

7 January 2019

Mr. Randy Melton
Administrator
Planning and Environmental Health & Safety
702 North Franklin Street
Tampa, FL 33602

Subject: Summary of Results – Third Detection Monitoring Event (September 2018)
Economizer Ash and Pyrite Pond System
Big Bend Station – Tampa Electric Company

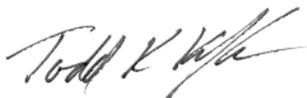
Dear Mr. Melton,

Geosyntec Consultants, Inc. (Geosyntec) has prepared the enclosed technical memorandum to summarize the findings from the Third Detection Monitoring Event performed on 12 September 2018 at the Economizer Ash and Pyrite Pond System (EAPPS) located at Big Bend Station. The detection monitoring event for Appendix III parameters was conducted in accordance with 40 CFR 257.94 of the federal Coal Combustion Residual Rule.

The Appendix III results were compared against background concentrations derived previously using statistical methods that comply with the allowable methods specified in 40 CFR 257.93. As with the first (October 2017) and second (April 2018) detection monitoring events, groundwater pH was the only Appendix III parameter detected above background levels. However, the Alternate Source Demonstration (April 2018) prepared in accordance with 40 CFR 257.94(3)(e) documented that groundwater pH is not a statistically significant increase (SSI) attributable to a release from the EAPPS. As a result, detection monitoring will continue at the EAPPS in the absence of an Appendix III SSI.

Please contact us at 813-558-0990 if you have further questions.

Sincerely,
GEOSYNTEC CONSULTANTS, INC.



Todd K. Kafka (FL PG 2338)
Principal



Michael N. Lodato (FL PG 1351)
Senior Principal

Memorandum

Date: 7 January 2019

To: Randy Melton

Copies to: Terry Eastley
Karen Zwolack

From: Cathy Crea, Ph.D

Reviewed by: Michael N. Lodato, PG
Todd Kafka, PG

Subject: Summary of Results for the Third Detection Monitoring Event
Economizer Ash and Pyrite Pond System
Tampa Electric Company - Big Bend Station
13031 Wyandotte Road
Gibson, FL 33572

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published 40 Code of Federal Regulations (CFR) Parts 257 and 261: Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule (USEPA, 2015). This regulation addresses the safe disposal of coal combustion residuals (CCR) as solid waste under Subtitle D of the Resource Conservation and Recovery Act (RCRA) and is referred to herein as the CCR Rule. The CCR Rule became effective on 14 October 2015 and provides national minimum criteria for “the safe disposal of CCR in new and existing CCR landfills, surface impoundments, and lateral expansions, design and operating criteria, groundwater monitoring and corrective action, closure requirements and post closure care, and recordkeeping, notification, and internet posting requirements.” The groundwater monitoring requirements of the CCR Rule apply to the economizer ash and pyrite pond system (EAPPS) at Tampa Electric Company’s (TEC) Big Bend Power Station (BBS) in southeast Hillsborough County in Gibson, Florida. TEC installed a groundwater monitoring system (GMS) at the EAPPS that complies with 40 CFR 257.91 and performed baseline groundwater sampling events in accordance with 40 CFR 257.93.

Geosyntec Consultants, Inc. (Geosyntec) has prepared this technical memorandum to summarize the results of the third detection monitoring event as required by 40 CFR 257.94. The third detection

monitoring event was performed by TEC staff on 12 September 2018. Geosyntec's statistical analyses were performed in accordance with the *Statistical Analysis Plan* dated 15 October 2017.

BACKGROUND

The GMS was installed at the EAPPS in May 2016 and consists of two background monitoring wells, BBS-CCR-BW1 and BBS-CCR-BW2, and three downgradient monitoring wells, BBS-CCR-1, BBS-CCR-2, and BBS-CCR-3. TEC conducted eleven baseline groundwater sampling events from the GMS between June 2016 and October 2017 and analyzed the samples for Appendix III and Appendix IV constituents as required in 40 CFR 257.93. The inorganic data were reviewed based on the following: *CCR Groundwater Monitoring Program Plan*, Big Bend Power Station, Apollo Beach, Florida, September 2016, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, August 2014 (OSWER 9355.0-131, EPA 540-R-013-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

Geosyntec prepared a *Statistical Analysis Plan* to provide details on the selection of statistical methods in accordance with the provisions set forth in 40 CFR 257.93 "Groundwater sampling and analysis requirements." Background concentrations were established for each of the constituents listed in 40 CFR 257 Appendix III by analyzing the data from the two background wells. A 95% upper prediction limit (UPL) was established for each constituent from the baseline sampling events conducted between June 2016 and August 2017 and the first detection monitoring event in October 2017. In accordance with the *Statistical Analysis Plan*, the same methodology used for the first two detection monitoring events (October 2017 and April 2018) was used for the third detection monitoring event (September 2018) and is not repeated herein. Details of the derivation of the background concentrations and the results of the first detection monitoring event are summarized in the summary memorandum *Summary of Statistical Analyses of Baseline Groundwater Samples Economizer Ash and Pyrite Pond System* dated January 2018.

DETECTION MONITORING RESULTS

The third detection monitoring event included the collection of five groundwater samples from the GMS in September 2018. Geosyntec reviewed and performed a Stage 2A data validation, consistent with the data collected previously. The data were qualified and deemed usable for meeting project objectives. The data validation summary memorandum is provided in **Attachment A**.

A comparison of the third detection monitoring results to the background values for the Appendix III constituents is shown in **Table 1** and indicates pH concentrations above background in BBS-CCR-1, which is one of the three downgradient monitoring wells. The established Upper Prediction Limit (UPL)

for pH is 6.70 standard units (SU) and the pH at BBS-CCR-1 was 6.80. Similar pH values were reported in this well during the first and second detection monitoring events (October 2017 and April 2018). Additionally, pH concentrations were reported above background in BBS-CCR-2 during the first and second detection monitoring events (October 2017 and April 2018), but were within background (6.29 SU) in September 2018.

CONCLUSIONS

As specified in 40 CFR 257.94(3)(e), Geosyntec prepared an alternate source demonstration (ASD) documenting that the elevated pH value is not an SSI and is not attributable to a release from the EAPPS. The elevated pH values are attributable to natural variability (e.g., local background and changes in groundwater flow directions) and within the margin of error for the field pH instrument (*Alternate Source Demonstration – Economizer Ash and Pyrite Pond System* dated April 2018). In the absence of SSIs for other Appendix III constituents, TEC will continue with detection monitoring as applicable for the EAPPS.

* * * * *

TABLE

TABLE 1 - DETECTION MONITORING RESULTS, ECONOMIZER ASH AND PYRITE POND SYSTEM, TEC BIG BEND STATION

Analytical Parameter		Boron, total	Calcium, total	Chloride, total	Fluoride, total	pH (field)	Sulfate, total	Total Dissolved Solids
Units		mg/L	mg/L	mg/L	mg/L	STD	mg/L	mg/L
Background Concentration Value		59.1	781	1140	0.559	(6.38, 6.70)	1550	5050
Well ID	Sample Collection Date	September 2018 Detection Monitoring Results						
BBS-CCR-1	9/12/2018	19.9	549	674	0.235	6.80	1220	3250
BBS-CCR-2	9/12/2018	0.177 J-	218	88.7	0.298	6.29	375	1060
BBS-CCR-3	9/12/2018	0.398	191	132	0.309	6.41	469	1200

Notes:

- Bold, highlighted text indicates statistically significant increase above background concentration values.

J- : Data validation qualifier - The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

mg/L - milligrams per liter

STD - standard units

ATTACHMENT A

Memorandum

Date: 15 November 2018
To: Todd Kafka
From: Chris Pracheil
CC: J. Caprio
Subject: Stage 2A Data Validation – Level II Data Deliverable – Tampa Electric Laboratory Service Work Order L18I055, TestAmerica Job ID 660-89608-1 and KNL Environmental Testing Order L18I055

SITE: Big Bend Power Station, Apollo Beach, Florida

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of five water samples, collected on September 12, 2018 as part of the Big Bend Power Station coal combustion residuals (CCR) groundwater monitoring program plan. The lithium analyses were performed by TestAmerica Tampa, Tampa, Florida (TA). The radium analyses were performed by KNL Environmental Testing, Tampa, Florida (KNL). The rest of the analyses were performed by Tampa Electric Laboratory Services, Tampa, Florida (TELS). The samples were analyzed for the following:

- Metals by EPA Methods 200.7 Rev. 4.4, 200.8 and 6010B
- Mercury by EPA Method 7470A
- Radium-226 by EPA Method 903.0
- Radium-228 by EPA Method Ra-05
- Chloride, Fluoride and Sulfate by EPA Method 300.0
- Total Dissolved Solids by Standard Method 2540C

EXECUTIVE SUMMARY

The samples were handled, prepared, and measured in the same manner under similar prescribed conditions.

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualifications.

The inorganic data were reviewed based on the following: CCR Groundwater Monitoring Program Plan, Big Bend Power Station, Apollo Beach, Florida, September 2016 (GWMP), USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, January 2017 (OLEM 9355.0-135, EPA 540-R-2017-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at a Stage 2A level in the data set:

Laboratory ID	Client ID
L18I055-01	BBS-CCR-1
L18I055-02	BBS-CCR-2
L18I055-03	BBS-CCR-3

Laboratory ID	Client ID
L18I055-04	BBS-CCR-BW1
L18I055-05	BBS-CCR-BW2

The samples were received at the laboratories within the criteria of 0-6°C. No sample preservation or sample receipt issues were noted by the laboratories.

The laboratory report was revised on November 15, 2018, to correct a typographical error on BBS-CCR-1 Rad-226/228 results and BBS-CCR-3 Rad 226/228 Counting Error.

1.0 TOTAL METALS

The samples were analyzed for total metals per EPA Methods 200.7 Rev. 4.4, 200.8 and 6010B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine the impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ⊗ Matrix Spike/Matrix Spike Duplicate
- ⊗ Laboratory Control Sample
- ✓ Serial Dilution
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis for the data set is 100%.

1.2 Holding Times

The holding time for the metals analysis of waters is 180 days from sample collection to analysis. The holding time was met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (method 200.7 batch 412052, method 200.8 batch 18I0070 and method 6010B batch 18I0068). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exception.

Boron was detected at an estimated concentration, greater than the MDL and less than the reporting limit (RL) in the method blank associated with batch 18I0068. Since boron was detected above the RL in the associated samples, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Three sample set specific MS/MSD pairs were reported, two for the method 200.8 data using samples BBS-CCR-1 and BBS-CCR-BW2; and one for the method 6010B data using sample BBS-CCR-2. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The recoveries of barium, beryllium, boron and chromium were low and the recoveries of molybdenum were high, outside laboratory specified acceptance criteria in the MS/MSD pair using sample BBS-CCR-2. Therefore, the concentrations of barium and boron were J- qualified as estimated with low biases and the non-detect results of beryllium and chromium were UJ qualified as estimated less than the MDLs. Since molybdenum was not detected in sample BBS-CCR-2, no qualifications were applied to the molybdenum data.

A batch MS/MSD pair was reported for the method 200.7 data. Since these are batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

It was noted that calcium was not included in the MS/MSD spike for the 6010B data. This did results in any qualifications to the data.

Client Sample ID	Compound	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier*	Reason Code**
BBS-CCR-2	Barium	0.0652	J-	0.0652	J-	4
BBS-CCR-2	Boron	0.177	J-,V	0.177	J-	4

mg/L-milligrams per liter

J- the reported value is an estimated value

V-laboratory flag indicating analyte was detected in both the sample and the associated method blank

* Validation qualifiers are defined in Attachment 1 at the end of this report

**Reason codes are defined in Attachment 2 at the end of this report

Client Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
BBS-CCR-2	Beryllium	0.500	J-,U	0.500	UJ	4
BBS-CCR-2	Chromium	1.60	J-,U	1.60	UJ	4

µg/L-micrograms per liter

J- the reported value is an estimated value

U-indicates that the compound was analyzed for but not detected

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria; however, it was noted that calcium was not included in the LCS spike for batch 18I0068. Therefore, the concentrations of calcium in the associated samples were J qualified as estimated.

Client Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
BBS-CCR-1	Calcium	549000	NA	549000	J	5
BBS-CCR-2	Calcium	218000	NA	218000	J	5
BBS-CCR-3	Calcium	191000	NA	191000	J	5
BBS-CCR-BW1	Calcium	664000	NA	664000	J	5
BBS-CCR-BW2	Calcium	344000	NA	344000	J	5

µg/L-micrograms per liter

NA-not applicable

1.6 Serial Dilution

Serial dilutions were not reported.

1.7 Field Duplicate

Field duplicates were not reported with the sample sets.

1.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the limits listed in Table 4 of the CCR Groundwater Monitoring Plan.

1.9 Electronic Data Deliverable (EDD) Review

The results and sample identifications (IDs) in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flags used in the laboratory report did not match the flags used in the EDD. No other discrepancies were identified between the level II reports and the EDD.

2.0 MERCURY

The samples were analyzed for mercury per EPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine the impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis for the data set is 100%.

2.2 Holding Times

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 18I0091). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair, using sample BBS-CCR-3, was reported. The recoveries and RPD results were within the laboratory specified acceptance criteria.

One batch MS was also reported, since this was batch QC the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Field Duplicate

Field duplicates were not reported with the sample sets.

2.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL for mercury met the limit listed in Table 4 of the CCR Groundwater Monitoring Plan.

2.8 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDD.

3.0 RADIUM-226 AND RADIUM-228

The samples were analyzed for radium 226 and radium 228 per EPA Methods 903.0 and RA-05, respectively.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine the impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The radium-226 and radium-228 data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis for the data set is 100%.

3.2 Holding Times

The holding times for radium-226 and radium-228 analysis of waters are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (one for the radium-226 data and two for the radium-228 data). The method blanks were within the validation criteria.

3.4 Matrix Spike

MSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three batch MSs were reported. Since these are batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported for radium-226 and two LCSs were reported for radium-228. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Batch laboratory duplicates were reported for the radium-226 and radium-228 data. Since these are batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Sensitivity

The samples were reported to the minimum detectable concentrations (MDCs). The reported MDCs met the limits listed in Table 4 of the CCR Groundwater Monitoring Plan.

3.8 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDD.

4.0 WET CHEMISTRY PARAMETERS

The samples were analyzed for chloride, fluoride and sulfate by EPA Method 300.0 and total dissolved solids by SM 2540C.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ⊗ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The wet chemistry data reported in this package are considered usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the data set is 100%.

4.2 Holding Times

The holding times for chloride, fluoride and sulfate by EPA method 300.0 are 28 days from sample collection to analysis and the holding time for total dissolved solids by SM 2540C is 7 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blanks

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Method blanks were reported for each analysis as appropriate. The wet chemistry parameters were not detected in the method blanks above the MDLs, with the following exception.

Fluoride was detected at an estimated concentration greater than the MDL and less than the RL in the method blank for batch 18I0170. Therefore, the estimated concentrations of fluoride in the associated samples were U qualified as not detected at the RL.

Client Sample ID	Compound	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
BBS-CCR-1	Fluoride	0.235	I,V	0.500	U	3
BBS-CCR-2	Fluoride	0.298	I,V	0.500	U	3
BBS-CCR-3	Fluoride	0.309	I,V	0.500	U	3
BBS-CCR-BW2	Fluoride	0.338	I,V	0.500	U	3

mg/L-milligrams per liter

I-the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

V-analyte detected in the method blank

4.4 **Matrix Spike/Matrix Spike Duplicate**

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Two batch MS/MSD pairs were reported for the method 300.0 data. Since these are batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

4.5 **Laboratory Control Sample**

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis as appropriate. The recovery results were within the laboratory specified acceptance criteria.

4.6 **Laboratory Duplicate**

Laboratory duplicates were reported for the total dissolved solids data. One sample set specific laboratory duplicate was reported for total dissolved solids using sample BBS-CCR-1. The RPD results were within the laboratory specified acceptance criteria.

4.7 **Field Duplicate**

Field duplicates were not reported with the sample sets.

4.8 Sensitivity

The samples were reported to the MDLs. The MDLs reported met the limits listed in Table 4 of the CCR Groundwater Monitoring Plan.

4.9 Electronic Data Deliverables Review

The results and IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flags used in the laboratory report did not match the flags used in the EDD. No other discrepancies were identified between the level II reports and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS
AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.
- J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS or RPD recovery outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other