistic = 43
critical = 58

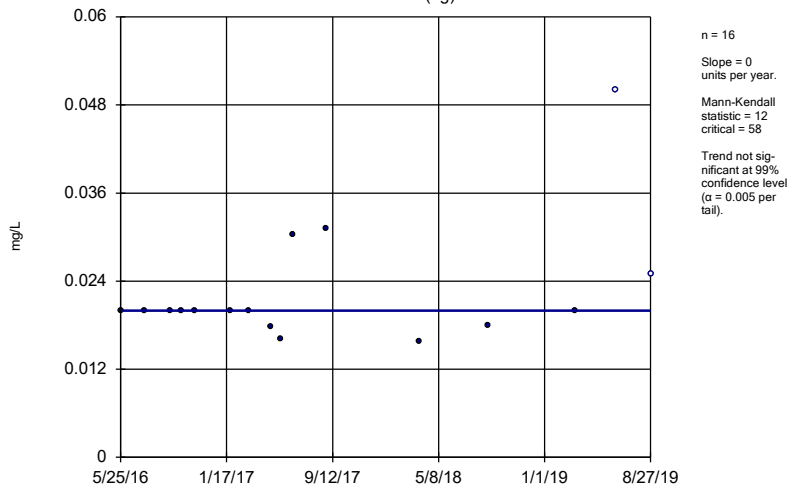
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total  Analysis Run 12/8/2019 12:02 PM  View: Trend Tests
Flint Creek LF  Client: Geosyntec  Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

## Sen's Slope Estimator

B-7A (bg)




n = 16

Slope = 0 units per year.

Mann-Kendall statistic = 12
critical = 58

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron, total  Analysis Run 12/8/2019 12:02 PM  View: Trend Tests
Flint Creek LF  Client: Geosyntec  Data: Flint Creek LF

# Interwell Prediction Limit Summary

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 11:47 AM

| Constituent | Well | Upper Lim. | Sig. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron, total (mg/L) | n/a | 0.0588 | n/a | 84 | n/a | n/a | 0 | n/a | n/a | 0.0002746 | NP (normality) 1 of 2 |

# Tolerance Limit Summary Table

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 3:50 PM

| Constituent | Well | Upper Lim. | Bg N | Bg Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony, total (mg/L) | n/a | 0.005 | 90 | n/a | n/a | 74.44 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Arsenic, total (mg/L) | n/a | 0.008 | 90 | n/a | n/a | 57.78 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Barium, total (mg/L) | n/a | 0.131 | 90 | n/a | n/a | 0 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Beryllium, total (mg/L) | n/a | 0.001 | 90 | n/a | n/a | 32.22 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Cadmium, total (mg/L) | n/a | 0.001 | 90 | n/a | n/a | 57.78 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Chromium, total (mg/L) | n/a | 0.005071 | 89 | 0.1085 | 0.03253 | 10.11 | None | x^(1/3) | 0.05 | Inter |
| Cobalt, total (mg/L) | n/a | 0.005202 | 89 | -7.438 | 1.12 | 3.371 | None | ln(x) | 0.05 | Inter |
| Combined Radium 226 + 228 (pCi/L) | n/a | 9.419 | 84 | 0.4635 | 0.9102 | 1.19 | None | ln(x) | 0.05 | Inter |
| Fluoride, total (mg/L) | n/a | 1 | 96 | n/a | n/a | 69.79 | n/a | n/a | 0.007269 | NP Inter(normality) |
| Lead, total (mg/L) | n/a | 0.005 | 89 | n/a | n/a | 51.69 | n/a | n/a | 0.01041 | NP Inter(normality) |
| Lithium, total (mg/L) | n/a | 0.05 | 90 | n/a | n/a | 8.889 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Mercury, total (mg/L) | n/a | 0.000096 | 90 | n/a | n/a | 56.67 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Molybdenum, total (mg/L) | n/a | 0.01 | 90 | n/a | n/a | 63.33 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Selenium, total (mg/L) | n/a | 0.0392 | 90 | n/a | n/a | 62.22 | n/a | n/a | 0.009888 | NP Inter(normality) |
| Thallium, total (mg/L) | n/a | 0.002 | 90 | n/a | n/a | 85.56 | n/a | n/a | 0.009888 | NP Inter(NDs) |

| FLINT CREEK LANDFILL GWPS | | | | |
|---|---|---|---|---|
| **Constituent Name** | **MCL** | **CCR-Rule Specified** | **Background Limit** | **GWPS** |
| Antimony, Total (mg/L) | 0.006 | | 0.005 | 0.006 |
| Arsenic, Total (mg/L) | 0.01 | | 0.008 | 0.01 |
| Barium, Total (mg/L) | 2 | | 0.13 | 2 |
| Beryllium, Total (mg/L) | 0.004 | | 0.001 | 0.004 |
| Cadmium, Total (mg/L) | 0.005 | | 0.001 | 0.005 |
| Chromium, Total (mg/L) | 0.1 | | 0.0051 | 0.1 |
| Cobalt, Total (mg/L) | n/a | 0.006 | 0.0052 | 0.006 |
| Combined Radium, Total (pCi/L) | 5 | | 9.42 | 9.42 |
| Fluoride, Total (mg/L) | 4 | | 1 | 4 |
| Lead, Total (mg/L) | 0.015 | | 0.005 | 0.015 |
| Lithium, Total (mg/L) | n/a | 0.04 | 0.05 | 0.05 |
| Mercury, Total (mg/L) | 0.002 | | 0.000096 | 0.002 |
| Molybdenum, Total (mg/L) | n/a | 0.1 | 0.01 | 0.1 |
| Selenium, Total (mg/L) | 0.05 | | 0.039 | 0.05 |
| Thallium, Total (mg/L) | 0.002 | | 0.002 | 0.002 |

**Grey cell indicates ACL is higher than MCL.*

**MCL = Maximum Contaminant Level*

**GWPS = Groundwater Protection Standard*

# Confidence Interval Summary Table - All Results (No Significant)

Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 12:00 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Compliance | Sig. | N | Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony, total (mg/L) | B-10 | 0.005 | 0.00011 | 0.006 | No | 15 | 0.003701 | 0.00223 | 73.33 | None | No | 0.01 | NP (normality) |
| Antimony, total (mg/L) | B-11 | 0.005 | 0.0002 | 0.006 | No | 15 | 0.003713 | 0.002194 | 86.67 | None | No | 0.01 | NP (NDs) |
| Antimony, total (mg/L) | B-2 | 0.005 | 0.0001 | 0.006 | No | 15 | 0.002585 | 0.002257 | 53.33 | None | No | 0.01 | NP (Cohens/xfrm) |
| Antimony, total (mg/L) | B-6 | 0.005 | 0.00008 | 0.006 | No | 15 | 0.003473 | 0.002259 | 73.33 | None | No | 0.01 | NP (normality) |
| Antimony, total (mg/L) | B-9 | 0.005 | 0.0005 | 0.006 | No | 15 | 0.003506 | 0.002205 | 80 | None | No | 0.01 | NP (NDs) |
| Arsenic, total (mg/L) | B-10 | 0.006 | 0.00067 | 0.01 | No | 15 | 0.003564 | 0.002058 | 53.33 | None | No | 0.01 | NP (normality) |
| Arsenic, total (mg/L) | B-11 | 0.007 | 0.00055 | 0.01 | No | 14 | 0.003454 | 0.002312 | 50 | None | No | 0.01 | NP (normality) |
| Arsenic, total (mg/L) | B-2 | 0.008 | 0.0004 | 0.01 | No | 15 | 0.003648 | 0.004383 | 26.67 | None | No | 0.01 | NP (Cohens/xfrm) |
| Arsenic, total (mg/L) | B-6 | 0.005 | 0.00051 | 0.01 | No | 15 | 0.002773 | 0.00205 | 40 | None | No | 0.01 | NP (normality) |
| Arsenic, total (mg/L) | B-9 | 0.005 | 0.00111 | 0.01 | No | 15 | 0.003242 | 0.001958 | 53.33 | None | No | 0.01 | NP (normality) |
| Barium, total (mg/L) | B-10 | 0.08048 | 0.07518 | 2 | No | 13 | 0.07783 | 0.003569 | 0 | None | No | 0.01 | Param. |
| Barium, total (mg/L) | B-11 | 0.145 | 0.1093 | 2 | No | 14 | 0.1271 | 0.02521 | 0 | None | No | 0.01 | Param. |
| Barium, total (mg/L) | B-2 | 0.1157 | 0.05487 | 2 | No | 14 | 0.09198 | 0.05817 | 0 | None | ln(x) | 0.01 | Param. |
| Barium, total (mg/L) | B-6 | 0.06802 | 0.05048 | 2 | No | 15 | 0.05925 | 0.01295 | 0 | None | No | 0.01 | Param. |
| Barium, total (mg/L) | B-9 | 0.1621 | 0.1385 | 2 | No | 15 | 0.1505 | 0.01778 | 0 | None | sqrt(x) | 0.01 | Param. |
| Beryllium, total (mg/L) | B-10 | 0.001 | 0.000049150.004 | | No | 15 | 0.0005733 | 0.0004399 | 66.67 | None | No | 0.01 | NP (normality) |
| Beryllium, total (mg/L) | B-11 | 0.0006942 | 0.0002667 | 0.004 | No | 14 | 0.0005489 | 0.0004836 | 0 | None | ln(x) | 0.01 | Param. |
| Beryllium, total (mg/L) | B-2 | 0.0002973 | 0.0001312 | 0.004 | No | 14 | 0.0002677 | 0.0002699 | 0 | None | No | 0.01 | NP (normality) |
| Beryllium, total (mg/L) | B-6 | 0.0003454 | 0.000070150.004 | | No | 15 | 0.0002347 | 0.0002642 | 13.33 | None | sqrt(x) | 0.01 | Param. |
| Beryllium, total (mg/L) | B-9 | 0.001 | 0.00003 | 0.004 | No | 15 | 0.0004197 | 0.0004528 | 46.67 | None | No | 0.01 | NP (normality) |
| Cadmium, total (mg/L) | B-10 | 0.001 | 0.00005 | 0.005 | No | 15 | 0.0007142 | 0.0004279 | 73.33 | None | No | 0.01 | NP (normality) |
| Cadmium, total (mg/L) | B-11 | 0.0007086 | 0.0001489 | 0.005 | No | 14 | 0.0004982 | 0.000539 | 0 | None | x^(1/3) | 0.01 | Param. |
| Cadmium, total (mg/L) | B-2 | 0.001 | 0.00005 | 0.005 | No | 15 | 0.0005712 | 0.0004635 | 46.67 | None | No | 0.01 | NP (normality) |
| Cadmium, total (mg/L) | B-6 | 0.001 | 0.00008 | 0.005 | No | 15 | 0.0005437 | 0.0004471 | 53.33 | None | No | 0.01 | NP (normality) |
| Cadmium, total (mg/L) | B-9 | 0.001 | 0.0002 | 0.005 | No | 15 | 0.0007693 | 0.0003975 | 86.67 | None | No | 0.01 | NP (NDs) |
| Chromium, total (mg/L) | B-10 | 0.001492 | 0.000521 | 0.1 | No | 13 | 0.001006 | 0.0006529 | 0 | None | No | 0.01 | Param. |
| Chromium, total (mg/L) | B-11 | 0.006423 | 0.001484 | 0.1 | No | 14 | 0.005403 | 0.006635 | 0 | None | ln(x) | 0.01 | Param. |
| Chromium, total (mg/L) | B-2 | 0.004987 | 0.002054 | 0.1 | No | 13 | 0.003628 | 0.002327 | 0 | None | sqrt(x) | 0.01 | Param. |
| Chromium, total (mg/L) | B-6 | 0.005371 | 0.002526 | 0.1 | No | 15 | 0.004085 | 0.002403 | 0 | None | sqrt(x) | 0.01 | Param. |
| Chromium, total (mg/L) | B-9 | 0.002965 | 0.001577 | 0.1 | No | 15 | 0.002271 | 0.001024 | 0 | None | No | 0.01 | Param. |
| Cobalt, total (mg/L) | B-10 | 0.001046 | 0.0003992 | 0.006 | No | 14 | 0.0007224 | 0.0004563 | 7.143 | None | No | 0.01 | Param. |
| Cobalt, total (mg/L) | B-11 | 0.002024 | 0.0003276 | 0.006 | No | 14 | 0.001437 | 0.001816 | 0 | None | x^(1/3) | 0.01 | Param. |
| Cobalt, total (mg/L) | B-2 | 0.002961 | 0.000286 | 0.006 | No | 14 | 0.002221 | 0.003977 | 0 | None | x^(1/3) | 0.01 | Param. |
| Cobalt, total (mg/L) | B-6 | 0.00233 | 0.000713 | 0.006 | No | 15 | 0.001522 | 0.001193 | 0 | None | No | 0.01 | Param. |
| Cobalt, total (mg/L) | B-9 | 0.001371 | 0.0005716 | 0.006 | No | 15 | 0.0009714 | 0.00059 | 0 | None | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-10 | 1.505 | 0.722 | 9.42 | No | 14 | 1.113 | 0.5527 | 0 | None | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-11 | 1.711 | 0.6529 | 9.42 | No | 12 | 1.182 | 0.674 | 0 | None | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-2 | 2.499 | 1.255 | 9.42 | No | 14 | 1.922 | 0.9752 | 0 | None | sqrt(x) | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-6 | 1.145 | 0.5735 | 9.42 | No | 12 | 0.8594 | 0.3644 | 0 | None | No | 0.01 | Param. |
| Combined Radium 226 + 228 (pCi/L) | B-9 | 1.803 | 0.5641 | 9.42 | No | 13 | 1.184 | 0.8331 | 0 | None | No | 0.01 | Param. |
| Fluoride, total (mg/L) | B-10 | 1 | 0.2319 | 4 | No | 16 | 0.7545 | 0.38 | 68.75 | None | No | 0.01 | NP (normality) |
| Fluoride, total (mg/L) | B-11 | 1 | 0.04 | 4 | No | 16 | 0.88 | 0.3279 | 87.5 | None | No | 0.01 | NP (NDs) |
| Fluoride, total (mg/L) | B-2 | 1 | 0.3361 | 4 | No | 16 | 0.8435 | 0.3408 | 81.25 | None | No | 0.01 | NP (NDs) |
| Fluoride, total (mg/L) | B-6 | 1 | 0.2066 | 4 | No | 16 | 0.8398 | 0.3464 | 87.5 | None | No | 0.01 | NP (NDs) |
| Fluoride, total (mg/L) | B-9 | 1 | 0.1884 | 4 | No | 16 | 0.7077 | 0.394 | 62.5 | None | No | 0.01 | NP (normality) |
| Lead, total (mg/L) | B-10 | 0.005 | 0.0003 | 0.015 | No | 15 | 0.00312 | 0.002162 | 60 | None | No | 0.01 | NP (normality) |
| Lead, total (mg/L) | B-11 | 0.006 | 0.000416 | 0.015 | No | 14 | 0.003139 | 0.002792 | 28.57 | None | No | 0.01 | NP (Cohens/xfrm) |
| Lead, total (mg/L) | B-2 | 0.005 | 0.0002 | 0.015 | No | 14 | 0.002829 | 0.003513 | 28.57 | None | No | 0.01 | NP (Cohens/xfrm) |
| Lead, total (mg/L) | B-6 | 0.002459 | 0.0006731 | 0.015 | No | 15 | 0.00171 | 0.00145 | 6.667 | None | sqrt(x) | 0.01 | Param. |
| Lead, total (mg/L) | B-9 | 0.005 | 0.000693 | 0.015 | No | 15 | 0.003002 | 0.00222 | 60 | None | No | 0.01 | NP (normality) |
| Lithium, total (mg/L) | B-10 | 0.01 | 0.00169 | 0.05 | No | 15 | 0.007401 | 0.01239 | 6.667 | None | No | 0.01 | NP (normality) |
| Lithium, total (mg/L) | B-11 | 0.00899 | 0.002358 | 0.05 | No | 14 | 0.00744 | 0.008724 | 0 | None | ln(x) | 0.01 | Param. |
| Lithium, total (mg/L) | B-2 | 0.01161 | 0.002431 | 0.05 | No | 15 | 0.01027 | 0.01351 | 6.667 | None | ln(x) | 0.01 | Param. |
| Lithium, total (mg/L) | B-6 | 0.0038 | 0.0008463 | 0.05 | No | 14 | 0.005464 | 0.01287 | 7.143 | None | No | 0.01 | NP (normality) |
| Lithium, total (mg/L) | B-9 | 0.009 | 0.00241 | 0.05 | No | 15 | 0.007772 | 0.01221 | 6.667 | None | No | 0.01 | NP (normality) |

# Confidence Interval Summary Table - All Results (No Significant)

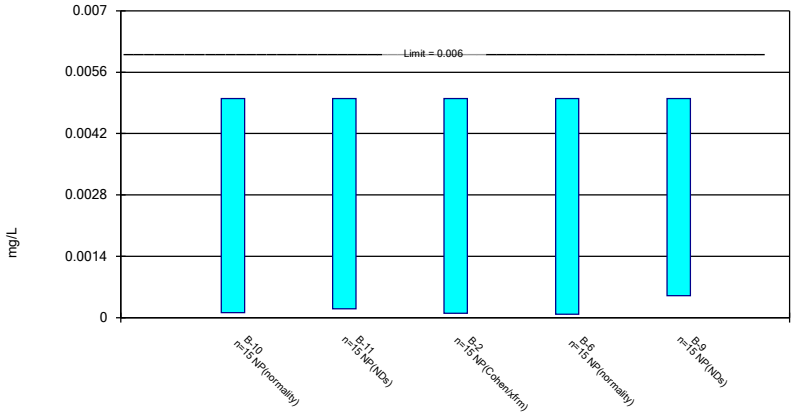


Flint Creek LF Client: Geosyntec Data: Flint Creek LF Printed 12/8/2019, 12:00 PM

| Constituent | Well | Upper Lim. | Lower Lim. | Compliance | Sig. | N | Mean | Std. Dev. | %NDs | ND Adj. | Transform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury, total (mg/L) | B-10 | 0.000025 | 0.000016 | 0.002 | No | 15 | 0.00002178 | 0.000005834 | 66.67 | None | No | 0.01 | NP (normality) |
| Mercury, total (mg/L) | B-11 | 0.000025 | 0.00002458 | 0.002 | No | 14 | 0.00002493 | 1.8e-7 | 85.71 | None | No | 0.01 | NP (NDs) |
| Mercury, total (mg/L) | B-2 | 0.000027 | 0.00001252 | 0.002 | No | 15 | 0.00002334 | 0.00001 | 60 | None | No | 0.01 | NP (normality) |
| Mercury, total (mg/L) | B-6 | 0.000025 | 0.00000738 | 0.002 | No | 15 | 0.00001544 | 0.000008342 | 40 | None | No | 0.01 | NP (normality) |
| Mercury, total (mg/L) | B-9 | 0.000025 | 0.00001472 | 0.002 | No | 15 | 0.00002244 | 0.000005506 | 80 | None | No | 0.01 | NP (NDs) |
| Molybdenum, total (mg/L) | B-10 | 0.005 | 0.00092 | 0.1 | No | 15 | 0.002665 | 0.003203 | 13.33 | None | No | 0.01 | NP (normality) |
| Molybdenum, total (mg/L) | B-11 | 0.01 | 0.0003706 | 0.1 | No | 15 | 0.003715 | 0.002668 | 66.67 | None | No | 0.01 | NP (normality) |
| Molybdenum, total (mg/L) | B-2 | 0.00388 | 0.000828 | 0.1 | No | 15 | 0.002644 | 0.002729 | 13.33 | None | sqrt(x) | 0.01 | Param. |
| Molybdenum, total (mg/L) | B-6 | 0.005 | 0.0005 | 0.1 | No | 15 | 0.002431 | 0.002802 | 40 | None | No | 0.01 | NP (normality) |
| Molybdenum, total (mg/L) | B-9 | 0.01 | 0.0008719 | 0.1 | No | 15 | 0.006527 | 0.008516 | 73.33 | None | No | 0.01 | NP (normality) |
| Selenium, total (mg/L) | B-10 | 0.005 | 0.0004 | 0.05 | No | 15 | 0.003767 | 0.002118 | 73.33 | None | No | 0.01 | NP (normality) |
| Selenium, total (mg/L) | B-11 | 0.00476 | 0.002361 | 0.05 | No | 15 | 0.003293 | 0.001377 | 26.67 | Cohen`s | No | 0.01 | Param. |
| Selenium, total (mg/L) | B-2 | 0.03288 | 0.01037 | 0.05 | No | 15 | 0.02412 | 0.02155 | 0 | None | x^(1/3) | 0.01 | Param. |
| Selenium, total (mg/L) | B-6 | 0.003311 | 0.001678 | 0.05 | No | 15 | 0.002494 | 0.001205 | 6.667 | None | No | 0.01 | Param. |
| Selenium, total (mg/L) | B-9 | 0.005 | 0.0008 | 0.05 | No | 15 | 0.003847 | 0.001984 | 80 | None | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-10 | 0.002 | 0.00136 | 0.002 | No | 15 | 0.001726 | 0.0006219 | 86.67 | None | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-11 | 0.002 | 0.001 | 0.002 | No | 15 | 0.001635 | 0.000662 | 86.67 | None | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-2 | 0.002 | 0.0005 | 0.002 | No | 15 | 0.001529 | 0.0007166 | 80 | None | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-6 | 0.002 | 0.001 | 0.002 | No | 15 | 0.001601 | 0.0006496 | 80 | None | No | 0.01 | NP (NDs) |
| Thallium, total (mg/L) | B-9 | 0.002 | 0.001044 | 0.002 | No | 15 | 0.001673 | 0.0006346 | 80 | None | No | 0.01 | NP (NDs) |

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

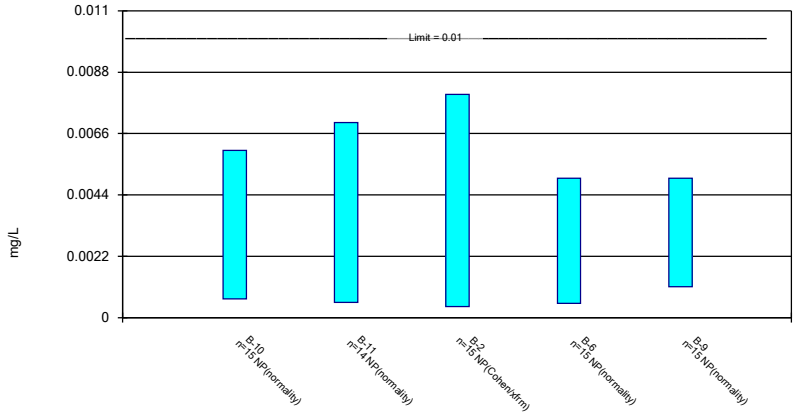



Constituent: Antimony, total Analysis Run 12/8/2019 11:59 AM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

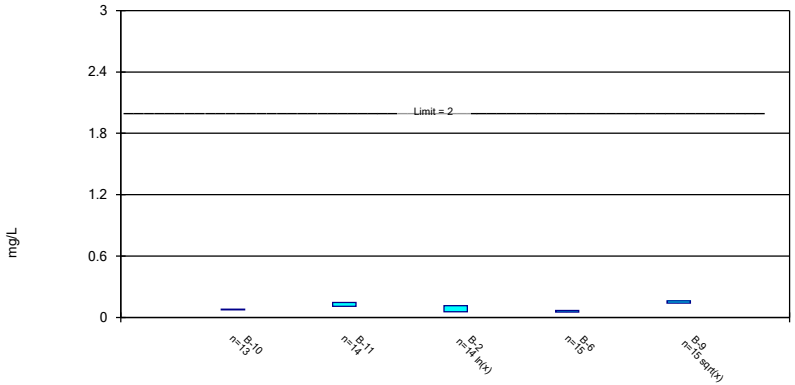



Constituent: Arsenic, total Analysis Run 12/8/2019 11:59 AM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

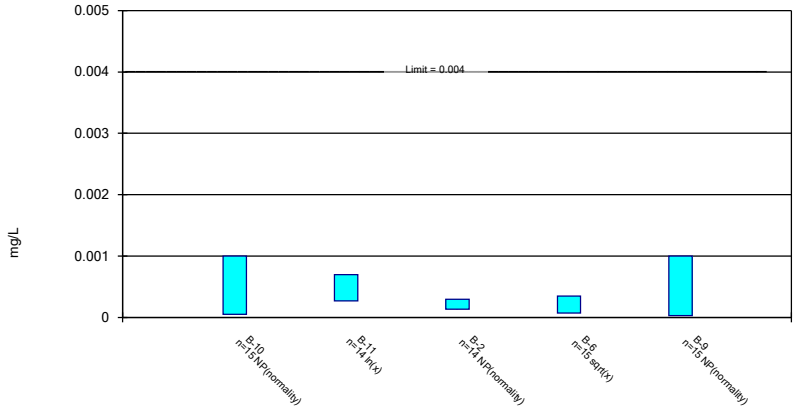



Constituent: Barium, total Analysis Run 12/8/2019 11:59 AM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Parametric and Non-Parametric (NP) Confidence Interval

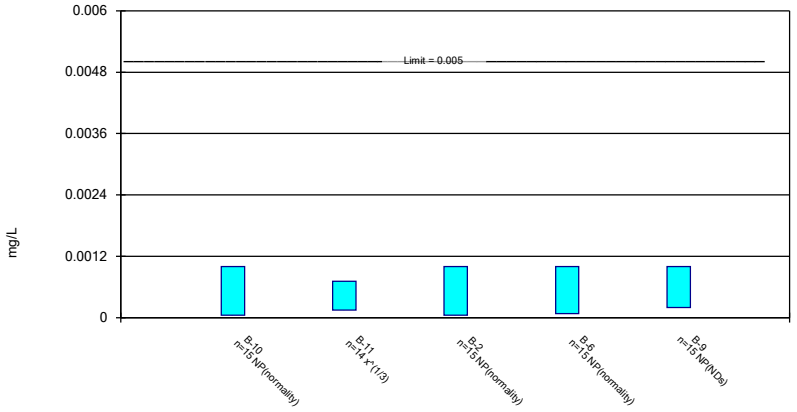
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.




Constituent: Beryllium, total Analysis Run 12/8/2019 11:59 AM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

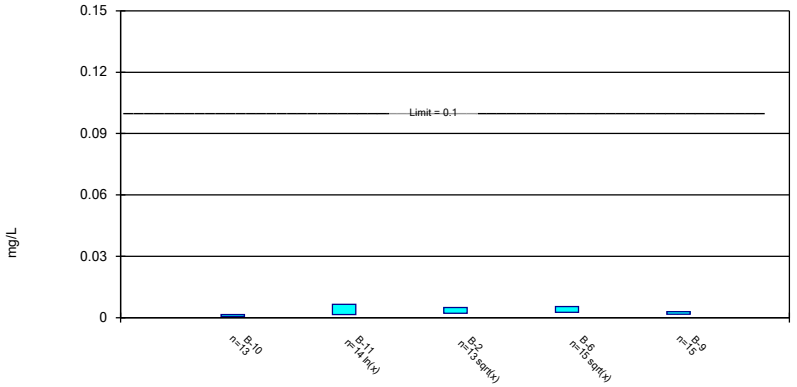



Constituent: Cadmium, total Analysis Run 12/8/2019 11:59 AM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

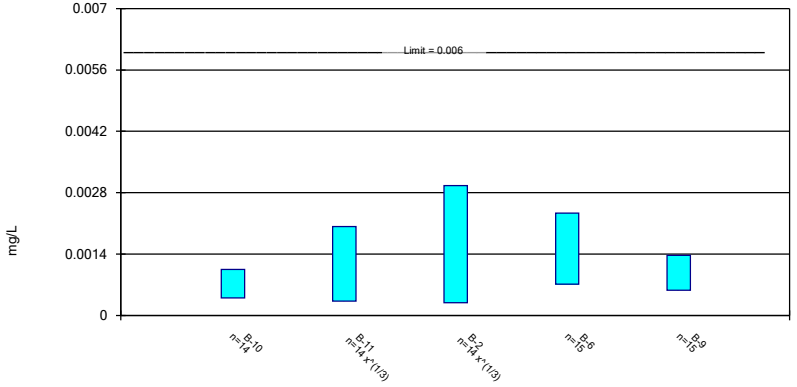



Constituent: Chromium, total Analysis Run 12/8/2019 11:59 AM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

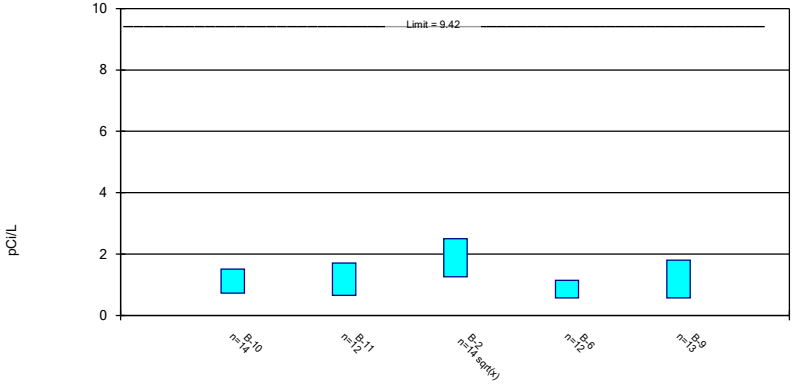



Constituent: Cobalt, total Analysis Run 12/8/2019 11:59 AM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Parametric Confidence Interval

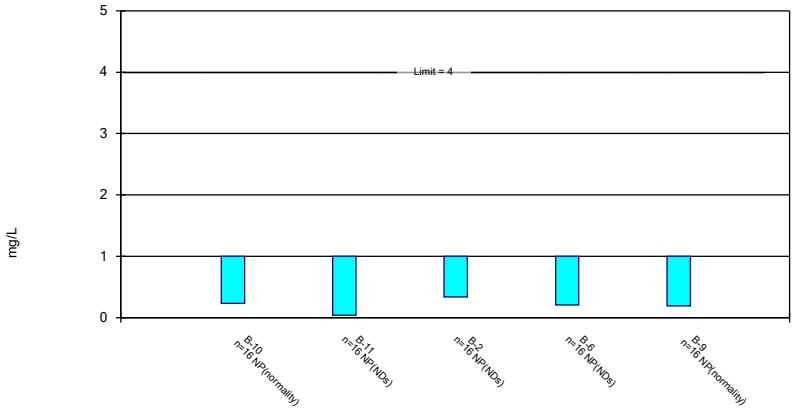
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.




Constituent: Combined Radium 226 + 228 Analysis Run 12/8/2019 11:59 AM View: Confidence Intervals -
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

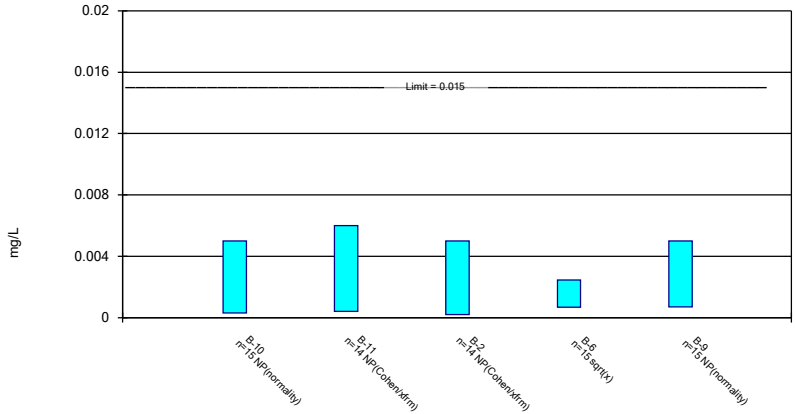



Constituent: Fluoride, total Analysis Run 12/8/2019 12:00 PM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

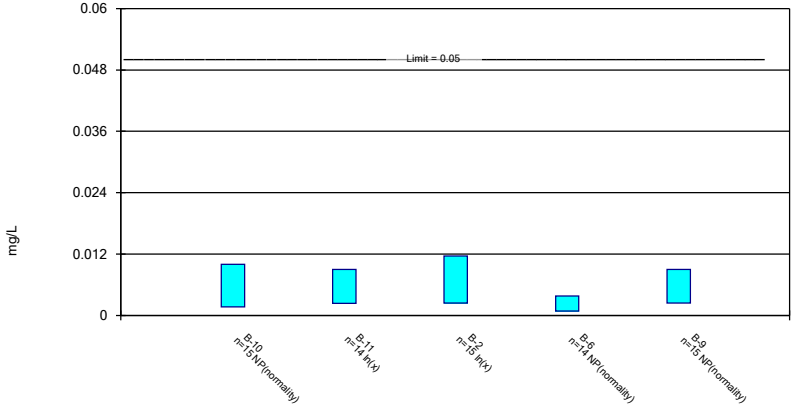



Constituent: Lead, total Analysis Run 12/8/2019 12:00 PM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

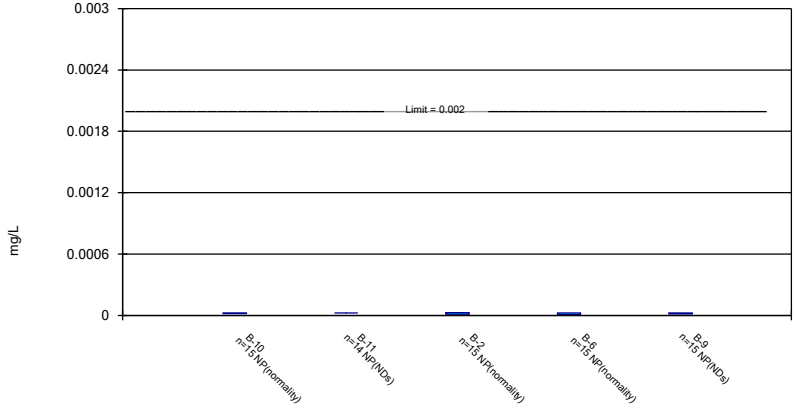



Constituent: Lithium, total Analysis Run 12/8/2019 12:00 PM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF



## Non-Parametric Confidence Interval

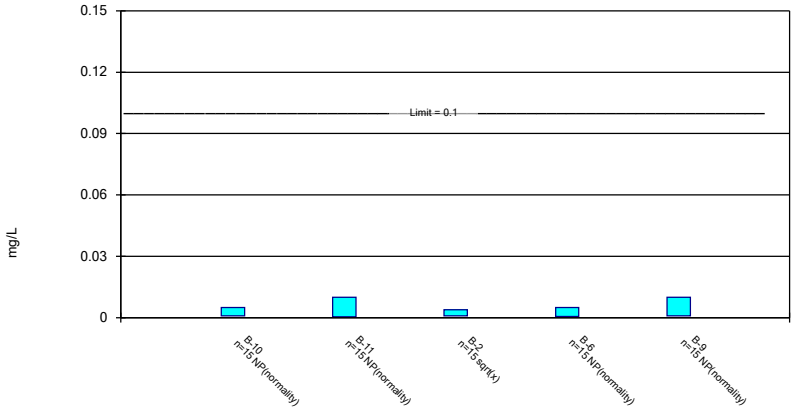
Compliance Limit is not exceeded. Per-well alpha = 0.01.




Constituent: Mercury, total Analysis Run 12/8/2019 12:00 PM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

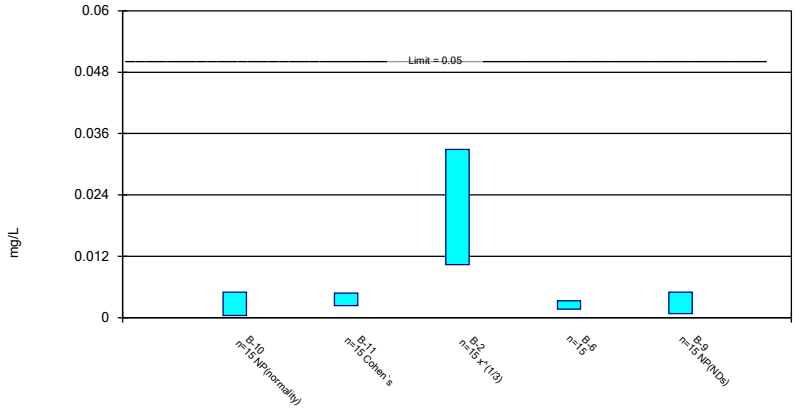



Constituent: Molybdenum, total Analysis Run 12/8/2019 12:00 PM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

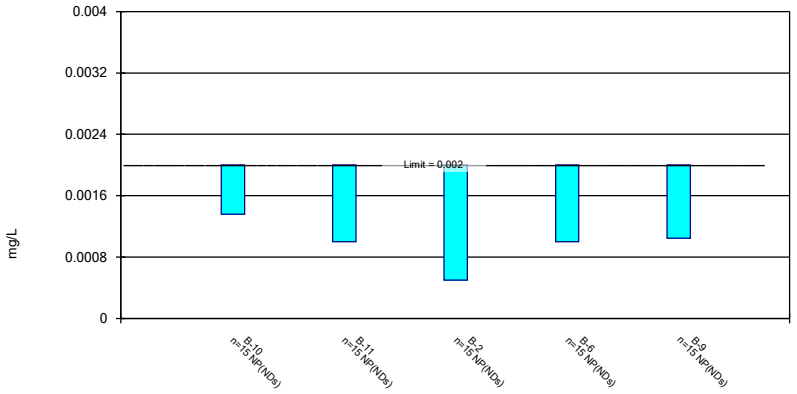



Constituent: Selenium, total Analysis Run 12/8/2019 12:00 PM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.




Constituent: Thallium, total Analysis Run 12/8/2019 12:00 PM View: Confidence Intervals - App IV
Flint Creek LF Client: Geosyntec Data: Flint Creek LF